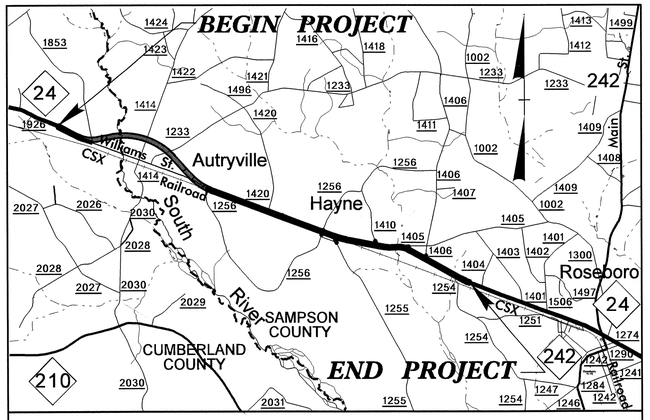
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-2303B	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
34416.1.1	STPNHF-F-8-2(17)	P.E.
34416.2.3		R/W & UTILITY
34416.3.4		CONST.

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



VICINITY MAP

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

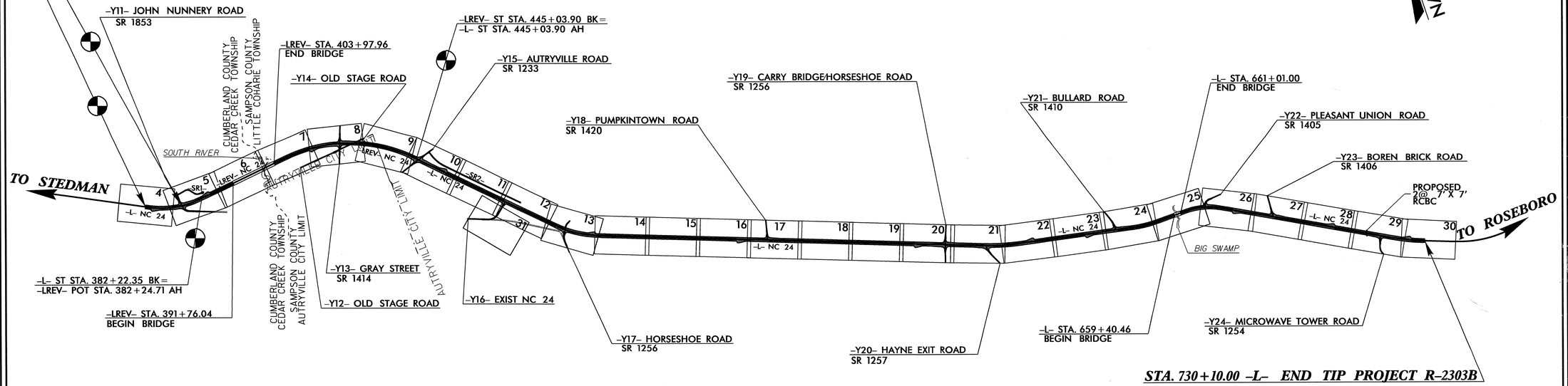
CUMBERLAND & SAMPSON COUNTIES

LOCATION: NC 24 FROM SR 1853 (JOHN NUNNERY RD) IN CUMBERLAND COUNTY TO SR 1404 (DOWDY RD) IN SAMPSON COUNTY

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

NAD 83/99

BEG. CONST. STA. 366+20.75 AH –L– (R-2303B)
END CONST. STA. 366+14.19 BK –L– (R-2303A)
STA. 376+35.51 –L– BEG. TIP PROJECT R-2303B
STA. 376+28.96 –L– END TIP PROJECT R-2303A



STA. 730+10.00 –L– END TIP PROJECT R-2303B

THIS IS A LIMITED AND PARTIAL CONTROL OF ACCESS PROJECT WITH ACCESS BEING LIMITED TO THE POINTS AS SHOWN ON THE PLANS.

TIP PROJECT: R-2303B

CONTRACT: C203087

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 2013 = 14792
ADT 2033 = 23272
DHV = 11 %
D = 65 %
T = 9 % *
V = 60 MPH
* TTST 6% DUAL 3%
FUNC. CLASS – ARTERIAL
TIER–STATEWIDE

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT R-2303B	=	6.437 MILES
LENGTH STRUCTURES TIP PROJECT R-2303B	=	0.262 MILES
TOTAL LENGTH TIP PROJECT R-2303B	=	6.699 MILES

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

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
MARCH 29, 2011

LETTING DATE:
MAY 21, 2013

GARY LOVERING, PE
PROJECT ENGINEER

KEVIN E. MOORE, PE
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER
SIGNATURE:

ROADWAY DESIGN ENGINEER
SIGNATURE:

12-FEB-2013 07:56
r:\roadway\proj\r-2303b_rdy_tsh.dgn
$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
R-2303B	1-A

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 25873 GARY R. LOVERING

8/17/99

INDEX OF SHEETS

SHEET NUMBER	SHEET
1	Title Sheet
1-A	Index of Sheets, General Notes and List of Standards
1-B	Conventional Symbols
1-C THROUGH 1-I	Survey Control Sheets
1-J	Centerline Coordinate List
2 THROUGH 2-D	Pavement Schedule, Typical Sections, Joint Repair Detail, and Wedging Details
2-E	Intersection Details
2-F	Sketch Showing Bridge/Pavement Relationship
2-G	Ditch Details
2-H THROUGH 2-K	-DET1- thru -DET4- Plan and Profile Sheets
2-L	Detail for Rock Embankment
2-M	Detail of Special DI (Str # 0505, 0520, 2808, 2809, and 2905)
2-N	Detail of Special Split Monolithic Island (Str # 0505, 1001, and 2005)
2-O	Geotechnical Std. Drawing 1801.01 - Std. Temporary Shoring
2-P THROUGH 2-R	Geotechnical Std. Drawing 1801.02 - Std. Temporary Wall
2-S	Detail of 20 Foot Woven Wire Gate
3 (2 SHEETS)	Summary of Quantities
3-A THROUGH 3-K	Summary of Drainage Quantities (For Pipes 48" and Under)
3-L	Summary of Drainage Quantities (For Pipes 54" and OVER)
3-M	Summary of Guardrail
3-N	Summary of Asphalt Pavement Break-Up/Removal and Subsurface Drainage
3-O THROUGH 3-Q	Earthwork Summary
3-R	Summaries of Fence and Shoulder Berm Gutter
3-S	Parcel Index Sheets
4 THROUGH 31	Plan Sheets
32 THROUGH 45	-L- and -LREV- Profile Sheets
46	-Y11- & -Y12- Profile Sheet
47	-Y13- & -Y14- Profile Sheet
48	-Y15- & -Y16- Profile Sheet
49	-Y17- & -Y18- Profile Sheet
50	-Y19- & -Y20- Profile Sheet
51	-Y21- & -Y22- Profile Sheet
52	-Y23- & -Y24- Profile Sheet
53	-SR1- & -SR2- Profile Sheet
54	-SR2- Profile Sheet
TMP-1 THROUGH TMP-51	Transportation Management Plans
PMP-1 THROUGH PMP-12	Pavement Marking Plans
EC-1 THROUGH EC-61	Erosion Control Plans
RF-1 THROUGH RF-3	Reforestation Plans
SIGN-1 THROUGH SIGN-17	Signing Plans
UC-1 THROUGH UC-44	Utility Construction Plans
UO-1 THROUGH UO-29	Utilities by Others Plans
X-1A	Cross Section Index Summary
X-1B THROUGH X-1L	Cross Section Summary Sheets
X-1 THROUGH X-237	Cross Sections
S-1 THROUGH S-146	Structure Plans
C-1 THROUGH C-5	Culvert Plans

GENERAL NOTES:

2012 SPECIFICATIONS
EFFECTIVE: 01-17-2012
REVISED: 07-30-2012

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 AND NO. 225.05
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

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.

SUBSURFACE DRAINS:

SUBSURFACE DRAINS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. NO. 815.02 AT LOCATIONS DIRECTED BY THE ENGINEER.

GUARDRAIL:

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

TEMPORARY SHORING:

SHORING REQUIRED FOR THE MAINTENANCE OF TRAFFIC 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 SAMPSON COUNTY (WATER), TOWN OF AUTRYVILLE (WATER), PROGRESS ENERGY (DISTRIBUTION), PROGRESS ENERGY (TRANSMISSION),CENTURYLINK, STAR TELEPHONE, PIEDMONT NATURAL GAS, AND TIME WARNER.

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

RIGHT-OF-WAY MARKERS:

RIGHT-OF-WAY MARKERS ON THIS PROJECT SHALL BE PLACED BY OTHERS AND CONCRETE CONTROL OF ACCESS MARKERS WILL BE PLACED BY CONTRACT.

EFF. 01-17-2012
REV. 10-30-2012

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
225.04	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
310.02	Parallel Pipe End Section - Precast Concrete Section for 15" to 24" Pipe
310.04	Parallel Pipe End Section - Prefabricated Steel Section for 15" to 24" Pipe
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 (Sheet 2 of 3 is no longer applicable)
DIVISION 6 - ASPHALT BASES AND PAVEMENTS	
654.01	Pavement Repairs
DIVISION 8 - INCIDENTALS	
806.03	Concrete Contol of Access Marker
815.02	Subsurface 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
838.22	Reinforced Concrete Endwall - for Double and Triple 54" Pipes 90 Skew
838.33	Reinforced Concrete Endwall - for Single 66" Pipe 90 Skew
838.45	Notes for Reinforced Concrete Endwall - Std. Dwg 838.21 thru 838.40
838.52	Reinforced Brick Endwall - for Double and Triple 54" Pipes 90 Skew
838.63	Reinforced Brick Endwall - for Single 66" 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
840.14	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
840.24	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
840.35	Traffic Bearing Grated Drop Inlet - for Cast Iron Double Frame and Grates
840.45	Precast Drainage Structure
840.46	Traffic Bearing Precast Drainage Structure
840.66	Drainage Structure Steps
840.72	Pipe Collar
846.01	Concrete Curb, Gutter and Curb & Gutter
846.04	Drop Inlet Installation in Shoulder Berm Gutter
850.01	Concrete Paved Ditches
850.10	Guide for Berm Drainage Outlet - 15" and 18" Pipe
852.01	Concrete Islands
852.06	Method for Placement of Drop Inlets in Concrete Islands
862.01	Guardrail Placement
862.02	Guardrail Installation
862.03	Structure Anchor Units (Details in Lieu of Standard Drawing as March 2013 Letting)
862.04	Anchoring End of Guardrail - B-77 and B-83 Anchor Units
866.02	Woven Wire Fence - with Wood Post
876.02	Guide for Rip Rap at Pipe Outlets
876.04	Drainage Ditches with Class 'B' Rip Rap

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12/05/11

PROJECT REFERENCE NO.	SHEET NO.
R-2303B	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 R/W Marker — RW
- Proposed Control of Access Line with Concrete C/A Marker — CA
- Existing Control of Access — CA
- Proposed Control of Access — CA
- Existing Easement Line — E
- Proposed Temporary Construction Easement — E
- Proposed Temporary Drainage Easement — TDE
- Proposed Permanent Drainage Easement — PDE
- Proposed Permanent Drainage / Utility Easement — DUE
- Proposed Permanent Utility Easement — PUE
- Proposed Temporary Utility Easement — TUE
- Proposed Aerial Utility Easement — AUE
- Proposed Permanent Easement with Iron Pin and Cap Marker

ROADS AND RELATED FEATURES:

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

VEGETATION:

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

EXISTING STRUCTURES:

MAJOR:

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

MINOR:

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

UTILITIES:

POWER:

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

TELEPHONE:

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

WATER:

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

TV:

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

GAS:

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

SANITARY SEWER:

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

MISCELLANEOUS:

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

PROJECT REFERENCE NO.	SHEET NO.
R-2303-B	1-C
Location and Surveys	

SURVEY CONTROL SHEET R-2303-B

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 WORK WITHIN THE SAME COORDINATE SYSTEM WHEN USING RTK (REAL TIME KINEMATIC) GPS AND A LOCAL BASE STATION. IF ANOTHER SYSTEM SUCH AS VRS (VIRTUAL REFERENCE 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:
   HTTPS://CONNECT.NCDOT.GOV/RESOURCES/LOCATION/PAGES/DEFAULT.ASPX
   THE FILES TO BE FOUND ARE AS FOLLOWS:
   R2303B_LS_CONTROL.TXT
   IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

3. THE CONTROL DATA FOR THIS PROJECT IS NOT THE SAME AS R-2303A, R-2303B, R-2303C, AND R-2303D HAVE THE SAME FACTOR.

◎ 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.

GPS CALIBRATION REPORT

PROJECT : R2303B

TIP NUMBER	R-2303 B		
USER NAME	MGWARD	DATE & TIME	11:05:59 AM 1/18/02
COORDINATE SYSTEM	SITE(AT GROUND)	ZONE	NORTH CAROLINA 3200
HORIZONTAL DATUM	NAD 1983 (CONUS)		
VERTICAL DATUM	NAVD 88	GEOID MODEL	GEOID99 (CONUS)
COORDINATE UNITS	METERS		
DISTANCE UNITS	US SURVEY FEET		
HEIGHT UNITS	METERS		

LOCAL SITE INFORMATION

LOCALIZED AROUND	NCGS LAKEWOOD
LATITUDE	34°59'23.46713"N
LONGITUDE	78°30'16.47464"W
SITE SCALE FACTOR	1.0000822500
HEIGHT	12.780M

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.

NOTE: DRAWING NOT TO SCALE

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCGS FOR MONUMENT "LAKEWOOD"
WITH NAD 83/95 STATE PLANE GRID COORDINATES OF
NORTHING: 451,606.046'(ft) EASTING: 2,148,380.369'(ft)
ELEVATION: 154.547'(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.999917757
THE N.C. LAMBERT GRID BEARING AND
LOCALIZED HORIZONTAL GROUND DISTANCE FROM
"LAKEWOOD" TO -L- L STATION 366+14.19 IS
N 84° 13' 07" W 46,202.115'
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

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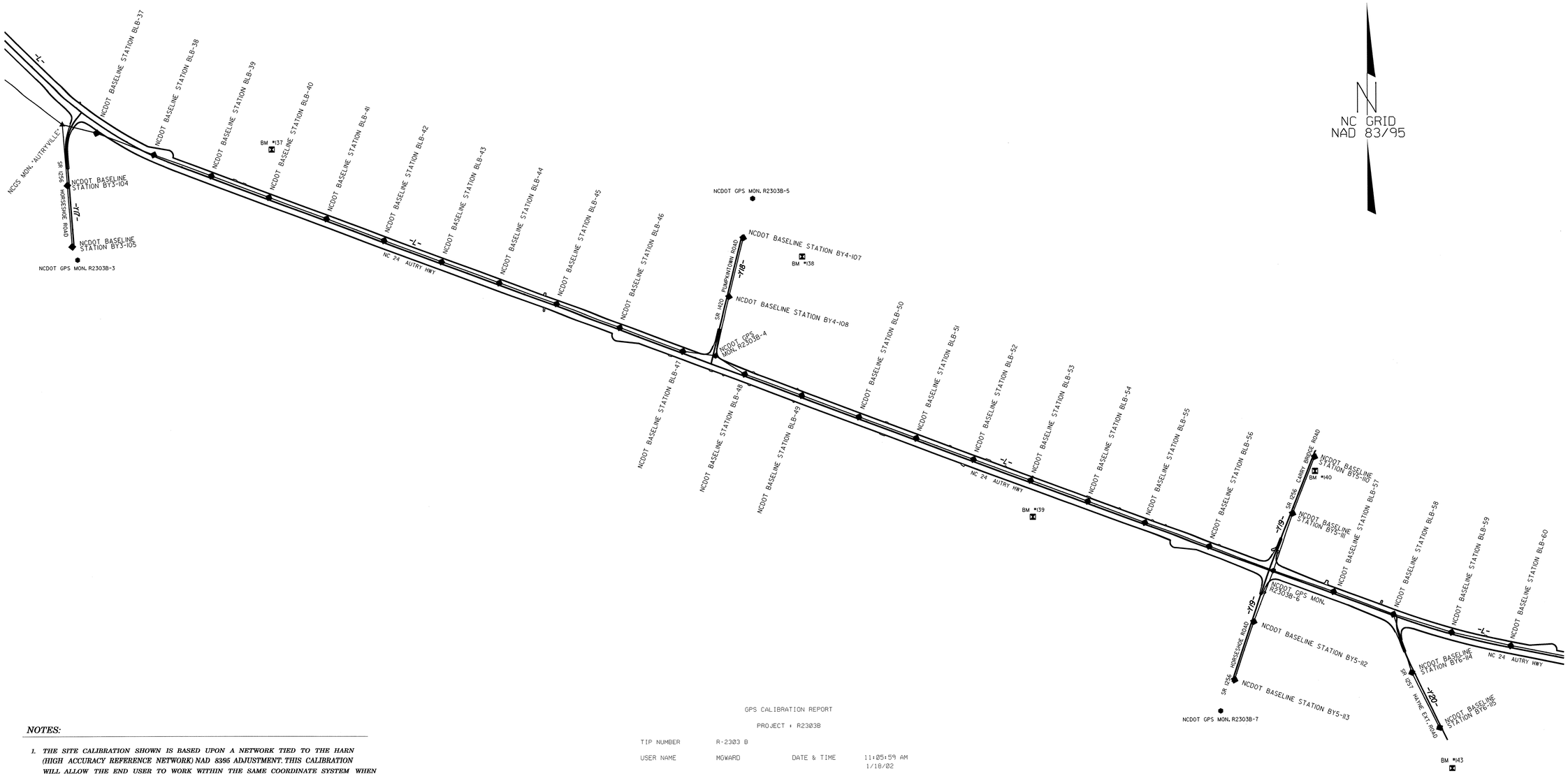
PROJECT REFERENCE NO.	SHEET NO.
R-2303-B	1-D
Location and Surveys	

SURVEY CONTROL SHEET R-2303-B



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 WORK WITHIN THE SAME COORDINATE SYSTEM WHEN USING RTK (REAL TIME KINEMATIC) GPS AND A LOCAL BASE STATION. IF ANOTHER SYSTEM SUCH AS VRS (VIRTUAL REFERENCE 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:
   HTTPS://CONNECT.NCDOT.GOV/RESOURCES/LOCATION/PAGES/DEFAULT.ASPX
   THE FILES TO BE FOUND ARE AS FOLLOWS:
   R2303B_LS_CONTROL.TXT
   IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

3. THE CONTROL DATA FOR THIS PROJECT IS NOT THE SAME AS R-2303A. R-2303B, R-2303C, AND R-2303D HAVE THE SAME FACTOR.

© 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.

GPS CALIBRATION REPORT

PROJECT : R2303B

TIP NUMBER	R-2303 B		
USER NAME	MGWARD	DATE & TIME	11:05:59 AM 1/18/02
COORDINATE SYSTEM	SITE(AT GROUND)	ZONE	NORTH CAROLINA 3200
HORIZONTAL DATUM	NAD 1983 (CONUS)		
VERTICAL DATUM	NAVD 88	GEOID MODEL	GEOID99 (CONUS)
COORDINATE UNITS	METERS		
DISTANCE UNITS	US SURVEY FEET		
HEIGHT UNITS	METERS		

LOCAL SITE INFORMATION
LOCALIZED AROUND NCGS LAKEWOOD
LATITUDE 34°59'23.46713"N
LONGITUDE 78°30'16.47464"W
SITE SCALE FACTOR 1.0000822500
HEIGHT 12.780M

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.

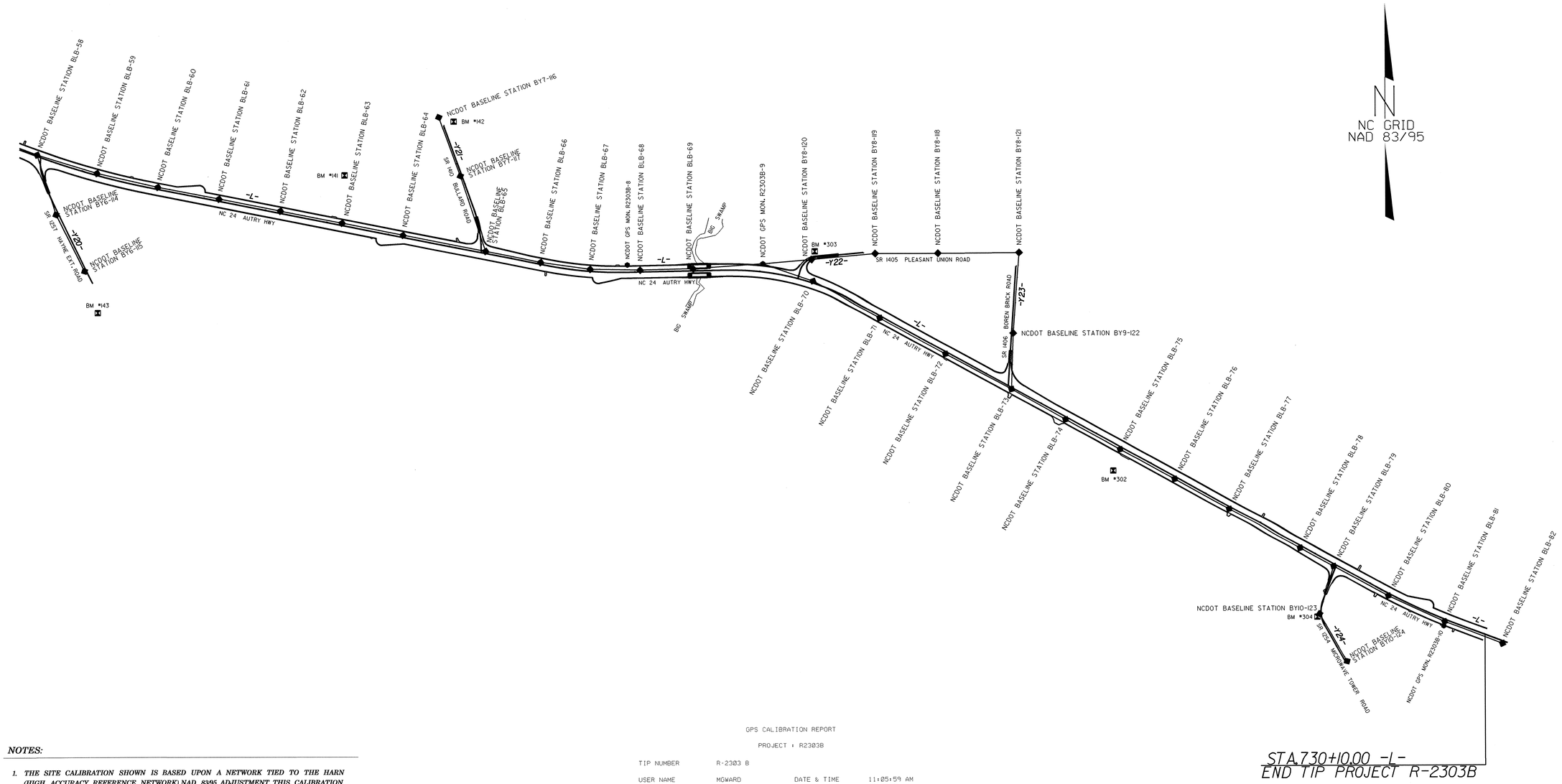
NOTE: DRAWING NOT TO SCALE

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCGS FOR MONUMENT "LAKEWOOD"
WITH NAD 83/95 STATE PLANE GRID COORDINATES OF
NORTHING: 451,606.046'(ft) EASTING: 2,148,380.369'(ft)
ELEVATION: 154.547'(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.999917757
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "LAKEWOOD" TO -L- L STATION 366+14.19 IS
N 84° 13' 07" W 46,202.115'
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

PROJECT REFERENCE NO.	SHEET NO.
R-2303-B	1-E
Location and Surveys	

SURVEY CONTROL SHEET R-2303-B



NOTES:

1. THE SITE CALIBRATION SHOWN IS BASED UPON A NETWORK TIED TO THE HARN (HIGH ACCURACY REFERENCE NETWORK) NAD 83/95 ADJUSTMENT. THIS CALIBRATION WILL ALLOW THE END USER TO WORK WITHIN THE SAME COORDINATE SYSTEM WHEN USING RTK (REAL TIME KINEMATIC) GPS AND A LOCAL BASE STATION. IF ANOTHER SYSTEM SUCH AS VRS (VIRTUAL REFERENCE 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:
   HTTPS://CONNECT.NCDOT.GOV/RESOURCES/LOCATION/PAGES/DEFAULT.ASPX
   THE FILES TO BE FOUND ARE AS FOLLOWS:
   R2303B_LS_CONTROL.TXT
   IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

3. THE CONTROL DATA FOR THIS PROJECT IS NOT THE SAME AS R-2303A. R-2303B, R-2303C, AND R-2303D HAVE THE SAME FACTOR.

◎ 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.

GPS CALIBRATION REPORT

PROJECT : R2303B

TIP NUMBER	R-2303 B		
USER NAME	MGWARD	DATE & TIME	11:05:59 AM 1/18/02
COORDINATE SYSTEM	SITE(AT GROUND)	ZONE	NORTH CAROLINA 3200
HORIZONTAL DATUM	NAD 1983 (CONUS)		
VERTICAL DATUM	NAVD 88	GEOID MODEL	GEOID99 (CONUS)
COORDINATE UNITS	METERS		
DISTANCE UNITS	US SURVEY FEET		
HEIGHT UNITS	METERS		

LOCAL SITE INFORMATION

LOCALIZED AROUND	NCGS LAKEWOOD
LATITUDE	34°59'23.46713"N
LONGITUDE	78°30'16.47464"W
SITE SCALE FACTOR	1.0000822500
HEIGHT	12.780M

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.

NOTE: DRAWING NOT TO SCALE

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCGS FOR MONUMENT "LAKEWOOD"
WITH NAD 83/95 STATE PLANE GRID COORDINATES OF
NORTHING: 451,606.046'(ft) EASTING: 2,148,380.369'(ft)
ELEVATION: 154.547'(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.999917757
THE N.C. LAMBERT GRID BEARING AND
LOCALIZED HORIZONTAL GROUND DISTANCE FROM
"LAKEWOOD" TO -L- L STATION 366+14.19 IS
N 84° 13' 07" W 46,202.115'
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

SURVEY CONTROL SHEET R-2303-B

PROJECT REFERENCE NO.	SHEET NO.
R-2303-B	1-F
Location and Surveys	

BLB

POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
BLA40	(R2303A)BL-40	456448.6830	2102009.6930	15.78	361+68.99	110.92 RT
211	R2303A-11	457961.4030	2102974.7870	131.24	363+39.45	1770.46 LT
BLA41	(R2303A)BL-41	456051.2730	2102797.5190	33.58	370+47.78	110.92 RT
212	R2303A-12	456893.7370	2103214.5600	131.26	372+37.14	894.56 LT
50042	(R2303A)BL-42	455856.2440	2103316.8040	128.79	375+81.60	110.92 RT
BLA43	(R2303A)BL-43	455554.9790	2104122.4590	120.05	383+25.38	444.86 RT
27	BLB-27	455034.4060	2109835.5760	154.48	445+08.98	93.27 RT
28	BLB-28	454609.1440	2110240.6630	153.13	450+96.03	110.89 RT
29	BLB-29	454232.9540	2110570.1090	152.92	455+94.80	146.78 RT
30	BLB-30	454066.6300	2110711.3420	157.46	458+12.17	165.77 RT
31	BLB-31	453833.8440	2110847.1380	158.71	460+72.40	235.83 RT
32	BLB-32	453683.2030	2111053.7270	158.40	463+25.22	197.71 RT
33	BLB-33	453299.9150	2111389.5190	159.78	468+33.49	234.19 RT
34	BLB-34	452949.9420	2111684.9740	146.93	472+89.65	275.34 RT
35	BLB-35	452591.8820	2112034.5760	146.80	477+90.00	284.18 RT
36	BLB-36	452292.7410	2112382.1410	147.89	482+47.48	252.54 RT
1	NCGS AUTRYVILLE	451819.6030	2112988.4200	147.50	489+94.24	178.61 RT
37	BLB-37	451749.5690	2113269.0810	147.59	492+50.87	67.40 RT
38	BLB-38	451571.4940	2113740.5030	145.18	497+44.75	9.42 LT
39	BLB-39	451394.8490	2114214.4380	144.61	502+51.44	18.36 LT
40	BLB-40	451218.8160	2114687.2070	144.63	507+55.92	18.66 LT
41	BLB-41	451041.5940	2115159.7410	144.40	512+60.59	17.76 LT
42	BLB-42	450864.7980	2115633.2780	144.46	517+66.06	17.62 LT
43	BLB-43	450688.0810	2116106.6790	144.52	522+71.37	17.50 LT
44	BLB-44	450512.1220	2116579.8750	146.62	527+76.22	18.01 LT
45	BLB-45	450336.4390	2117050.4080	148.42	532+78.48	17.86 LT
46	BLB-46	450142.2670	2117569.3500	149.48	538+32.56	17.30 LT
47	BLB-47	449948.3130	2118086.6430	149.30	543+85.01	16.37 LT
4	R2303B-4	449910.3410	2118355.7200	147.99	546+50.39	74.83 LT
48	BLB-48	449758.6880	2118595.3490	148.31	549+27.91	16.49 LT
49	BLB-49	449584.7800	2119063.8580	144.85	554+27.66	17.29 LT
50	BLB-50	449409.3550	2119533.0890	141.88	559+28.61	16.92 LT
51	BLB-51	449233.3570	2120003.7730	141.81	564+31.12	16.53 LT
52	BLB-52	449059.0530	2120473.2890	142.34	569+31.95	17.31 LT
53	BLB-53	448884.8450	2120942.8110	142.16	574+32.74	18.18 LT
54	BLB-54	448710.0110	2121412.2400	142.84	579+33.67	18.44 LT
55	BLB-55	448531.2230	2121881.2310	144.98	584+35.58	14.83 LT
56	BLB-56	448334.7500	2122410.0770	147.56	589+99.74	15.58 LT
6	R2303B-6	448130.0380	2122935.7100	149.30	595+63.77	7.48 LT
57	BLB-57	447953.6090	2123431.3250	152.05	600+89.79	15.40 LT
58	BLB-58	447764.9150	2123921.8140	149.56	606+15.30	10.03 LT
59	BLB-59	447615.7070	2124400.2710	148.85	611+17.71	16.07 LT
60	BLB-60	447503.1270	2124886.1050	145.67	616+17.86	17.02 LT
61	BLB-61	447407.7640	2125376.1230	135.80	621+17.07	17.50 LT
62	BLB-62	447312.1820	2125866.9480	127.19	626+17.11	17.92 LT
63	BLB-63	447216.4290	2126359.4530	130.87	631+18.84	18.49 LT
64	BLB-64	447120.9350	2126847.0570	135.80	636+15.70	18.38 LT
65	BLB-65	446990.4850	2127507.9660	121.74	642+89.36	17.23 LT
66	BLB-66	446902.1320	2127947.6490	119.06	647+37.87	14.87 LT
67	BLB-67	446849.1290	2128343.7220	110.80	651+39.68	17.41 LT
68	BLB-68	446843.1080	2128742.7700	102.57	655+40.47	15.87 LT
69	BLB-69	446852.8670	2129168.3280	102.24	659+66.14	17.23 LT
9	R2303B-9	446891.0130	2129725.7830	103.67	665+16.31	64.69 LT
70	BLB-70	446750.4920	2130126.5300	106.67	669+30.43	15.83 LT
71	BLB-71	446456.9830	2130657.3550	113.40	675+36.01	16.52 RT
72	BLB-72	446166.1210	2131182.7950	114.12	681+36.58	17.27 RT
73	BLB-73	445881.4700	2131710.1640	125.30	687+35.84	11.66 RT
74	BLB-74	445635.5700	2132140.8070	132.47	692+31.70	18.85 RT
75	BLB-75	445394.8900	2132576.2820	132.13	697+29.26	19.14 RT
76	BLB-76	445155.5080	2133011.6130	132.51	702+26.06	18.37 RT
77	BLB-77	444915.9120	2133447.1370	131.67	707+23.14	17.68 RT
78	BLB-78	444602.5310	2134013.2180	116.71	713+70.17	18.51 RT
79	BLB-79	444455.3580	2134281.0330	123.61	716+75.76	17.95 RT
80	BLB-80	444215.7150	2134717.9760	131.05	721+73.73	17.94 RT
81	BLB-81	444005.1980	2135167.7340	132.55	726+68.91	17.58 RT
82	BLB-82	443827.7880	2135630.7880	124.15	731+64.15	18.16 RT
83	BLB-83	443714.3000	2135935.4770	119.53	734+89.29	18.11 RT
84	BLB-84	443518.1230	2136464.5270	122.63	740+51.68	26.95 RT
85	BLB-85	443342.9180	2136930.2710	130.79	745+32.62	107.07 RT
86	BLB-86	443170.0890	2137397.3780	136.40	749+79.96	259.66 RT
87	BLB-87	443472.7320	2137866.3560	134.68	754+58.48	9.74 RT

BLB

POINT	DESC.	NORTH	EAST	ELEVATION	LREV STATION	OFFSET
14	BLB-14	455950.7400	2104075.2870	122.47	383+34.55	46.29 RT
15	BLB-15	456040.9710	2104378.8960	116.84	386+46.71	7.28 LT
16	BLB-16	456069.3160	2104666.6430	104.77	389+35.73	5.56 LT
17	BLB-17	456114.4230	2105052.2040	91.74	393+23.86	12.66 LT
18	BLB-18	456197.7850	2105746.9820	90.33	400+23.46	27.53 LT
19	BLB-19	456245.3680	2106144.3500	98.71	404+23.58	35.94 LT
20	BLB-20	456276.0230	2106542.9510	101.52	408+23.27	27.38 LT
21	BLB-21	456266.1180	2107019.4650	115.43	412+97.92	23.25 RT
22	BLB-22	456200.9180	2107538.1600	115.46	418+26.13	71.28 RT
23	BLB-23	456080.1120	2108023.1860	118.60	423+37.64	102.87 RT
24	BLB-24	455861.9110	2108642.9130	134.29	430+13.41	104.20 RT
25	BLB-25	455597.9120	2109101.8440	140.41	435+58.71	119.56 RT
26	BLB-26	455300.2730	2109520.0840	152.68	440+88.20	113.19 RT

BY

POINT	DESC.	NORTH	EAST	ELEVATION	Y13 STATION	OFFSET
93	BY-93	457065.3590	2108378.5630	116.87	OUTSIDE PROJECT LIMITS	
94	BY-94	456602.3030	2108209.7500	120.02	12+06.39	13.42 LT
BY23	BLB-23	456080.1120	2108023.1860	118.60	17+60.90	14.75 LT
95	BY-95	455610.3030	2107852.6590	114.75	22+60.70	13.42 LT
2	R2303B-2	454995.3110	2107583.8800	107.07	OUTSIDE PROJECT LIMITS	
210	NCGS VISION	453968.3110	2107234.0590	109.27	OUTSIDE PROJECT LIMITS	

BY1

POINT	DESC.	NORTH	EAST	ELEVATION	Y12 STATION	OFFSET
BY123	BLB-23	456080.1120	2108023.1860	118.60	OUTSIDE PROJECT LIMITS	
98	BY1-98	455985.9710	2107754.7830	116.61	19+65.05	12.46 RT
99	BY1-99	455928.9090	2107196.8300	115.24	14+04.19	11.61 RT

BY1

POINT	DESC.	NORTH	EAST	ELEVATION	Y14 STATION	OFFSET
96	BY1-96	456104.6910	2108775.6110	136.50	OUTSIDE PROJECT LIMITS	
97	BY1-97	456051.2920	2108276.3990	122.88	12+86.42	11.78 RT
BY123	BLB-23	456080.1120	2108023.1860	118.60	10+37.73	43.89 LT

BY2

POINT	DESC.	NORTH	EAST	ELEVATION	Y15 STATION	OFFSET
100	BY2-100	455380.0920	2110810.6250	153.47	OUTSIDE PROJECT LIMITS	
101	BY2-101	455165.1820	2110318.9040	153.35	11+23.65	12.47 LT
BY227	BLB-27	455034.4060	2109835.5760	154.48	16+23.60	15.10 RT
102	BY2-102	454872.9390	2109357.4430	152.66	21+28.28	11.81 RT
103	BY2-103	454716.6040	2108874.6220	146.33	26+35.74	15.05 RT

BY2A

POINT	DESC.	NORTH	EAST	ELEVATION	Y16 STATION	OFFSET
BY236	BLB-36	452292.7410	2112382.1410	147.89	11+70.80	1036.02 LT
130	BY2A-130	452546.5250	2111949.8100	147.86	13+32.48	561.50 LT
129	BY2A-129	452791.8690	2111451.6660	146.13	15+23.50	77.40 LT
128	BY2A-128	453115.3930	2110658.5440	148.83	23+46.71	28.88 RT
127	BY2A-127	453307.4760	2110113.3890	142.66	OUTSIDE PROJECT LIMITS	

BY3

POINT	DESC.	NORTH	EAST	ELEVATION	Y17 STATION	OFFSET
BY31	NCGS AUTRYVILLE	451819.6030	2112988.4200	147.50	11+60.90	75.63 RT
104	BY3-104	451319.5020	2113029.7390	148.21	16+34.73	14.45 RT
105	BY3-105	450814.4640	2113068.2700	151.38	OUTSIDE PROJECT LIMITS	

BY4

POINT	DESC.	NORTH	EAST	ELEVATION	Y18 STATION	OFFSET
107	BY4-107	450886.1250	2118585.9670	155.86	10+18.60	14.38 LT
108	BY4-108	450398.5930	2118467.5240	152.01	15+20.31	14.31 LT
BY44	R2303B-4	449910.3410	2118355.7200	147.99	20+21.16	20.85 LT

BY5

POINT	DESC.	NORTH	EAST	ELEVATION	Y19 STATION	OFFSET
110	BY5-110	449069.5390	2123277.5260	146.32	10+48.49	12.62 LT
111	BY5-111	448602.8480	2123095.5100	150.12	15+49.42	13.26 LT
BY56	R2303B-6	448130.0380	2122935.7100	149.30	20+49.04	34.15 LT
112	BY5-112	447706.4630	2122773.2170	144.35	25+02.97	14.95 LT
113	BY5-113	447233.3870	2122614.3180	141.03	30+02.02	13.59 LT

BY6

POINT	DESC.	NORTH	EAST	ELEVATION	Y20 STATION	OFFSET
BY658	BLB-58	447764.9150	2123921.8140	149.56	OUTSIDE PROJECT LIMITS	
114	BY6-114	447286.3510	2124072.1430	148.45	14+75.99	19.00 RT
115	BY6-115	446836.8500	2124298.4000	147.17	19+79.20	13.73 RT

BY7

POINT	DESC.	NORTH	EAST	ELEVATION	Y21 STATION	OFFSET
116	BY7-116	448064.6850	2127136.9350	128.39	OUTSIDE PROJECT LIMITS	
117	BY7-117	447592.1580	2127307.6140	120.38	14+24.96	11.97 RT
BY765	BLB-65	446990.4850	2127507.9660	121.74	20+55.01	35.34 LT

BY8

POINT	DESC.	NORTH	EAST	ELEVATION	Y22 STATION	OFFSET
121	BY8-121	446974.2690	2131774.7410	132.12	OUTSIDE PROJECT LIMITS	
118	BY8-118	446971.0860	2131125.8310	128.38	OUTSIDE PROJECT LIMITS	
119	BY8-119	446969.9450	2130624.0170	121.25	OUTSIDE PROJECT LIMITS	
120	BY8-120	446923.8510	2130114.0990	109.43	14+22.03	8.88 LT
BY89	R2303B-9	446891.0130	2129725.7830	103.67	15+84.93	301.20 RT

BY9

POINT	DESC.	NORTH	EAST	ELEVATION	Y23 STATION	OFFSET
A121	BY8-121	446974.2690	2131774.7410	132.12	OUTSIDE PROJECT LIMITS	
122	BY9-122	446331.6120	2131725.8170	123.27	15+34.95	12.73 LT
BY973	BLB-73	445881.4700	2131710.1640	125.30	OUTSIDE PROJECT LIMITS	

BY10

POINT	DESC.	NORTH	EAST	ELEVATION	Y24 STATION	OFFSET
BY1079	BLB-79	444455.3580	2134281.0330	123.61	10+15.69	17.02 RT
123	BY10-123	444071.8360	2134168.6850	125.22	14+12.55	12.22 RT
124	BY10-124	443690.2910	2134386.8430	127.72	OUTSIDE PROJECT LIMITS	

BENCHMARKS

92 ELEVATION = 109.37
N 456669 E 2106599
LREV STATION 409+18 413 LEFT
R/R SPIKE 10" PINE

106 ELEVATION = 136.12
N 456342 E 2108538
LREV STATION 427+41 301 LEFT
R/R SPIKE 15" PINE

109 ELEVATION = 149.86
N 454593 E 2109372
Y15 STATION 22+02 258 LEFT
R/R SPIKE 24" PINE

131 ELEVATION = 151.46
N 453170 E 2110649
Y16 STATION 23+18 77 RIGHT
R/R SPIKE 18" PINE

137 ELEVATION = 144.08
N 451614 E 2114710
L STATION 506+40 397 LEFT
R/R SPIKE 20" PINE

138 ELEVATION = 159.44
N 450731 E 2119071
Y18 STATION 10+55 522 LEFT
R/R SPIKE 26" PINE

139 ELEVATION = 137.52
N 448582 E 2120960
L STATION 575+54 260 RIGHT
R/R SPIKE 10" MAPLE

BENCHMARKS

140 ELEVATION = 149.55
N 448954 E 2123282
Y19 STATION 11+54 59 LEFT
R/R SPIKE 12" GUM

143 ELEVATION = 145.77
N 446505 E 2124403
Y20 STATION 20+99
S 9° 41' 28.0" E DIST 234.03
R/R SPIKE 17" OAK

141 ELEVATION = 122.91
N 447598 E 2126381
L STATION 630+66 397 LEFT
R/R SPIKE 48" OAK

142 ELEVATION = 127.80
N 448030 E 2127256
Y21 STATION 10+00
N 67° 22' 35.1" E DIST 87.34
R/R SPIKE 26" OAK

303 ELEVATION = 115.09
N 446989 E 2130141
Y22 STATION 13+85 47 RIGHT
R/R SPIKE 36"OAK

302 ELEVATION = 130.60
N 445225 E 2132521
L STATION 697+63 195 RIGHT
R/R SPIKE 20"PINE

304 ELEVATION = 125.42
N 444048 E 2134151
Y24 STATION 14+32 33 RIGHT
R/R SPIKE 18" TWIN OAK

GPS CALIBRATION REPORT

PROJECT = R2303B

TIP NUMBER	R-2303 B		
USER NAME	MGWARD	DATE & TIME	11:05:59 AM 1/18/02
COORDINATE SYSTEM	SITE(AT GROUND)	ZONE	NORTH CAROLINA 3200
HORIZONTAL DATUM	NAD 1983 (CONUS)		
VERTICAL DATUM	NAVD 88	GEOID MODEL	GEOID99 (CONUS)
COORDINATE UNITS	METERS		
DISTANCE UNITS	US SURVEY FEET		
HEIGHT UNITS	METERS		

LOCAL SITE INFORMATION

LOCALIZED AROUND	NCGS LAKEWOOD
LATITUDE	34°59'23.46713"N
LONGITUDE	78°30'16.47464"W
SITE SCALE FACTOR	1.0000822500
HEIGHT	12.780M

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 DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCGS FOR MONUMENT "LAKEWOOD"
WITH NAD 83/95 STATE PLANE GRID COORDINATES OF
NORTHING: 451,606.046'(ft) EASTING: 2,148,380.369'(ft)
ELEVATION: 154.547'(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.999917757
THE N.C. LAMBERT GRID BEARING AND
LOCALIZED HORIZONTAL GROUND DISTANCE FROM
"LAKEWOOD" TO -L- L STATION 366+14.19 IS
N 84° 13' 07" W 46,202.115'
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 8395 ADJUSTMENT. THIS CALIBRATION WILL ALLOW THE END USER TO WORK WITHIN THE SAME COORDINATE SYSTEM WHEN USING RTK (REAL TIME KINEMATIC) GPS AND A LOCAL BASE STATION. IF ANOTHER SYSTEM SUCH AS VRS (VIRTUAL REFERENCE 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:*
   HTTPS://CONNECT.NCDOT.GOV/RESOURCES/LOCATION/PAGES/DEFAULT.ASPX
   THE FILES TO BE FOUND ARE AS FOLLOWS:
   R2303B_LS_CONTROL.TXT
   IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

3. *THE CONTROL DATA FOR THIS PROJECT IS NOT THE SAME AS R-2303A. R-2303B, R-2303C, AND R-2303D HAVE THE SAME FACTOR.*

© *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

6/2/99

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$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
R-2303-B	1-G
Location and Surveys	

SURVEY CONTROL SHEET R-2303-B

ROW MARKER IRON PIN AND CAP-E

ALIGN	STATION	OFFSET	NORTH	EAST
L	377·00.00	-110.00	456067.4522	2103445.9473
L	379·82.35	110.00	455849.4804	2103729.3715
L	379·82.35	-110.00	456068.9855	2103714.6232
L	380·56.95	-111.46	456076.2796	2103785.8266
L	382·22.35	-110.00	456092.8550	2103947.6336
L	382·22.35	110.00	455874.4178	2103973.8090
L	446·00.00	110.00	454958.5193	2109888.5441
L	447·20.00	-125.00	455041.2661	2110139.0994
L	451·42.20	-125.00	454744.4312	2110439.3376
L	451·42.20	110.00	454577.3175	2110274.1164
L	454·75.00	-125.00	454510.4520	2110675.9993
L	454·75.00	110.00	454343.3375	2110510.7790
L	457·50.00	110.00	454149.9947	2110706.3386
L	469·15.00	110.00	453330.9240	2111534.8000
L	470·35.00	135.00	453228.7781	2111602.5584
L	472·30.00	125.00	453098.7917	2111748.2586
L	476·28.68	-125.00	452996.2761	2112207.5354
L	485·99.75	115.00	452142.8785	2112729.3548
L	485·99.75	-125.00	452313.5487	2112898.0904
L	487·99.75	-105.00	452162.7267	2113025.2722
L	487·99.75	115.00	452001.2122	2112875.8967
L	489·41.14	137.32	451887.0282	2112971.6245
L	491·31.71	121.44	451776.4612	2113137.5482
L	491·70.64	115.00	451757.8561	2113174.0485
L	496·70.00	115.00	451491.8006	2113618.3908
L	496·70.00	-105.00	451689.2945	2113715.3245
L	498·67.75	-130.00	451634.0367	2113898.7901
L	498·67.75	115.00	451407.4681	2113805.5610
L	500·67.75	105.00	451343.4643	2113999.2162
L	500·67.75	-105.00	451540.2218	2114072.6088
L	515·60.00	105.00	450821.9294	2115397.3619
L	515·60.00	-105.00	451018.6864	2115470.7560
L	530·35.00	-105.00	450503.1803	2116852.7395
L	530·50.00	105.00	450301.1809	2116793.3995
L	537·90.00	105.00	450042.5541	2117486.7336
L	537·90.00	-105.00	450239.3111	2117560.1277
L	540·25.00	100.00	449965.1073	2117708.6615
L	540·25.00	-105.00	450157.1796	2117780.3081
L	543·21.20	130.00	449833.4786	2117975.6977
L	543·27.37	100.00	449859.4302	2117991.9637
L	543·71.01	130.00	449816.0702	2118022.3665
L	543·77.00	100.00	449842.0849	2118038.4637
L	545·35.00	-105.00	449978.9368	2118258.1465
L	547·25.00	-105.00	449912.5327	2118436.1647
L	551·10.00	100.01	449585.8937	2118725.2352
L	555·85.00	-105.00	449611.9664	2119241.9314
L	561·25.00	-105.00	449423.2387	2119747.8779
L	561·25.00	-125.00	449441.9775	2119754.8678
L	561·95.00	100.00	449206.7018	2119741.8169
L	561·95.00	120.00	449187.9630	2119734.8270
L	572·90.00	-125.00	449034.8151	2120846.4005
L	572·90.00	-105.00	449016.0763	2120839.4106
L	576·95.00	100.00	448682.4583	2121147.2239
L	576·95.00	120.00	448663.7195	2121140.2340
L	583·80.00	-105.00	448635.1260	2121860.6730
L	587·30.00	100.00	448320.7303	2122116.9547
L	587·30.00	125.00	448297.3068	2122108.2173
L	587·30.00	-105.00	448512.8026	2122188.6013
L	589·70.00	110.00	448227.4819	2122338.3249
L	589·70.00	125.00	448213.4279	2122333.0824
L	589·70.00	-105.00	448428.9236	2122413.4664
L	594·70.00	110.00	448052.7341	2122806.7939
L	594·70.00	-105.00	448254.1758	2122881.9354
L	595·90.00	110.00	448010.7946	2122919.2264
L	596·00.00	-125.00	448227.4801	2123010.7273
L	597·50.00	125.00	447940.8212	2123063.8941
L	597·50.00	110.00	447954.8753	2123069.1365
L	605·75.00	125.00	447652.4873	2123836.8679
L	606·14.65	-125.00	447872.8636	2123961.3934
L	607·70.00	115.00	447594.6066	2124026.6143
L	608·75.00	-110.00	447774.8252	2124197.4251
L	608·75.00	-125.00	447789.0968	2124202.0424
L	615·81.45	135.00	447360.9262	2124821.1940
L	615·81.45	115.00	447380.5542	2124825.0334
L	615·81.45	-110.00	447601.3694	2124868.2266
L	617·70.00	-110.00	447565.1735	2125053.2698
L	617·70.00	135.00	447324.7303	2125006.2372
L	617·70.00	-130.00	447584.8016	2125057.1092
L	620·00.00	-100.00	447511.2065	2125277.0723
L	620·00.00	-130.00	447540.6485	2125282.8314
L	620·00.00	135.00	447280.5773	2125231.9594
L	630·80.00	135.00	447073.2501	2126291.8723
L	630·80.00	100.00	447107.5991	2126298.5913
L	631·00.00	-100.00	447300.0399	2126356.6132
L	634·00.00	125.00	447021.6338	2126607.8403
L	634·00.00	100.00	447046.1688	2126612.6396
L	634·00.00	-100.00	447242.4490	2126651.0335
L	636·45.00	115.00	446984.4153	2126850.2032
L	636·45.00	-100.00	447195.4164	2126891.4767
L	636·45.00	125.00	446974.6012	2126848.2835
L	641·50.00	-100.00	447098.4718	2127387.0841
L	643·00.00	-110.00	447079.4903	2127536.2140
L	646·78.19	115.00	446786.0741	2127864.1768
L	646·78.19	100.00	446800.7943	2127867.0609
L	646·78.19	-110.00	447006.8893	2127907.3699
L	649·18.19	100.00	446757.3627	2128107.4295
L	649·18.19	-110.00	446964.9948	2128138.8765
L	652·74.35	-125.00	446950.3776	2128479.8746
L	652·74.35	125.00	446700.4444	2128474.0967
L	655·14.35	-125.00	446951.6965	2128714.4960
L	655·14.35	125.00	446701.7452	2128719.4316
L	661·10.79	-125.00	446963.4716	2129310.8198
L	661·10.79	125.00	446713.5203	2129315.7554
L	663·90.79	110.00	446727.4729	2129587.4969
L	663·90.79	-110.00	446947.1749	2129598.9430
L	665·35.07	-110.00	446933.6238	2129750.7217
L	669·30.00	-115.00	446844.4974	2130158.1198
L	671·32.71	-115.00	446764.8017	2130357.3361
L	671·32.71	-140.00	446787.4995	2130367.8152
L	671·32.71	110.00	446560.5217	2130263.0246
L	674·12.71	110.00	446434.7209	2130504.2328
L	674·12.71	-140.00	446653.5980	2130625.0335
L	677·25.00	125.00	446270.6867	2130770.3960
L	677·25.00	-140.00	446502.6954	2130898.4466
L	677·25.00	110.00	446283.8192	2130777.6441
L	678·35.00	-100.00	446414.5221	2130975.4237
L	678·35.00	-140.00	446449.5423	2130994.7521
L	679·70.00	-100.00	446349.2888	2131093.6168
L	679·70.00	110.00	446165.4328	2130992.1427
L	679·70.00	125.00	446152.3002	2130984.8946
L	680·52.45	-100.00	446309.4485	2131165.8014
L	680·91.67	-225.99	446400.8014	2131261.0191
L	687·90.00	110.00	445769.2007	2131710.0564
L	687·90.00	97.00	445780.5822	2131716.3382
L	688·00.00	-100.00	445948.2245	2131820.2856
L	697·64.00	110.00	445298.5542	2132562.7979
L	697·68.00	97.00	445308.0030	2132572.5816
L	701·19.58	-100.00	445310.5918	2132975.5812
L	701·20.00	110.00	445126.5315	2132874.4775
L	701·20.00	-115.00	445323.5200	2132983.1997
L	703·50.00	-115.00	445212.3817	2133184.5657
L	703·50.00	110.00	445015.3932	2133075.8435
L	703·50.00	-105.00	445203.6267	2133179.7336
L	705·00.00	110.00	444942.9117	2133207.1692
L	713·95.00	-105.00	444698.6723	2134094.6359
L	716·55.00	110.00	444384.8043	2134218.3769
L	717·60.00	100.00	444342.8223	2134315.1370
L	720·52.75	-105.00	444380.8425	2134670.4963
L	720·52.75	100.00	444201.3623	2134571.4407
L	723·15.00	-125.00	444279.7586	2134907.4576
L	723·15.00	-105.00	444261.8152	2134898.6237
L	724·56.00	100.00	444016.1329	2134937.6201
L	725·40.00	-125.00	444186.5860	2135106.7126
L	725·40.00	-100.00	444163.7314	2135096.5801
L	725·40.00	100.00	443980.8947	2135015.5199
L	728·79.38	100.00	443850.5398	2135335.3627
L	728·79.38	-100.00	444037.9503	2135405.2003
L	730·10.00	-100.00	443992.3390	2135527.5991
L	730·10.00	100.00	443804.9285	2135457.7614
L	730·10.00	-105.00	443997.0243	2135529.3450
L	730·10.00	130.00	443776.8169	2135447.2858
L	731·12.53	130.00	443741.0131	2135543.3660
L	731·13.05	195.00	443679.9247	2135521.1517
L	731·26.63	-105.00	443956.2997	2135638.6301

ROW MARKER IRON PIN AND CAP-E

ALIGN	STATION	OFFSET	NORTH	EAST
LREV	382·55.00	-85.00	456071.6364	2103980.6819
LREV	382·55.00	110.00	455878.0215	2104003.8828
LREV	383·57.78	-110.00	456108.6872	2104079.7551
LREV	384·40.00	-130.00	456138.3279	2104159.0137
LREV	385·00.00	-110.00	456125.6087	2104220.9671
LREV	385·00.00	110.00	455907.1715	2104247.1425
LREV	385·97.10	110.00	455918.7239	2104343.5491
LREV	391·00.00	115.00	455965.4395	2104841.9342
LREV	391·00.00	-115.00	456194.3323	2104819.3931
LREV	403·27.49	115.00	456085.7395	2106063.5150
LREV	403·27.60	108.84	456091.8806	2106063.0207
LREV	405·77.47	115.00	456110.2388	2106312.2915
LREV	405·77.60	107.82	456117.3969	2106311.7172
LREV	405·80.00	-115.00	456339.3795	2106292.2682
LREV	410·01.92	-115.00	456380.7297	2106712.1571
LREV	410·01.92	115.00	456151.8369	2106734.6982
LREV	412·01.92	-110.00	456393.7207	2106914.9844
LREV	412·01.92	115.00	456169.2655	2106930.6317
LREV	414·80.00	-110.00	456402.2832	2107201.6029
LREV	414·80.00	115.00	456177.2941	2107199.3842
LREV	414·80.00	125.00	456167.2946	2107199.2856
LREV	417·50.00	115.00	456164.6551	2107460.1419
LREV	417·50.00	125.00	456154.6929	2107459.2729
LREV	417·50.00	-110.00	456388.8040	2107479.6930
LREV	421·66.56	-110.00	456326.1165	2107904.4919
LREV	421·66.56	115.00	456105.8746	2107858.4643
LREV	422·80.00	-110.00	456300.5991	2108018.3008
LREV	424·00.00	-130.00	456289.3128	2108143.0850
LREV	425·49.59	562.42	455585.2251	2108083.9916
LREV	425·51.30	531.71	455614.0789	2108094.5953
LREV	425·95.00	-135.00	456236.2827	2108337.6537
LREV	429·84.61	559.70	455456.6327	2108433.3298
LREV	431·16.74	550.67	455417.3118	2108539.9868
LREV	433·50.00	-130.00	455919.1257	2109049.6585
LREV	433·86.37	519.58	455336.5365	2108760.2994
LREV	435·81.88	341.79	455398.6457	2109001.0746
LREV	436·76.64	467.47	455246.9804	2109003.0815
LREV	437·96.23	211.29	455394.7294	2109239.0982
LREV	438·16.43	237.37	455362.4412	2109239.2268
LREV	439·24.14	130.00	455386.8421	2109385.7334
LREV	443·03.90	-130.00	455338.4540	2109843.1239
LREV	443·03.90	130.00	455148.9356	2109665.1274
LREV	444·55.00	130.00	455046.0835	2109771.4938
LREV	445·03.90	-130.00	455196.7540	2109988.9405

ROW MARKER IRON PIN AND CAP-E

ALIGN	STATION	OFFSET	NORTH	EAST
SR1	10·40.00	30.00	456261.5464	2103359.1840
SR1	10·40.00	-30.00	456320.4870	2103347.9584
SR1	12·74.25	30.00	456305.3734	2103589.2999
SR1	12·74.25	-30.00	456364.3139	2103578.0744
SR1	14·39.17	-30.00	456297.7926	2103753.9968
SR1	14·39.17	30.00	456261.0258	2103706.5816
SR1	15·49.00	-55.00	456226.3155	2103841.0571
SR1	15·94.00	35.00	456132.5336	2103806.2909
SR1	17·44.63	-53.30	456182.5605	2103968.0948
SR1	18·30.00	-50.00	456184.2257	2104053.5146

ROW MARKER IRON PIN AND CAP-E

ALIGN	STATION	OFFSET	NORTH	EAST
SR2	10·90.72	-30.00	455092.0419	2110346.9332
SR2	10·90.72	30.00	455073.2054	2110289.9666
SR2	14·36.00	30.00	454760.6369	2110455.4664
SR2	15·76.62	-30.00	454694.8576	2110593.3106
SR2	27·50.00	-30.00	453869.8987	2111427.7277
SR2	38·74.00	-55.00	453097.4319	2112244.6095
SR2	38·74.00	-30.00	453079.6537	2112227.0329
SR2	39·18.75	-55.00	453065.9664	2112276.4358

NOTE: DRAWING NOT TO SCALE

SURVEY CONTROL SHEET R-2303-B

ROW MARKER IRON PIN AND CAP-E

ALIGN	STATION	OFFSET	NORTH	EAST
Y11	15+50.00	-40.00	456379.4275	2103336.7328
Y11	15+50.00	-30.00	456377.5565	2103326.9092
Y11	17+85.00	-40.00	456148.5771	2103380.6997
Y11	21+60.00	-50.00	455830.0403	2103486.2664
Y11	22+00.25	-47.97	455811.3840	2103510.2805

ROW MARKER IRON PIN AND CAP-E

ALIGN	STATION	OFFSET	NORTH	EAST
Y12	20+50.00	25.00	455982.2697	2107840.5694
Y12	20+50.00	40.00	455967.3498	2107842.1181
Y12	20+50.00	-25.00	456032.0026	2107835.4083
Y12	20+50.00	-40.00	456046.9224	2107833.8597
Y12	21+35.00	40.00	455976.1256	2107926.6644
Y12	21+50.00	-40.00	456057.2467	2107933.3247

ROW MARKER IRON PIN AND CAP-E

ALIGN	STATION	OFFSET	NORTH	EAST
Y13	14+75.00	-40.00	456340.5655	2108143.7794
Y13	14+75.00	-30.00	456343.9524	2108134.3704
Y13	14+75.00	30.00	456364.2736	2108077.9166
Y13	14+75.00	40.00	456367.6605	2108068.5075
Y13	20+00.00	30.00	455870.3017	2107900.1056
Y13	20+00.00	40.00	455873.6886	2107890.6965
Y13	21+71.04	-30.00	455689.0523	2107898.6315

ROW MARKER IRON PIN AND CAP-E

ALIGN	STATION	OFFSET	NORTH	EAST
Y14	15+82.47	-30.00	456124.4160	2108566.3048
Y14	16+41.95	30.00	456071.1033	2108631.8398
Y14	16+82.33	55.90	456049.6596	2108674.7515
Y14	17+32.49	30.00	456080.7630	2108721.8708

ROW MARKER IRON PIN AND CAP-E

ALIGN	STATION	OFFSET	NORTH	EAST
Y15	11+00.00	-30.01	455155.9620	2110346.8624
Y15	12+00.00	-30.01	455124.5631	2110251.9198
Y15	13+00.00	-45.00	455078.9369	2110161.6815
Y15	13+00.00	45.00	455164.3867	2110133.4268
Y15	13+00.00	30.01	455150.1505	2110138.1341
Y15	13+00.00	-30.02	455093.1641	2110156.9771
Y15	13+60.00	50.00	455150.2974	2110074.8905
Y15	16+75.00	-45.00	454961.2089	2109805.6406
Y15	17+20.00	45.00	455032.5313	2109734.6610
Y15	17+20.00	-45.00	454947.0815	2109762.9157
Y15	18+00.00	45.00	455007.4160	2109658.7056
Y15	18+00.00	-45.00	454921.9662	2109686.9603
Y15	18+50.00	30.01	454977.4829	2109615.9407
Y15	18+50.00	-30.04	454920.4697	2109634.7926

ROW MARKER IRON PIN AND CAP-E

ALIGN	STATION	OFFSET	NORTH	EAST
Y16	12+05.00	75.00	453173.1057	2111566.0279
Y16	12+05.00	-80.00	453057.8834	2111669.7044
Y16	14+40.60	-50.00	452922.5933	2111474.4969
Y16	14+40.60	60.00	453004.3639	2111400.9200
Y16	14+86.73	-174.37	452785.7036	2111499.9399
Y16	15+15.57	-211.28	452729.9407	2111477.7691
Y16	15+45.00	-75.15	452835.0426	2111381.1818
Y16	17+00.00	-40.40	452845.3314	2111195.6030
Y16	17+50.00	28.90	452923.6679	2111160.6307
Y16	17+53.00	60.00	452954.1115	2111167.4908
Y16	17+70.20	-50.00	452855.9481	2111115.1459
Y16	19+50.00	-30.00	452938.9629	2110954.4082

ROW MARKER IRON PIN AND CAP-E

ALIGN	STATION	OFFSET	NORTH	EAST
Y17	12+25.00	55.45	451742.6436	2112982.4418
Y17	12+25.04	-39.99	451717.9753	2113074.6368
Y17	13+59.35	-30.00	451597.4314	2113053.4893

ROW MARKER IRON PIN AND CAP-E

ALIGN	STATION	OFFSET	NORTH	EAST
Y18	18+00.00	30.00	450137.2514	2118358.4850
Y18	18+00.00	-30.25	450123.0369	2118417.0325
Y18	19+25.00	45.00	450019.3201	2118314.4132
Y18	19+25.00	-45.00	449998.0862	2118401.8725

ROW MARKER IRON PIN AND CAP-E

ALIGN	STATION	OFFSET	NORTH	EAST
Y19	18+00.00	30.00	448385.2868	2122963.8756
Y19	18+00.00	-30.00	448363.4140	2123019.7466
Y19	19+00.00	-50.00	448263.1889	2123002.0446
Y19	19+00.00	50.00	448299.2362	2122908.7676
Y19	22+30.00	40.00	447982.8200	2122807.2833
Y19	22+30.00	-40.00	447957.5551	2122883.1891
Y19	22+64.53	-30.01	447927.9485	2122862.8015
Y19	22+70.00	30.00	447941.7090	2122804.1391

ROW MARKER IRON PIN AND CAP-E

ALIGN	STATION	OFFSET	NORTH	EAST
Y20	11+40.00	29.98	447596.3744	2123933.1066
Y20	12+00.00	29.87	447538.3580	2123952.0233
Y20	12+00.00	-35.00	447559.4152	2124013.3841
Y20	13+00.00	-35.00	447467.6785	2124047.8229
Y20	13+00.00	-29.97	447465.7783	2124043.1695

ROW MARKER IRON PIN AND CAP-E

ALIGN	STATION	OFFSET	NORTH	EAST
Y21	17+75.00	30.02	447257.6911	2127406.3791
Y21	18+75.00	-29.96	447173.9176	2127487.3596
Y21	18+75.00	40.00	447161.7908	2127418.4570
Y21	19+35.00	-45.00	447114.2305	2127511.0509

ROW MARKER IRON PIN AND CAP-E

ALIGN	STATION	OFFSET	NORTH	EAST
Y22	12+00.00	-30.00	446929.6743	2130333.4673
Y22	12+50.00	-50.00	446904.9563	2130285.6236
Y22	13+70.00	-50.00	446893.4105	2130166.1803
Y22	14+78.53	78.69	446958.6183	2130009.2942

ROW MARKER IRON PIN AND CAP-E

ALIGN	STATION	OFFSET	NORTH	EAST
Y23	14+31.60	30.00	446437.6178	2131690.1585
Y23	16+75.00	-50.00	446189.3699	2131753.5472
Y23	16+75.00	-30.00	446190.7197	2131733.5927
Y23	17+80.00	-50.00	446084.6093	2131746.4609

ROW MARKER IRON PIN AND CAP-E

ALIGN	STATION	OFFSET	NORTH	EAST
Y24	11+80.00	35.00	444308.0107	2134206.1301
Y24	11+80.00	-40.00	444281.4998	2134276.2883
Y24	12+50.00	-26.62	444220.7471	2134239.0320
Y24	12+50.00	23.38	444238.4218	2134192.2576

ROW MARKER PERMANENT EASEMENT-E

ALIGN	STATION	OFFSET	NORTH	EAST
Y11	14+28.00	-30.07	456497.4135	2103304.1499
Y11	14+32.91	-59.00	456498.0047	2103333.4906
Y11	14+50.69	-44.00	456477.7323	2103322.0820
Y11	14+52.62	-55.00	456477.8944	2103333.2488
Y11	14+92.12	-29.91	456434.4008	2103315.9875
Y11	23+29.00	-49.73	455768.7820	2103624.8588
Y11	23+69.00	-49.86	455754.8417	2103662.3513
Y11	24+22.42	-147.00	455827.0059	2103746.5066

ROW MARKER PERMANENT EASEMENT-E

ALIGN	STATION	OFFSET	NORTH	EAST
Y12	21+08.00	40.00	455973.3380	2107899.8087

ROW MARKER PERMANENT EASEMENT-E

ALIGN	STATION	OFFSET	NORTH	EAST
Y13	14+09.51	-30.00	456405.5719	2108156.5510
Y13	14+21.80	-58.00	456384.5250	2108178.7337
Y13	14+31.62	-30.00	456384.7686	2108149.0626
Y13	14+40.60	-52.00	456368.8682	2108166.7210
Y13	15+03.00	48.57	456344.2190	2108050.9576
Y13	15+58.50	94.20	456307.4489	2107989.2275
Y13	19+64.00	40.28	455907.6566	2107902.6235

ROW MARKER PERMANENT EASEMENT-E

ALIGN	STATION	OFFSET	NORTH	EAST
Y14	17+27.00	-43.00	456152.7602	2108708.6204
Y14	17+27.00	-30.00	456139.8344	2108710.0073

ROW MARKER PERMANENT EASEMENT-E

ALIGN	STATION	OFFSET	NORTH	EAST
Y15	9+48.39	-55.00	455181.1058	2110499.9669
Y15	9+54.06	-29.94	455202.6826	2110485.9643
Y15	9+67.88	-59.00	455170.5528	2110482.3554
Y15	9+71.72	30.03	455253.2922	2110449.2673
Y15	9+74.75	-29.96	455195.6399	2110466.1259
Y15	9+83.60	68.00	455285.4222	2110425.9682
Y15	12+05.91	-71.00	455083.7901	2110259.1770
Y15	12+05.91	68.00	455215.7626	2110215.5391
Y15	12+05.91	77.00	455224.3076	2110212.7137
Y15	12+05.91	-30.01	455122.7074	2110246.3087
Y15	12+25.91	68.00	455209.4838	2110196.5503
Y15	12+25.91	-71.00	455077.5113	2110240.1881
Y15	12+25.91	-30.01	455116.4276	2110227.3201
Y15	12+25.91	78.00	455218.9782	2110193.4109
Y15	13+75.13	66.05	455160.7852	2110055.4870
Y15	16+95.75	60.00	455054.3860	2109752.9758
Y15	17+43.17	45.00	455025.2573	2109712.6624
Y15	18+76.76	-30.04	454912.0674	2109609.3860
Y15	19+21.50	-56.00	454873.3785	2109575.0564
Y15	19+34.95	-30.05	454893.7963	2109554.1389

ROW MARKER PERMANENT EASEMENT-E

ALIGN	STATION	OFFSET	NORTH	EAST
Y16	14+85.43	-69.00	452874.7836	2111443.6218

ROW MARKER PERMANENT EASEMENT-E

ALIGN	STATION	OFFSET	NORTH	EAST
Y19	19+08.37	-55.75	448253.3836	2123004.4288
Y19	19+08.80	81.00	448302.0812	2122876.6403
Y19	19+08.80	51.52	448291.4962	2122904.1587
Y19	19+40.00	57.01	448264.0208	2122887.7979
Y19	19+40.00	81.30	448272.6146	2122865.0790

ROW MARKER PERMANENT EASEMENT-E

ALIGN	STATION	OFFSET	NORTH	EAST
Y20	12+60.00	29.85	447480.9984	2123972.8400
Y20	13+71.00	30.01	447376.8158	2124016.2854
Y20	14+03.00	89.99	447321.4300	2123975.9682
Y20	14+29.00	64.30	447308.6066	2124010.7848

ROW MARKER PERMANENT EASEMENT-E

ALIGN	STATION	OFFSET	NORTH	EAST
Y23	16+65.00	-30.00	446200.6969	2131734.2676
Y23	16+65.00	-68.00	446198.1323	2131772.1810
Y23	16+95.00	-68.00	446168.2007	2131770.1564
Y23	16+95.00	-50.00	446169.4155	2131752.1974

NOTE: DRAWING NOT TO SCALE

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PROJECT REFERENCE NO.	SHEET NO.
R-2303-B	1-HA
Location and Surveys	

SURVEY CONTROL SHEET R-2303-B

ROW MARKER PERMANENT EASEMENT-E

ALIGN	STATION	OFFSET	NORTH	EAST
L	380·04.80	-110.65	456071.1694	2103735.9421
L	380·16.11	136.00	455826.1744	2103766.6293
L	380·16.11	109.03	455853.0595	2103764.4541
L	380·34.85	-111.23	456074.1076	2103764.6246
L	472·47.90	124.87	453086.2997	2111761.0796
L	485·83.00	-147.00	452340.9701	2112901.6446
L	485·83.00	-125.00	452325.3262	2112886.1778
L	486·03.75	-155.00	452332.0728	2112922.0242
L	486·08.75	-143.00	452320.0295	2112917.1377
L	490·34.68	-129.00	452034.3117	2113212.4308
L	497·41.37	-137.00	451688.7397	2113790.9194
L	497·41.37	-115.52	451669.2369	2113781.9159
L	547·25.00	100.00	449720.4604	2118364.5181
L	547·25.00	127.00	449695.1630	2118355.0817
L	548·55.00	100.00	449675.0259	2118486.3200
L	548·55.00	127.00	449649.7286	2118476.8836
L	562·67.60	120.00	449162.5896	2119802.8487
L	562·67.60	133.00	449150.4094	2119798.3053
L	565·83.70	136.00	449037.1230	2120093.4229
L	568·87.20	136.00	448931.0511	2120377.7835
L	569·09.70	120.00	448938.1785	2120404.4566
L	569·09.70	131.00	448927.8721	2120400.6121
L	574·92.71	-118.00	448957.4102	2121033.8808
L	574·92.71	-105.00	448945.2300	2121029.3373
L	580·47.96	-118.00	448763.3528	2121554.1156
L	580·80.34	-263.00	448887.8921	2121635.1305
L	580·84.92	-105.00	448738.2552	2121584.2014
L	580·95.63	-261.00	448880.6737	2121648.7594
L	580·96.05	-263.00	448882.4010	2121649.8513
L	581·10.35	-261.00	448875.5275	2121662.5523
L	603·92.32	125.00	447716.3332	2123665.7081
L	603·92.32	151.00	447691.9728	2123656.6212
L	604·12.32	151.00	447684.9829	2123675.3599
L	604·12.32	125.00	447709.3433	2123684.4468
L	608·03.00	-125.00	447811.1992	2124135.1239
L	608·03.00	-162.50	447846.7330	2124147.1013
L	613·68.05	115.00	447426.1708	2124612.3222
L	613·68.05	141.00	447400.8516	2124606.4115
L	613·83.87	-125.00	447656.3869	2124681.9662
L	613·88.06	141.00	447396.2278	2124626.3711
L	613·88.06	115.00	447421.5669	2124632.1959
L	620·00.00	-118.00	447528.8717	2125280.5277
L	622·09.33	135.00	447240.3923	2125437.3960
L	622·09.33	161.00	447214.8759	2125432.4048
L	622·29.33	161.00	447211.0365	2125452.0329
L	622·29.33	135.00	447236.5529	2125457.0241
L	630·64.92	-122.00	447328.3650	2126326.4090
L	630·64.92	-113.00	447319.5314	2126324.6811
L	630·86.25	-125.00	447327.2135	2126347.9180
L	630·86.25	-113.00	447315.4377	2126345.6146
L	634·90.00	148.00	446981.7843	2126691.7511
L	634·90.00	125.00	447004.3555	2126696.1662
L	635·10.00	125.00	447000.5171	2126715.7944
L	635·10.00	148.00	446977.9449	2126711.3791
L	640·62.20	-115.90	447130.9310	2127303.9695
L	641·55.30	-119.39	447116.4814	2127396.0074
L	642·84.60	-124.37	447096.5480	2127523.8587
L	645·38.80	-130.70	447053.9630	2127774.5463
L	647·29.20	190.00	446702.6387	2127900.2076
L	647·29.20	99.30	446791.6900	2127917.4478
L	647·36.20	-126.70	447012.2506	2127967.2048
L	647·62.50	190.00	446696.2397	2127933.5359
L	647·62.50	98.93	446785.7096	2127950.5461
L	653·21.00	-142.31	446967.0015	2128524.7797
L	653·26.00	-153.60	446978.2560	2128529.6526
L	653·43.60	-144.60	446969.1841	2128546.5126
L	653·43.60	-126.16	446950.7487	2128546.4767
L	665·04.80	-110.00	446937.3969	2129718.9706
L	665·10.80	-130.60	446957.1554	2129727.6044
L	665·28.60	-136.80	446961.0699	2129747.2230
L	665·32.50	-125.20	446949.0449	2129749.9217
L	665·79.80	-121.29	446938.3105	2129799.2062
L	669·26.00	-140.72	446870.2221	2130162.3590
L	671·57.80	-163.90	446797.6834	2130402.3720
L	671·58.30	-153.00	446787.6135	2130398.1654
L	671·76.40	-165.10	446790.0926	2130420.8888
L	671·77.00	-154.20	446780.0126	2130416.6918
L	674·15.00	-140.05	446652.5383	2130627.0667
L	674·15.00	-155.31	446665.8935	2130634.4377
L	674·15.00	-165.73	446675.0162	2130639.4727
L	674·40.10	-165.60	446662.7748	2130661.3855
L	674·40.10	-155.30	446653.7571	2130656.4085
L	680·28.30	-145.50	446360.9531	2131166.6448
L	680·28.30	-137.90	446354.2983	2131162.9719
L	680·64.60	110.00	446119.7212	2131074.9655
L	680·64.60	135.00	446097.8335	2131062.8852
L	680·68.70	-152.34	446347.4186	2131205.3196
L	681·26.00	135.00	446068.1645	2131116.6412
L	681·26.00	126.00	446076.0440	2131120.9901
L	686·55.00	115.00	445830.0565	2131589.4473
L	686·55.00	126.00	445820.4260	2131584.1320
L	686·95.00	115.00	445810.7281	2131624.4675
L	686·95.00	126.00	445801.0976	2131619.1522
L	687·70.88	166.90	445728.6212	2131665.8255
L	687·80.00	142.00	445746.0166	2131685.8387
L	687·80.00	126.00	445760.0247	2131693.5700
L	688·03.66	167.30	445712.4397	2131694.3259
L	688·17.50	133.00	445735.7758	2131723.0190
L	688·17.50	123.00	445744.5309	2131727.8511
L	688·44.48	339.86	445541.6299	2131646.6845
L	688·72.81	329.81	445536.7423	2131676.3410
L	697·65.00	205.00	445214.8981	2132517.7684
L	697·93.48	123.00	445272.9256	2132582.3297
L	697·96.00	215.00	445191.1635	2132540.0770
L	697·98.00	110.00	445282.1251	2132592.5650
L	698·25.79	123.00	445257.3149	2132610.6140
L	698·30.00	110.00	445266.6624	2132620.5812
L	706·28.30	123.00	444869.5344	2133313.2147
L	706·33.80	157.70	444836.4967	2133301.2626
L	706·54.10	157.80	444826.6000	2133318.9870
L	706·67.10	123.00	444850.7858	2133347.1843
L	709·42.00	123.00	444717.9514	2133587.8605
L	709·47.30	134.90	444704.9719	2133586.7504
L	709·65.60	110.00	444717.9292	2133614.8041
L	709·65.60	126.60	444703.3958	2133606.7828
L	711·07.20	-124.60	444854.9000	2133852.1366
L	711·07.20	-105.00	444837.7392	2133842.6652
L	711·25.40	-132.90	444853.3723	2133872.0814
L	711·30.80	-121.00	444840.3445	2133871.0589
L	713·08.00	-121.00	444754.7197	2134026.1983
L	713·08.00	-105.00	444740.7116	2134018.4670
L	713·24.00	110.00	444544.7468	2133928.5849
L	713·24.00	155.00	444505.3491	2133906.8405
L	713·77.00	155.00	444479.7389	2133953.2422
L	713·77.00	110.00	444519.1367	2133974.9867
L	720·24.80	-121.00	444408.3548	2134653.7600
L	721·88.20	122.60	444116.1646	2134682.5008
L	721·94.00	100.00	444133.4852	2134698.1771
L	722·07.10	127.70	444102.7413	2134697.3055
L	722·19.40	100.00	444121.6194	2134721.1469
L	722·52.70	-121.20	444303.5750	2134851.2464
L	722·55.90	-132.80	444312.5142	2134859.2732
L	722·74.00	-121.20	444294.1984	2134869.8567
L	722·75.70	-127.50	444299.0856	2134874.1658
L	724·60.43	123.00	443993.3537	2134932.0954
L	724·67.79	100.00	444011.1165	2134948.5218
L	724·79.44	129.00	443979.7996	2134947.2648
L	724·94.05	100.00	444000.0261	2134972.8413
L	725·46.20	-130.00	444188.7054	2135114.2768
L	725·56.00	-100.00	444157.3829	2135110.9549
L	725·63.64	-120.00	444172.6837	2135125.8540
L	726·87.47	115.00	443908.0034	2135147.8107
L	726·98.25	100.00	443917.6997	2135163.6756
L	727·03.86	127.00	443890.5439	2135158.7438
L	727·11.66	116.00	443897.7186	2135170.2777
L	728·83.08	127.00	443823.9470	2135329.4026
L	728·83.08	116.00	443834.2546	2135333.2437
L	729·03.86	115.00	443827.9355	2135353.0649
L	729·03.86	125.00	443818.5650	2135349.5730
L	729·84.34	100.00	443813.8886	2135433.7167

ROW MARKER PERMANENT EASEMENT-E

ALIGN	STATION	OFFSET	NORTH	EAST
LREV	404·58.49	108.30	456105.2434	2106193.2262
LREV	404·77.23	182.67	456033.0705	2106219.1661
LREV	404·85.52	108.19	456108.0017	2106220.1129
LREV	404·99.84	176.79	456041.1381	2106241.0910
LREV	405·02.66	157.35	456060.7609	2106241.9922
LREV	419·33.00	-110.00	456367.4954	2107667.2162
LREV	419·61.00	-149.00	456401.9491	2107701.5237
LREV	419·70.00	-110.00	456361.9972	2107704.9807
LREV	419·80.00	-125.00	456375.2681	2107717.4591
LREV	419·88.00	-157.00	456405.6147	2107730.5872
LREV	419·97.00	-138.00	456385.3863	2107736.8947
LREV	422·09.00	130.69	456081.9091	2107895.3581
LREV	422·58.30	-131.00	456326.1854	2108001.3664
LREV	423·96.56	-143.84	456303.5983	2108143.2786
LREV	424·18.00	-158.00	456311.3660	2108168.5019
LREV	424·18.00	-147.00	456300.7660	2108165.5626
LREV	424·34.00	-148.00	456297.2593	2108181.8240
LREV	424·34.00	-159.00	456307.8472	2108184.8068
LREV	428·50.00	-146.00	456156.3977	2108589.6635
LREV	436·35.24	-328.00	455931.4323	2109410.4308
LREV	436·59.09	-345.00	455931.2785	2109441.4177
LREV	437·69.18	-130.00	455687.9761	2109415.7330
LREV	437·89.23	-157.00	455697.8880	2109448.3348
LREV	437·98.58	-130.00	455670.3066	2109440.4458
LREV	438·03.73	-154.00	455686.6440	2109458.8191
LREV	444·14.46	130.32	455073.9396	2109742.6859

ROW MARKER PERMANENT EASEMENT-E

ALIGN	STATION	OFFSET	NORTH	EAST
SR1	13·58.00	-30.00	456355.3037	2103676.8613
SR1	13·58.00	-45.00	456369.2880	2103682.2871
SR1	13·75.00	-45.00	456360.1447	2103702.3941
SR1	13·75.00	-30.00	456346.8638	2103695.4215
SR1	14·85.56	29.98	456224.3731	2103735.0239
SR1	15·02.00	-44.30	456256.9019	2103803.8023
SR1	15·02.00	-65.00	456269.5852	2103820.1590
SR1	15·11.87	52.70	456189.6654	2103733.1962
SR1	15·14.40	48.82	456190.0358	2103737.8137
SR1	15·35.00	-51.81	456235.4263	2103829.9599
SR1	15·35.00	-72.00	456247.7963	2103845.9125
SR1	15·40.53	29.96	456180.9450	2103768.7240

ROW MARKER PERMANENT EASEMENT-E

ALIGN	STATION	OFFSET	NORTH	EAST
SR2	35·53.00	-30.00	453305.3376	2111998.7616
SR2	35·53.00	-48.00	453318.1379	2112011.4168
SR2	35·72.00	-64.00	453316.1576	2112036.1772
SR2	35·92.00	-61.00	453299.9622	2112048.2898
SR2	35·92.00	-53.00	453294.2740	2112042.6660
SR2	38·28.00	-53.00	453128.3506	2112210.4916
SR2	38·28.00	-30.00	453111.9947	2112194.3211

NOTE: DRAWING NOT TO SCALE

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PROJECT REFERENCE NO.	SHEET NO.
R-2303-B	1-I
Location and Surveys	

SURVEY CONTROL SHEET R-2303-B

L

TYPE	STATION	NORTH	EAST
POT	344+41.88	457252.1224	2100473.3512
TS	366+20.75	456260.0205	2102413.2509
SC	368+60.75	456154.4868	2102628.7705
CS	379+82.35	455959.2329	2103721.9973
ST	382+22.35	455983.6367	2103960.7242
PC	384+69.33	456013.0217	2104205.9455
PT	389+57.19	456061.2057	2104691.3851
PC	391+38.46	456075.4404	2104872.0980
PT	404+75.97	456217.5608	2106201.8668
TS	407+39.16	456252.8106	2106462.6853
SC	409+39.16	456277.9015	2106661.0993
CS	443+03.90	455243.6948	2109754.1256
ST	445+03.90	455104.3066	2109897.5432
TS	485+99.75	452224.6580	2112810.2072
SC	487+99.75	452085.6408	2112953.9788
CS	498+67.75	451513.8166	2113849.3216
ST	500+67.75	451441.8434	2114035.9118
PC	606+14.65	447755.7463	2123917.7065
PT	615+81.45	447493.4153	2124847.1099
TS	646+78.19	446898.9345	2127886.2573
SC	649+18.19	446856.2346	2128122.4083
CS	652+74.35	446825.4110	2128476.9857
ST	655+14.35	446826.7208	2128716.9625
TS	661+10.79	446838.4960	2129313.2866
SC	663+90.79	446837.3239	2129593.2200
CS	671+32.71	446660.3919	2130309.1325
ST	674+12.71	446531.0273	2130557.3841
PC	720+52.75	444288.9145	2134619.7593
PT	728+79.38	443944.2450	2135370.2815
TS	737+17.86	443651.4563	2136155.9854
SC	739+17.86	443583.7086	2136344.1511
CS	764+20.60	443811.2644	2138764.2644
ST	766+20.60	443912.8999	2138936.5034
POT	778+62.72	444555.9935	2139999.1820

LREV

TYPE	STATION	NORTH	EAST
POT	344+41.88	457252.1224	2100473.3512
TS	366+20.75	456260.0205	2102413.2509
SC	368+60.75	456154.4868	2102628.7705
CS	379+82.35	455959.2329	2103721.9973
EQB	382+22.35	455983.6367	2103960.7242
EQA	382+24.71	455983.6367	2103960.7242
PC	385+97.10	456027.9425	2104330.4614
PT	388+50.29	456055.4130	2104582.1551
TS	410+01.92	456266.2831	2106723.4256
SC	412+01.92	456283.9870	2106922.6332
PCC	421+66.56	456218.4427	2107881.9895
CS	443+03.90	455243.6948	2109754.1256
ST	445+03.90	455104.3066	2109897.5432
TS	485+99.75	452224.6580	2112810.2072
SC	487+99.75	452085.6408	2112953.9788
CS	498+67.75	451513.8166	2113849.3216
ST	500+67.75	451441.8434	2114035.9118
PC	606+14.65	447755.7463	2123917.7065
PT	615+81.45	447493.4153	2124847.1099
TS	646+78.19	446898.9345	2127886.2573
SC	649+18.19	446856.2346	2128122.4083
CS	652+74.35	446825.4110	2128476.9857
ST	655+14.35	446826.7208	2128716.9625
TS	661+10.79	446838.4960	2129313.2866
SC	663+90.79	446837.3239	2129593.2200
CS	671+32.71	446660.3919	2130309.1325
ST	674+12.71	446531.0273	2130557.3841
PC	720+52.75	444288.9145	2134619.7593
PT	728+79.38	443944.2450	2135370.2815
TS	737+17.86	443651.4563	2136155.9854
SC	739+17.86	443583.7086	2136344.1511
CS	764+20.60	443811.2644	2138764.2644
ST	766+20.60	443912.8999	2138936.5034
POT	778+62.72	444555.9935	2139999.1820

SR1

TYPE	STATION	NORTH	EAST
POT	10+00.00	456283.5330	2103314.2775
PC	12+74.25	456334.8437	2103583.6872
PT	14+39.17	456279.4092	2103730.2892
PC	15+58.84	456184.8346	2103803.6243
PT	17+04.24	456127.0048	2103930.8762
POT	18+30.89	456134.3617	2104057.3053

SR2

TYPE	STATION	NORTH	EAST
POT	10+00.00	455168.7530	2110289.9705
PC	10+90.72	455082.6236	2110318.4499
PT	15+76.62	454673.5238	2110572.2187
POT	39+21.88	453024.6561	2112239.9909

Y11

TYPE	STATION	NORTH	EAST
POT	10+00.00	456912.2320	2103194.5380
PC	20+22.43	455907.8529	2103385.8280
PT	22+27.12	455758.0335	2103511.9975
POT	28+95.13	455523.2310	2104137.3830

Y12

TYPE	STATION	NORTH	EAST
POT	10+00.00	455898.7300	2106793.6000
POT	21+99.62	456022.5830	2107986.8053

Y13

TYPE	STATION	NORTH	EAST
POT	10+00.00	456801.0400	2108267.0200
POT	26+06.23	455289.7400	2107723.0100

Y14

TYPE	STATION	NORTH	EAST
POT	10+00.00	456032.4485	2107990.3565
POT	17+50.00	456112.4593	2108736.0765

Y15

TYPE	STATION	NORTH	EAST
POT	10+00.00	455215.8442	2110432.3868
POT	26+38.73	454701.3800	2108876.5100

Y16

TYPE	STATION	NORTH	EAST
POT	10+00.00	453254.4735	2111768.5848
PC	14+40.60	452959.7617	2111441.0528
PT	17+70.20	452902.6373	2111133.0377
POT	23+79.76	453120.7600	2110563.8400

Y17

TYPE	STATION	NORTH	EAST
POT	10+00.00	451921.9353	2113146.6842
PC	10+64.62	451870.9644	2113106.9588
PT	13+59.35	451595.1901	2113023.5732
POT	21+36.46	450820.2524	2113081.6316

Y18

TYPE	STATION	NORTH	EAST
POT	10+00.00	450907.5900	2118576.3800
POT	20+94.03	449844.4450	2118318.2632

Y19

TYPE	STATION	NORTH	EAST
POT	10+00.00	449119.2981	2123283.4495
PC	18+75.51	448304.0346	2122964.2832
PT	21+65.80	448031.1049	2122865.5122
POT	30+23.14	447217.6425	2122594.7555

Y20

TYPE	STATION	NORTH	EAST
POT	10+00.00	447743.4917	2123950.8620
PC	10+28.07	447715.5142	2123948.5348
PCC	11+31.92	447612.8626	2123959.4380
PT	14+19.32	447345.6076	2124064.2537
POT	20+98.62	446735.6700	2124363.3000

Y21

TYPE	STATION	NORTH	EAST
POT	10+00.00	447996.3100	2127175.7200
PC	17+19.15	447319.1979	2127417.9971
PT	20+10.64	447033.8952	2127471.4476
POT	20+64.76	446979.7909	2127472.8971

Y22

TYPE	STATION	NORTH	EAST
POT	10+00.00	446978.7781	2130529.6530
PC	13+78.83	446942.3292	2130152.5832
PT	15+58.41	446834.0802	2130022.7432
POT	16+23.73	446771.2492	2130004.8636

Y23

TYPE	STATION	NORTH	EAST
POT	10+00.00	446866.2053	2131749.2159
POT	19+59.43	445908.9666	2131684.4657

Y24

TYPE	STATION	NORTH	EAST
POT	10+00.00	444464.0187	2134302.4966
PC	13+00.99	444182.4578	2134196.1026
PT	15+19.93	443971.0752	2134212.3219
POT	18+37.35	443694.7351	2134368.5122

NOTE: DRAWING NOT TO SCALE

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PROJ. REFERENCE NO.	SHEET NO.
R-2303B	1-J

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CENTERLINE COORDINATE LIST

Point #	Chain	Station	Northing (Y)	Easting (X)
1	L	367+00.00	456224.0677	2102483.8809
2	L	368+00.00	456179.9561	2102573.6233
3	L	369+00.00	456138.7667	2102664.7389
4	L	370+00.00	456101.5141	2102757.5326
5	L	371+00.00	456068.3299	2102851.8578
6	L	372+00.00	456039.2769	2102947.5361
7	L	373+00.00	456014.4100	2103044.3869
8	L	374+00.00	455993.7762	2103142.2269
9	L	375+00.00	455977.4144	2103240.8713
10	L	376+00.00	455965.3556	2103340.1336
11	L	377+00.00	455957.6226	2103439.8263
12	L	378+00.00	455954.2300	2103539.7608
13	L	379+00.00	455955.1842	2103639.7484
14	L	380+00.00	455960.4818	2103739.6001
15	L	381+00.00	455969.6286	2103839.1768
16	L	382+00.00	455980.9806	2103938.5296
17	LREV	383+02.36 R 2	455992.8751	2104037.8197
18	LREV	384+02.36 R 2	456004.7731	2104137.1094
19	LREV	385+02.36 R 2	456016.6710	2104236.3991
20	LREV	386+02.36 R 2	456028.5678	2104335.6889
21	LREV	387+02.36 R 2	456040.0083	2104435.0320
22	LREV	388+02.36 R 2	456050.6206	2104534.4670
23	LREV	389+02.36 R 2	456060.5163	2104633.9761
24	LREV	390+02.36 R 2	456070.3168	2104733.4947
25	LREV	391+02.36 R 2	456080.1173	2104833.0133
26	LREV	392+02.36 R 2	456089.9178	2104932.5319
27	LREV	393+02.36 R 2	456099.7182	2105032.0505
28	LREV	394+02.36 R 2	456109.5187	2105131.5691
29	LREV	395+02.36 R 2	456119.3192	2105231.0877
30	LREV	396+02.36 R 2	456129.1197	2105330.6063
31	LREV	397+02.36 R 2	456138.9202	2105430.1248
32	LREV	398+02.36 R 2	456148.7207	2105529.6434
33	LREV	399+02.36 R 2	456158.5212	2105629.1620
34	LREV	400+02.36 R 2	456168.3217	2105728.6806
35	LREV	401+02.36 R 2	456178.1221	2105828.1992
36	LREV	402+02.36 R 2	456187.9226	2105927.7178
37	LREV	403+02.36 R 2	456197.7231	2106027.2364
38	LREV	404+02.36 R 2	456207.5236	2106126.7550
39	LREV	405+02.36 R 2	456217.3241	2106226.2736
40	LREV	406+02.36 R 2	456227.1246	2106325.7922
41	LREV	407+02.36 R 2	456236.9251	2106425.3108
42	LREV	408+02.36 R 2	456246.7256	2106524.8294
43	LREV	409+02.36 R 2	456256.5260	2106624.3480
44	LREV	410+02.36 R 2	456266.3265	2106723.8666
45	LREV	411+02.36 R 2	456275.8869	2106823.4083
46	LREV	412+02.36 R 2	456284.0178	2106923.0752
47	LREV	413+02.36 R 2	456289.5327	2107022.9196
48	LREV	414+02.36 R 2	456292.1930	2107122.8808
49	LREV	415+02.36 R 2	456291.9966	2107222.8772
50	LREV	416+02.36 R 2	456288.9436	2107322.8272
51	LREV	417+02.36 R 2	456283.0365	2107422.6492
52	LREV	418+02.36 R 2	456274.2802	2107522.2617
53	LREV	419+02.36 R 2	456262.6818	2107621.5834
54	LREV	420+02.36 R 2	456248.2507	2107720.5332
55	LREV	421+02.36 R 2	456230.9988	2107819.0303
56	LREV	422+02.36 R 2	456210.9584	2107916.9984
57	LREV	423+02.36 R 2	456188.3540	2108014.4073
58	LREV	424+02.36 R 2	456163.2596	2108111.2046
59	LREV	425+02.36 R 2	456135.6918	2108207.3268
60	LREV	426+02.36 R 2	456105.6686	2108302.7105
61	LREV	427+02.36 R 2	456073.2098	2108397.2932
62	LREV	428+02.36 R 2	456038.3367	2108491.0126
63	LREV	429+02.36 R 2	456001.0724	2108583.8071
64	LREV	430+02.36 R 2	455961.4411	2108675.6157
65	LREV	431+02.36 R 2	455919.4691	2108766.3780
66	LREV	432+02.36 R 2	455875.1839	2108856.0344
67	LREV	433+02.36 R 2	455828.6147	2108944.5260
68	LREV	434+02.36 R 2	455779.7920	2109031.7945
69	LREV	435+02.36 R 2	455728.7479	2109117.7826
70	LREV	436+02.36 R 2	455675.5160	2109202.4338
71	LREV	437+02.36 R 2	455620.1313	2109285.6923
72	LREV	438+02.36 R 2	455562.6302	2109367.5035
73	LREV	439+02.36 R 2	455503.0505	2109447.8137
74	LREV	440+02.36 R 2	455441.4314	2109526.5699
75	LREV	441+02.36 R 2	455377.8134	2109603.7204
76	LREV	442+02.36 R 2	455312.2383	2109679.2145
77	LREV	443+02.36 R 2	455244.7492	2109753.0025
78	LREV	444+02.36 R 2	455175.5368	2109825.1781
79	LREV	445+02.36 R 2	455105.3897	2109896.4477
80	L	446+02.36 R 2	455035.0832	2109967.5602
81	L	447+02.36 R 2	454964.7767	2110038.6728
82	L	448+02.36 R 2	454894.4702	2110109.7854
83	L	449+02.36 R 2	454824.1637	2110180.8979
84	L	450+02.36 R 2	454753.8572	2110252.0105
85	L	451+02.36 R 2	454683.5507	2110323.1230
86	L	452+02.36 R 2	454613.2442	2110394.2356
87	L	453+02.36 R 2	454542.9377	2110465.3482
88	L	454+02.36 R 2	454472.6313	2110536.4607
89	L	455+02.36 R 2	454402.3248	2110607.5733
90	L	456+02.36 R 2	454332.0183	2110678.6859
91	L	457+02.36 R 2	454261.7118	2110749.7984
92	L	458+02.36 R 2	454191.4053	2110820.9110
93	L	459+02.36 R 2	454121.0988	2110892.0236
94	L	460+02.36 R 2	454050.7923	2110963.1361
95	L	461+02.36 R 2	453980.4858	2111034.2487
96	L	462+02.36 R 2	453910.1793	2111105.3613
97	L	463+02.36 R 2	453839.8728	2111176.4738
98	L	464+02.36 R 2	453769.5663	2111247.5864
99	L	465+02.36 R 2	453699.2598	2111318.6990
100	L	466+02.36 R 2	453628.9533	2111389.8115
101	L	467+02.36 R 2	453558.6468	2111460.9241
102	L	468+02.36 R 2	453488.3403	2111532.0366
103	L	469+02.36 R 2	453418.0338	2111603.1492
104	L	470+02.36 R 2	453347.7273	2111674.2618
105	L	471+02.36 R 2	453277.4209	2111745.3743
106	L	472+02.36 R 2	453207.1144	2111816.4869
107	L	473+02.36 R 2	453136.8079	2111887.5995
108	L	474+02.36 R 2	453066.5014	2111958.7120
109	L	475+02.36 R 2	452996.1949	2112029.8246
110	L	476+02.36 R 2	452925.8884	2112100.9372
111	L	477+02.36 R 2	452855.5819	2112172.0497
112	L	478+02.36 R 2	452785.2754	2112243.1623
113	L	479+02.36 R 2	452714.9689	2112314.2749
114	L	480+02.36 R 2	452644.6624	2112385.3874
115	L	481+02.36 R 2	452574.3559	2112456.5000
116	L	482+02.36 R 2	452504.0494	2112527.6126
117	L	483+02.36 R 2	452433.7429	2112598.7251
118	L	484+02.36 R 2	452363.4364	2112669.8377
119	L	485+02.36 R 2	452293.1299	2112740.9503
120	L	486+02.36 R 2	452222.8234	2112812.0628
121	L	487+02.36 R 2	452152.7309	2112883.3858
122	L	488+02.36 R 2	452083.8699	2112955.8953
123	L	489+02.36 R 2	452017.2734	2113030.4873
124	L	490+02.36 R 2	451953.1998	2113107.2574
125	L	491+02.36 R 2	451891.7203	2113186.1202
126	L	492+02.36 R 2	451832.9032	2113266.9882
127	L	493+02.36 R 2	451776.8139	2113349.7715
128	L	494+02.36 R 2	451723.5147	2113434.3780
129	L	495+02.36 R 2	451673.0649	2113520.7139
130	L	496+02.36 R 2	451625.5203	2113608.6832
131	L	497+02.36 R 2	451580.9340	2113698.1881
132	L	498+02.36 R 2	451539.3553	2113789.1292
133	L	499+02.36 R 2	451500.8199	2113881.4012
134	L	500+02.36 R 2	451464.7687	2113974.6750
135	L	501+02.36 R 2	451429.7464	2114068.3416
136	L	502+02.36 R 2	451394.7969	2114162.0354
137	L	503+02.36 R 2	451359.8473	2114255.7292
138	L	504+02.36 R 2	451324.8977	2114349.4230
139	L	505+02.36 R 2	451289.9482	2114443.1168
140	L	506+02.36 R 2	451254.9986	2114536.8106
141	L	507+02.36 R 2	451220.0490	2114630.5044
142	L	508+02.36 R 2	451185.0995	2114724.1982
143	L	509+02.36 R 2	451150.1499	2114817.8920
144	L	510+02.36 R 2	451115.2003	2114911.5858
145	L	511+02.36 R 2	451080.2508	2115005.2796
146	L	512+02.36 R 2	451045.3012	2115098.9734
147	L	513+02.36 R 2	451010.3516	2115192.6672
148	L	514+02.36 R 2	450975.4021	2115286.3610
149	L	515+02.36 R 2	450940.4525	2115380.0548
150	L	516+02.36 R 2	450905.5029	2115473.7486
151	L	517+02.36 R 2	450870.5534	2115567.4424
152	L	518+02.36 R 2	450835.6038	2115661.1362
153	L	519+02.36 R 2	450800.6542	2115754.8300
154	L	520+02.36 R 2	450765.7047	2115848.5238
155	L	521+02.36 R 2	450730.7551	2115942.2176
156	L	522+02.36 R 2	450695.8055	2116035.9114
157	L	523+02.36 R 2	450660.8560	2116129.6052
158	L	524+02.36 R 2	450625.9064	2116223.2990
159	L	525+02.36 R 2	450590.9568	2116316.9928
160	L	526+02.36 R 2	450556.0073	2116410.6866
161	L	527+02.36 R 2	450521.0577	2116504.3804
162	L	528+02.36 R 2	450486.1081	2116598.0742
163	L	529+02.36 R 2	450451.1586	2116691.7680
164	L	530+02.36 R 2	450416.2090	2116785.4618
165	L	531+02.36 R 2	450381.2594	2116879.1556
166	L	532+02.36 R 2	450346.3099	2116972.8494
167	L	533+02.36 R 2	450311.3603	2117066.5432
168	L	534+02.36 R 2	450276.4107	2117160.2370
169	L	535+02.36 R 2	450241.4612	2117253.9308
170	L	536+02.36 R 2	450206.5116	2117347.6246
171	L	537+02.36 R 2	450171.5621	2117441.3184
172	L	538+02.36 R 2	450136.6125	2117535.0121
173	L	539+02.36 R 2	450101.6629	2117628.7059
174	L	540+02.36 R 2	450066.7134	2117722.3997
175	L	541+02.36 R 2	450031.7638	2117816.0935
176	L	542+02.36 R 2	449996.8142	2117909.7873
177	L	543+02.36 R 2	449961.8647	2118003.4811
178	L	544+02.36 R 2	449926.9151	2118097.1749
179	L	545+02.36 R 2	449891.9655	2118190.8687
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181	L	547+02.36 R 2	449822.0664	2118378.2563
182	L	548+02.36 R 2	449787.1168	2118471.9501
183	L	549+02.36 R 2	449752.1673	2118565.6439
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186	L	552+02.36 R 2	449647.3186	2118846.7253
187	L	553+02.36 R 2	449612.3690	2118940.4191
188	L	554+02.36 R 2	449577.4194	2119034.1129
189	L	555+02.36 R 2	449542.4699	2119127.8067
190	L	556+02.36 R 2	449507.5203	2119221.5005
191	L	557+02.36 R 2	449472.5707	2119315.1943
192	L	558+02.36 R 2	449437.6212	2119408.8881
193	L	559+02.36 R 2	449402.6716	2119502.5819
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199	L	565+02.36 R 2	449192.9742	2120064.7447
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202	L	568+02.36 R 2	449088.1255	2120345.8261
203	L	569+02.36 R 2	449053.1760	2120439.5199
204	L	570+02.36 R 2	449018.2264	2120533.2137
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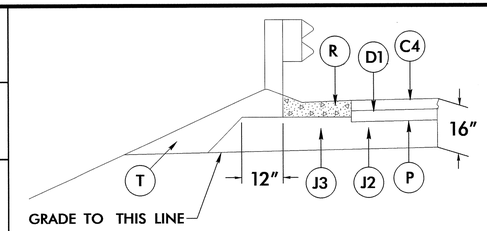
PAVEMENT SCHEDULE
(FINAL PAVEMENT DESIGN)

C1	PROP. APPROX. 1¼" ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 137.50 LBS. PER SQ. YD.	J1	PROP. 8" AGGREGATE BASE COURSE.
C2	PROP. APPROX. 2½" ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 137.5 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.	J2	PROP. 10" AGGREGATE BASE COURSE.
C3	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.	J3	PROP. VAR. DEPTH AGGREGATE BASE COURSE.
C4	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.	J4	PROP. 6" AGGREGATE BASE COURSE.
C5	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.	N	GEOTEXTILE FOR PAVEMENT STABILIZATON.
D1	PROP. APPROX. 3" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 342 LBS. PER SQ. YD.	P	PRIME COAT.
D2	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.	R	SHOULDER BERM GUTTER.
E1	PROP. APPROX. 4½" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 513 LBS. PER SQ. YD.	U	EXISTING PAVEMENT.
E2	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 3" IN DEPTH OR GREATER THAN 5½" IN DEPTH.	T	EARTH MATERIAL.
E3	PROP. APPROX. 4½" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 513 LBS. PER SQ. YD.	W	VARIABLE DEPTH ASPHALT PAVEMENT. (See Wedging Detail This Sheet)
E4	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.		



SHOULDER BERM GUTTER DETAIL

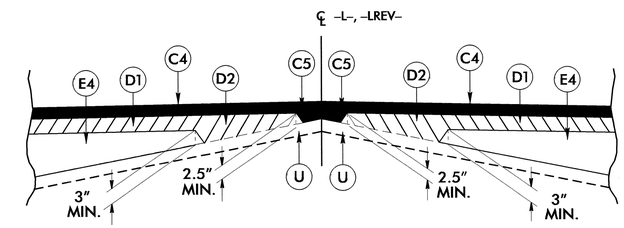
PROJECT REFERENCE NO.	SHEET NO.
R-2303B	2

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 25673 ENGINEER GARY R. LOVERING — 2-28-2013

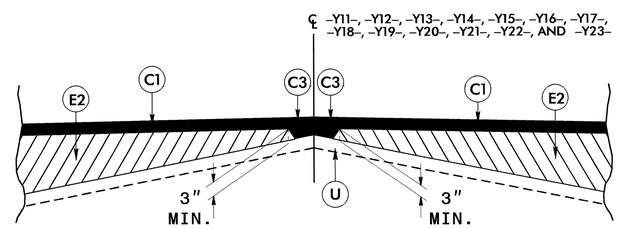
PAVEMENT DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 22896 ENGINEER CLARK S. MORRISON — 2/28/13

USE SHOULDER BERM GUTTER

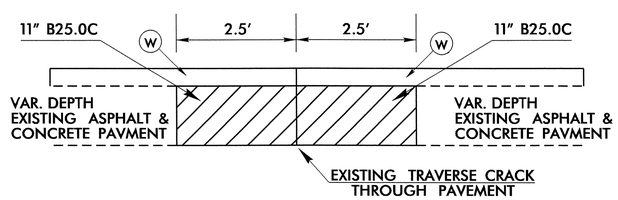
-LREV- STA. 389+66.70 TO STA. 391+52.04 (RT)
-LREV- STA. 390+22.29 TO STA. 391+52.04 (LT)
-LREV- STA. 404+21.96 TO STA. 404+50.32 (RT)
-LREV- STA. 404+21.96 TO STA. 406+56.57 (LT)
-LREV- STA. 426+25.00 TO STA. 441+68.75 (RT)
-L- STA. 462+85.00 TO STA. 478+25.00 (LT)
-L- STA. 463+56.00 TO STA. 464+99.75 (RT)
-L- STA. 468+92.95 (RT) TO -Y16- STA. 11+56.31 (RT)
-Y16- STA. 11+32.55 (LT) TO -L- STA. 480+50.00 (RT)
-L- STA. 654+59.75 TO STA. 659+16.29 (LT)
-L- STA. 655+30.00 TO STA. 659+16.29 (RT)
-L- STA. 661+25.17 TO STA. 663+07.25 (RT)
-L- STA. 661+25.17 TO STA. 661+34.74 (M-LT)
-L- STA. 668+00.00 TO STA. 674+60.00 (RT)
-L- STA. 680+70.00 TO STA. 684+70.00 (LT)
-L- STA. 710+82.00 TO STA. 714+38.25 (RT)
-L- STA. 712+33.75 TO STA. 715+25.00 (LT)



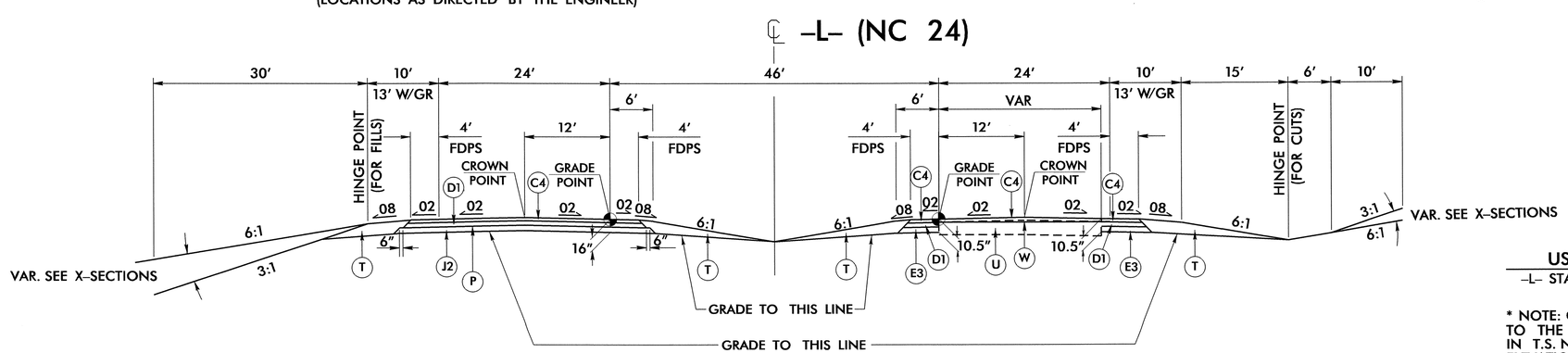
DETAIL SHOWING METHOD OF WEDGING
(SEE TYPICAL SECTIONS TO DETERMINE COMPOSITION OF WEDGING)



Detail Showing Method of Wedging



DETAIL SHOWING METHOD OF JOINT REPAIR
(LOCATIONS AS DIRECTED BY THE ENGINEER)



TYPICAL SECTION NO. 1

USE TYPICAL SECTION NO. 1 *
-L- STA. 366+20.75 AH TO STA. 368+00.00

* NOTE: CROWN POINT IS TRANSFERRED TO THE INSIDE EDGE OF TRAVEL AS SHOWN IN T.S. NO. 2 AND NO.3 IN THE SUPER ELEVATION TRANSITION AT STA. 367+00.75

6/2/99

21-FEB-2013 09:31
F:\roadway\proj\r-2303b_rdy_typ.dgn
$$USERNAME$$

PROJECT REFERENCE NO.	SHEET NO.
R-2303B	2-A

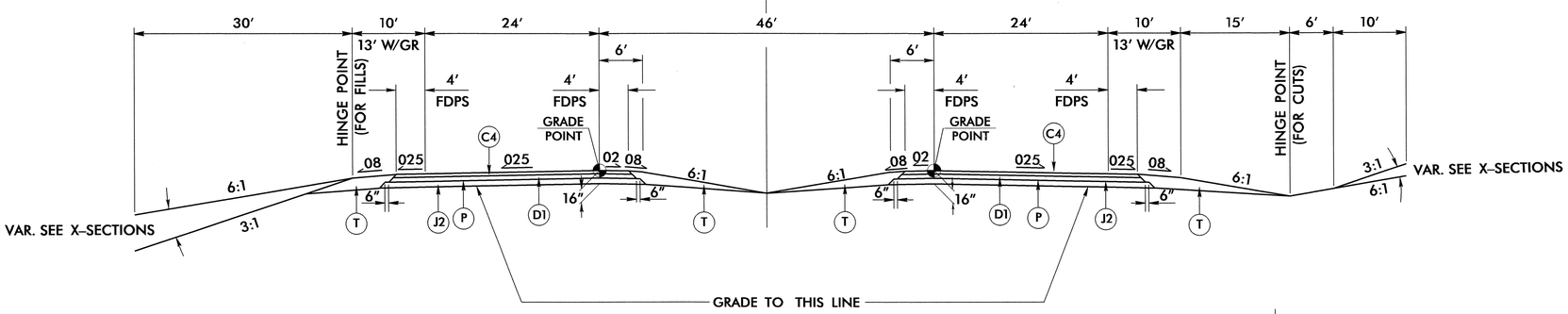
ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 25873 ENGINEER GARY R. LOWERING

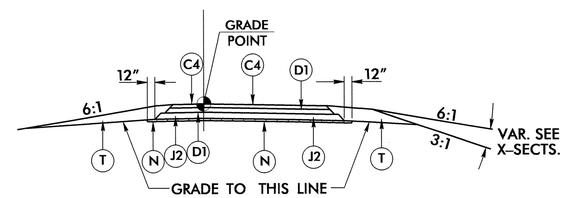
PAVEMENT DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 22896 ENGINEER CLARK S. MORRISON 2/25/13

–L– & –LREV– (NC24)



TYPICAL SECTION NO. 2



TYPICAL SECTION NO. 2A

USE TYPICAL SECTION NO. 2

–L– STA. 368+00.00 TO STA. 382+22.35 BK
–LREV– STA. 382+24.71 AH TO STA. 391+76.04 (BEGIN BRIDGE)
–LREV– STA. 403+97.96 (END BRIDGE) TO STA. 445+03.90 BK
–L– STA. 445+03.90 AH TO STA. 526+00.00

–L– STA. 539+50.00 TO STA. 593+50.00
–L– STA. 612+00.00 TO STA. 632+00.00

–L– STA. 648+00.00 TO STA. 659+40.46 (BEGIN BRIDGE)
–L– STA. 661+01.00 (END BRIDGE) TO STA. 675+00.00
–L– STA. 681+00.00 TO STA. 687+50.00

–L– STA. 694+50.00 TO STA. 704+50.00
–L– STA. 708+75.00 TO STA. 718+50.00

USE TYPICAL SECTION NO. 2A

GEOTEXTILE FOR PAVEMENT STABILIZATION MAY BE REQUIRED AT THESE LOCATIONS AND SHOULD BE INVESTIGATED BY THE ENGINEER DURING CONSTRUCTION.

–L– STA. 390+00.00 TO STA. 391+85.00 (LT.)
–L– STA. 390+00.00 TO STA. 392+31.00 (RT.)

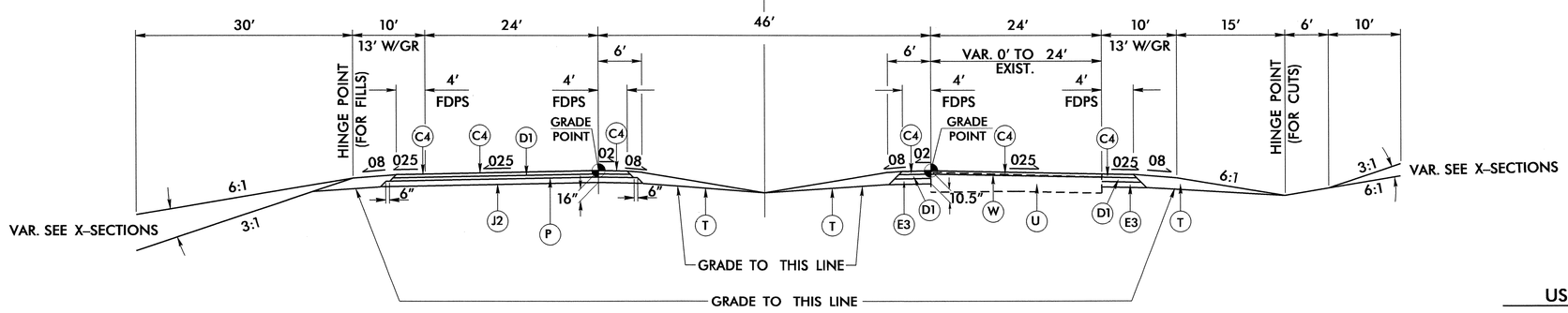
–L– STA. 432+50.00 TO STA. 434+00.00 (RT.)
–L– STA. 432+50.00 TO STA. 436+00.00 (LT.)

–L– STA. 438+50.00 TO STA 440+50.00 (RT.)
–L– STA 438+50.00 TO STA. 441+50.00 (LT.)

–L– STA. 463+50.00 TO STA. 466+50.00 (RT.)
–L– STA. 463+50.00 TO STA. 468+09.00 (LT.)

–L– STA. 654+00.00 TO STA. 659+50.00 (RT.)

–L– (NC 24)



TYPICAL SECTION NO. 3

USE TYPICAL SECTION NO. 3

–L– STA. 675+00.00 TO STA. 681+00.00 (RT. LANE)
–L– STA. 687+50.00 TO STA. 694+50.00 (RT. LANE)
–L– STA. 704+50.00 TO STA. 708+75.00 (RT. LANE)
–L– STA. 718+50.00 TO STA. 730+10.00 (RT. LANE)

PAVEMENT SCHEDULE (FINAL PAVEMENT DESIGN)	
C4	3″ S9.5C
D1	3″ I19.0C
E3	4½″ B25.0C
J2	10″ ABC
N	GEOTEXTILE FOR PAVT STAB.
P	PRIME COAT
U	EXIST. PAVEMENT
T	EARTH MATERIAL
W	WEDGING

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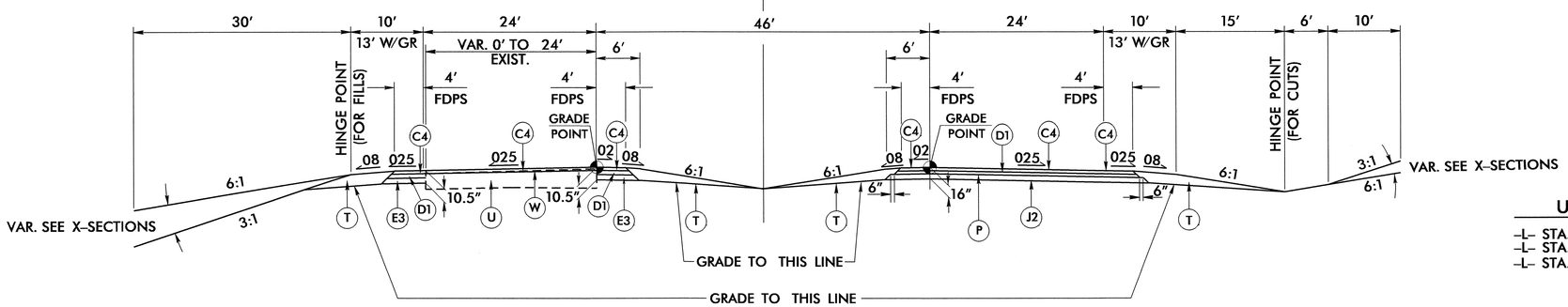
PROJECT REFERENCE NO.	SHEET NO.
R-2303B	2-B
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 25873 ENGINEER GARY R. LOVERING 2-12-13

NORTH CAROLINA PROFESSIONAL SEAL 22896 ENGINEER CLARK S. MORRISON 2/12/13

℄ –L– (NC 24)

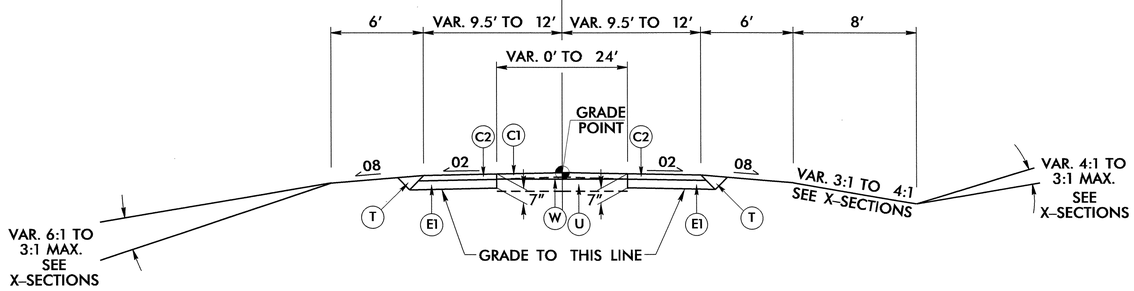


USE TYPICAL SECTION NO. 4

–L– STA. 526+00.00 TO STA. 539+50.00 (LT. LANE)
–L– STA. 593+50.00 TO STA. 612+00.00 (LT. LANE)
–L– STA. 632+00.00 TO STA. 648+00.00 (LT. LANE)

TYPICAL SECTION NO. 4

℄ –Y– LINES



TYPICAL SECTION NO. 5

–L– PAVEMENT DESIGN WIDENING

–Y11– STA. 18+06.73 TO STA. 18+58.59
–Y11– STA. 23+00.00 TO STA. 25+00.00
–Y12– STA. 20+50.00 TO STA. 21+84.03
–Y19– STA. 19+01.76 TO STA. 19+97.07

–Y20– STA. 11+31.92 TO STA. 11+99.03

–Y21– STA. 19+07.90 TO STA. 20+04.30

–Y23– STA. 17+71.63 TO STA. 17+91.12

–L– PAVEMENT DESIGN ALL NEW PVT.

–Y11– STA. 18+58.59 TO STA. 19+05.88
–Y11– STA. 20+28.41 TO STA. 23+00.00

–Y13– STA. 15+02.72 TO STA. 15+99.71
–Y13– STA. 17+18.26 TO STA. 18+66.60

–Y15– STA. 13+18.41 TO STA. 14+44.95
–Y15– STA. 15+77.42 TO STA. 16+72.53

–Y16– STA. 10+59.10 TO STA. 11+56.31

–Y17– STA. 10+59.00 TO STA. 11+64.65

–Y18– STA. 19+46.95 TO STA. 20+34.61

–Y19– STA. 21+15.03 TO STA. 22+02.84

–Y20– STA. 10+61.81 TO STA. 11+31.92

–Y22– STA. 13+81.73 TO STA. 15+64.73

–Y23– STA. 17+91.12 TO STA. 18+94.31

USE TYPICAL SECTION NO. 5

–Y11– STA. 15+50.00 TO STA. 18+06.73

–Y13– STA. 13+75.00 TO STA. 15+02.72
–Y13– STA. 18+66.60 TO STA. 20+00.00

–Y14– STA. 16+30.00 TO STA. 17+20.00

–Y15– STA. 13+00.00 TO STA. 13+18.41
–Y15– STA. 16+72.53 TO STA. 18+00.00

–Y16– STA. 11+56.31 TO STA. 19+50.00

–Y17– STA. 11+64.65 TO STA. 15+00.00

–Y18– STA. 18+00.00 TO STA. 19+46.95

–Y19– STA. 17+75.00 TO STA. 19+01.76
–Y19– STA. 22+02.84 TO STA. 22+71.00

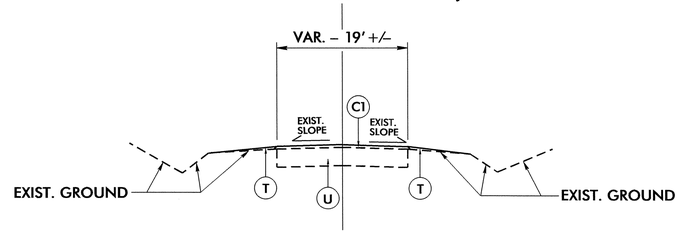
–Y20– STA. 11+99.03 TO STA. 13+00.00

–Y21– STA. 17+75.00 TO STA. 19+07.90

–Y22– STA. 12+00.00 TO STA. 13+81.73

–Y23– STA. 16+75.00 TO STA. 17+71.63

℄ –Y15– (SR 1238 AUTRYVILLE RD)



TYPICAL SECTION NO. 6

USE TYPICAL SECTION NO. 6

–Y15– STA. 11+00.00 TO STA. 13+00.00
–Y15– STA. 18+00.00 TO STA. 18+50.00

–Y11– (JOHN NUNNERY ROAD)
–Y12– (E OLD STAGE RD)
–Y13– (SR 1414 N GRAY ST)
–Y14– (E OLD STAGE RD)
–Y15– (AUTRYVILLE ROAD)
–Y16– (NC 24 AUTRY HWY)
–Y17– (SR 1258 HORSESHOE RD)
–Y18– (SR 1420 PUMPKINTOWN RD)
–Y19– (SR 1256 CARRY BRIDGE RD)
–Y20– (SR 1257 HAYNE EXIST RD)
–Y21– (SR 1410 BULLARD RD)
–Y22– (SR 1405 PLEASANT UNION RD)
–Y23– (SR 1406 BOREN BRICK RD)

PAVEMENT SCHEDULE (FINAL PAVEMENT DESIGN)	
C1	1¼" SF9.5A
C2	2½" SF9.5A
E1	4½" B25.0B
U	EXIST. PAVEMENT
T	EARTH MATERIAL
W	WEDGING

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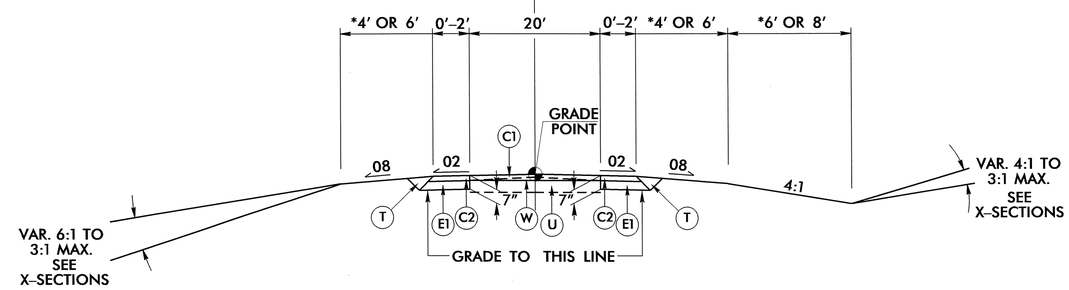
PROJECT REFERENCE NO.	SHEET NO.
R-2303B	2-C
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 28873 ENGINEER GARY R. LOVERING
NORTH CAROLINA PROFESSIONAL SEAL 22896 ENGINEER CLARK S. MORRISON 12/11/13

℄ –Y24– (SR 1254 MICROWAVE TOWER RD)



TYPICAL SECTION NO. 7

USE TYPICAL SECTION NO. 7

USE 4' SHLD. AND 6' DITCH RT.
–Y24– STA. 11+49.15 TO STA. 12+50.00

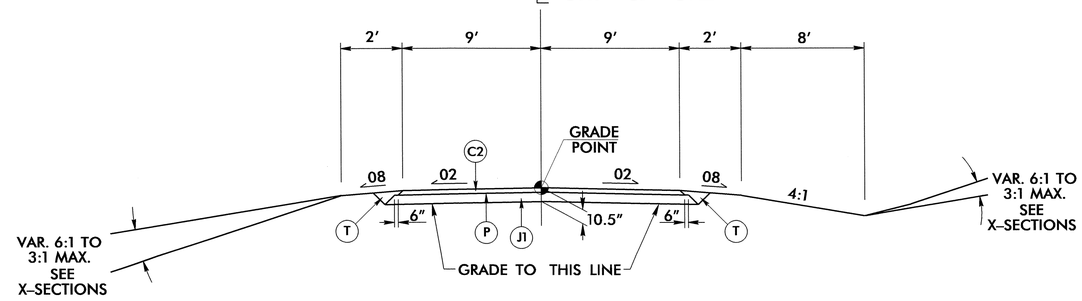
–L– PAVEMENT DESIGN WIDENING

–Y24– STA. 11+39.25 TO STA. 11+49.15

–L– PAVEMENT DESIGN ALL NEW PVT.

–Y24– STA. 10+59.61 TO STA. 11+39.25

℄ –SR1– & –SR2–

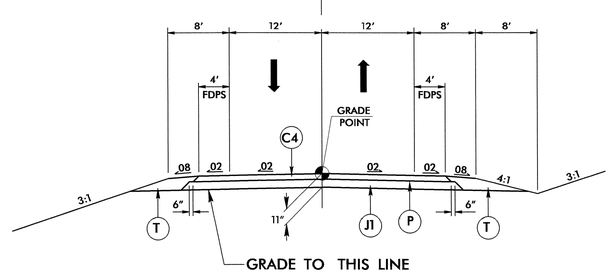


TYPICAL SECTION NO. 8

USE TYPICAL SECTION NO. 8

–SR1– STA. 10+10.00 TO STA. 18+25.89
–SR2– STA. 10+09.17 TO STA. 39+14.00

℄ –DET1–, –DET2–, –DET3–, –DET4–



TYPICAL SECTION NO. 9

USE TYPICAL SECTION NO. 9

–DET1– STA. 13+10.00 TO STA. 20+95.11
–DET2– STA. 12+48.62 TO STA. 17+49.96
–DET3– STA. 10+00.00 TO STA. 16+75.33
–DET4– STA. 10+00.00 TO STA. 18+07.63

WIDEN USING EXISTING GRADE & SE

–DET1– STA. 10+00.00 TO STA. 13+10.00
–DET2– STA. 10+00.00 TO STA. 12+48.62
–DET3– STA. 16+75.33 TO STA. 20+03.58
–DET4– STA. 18+07.63 TO STA. 20+95.11

PAVEMENT SCHEDULE (FINAL PAVEMENT DESIGN)	
C1	1¼" SF9.5A
C2	2½" SF9.5A
C4	3" S9.5C
E1	4½" B25.0B
J1	8" ABC
P	PRIME COAT
U	EXIST. PAVEMENT
T	EARTH MATERIAL
W	WEDGING

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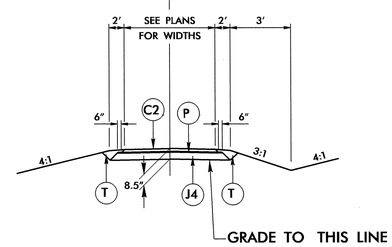
PROJECT REFERENCE NO.	SHEET NO.
R-2303B	2-D
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 22896 ENGINEER CLARK S. MORRISON 2/25/13

℄ DRIVEWAYS



TYPICAL SECTION NO. 10

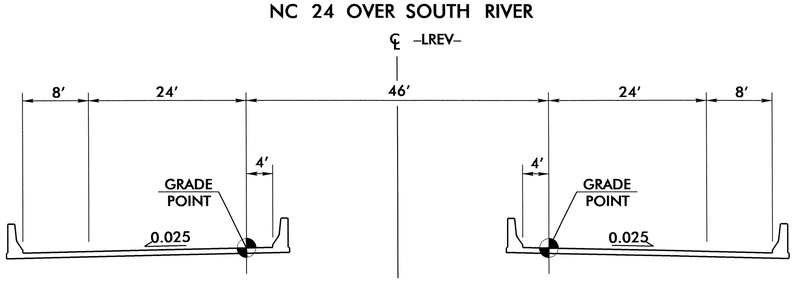
USE TYPICAL SECTION NO. 10

ASPHALT DRIVEWAYS

STRUCTURE TYPICAL SECTIONS
(NOT TO SCALE)

–LREV– STRUCTURE

NC 24 OVER SOUTH RIVER



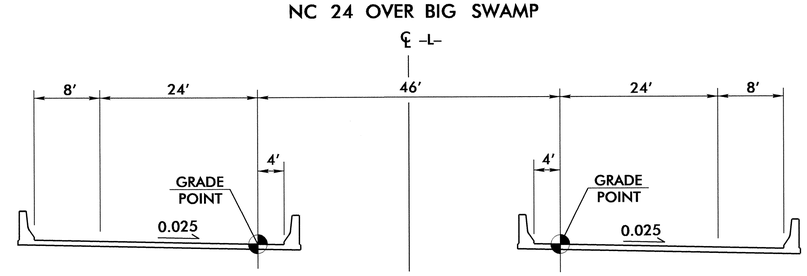
TYPICAL SECTION NO. 11

USE TYPICAL SECTION NO. 11

–LREV– STA. 391+76.04 (BEGIN BRIDGE) TO LREV– STA. 403+97.96 (END BRIDGE)

–L– STRUCTURE

NC 24 OVER BIG SWAMP



TYPICAL SECTION NO. 12

USE TYPICAL SECTION NO. 12

–L– STA. 659+40.46 (BEGIN BRIDGE TO
–L– STA. 661+01.00 (END BRIDGE)

PAVEMENT SCHEDULE (FINAL PAVEMENT DESIGN)	
C1	1¼" SF9.5A
C2	2½" SF9.5A
C4	3" S9.5C
E1	4½" B25.0B
J4	6" ABC
P	PRIME COAT
U	EXIST. PAVEMENT
T	EARTH MATERIAL
W	WEDGING

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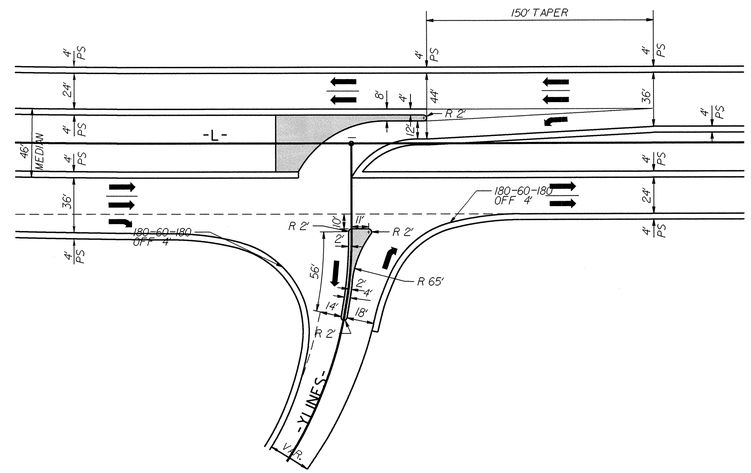
PROJECT REFERENCE NO.	SHEET NO.
R-2303B	2-E
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	

NORTH CAROLINA PROFESSIONAL SEAL 25873 ENGINEER GARY R. LOVERING

INTERSECTION DETAILS

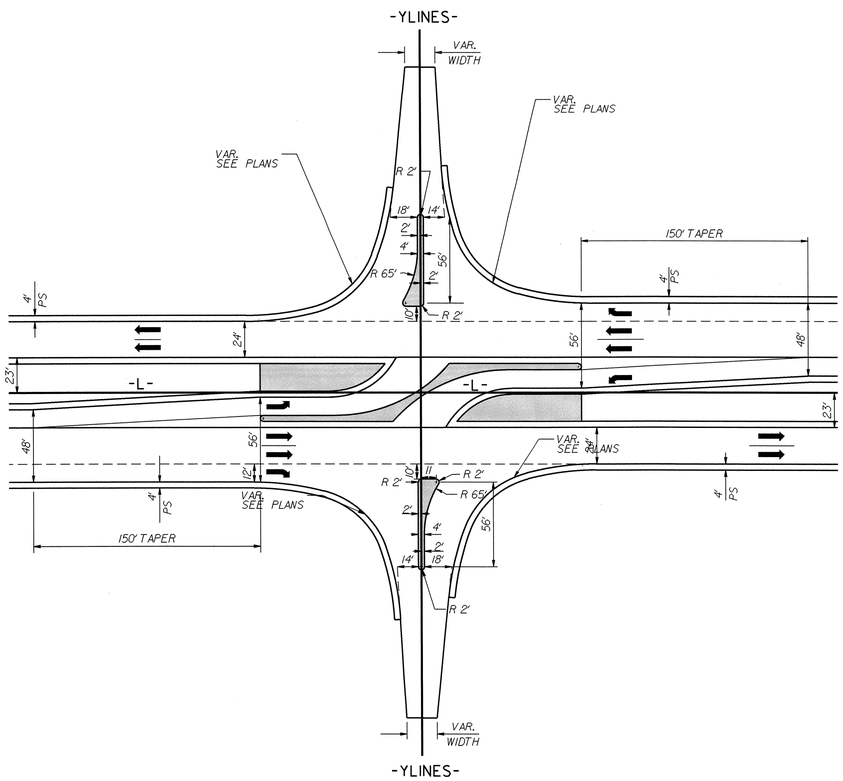


INTERSECTION DETAIL NO. 2

–Y16–
–Y17–
–Y18–
–Y20–
–Y21–
–Y22–
–Y23–
–Y24–

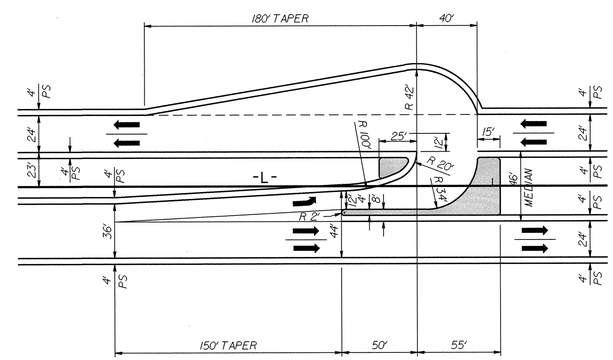
5" MONOLITHIC CONCRETE ISLAND (SURFACE MOUNTED)

NOTE: ALL DIMENSIONS ARE TYPICAL UNLESS OTHERWISE SHOWN IN THE PLANS.



INTERSECTION DETAIL NO. 1

–Y11–
–Y13–
–Y15–
–Y19–



INTERSECTION DETAIL NO. 3

–L– STA. 368+35
–LREV– STA. 384+37
–LREV– STA. 415+32
–L– STA. 453+73
–L– STA. 498+52
–L– STA. 538+38
–L– STA. 587+89
–L– STA. 619+50
–L– STA. 634+57
–L– STA. 677+75
–L– STA. 703+00
–L– STA. 724+94

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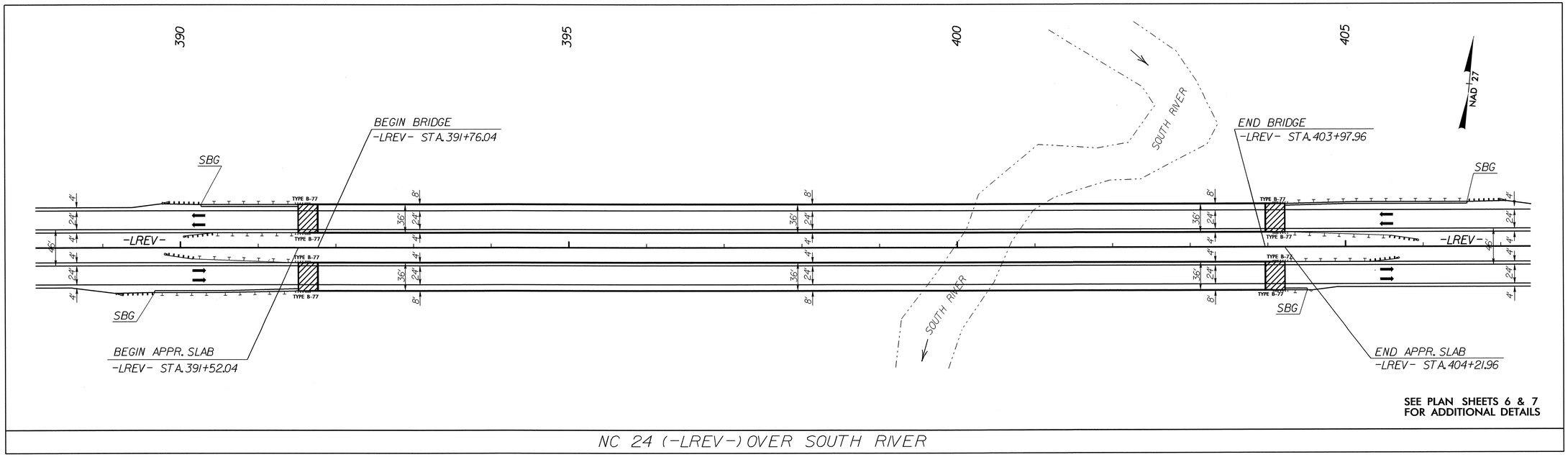
PROJECT REFERENCE NO.	SHEET NO.
R-2303B	2-F
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

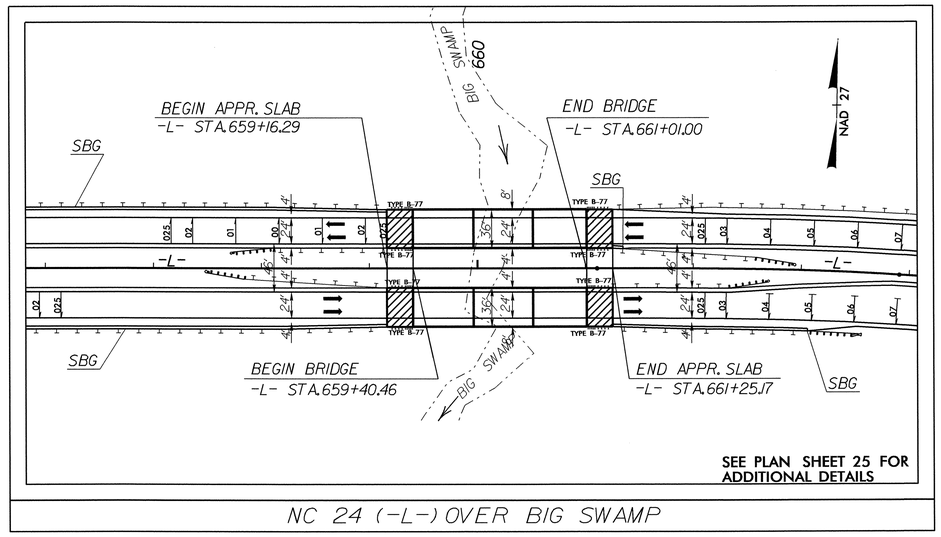
NORTH CAROLINA PROFESSIONAL SEAL 26873 ENGINEER GARY R. LOVERING

SKETCH SHOWING BRIDGE/PAVEMENT RELATIONSHIP

(NOT TO SCALE)



NC 24 (-LREV-) OVER SOUTH RIVER



NC 24 (-L-) OVER BIG SWAMP

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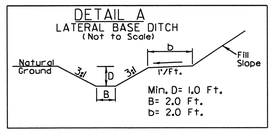
PROJECT REFERENCE NO.	SHEET NO.
R-2303B	2-G
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

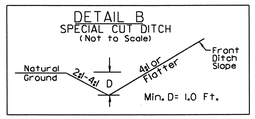
DITCH DETAILS

DETAIL A
LATERAL BASE DITCH
(Not to Scale)



Sta. 404+31.84 to 406+50 –L– Lt
Sta. 404+10.98 to 410+00 –L– Rt
Sta. 426+13 to 428+35.56 –L– Lt.
Sta. 431+50 to 436+00 –L– Lt
Sta. 438+00 to 439+98.02 –L– Lt
Sta. 462+50 to 480+50 –L– Lt
Sta. 487+00 to 503+00 –L– Lt
Sta. 494+27.68 to 503+00 –L– Rt
Sta. 492+77.68 to 494+27.68 –L– Rt
Sta. 503+30 to 513+00 –L– Rt
Sta. 514+40 to 523+00 –L– Rt
Sta. 503+15 to 520+00 –L– Lt
Sta. 523+50 to 526+00 –L– Rt
Sta. 552+50 to 555+00 –L– Rt
Sta. 553+00 to 554+00 –L– Lt
Sta. 556+50 to 558+00 –L– Rt
Sta. 558+50 to 561+50 –L– Lt
Sta. 561+75 to 573+00 –L– Lt
Sta. 562+00 to 576+75 –L– Rt
Sta. 587+29.73 to 594+22.23 –L– Rt
Sta. 607+50 to 615+00 –L– Rt
Sta. 617+50 to 627+60 –L– Lt
Sta. 640+00 to 646+00 –L– Rt
Sta. 670+25 to 672+00 –L– Lt
Sta. 682+15 to 685+50 –L– Rt
Sta. 688+13.79 to 691+50 –L– Lt
Tie to –Y23– Lt ditch
Sta. 696+50 to 701+20 –L– Lt
Sta. 714+24 to 715+97.11 –L– Rt
Sta. 11+31.75 14+00 –Y16– Rt
Sta. 11+10.19 13+00 –Y16– Lt
Sta. 17+00 to 18+64 –Y23– Lt
Ditch Should Be at Zero Depth

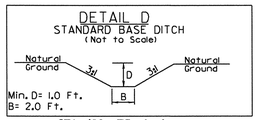
DETAIL B
SPECIAL CUT DITCH
(Not to Scale)



Sta. 367+80.51 to 371+00 –L– Rt
Sta. 374+10 to 376+10 –L– Rt
Sta. 374+10 to 375+28 –L– Lt
Sta. 377+27.35 to 382+10.51 –L– Lt
Sta. 384+50 to 385+50 –L– Lt
Sta. 415+32.69 to 422+08.01 –L– Rt
Sta. 448+31.02 to 462+50 –L– Lt
Sta. 573+00 to 574+15 –L– Lt
Sta. 574+50 to 576+75 –L– Lt
Sta. 576+77 to 594+00 –L– Lt
Sta. 595+97.62 to 600+00 –L– Rt
Sta. 596+00 to 611+00 –L– Lt
Sta. 600+50 to 605+92 –L– Rt
Sta. 611+50 to 616+00 –L– Lt
Sta. 616+00 to 630+00 –L– Rt
Sta. 627+60 to 635+07.06 –L– Lt
Sta. 635+07 to 639+50 –L– Rt
Sta. 636+82 to 637+50 –L– Lt
Sta. 638+32.06 to 641+50 –L– Lt
Sta. 643+35 to 646+00 –L– Lt
Sta. 646+44.03 to 648+00 –L– Rt
Sta. 651+00 to 654+75 –L– Lt
Sta. 673+50 to 678+00 –L– Lt
Sta. 674+75 to 678+50 –L– Rt**
Sta. 679+00 to 681+90 –L– Rt**
Sta. 685+50 to 687+00.06 –L– Rt
Sta. 701+50 to 703+50 –L– Lt
Sta. 701+00 to 707+13 –L– Rt
Sta. 704+00 to 710+00 –L– Lt
Sta. 717+75 to 720+52.75 –L– Rt
Sta. 721+00 to 723+65 –L– Rt
Sta. 724+00 to 727+50 –L– Rt
Sta. 13+11 to 13+90 –Y15– Lt.
Sta. 13+11 to 14+44.95– Rt.
Sta. 17+00 to 18+50 –Y15– Rt
Sta. 17+00 to 18+50 –Y15– Lt.
Sta. 14+40 to 17+00 –Y16– Rt
Sta. 18+75 to 19+67 –Y19– Lt
Sta. 18+80 to 19+90 –Y19– Rt
Sta. 21+19 to 22+50 –Y19– Lt
Sta. 21+95 to 22+50 –Y19– Rt
Sta. 12+50 to 14+50 –Y22– Lt
Sta 10+75 to 11+90 –Y24– Lt

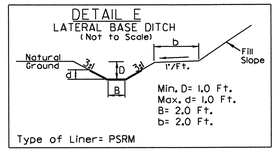
**Outlet on Natural Ground outside of wetlands

DETAIL D
STANDARD BASE DITCH
(Not to Scale)



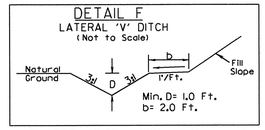
STA. 613+75 –L– Lt
STA. 666+87 –L– Lt
STA. 419+40 –L– Lt
STA. 11+50 –Y17– Rt
STA. 13+00 to 14+50 –Y20– Rt

DETAIL E
LATERAL BASE DITCH
(Not to Scale)



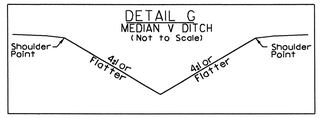
Sta. 710+00 to 712+00 –L– Lt

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



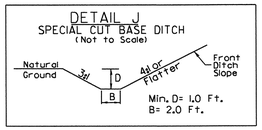
Sta. 377+43.01 to 382+22.35 –L– Rt

DETAIL G
MEDIAN V DITCH
(Not to Scale)



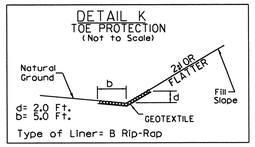
Sta. 368+85 to 372+60 –L– Med
Sta. 379+73 to 380+28 –L– Med
Sta. 446+89 to 453+50 –L– Med
Sta. 491+02 to 498+02 –L– Med
Sta. 538+89 to 546+00 –L– Med
Sta. 674+00 to 675+00 –L– Med
Sta. 698+75 to 702+50 –L– Med

DETAIL J
SPECIAL CUT BASE DITCH
(Not to Scale)



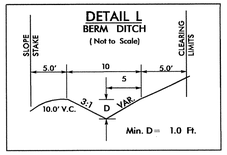
Sta. 526+00 to 537+50 –L– Rt
Sta. 528+50 to 542+13 –L– Lt
Sta. 547+37.30 to 553+00 –L– Lt
Sta. 547+37 to 552+50 –L– Rt

DETAIL K
TOE PROTECTION
(Not to Scale)



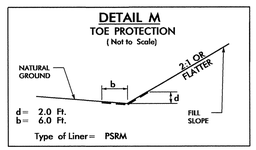
Sta 387+40 to 390+00 –L– Rt
Sta. 388+00 to 391+70 –L– Lt
Sta. 436+00 to 437+00 –L– Lt
Sta. 440+20 to 441+70 –L– Lt
Sta. 542+60 to 545+25 –L– Lt.
Sta. 663+15 to 665+50 –L– Rt
Sta. 669+15 to 670+25 –L– Lt
Sta. 711+00 to 713+37 –L– Rt
Sta. 713+75 to 715+50 –L– Lt

DETAIL L
BERM DITCH
(Not to Scale)



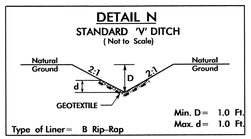
FROM STA. 625+00 TO STA. 630+00 –L– Rt
FROM STA. 672+50 TO STA. 676+00 –L– Lt

DETAIL M
TOE PROTECTION
(Not to Scale)



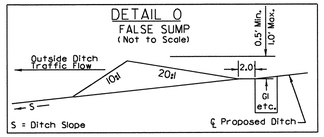
Sta. 554+00 to 558+50 –L– Lt
Sta. 12+50 to 15+00 –Y22– Rt

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



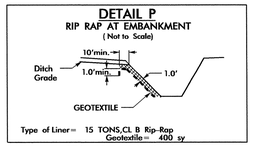
FROM STA. 391+95 TO STA. 393+75 –LREV– Rt
FROM STA. 391+95 TO STA. 393+60 –LREV– Lt
FROM STA. 401+85 TO STA. 402+85 –LREV– Rt
FROM STA. 401+75 TO STA. 403+87 –LREV– Lt

DETAIL O
FALSE SUMP
(Not to Scale)



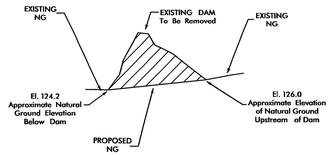
STA. 387+30 –LREV– Lt
STA. 387+30 –LREV– Rt
STA. 646+00 –L– Lt
STA. 696+00 –L– Lt.

DETAIL P
RIP RAP AT EMBANKMENT
(Not to Scale)



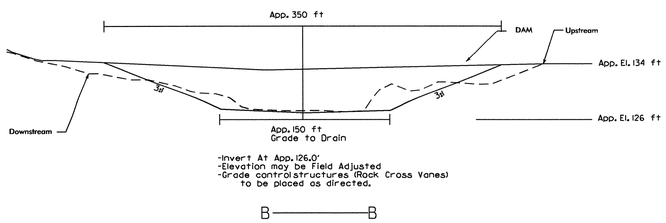
STA. 425+04 –L– Lt
STA. 440+04 –L– Lt

DAM REMOVAL DETAIL



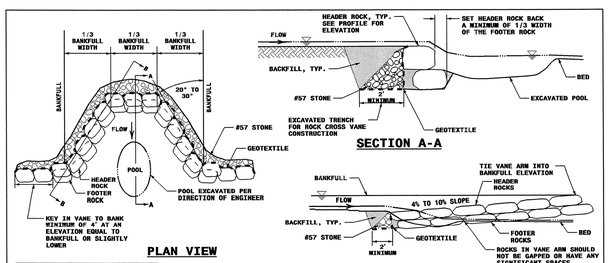
UNCLASSIFIED EXCAVATION: 4100 CU YDS +/-

A ——— A



-Invert At App. 126.0'
-Elevation may be Field Adjusted
-Grade controlstructures (Rock Cross Vanes) to be placed as directed.

B ——— B

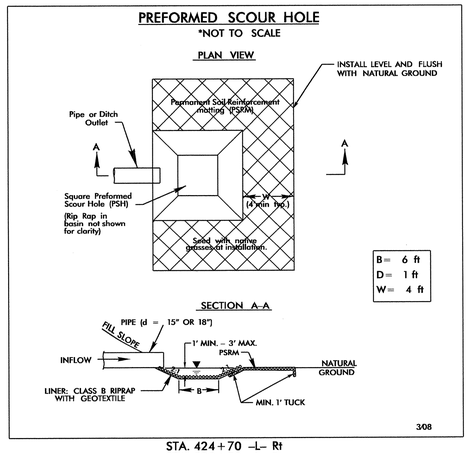


	BOULDER DIMENSIONS (FT)		
STATION	HEIGHT	LENGTH	WIDTH
529+00 -L-	4	2	2

NOTES:
1) DEEPEST PART OF POOL TO BE IN LINE WITH WHERE VANE ARM TIES INTO BANKFULL.
2) DO NOT EXCAVATE POOL TOO CLOSE TO FOOTER BOULDERS.
3) CLASS "A" STONE CAN BE USED TO REDUCE VOIDS BETWEEN HEADERS AND FOOTERS.
4) COMPACT BACKFILL TO EXTENT POSSIBLE OR AT THE DIRECTION OF THE ENGINEER.
5) POOL DEPTH SHOULD BE 2 TO 3 TIMES BANKFULL DEPTH.

ROCK CROSS VANE DETAIL
NOT TO SCALE

PREFORMED SCOUR HOLE
*NOT TO SCALE



STA. 424+70 –L– Rt
STA. 539+50 –L– Rt

5/14/99
13-FEB-2013 15:53
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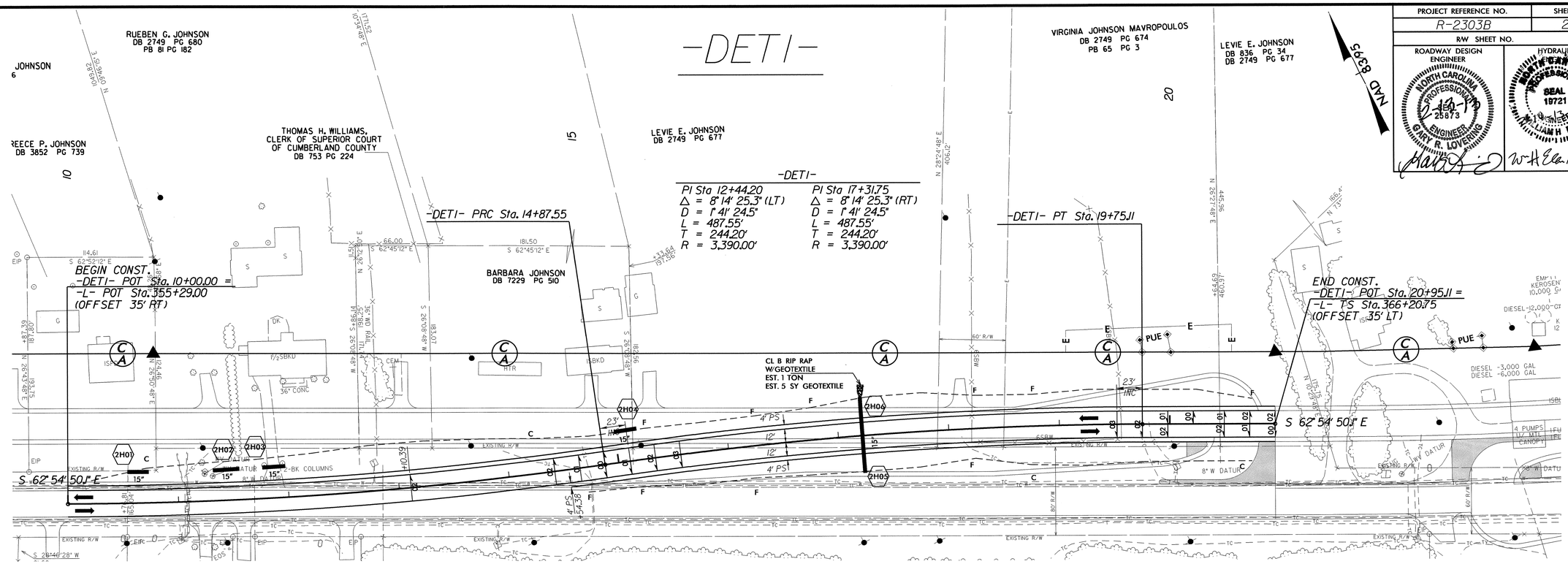
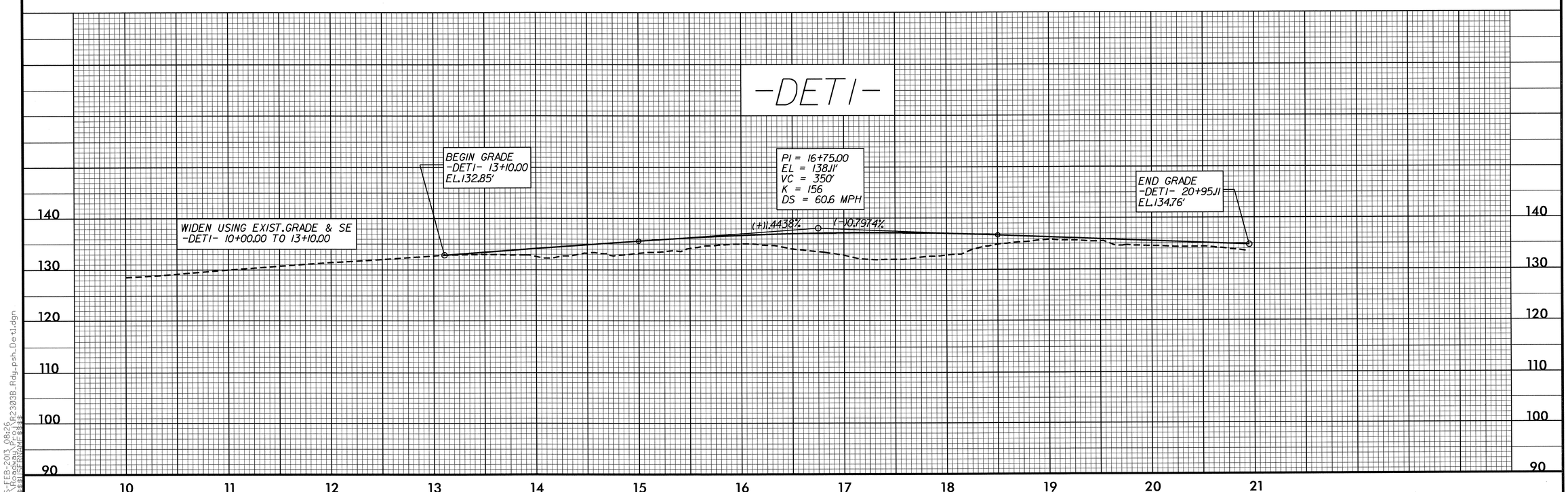
PROJECT REFERENCE NO.	SHEET NO.
R-2303B	2-H
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 25873 ENGINEER GARY R. LOVERING 5-13-13

NORTH CAROLINA PROFESSIONAL SEAL 18721 ENGINEER WILLIAM H. ELAM 5-13-13

NAD 83/95





8/17/99

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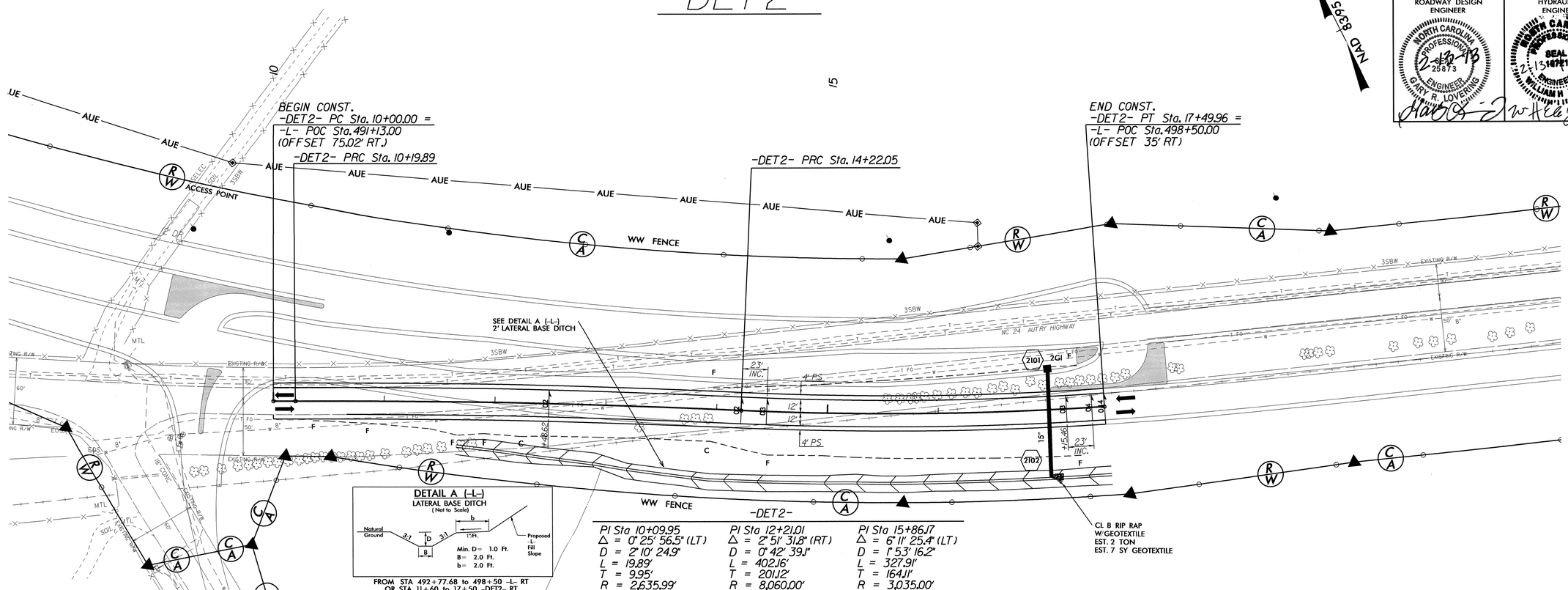
PROJECT REFERENCE NO.	SHEET NO.
R-2303B	2-1
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 25873 ENGINEER GARY R. LOVERING 2-13-13

NORTH CAROLINA PROFESSIONAL SEAL 31474 ENGINEER WILLIAM H. ELAM 2-13-13

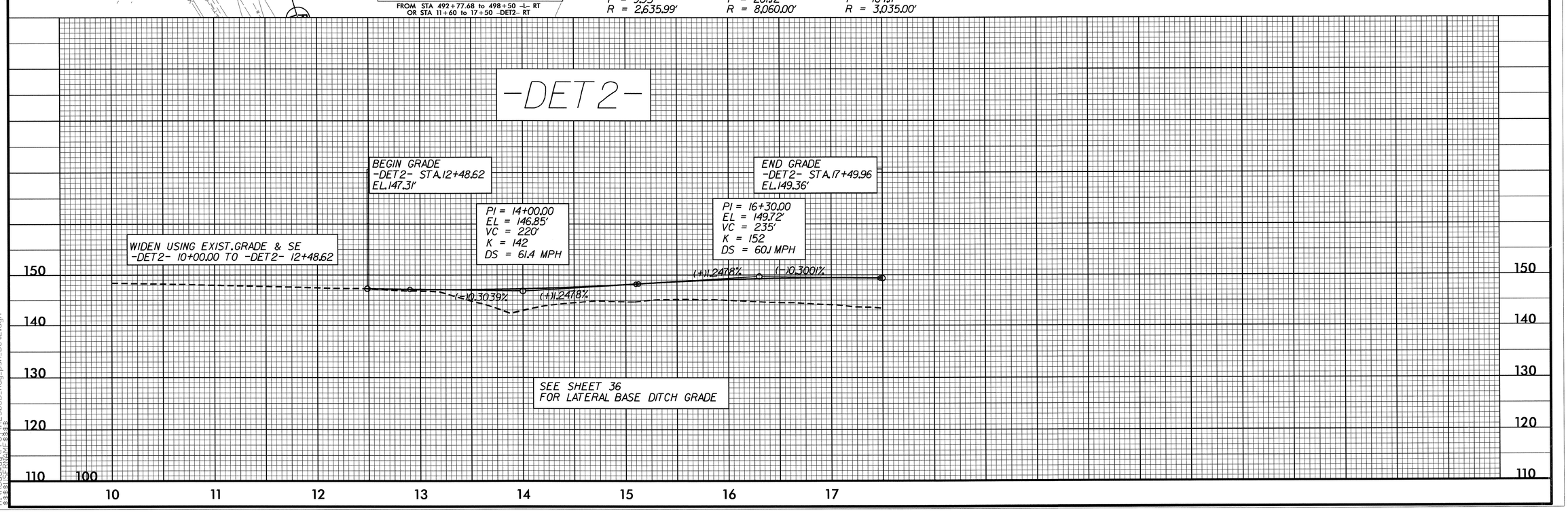
-DET2-

NAD 83/95



PI Sta 10+09.95	PI Sta 12+21.01	PI Sta 15+86.17
Δ = 0° 25' 56.5" (LT)	Δ = 2° 51' 31.8" (RT)	Δ = 6° 11' 25.4" (LT)
D = 2° 10' 24.9"	D = 0° 42' 39.1"	D = 1° 53' 16.2"
L = 19.89'	L = 402.16'	L = 327.91'
T = 9.95'	T = 201.12'	T = 164.11'
R = 2,635.99'	R = 8,060.00'	R = 3,035.00'

-DET2-



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PROJECT REFERENCE NO.	SHEET NO.
R-2303B	2-J
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 25873 ENGINEER GARY R. LOVERING — 2-13-13

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 18721 ENGINEER WILLIAM ELAM — 2-14-13

PHASE 1 – CONSTRUCTING DETOUR
PHASE 2 – CONSTRUCTING –L– LT

DITCH LEGEND	
LEFT DITCH	–·–·–·–
RIGHT DITCH	----------

DETAIL R (–L–)
SPECIAL LATERAL 'V' DITCH
(Not to Scale)

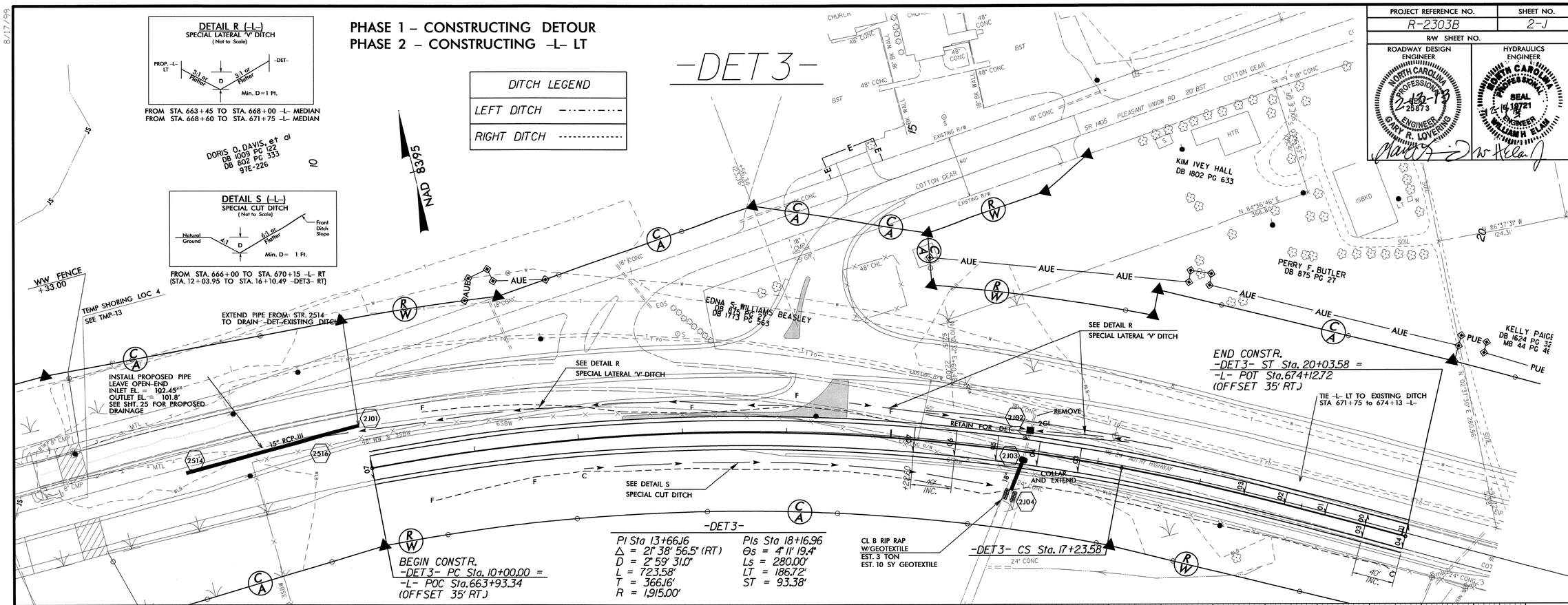
PROP. –L– LT; 3:1 or Flatter; D; 3:1 or Flatter; –DET–; Min. D=1 Ft.

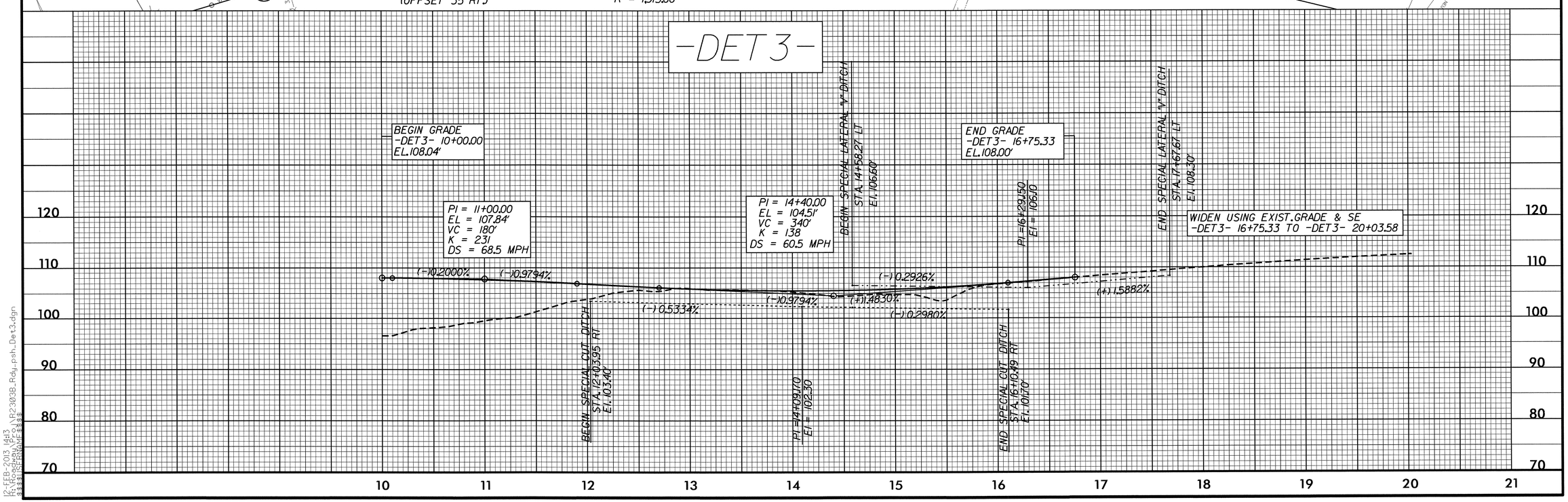
FROM STA. 663+45 TO STA. 668+00 –L– MEDIAN
FROM STA. 668+60 TO STA. 671+75 –L– MEDIAN

DETAIL S (–L–)
SPECIAL CUT DITCH
(Not to Scale)

Natural Ground; 4:1; D; 6:1 or Flatter; Front Ditch Slope; Min. D= 1 Ft.

FROM STA. 666+00 TO STA. 670+15 –L– RT
(STA. 12+03.95 TO STA. 16+10.49 –DET3– RT)





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PROJECT REFERENCE NO.	SHEET NO.
R-2303B	2-K
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 25873 ENGINEER GARY R. LOVERING 2-14-13

NORTH CAROLINA PROFESSIONAL SEAL 16721 ENGINEER WILLIAM H. ELAM 2-14-13

DITCH LEGEND

LEFT DITCH —·—·—·—

DETAIL 1 (R-2303C -L-)
SPECIAL CUT DITCH
(Not to Scale)
Natural Ground, 3:1, D, 4:1 or Flatter, Front Ditch Slope
Min. D = 1 Ft.
FROM STA. 10+00 TO STA. 14+55 -DET- LT

DETAIL B (-L-)
SPECIAL CUT DITCH
(Not to Scale)
Natural Ground, 2:1-4:1, D, 4:1 or Flatter, Front Ditch Slope
Min. D = 1.0 Ft.
FROM STA. 14+91 TO STA. 16+88 -DET- LT

-DET4-

NAD 83/95

BEGIN CONST.
-DET4- POT Sta. 10+00.00 =
-L- POT Sta.730+10.00
(OFFSET 35' LT)

-DET4-
PI Sta 13+64.20
Δ = 8° 14' 25.4" (RT)
D = 1° 41' 24.5"
L = 487.56'
T = 244.20'
R = 3,390.00'

PI Sta 18+51.76
Δ = 8° 14' 25.4" (LT)
D = 1° 41' 24.5"
L = 487.56'
T = 244.20'
R = 3,390.00'

-DET4- PC Sta. 11+20.00

-DET4- PRC Sta. 16+07.56

LATERAL 'V' DITCH
SEE DETAIL 1 (R-2303C -L-)

PREFORMED SCOUR HOLE
OUTLET PROTECTION
CLASS 'B' RIP RAP
EST 8 TONS
EST 16 SY FF
EST 25 SY PSRM
SEE DETAIL 2 (R-2303C -L-)
SHEET 2-H

END CONST.
-DET4- PT Sta. 20+95.11 =
-L- POT Sta.740+10.97.62
(OFFSET 48.80' RT)

NANCY T. FAIRCLOTH
DB 1347 PG 819

HUBERT AUTRY HEIRS
WB 88-E-17
DB 559 PG 508

HUBERT AUTRY HEIRS
WB 88-E-17
DB 559 PG 508
MB 71 PG 85

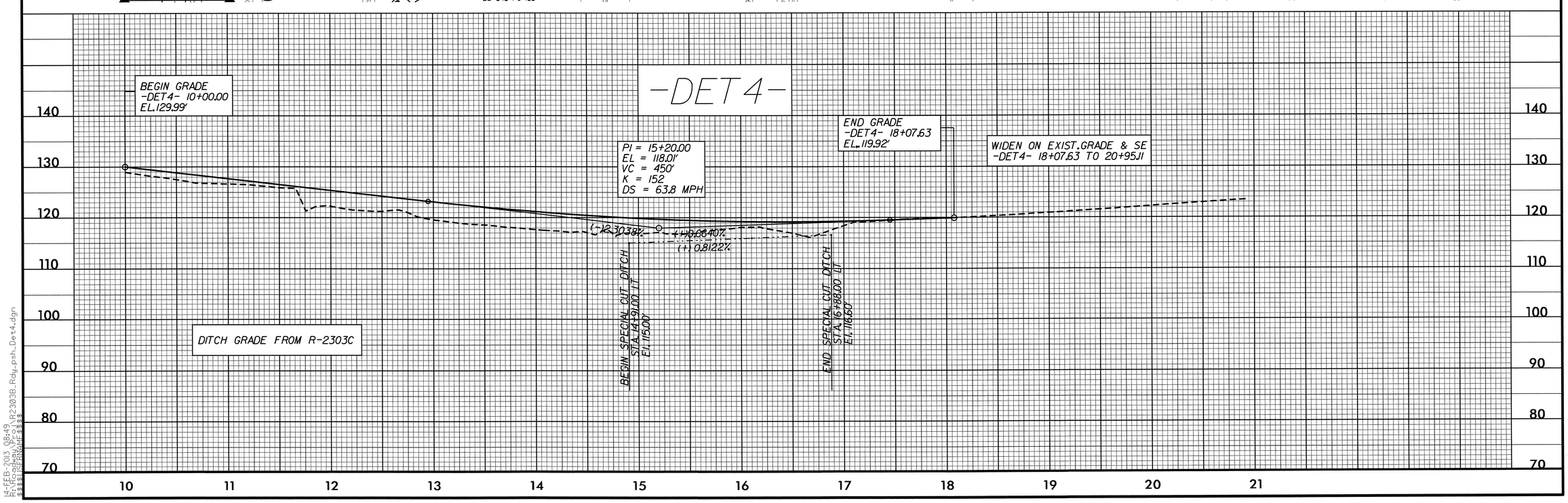
JAMES FRANKLIN BUTLER JR.
DB 1334 PG 001

N.C. NATURAL GAS CORP.
DB 895 PG 565

MARGIE L. LOCKWOOD
DB 802 PG 750
DB 907 PG 650
DB 845 PG 183

CLEVELAND GODBOLD, ET UX
DB 862 PG 168
DB 992 PG 285

ACCESS POINT
TIE IN EXISTING DITCH
SEE DETAIL B
SPECIAL CUT DITCH
PSH
PDE
PUE
DUE
WW FENCE
NC 24 AUTRY HWY 24' BST
NC 24 AUTRY HIGHWAY
S 69° 33' 44.4" E



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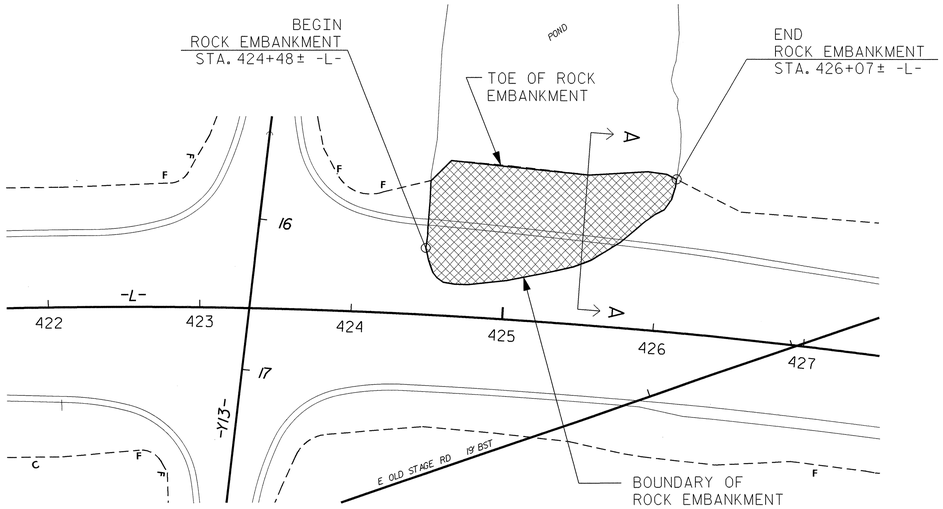
PROJECT REFERENCE NO.	SHEET
R-2303B	2-L

GEOTECHNICAL ENGINEER

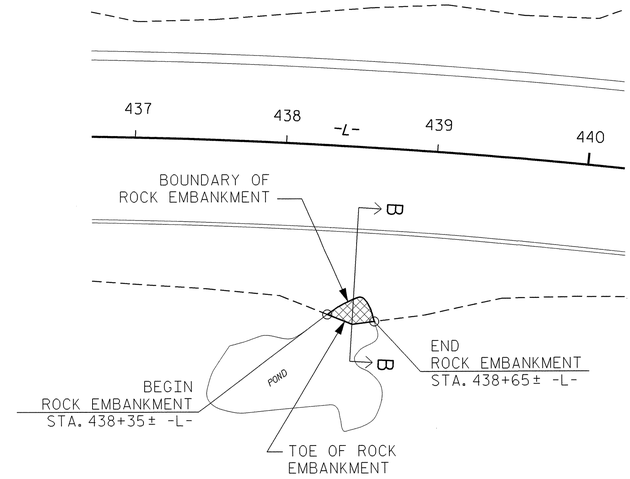
ENGINEER

SIGNATURE DATE SIGNATURE DATE



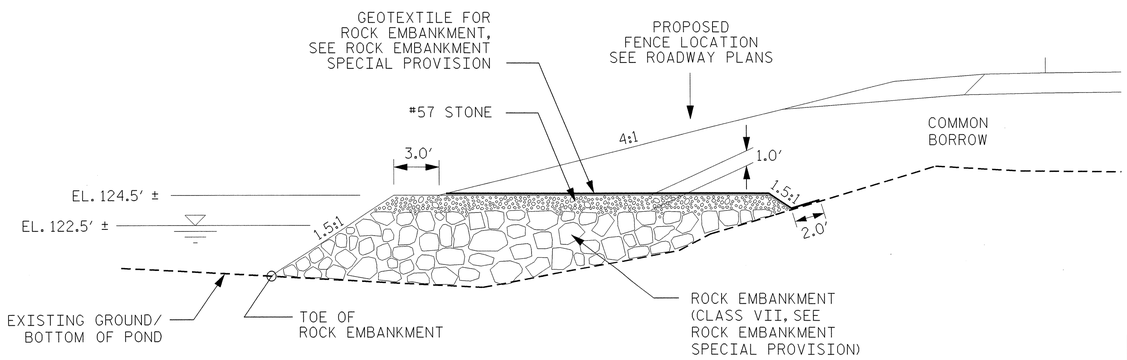
PLAN VIEW

NOT TO SCALE



ROCK EMBANKMENT AREA

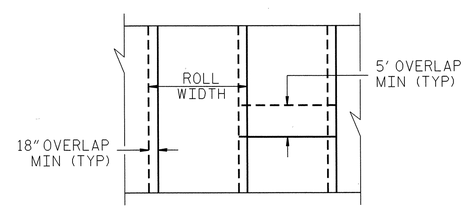
ROCK EMBANKMENT STATIONS		
BEGIN	END	LOCATION
424+48± -L-	426+07± -L-	LEFT
438+35± -L-	438+65± -L-	RIGHT



ROCK EMBANKMENT TYPICAL SECTION A-A

NOT TO SCALE

ESTIMATED QUANTITIES	
ROCK EMBANKMENTS	1,800 TONS
#57 STONE	950 TONS
GEOTEXTILE FOR ROCK EMBANKMENTS	1,050 SY



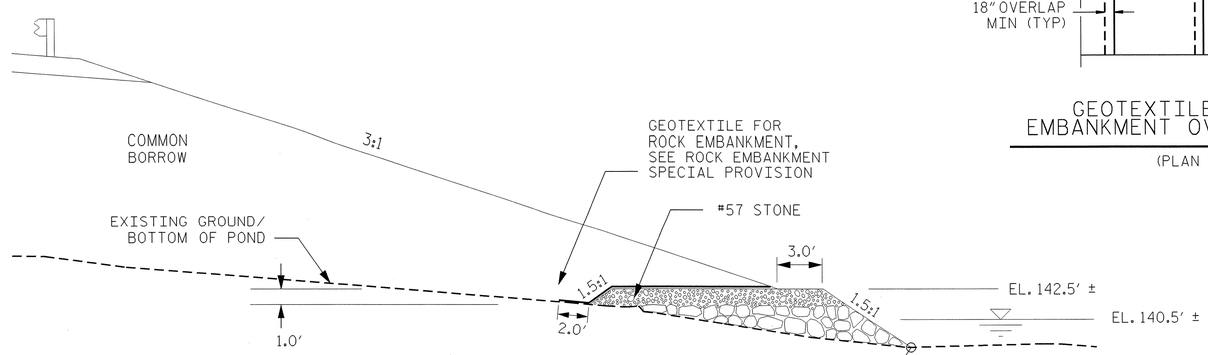
GEOTEXTILE FOR ROCK EMBANKMENT OVERLAP DETAIL

(PLAN VIEW)

FOR ROCK EMBANKMENT, SEE ROCK EMBANKMENTS SPECIAL PROVISION.

THE ESTIMATED QUANTITIES OF ROCK EMBANKMENTS INCLUDE ADDITIONAL TONNAGE FOR THE ANTICIPATED SETTLEMENT OF ROCK EMBANKMENTS.

THE ESTIMATED QUANTITIES OF #57 STONE INCLUDE ADDITIONAL TONNAGE FOR FOR FILLING OF GAPS BETWEEN CLASS VII AND EXCAVATION FOR FENCE POST, IF NECESSARY.



ROCK EMBANKMENT TYPICAL SECTION B-B

NOT TO SCALE

PREPARED BY: J. PARK	DATE: 08/2012
REVIEWED BY: J. BATTS	DATE: 08/2012

GEOTECHNICAL ENGINEERING UNIT

☐ EASTERN REGIONAL OFFICE
☐ WESTERN REGIONAL OFFICE
☐ CONTRACT OFFICE

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

ROCK EMBANKMENT DETAILS

REVISIONS

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

GEJ248334 12/6/2012 R2303B_GEO_RDWY_Add_RockEmb_Plan jpark RD-Oce860-34

PROJ. REFERENCE NO.	SHEET NO.
R-2303B	2-M

GENERAL NOTES:

USE CLASS "B" CONCRETE THROUGHOUT.

PROVIDE ALL DROP INLETS OVER 3'-6" IN DEPTH WITH STEPS 12" ON CENTER. USE STEPS WHICH COMPLY WITH STD. DRAWING 840.66.

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

USE FORMS FOR THE CONSTRUCTION OF THE BOTTOM SLAB.

IF REINFORCED CONCRETE PIPE IS SET IN BOTTOM SLAB OF BOX, ADD TO SLAB AS SHOWN ON STD. NO. 840.00.

CONSTRUCT WITH PIPE CROWNS MATCHING.

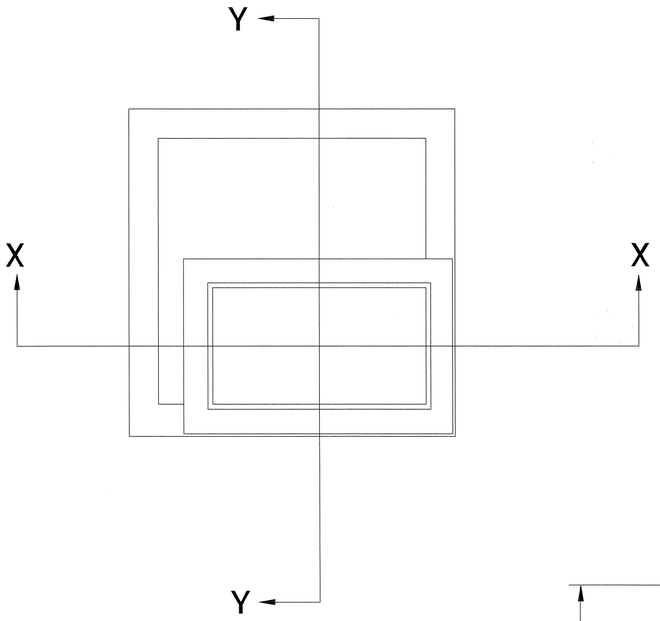
INSTALL 2" WEEPHOLES AS DIRECTED BY THE ENGINEER.

INSTALL STONE DRAINS, OF A MINIMUM OF 1 CUBIC FOOT OF NO. 78M STONE IN A POROUS FABRIC BAG OR WRAP, AT EACH WEEP HOLE OR AS DIRECTED BY THE ENGINEER.

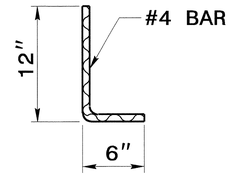
CHAMFER ALL EXPOSED CORNERS 1".

DRAWING NOT TO SCALE.

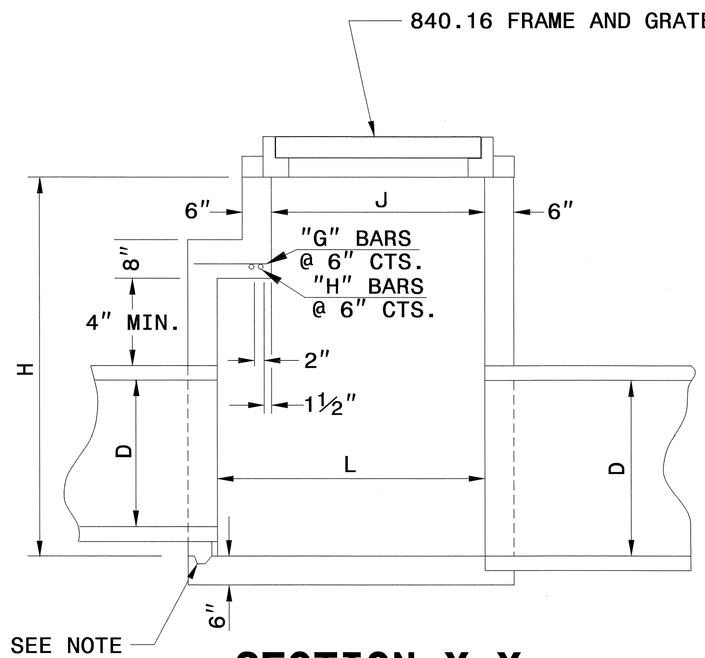
DIMENSIONS MAY BE FIELD ADJUSTED AS DIRECTED BY THE ENGINEER.



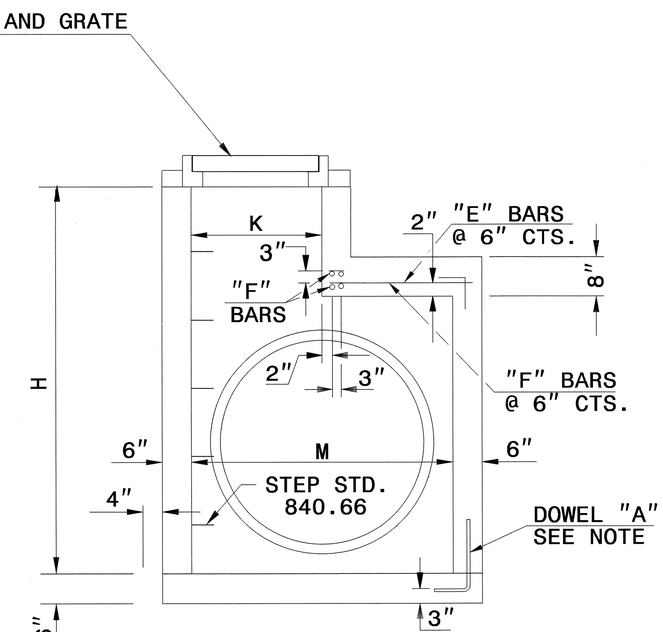
PLAN



DOWEL



SECTION X-X



SECTION Y-Y

MIN. DIMENSIONS AND QUANTITIES FOR CONCRETE DROP INLET(BASED ON MIN. HEIGHT, H)

DIMENSIONS OF BOX AND PIPE						REINFORCING STEEL - NO. 4 BARS									CU YDS CONC. IN BOX				DEDUCTIONS FOR ONE PIPE	
PIPE	SPAN	WIDTH	SPAN	WIDTH	HEIGHT	BARS E		BARS F		BARS G		BARS H		TOTAL	BOTTOM SLAB	H TOTAL	H PER FT HT	TOTAL		
D	J	K	L	M	H	NO.	LENGTH	NO.	LENGTH	NO.	LENGTH	NO.	LENGTH	LBS.					C.S.	R.C.
12"	3'-0"	2'-0"	3'-8"	2'-0"	3'-9"	—	—	—	—	—	—	—	—	—	0.362	0.926	0.247	1.288	0.015	0.024
15"	3'-0"	2'-0"	3'-8"	2'-0"	4'-0"	—	—	—	—	—	—	—	—	—	0.362	0.988	0.247	1.350	0.023	0.036
18"				2'-0"	4'-3"	—	—	—	—	—	—	—	—	—	0.362	1.050	0.247	1.412	0.033	0.049
24"				2'-10"	4'-9"	8	1'-5"	6	4'-9"	—	—	—	—	27	0.444	1.362	0.278	1.806	0.059	0.085
30"			3'-8"	3'-5"	5'-3"	8	2'-0"	7	4'-9"	—	—	—	—	33	0.502	1.644	0.288	2.146	0.092	0.127
36"			4'-0"	4'-0"	5'-9"	8	2'-5"	8	4'-11"	4	0'-9"	2	4'-11"	47	0.560	1.931	0.321	2.525	0.132	0.178
42"			4'-10"	4'-10"	6'-3"	10	3'-1"	9	5'-7"		1'-5"	3	5'-7"	67	0.704	2.500	0.370	3.282	0.180	0.243
48"			5'-4"	5'-4"	6'-9"	11	3'-7"	10	6'-1"		1'-11"	4	6'-1"	87	0.823	3.013	0.407	3.920	0.235	0.317
54"			6'-0"	6'-0"	7'-3"	12	4'-1"	11	6'-7"		2'-5"	5	6'-7"	107	0.951	3.589	0.444	4.677	0.297	0.401
60"			6'-6"	6'-6"	7'-9"	13	4'-9"	12	7'-3"		3'-1"	6	7'-3"	135	1.311	4.539	0.494	5.775	0.367	0.495
66"			7'-2"	7'-2"	8'-3"	14	5'-4"	14	7'-10"		3'-7"	7	7'-10"	168	1.136	5.061	0.537	6.506	0.444	0.599
72"	3'-0"	2'-0"	7'-8"	7'-8"	8'-9"	15	5'-11"	15	8'-5"	4	4'-3"	8	8'-5"	199	1.500	5.860	0.580	7.473	0.528	0.713

NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER
3/1/13

STR. NOS. 2808, 2809, 2905, 0505, 0520

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

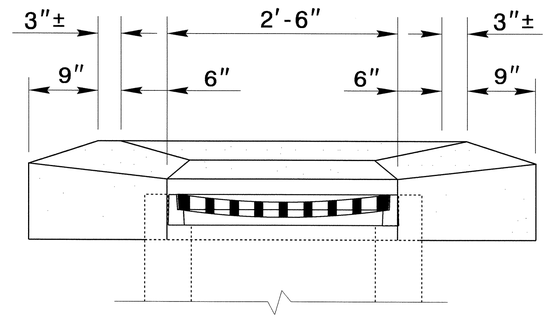
SPECIAL DI

ORIGINAL BY: rnbritt DATE: 05-15-09
MODIFIED BY: rnbritt DATE: 08-25-09
CHECKED BY: [signature] DATE: 1/14/13
FILE SPEC.: detail/nbritt/english/interstate/i5010di30-18rcp.dgn

PROJECT REFERENCE NO.	SHEET NO.
R-2303B	2-N

GENERAL NOTES:
REFER TO RDWY. STD. DWG. NO. 852.01 FOR CONCRETE ISLAND CONSTRUCTION.

INSTALL GRATE AND FRAME IN POSITION AS DIRECTED BY THE ENGINEER. CUT AND BEND ALL REBAR CROSSING THIS OPENING TO ALLOW 2" MINIMUM CONCRETE COVERAGE.



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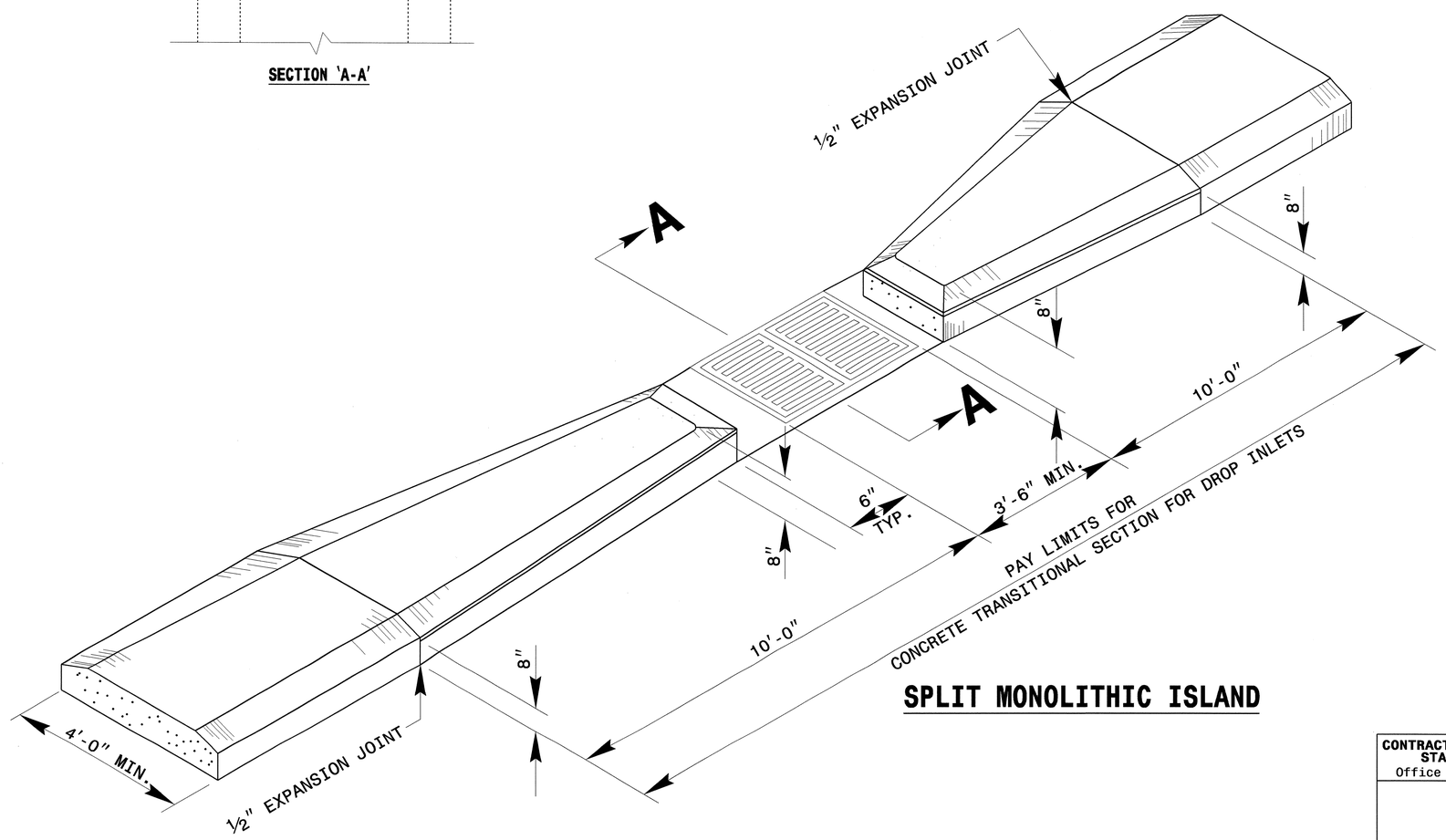


SPLIT MONOLITHIC ISLAND

NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER JOEL S. HONEYCUTT 3/1/13

STRUCTURE NUMBERS, 0505, 1001 & 2005

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

SPECIAL SPLIT MONOLITHIC ISLAND

ORIGINAL BY: nbritt DATE: 07/31/12
MODIFIED BY: nbritt DATE: 03/01/13
CHECKED BY: DATE:
FILE SPEC.: special details/nbritt/english/rural/r2303a specialdi.dgn

PROJECT REFERENCE NO.	SHEET
R-2303B	2-0

GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 022246 ENGINEER SCOTT A. HIDDEN

Scott A. Hidden 8/10/12

SIGNATURE DATE

ENGINEER

SIGNATURE DATE

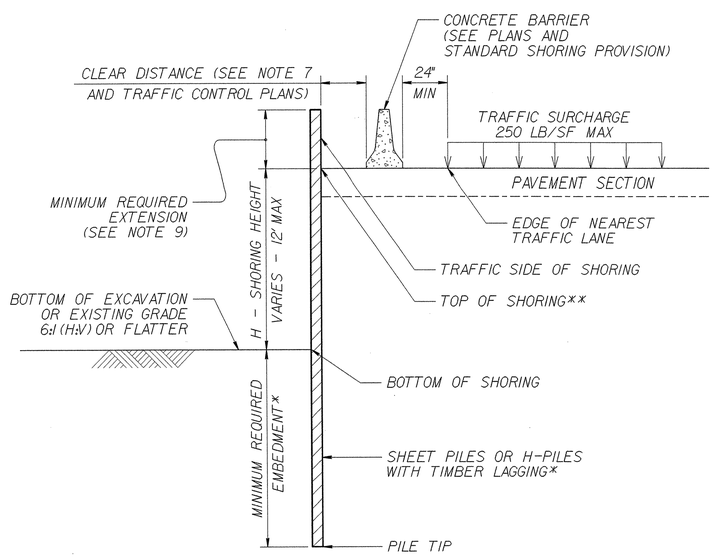
GROUNDWATER CONDITION (SEE NOTE 6)	H SHORING HEIGHT (FT)	SLOPE OR SURCHARGE CASE WITH NO TRAFFIC IMPACT					SURCHARGE CASE WITH TRAFFIC IMPACT				
		SHEET PILES		H-PILES WITH TIMBER LAGGING			SHEET PILES		H-PILES WITH TIMBER LAGGING		
		MINIMUM REQUIRED EMBEDMENT (FT)	MINIMUM REQUIRED SECTION MODULUS (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 "--".**

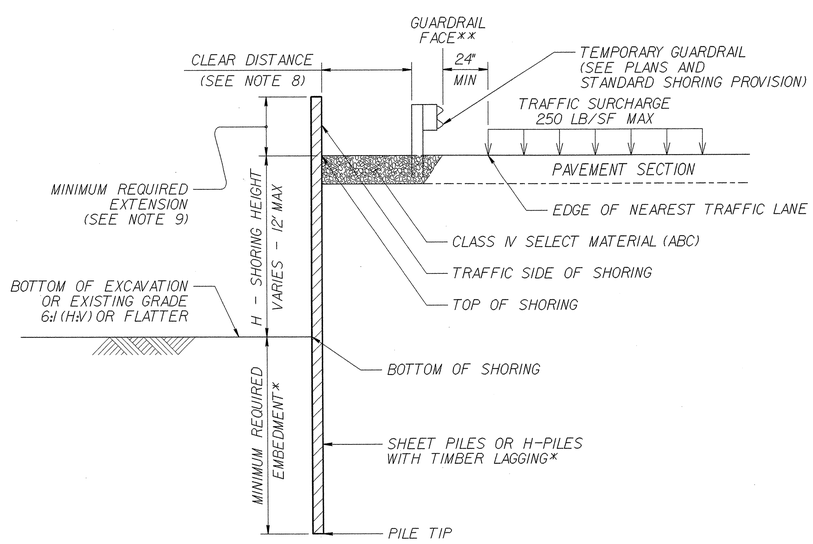
NOTES:

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.



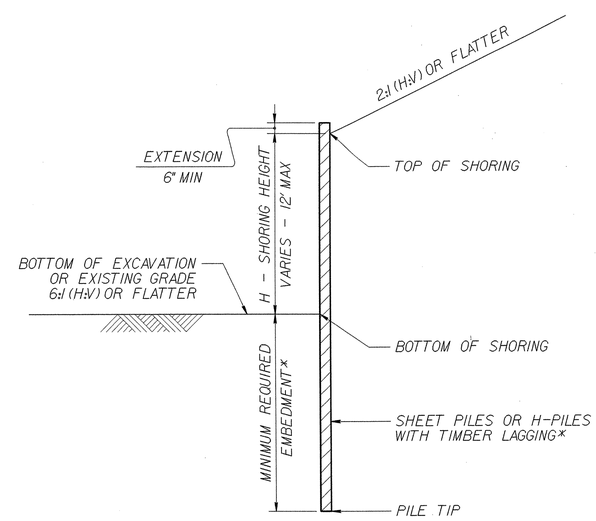
CONCRETE BARRIER

****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: 11-20-12

PROJECT REFERENCE NO.	SHEET
R-2303B	2-P

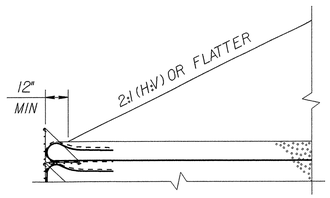
GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 022246 ENGINEER SCOTT A. HIDDEN

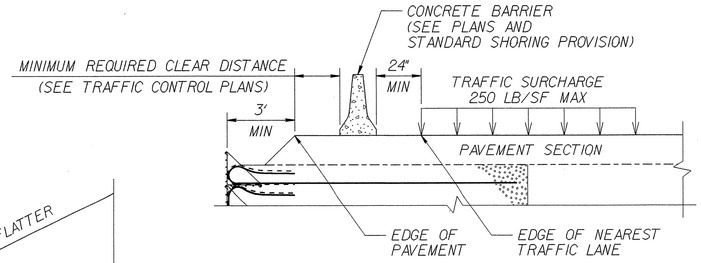
Scott A. Hidden 8/10/12
SIGNATURE DATE

ENGINEER

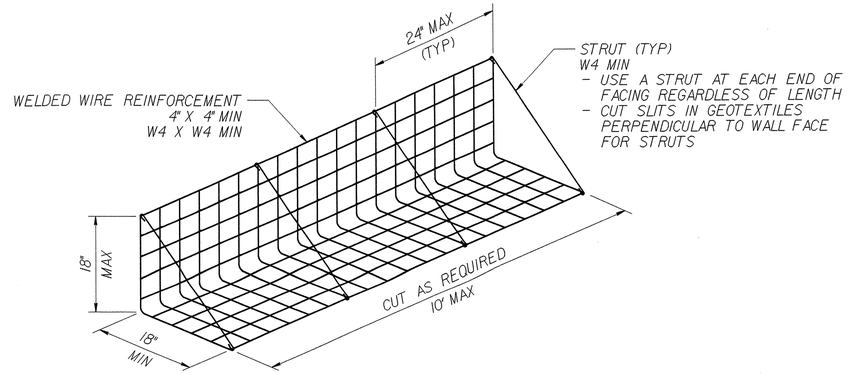
SIGNATURE DATE



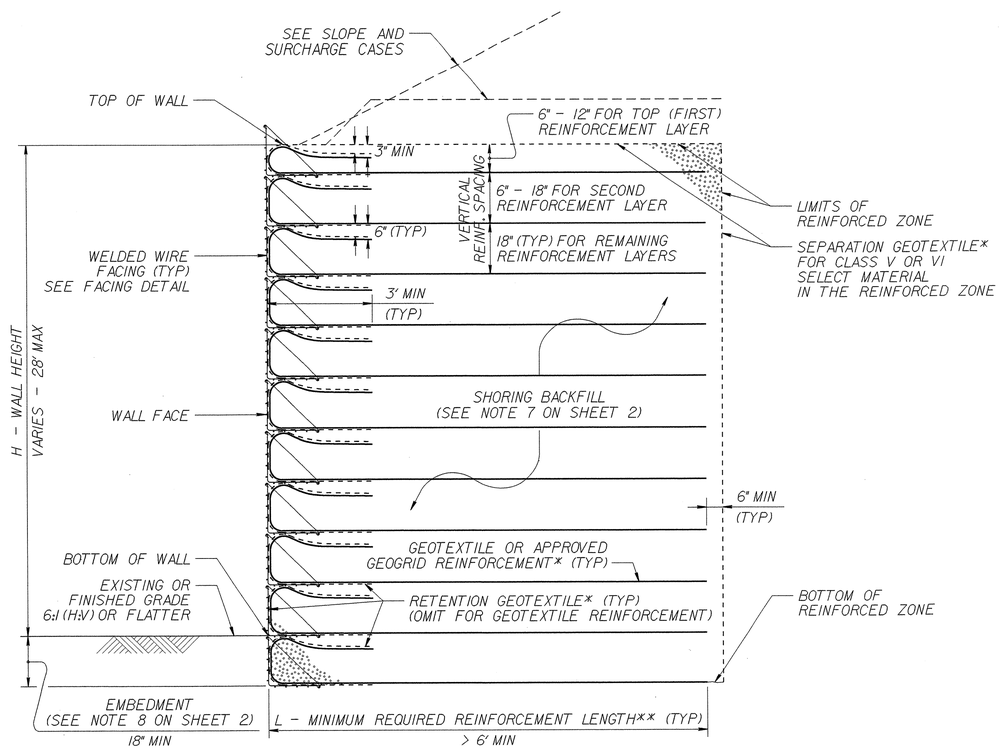
SLOPE CASE



SURCHARGE CASE

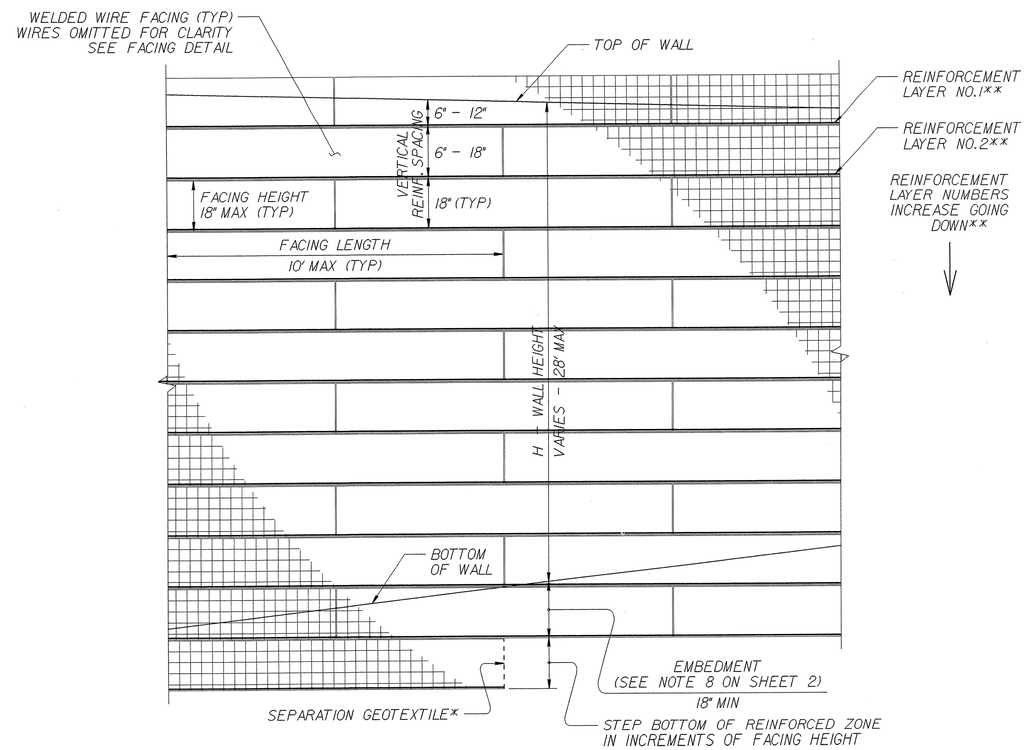


FACING DETAIL



STANDARD TEMPORARY WALL

(FOR STANDARD TEMPORARY WALLS ON STRUCTURES, SEE TEMPORARY WALL ON STRUCTURE DETAIL ON SHEET 2.)
*SEE GEOSYNTHETIC PLACEMENT DETAILS ON SHEET 2.
**SEE REINFORCEMENT TABLES ON SHEET 3.



STANDARD TEMPORARY WALL – PARTIAL ELEVATION

*SEE GEOSYNTHETIC PLACEMENT DETAILS ON SHEET 2.
**SEE REINFORCEMENT TABLES ON SHEET 3.

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

GEOTECHNICAL ENGINEERING UNIT

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH

STANDARD DRAWING NO. 1801.02

STANDARD TEMPORARY WALL
Sheet 1 of 3

DATE: 11-20-12

PROJECT REFERENCE NO.	SHEET
R-2303B	2-Q

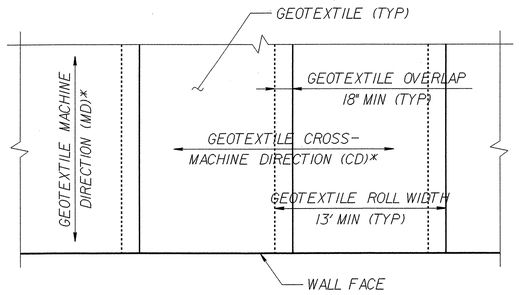
GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 022246 ENGINEER SCOTT A. HIDDEN

Scott A. Hidden 8/10/12
SIGNATURE DATE

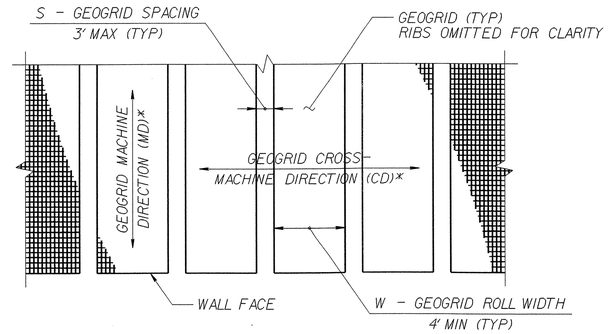
ENGINEER

SIGNATURE DATE



GEOTEXTILE PLACEMENT

(100% COVERAGE MIN FOR GEOTEXTILE REINFORCEMENT)

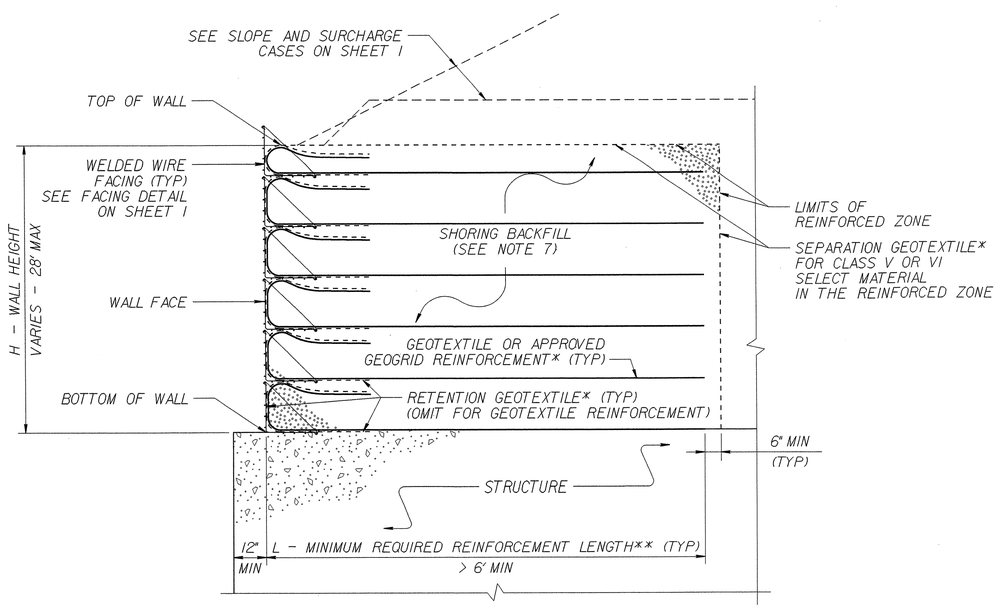


GEOGRID PLACEMENT

(80% COVERAGE MIN FOR GEOGRID REINFORCEMENT – $\frac{W}{W+S} \times 100 \geq 80\%$, SEE NOTE 11)

GEOSYNTHETIC PLACEMENT DETAILS

(PLAN VIEW)
***SEE NOTE 12.**



TEMPORARY WALL ON STRUCTURE DETAIL

***SEE GEOSYNTHETIC PLACEMENT DETAILS.**
****SEE REINFORCEMENT TABLES ON SHEET 3.**

NOTES:

1. AT THE CONTRACTOR'S OPTION, USE STANDARD TEMPORARY WALLS AS NOTED IN THE PLANS.
2. FOR STANDARD TEMPORARY WALLS, SEE STANDARD SHORING PROVISION.
3. STANDARD TEMPORARY WALLS ARE 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 WALLS IF ASSUMED SOIL PARAMETERS ARE NOT APPLICABLE.
5. DO NOT USE STANDARD TEMPORARY WALLS WHEN VERY LOOSE OR SOFT SOIL OR MUCK IS BELOW TEMPORARY WALLS.
6. USE GROUNDWATER ELEVATION NOTED IN THE PLANS. IF NO GROUNDWATER ELEVATION IS SHOWN IN THE PLANS, ASSUME GROUNDWATER DEPTH IS LESS THAN 7' BELOW BOTTOM OF REINFORCED ZONE. DO NOT USE STANDARD TEMPORARY WALLS IF GROUNDWATER IS ABOVE BOTTOM OF REINFORCED ZONE.
7. DO NOT USE A-2-4 SOIL FOR STANDARD TEMPORARY WALLS AROUND CULVERTS OR IN THE REINFORCED ZONE OF STANDARD TEMPORARY WALLS FOR SLOPE CASES. DO NOT USE CLASS VI SELECT MATERIAL IN THE REINFORCED ZONE OF STANDARD TEMPORARY WALLS WITH GEOTEXTILE REINFORCEMENT.
8. EMBEDMENT IS NOT REQUIRED FOR STANDARD TEMPORARY WALLS ON STRUCTURES OR ROCK AS DETERMINED BY THE ENGINEER.
9. DO NOT USE MORE THAN 4 DIFFERENT REINFORCEMENT STRENGTHS FOR EACH STANDARD TEMPORARY WALL.
10. GEOGRIDS ARE APPROVED FOR SHORT-TERM DESIGN STRENGTHS FOR A 3-YEAR DESIGN LIFE IN THE MACHINE DIRECTION (MD) AND CROSS-MACHINE DIRECTION (CD) BASED ON MATERIAL TYPE. FOR DETAILS OF APPROVED GEOGRIDS AND SHORT-TERM DESIGN STRENGTHS, SEE www.ncdot.org/doh/operations/materials/soils/gep.html
    DEFINE MATERIAL TYPE FROM THE WEBSITE ABOVE FOR SHORING BACKFILL AS FOLLOWS:

MATERIAL TYPE	SHORING BACKFILL
BORROW	A-2-4 SOIL
FINE AGGREGATE	CLASS II, TYPE I OR CLASS III SELECT MATERIAL
COARSE AGGREGATE	CLASS V OR VI SELECT MATERIAL

11. FOR GEOGRID REINFORCEMENT WITH LESS THAN 100% COVERAGE, STAGGER REINFORCEMENT SO GEOGRIDS ARE CENTERED OVER GAPS IN THE REINFORCEMENT LAYER BELOW.
12. AT THE CONTRACTOR'S OPTION, REINFORCEMENT MAY BE INSTALLED WITH THE MD PARALLEL TO THE WALL FACE IF BOTH THE FOLLOWING CONDITIONS OCCUR:
    - W (REINFORCEMENT ROLL WIDTH) ≥ L (MINIMUM REQUIRED REINFORCEMENT LENGTH) + 4.5' AND
    - REINFORCEMENT STRENGTH IN CD ≥ MINIMUM REQUIRED REINFORCEMENT STRENGTH IN MD.
13. SUBMIT A "STANDARD TEMPORARY WALL SELECTION FORM" AT LEAST 7 DAYS BEFORE STARTING TEMPORARY WALL CONSTRUCTION.
14. DO NOT PLACE SHORING BACKFILL OR REINFORCEMENT UNTIL EXCAVATION DIMENSIONS AND FOUNDATION MATERIAL ARE APPROVED.
15. FOR STANDARD TEMPORARY WALLS WITH PILE FOUNDATIONS IN THE REINFORCED ZONE, DRIVE PILES THROUGH REINFORCEMENT AFTER CONSTRUCTING TEMPORARY WALLS.
16. DO NOT SPLICE OR OVERLAP REINFORCEMENT SO SEAMS ARE PARALLEL TO THE WALL FACE.
17. CONTACT THE ENGINEER WHEN EXISTING OR FUTURE OBSTRUCTIONS SUCH AS FOUNDATIONS, PAVEMENTS, PIPES, INLETS OR UTILITIES WILL INTERFERE WITH REINFORCEMENT.
18. FOR STANDARD TEMPORARY WALLS WITH INTERIOR ANGLES LESS THAN 90 DEGREES, WRAP GEOSYNTHETICS AT ACUTE CORNERS AS DIRECTED BY THE ENGINEER.
19. FOR STANDARD TEMPORARY WALLS WITH TOP OF WALL WITHIN 5' OF FINISHED GRADE, REMOVE TOP FACING AND INCORPORATE TOP REINFORCEMENT LAYER INTO FILL WHEN PLACING FILL IN FRONT OF WALL.

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

GEOTECHNICAL ENGINEERING UNIT

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD DRAWING NO. 1801.02

STANDARD
TEMPORARY WALL
Sheet 2 of 3

DATE: 11-20-12

PROJECT REFERENCE NO.	SHEET
R-2303B	2-R

GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 022246 ENGINEER SCOTT A. HIDDEN

Scott A. Hidden 8/10/12
SIGNATURE DATE

ENGINEER

SIGNATURE DATE

SLOPE OR SURCHARGE CASE	GROUNDWATER DEPTH BELOW BOTTOM OF REINFORCED ZONE (SEE NOTE 6 ON SHEET 2) (FT)	SHORING BACKFILL TYPE IN THE REINFORCED ZONE (SEE NOTE 7 ON SHEET 2)	H - WALL HEIGHT (FT)																								
			< 4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
SLOPE CASE	> 0	CLASS II,TYPE I, CLASS III,CLASS V OR CLASS VI SELECT MATERIAL	6	6	7	8	9	11	12	13	13	14	15	16	17	18	19	20	21	22	23	24	24	25	26	27	27
SURCHARGE CASE	> 0 TO 7 FOR H < 20′ > 0 TO 10 FOR H ≥ 20′	ALL SHORING BACKFILL TYPES	6	7	7	8	8	9	9	10	11	11	12	12	13	14	14	15	16	17	17	18	19	19	20	21	22
	> 7 FOR H < 20′ > 10 FOR H ≥ 20′	A-2-4 SOIL	6	6	7	8	8	9	9	10	11	11	12	12	13	14	14	15	16	16	17	18	18	19	20	20	21
		CLASS II,TYPE I OR CLASS III SELECT MATERIAL	6	6	7	7	8	8	9	10	10	11	11	12	12	13	14	15	15	16	16	17	17	18	18	19	20
		CLASS V OR CLASS VI SELECT MATERIAL	6	6	7	7	7	8	8	9	9	10	10	11	12	13	13	14	14	15	15	16	17	17	18	19	19

L – MINIMUM REQUIRED REINFORCEMENT LENGTH (FT)

(FOR ALL REINFORCEMENT TYPES)

WALL HEIGHT (H) + EMBEDMENT (FT)	NUMBER OF REINFORCEMENT LAYERS*
2.5 - 4	3
4 - 5.5	4
5.5 - 7	5
7 - 8.5	6
8.5 - 10	7
10 - 11.5	8
11.5 - 13	9
13 - 14.5	10
14.5 - 16	11
16 - 17.5	12
17.5 - 19	13
19 - 20.5	14
20.5 - 22	15
22 - 23.5	16
23.5 - 25	17
25 - 26.5	18
26.5 - 28	19
28 - 29.5	20

*BASED ON VERTICAL REINFORCEMENT SPACING SHOWN ON SHEET 1.

REINFORCEMENT LAYER NUMBER*	SHORING BACKFILL TYPE IN THE REINFORCED ZONE (SEE NOTE 7 ON SHEET 2)				
	SLOPE CASE		SURCHARGE CASE		
	CLASS II,TYPE I OR CLASS III SELECT MATERIAL	CLASS V SELECT MATERIAL	A-2-4 SOIL	CLASS II,TYPE I OR CLASS III SELECT MATERIAL	CLASS V SELECT MATERIAL
1	2400	2400	2400	2400	2400
2	2400	2400	2400	2400	2400
3	2400	2400	2400	2400	2400
4	2400	2400	2500	2400	2400
5	2500	2400	3000	2400	2400
6	3000	2400	3500	2800	2400
7	3500	2700	4000	3200	2600
8	4000	3100	4500	3600	2900
9	4500	3500	5000	4000	3200
10	5000	3900	5500	4400	3500
11	5500	4300	6000	4800	3800
12	6000	4700	6500	5200	4100
13	6500	5100	7000	5600	4400
14	7000	5400	7500	6000	4700
15	7500	5800	8000	6400	5000
16	8000	6200	8500	6800	5300
17	8500	6600	9000	7200	5600
18	9000	7000	9500	7600	5900
19	9500	7400	10000	8000	6200
20	10000	7800	10500	8400	6500

GEOTEXTILE REINFORCEMENT
ULTIMATE TENSILE STRENGTH (LB/FT)

REINFORCEMENT LAYER NUMBER*	SHORING BACKFILL TYPE IN THE REINFORCED ZONE (SEE NOTE 7 ON SHEET 2)				
	SLOPE CASE		SURCHARGE CASE		
	CLASS II,TYPE I OR CLASS III SELECT MATERIAL	CLASS V OR CLASS VI SELECT MATERIAL	A-2-4 SOIL	CLASS II,TYPE I OR CLASS III SELECT MATERIAL	CLASS V OR CLASS VI SELECT MATERIAL
1	240	200	340	290	240
2	380	310	520	430	350
3	530	420	700	570	460
4	690	550	870	720	570
5	860	690	1050	860	680
6	1030	830	1220	1000	790
7	1200	970	1400	1150	900
8	1370	1110	1580	1290	1010
9	1550	1240	1750	1430	1120
10	1720	1380	1930	1580	1230
11	1890	1520	2100	1720	1340
12	2060	1660	2280	1860	1450
13	2240	1800	2450	2010	1560
14	2410	1940	2630	2150	1670
15	2580	2080	2800	2290	1780
16	2750	2220	2980	2440	1890
17	2930	2360	3160	2580	2000
18	3100	2500	3330	2720	2110
19	3270	2640	3510	2860	2220
20	3440	2780	3690	3000	2330

GEOGRID REINFORCEMENT
SHORT-TERM DESIGN STRENGTH (LB/FT)
(SEE NOTE 10 ON SHEET 2.)

MINIMUM REQUIRED REINFORCEMENT STRENGTH IN MD
(SEE NOTE 9 ON SHEET 2.)
*SEE PARTIAL ELEVATION ON SHEET 1
FOR REINFORCEMENT LAYER NUMBERING.

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

GEOTECHNICAL ENGINEERING UNIT

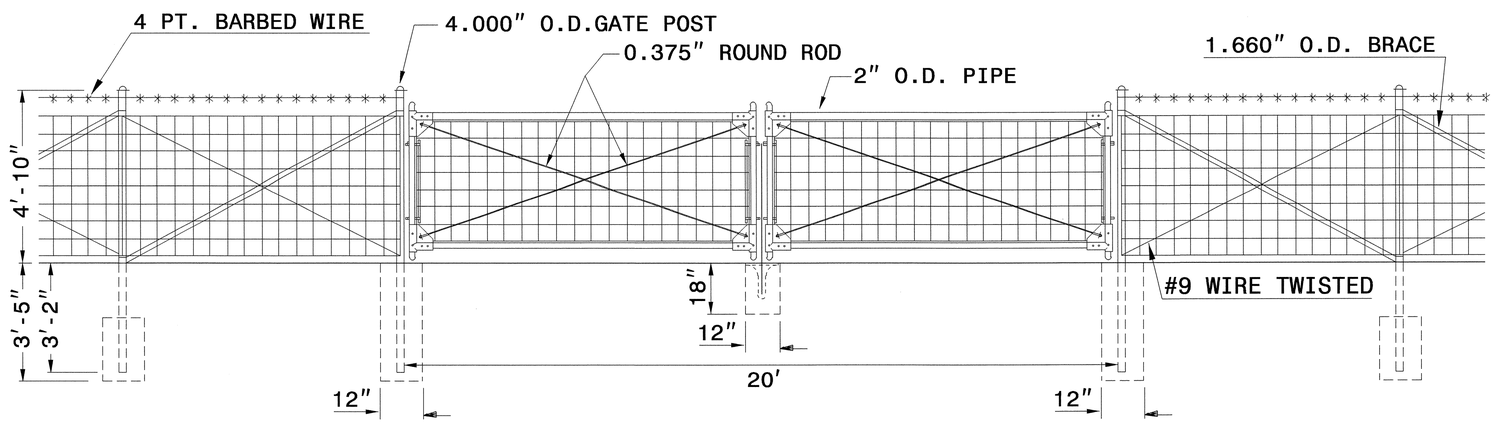
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD DRAWING NO. 1801.02

STANDARD
TEMPORARY WALL
Sheet 3 of 3

DATE: 11-20-12

PROJECT REFERENCE NO.	SHEET NO.
R-2303B	2-S



GENERAL NOTES:

CONSTRUCT FENCE GATE AS DETAILED AND, IN CONJUNCTION WITH ROADWAY STANDARD DRAWING 866.03
USE LATCH DEVICE APPROVED BY THE ENGINEER.
HINGE ASSEMBLY, AS DETAILED, IS SUGGESTED.
SUBSTITUTION MAY BE MADE SUBJECT TO THE APPROVAL OF THE ENGINEER.

NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER JOEL S. HAMILTON
3/1/13

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

20 FOOT WOVEN WIRE GATE

ORIGINAL BY: K KEMPF DATE: 2-8-13
MODIFIED BY: DATE:
CHECKED BY: DATE: 2/8/13
FILE SPEC.: KEMPF\ENGLISH\R2303B_866D0301.DGN

SYSTIME: USERNAME:

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SUMMARY OF QUANTITIES

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
ROADWAY SUMMARY OF QUANTITIES FOR CONTRACT - C203087

ItemNumber	Sec #	Quantity	Unit	Description
0000100000-N	800	Lump Sum		MOBILIZATION
0000400000-N	801	Lump Sum		CONSTRUCTION SURVEYING
0001000000-E	200	Lump Sum		CLEARING & GRUBBING .. ACRE(S)
0008000000-E	200	3	ACR	SUPPLEMENTARY CLEARING & GRUBBING
0015000000-N	205	12	EA	SEALING ABANDONED WELLS
0022000000-E	225	42,600	CY	UNCLASSIFIED EXCAVATION
0029000000-N	SP	Lump Sum		REINFORCED BRIDGE APPROACH FILL, STATION ********** (397+87.00 LEFT LANE)
0029000000-N	SP	Lump Sum		REINFORCED BRIDGE APPROACH FILL, STATION ********** (397+87.00 RIGHT LANE)
0029000000-N	SP	Lump Sum		REINFORCED BRIDGE APPROACH FILL, STATION ********** (660+21.00 LEFT LANE)
0029000000-N	SP	Lump Sum		REINFORCED BRIDGE APPROACH FILL, STATION ********** (660+21.00 RIGHT LANE)
0036000000-E	225	62,100	CY	UNDERCUT EXCAVATION
0106000000-E	230	983,600	CY	BORROW EXCAVATION
0134000000-E	240	18,700	CY	DRAINAGE DITCH EXCAVATION
0141000000-E	240	850	LF	BERM DITCH CONSTRUCTION
0156000000-E	250	41,500	SY	REMOVAL OF EXISTING ASPHALT PAVEMENT
0177000000-E	250	16,590	SY	BREAKING OF EXISTING ASPHALT PAVEMENT
0192000000-N	260	70	HR	PROOF ROLLING
0194000000-E	SP	65,500	CY	SELECT GRANULAR MATERIAL, CLASS III
0196000000-E	270	67,600	SY	GEOTEXTILE FOR SOIL STABILIZATION
0199000000-E	SP	2,473.3	SF	TEMPORARY SHORING
0220000000-E	SP	1,800	TON	ROCK EMBANKMENTS
0222000000-E	SP	1,050	SY	GEOTEXTILE FOR ROCK EMBANKMENTS
0318000000-E	300	2,530	TON	FOUNDATION CONDITIONING MATERIAL, MINOR STRUCTURES
0320000000-E	300	7,960	SY	FOUNDATION CONDITIONING GEOTEXTILE
0342000000-E	310	72	LF	**" SIDE DRAIN PIPE (30")
0343000000-E	310	976	LF	15" SIDE DRAIN PIPE
0344000000-E	310	651	LF	18" SIDE DRAIN PIPE
0345000000-E	310	820	LF	24" SIDE DRAIN PIPE
0348000000-E	310	4	EA	**" SIDE DRAIN PIPE ELBOWS (15")
0348000000-E	310	3	EA	**" SIDE DRAIN PIPE ELBOWS (18")
0366000000-E	310	4,836	LF	15" RC PIPE CULVERTS, CLASS III
0372000000-E	310	2,472	LF	18" RC PIPE CULVERTS, CLASS III
0378000000-E	310	2,996	LF	24" RC PIPE CULVERTS, CLASS III
0384000000-E	310	1,124	LF	30" RC PIPE CULVERTS, CLASS III
0390000000-E	310	204	LF	36" RC PIPE CULVERTS, CLASS III
0396000000-E	310	600	LF	42" RC PIPE CULVERTS, CLASS III
0402000000-E	310	796	LF	48" RC PIPE CULVERTS, CLASS III
0408000000-E	310	344	LF	54" RC PIPE CULVERTS, CLASS III
0420000000-E	310	176	LF	66" RC PIPE CULVERTS, CLASS III
0448000000-E	310	196	LF	****" RC PIPE CULVERTS, CLASS IV (48")
0448200000-E	310	4,204	LF	15" RC PIPE CULVERTS, CLASS IV
0448300000-E	310	1,184	LF	18" RC PIPE CULVERTS, CLASS IV
0448400000-E	310	564	LF	24" RC PIPE CULVERTS, CLASS IV
0448500000-E	310	1,160	LF	30" RC PIPE CULVERTS, CLASS IV
0448600000-E	310	192	LF	36" RC PIPE CULVERTS, CLASS IV
0453000000-E	310	4	EA	**" PIPE END SECTION (15")
0453000000-E	310	5	EA	**" PIPE END SECTION (18")
0453000000-E	310	2	EA	**" PIPE END SECTION (24")
0582000000-E	310	292	LF	15" CS PIPE CULVERTS, 0.064" THICK
0636000000-E	310	10	EA	**" CS PIPE ELBOWS, *****" THICK (15", 0.064")
0995000000-E	340	2,700	LF	PIPE REMOVAL
1011000000-N	500	Lump Sum		FINE GRADING
1077000000-E	SP	980	TON	#57 STONE
1110000000-E	510	20,000	TON	STABILIZER AGGREGATE
1115000000-E	SP	12,900	SY	GEOTEXTILE FOR PAVEMENT STABILIZATION
1121000000-E	520	178,910	TON	AGGREGATE BASE COURSE
1220000000-E	545	6,476	TON	INCIDENTAL STONE BASE
1275000000-E	600	123,000	GAL	PRIME COAT
1330000000-E	607	780	SY	INCIDENTAL MILLING
1489000000-E	610	1,530	TON	ASPHALT CONC BASE COURSE, TYPE B25.0B
1491000000-E	610	7,000	TON	ASPHALT CONC BASE COURSE, TYPE B25.0C
1503000000-E	610	54,290	TON	ASPHALT CONC INTERMEDIATE COURSE, TYPE I19.0C
1523000000-E	610	54,000	TON	ASPHALT CONC SURFACE COURSE, TYPE S9.5C
1525000000-E	610	2,080	TON	ASPHALT CONC SURFACE COURSE, TYPE SF9.5A
1575000000-E	620	6,310	TON	ASPHALT BINDER FOR PLANT MIX
1693000000-E	654	1,300	TON	ASPHALT PLANT MIX, PAVEMENT REPAIR
1880000000-E	SP	500	TON	GENERIC PAVING ITEM JOINT REPAIR
2020000000-N	806	15	EA	CONTROL OF ACCESS MARKERS
2022000000-E	815	1,142.4	CY	SUBDRAIN EXCAVATION
2026000000-E	815	3,400	SY	GEOTEXTILE FOR SUBSURFACE DRAINS
2036000000-E	815	571.2	CY	SUBDRAIN COARSE AGGREGATE
2044000000-E	815	3,400	LF	6" PERFORATED SUBDRAIN PIPE
2070000000-N	815	7	EA	SUBDRAIN PIPE OUTLET
2077000000-E	815	42	LF	6" OUTLET PIPE
2209000000-E	838	26	CY	ENDWALLS
2220000000-E	838	14	CY	REINFORCED ENDWALLS
2253000000-E	840	0.447	CY	PIPE COLLARS
2286000000-N	840	151	EA	MASONRY DRAINAGE STRUCTURES
2297000000-E	840	7	CY	MASONRY DRAINAGE STRUCTURES
2308000000-E	840	161	LF	MASONRY DRAINAGE STRUCTURES
2354200000-N	840	2	EA	FRAME WITH GRATE, STD 840.24
2364000000-N	840	14	EA	FRAME WITH TWO GRATES, STD 840.16
2366000000-N	840	108	EA	FRAME WITH TWO GRATES, STD 840.24
2367000000-N	840	28	EA	FRAME WITH TWO GRATES, STD 840.29
2451000000-N	852	13	EA	CONCRETE TRANSITIONAL SECTION FOR DROP INLET
2556000000-E	846	7,760	LF	SHOULDER BERM GUTTER
2612000000-E	848	110	SY	6" CONCRETE DRIVEWAY
2619000000-E	850	30	SY	4" CONCRETE PAVED DITCH
2647000000-E	852	5,880	SY	5" MONOLITHIC CONCRETE ISLANDS (SURFACE MOUNTED)
3030000000-E	862	10,450	LF	STEEL BM GUARDRAIL
3045000000-E	862	100	LF	STEEL BM GUARDRAIL, SHOP CURVED
3105000000-N	862	2	EA	STEEL BM GUARDRAIL TERMINAL SECTIONS
3150000000-N	862	10	EA	ADDITIONAL GUARDRAIL POSTS
3210000000-N	862	8	EA	GUARDRAIL ANCHOR UNITS, TYPE CAT-1
3270000000-N	SP	22	EA	GUARDRAIL ANCHOR UNITS, TYPE 350
3285000000-N	SP	8	EA	GUARDRAIL ANCHOR UNITS, TYPE M-350
3317000000-N	862	16	EA	GUARDRAIL ANCHOR UNITS, TYPE B-77
3360000000-E	863	825	LF	REMOVE EXISTING GUARDRAIL
3380000000-E	862	2,150	LF	TEMPORARY STEEL BM GUARDRAIL
3389100000-N	SP	7	EA	TEMPORARY GUARDRAIL ANCHOR UNITS, TYPE 350
3503000000-E	866	65,980	LF	WOVEN WIRE FENCE, 47" FABRIC
3506000000-E	866	4,112	EA	4" TIMBER FENCE POSTS, ***** LONG (7'-6")
3515000000-E	866	1,115	EA	5" TIMBER FENCE POSTS, 8'-0" LONG
3536000000-E	866	1,690	LF	CHAIN LINK FENCE, 48" FABRIC
3542000000-E	866	150	EA	METAL LINE POSTS FOR 48" CHAIN LINK FENCE
3548000000-E	866	8	EA	METAL TERMINAL POSTS FOR 48" CHAIN LINK FENCE
3557000000-E	866	6,800	LF	ADDITIONAL BARBED WIRE
3565000000-E	866	3	EA	DOUBLE GATES, **" HIGH, **' WIDE, **' OPENING (47" HIGH, 10' WIDE, 20' OPENING)
3565000000-E	866	1	EA	DOUBLE GATES, **" HIGH, **' WIDE, **' OPENING (47" HIGH, 6' WIDE, 12' OPENING)
3565000000-E	866	2	EA	DOUBLE GATES, **" HIGH, **' WIDE, **' OPENING (47" HIGH, 8' WIDE, 16' OPENING)
3578000000-N	SP	12	EA	GENERIC FENCING ITEM METAL GATE POSTS FOR 47" WOVEN WIRE FENCE, DOUBLE GATE
3595000000-E	869	725	LF	RELAPPING GUARDRAIL
3628000000-E	876	690	TON	RIP RAP, CLASS I
3649000000-E	876	1,700	TON	RIP RAP, CLASS B
3651000000-E	SP	20	TON	BOULDERS
3656000000-E	876	10,500	SY	GEOTEXTILE FOR DRAINAGE
3659000000-N	SP	3	EA	PREFORMED SCOUR HOLES WITH LEVEL SPREADER APRON
4072000000-E	903	4,292	LF	SUPPORTS, 3-LB STEEL U-CHANNEL
4096000000-N	904	20	EA	SIGN ERECTION, TYPE D
4102000000-N	904	163	EA	SIGN ERECTION, TYPE E
4108000000-N	904	57	EA	SIGN ERECTION, TYPE F
4155000000-N	907	51	EA	DISPOSAL OF SIGN SYSTEM, U-CHANNEL
4400000000-E	1110	3,006	SF	WORK ZONE SIGNS (STATIONARY)
4405000000-E	1110	352	SF	WORK ZONE SIGNS (PORTABLE)
4410000000-E	1110	421	SF	WORK ZONE SIGNS (BARRICADE MOUNTED)
4415000000-N	1115	2	EA	FLASHING ARROW BOARD
4420000000-N	1120	4	EA	PORTABLE CHANGEABLE MESSAGE SIGN
4422000000-N	1120	240	DAY	PORTABLE CHANGEABLE MESSAGE SIGN (SHORT TERM)
4430000000-N	1130	850	EA	DRUMS
4435000000-N	1135	100	EA	CONES
4445000000-E	1145	1,500	LF	BARRICADES (TYPE III)
4455000000-N	1150	520	DAY	FLAGGER
4465000000-N	1160	2	EA	TEMPORARY CRASH CUSHIONS
4480000000-N	1165	2	EA	TMA
4485000000-E	1170	480	LF	PORTABLE CONCRETE BARRIER
4510000000-N	SP	48	HR	LAW ENFORCEMENT
4650000000-N	1251	1,136	EA	TEMPORARY RAISED PAVEMENT MARKERS
4685000000-E	1205	167,860	LF	THERMOPLASTIC PAVEMENT MARKING LINES (4", 90 MILS)
4686000000-E	1205	40,671	LF	THERMOPLASTIC PAVEMENT MARKING LINES (4", 120 MILS)
4695000000-E	1205	13,511	LF	THERMOPLASTIC PAVEMENT MARKING LINES (8", 90 MILS)

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STATE OF NORTH CAROLINA
SUMMARY OF QUANTITIES

PROJECT REFERENCE No.	SHEET No.
R-2303B	3 (2 of 2)

ItemNumber	Sec #	Quantity	Unit	Description
4697000000-E	1205	311	LF	THERMOPLASTIC PAVEMENT MARKING LINES (8", 120 MILS)
4710000000-E	1205	782	LF	THERMOPLASTIC PAVEMENT MARKING LINES (24", 120 MILS)
4721000000-E	1205	8	EA	THERMOPLASTIC PAVEMENT MARKING CHARACTER (120 MILS)
4725000000-E	1205	248	EA	THERMOPLASTIC PAVEMENT MARKING SYMBOL (90 MILS)
4770000000-E	1205	9,244	LF	COLD APPLIED PLASTIC PAVEMENT MARKING LINES, TYPE ** (4") (IV)
4810000000-E	1205	498,132	LF	PAINT PAVEMENT MARKING LINES (4")
4820000000-E	1205	352	LF	PAINT PAVEMENT MARKING LINES (8")
4825000000-E	1205	94	LF	PAINT PAVEMENT MARKING LINES (12")
4835000000-E	1205	1,574	LF	PAINT PAVEMENT MARKING LINES (24")
4840000000-N	1205	8	EA	PAINT PAVEMENT MARKING CHARACTER
4845000000-N	1205	40	EA	PAINT PAVEMENT MARKING SYMBOL
4850000000-E	1205	12,252	LF	REMOVAL OF PAVEMENT MARKING LINES (4")
4870000000-E	1205	68	LF	REMOVAL OF PAVEMENT MARKING LINES (24")
4905000000-N	1253	1,745	EA	SNOWPLOWABLE PAVEMENT MARKERS
5325300000-E	1510	112	LF	3" WATER LINE
5325400000-E	1510	223	LF	4" WATER LINE
5325600000-E	1510	2,438	LF	6" WATER LINE
5325800000-E	1510	17,050	LF	8" WATER LINE
5326000000-E	1510	4,400	LF	10" WATER LINE
5540000000-E	1515	6	EA	6" VALVE
5546000000-E	1515	25	EA	8" VALVE
5552000000-E	1515	5	EA	10" VALVE
5643100000-E	1515	11	EA	3/4" WATER METER
5648000000-N	1515	4	EA	RELOCATE WATER METER

ItemNumber	Sec #	Quantity	Unit	Description
5649000000-N	1515	2	EA	RECONNECT WATER METER
5666000000-E	1515	7	EA	FIRE HYDRANT
5801000000-E	1530	17,917	LF	ABANDON 8" UTILITY PIPE
5802000000-E	1530	4,448	LF	ABANDON 10" UTILITY PIPE
5815000000-N	1530	13	EA	REMOVE WATER METER
5815500000-N	1530	5	EA	REMOVE FIRE HYDRANT
5835600000-E	1540	399	LF	12" ENCASEMENT PIPE
5835700000-E	1540	898	LF	16" ENCASEMENT PIPE
5871600000-E	1550	1,822	LF	TRENCHLESS INSTALLATION OF 10" IN SOIL
5882000000-N	SP	1	EA	GENERIC UTILITY ITEM RELOCATION OF WATER BOOSTER STATION
6000000000-E	1605	130,000	LF	TEMPORARY SILT FENCE
6006000000-E	1610	7,700	TON	STONE FOR EROSION CONTROL, CLASS A
6009000000-E	1610	22,125	TON	STONE FOR EROSION CONTROL, CLASS B
6012000000-E	1610	13,400	TON	SEDIMENT CONTROL STONE
6015000000-E	1615	200	ACR	TEMPORARY MULCHING
6018000000-E	1620	7,500	LB	SEED FOR TEMPORARY SEEDING
6021000000-E	1620	31.5	TON	FERTILIZER FOR TEMPORARY SEEDING
6024000000-E	1622	10,100	LF	TEMPORARY SLOPE DRAINS
6029000000-E	SP	11,600	LF	SAFETY FENCE
6030000000-E	1630	49,100	CY	SILT EXCAVATION
6036000000-E	1631	140,000	SY	MATTING FOR EROSION CONTROL
6037000000-E	SP	12,000	SY	COIR FIBER MAT
6038000000-E	SP	1,200	SY	PERMANENT SOIL REINFORCEMENT MAT
6042000000-E	1632	4,350	LF	1/4" HARDWARE CLOTH
6045000000-E	SP	120	LF	**" TEMPORARY PIPE (18")

ItemNumber	Sec #	Quantity	Unit	Description
6046000000-E	1636	40	LF	TEMPORARY PIPE FOR STREAM CROSSING
6048000000-E	SP	550	SY	FLOATING TURBIDITY CURTAIN
6070000000-N	1639	12	EA	SPECIAL STILLING BASINS
6071012000-E	SP	23,100	LF	COIR FIBER WATTLE
6071020000-E	SP	17,000	LB	POLYACRYLAMIDE (PAM)
6071030000-E	1640	21,450	LF	COIR FIBER BAFFLE
6071050000-E	SP	60	EA	**" SKIMMER (1-1/2")
6071050000-E	SP	5	EA	**" SKIMMER (2")
6071050000-E	SP	2	EA	**" SKIMMER (2-1/2")
6084000000-E	1660	200	ACR	SEEDING & MULCHING
6087000000-E	1660	100	ACR	MOWING
6090000000-E	1661	2,950	LB	SEED FOR REPAIR SEEDING
6093000000-E	1661	11	TON	FERTILIZER FOR REPAIR SEEDING
6096000000-E	1662	5,950	LB	SEED FOR SUPPLEMENTAL SEEDING
6108000000-E	1665	179	TON	FERTILIZER TOPDRESSING
6111000000-E	SP	100	LF	IMPERVIOUS DIKE
6114500000-N	1667	100	MHR	SPECIALIZED HAND MOWING
6117000000-N	SP	200	EA	RESPONSE FOR EROSION CONTROL
6120000000-E	SP	180	CY	CULVERT DIVERSION CHANNEL
6123000000-E	1670	9	ACR	REFORESTATION
6126000000-E	SP	0.7	ACR	STREAMBANK REFORESTATION

COMPUTED BY: CP DATE: 3/29/2011

CHECKED BY: RAS DATE: 11/19/2012

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
R-2303B	3-A

RD266215

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
-L- 367+64	RT	0404								40																	
-L- 371+00	RT	0401		128.6																							
-L- 371+07	RT	0401	0402		125.9	125																					
-L- 371+15	MED	0402		130.7																							
-L- 371+08	LT	0402	0403		125	124.8																					
-L- 373+00	MED	0402	0501		124.8	121.9																					
-L- 371+00	LT	0403		128																							
-L- 374+86	MED	0501		129.2																							
-L- 375+61	MED	0501	0520		121.43	121.2																					
-L- 376+36	MED	0505		130.1																							
-L- 375+65	MED	0520		130.2																							
-L- 375+83	LT	0520	0502		119.3	119.7																					
-L- 377+93	MED	0505	0508		119.3	117.4																					
-Y11- 20+67	RT	0506	0507		126	123.6																					
-L- 375+65	MED	0520	0505		119.3	119																					
-L- 375+28	LT	0502		124.9																							
-Y11- 18+36	RT	0502	0503		120.7	121.6																					
-Y11- 18+04	RT	0503		124.8																							
-Y11- 18+04	CL	0503	0504		121.9	122.1																					
-Y11- 18+04	LT	0504		124.8																							
-SR1- 18+25	CL	0518																									
-Y11- 17+04	LT	0517							28																		
-SR1- 13+59	CL	0519																									
-L- 379+50	MED	0508		126.5																							
-L- 380+86	MED	0508	0509		117.4	115.7																					
-L- 382+22	MED	0509		123.6																							
-L- 382+16	LT	0509	0510		116.7	119.2																					
-L- 382+22	RT	0509	0511		116.7	122.1																					
-LREV- 383+00	MED	0509	0512		115.7	114.8																					
-LREV- 383+77	MED	0512		122.3																							
-LREV- 384+26	MED	0512	0513		114.8	114.2																					
-LREV- 384+74	MED	0513		121																							
-LREV- 385+88	MED	0513	0514		114.2	108.9																					
-LREV- 387+02	MED	0514		114.1																							
-LREV- 387+02	RT	0514	0515		110.1	110.45																					
-LREV- 387+03	LT	0514	0516		110.1	110.75																					
-LREV- 387+02	RT	0515		113.2																							
-LREV- 388+72	MED	0514	0608		108.8	104.9																					
-LREV- 387+03	LT	0516		113.5																							
SHEET TOTALS									28	40																	

STATION	R.C. PIPE CLASS III 12"	15"	18"	24"	30"	36"	42"	48"	R.C. PIPE CLASS IV 12"	15"	18"	24"	30"	36"	42"	48"	** " R.C. PIPE (CLASS V)	***" RC PIPE CULVERTS, CONTRACTOR DESIGN	***" RC PIPE CULVERTS, CONTRACTOR DESIGN	ENDWALLS STD. 838.01 OR STD. 838.11 (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
-L- 367+64																									
-L- 371+00																						1			
-L- 371+07		84																							
-L- 371+15																						1	0.9		
-L- 371+08			76																						
-L- 373+00			368																						
-L- 371+00																						1			
-L- 374+86																						1	2.77		
-L- 375+61				76																					
-L- 376+36																						1	5	1.1	
-L- 375+65																						1	5	0.9	
-L- 375+83					80																				
-L- 377+93													312												
-Y11- 20+67			144																						
-L- 375+65					72																				
-L- 375+28																						1	5	0.2	
-Y11- 18+36			80																						
-Y11- 18+04																						1			
-Y11- 18+04		52																							
-Y11- 18+04																						1			
-SR1- 18+25										36															
-Y11- 17+04																									
-SR1- 13+59											52														
-L- 379+50																						1	4.1		
-L- 380+86													268												
-L- 382+22																						1	2.9		
-L- 382+16			76																						
-L- 382+22			84																						
-LREV- 383+00													152												
-LREV- 383+77																						1	2.5		
-LREV- 384+26													96												
-LREV- 384+74																						1	1.8		
-LREV- 385+88													228												
-LREV- 387+02																						1	0.3		
-LREV- 387+02		72																							
-LREV- 387+03		72																							
-LREV- 387+02																						1			
-LREV- 388+72					336																				
-LREV- 387+03																						1			
SHEET TOTALS		280	828	76	488					36	52		1056									16	30.27	2.20	

STATION	FRAME, GRATES, AND HOOD STANDARD 840.03 TYPE OF GRATE E	F	G	CONCRETE TRANSITIONAL SECTION DROP INLET	CATCH BASIN	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATES STD. 840.16	G.D.I. TYPE "A" STD. 840.18 OR 840.27	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 GRATE STD. 840.29	G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.29	T.B.D.I. STD. 840.35	SPECIAL DI, SEE DETAILS SHT. 2-M	PARALLEL PIPE END SECTION STD. 310.02 OR 310.04	PREFORMED SCOUR HOLE	SIDE DRAIN PIPE ELBOWS NO. & SIZE	C. S. PIPE ELBOWS NO. & SIZE	CONC. COLLARS CL. "B" C.Y. STD. 840.72	PIPE REMOVAL LIN. FT.	REMARKS
-L- 367+64																		1						PES FOR 18"
-L- 371+00									1				1											
-L- 371+07																								
-L- 371+15									1				1											
-L- 371+08																								
-L- 373+00																								
-L- 371+00									1				1											
-L- 374+86								1					1											
-L- 375+61																								
-L- 376+36				1													1							SPECIAL ISLAND DETAIL, SEE SHT. 2-N
-L- 375+65				1													1							
-L- 375+83																								
-L- 377+93																								
-Y11- 20+67																								
-L- 375+65																								
-L- 375+28								1				1	1											
-Y11- 18+36																								
-Y11- 18+04									1				1											
-Y11- 18+04																								
-Y11- 18+04									1				1											
-SR1- 18+25																								
-Y11- 17+04																								
-SR1- 13+59																								
-L- 379+50								1					1											
-L- 380+86																								
-L- 382+22								1					1											
-L- 382+16																								
-L- 382+22																								
-LREV- 383+00																								
-LREV- 383+77								1					1											
-LREV- 384+26																								
-LREV- 384+74				1		1	1																	STD. 852.06
-LREV- 385+88																								
-LREV- 387+02								1					1											
-LREV- 387+02																								
-LREV- 387+03																								
-LREV- 387+02									1				1											
-LREV- 388+72																								
-LREV- 387+03									1				1											
SHEET TOTALS				3		1	1	6	7			1	13				2	1						

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: CP DATE: 3/29/2011

CHECKED BY: RAS DATE: 11/20/2012

RD261642

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
R-2303B	3-B

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
-LREV- 390+33	LT	0602		111.9															
-LREV- 390+32	LT	0602	0601		101	101													
-LREV- 390+30	LT	0601																	
-LREV- 390+37	LT	0602	0608		101	100.9													
-LREV- 390+51	RT	0603		111.8															
-LREV- 390+58	RT	0603	0604		100.1	100													
-LREV- 390+46	RT	0603	0608		100.8	100.9													
-LREV- 390+41	MED	0608		110.2															
-LREV- 390+92	MED	0608	0606		106.2	106.9													
-LREV- 391+42	MED	0606		109.6															
-LREV- 391+42	LT	0606	0605		106.9	108.9													
-LREV- 391+42	RT	0606	0607		106.9	108.9													
-LREV- 391+41	LT	0605		111.6															
-LREV- 391+41	RT	0607		111.7															
-LREV- 404+25	RT	0701		107.6															
-L-REV 404+25	LT	0704		107.4															
-LREV- 404+25	RT	0701	0703		103.1	99.7			36										
-LREV- 405+33	LT	0704	0705		104.7	102.7													
-LREV- 406+40	LT	0705		106.9															
-LREV- 406+40	LT	0705	0706		102.7	98.8			40										
-LREV- 407+06	RT	0707																	
-LREV- 406+86	RT	0707	0710		98	97.6													
-LREV- 406+67	MED	0710		105															
-LREV- 406+53	LT	0710	0706		97.1	96.7													
-LREV- 408+59	MED	0710	0708		102.3	105.1													
-LREV- 410+52	MED	0708		109.1															
-LREV- 410+51	RT	0708	0709		105.1	105.4													
-LREV- 410+51	RT	0709		108.1															
-LREV- 416+53	MED	0801		120															
-LREV- 417+97	MED	0801	0803		117.3	116.1													
-LREV- 419+40	MED	0803		119.9															
-LREV- 419+40	RT	0803	0802		112.5	112.8													
SHEET TOTALS									76										

STATION	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"
-LREV- 390+33																								
-LREV- 390+32																								40
-LREV- 390+30																								
-LREV- 390+37																								56
-LREV- 390+51																								
-LREV- 390+58																								44
-LREV- 390+46																								56
-LREV- 390+41																								
-LREV- 390+92										100														
-LREV- 391+42																								
-LREV- 391+42																		52						
-LREV- 391+42																		56						
-LREV- 391+41																								
-LREV- 391+41																								
-LREV- 404+25																								
-L-REV 404+25																								
-LREV- 404+25																								
-LREV- 405+33																		212						
-LREV- 406+40																								
-LREV- 406+40																								
-LREV- 407+06																								
-LREV- 406+86												100												
-LREV- 406+67																								
-LREV- 406+53													100											
-LREV- 408+59										384														
-LREV- 410+52																								
-LREV- 410+51										72														
-LREV- 410+51																								
-LREV- 416+53																								
-LREV- 417+97																		284						
-LREV- 419+40																								
-LREV- 419+40													92											
SHEET TOTALS										556		100	192					604						196

STATION	** " R.C. PIPE (CLASS V)	***" RC PIPE CULVERTS, CONTRACTOR DESIGN	***" RC PIPE CULVERTS, CONTRACTOR DESIGN			ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CU. YARDS R.C.P.	C.S.P.	QUANTITIES FOR DRAINAGE STRUCTURES PER EACH (0' THRU 5.0')	*TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL.'B') LIN. FT. A 5.0' THRU 10.0'	B 10.0' AND ABOVE	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STANDARD 840.03 TYPE OF GRATE E	F	G	CONCRETE TRANSITIONAL SECTION DROP INLET	CATCH BASIN
-LREV- 390+33								1	5	0.9						
-LREV- 390+32																
-LREV- 390+30						6										
-LREV- 390+37																
-LREV- 390+51								1	5	1.7						
-LREV- 390+58																
-LREV- 390+46																
-LREV- 390+41								1	4.3							
-LREV- 390+92																
-LREV- 391+42								1								
-LREV- 391+42																
-LREV- 391+42																
-LREV- 391+41								1								
-LREV- 391+41								1								
-LREV- 404+25								1								
-L-REV 404+25								1								
-LREV- 404+25																
-LREV- 405+33																
-LREV- 406+40								1								
-LREV- 406+40																
-LREV- 407+06						1.5										
-LREV- 406+86																
-LREV- 406+67								1	2.9							
-LREV- 406+53																
-LREV- 408+59																
-LREV- 410+52								1								
-LREV- 410+51																
-LREV- 410+51								1								
-LREV- 416+53								1								
-LREV- 417+97																
-LREV- 419+40								1	2.4							
-LREV- 419+40																
SHEET TOTALS						7.5		14	19.60	2.60						

STATION	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND 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 GRATE STD. 840.29	G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.29	T.B.D.I. STD. 840.35	SPECIAL DI, SEE DETAILS SHT. 2-M	PARALLEL PIPE END SECTION STD. 310.02 OR 310.04	PREFORMED SCOUR HOLE	SIDE DRAIN PIPE ELBOWS NO. & SIZE	C. S. PIPE ELBOWS NO. & SIZE	CONC. COLLARS CL. "B" C.Y. STD. 840.72	PIPE REMOVAL LIN. FT.	REMARKS
-LREV- 390+33			1							1									STD. 846.04
-LREV- 390+32																			
-LREV- 390+30																			
-LREV- 390+37																			
-LREV- 390+51			1							1									STD. 846.04
-LREV- 390+58																			
-LREV- 390+46																			
-LREV- 390+41			1					1											
-LREV- 390+92																			
-LREV- 391+42				1				1											
-LREV- 391+42																			
-LREV- 391+42																			
-LREV- 391+41				1						1									STD. 846.04
-LREV- 391+41				1						1									STD. 846.04
-LREV- 404+25				1						1									STD. 846.04
-L-REV 404+25				1						1									STD. 846.04
-LREV- 404+25															2 @ 15"				
-LREV- 405+33																			
-LREV- 406+40				1						1									STD. 846.04
-LREV- 406+40															2 @ 15"				
-LREV- 407+06																			
-LREV- 406+86																			
-LREV- 406+67				1				1											
-LREV- 406+53																			
-LREV- 408+59																			
-LREV- 410+52				1				1											
-LREV- 410+51																			
-LREV- 410+51				1				1											
-LREV- 416+53				1				1											
-LREV- 417+97																			
-LREV- 419+40				1				1											
-LREV- 419+40																			
SHEET TOTALS			3	11				7		7					4 @ 15"				

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

RD261642

COMPUTED BY: CP DATE: 3/29/2011

CHECKED BY: RAS DATE: 11/20/2012

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
R-2303B	3-C

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

LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 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	C.S. PIPE 12" .064	15" .064	18" .064	24" .064	30" .079	36" .079	42" .109	48" .109
-LREV- 419+40	LT	0803	0804		112.5	112.3																					
-LREV- 420+08	MED	0803	0805		116.7	117.3																					
-LREV- 420+76	MED	0805		120																							
-LREV- 424+70	RT	0806																									
-LREV- 424+75	MED	0807		127.1																							
-LREV- 424+74	RT	0807	0806		122.4	120																					
-LREV- 425+70	MED	0807	0810		122.9	124.8																					
-LREV- 426+65	MED	0810		131.4																							
-LREV- 426+30	RT	0808		131.1																							
-LREV- 426+47	RT	0808	0811		129.1	129																					
-LREV- 426+65	RT	0811		131.9																							
-LREV- 426+65	RT	0811	0810		125.3	125																					
-LREV- 427+88	MED	0810	0902		128.4	130.4																					
-LREV- 429+10	MED	0902		136.5																							
-LREV- 429+14	LT	0902	0903		130.7	131.1																					
-LREV- 429+09	RT	0902	0901		133.8	135.3																					
-LREV- 429+17	LT	0903		133																							
-LREV- 429+08	RT	0901		138																							
-Y14- 16+49	LT	0915								36																	
-Y14- 16+87	RT	0916								40																	
-LREV- 432+82	LT	0904	0905		137.5	137.2																					
-LREV- 432+85	MED	0905		146																							
-LREV- 432+86	RT	0905	0907		137.2	136.8																					
-LREV- 432+88	RT	0907		147																							
-LREV- 432+89	RT	0907	0906		133.8	133.7																					
-LREV- 438+50	MED	0908		157																							
-LREV- 438+50	RT	0908	0909		154.3	153.9																					
-LREV- 438+50	RT	0909		158.5																							
-LREV- 438+50	RT	0909	0910		153.9	140.8																	64						
-LREV- 439+81	CL	0911	0910		140.5	139.1																					
-L- 445+74	CL	1001		160.6																							
-L- 446+85	CL	1001	1002		157.4	155.3																					
-L- 447+98	MED	1002		158																							
-L- 448+15	LT	1002	1003		154.6	151.6																					
SHEET TOTALS										76													64						

STATION	R.C. PIPE CLASS III 12"	15"	18"	24"	30"	36"	42"	48"	R.C. PIPE CLASS IV 12"	15"	18"	24"	30"	36"	42"	48"	** " R.C. PIPE (CLASS V)	***" RC PIPE CULVERTS, CONTRACTOR DESIGN	***" RC PIPE CULVERTS, CONTRACTOR DESIGN			ENDWALLS STD. 838.01 OR STD. 838.11 (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
-LREV- 419+40					80																					
-LREV- 420+08										132																
-LREV- 420+76																								1		
-LREV- 424+70																										
-LREV- 424+75																								1		
-LREV- 424+74			64																							
-LREV- 425+70											188															
-LREV- 426+65																								1	1.6	
-LREV- 426+30																								1		
-LREV- 426+47										32																
-LREV- 426+65																								1	1.6	
-LREV- 426+65										52																
-LREV- 427+88											244															
-LREV- 429+10																								1	1.1	
-LREV- 429+14		96																								
-LREV- 429+09										56																
-LREV- 429+17																								1		
-LREV- 429+08																								1		
-Y14- 16+49																										
-Y14- 16+87																										
-LREV- 432+82					100																					
-LREV- 432+85																								1	3.8	
-LREV- 432+86													56													
-LREV- 432+88																								1	5	3.2
-LREV- 432+89													48													
-LREV- 438+50																								1		
-LREV- 438+50										56																
-LREV- 438+50																								1		
-LREV- 438+50																										
-LREV- 439+81				356																						
-L- 445+74																								1		
-L- 446+85										224																
-L- 447+98																								1		
-L- 448+15		108																								
SHEET TOTALS		204	64	356	180					552	432		104											14	13.10	3.20

STATION	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STANDARD 840.03 TYPE OF GRATE E	F	G	CONCRETE TRANSITIONAL SECTION DROP INLET	CATCH BASIN	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND 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 GRATE STD. 840.29	G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.29	T.B.D.I. STD. 840.35	SPECIAL DI, SEE DETAILS SHT. 2-M	PARALLEL PIPE END SECTION STD. 310.02 OR 310.04	PREFORMED SCOUR HOLE	SIDE DRAIN PIPE ELBOWS NO. & SIZE	C. S. PIPE ELBOWS NO. & SIZE	CONC. COLLARS CL. "B" C.Y. STD. 840.72	PIPE REMOVAL LIN. FT.	REMARKS
-LREV- 419+40																									
-LREV- 420+08																									
-LREV- 420+76										1				1											
-LREV- 424+70																				1					
-LREV- 424+75										1				1											
-LREV- 424+74																									
-LREV- 425+70																									
-LREV- 426+65										1				1											
-LREV- 426+30											1					1									STD. 846.04
-LREV- 426+47																									
-LREV- 426+65										1						1									STD. 846.04
-LREV- 426+65																									
-LREV- 427+88																									
-LREV- 429+10										1				1											
-LREV- 429+14																									
-LREV- 429+09																									
-LREV- 429+17										1				1											
-LREV- 429+08										1						1									STD. 846.04
-Y14- 16+49																								18	REMOVE EXIST. 15" RCP
-Y14- 16+87																									
-LREV- 432+82																									
-LREV- 432+85										1				1											
-LREV- 432+86																									
-LREV- 432+88										1						1									STD. 846.04
-LREV- 432+89																									
-LREV- 438+50										1				1											
-LREV- 438+50																									
-LREV- 438+50										1						1									STD. 846.04
-LREV- 438+50																						2 @ 15"		11	REMOVE EXIST. 4" PVC
-LREV- 439+81																								20	REMOVE EXIST. 8" PLASTIC
-L- 445+74					1		1	1																	SPECIAL ISLAND DETAIL, SEE SHT. 2-N
-L- 446+85																									
-L- 447+98										1				1											
-L- 448+15																									
SHEET TOTALS					1		1	1		12	1			8		5				1		2 @ 15"		49	

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: CP DATE: 3/29/2011

CHECKED BY: RAS DATE: 11/20/2012

RD261642

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
R-2303B	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
-SR- 10+24	CL	1020					
-Y15- 13+78	RT	1018					
-Y15- 17+29	LT	1008					
-L- 451+48	MED	1004		156.9			
-L- 451+50	LT	1004	1105		154.2	152.8	
-L- 455+50	MED	1006		156.9			
-L- 455+53	LT	1006	1007		154.2	153.1	
-L- 461+00	MED	1108		161.7			
-L- 461+00	LT	1108	1109		159	155.3	
-L- 462+90	LT	1103		164.7			
-L- 462+90	LT	1103	1104		161.2	150	
-L- 464+74	CL	1101	1102		151.8	149.8	
-Y16- 13+00	CL	1110	1202		146.1	145.8	
-Y16- 15+50	CL	3101	3102		144	143.7	
-Y16- 17+19	RT	3103					
-L- 472+50	MED	1208		162.6			
-L- 472+43	RT	1208	1203		159.9	159.3	
-L- 472+35	RT	1203		164.4			
-L- 472+25	RT	1203	1207		159.3	146.5	
-L- 473+00	LT	1204		164			
-L- 473+00	LT	1204	1209		158	146.5	
-L- 476+60	LT	1205		161.7			
-L- 476+60	LT	1205	1206		158.2	145.8	
-L- 480+43	RT	1210		157.7			
-L- 480+42	RT	1210	1211		155	152.8	
-L- 480+50	MED	1211		155.6			
-L- 480+49	LT	1211	1212		152.8	146.7	
-L- 485+00	MED	1213		152			
-L- 487+00	MED	1213	1304		149.3	145.7	
-L- 489+00	MED	1304		148.6			
-L- 488+90	RT	1301	1304		145.3	145.1	
SHEET TOTALS							

STATION	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
-SR- 10+24												
-Y15- 13+78		16										
-Y15- 17+29		32										
-L- 451+48												
-L- 451+50												
-L- 455+50												
-L- 455+53												
-L- 461+00												
-L- 461+00												
-L- 462+90												
-L- 462+90												
-L- 464+74												
-Y16- 13+00												
-Y16- 15+50												
-Y16- 17+19			52									
-L- 472+50												
-L- 472+43												
-L- 472+35												
-L- 472+25												
-L- 473+00												
-L- 473+00												
-L- 476+60												
-L- 476+60												
-L- 480+43												
-L- 480+42												
-L- 480+50												
-L- 480+49												
-L- 485+00												
-L- 487+00												
-L- 489+00												
-L- 488+90												
SHEET TOTALS		48	52									

STATION	C.S. PIPE 12" (.064)	15" (.064)	18" (.064)	24" (.064)	30" (.079)	36" (.079)	42" (.109)	48" (.109)
-SR- 10+24								
-Y15- 13+78								
-Y15- 17+29								
-L- 451+48								
-L- 451+50								
-L- 455+50								
-L- 455+53								
-L- 461+00								
-L- 461+00								
-L- 462+90								
-L- 462+90		52						
-L- 464+74								
-Y16- 13+00								
-Y16- 15+50								
-Y16- 17+19								
-L- 472+50								
-L- 472+43								
-L- 472+35								
-L- 472+25		64						
-L- 473+00								
-L- 473+00		60						
-L- 476+60								
-L- 476+60		52						
-L- 480+43								
-L- 480+42								
-L- 480+50								
-L- 480+49								
-L- 485+00								
-L- 487+00								
-L- 489+00								
-L- 488+90								
SHEET TOTALS		228						

STATION	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"
-SR- 10+24											72					
-Y15- 13+78																
-Y15- 17+29																
-L- 451+48																
-L- 451+50		80														
-L- 455+50																
-L- 455+53		96														
-L- 461+00																
-L- 461+00		108														
-L- 462+90																
-L- 462+90																
-L- 464+74				220												
-Y16- 13+00			96													
-Y16- 15+50				88												
-Y16- 17+19																
-L- 472+50																
-L- 472+43										56						
-L- 472+35																
-L- 472+25																
-L- 473+00																
-L- 473+00																
-L- 476+60																
-L- 476+60																
-L- 480+43																
-L- 480+42		56														
-L- 480+50																
-L- 480+49		100														
-L- 485+00																
-L- 487+00		396														
-L- 489+00																
-L- 488+90				96												
SHEET TOTALS		836	96	404						56	72					

STATION	** " R.C. PIPE (CLASS V)	***" RC PIPE CULVERTS, CONTRACTOR DESIGN	***" RC PIPE CULVERTS, CONTRACTOR DESIGN			ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CU. YARDS R.C.P.	C.S.P.	QUANTITIES FOR DRAINAGE STRUCTURES PER EACH (0' THRU 5.0')	*TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL.'B') LIN. FT. A 5.0' THRU 10.0'	B 10.0' AND ABOVE	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STANDARD 840.03 TYPE OF GRATE E	F	G	CONCRETE TRANSITIONAL SECTION DROP INLET	CATCH BASIN
-SR- 10+24																
-Y15- 13+78																
-Y15- 17+29																
-L- 451+48								1								
-L- 451+50																
-L- 455+50								1								
-L- 455+53																
-L- 461+00								1								
-L- 461+00																
-L- 462+90								1								
-L- 462+90																
-L- 464+74																
-Y16- 13+00																
-Y16- 15+50																
-Y16- 17+19																
-L- 472+50								1								
-L- 472+43																
-L- 472+35								1	0.1							
-L- 472+25																
-L- 473+00								1	1							
-L- 473+00																
-L- 476+60								1								
-L- 476+60																
-L- 480+43								1								
-L- 480+42																
-L- 480+50								1								
-L- 480+49																
-L- 485+00								1								
-L- 487+00																
-L- 489+00								1								
-L- 488+90																
SHEET TOTALS								12	1.10							

STATION	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND 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 GRATE STD. 840.29	G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.29	T.B.D.I. STD. 840.35	SPECIAL DI, SEE DETAILS SHT. 2-M	PARALLEL PIPE END SECTION STD. 310.02 OR 310.04	PREFORMED SCOUR HOLE
-SR- 10+24														
-Y15- 13+78														
-Y15- 17+29														
-L- 451+48				1				1						
-L- 451+50														
-L- 455+50				1				1						
-L- 455+53														
-L- 461+00				1				1						
-L- 461+00														
-L- 462+90				1						1				
-L- 462+90														
-L- 464+74														
-Y16- 13+00														
-Y16- 15+50														
-Y16- 17+19														
-L- 472+50				1				1						
-L- 472+43														
-L- 472+35				1						1				
-L- 472+25														
-L- 473+00				1						1				
-L- 473+00														
-L- 476+60				1						1				
-L- 476+60														
-L- 480+43				1						1				
-L- 480+42														
-L- 480+50				1				1						
-L- 480+49														
-L- 485+00				1				1						
-L- 487+00														
-L- 489+00				1				1						
-L- 488+90														
SHEET TOTALS				12				7		5				

STATION	SIDE DRAIN PIPE ELBOWS NO. & SIZE	C. S. PIPE ELBOWS NO. & SIZE	CONC. COLLARS CL. "B" C.Y. STD. 840.72	PIPE REMOVAL LIN. FT.	REMARKS
-SR- 10+24					
-Y15- 13+78				20	REMOVE EX. 18" RCP
-Y15- 17+29					
-L- 451+48					
-L- 451+50					
-L- 455+50					
-L- 455+53					
-L- 461+00					
-L- 461+00					
-L- 462+90					STD. 846.04
-L- 462+90		2 @ 15"			
-L- 464+74					
-Y16- 13+00					
-Y16- 15+50					
-Y16- 17+19					
-L- 472+50					
-L- 472+43					
-L- 472+35					STD. 846.04
-L- 472+25		2 @ 15"			
-L- 473+00					STD. 846.04
-L- 473+00		2 @ 15"			
-L- 476+60					STD. 846.04
-L- 476+60		2 @ 15"			
-L- 480+43					STD. 846.04
-L- 480+42					
-L- 480+50					
-L- 480+49					
-L- 485+00					
-L- 487+00					
-L- 489+00					
-L- 488+90					
SHEET TOTALS		8 @ 15"		20	

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:	CP	DATE:	3/29/2011
CHECKED BY:	RAS	DATE:	11/20/2012

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
R-2303B	3-E

RD261642

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	THICKNESS OR GAUGE	C.S. PIPE SIZE	THICKNESS OR GAUGE	R.C. PIPE CLASS III SIZE	R.C. PIPE CLASS IV SIZE	** " R.C. PIPE (CLASS V)	**** RC PIPE CULVERTS, CONTRACTOR DESIGN	***** RC PIPE CULVERTS, CONTRACTOR DESIGN	ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CU. YARDS R.C.P.	ENDWALLS CU. YARDS C.S.P.	QUANTITIES FOR DRAINAGE STRUCTURES PER EACH (0' THRU 5.0')	LIN. FT. A 5.0' THRU 10.0'	LIN. FT. B 10.0' AND ABOVE	*TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL.'B')	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STANDARD 840.03 TYPE OF GRATE E	F	G	CONCRETE TRANSITIONAL SECTION DROP INLET	CATCH BASIN	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND 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 GRATE STD. 840.29	G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.29	T.B.D.I. STD. 840.35	SPECIAL DI, SEE DETAILS SHT. 2-M	PARALLEL PIPE END SECTION STD. 310.02 OR 310.04	PREFORMED SCOUR HOLE	SIDE DRAIN PIPE ELBOWS NO. & SIZE	C. S. PIPE ELBOWS NO. & SIZE	CONC. COLLARS CL. "B" C.Y. STD. 840.72	PIPE REMOVAL LIN. FT.	REMARKS
-L- 489+00	LT	1304	1305		144.4	144.2						80																																					
-L- 490+06	LT	1311						32																																									
-Y17- 11+44	CL	1302	1303		145	143						84																																				42	REMOVE EX. 18" RCP
-L- 492+78	MED	1306		148.2															1													1			1													
-L- 492+84	LT	1306	1307		145.5	141.7							92																																			
-L- 496+53	MED	1308		146.8															1													1			1													
-L- 496+54	LT	1308	1309		144.1	141.1							84																																			
-L- 498+89	CL	1310		148.4															1								1		1	1																		STD. 852.06
-L- 499+00	LT	1310	1403		145.2	140.9													88																													
-L- 503+20	RT	1404																6																													26	REMOVE EX. 30" STEEL PIPE
-L- 503+13	CL	1404	1405		139.3	138.2											144																															REMOVE EX. 30" RCP
-L- 503+17	CL	1417	1418		139.3	138.2											144																															
-L- 503+50	MED	1406		144.2															1													1			1													
-L- 503+50	LT	1406	1407		139.9	139.2							80																																			
-L- 504+44	LT	1415							48																																						40	REMOVE EX.24" RCP
-L- 505+27	LT	1416							44																																						31	REMOVE EX. 24" RCP
-L- 506+00	MED	1408		144.2															1													1			1													
-L- 506+00	LT	1408	1409		139.9	139.1							92																																			
-L- 510+00	MED	1401		144.6															1													1			1													
-L- 510+00	LT	1401	1402		141.1	139.5							84																																			
-L- 505+90	LT	1419							40																																							
-L- 517+00	RT	1507																6																														REMOVE EX.30" RCP + 10' CONC HW
-L- 517+00	CL	1506	1507		139.6	142.8											156																															REMOVE EX.36" RCP
-L- 517+06	CL	1509	1508		142.8	139.6											156																															
-L- 518+00	MED	1501		145.1															1													1			1													
-L- 518+00	LT	1501	1502		141.6	139.5							84																																			
-L- 522+02	MED	1504		143.6															1													1			1													
-L- 522+02	LT	1504	1503		141	140.3							80																																			
-L- 523+23	MED	1504	1505		141.8	144.7							240																																			
-L- 524+44	MED	1505		147.4															1													1			1													
-L- 531+00	MED	1602		146.3															1													1			1													
-L- 531+00	LT	1602	1601		143.8	143.6							84																																			
-L- 531+58	LT	1607							20																																						17	REMOVE EX. 18" RCP
-L- 532+02	RT	1608							24																																			1				PES FOR 24"
-L- 538+03	CL	1604		151.2															1								1		1	1																		STD. 852.06
-L- 538+76	MED	1604	1605		148.03	147.6													148																													
-L- 539+50	MED	1605		149.9															1													1			1													
-L- 539+50	RT	1606		149.7																																							1				
-L- 539+50	RT	1605	1606		147	146.8							72																																			
-L- 542+00	MED	1605	1701		147	148.5													496																													49	REMOVE EX. 15" RCP
SHEET TOTALS								32	176			992	164				600	12	732			12					2		2	2		10			10					1	1					205	

ABBREVIATIONS

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

COMPUTED BY:	CP	DATE:	3/29/2011
CHECKED BY:	RAS	DATE:	11/20/2012

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
R-2303B	3-F

R0261642

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	THICKNESS OR GAUGE	DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE	C.S. PIPE SIZE	THICKNESS OR GAUGE	R.C. PIPE CLASS III SIZE	R.C. PIPE CLASS IV SIZE	** " R.C. PIPE (CLASS V)	**** RC PIPE CULVERTS, CONTRACTOR DESIGN	**** RC PIPE CULVERTS, CONTRACTOR DESIGN	**** RC PIPE CULVERTS, CONTRACTOR DESIGN	ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CU. YARDS R.C.P.	ENDWALLS CU. YARDS C.S.P.	QUANTITIES FOR DRAINAGE STRUCTURES PER EACH (0' THRU 5.0')	LIN. FT. 5.0' THRU 10.0' A	LIN. FT. 10.0' AND ABOVE B	*TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. "A" + (1.3 X COL. "B")	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STANDARD 840.03 TYPE OF GRATE E	F	G	CONCRETE TRANSITIONAL SECTION DROP INLET	CATCH BASIN	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND 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 GRATE STD. 840.29	G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.29	T.B.D.I. STD. 840.35	SPECIAL DI, SEE DETAILS SHT. 2-M	PARALLEL PIPE END SECTION STD. 310.02 OR 310.04	PREFORMED SCOUR HOLE	SIDE DRAIN PIPE ELBOWS NO. & SIZE	C. S. PIPE ELBOWS NO. & SIZE	CONC. COLLARS CL. "B" C.Y. STD. 840.72	PIPE REMOVAL LIN. FT.	REMARKS
-L- 544+50	MED	1701		151																				1																											
-L- 545+55	CL	1701	1702		148.5	149.1											208																																	25	REMOVE EX. 15" CONC
-L- 546+60	CL	1702		152.3																				1					1		1	1																			STD. 852.06
-L- 549+92	RT	1705						36																																											
-L- 549+93	LT	1706						36																																										24	REMOVE EX. 18" CONC
-L- 554+10	RT	1707							28																																									21	REMOVE EX. PIPE
-L- 553+71	LT	1708							32																																					1				46	REMOVE EX. 15" CONC, PES FOR 18"
-L- 555+15	MED	1801		144.8																				1									1				1													
-L- 555+15	RT	1801	1802		139.9	139.7										80																																	20	REMOVE EX. 15" CONC
-L- 558+58	MED	1803		143.1																				1									1				1													
-L- 558+58	RT	1803	1804		139.2	139										84																																		
-L- 562+00	RT	1805		144																				1									1				1													45	REMOVE EX. 30" CONC
-L- 562+03	RT	1805	1806		141.01	138.8										88																																		
-L- 561+63	LT	1807								44																																							38	REMOVE EX. 18" CONC
-L- 567+14	LT	1808								48																																							26	REMOVE EX. 24" CONC
-L- 568+53	RT	1809								36																																							24	REMOVE EX. 24" CONC
-L- 570+47	LT	1910								64																																							122	REMOVE EX . 24" CONC
-L- 573+00	LT	1901																				6																												
-L- 573+00	CL	1901	1902		137.5	136.7																	180																											
-L- 575+00	MED	1903		143.4																				1									1				1													
-L- 575+02	RT	1903	1904		139.5	136.3										92																																	43	REMOVE EX. 24" CONC
-L- 579+29	LT	1912								32																																							33	REMOVE EX. 24" RCP
-L- 582+00	MED	1908		144.6																				1									1				1													
-L- 581+93	LT	1908	1909		142.1	141.8										76																																		
-L- 582+01	LT	1913								32																																				1				24	REMOVE EX. 24" CONC, PES FOR 24"
-L- 583+84	LT																																																	21	REMOVE EX. 24" CONC
-L- 584+85	LT	2010								32																																								76	REMOVE EX. 18 " & 24"CONC
-L- 586+05	LT	2011								32																																								22	REMOVE EX. 24" CONC
-L- 587+52	CL	2001		149																				1					1		1	1																			17	**STD. 852.06** REMOVE EX. 24" CONC
-L- 588+41	CL	2001	2002		145.8	145.1											176																																	
-L- 589+30	MED	2002		147.9																				1									1				1													
-L- 589+27	RT	2002	2004		143.9	141.8										88																																		
-L- 591+01	MED	2002	2003		144.9	146.3											340																																	
-L- 590+71	LT	2012								32																																							25	REMOVE EX. 18" CONC
-L- 592+72	MED	2003		149																				1									1				1													
-L- 595+27	CL	2005		151.8																				1							1	1																		46	**SPECIAL ISLAND DETAIL, SEE SHT. 2-N**
-L- 596+38	CL	2005	2103		148.6	148.3											220																																	
-L- 597+50	MED	2103		150.7																				1									1				1													
-L- 597+50	RT	2103	2104		148.3	148										80																																		
-Y19- 18+87	LT	2006							24																																									18	REMOVE EX. 15" CONC
-Y19- 18+87	RT	2006																																																19	REMOVE EX. 15 " CONC
-Y19- 21+61	LT																																																	17	REMOVE EX. 12" CONC
-Y19- 22+46	LT	2007							24																																									20	REMOVE EX. 15" CONC
SHEET TOTALS								72	108	352						588						180	944	6	12				2		3	3	9			9				2					772	

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

COMPUTED BY:	CP	DATE:	3/29/2011
CHECKED BY:	RAS	DATE:	11/20/2012

RD261642

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
R-2303B	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
-L- 604+45	LT	2109							28										
-L- 601+35	LT	2108							36										
-L- 603+50	LT																		
-L- 604+72	LT	2101		145.7															
-L- 604+86	LT	2101	2105		143.8	143.5													
-L- 605+00	MED	2105		149.2															
-L- 606+50	CL	2105	2106		143.5	142.6													
-L- 608+02	LT	2102		145.6															
-L- 608+01	LT	2102	2106		143.3	143													
-Y20- 10+99	CL	2107																	
-L- 608+00	MED	2106		149.2															
-L- 609+50	CL	2106	2202		142.6	141.7													
-L- 611+00	MED	2202		148.1															
-L- 609+75	LT	2110							20										
-L- 612+36	CL	2202	2205		141.7	140.7													
-L- 613+72	MED	2205		146.3															
-L- 613+73	LT	2205	2206`		140.3	139.9													
-L- 613+97	LT	2212								40									
-L- 617+50	MED	2207		143.5															
-L- 618+69	CL	2207	2208		140.7	137.9													
-L- 619+87	CL	2208		141.1															
-L- 619+88	RT	2209		135.6															
-L- 619+88	RT	2208	2209		132.6	132.9													
-L- 620+68	CL	2208	2210		132.6	131.3													
-L- 621+50	MED	2210		135															
-L- 621+50	LT	2210	2211		131.3	131													
-L- 625+02	RT	2301		125.7															
-L- 626+03	RT	2301	2306		122.2	121													
-L- 627+04	RT	2306		123.7															
-L- 627+19	RT	2306	2307		120	119.7													
-L- 627+33	MED	2307		126.5															
-L- 627+04	RT	2306	2305		121.5	128.7				32									
-L- 627+50	LT	2307	2308		119	118.7													
-L- 630+00	MED	2302		128.8															
-L- 630+00	LT	2302	2303		126.6	126													
-L- 630+39	LT	2311								36									
-L- 634+21	CL	2309		136.1															
-L- 634+16	LT	2309	2310		132.9	131.4													
-L- 637+83	LT	2312								64									
-L- 640+52	LT																		
-L- 641+50	LT	2403	2404		119.5	119.3													
SHEET TOTALS									84	172									

STATION	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"
-L- 604+45																								
-L- 601+35																								
-L- 603+50																								
-L- 604+72																								
-L- 604+86										92														
-L- 605+00																								
-L- 606+50																			296					
-L- 608+02																								
-L- 608+01											88													
-Y20- 10+99											152													
-L- 608+00																								
-L- 609+50																				296				
-L- 611+00																								
-L- 609+75																								
-L- 612+36												268												
-L- 613+72																								
-L- 613+73												84												
-L- 613+97																								
-L- 617+50																								
-L- 618+69																		236						
-L- 619+87																								
-L- 619+88																								
-L- 619+88																			84					
-L- 620+68																			164					
-L- 621+50																								
-L- 621+50												80												
-L- 625+02																								
-L- 626+03												200												
-L- 627+04																								
-L- 627+19													88											
-L- 627+33																								
-L- 627+04																								
-L- 627+50													92											
-L- 630+00																								
-L- 630+00										80														
-L- 630+39																								
-L- 634+21																								
-L- 634+16																		80						
-L- 637+83																								
-L- 640+52																								
-L- 641+50												84												
SHEET TOTALS										172	240	716	180					316	544	296				

STATION	** " R.C. PIPE (CLASS V)	***" RC PIPE CULVERTS, CONTRACTOR DESIGN	***" RC PIPE CULVERTS, CONTRACTOR DESIGN			ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CU. YARDS R.C.P.	C.S.P.	QUANTITIES FOR DRAINAGE STRUCTURES PER EACH (0' THRU 5.0')	*TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL.'B') LIN. FT. A 5.0' THRU 10.0'	B 10.0' AND ABOVE	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STANDARD 840.03 TYPE OF GRATE E	F	G	CONCRETE TRANSITIONAL SECTION DROP INLET	CATCH BASIN	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND 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 GRATE STD. 840.29	G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.29	T.B.D.I. STD. 840.35	SPECIAL DI, SEE DETAILS SHT. 2-M	PARALLEL PIPE END SECTION STD. 310.02 OR 310.04	PREFORMED SCOUR HOLE
-L- 604+45																														
-L- 601+35																														
-L- 603+50																														
-L- 604+72								1												1				1						
-L- 604+86																														
-L- 605+00								1	0.7											1				1						
-L- 606+50																														
-L- 608+02								1												1				1						
-L- 608+01																														
-Y20- 10+99																														
-L- 608+00								1	1.6										1					1						
-L- 609+50																														
-L- 611+00								1	1.4										1					1						
-L- 609+75																														
-L- 612+36																														
-L- 613+72								1	1										1					1						
-L- 613+73																														
-L- 613+97																														
-L- 617+50								1												1				1						
-L- 618+69																														
-L- 619+87								1	3.5						1		1	1												
-L- 619+88								1												1				1						
-L- 619+88																														
-L- 620+68																														
-L- 621+50								1												1				1						
-L- 621+50																														
-L- 625+02								1											1					1						
-L- 626+03																														
-L- 627+04								1											1					1						
-L- 627+19																														
-L- 627+33								1	2.5											1				1						
-L- 627+04																														
-L- 627+50																														
-L- 630+00								1													1			1						
-L- 630+00																														
-L- 630+39																														
-L- 634+21								1							1		1	1												
-L- 634+16																														
-L- 637+83																													1	
-L- 640+52																														
-L- 641+50																														
SHEET TOTALS								15	10.70						2		2	2	5	7	1			13					1	

STATION	SIDE DRAIN PIPE ELBOWS NO. & SIZE	C. S. PIPE ELBOWS NO. & SIZE	CONC. COLLARS CL. "B" C.Y. STD. 840.72	PIPE REMOVAL LIN. FT.	REMARKS
-L- 604+45					
-L- 601+35					
-L- 603+50				20	REMOVE EX. 18" PLASTIC
-L- 604+72					
-L- 604+86				67	REMOVE EX. 18" CONC
-L- 605+00					
-L- 606+50				37	REMOVE EX. 18" CONC
-L- 608+02					
-L- 608+01					
-Y20- 10+99				32	REMOVE EX. 18" RCP
-L- 608+00					
-L- 609+50					
-L- 611+00					
-L- 609+75					
-L- 612+36					
-L- 613+72					
-L- 613+73					REMOVE EX. 6' CONC HW+ 18" CONC
-L- 613+97				21	REMOVE EX. 15" CONC
-L- 617+50					
-L- 618+69					
-L- 619+87					**STD. 852.06**
-L- 619+88					
-L- 619+88					
-L- 620+68					
-L- 621+50					
-L- 621+50					
-L- 625+02					
-L- 626+03					
-L- 627+04					
-L- 627+19					
-L- 627+33					
-L- 627+04	2 @ 18"				**BDO, STD. 850.10**
-L- 627+50				53	REMOVE EX. 18" RCP
-L- 630+00					
-L- 630+00					
-L- 630+39				33	REMOVE EX 15" CONC
-L- 634+21					**STD. 852.06**
-L- 634+16					
-L- 637+83					PES FOR 18"
-L- 640+52				44	REMOVE EX. 15" CONC
-L- 641+50					
SHEET TOTALS	2 @ 18"			307	

SIZE / THICKNESS OR GAUGE

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: CP DATE: 3/29/2011

CHECKED BY: RAS DATE: 11/20/2012

CSD265813

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
R-2303B	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	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
-L- 641+50	MED	2404		125															
-L- 642+14	CL	2404	2405		119.3	118.9													
-L- 642+79	CL	2405		123.4															
-L- 642+85	RT	2405	2401		118.9	118.6													
-L- 645+32	LT	2406	2407		115.1	114.7													
-L- 645+27	MED	2407		118.1															
-L- 645+23	RT	2407	2408		114.7	114.4													
-L- 653+00	LT	2517		106.5															
-L- 653+00	LT	2517	2518		104.3	103.9													
-L- 653+00	MED	2518		112.2															
-L- 654+64	MED	2518	2519		103.4	101.7													
-L- 656+25	MED	2519		108.2															
-L- 656+25	RT	2519	2521		95.3	94.4													
-L- 656+25	LT	2519	2520		95.3	95.6													
-L- 657+50	LT	2501		106.8															
-L- 657+87	LT	2501	2503		104.05	96.7													
-L- 653+57	LT	2504							28										
-L- 658+25	LT	2503		106.8															
-L- 658+25	LT	2503	2502		94	94													
-L- 658+25	LT	2503	2505		94	93.9													
-L- 658+25	MED	2505		105.9															
-L- 658+63	MED	2505	2506		101.9	103													
-L- 659+01	RT	2506	2507		103	103.8													
-L- 659+02	MED	2506		105.7															
-L- 658+26	CL	2505	2508		93.9	93.8													
-L- 659+01	RT	2507		106.5															
-L- 661+30	RT	2509		106															
-L- 661+30	MED	2510		105															
-L- 661+30	LT	2511		106.7															
-L- 661+30	RT	2509	2510		103.3	102.3													
-L- 661+30	MED	2510	2511		102.3	104													
-L- 661+72	MED	2510	2514		102.3	101.8													
-L- 662+15	MED	2514		104.8															
-L- 662+15	LT	2514	2513		93.9	94													
-L- 662+15	RT	2514	2515		93.9	93.8													
-L- 662+16	RT	2515	2512		93.8	93.8													
-L- 662+16	RT	2515		105.6															
SHEET TOTALS									28										

STATION	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"
-L- 641+50																
-L- 642+14																
-L- 642+79																
-L- 642+85																
-L- 645+32												88				
-L- 645+27																
-L- 645+23												72				
-L- 653+00																
-L- 653+00											88					
-L- 653+00																
-L- 654+64												324				
-L- 656+25																
-L- 656+25																104
-L- 656+25																100
-L- 657+50																
-L- 657+87																
-L- 653+57																
-L- 658+25																
-L- 658+25																48
-L- 658+25																56
-L- 658+25																
-L- 658+63										76						
-L- 659+01																
-L- 659+02																
-L- 658+26																104
-L- 659+01																
-L- 661+30																
-L- 661+30																
-L- 661+30																
-L- 661+30																
-L- 661+30																
-L- 661+72										84						
-L- 662+15																
-L- 662+15																104
-L- 662+15																56
-L- 662+16																44
-L- 662+16																
SHEET TOTALS										160	88	484				616

STATION	R.C. PIPE CLASS IV 12"	15"	18"	24"	30"	36"	42"	48"	** " R.C. PIPE (CLASS V)	***" RC PIPE CULVERTS, CONTRACTOR DESIGN	***" RC PIPE CULVERTS, CONTRACTOR DESIGN			ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CU. YARDS R.C.P.	C.S.P.
-L- 641+50															
-L- 642+14				128											
-L- 642+79															
-L- 642+85				80											
-L- 645+32															
-L- 645+27															
-L- 645+23															
-L- 653+00															
-L- 653+00															
-L- 653+00															
-L- 654+64															
-L- 656+25															
-L- 656+25															
-L- 656+25															
-L- 657+50															
-L- 657+87		72													
-L- 653+57															
-L- 658+25															
-L- 658+25															
-L- 658+25															
-L- 658+25															
-L- 658+63															
-L- 659+01		52													
-L- 659+02															
-L- 658+26															
-L- 659+01															
-L- 661+30															
-L- 661+30															
-L- 661+30															
-L- 661+30		52													
-L- 661+30		20													
-L- 661+72															
-L- 662+15															
-L- 662+15															
-L- 662+15															
-L- 662+16															
-L- 662+16															
SHEET TOTALS		196		208											

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 DROP INLET	CATCH BASIN	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND 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 GRATE STD. 840.29	G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.29	T.B.D.I. STD. 840.35	SPECIAL DI, SEE DETAILS SHT. 2-M	PARALLEL PIPE END SECTION STD. 310.02 OR 310.04	PREFORMED SCOUR HOLE
-L- 641+50	1	0.7										1					1						
-L- 642+14																							
-L- 642+79	1							1		1	1												
-L- 642+85																							
-L- 645+32																							
-L- 645+27	1													1			1						
-L- 645+23																							
-L- 653+00	1												1				1						
-L- 653+00																							
-L- 653+00	1	3.8										1					1						
-L- 654+64																							
-L- 656+25	1	5	2.9									1					1						
-L- 656+25																							
-L- 656+25																							
-L- 657+50	1												1						1				
-L- 657+87																							
-L- 653+57																							
-L- 658+25	1	5	2.8									1							1				
-L- 658+25																							
-L- 658+25																							
-L- 658+25	1	5	2									1					1						
-L- 658+63																							
-L- 659+01																							
-L- 659+02	1												1				1						
-L- 658+26																							
-L- 659+01	1												1						1				
-L- 661+30	1												1						1				
-L- 661+30	1												1				1						
-L- 661+30	1																		1	1			
-L- 661+30																							
-L- 661+30																							
-L- 661+72																							
-L- 662+15	1	5	0.9									1					1						
-L- 662+15																							
-L- 662+15																							
-L- 662+16																							
-L- 662+16	1	5	1.8									1							1				
SHEET TOTALS	16	29.50	10.40					1		1	1	7	6	1			9		6	1			

STATION	SIDE DRAIN PIPE ELBOWS NO. & SIZE	C. S. PIPE ELBOWS NO. & SIZE	CONC. COLLARS CL. "B" C.Y. STD. 840.72	PIPE REMOVAL LIN. FT.	REMARKS
-L- 641+50					
-L- 642+14				64	REMOVE EX. 18" RCP
-L- 642+79					STD. 852.06
-L- 642+85					
-L- 645+32				58	REMOVE EX. 18" CONC
-L- 645+27					
-L- 645+23					
-L- 653+00				24	REMOVE EX. 15" RCP
-L- 653+00					
-L- 653+00					
-L- 654+64					
-L- 656+25					
-L- 656+25					
-L- 656+25					
-L- 657+50					STD. 846.04
-L- 657+87					
-L- 653+57					
-L- 658+25					STD. 846.04
-L- 658+25					
-L- 658+25					
-L- 658+25					
-L- 658+63					
-L- 659+01					
-L- 659+02					
-L- 658+26					
-L- 659+01					STD. 846.04
-L- 661+30					STD. 846.04
-L- 661+30					
-L- 661+30					STD. 846.04
-L- 661+30					
-L- 661+30					
-L- 661+72					
-L- 662+15					
-L- 662+15					
-L- 662+15					
-L- 662+16					
-L- 662+16					STD. 846.04
SHEET TOTALS				146	

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: CP DATE: 3/29/2011

CHECKED BY: RAS DATE: 11/21/2012

RD261642

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
R-2303B	3-I

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

LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 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	C.S. PIPE 12" .064	15" .064	18" .064	24" .064	30" .079	36" .079	42" .109	48" .109
-L- 662+17	RT	2514	2516		101.8	102.5																					
-L- 663+45	MED	2516		105.2																							
-L- 665+33	LT																										
-L- 666+59	LT																										
-Y22- 14+87	CL	2614																									
-L- 668+00	RT	2603		110.8																							
-L- 669+10	RT	2603	2602		108.1	104																					
-L- 670+20	RT	2602		113.3																							
-L- 669+78	LT	2601	2604		107.7	107.2																					
-L- 670+00	MED	2604		112.4																							
-L- 670+10	RT	2604	2602		107.2	103.2																					
-L- 670+22	RT	2602	2605		103.2	101.5					32																
-L- 674+50	LT	2608		108.4																							
-L- 674+50	LT	2607	2608		113.4	105.8				28																	
-L- 674+50	MED	2609		111.6																							
-L- 674+50	RT	2608	2609		105.3	104.9																					
-L- 674+50	RT	2609	2610		104.4	104.1																					
-L- 676+00	LT	2606		109.7																							
-L- 675+25	LT	2608	2606		105.8	106.7																					
-L- 680+75	MED	2613		114.3																							
-L- 680+75	LT	2613	2612		111.6	111.4																					
-L- 680+75	LT	2612		115.4																							
-L- 680+75	LT	2612	2611		111.4	109.9																					
-L- 680+75	LT	2611		112.7																							
-L- 681+01	LT	2611	2704		109.7	109.5																					
-L- 683+00	MED	2705		116.6																							
-L- 683+00	RT	2705	2706		110.1	109.3																					
-L- 687+38	RT	2715								27																	
-L- 688+50	MED	2707		127.1																							
-L- 688+48	LT	2707	2708		125.2	124.9																					
-L- 691+50	MED	2702		130.3																							
-L- 691+50	LT	2702	2703		128.4	128.1																					
-L- 691+85	RT	2712								84																	
-L- 696+00	RT																										
-L- 696+83	LT	2806	2807		129.7	128.4																					
SHEET TOTALS										139	32																

STATION	R.C. PIPE CLASS III 12"	15"	18"	24"	30"	36"	42"	48"	R.C. PIPE CLASS IV 12"	15"	18"	24"	30"	36"	42"	48"	** " R.C. PIPE (CLASS V)	***" RC PIPE CULVERTS, CONTRACTOR DESIGN	***" RC PIPE CULVERTS, CONTRACTOR DESIGN			ENDWALLS STD. 838.01 OR STD. 838.11 (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
-L- 662+17		128																								
-L- 663+45																								1		
-L- 665+33																										
-L- 666+59																										
-Y22- 14+87			100																							
-L- 668+00																								1		
-L- 669+10										212																
-L- 670+20																								1	5	0.1
-L- 669+78				108																						
-L- 670+00																								1	0.2	
-L- 670+10												60														
-L- 670+22																										
-L- 674+50																								1		
-L- 674+50																										
-L- 674+50																								1	2.2	
-L- 674+50				88																						
-L- 674+50					84																					
-L- 676+00																								1		
-L- 675+25			148																							
-L- 680+75																								1		
-L- 680+75		56																								
-L- 680+75																								1		
-L- 680+75		20																								
-L- 680+75																								1		
-L- 681+01			52																							
-L- 683+00																								1	1.5	
-L- 683+00			92																							
-L- 687+38																										
-L- 688+50																								1		
-L- 688+48		88																								
-L- 691+50																								1		
-L- 691+50		76																								
-L- 691+85																										
-L- 696+00																										
-L- 696+83				76																						
SHEET TOTALS		368	392	272	84					212		60												13	8.90	0.10

STATION	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STANDARD 840.03 TYPE OF GRATE E	F	G	CONCRETE TRANSITIONAL SECTION DROP INLET	CATCH BASIN	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND 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 GRATE STD. 840.29	G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.29	T.B.D.I. STD. 840.35	SPECIAL DI, SEE DETAILS SHT. 2-M	PARALLEL PIPE END SECTION STD. 310.02 OR 310.04	PREFORMED SCOUR HOLE	SIDE DRAIN PIPE ELBOWS NO. & SIZE	C. S. PIPE ELBOWS NO. & SIZE	CONC. COLLARS CL. "B" C.Y. STD. 840.72	PIPE REMOVAL LIN. FT.	REMARKS
-L- 662+17																									
-L- 663+45										1				1											
-L- 665+33																								50	REMOVE EX. 18" CONC
-L- 666+59																								53	REMOVE EX. 18" CONC
-Y22- 14+87																									
-L- 668+00										1						1									STD. 846.04
-L- 669+10																									
-L- 670+20										1						1									STD. 846.04
-L- 669+78																									
-L- 670+00										1				1										17	REMOVE REMAINDER OF 18" CONC
-L- 670+10																								27	REMOVE 24' OF EX. 18" CONC
-L- 670+22																									
-L- 674+50									1				1	1											3-GI
-L- 674+50																					1 @ 18"				BDO, STD. 850.10
-L- 674+50										1				1											
-L- 674+50																								69	REMOVE EX. 24" CONC
-L- 674+50																									
-L- 676+00										1				1											
-L- 675+25																								26	REMOVE EX. 15" CONC
-L- 680+75										1				1											
-L- 680+75																									
-L- 680+75																1	1								STD. 846.04
-L- 680+75																									
-L- 680+75										1				1											
-L- 681+01																								49	REMOVE EX. 18" CONC
-L- 683+00										1				1											
-L- 683+00																									
-L- 687+38																			1					27	REMOVE EX. 15" CONC, PES FOR 18"
-L- 688+50											1			1											
-L- 688+48																									
-L- 691+50											1			1											
-L- 691+50																									
-L- 691+85																			1						PES FOR 18"
-L- 696+00																								49	REMOVE EX. 15" CONC
-L- 696+83																									
SHEET TOTALS									1	9	2		1	10		3	1		2		1 @ 18"			367	

SIZE / THICKNESS OR GAUGE

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:	CP	DATE:	3/29/2011
CHECKED BY:	RAS	DATE:	11/21/2012

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
R-2303B	3-J

RD261642

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
-L- 696+88	MED	2807		131.9															
-L- 696+88	RT	2807	2808		128.4	127.3													
-L- 696+88	RT	2808		130.3															
-L- 697+56	RT	2808	2809		127.3	126.9					136								
-L- 698+25	RT	2809		131.4															
-L- 698+07	RT	2809	2810		126.9	126.6					124								
-L- 702+50	RT	2811							28										
-L- 703+50	LT	2801		130.6															
-L- 703+44	LT	2801	2802		127.9	127.6													
-L- 703+36	CL	2802		134.9															
-L- 705+25	MED	2802	2804		127.6	126.5													
-L- 705+50	LT	2812							40										
-L- 707+15	MED	2804		130.1															
-L- 707+00	RT	2803		129															
-L- 707+07	RT	2804	2803		126	126.3													
-L- 707+50	LT	2813							56										
-L- 708+82	MED	2804	2910		125.8	122.2													
-L- 710+50	MED	2910		126															
-L- 709+67	LT	2909		127.7															
-L- 710+08	LT	2909	2910		125	122.4													
-L- 710+50	RT	2911		125.4															
-L- 710+50	RT	2910	2911		122.4	122.7													
-L- 711+82	MED	2910	2921		121.7	110.1													
-L- 713+15	MED	2921		121.5															
-L- 713+21	MED	2921	2920		110.1	108.8													
-L- 713+44	MED	2912	2919		109.4	108.8													
-L- 713+50	MED	2912		121.2															
-L- 713+89	MED	2912	2918		109.4	115.3													
-L- 714+28	MED	2918		121															
-L- 714+28	LT	2907	2918		120	117													
-L- 714+28	LT	2907		122.7															
-L- 714+28	RT	2908	2918		119.9	117													
-L- 714+28	RT	2908		122.6															
-L- 714+89	MED	2918	2914		115.3	115.8													
-L- 715+50	MED	2914		121.5															
-L- 715+52	LT	2913	2914		118	117.5													
-L- 715+54	LT	2913		120.7															
-L- 716+12	CL	2914	2905		115.8	119													
-L- 716+73	CL	2905		125.9															
-L- 717+08	CL	2905	2915		119	119.2													
-L- 717+44	MED	2915		126															
-L- 717+59	MED	2915	2916		120.2	122.5													
SHEET TOTALS									124		260								

STATION	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"
-L- 696+88																								
-L- 696+88												72												
-L- 696+88																								
-L- 697+56																								
-L- 698+25																								
-L- 698+07																								
-L- 702+50																								
-L- 703+50																								
-L- 703+44																		64						
-L- 703+36																								
-L- 705+25																		376						
-L- 705+50																								
-L- 707+15																								
-L- 707+00																								
-L- 707+07										76														
-L- 707+50																								
-L- 708+82											332													
-L- 710+50																								
-L- 709+67																								
-L- 710+08										116														
-L- 710+50																								
-L- 710+50										72														
-L- 711+82												264												
-L- 713+15																								
-L- 713+21												16												
-L- 713+44														8										
-L- 713+50																								
-L- 713+89														76										
-L- 714+28																								
-L- 714+28																		56						
-L- 714+28																								
-L- 714+28																		60						
-L- 714+28																								
-L- 714+89														120										
-L- 715+50																								
-L- 715+52										76														
-L- 715+54																								
-L- 716+12																						120		
-L- 716+73																								
-L- 717+08																						72		
-L- 717+44																								
-L- 717+59												72												
SHEET TOTALS										340	332	424		204				556				192		

STATION	** R.C. PIPE (CLASS V)	*** RC PIPE CULVERTS, CONTRACTOR DESIGN	*** RC PIPE CULVERTS, CONTRACTOR DESIGN			ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CU. YARDS R.C.P.	C.S.P.	QUANTITIES FOR DRAINAGE STRUCTURES PER EACH (0' THRU 5.0')	*TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL.'B') LIN. FT. A 5.0' THRU 10.0'	B 10.0' AND ABOVE	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STANDARD 840.03 TYPE OF GRATE E	F	G	CONCRETE TRANSITIONAL SECTION DROP INLET	CATCH BASIN
-L- 696+88								1								
-L- 696+88																
-L- 696+88								1								
-L- 697+56																
-L- 698+25								1								
-L- 698+07																
-L- 702+50																
-L- 703+50								1								
-L- 703+44																
-L- 703+36								1	2.3						1	
-L- 705+25																
-L- 705+50																
-L- 707+15								1								
-L- 707+00								1								
-L- 707+07																
-L- 707+50																
-L- 708+82																
-L- 710+50								1								
-L- 709+67								1								
-L- 710+08																
-L- 710+50								1								
-L- 710+50																
-L- 711+82																
-L- 713+15								1	5	1.4						
-L- 713+21																
-L- 713+44																
-L- 713+50								1	5	1.8						
-L- 713+89																
-L- 714+28								1	0.7							
-L- 714+28																
-L- 714+28								1								
-L- 714+28																
-L- 714+28								1								
-L- 714+89																
-L- 715+50								1	0.7							
-L- 715+52																
-L- 715+54								1								
-L- 716+12																
-L- 716+73								1	1.9						1	
-L- 717+08																
-L- 717+44								1	0.8							
-L- 717+59																
SHEET TOTALS								19	16.40	3.20					2	

STATION	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND 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 GRATE STD. 840.29	G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.29	T.B.D.I. STD. 840.35	SPECIAL DI, SEE DETAILS SHT. 2-M	PARALLEL PIPE END SECTION STD. 310.02 OR 310.04	PREFORMED SCOUR HOLE	SIDE DRAIN PIPE ELBOWS NO. & SIZE	C. S. PIPE ELBOWS NO. & SIZE	CONC. COLLARS CL. "B" C.Y. STD. 840.72	PIPE REMOVAL LIN. FT.	REMARKS
-L- 696+88				1				1											
-L- 696+88																			REMOVE EX. 18" RCP
-L- 696+88		1										1							
-L- 697+56																			
-L- 698+25		1										1							
-L- 698+07																			
-L- 702+50													1						PES FOR 15"
-L- 703+50				1				1											
-L- 703+44																			
-L- 703+36	1	1																	**STD. 852.06**
-L- 705+25																		15	REMOVE EX. 12" MTL
-L- 705+50																			
-L- 707+15				1				1											
-L- 707+00				1				1											
-L- 707+07																		30	REMOVE EX. 18" RCP
-L- 707+50																			
-L- 708+82																		22	REMOVE EX. 15" RCP
-L- 710+50			1					1										18	REMOVE EX. 15" RCP
-L- 709+67				1				1											
-L- 710+08																			
-L- 710+50				1				1											
-L- 710+50																			
-L- 711+82																			
-L- 713+15			1					1											
-L- 713+21																			**INTO THE SIDE OF 7'X7' RCBC**
-L- 713+44																			**INTO THE SIDE OF 7'X7' RCBC**
-L- 713+50			1					1											
-L- 713+89																			
-L- 714+28			1					1											
-L- 714+28																			
-L- 714+28				1						1									**STD. 846.04**
-L- 714+28																			
-L- 714+28				1						1									**STD. 846.04**
-L- 714+89																			
-L- 715+50			1					1											
-L- 715+52																			
-L- 715+54				1				1											
-L- 716+12																			
-L- 716+73		1										1							
-L- 717+08																		47	REMOVE EX. 15" CONC
-L- 717+44			1					1										21	REMOVE EX. 12" CMP
-L- 717+59																		16	REMOVE EX. 12" CONC
SHEET TOTALS	1	4	6	9				13		2		3	1					169	

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

CSD265813

COMPUTED BY:	CP	DATE:	3/29/2011
CHECKED BY:	RAS	DATE:	11/21/2012

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
R-2303B	3-K

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

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

STATION	LOCATION (LT, RT, OR CL)	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL
-L- 717+44	LT	2915	2917		120.7	121.1	
-L- 717+44	LT	2917		124.1			
-L- 718+22	LT	2904	2917		125.1	121.4	
-L- 719+00	LT	2904		127.8			
-L- 719+22	MED	2915	2906		120.7	124.5	
-L- 721+00	MED	2906		131.1			
-L- 721+00	RT	2906	2902		124.5	124.8	
-L- 721+00	RT	2902		128			
-L- 721+84	MED	2906	2901		124.8	128	
-L- 722+69	MED	2901		130.7			
-L- 726+57	RT	3002					
-L- 727+60	RT	3003					
-L- 728+12	RT	3004					
-L- 729+23	RT	3005					
-DET1- 10+64	LT	2H01					
-DET1- 11+44	LT	2H02					
-DET1- 11+88	LT	2H03					
-DET1- 15+10	LT	2H04					
-DET1- 17+22	RT	2H05	2H06		132.3	132.2	
-DET2- 17+00	LT	2I01		143			
-DET2- 17+00	LT	2I01	2I02		140.3	139.9	
-L- 662+15	MED	2514	2J01		99.6	100.2	
-DET3- 16+32	LT	2J02		106.1			
-DET3- 16+29	RT	2J03	2J04				
-DET4- 12+45	LT	2K01					
-DET4- 14+78	CL	2K02	2K03		114.5	115	
-DET4- 14+70	RT	2K03		117.5			
-DET4- 14+70	RT	2K03	2K04		114.9	114.8	
-DET4- 14+56	LT	2K05					

SIZE / THICKNESS OR GAUGE

STATION	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
-L- 718+22		152										
-L- 726+57		24										
-L- 727+60		20										
-L- 728+12		20										
-L- 729+23		20										
-DET1- 10+64		20										
-DET1- 11+44		24										
-DET1- 11+88		20										
-DET1- 15+10		20										
-DET1- 17+22		68										
-DET2- 17+00		96										
-DET3- 16+29			32									
-DET4- 12+45		32										
-DET4- 14+78					60							
-DET4- 14+70					12							
SHEET TOTAL		516	32		72							
SHEET 3A TOTAL		28	40									
SHEET 3B TOTAL		76										
SHEET 3C TOTAL			76									
SHEET 3D TOTAL		48	52									
SHEET 3E TOTAL			32	176								
SHEET 3F TOTAL		72	108	352								
SHEET 3G TOTAL		84	172									
SHEET 3H TOTAL		28										
SHEET 3I TOTAL			139	32								
SHEET 3J TOTAL		124		260								
SHEET 3K TOTAL		516	32		72							
SHEET 3L TOTAL												
GRAND TOTAL		976	651	820	72							

STATION	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"
-L- 717+44											80					
-L- 719+22											352					
-L- 721+84										168						
-L- 662+15										172						
SHEET TOTAL										340	432					
SHEET 3A TOTAL										280	828	76	488			
SHEET 3B TOTAL										556		100	192			
SHEET 3C TOTAL		64								204	64	356	180			
SHEET 3D TOTAL		228								836	96	404				
SHEET 3E TOTAL										992		164			600	
SHEET 3F TOTAL										588						180
SHEET 3G TOTAL										172	240	716	180			
SHEET 3H TOTAL										160	88	484				616
SHEET 3I TOTAL										368	392	272	84			
SHEET 3J TOTAL										340	332	424		204		
SHEET 3K TOTAL										340	432					
SHEET 3L TOTAL																
GRAND TOTAL		292								4836	2472	2996	1124	204	600	796

STATION	R.C. PIPE CLASS IV 12"	15"	18"	24"	30"	36"	42"	48"	** " R.C. PIPE (CLASS V)	*** RC PIPE CULVERTS, CONTRACTOR DESIGN	*** RC PIPE CULVERTS, CONTRACTOR DESIGN
-L- 721+00			84								
SHEET TOTAL			84								
SHEET 3A TOTAL		36	52		1056						
SHEET 3B TOTAL		604						196			
SHEET 3C TOTAL		552	432		104						
SHEET 3D TOTAL		56	72								
SHEET 3E TOTAL		732									
SHEET 3F TOTAL		944									
SHEET 3G TOTAL		316	544	296							
SHEET 3H TOTAL		196		208							
SHEET 3I TOTAL		212		60							
SHEET 3J TOTAL		556				192					
SHEET 3K TOTAL			84								
SHEET 3L TOTAL											
GRAND TOTAL		4204	1184	564	1160	192		196			

STATION	ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CU. YARDS R.C.P.	C.S.P.	QUANTITIES FOR DRAINAGE STRUCTURES PER EACH (0' THRU 5.0')	*TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL.'B') LIN. FT. A 5.0' THRU 10.0'	B 10.0' AND ABOVE	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STANDARD 840.03 TYPE OF GRATE E	F	G	CONCRETE TRANSITIONAL SECTION DROP INLET	CATCH BASIN
-L- 717+44			1								
-L- 719+00			1								
-L- 721+00			1	1.6							
-L- 721+00			1								
-L- 722+69			1	0.9							
-DET2- 17+00			1								
-DET3- 16+32			1								
-DET4- 14+70			1								
SHEET TOTAL			8	2.5							
SHEET 3A TOTAL			16	30.27	2.20					3	
SHEET 3B TOTAL	7.5		14	19.60	2.60						
SHEET 3C TOTAL			14	13.10	3.20					1	
SHEET 3D TOTAL			12	1.10							
SHEET 3E TOTAL	12.0		12							2	
SHEET 3F TOTAL	6.0		12							2	
SHEET 3G TOTAL			15	10.70						2	
SHEET 3H TOTAL			16	29.50	10.40					1	
SHEET 3I TOTAL			13	8.90	0.10						
SHEET 3J TOTAL			19	16.40	3.20					2	
SHEET 3K TOTAL			8	2.50							
SHEET 3L TOTAL											
GRAND TOTAL	25.5		151	132.07	21.70					13	
				LF =	160.28						
SAY	26				161						

STATION	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND 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 GRATE STD. 840.29	G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.29	T.B.D.I. STD. 840.35	SPECIAL DI, SEE DETAILS SHT. 2-M	PARALLEL PIPE END SECTION STD. 310.02 OR 310.04	PREFORMED SCOUR HOLE
-L- 717+44				1				1						
-L- 719+00				1				1						
-L- 721+00				1				1						
-L- 721+00				1				1						
-L- 722+69				1				1						
-L- 726+57													1	
-L- 728+12													1	
-L- 729+23													1	
-DET2- 17+00				1				1						
-DET3- 16+32				1				1						
-DET4- 14+70				1				1						
-DET4- 14+56														1
SHEET TOTAL				8				8					3	1
SHEET 3A TOTAL	1	1	6	7			1	13				2	1	
SHEET 3B TOTAL			3	11				7		7				
SHEET 3C TOTAL	1	1		12	1			8		5				1
SHEET 3D TOTAL				12				7		5				
SHEET 3E TOTAL	2	2		10				10					1	1
SHEET 3F TOTAL	3	3		9				9					2	
SHEET 3G TOTAL	2	2	5	7	1			13					1	
SHEET 3H TOTAL	1	1	7	6	1			9		6	1			
SHEET 3I TOTAL			1	9	2		1	10		3	1		2	
SHEET 3J TOTAL	1	4	6	9				13		2		3	1	
SHEET 3K TOTAL				8				8					3	1
SHEET 3L TOTAL			1					1						
GRAND TOTAL	11	14	29	100	5		2	108		28	2	5	11	3
SAY													4 @ 15"	
													5 @ 18"	
													2 @ 24"	

STATION	SIDE DRAIN PIPE ELBOWS NO. & SIZE	C. S. PIPE ELBOWS NO. & SIZE	CONC. COLLARS CL. "B" C.Y. STD. 840.72	PIPE REMOVAL LIN. FT.	REMARKS
-L- 719+22				16	REMOVE EX. 15" CONC
-L- 721+00				102	REMOVE TWO EX. 15" CONC PIPES
-L- 721+00				66	REMOVE THREE EX. 15" CONC PIPES
-L- 722+69				23	REMOVE EX. 15" CONC
-L- 726+57				24	REMOVE EX. 15" CONC, PES FOR 15"
-L- 727+60				20	REMOVE EX. 15" CONC
-L- 728+12				20	REMOVE EX. 15" CONC, PES FOR 15"
-L- 729+23					PES FOR 15"
-DET1- 10+64				20	REMOVE TEMPORARY PIPE
-DET1- 11+44				24	REMOVE TEMPORARY PIPE
-DET1- 11+88				20	REMOVE TEMPORARY PIPE
-DET1- 15+10				20	REMOVE TEMPORARY PIPE
-DET1- 17+22				68	REMOVE TEMPORARY PIPE
-DET2- 17+00				96	PARTIAL REMOVAL
-L- 662+15				40	PARTIAL REMOVAL
-DET3- 16+32				17	REMOVE EX. 18" CONC.
-DET3- 16+29			0.4465	32	REMOVE TEMPORARY PIPE
SHEET TOTAL			0.4465	608	
SHEET 3A TOTAL					
SHEET 3B TOTAL	4 @ 15"				
SHEET 3C TOTAL		2 @ 15"		49	
SHEET 3D TOTAL		8 @ 15"		20	
SHEET 3E TOTAL				205	
SHEET 3F TOTAL				772	
SHEET 3G TOTAL	2 @ 18"			307	
SHEET 3H TOTAL				146	
SHEET 3I TOTAL	1 @ 18"			367	
SHEET 3J TOTAL				169	
SHEET 3K TOTAL			0.4465	608	
SHEET 3L TOTAL					
	4 @ 15"				
GRAND TOTAL	3 @ 18"	10 @ 15"	0.4465	2643	
SAY			0.447	2700	

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: CP DATE: 3/29/2011

CHECKED BY: RAS DATE: 11/20/2012

RD266215

PROJECT NO.	SHEET NO.
R-2303B	3-L

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 54" & OVER)

STATION / SIZE / THICKNESS OR GAUGE	LOCATION (LT, RT, OR CL)	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	CLASS III R.C. PIPE (UNLESS NOTED OTHERWISE) 54"	60"	66"	72"	78"	84"
-L- 576+77	LT	1905		144.6									
-L- 576+78	LT	1905	1906		138.5	134.9				88			
-L- 576+80	MED	1906		143.1									
-L- 576+81	RT	1906	1907		134.9	134.6				88			
-L- 682+08	CL	2713	2714		111.7	107		172					
-L- 682+12	CL	2713	2714		111.7	107		172					
SHEET TOTAL								344		176			
GRAND TOTAL								344		176			
SAY													

STATION	BITUMINOUS COATED C.S. PIPE TYPE B (UNLESS NOTED OTHERWISE) 54" .109	54" .138	54" .168	54" SHOP ELON-GATED .138	54" SHOP ELON-GATED .168	60" .138	60" .168	66" .138	66" .168	72" .139	72" .168	STRUCTURAL PLATE PIPE 60" 12	60" 10	66" 12	66" 10	72" 12	72" 10
-L- 576+77																	
-L- 576+78																	
-L- 576+80																	
-L- 576+81																	
-L- 682+08																	
-L- 682+12																	
SHEET TOTAL																	
GRAND TOTAL																	
SAY																	

STATION	REINFORCED ENDWALLS WITH R.C. - C.Y.	REINFORCED ENDWALLS WITH C.S. - C.Y.	MASONRY DRAINAGE STRUCTURES CUBIC YARDS	C.B. STD. 840.01 OR 840.02	FRAMES, GRATES & HOOD STANDARD 840.03 TYPE OF GRATE E	F	G	CONCRETE TRANSITIONAL SECTION DROP INLET	CONCRETE TRANSITIONAL SECTION CATCH BASIN	G.D.I. TYPE "A" STD. 840.17 OR STD. 840.26	G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.24	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
-L- 576+77	6.3																STD. 838.33 OR STD. 838.63
-L- 576+78																	REMOVE EX. 30" CONC
-L- 576+80			6.3							1	1						REMOVE EX. 36" CONC
-L- 576+81																	
-L- 682+08	6.9																STD. 838.22 OR STD. 838.52
-L- 682+12																	
SHEET TOTAL	13.2		6.3							1	1						
GRAND TOTAL	13.2		6.3							1	1						TOTAL - STD 840.24 AND 840.26 (840.17) ADDED TO SHEET 3-K
SAY	14		7														

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

COMPUTED BY: SAT DATE: 01/16/2013
CHECKED BY: KEM DATE: 01/16/2013

PROJECT REFERENCE NO.	SHEET NO.
R-2303B	3-M

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

"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			RELAP	REMOVE EXISTING GUARDRAIL	REMARKS
				STRAIGHT	SHOP CURVED	DOUBLE FACED	APPROACH END	TRAILING END			APPROACH END	TRAILING END	APPROACH END	TRAILING END	TYPE 350	TYPE B-77	M-350	CAT-1	TERM. END SECT.	TEMP. GRAU 350			NO.	PERMITTED G	PERMITTED NG			
-LREV-	389+16.04	391+66.04(BR)	RT	250.00			390+52	391+66.04(BR)	10	13	50		1		1	1												
-LREV-	389+72.29	391+66.04(BR)	LT	193.75			391+66.04(BR)	390+44	10	13		50		1	1	1												GR FROM 390+22.42 TO 390+44.15 NOT WARRANTED - LEFT IN BECAUSE OF 2GI IN SHOULDER
-LREV-	389+78.54	391+66.04(BR)	M-RT	187.50				391+66.04(BR)	4	6	168.75		12.75			1	1											
-LREV-	390+03.54	391+66.04(BR)	M-LT	162.50			391+66.04(BR)		4	6		37.5		4		1	1									106.25		
-LREV-	404+07.96(BR)	404+57.96	RT	50.00			404+07.96(BR)		8	13						1		1										GR FROM NOT WARRANTED - LEFT IN BECAUSE OF 2GI IN SHOULDER
-LREV-	404+07.96(BR)	405+70.46	M-RT	162.50			404+07.96(BR)		4	6		37.5		4		1	1											
-LREV-	404+07.96(BR)	405+95.46	M-LT	187.50				404+07.96(BR)	4	6	168.75		12.75			1	1									131.25		
-LREV-	404+07.96(BR)	407+07.96	LT	300.00			405+72	404+07.96(BR)	10	13	50		1		1	1												GR FROM 406+81.54 TO 406+94.04 NOT WARRANTED - LEFT IN BECAUSE OF 2GI (NO. 0705) IN SHOULDER
-LREV-	425+74.26	441+74.26	RT	1600.00			427+00	441+75	10	13	50		1		1			1										GR FROM 425+75 TO 429+09 & FROM 439+42 TO 441+75 NOT WARRANTED - LEFT IN BECAUSE OF 2GI's IN SHOULDER
-Y14-	16+27		CL	25.00					3	6									2									
-LREV-	434+19.77	443+07.27	LT	887.50			441+83	434+25	10	13	50	50	1	1	2													
-L-	462+00.00	480+00.00	LT	1800.00			478+75	462+00	10	13	50		1		2													
-L-	463+06.00	465+06.03	RT	200.03			464+31	465+06	10	13	50		1		1			1										
-L-	468+43.00	11+62.73 (Y16)	RT/RT	231.25	53.57		469+71	11+56.31 (Y16)	10	13	50		1		1			1										
-L-	11+82.50 (Y16)	480+56.35	LT/RT	950.00	45.74		472+44.29	480+56.25	10	13	50		1		1			1										GR FROM 479+25 TO 480+56.25 NOT WARRANTED - LEFT IN BECAUSE OF 2GI IN SHOULDER
-L-	652+15.46	659+40.46(BR)	RT	725.00			653+43	659+40.46(BR)	10	13	50		1		1	1											204.32	REMOVE EXISTING GUARDRAIL FROM STA. 657+83.55 TO 659+87.16
-L-	654+09.21	659+40.46(BR)	LT	531.25			659+40.46(BR)	654+50	10	13		50		1	1	1											204.38	REMOVE EXISTING GUARDRAIL FROM STA. 657+82.93 TO 659+86.70
-L-	657+52.96	659+40.46(BR)	M-RT	187.50				659+40.46(BR)	4	6	168.75		12.75			1	1									131.25	192.07	REMOVE EXISTING GUARDRAIL FROM STA. 660+78.93 TO 662+69.91
-L-	657+77.96	659+40.46(BR)	M-LT	162.50			659+40.46(BR)		4	6		37.5		4		1	1									106.25	204.61	REMOVE EXISTING GUARDRAIL FROM STA. 660+80.17 TO 662+82.03
-L-	661+01.00(BR)	665+19.75	LT	418.75			663+99	661+01(BR)	10	13	50		1		1	1												
-L-	661+01.00(BR)	662+88.50	M-LT	187.50				661+01(BR)	4	6	168.75		12.75			1	1									131.25		
-L-	661+01.00(BR)	662+63.50	M-RT	162.50			661+01.00(BR)		4	6		37.5		4		1	1									106.25		
-L-	661+01.00(BR)	663+57.25	RT	256.25			661+01.00(BR)	663+11	10	13		50		1	1	1												
-L-	667+34.51	674+90.76	RT	756.25			668+61	674+86	10	13	50		1		1			1										GR FROM NOT WARRANTED - LEFT IN BECAUSE OF 2GI IN SHOULDER
-L-	680+20.00	685+35.00	LT	512.50			684+10	680+75	10	13	50	50	1	1	2													GR FROM NOT WARRANTED - LEFT IN BECAUSE OF 2GI's IN SHOULDER
-L-	679+55.23	681+23.98	RT	168.75			682+00		10	13	50		1		1			1										
-L-	710+32.00	714+44.50	RT	412.50			713+47.12(CULV)	714+18	10	13	50		1		1			1										
-L-	711+80.00	716+05.00	LT	425.00			716+24.64(CULV)	713+12.36	10	13	50		1		2													
			SUBTOTAL	12093.78	99.31									SUBTOTAL	22	16	8	8	2						SUBTOTAL	712.50	805.38	
			LESS ANCHORS	1750.00																								
			TOTAL	10343.78	99.31									TOTAL	22	16	8	8	2						TOTAL	712.50	805.38	
			SAY	10450	100									SAY	22	16	8	8	2						SAY	725.00	825.00	
	TEMPORARY GUARDRAIL																											
-L-	511+25.00	520+00.00	LT	775.00			514+25.00	518+25.00	4	6	50	50	1	1						2								SEE SHEET TMP-9
-L-	652+87.50	659+04.01	LT	566.51			655+25.00	656+75.00	4	6	50		1							1								TIE TO EXISTING GUARDRAIL, SEE SHEET TMP-13
-L-	679+75.00	685+25.00	RT	550.00			683+25.00	680+75.00	4	6	50	50	1	1						2								SEE SHEET TMP-15
-L-	711+20.00	717+03.00	RT	583.00			713+50.00	713+23.00	4	6	50	50	1	1						2								SEE SHEET TMP-16
			SUBTOTAL	2474.51														SUBTOTAL		7								
			LESS ANCHORS	350.00																								
			TOTAL	2124.51															TOTAL	7								
			SAY	2150															SAY	7								

DEDUCTIONS FOR ANCHORS:
GRAU-350 22 @ 50 EA. = 1100.00
TYPE B-77 16 @ 18.75 EA. = 300.00
M-350 8 @ 37.5 EA. = 300.00
CAT-1 8 @ 6.25 EA. = 50.00
TOTAL = 1750.00

DEDUCTIONS FOR ANCHORS:
TEMPORARY GRAU-350 7 @ 50 EA. = 350.00
TOTAL = 350.00

ADDITIONAL POSTS = 10 EACH

6/16/99

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CHECKED BY: TLS DATE: 1/8/12

PROJECT REFERENCE NO.	SHEET NO.
R-2303B	3-N

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

SUMMARY OF ASPHALT PAVEMENT BREAK-UP /REMOVAL
IN SQUARE YARDS

LINE	BEGIN STATION	END STATION	LOCATION	ASPHALT REMOVAL
-L-	368+00	376+15	RT	2,863.00
-L-	495+02	526+00	LT	8,261.33
-L-	539+50	543+00	LT	933.33
-L-	548+00	558+00	LT	2,666.67
-L-	580+00	593+50	LT	3,600.00
-L-	605+90	607+00	LT, RT	137.78
-L-	612+00	632+00	LT	5,428.56
-L-	648+00	650+00	LT	647.78
-L-	673+00	675+00	RT	666.67
-L-	681+00	687+50	RT	2,130.56
-L-	694+50	704+50	RT	2,694.67
-L-	708+75	718+50	RT	2,639.78
-Y11-	18+59	23+00	LT, RT	1,597.44
-Y13-	14+60	16+05	LT, RT	322.22
-Y13-	17+20	18+65	LT, RT	443.11
-Y14-	10+33	12+15	LT, RT	411.22
-Y14-	15+90	16+30	LT, RT	85.56
-Y15-	13+15	14+50	LT, RT	279.78
-Y15-	15+85	17+50	LT, RT	335.44
-Y16-	16+06	17+63	LT	265.56
-Y17-	10+85	13+60	LT, RT	1,312.11
-Y19-	20+33	21+65	LT, RT	412.44
-Y20-	10+00	11+30	LT, RT	275.78
-Y22-	13+00	-L-	LT, RT	1,837.22
-Y23-	17+90	19+60	LT, RT	495.33
-Y24-	10+00	11+50	LT, RT	256.67
			TOTAL	41,000.00
			SAY	41,500

LINE	BEGIN STATION	END STATION	LOCATION	ASPHALT BREAK-UP
-L-	490+15	495+00	RT	1,336.00
-L-	543+00	548+00	LT	1,333.33
-L-	558+00	580+00	LT	5,866.67
-L-	650+00	659+16	LT	2,442.67
-L-	661+25	673+00	LT, RT	3,916.67
-Y13-	16+05	17+15	LT, RT	254.44
-Y14-	12+17	15+91	LT, RT	823.89
-Y15-	14+50	15+85	LT, RT	283.22
-Y18-	19+47	20+50	LT, RT	332.22
			TOTAL	16,589.11
			SAY	16,590

SUMMARY OF SUBSURFACE DRAINAGE

LINE	BEGIN STATION	END STATION	LOCATION	DRAIN TYPE* UD/BD/SD	LF
-Y16-	16+50	19+50	LT	SD	300
-Y16-	16+50	19+50	RT	SD	300
	CONTINGENCY			SD	2800
				TOTAL LF:	3400

*UD = UNDERDRAIN
*BD = BLIND DRAIN
*SD = SUBSURFACE DRAIN

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DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

SUMMARY OF EARTHWORK

IN CUBIC YARDS

LOCATION	UNCLASSIFIED EXCAVATION	UNDERCUT	EMBT+%	BORROW	WASTE
PHASE I					
-L- (DET1) 355+29.00 TO 366+20.75	760		2,404	1,644	
-L- (LT) 366+20.75 TO 375+00.00	2,163		1,458	0	706
SUBTOTAL 1	2,923		3,862	1,644	706
-L- (FULL) 375+00.00 TO 377+00.00	24		2,821	2,797	
-Y11- 15+50.00 TO 19+05.88	148		234	86	
-SR1- 10+10.00 TO 18+25.89	128		3,341	3,213	
SUBTOTAL 2	300		6,396	6,096	
-L- (FULL) 377+00.00 TO 391+76.04 (BEG. BRDG.)	1,771		38,193	36,422	
SUBTOTAL 3	1,771		38,193	36,422	
-L- (FULL) 403+97.96 (END BRDG.) TO 432+00.00	1,416		95,151	93,735	
REMOVE DAM -L- RT. 430+00.00	4,100				4,100
-Y13- 13+75.00 TO 15+99.71	11		1,420	1,409	
-Y14- 16+30.00 TO 17+20.00	268	195	268	268	463
SUBTOTAL 4	5,795	195	96,839	95,412	4,563
-L- (FULL) 432+00.00 TO 460+00.00	2,265		139,589	137,324	
-Y15- 13+00.00 TO 14+44.95	27		785	758	
-Y15- 15+77.42 TO 18+50.00	65		1,369	1,304	
-SR2- 10+09.14 TO 22+50.00	32		4,469	4,437	
SUBTOTAL 5	2,389		146,212	143,823	
-L- (FULL) 460+00.00 TO 488+50.00	1,545		200,720	199,175	
-Y16- 10+59.10 TO 16+00.00	49		14,940	14,891	
-SR2- 22+50.00 TO 39+14.00	55		7,215	7,160	
SUBTOTAL 6	1,649		222,875	221,226	
-L- (LT) 488+50.00 TO 493+00.00	0		5,186	5,186	
SUBTOTAL 7	0		5,186	5,186	
-L- (DET2) 491+13.00 TO 498+50.00	82		4,476	4,394	
-L- (RT) 498+50.00 TO 502+50.00	0		5,671	5,671	
SUBTOTAL 8	82		10,147	10,065	
-L- (RT) 502+50.00 TO 532+50.00	309	14,640	45,773	45,464	14,640
SUBTOTAL 9	309	14,640	45,773	45,464	14,640
-L- (RT) 532+50.00 TO 562+50.00	683		31,251	30,568	
SUBTOTAL 10	683		31,251	30,568	
-L- (RT) 562+50.00 TO 592+50.00	0		46,949	46,949	
SUBTOTAL 11	0		46,949	46,949	
-L- (RT) 592+50.00 TO 622+50.00	5,504	2,799	18,026	12,522	2,799
-Y19- 21+19.31 TO 22+71.00	120		185	65	
-Y20- 10+61.81 TO 13+00.00	88		300	212	
SUBTOTAL 12	5,712	2,799	18,511	12,799	2,799

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.

PROJECT REFERENCE NO. R-2303B
SHEET NO. 3-0

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COMPUTED BY: TLS DATE: 1/4/13
CHECKED BY: TLS DATE: 1/10/13

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

SUMMARY OF EARTHWORK

IN CUBIC YARDS

LOCATION	UNCLASSIFIED EXCAVATION	UNDERCUT	EMBT + %	BORROW	WASTE
-L- (RT) 622+50.00 TO 647+50.00	5,683	3,553	15,669	12,657	6,224
SUBTOTAL 13	5,683	3,553	15,669	12,657	6,224
-L- (RT) 647+50.00 TO 659+40.46 (BEG. BRDG.)	221	4,112	46,645	46,424	4,112
SUBTOTAL 14	221	4,112	46,645	46,424	4,112
-L- (RT) 661+01.00 (END BRDG.) TO 664+00.00	0	968	14,861	14,861	968
-L- (DET3) 663+93.34 TO 674+12.72	662		4,210	3,548	
SUBTOTAL 15	662	968	19,071	18,409	968
-L- (LT) 671+20.00 TO 701+20.00	5,938	5,208	20,234	14,296	5,208
-Y23- 16+75.00 TO 18+94.31	32		795	763	
SUBTOTAL 16	5,970	5,208	21,029	15,059	5,208
-L- (LT) 701+20.00 TO 730+10.00	6,997	11,193	33,316	32,080	16,954
-L- (DET4) 730+10.00 TO 740+97.62	962		2,801	1,839	
SUBTOTAL 17	7,959	11,193	36,117	33,919	16,954
PHASE II					
-L- (RT) 488+50.00 TO 491+13.00	0		2,941	2,941	
-Y17- 10+59.00 TO 15+00.00	44		2,034	1,990	
SUBTOTAL 1	44		4,975	4,931	
-L- (LT) 493+00.00 TO 498+52.98	0		8,173	8,173	
-L- (LT) 498+52.68 TO 502+50.00	0		1,998	1,998	
SUBTOTAL 2	0		10,171	10,171	
-L- (LT) 502+50.00 TO 532+50.00	707		6,535	5,828	
SUBTOTAL 3	707		6,535	5,828	
-L- (LT) 532+50.00 to 562+50.00	1,832		11,951	10,119	
-Y18- 18+00.00 TO 20+34.61	17		649	632	
SUBTOTAL 4	1,849		12,600	10,751	
-L- (LT) 562+50.00 TO 592+50.00	1,608		20,038	18,430	
SUBTOTAL 5	1,608		20,038	18,430	
-L- (LT) 592+50.00 TO 622+50.00	5,876	441	3,316	0	2,956
-Y19- 17+75.00 TO 21+15.03	301		540	239	
SUBTOTAL 6	6,177	441	3,901	239	2,956
-L- (LT) 622+50.00 TO 647+50.00	1,503	65	2,589	1,086	65
-Y21- 17+75.00 TO 20+04.30	212		121	0	91
SUBTOTAL 7	1,715	65	2,710	1,086	156
-L- (LT) 647+50.00 TO 659+40.46 (BEG. BRDG.)	1,315	1,390	23,289	21,974	1,390
SUBTOTAL 8	1,315	1,390	23,289	21,974	1,390

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.

PROJECT REFERENCE NO. R-2303B
SHEET NO. 3-P

COMPUTED BY: TLS DATE: 1/13
CHECKED BY: TLS DATE: 1/10/13

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

SUMMARY OF EARTHWORK

IN CUBIC YARDS

LOCATION	UNCLASSIFIED EXCAVATION	UNDERCUT	EMBT+%	BORROW	WASTE
-L- (LT) 661+01.00 (END BRDG.) TO 664+00.00	0	162	6,108	6,108	162
-L- (LT) 664+00.00 TO 671+20.00	0		13,211	13,211	
-Y22- 12+00.00 TO 15+64.73	262		2,908	2,646	
SUBTOTAL 9	262	162	22,227	21,965	162
-L- (RT) 671+20.00 TO 701+20.00	2,364	369	7,939	5,575	369
SUBTOTAL 10	2,364	369	7,939	5,575	369
-L- (RT) 701+20.00 TO 730.10.00	1,413	1,073	11,955	10,858	1,389
-Y24- 10+59.61 TO 12+50.00	133	300	763	759	429
SUBTOTAL 11	1,546	1,373	12,718	11,617	1,818
PHASE III					
-L- (RT) 366+20.75 TO 375+00.00	245		2,930	2,685	
-Y11- 20+23.00 TO 25+00.00	51		1,909	1,858	
SUBTOTAL 1	296		4,839	4,543	
-Y12- 20+50.00 TO 21+99.62	23		49	26	
-Y13- 17+42.59 TO 20+00.00	106		468	362	
SUBTOTAL 2	129		517	388	
-L- (RT) 491+13.00 TO 498+50.00	242		4,711	4,469	
SUBTOTAL 3	242		4,711	4,469	
-Y16- 16+00.00 TO 19+50.00	39		1,569	1,530	
SUBTOTAL 4	39		1,569	1,530	
-L- (RT) 664+00.00 TO 671+20.00	184		13,108	12,924	
SUBTOTAL 5	184		13,108	12,924	
PROJECT SUBTOTAL	60,585	46,468	962,572	918,543	63,025
MATERIAL FOR SHOULDER CONSTRUCTION			65,680	65,680	
LOSS DUE TO CLEARING & GRUBBING	- 18,000			18,000	
ADDITIONAL UNDERCUT		15,550	19,438	19,438	15,550
WASTE IN LIEU OF BORROW				-7,412	-7,412
SELECT GRANULAR MATERIAL IN LIEU OF BORROW			-77,523	-77,523	
PROJECT SUBTOTAL	42,585	62,018	970,167	936,726	71,163
EST. 5% TO REPLACE TOP SOIL ON BORROW PIT				46,836	
GRAND TOTAL	42,585	62,018	970,167	983,562	71,163
SAY	42,600	62,100		983,600	

DDE = 18,700 CY

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

PROJECT REFERENCE NO. R-2303B
SHEET NO. 3-0

COMPUTED BY: RAS	DATE: 12/14/12
CHECKED BY: TLS	DATE: 01/15/13

PROJECT NO.	SHEET NO.
R-2303B	3-R

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SUMMARY OF WOVEN WIRE FENCE

LINE	SIDE	STATION	STATION	FABRIC 47" (LF)	LINE POST (4")	TERMINAL POST (5")
-LREV-	LT.	385+00.00	391+64.00	666.36	42	11
-LREV-	LT.	391+58.54	391+66.04	60.03	3	2
-LREV-	LT.	404+03.00	404+07.96	60.20	2	5
-LREV-	LT.	404+03.00	422+80.00	1,913.76	125	21
-LREV-/-Y13-	LT./RT.	422+80.00	14+75.00	83.77	5	2
-Y13-/-LREV-	LT.	14+75.00	424+50.00	125.04	5	8
-LREV-	LT.	424+50.00	445+03.90	2,140.02	132	39
-L-/-Y15-	LT./RT.	445+03.90	14+00.00	39.39	2	2
-Y15-/-L-	LT.	13+00.00	447+20.00	43.92	0	5
-L-	LT.	447+20.00	489+90.00	4,260.63	280	44
-L-	LT.	490+50.00	504+15.00	1,334.69	87	16
-L-	LT.	505+95.00	531+35.00	2,539.50	166	28
-L-	LT.	531+95.00	545+35.00	1,340.00	86	17
-L-/-Y18-	LT./RT.	545+35.00	19+25.00	69.26	4	2
-Y18-/-L-	LT.	19+25.00	547+25.00	92.17	4	5
-L-	LT.	547+25.00	549+60.00	235.00	16	2
-L-	LT.	550+20.00	553+35.00	315.00	19	7
-L-	LT.	553+95.00	561+25.00	750.00	47	13
-L-	LT.	561+85.00	566+90.00	505.00	32	7
-L-	LT.	567+50.00	570+20.00	270.00	17	4
-L-	LT.	570+80.00	574+10.00	350.00	20	10
-L-	LT.	574+70.00	579+05.00	435.00	27	7
-L-	LT.	579+65.00	581+70.00	205.00	13	4
-L-	LT.	582+30.00	584+31.61	201.61	12	4
-L-	LT.	586+35.00	590+55.00	420.00	26	7
-L-	LT.	591+15.00	594+70.00	355.00	21	8
-L-/-Y19-	LT./RT.	594+70.00	19+00.00	52.44	3	2
-Y19-/-L-	LT.	19+00.00	596+00.00	36.75	0	5
-L-	LT.	596+00.00	601+00.00	500.00	33	5
-L-	LT.	601+60.00	604+10.00	250.00	16	4
-L-	LT.	604+70.00	609+40.00	479.18	27	13
-L-	LT.	610+00.00	613+97.00	389.60	24	7
-L-	LT.	614+57.00	629+88.00	1,578.68	97	28
-L-	LT.	630+48.00	637+75.00	727.00	47	10
-L-	LT.	638+35.00	641+50.00	315.00	18	8
-L-/-Y21-	LT./RT.	641+50.00	18+75.00	70.67	4	2
-Y21-/-L-	LT.	18+75.00	643+00.00	107.12	5	5
-L-	LT.	643+00.00	653+30.00	1,008.21	66	11
-L-	LT.	653+90.00	659+09.00	517.55	33	8
-L-	LT.	659+09.00	659+16.29	70.38	4	2
-L-	LT.	661+25.17	661+33.00	68.79	2	5
-L-	LT.	661+33.00	665+35.07	418.67	27	6
-L-/-Y22-	LT./RT.	665+35.07	14+78.53	259.78	17	2
-Y22-/-L-	LT.	13+70.00	669+30.00	49.57	1	5
-L-	LT.	669+30.00	685+50.00	1,706.95	105	30
-L-	LT.	680+52.45	685+50.00	956.70	58	18
-Y23-/-L-	LT.	17+80.00	688+00.00	155.08	8	5
TOTAL:				28,528.47	1,788	461
				LF	EA	EA

LINE	SIDE	STATION	STATION	FABRIC 47" (LF)	LINE POST (4")	TERMINAL POST (5")
-L-	LT.	688+00.00	705+45.00	1,769.58	112	26
-L-	LT.	705+61.00	707+15.00	154.00	9	4
-L-	LT.	707+75.00	709+55.00	180.00	11	4
-L-	LT.	710+15.00	716+40.00	625.00	39	10
-L-	LT.	717+00.00	719+40.00	240.00	15	4
-L-	LT.	720+00.00	731+26.63	1,160.62	66	31
-LREV-	RT.	385+00.00	391+64.00	661.67	41	11
-LREV-	RT.	391+64.00	391+66.04	60.03	3	2
-LREV-	RT.	404+02.85	404+07.96	52.24	1	5
-LREV-	RT.	404+03.00	421+66.56	1,755.74	106	36
-LREV-/-Y12-	RT.	421+66.56	21+50.00	89.27	5	2
-LREV-	RT.	MITIGATION SITE	425+00.00	3,701.81	226	71
-LREV-	RT.	439+24.34	444+55.00	514.87	32	8
-LREV-/-Y15-	RT.	444+55.00	17+20.00	39.25	2	2
-Y15-/-L-	LT./RT.	17+20.00	446+00.00	127.95	5	8
-L-	RT.	446+00.00	470+35.00	2,437.58	159	27
-L-/-Y16-	RT.	470+35.00	12+05.00	66.59	4	2
-Y16-/-L-	LT./RT.	12+05.00	472+30.00	88.57	4	5
-L-	RT.	472+30.00	489+41.14	1,722.61	112	21
-L-/-Y17-	RT.	489+41.14	12+25.00	144.79	9	2
-Y17-/-L-	RT.	12+25.00	491+31.75	85.87	3	5
-L-	RT.	491+31.73	503+75.00	1,275.99	82	17
-L-	RT.	504+35.00	531+85.00	2,750.00	180	31
-L-	RT.	532+45.00	542+67.00	1,022.05	66	13
-L-	RT.	543+27.37	543+46.00	18.63	0	4
-L-	RT.	543+58.00	546+05.23	247.23	16	4
-L-	RT.	547+25.00	549+55.00	230.00	14	4
-L-	RT.	550+15.00	553+90.00	375.00	23	7
-L-	RT.	554+50.00	561+30.00	680.00	43	10
-L-	RT.	561+90.00	568+10.00	640.00	37	16
-L-	RT.	568+70.00	578+55.00	1,005.00	63	16
-L-	RT.	579+15.00	594+70.00	1,594.83	100	26
-L-/-Y19-	RT.	594+70.00	22+30.00	69.92	4	2
-Y19-/-L-	LT./RT.	22+30.00	595+90.00	64.29	2	5
-L-	RT.	595+90.00	605+75.00	1,000.00	63	15
-L-/-Y20-	RT.	605+75.00	12+00.00	172.43	10	5
-Y20-/-L-	LT./RT.	12+00.00	607+70.00	37.60	0	5
-L-	RT.	607+70.00	633+40.00	2,640.82	168	38
-L-	RT.	634+00.00	647+65.00	1,415.55	86	28
-L-	RT.	648+25.00	659+09.00	1,106.91	71	14
-L-	RT.	659+09.00	659+16.29	70.38	4	2
-L-	RT.	661+25.17	661+42.74	71.17	2	5
-L-	RT.	661+42.74	681+05.00	1,935.22	121	32
-L-	RT.	681+65.00	687+02.97	537.97	35	7
-L-	RT.	687+90.00		13.00	0	4
-L-	RT.	697+95.00	699+45.00	150.00	9	4
-L-	RT.	700+05.00	702+38.00	233.00	15	4
TOTAL:				35,035.03	2,178	604
				LF	EA	EA

LINE	SIDE	STATION	STATION	FABRIC 47" (LF)	LINE POST (4") EA	TERMINAL POST (5") EA
-L-	RT.	702+54.00	707+13.76	459.76	29	7
-L-	RT.	708+33.76	716+55.00	821.24	51	14
-L-/-Y24-	RT.	716+55.00	11+80.00	77.76	4	2
-Y24-/-L-	LT./RT.	11+80.00	717+60.00	72.59	2	5
-L-	RT.	717+60.00	720+52.75	292.75	20	2
-L-	RT.	721+15.00	726+13.00	506.89	32	7
-L-	RT.	729+60.00	731+12.53	182.53	8	10
TOTAL:				2,413.52	146	47
PROJECT TOTAL:				65,977.02	4,112.00	1,112.00
SAY:				**65,980.00**	**4,112**	**1,115**

SUMMARY OF 48" CHAIN LINK FENCE

LINE	SIDE	STATION	STATION	FABRIC (LF)	METAL LINE POST (EA)	METAL TERMINAL POST (EA)
-Y11-	LT.	17+65.40	18+76.90	123.71	10	1
-L-	LT.	377+00.00	382+22.35	502.91	42	1
-LREV-	LT.	382+24.71	385+00.00	292.91	25	4
-Y11-/-L-	RT.	21+60.00	382+22.35	489.59	41	1
-LREV-	RT.	382+24.71	385+00.00	275.29	23	1
PROJECT TOTAL:				1,684.41	141	8
SAY:				**1,690**	**150**	**8**

SHOULDER BERM GUTTER

LINE	SIDE	STATION	STATION	LENGTH (FT)
-L-	RT.	389+66.70	391+52.04	185.34
-L-	LT.	390+22.29	391+52.04	129.75
-L-	RT.	404+21.96	404+50.32	28.36
-L-	LT.	404+21.96	406+56.57	234.61
-L-	RT.	426+25.00	441+68.75	1543.75
-L-	LT.	462+85.00	478+25.00	1540.00
-L-	RT.	463+56.00	464+99.75	143.75
-L-	RT. / RT.	468+92.95	11+56.31	265.67
-L-	LT. / RT.	11+32.55	480+50.00	939.48
-L-	LT.	654+59.75	659+16.29	456.54
-L-	RT.	655+30.00	659+16.29	386.29
-L-	RT.	661+25.17	663+07.25	182.08
-L-	M-LT.	661+25.17	661+34.74	9.57
-L-	RT.	668+00.00	674+60.00	660.00
-L-	LT.	680+70.00	684+70.00	400.00
-L-	RT.	710+82.00	714+38.25	356.25
-L-	LT.	712+33.75	715+25.00	291.25
PROJECT TOTAL:				7752.69
SAY:				**7760**

PROJ. REFERENCE NO.	SHEET NO.
R-2303B	3-S

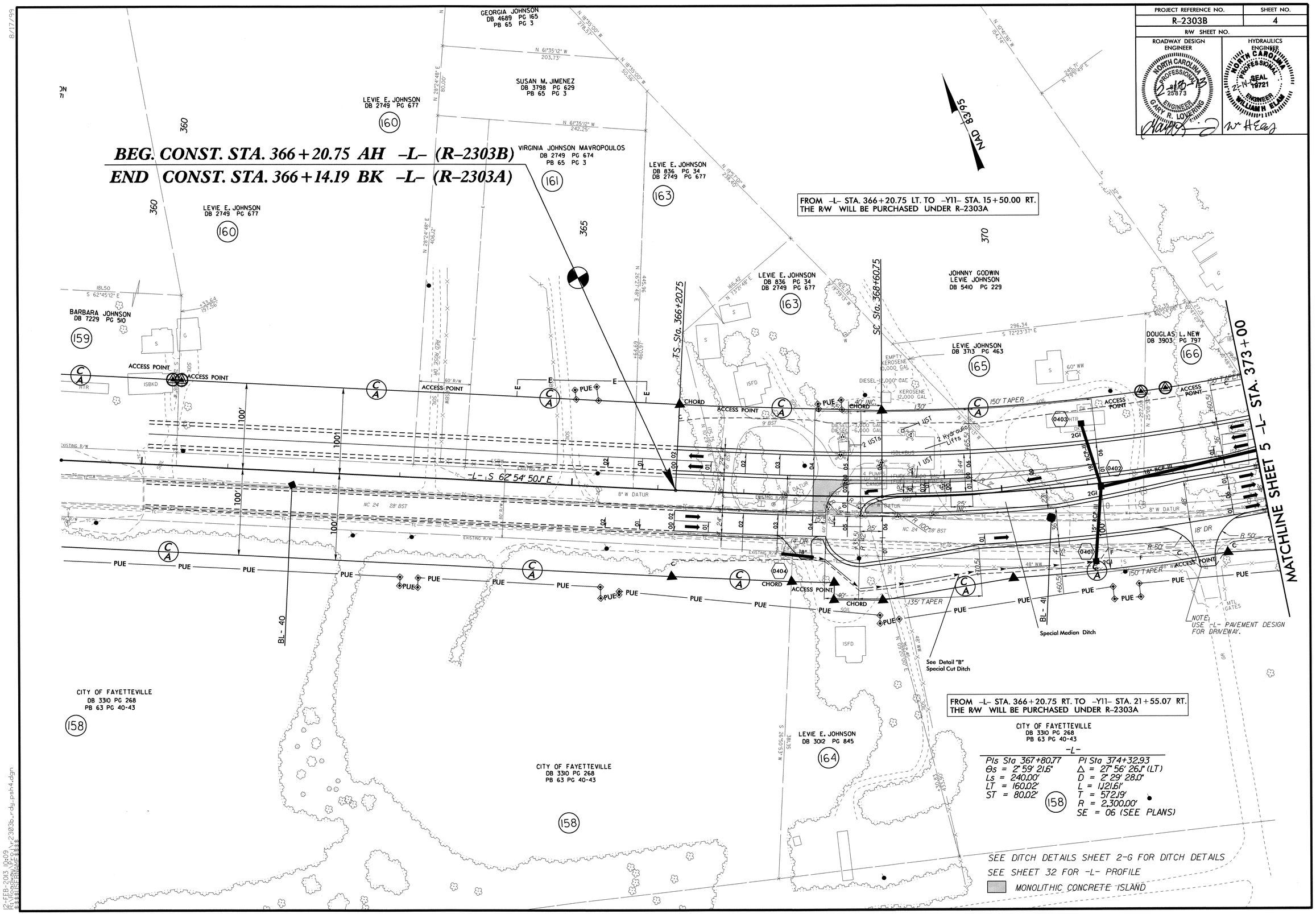
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PARCEL INDEX SHEET

PARCEL No.	SHEET No.	PROPERTY OWNER NAME
2	5	LARRY O. SUTTON
4	5	LEIBURN R. STRICKLAND
5	5	DELMAR HOLLINGSWORTH
6	5, 6	THELMA NUNNERY
8	5, 6	LINDA BULLARD NOWELL
9	5, 6	DAVID I. MORRIS
10	5	JOHN PRESTON NUNNERY
11	5, 6	JAMES ANTHONY NUNNERY
12	5	JOHN P. NUNNERY
13	5	GREGORY P. NUNNERY
14	5	ROY HALL
15	5	ROBERT L. NUNNERY
16	5	TONY KNUDSEN, et ux
19	6, 7	ROLAND NUNNERY
19A	6	JOHN STEVEN NUNNERY
19B	6, 7	ROLAND NUNNERY
20	7	RICHARD S. SESSOMS,JR.
21	7, 8	JAMES H. SPELL
22	8	VIRGINIA MAE PHILLIPS SIMMONS
23	8	ROBERT F. CASHWELL
24	8, 9	STACY R. CARR, III
24A	9	DWIGHT A. TART
25	8	BETTY A. WILLIAMS
26	8, 9	HEATHER ELIZABETH MELVIN
26A	8	PAMELA C. MELVIN (PER SAMPSON CO. GIS)
27	8, 9	THORNTON HOMES
28	8, 9	PAMELA B. MELVIN
28A	9	PAMELA C. MELVIN
29	9	FRANCES A. FAIRCLOTH
30	9	DONNA BROWN HOLDEN
31	9	HELEN S. SESSOMS
31A	9	DOUGLAS LEON NEW
32	9	FRANCES A. FAIRCLOTH
33	9, 10	DOUGLAS NEW
34	9	DANNY RAY JOHNSON
35	10	JOHN A. BROCK, et al
36	10	STEVEN FILZEN
37	10	DOUGLAS L. NEW
38	10, 11	HOYLE S. BROOME
39	11	ELVA MARIE FAIRCLOTH
40	11	ERNEST E. HOWELL
41	11	WILLIE FRANK MCGOWAN
42	11, 31	ADIRONDACK TIMBER CO., INC
43	11, 12, 31	FAIRCLOTH HEIRS
43A	11, 12	HARRISON L. FAIRCLOTH
43B	12	ROOSEVELT A. FAIRCLOTH
43I	11	IMPROVEMENT ACQUISITION
44	12, 13, 14, 31	H. BREWER HONEYCUTT
45	12	MARY FAIRCLOTH FINNEY
46	14	EDDIE I. HALL
46A	14	SUSAN RENEGAR, ETAL
47	14, 15, 16, 17	JAMES R. STARLING
48	17	JAMES V. BROWN
48Z	17	DORIS MARIE BROWN
49	17, 18	RICHARD F. HALL
50	17	GEORGE L. HALL
51	17	JOSE PEDRAZA
53	17, 18	GEORGE L. HALL
53A	18	GEORGE L. HALL
53B	18	GEORGE L. HALL

PARCEL No.	SHEET No.	PROPERTY OWNER NAME
56	18, 19	JIMMY M. HALL
57	18, 19	SOMBOON J. KACHAENCHAI
58	19	SCOTT McGOWAN
61	19	SABRA TYNDALL
62	19	LINDA F. FAIRCLOTH
63	19, 20	WEYERHAEUSER NR CO.
64	20	RANDY CLAY FAIRCLOTH
65	20	VICKIE HORNE
66	20	SUSAN WILSON
67	20	KENNETH W. NUNNERY
68	20	TROY W. NUNNERY
70	20, 21	WILLIAM T. MCLEOD
71	20, 21	FAYE NUNNERY HEIRS
73	21	JOAN H. BULLINGTON
74	20, 21	JESSIE P. BUTLER
75	21	J. W. EZZELL
76	21	MARIAM HARRIS ELLIS
77	21	RUBY DRENNON
78	21	SANDRA D. PENN
79	21, 22	BETTY H. BARNES
80	21, 22	BURIL D. BUTLER
80A	22	BRIAN K. BUTLER
81	25	BURIL D. BUTLER
82	22, 23, 24, 25	LALA VAE M. BUTLER
83	25, 26	DORIS O. DAVIS, et al
85	26	EDNA S. WILLIAMS BEASLEY
86	26	PLEASANT UNION BAPTIST CHURCH
88	26	PERRY F. BUTLER
88B	26	KELLY PAIGE
88C	26	MARIA E. OLIVER
88D	26	RONALD J. WOOD
89	25, 26, 27	THOMAS C. TANNAHILL
89A	26	PEARL A. BRADSHAW
89B	26, 27	HART-McNIELL INVESTMENS
91	27, 28	THE RICHARD AND GRACE ADAMS
92	27, 28	HANSON BRICK EAST, LLC
93	28, 29	ROBIE FAIRCLOTH
93A	28	AUTRY MILLS
93B	28, 29	ROY ROGER FAIRCLOTH
93C	28, 29	ELIZABETH FAIRCLOTH
94	29	JERRY W. LUCAS
95	29, 30	AUTRY MILLS PROPERTIES LLC
95A	29	ANNE HALL McRORIE
96	29	JESSE B. CARLISLE
97	29, 30	NATHAN W. TANNER
98	30	CONNIE INEZ HALL
99	30	TERRY R. HUDSON
99A	30	SHANNON E. FAIRCLOTH
100	30	CHARLES G. SESSOMS
101	31	ELIZABETH FAIRCLOTH

PROJECT REFERENCE NO.	SHEET NO.
R-2303B	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER



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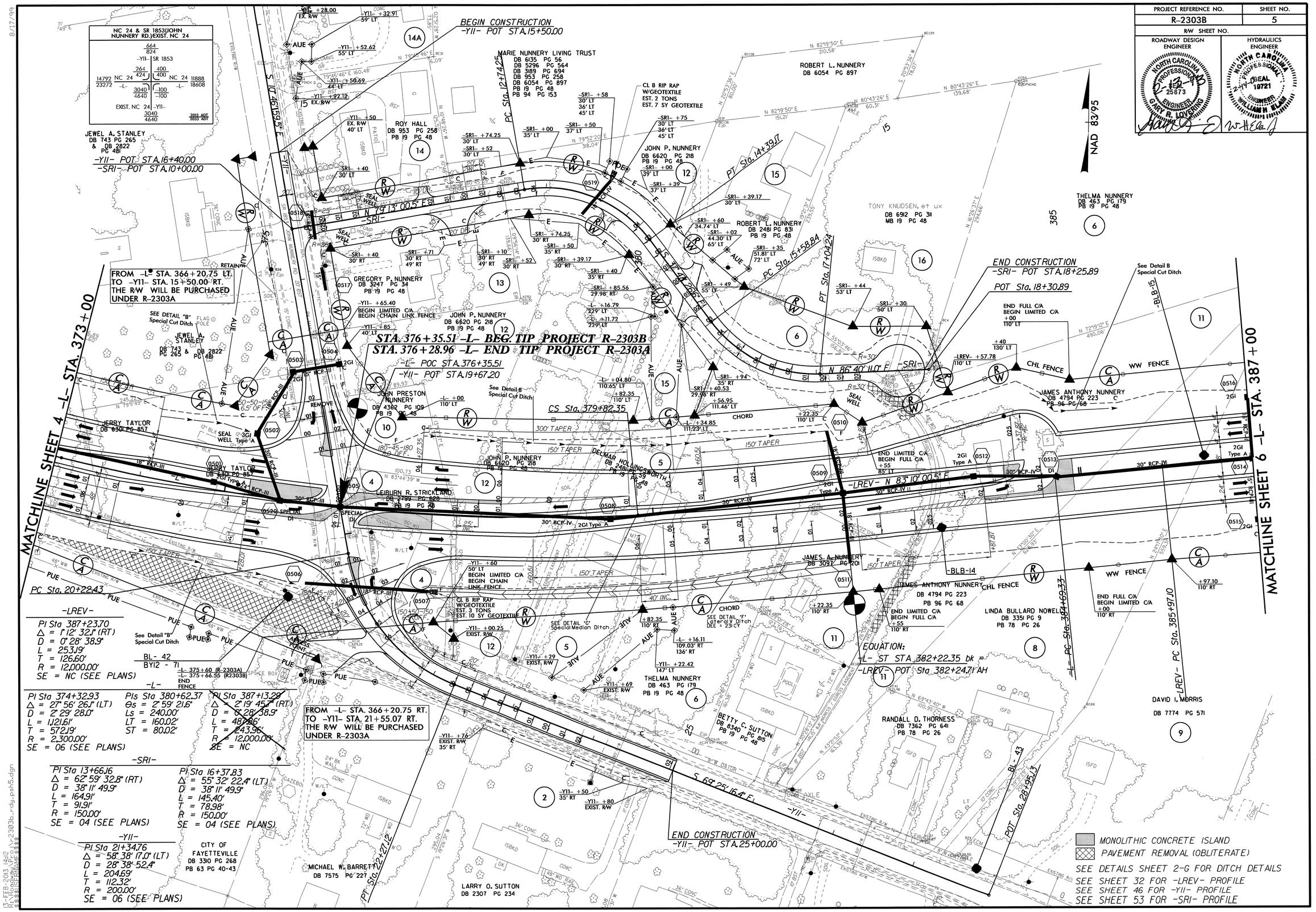
PROJECT REFERENCE NO.	SHEET NO.
R-2303B	5
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 25873 ENGINEER GARY R. LOVERING

NORTH CAROLINA PROFESSIONAL SEAL 19721 ENGINEER WILLIAM H. ELLIS



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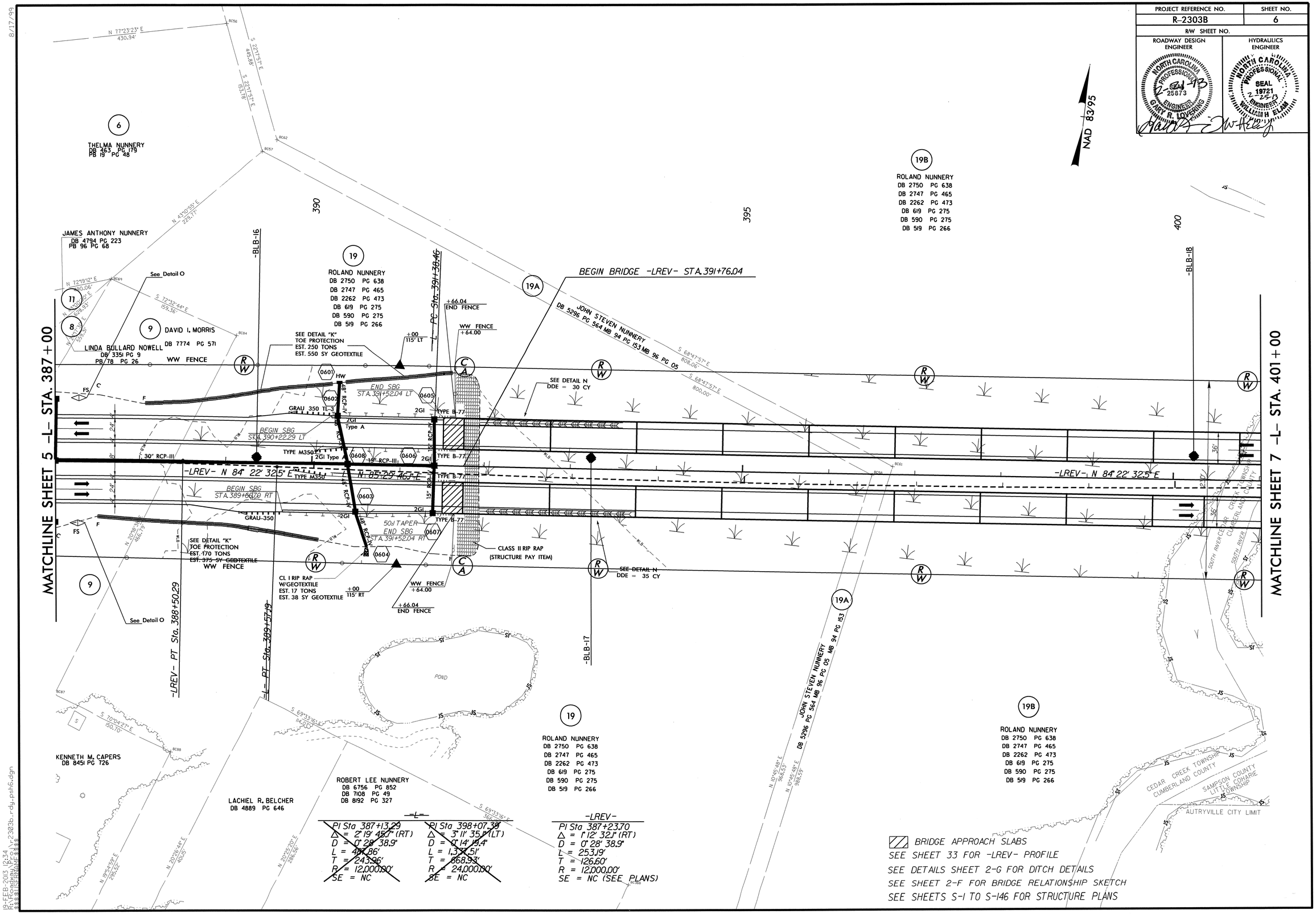
R-2303B	6
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER



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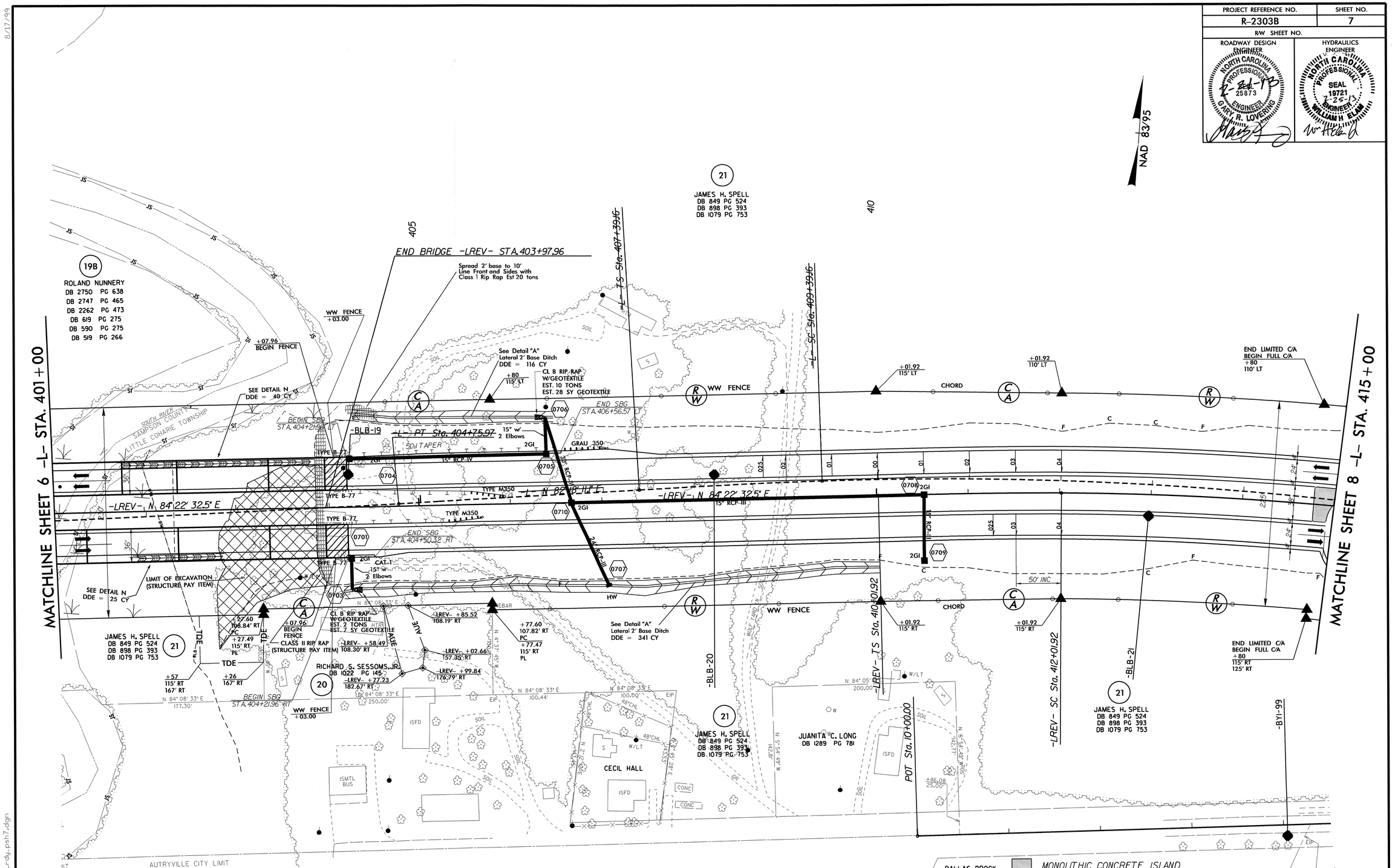
PROJECT REFERENCE NO.	SHEET NO.
R-2303B	7
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER



-LREV-	
PIs Sta 411+35.26	PI Sta 416+87.32
Θs = 1° 38' 13.3"	Δ = 15° 47' 29.1" (RT)
Ls = 200.00'	D = 1° 38' 13.3"
LT = 133.34'	L = 964.64'
ST = 66.67'	T = 485.40'
	R = 3,500.00'
	SE = 04 (SEE PLANS)

-L-			
~~PI Sta 398+07.38~~	~~PIs Sta 408+72.50~~	~~PI Sta 427+34.28~~	~~PIs Sta 443+70.57~~
~~Δ = 3° 11' 35.1" (LT)~~	~~Θs = 1° 28' 08.8"~~	~~Δ = 49° 25' 56.6" (RT)~~	~~Θs = 1° 28' 08.8"~~
~~D = 8° 14' 19.4"~~	~~Ls = 200.00'~~	~~D = 1° 28' 08.8"~~	~~Ls = 200.00'~~
~~L = 1,334.51'~~	~~LT = 133.34'~~	~~L = 3,364.74'~~	~~LT = 133.34'~~
~~T = 668.93'~~	~~ST = 66.67'~~	~~T = 1,795.12'~~	~~ST = 66.67'~~
~~R = 24,000.00'~~		~~R = 3,900.00'~~	
~~SE = NC~~		~~SE = 04~~	

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PROJECT REFERENCE NO.	SHEET NO.
R-2303B	8
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 25873 ENGINEER GARY R. LOVERING 2-14-13

NORTH CAROLINA PROFESSIONAL SEAL 19721 ENGINEER WILLIAM H. ELAM 2-14-13

-LREV-

PIs Sta 411+35.26	PI Sta 416+87.32	PI Sta 432+62.81	PIs Sta 443+70.57
Θs = 1° 38' 13.3"	Δ = 15° 47' 29.1" (RT)	Δ = 31° 24' 00.5" (RT)	Θs = 1° 28' 08.8"
Ls = 200.00'	D = 1° 38' 13.3"	D = 1° 28' 08.8"	Ls = 200.00'
LT = 133.34'	L = 964.64'	L = 2,137.34'	LT = 133.34'
ST = 66.67'	T = 485.40'	T = 1,096.25'	ST = 66.67'
	R = 3,500.00'	R = 3,900.00'	
	SE = 04 (SEE PLANS)	SE = 04 (SEE PLANS)	

-L-

~~PIs Sta 408+72.50~~	~~PI Sta 427+34.29~~	~~PIs Sta 443+70.57~~
~~Θs = 1° 28' 08.8"~~	~~Δ = 49° 25' 55.6" (RT)~~	~~Θs = 1° 28' 08.8"~~
~~Ls = 200.00'~~	~~D = 1° 28' 08.8"~~	~~Ls = 200.00'~~
~~LT = 133.34'~~	~~L = 3,364.74'~~	~~LT = 133.34'~~
~~ST = 66.67'~~	~~T = 1,795.12'~~	~~ST = 66.67'~~
	~~R = 3,900.00'~~	
	~~SE = 04~~	

NC 24 & SR 1414(GRAY ST.)

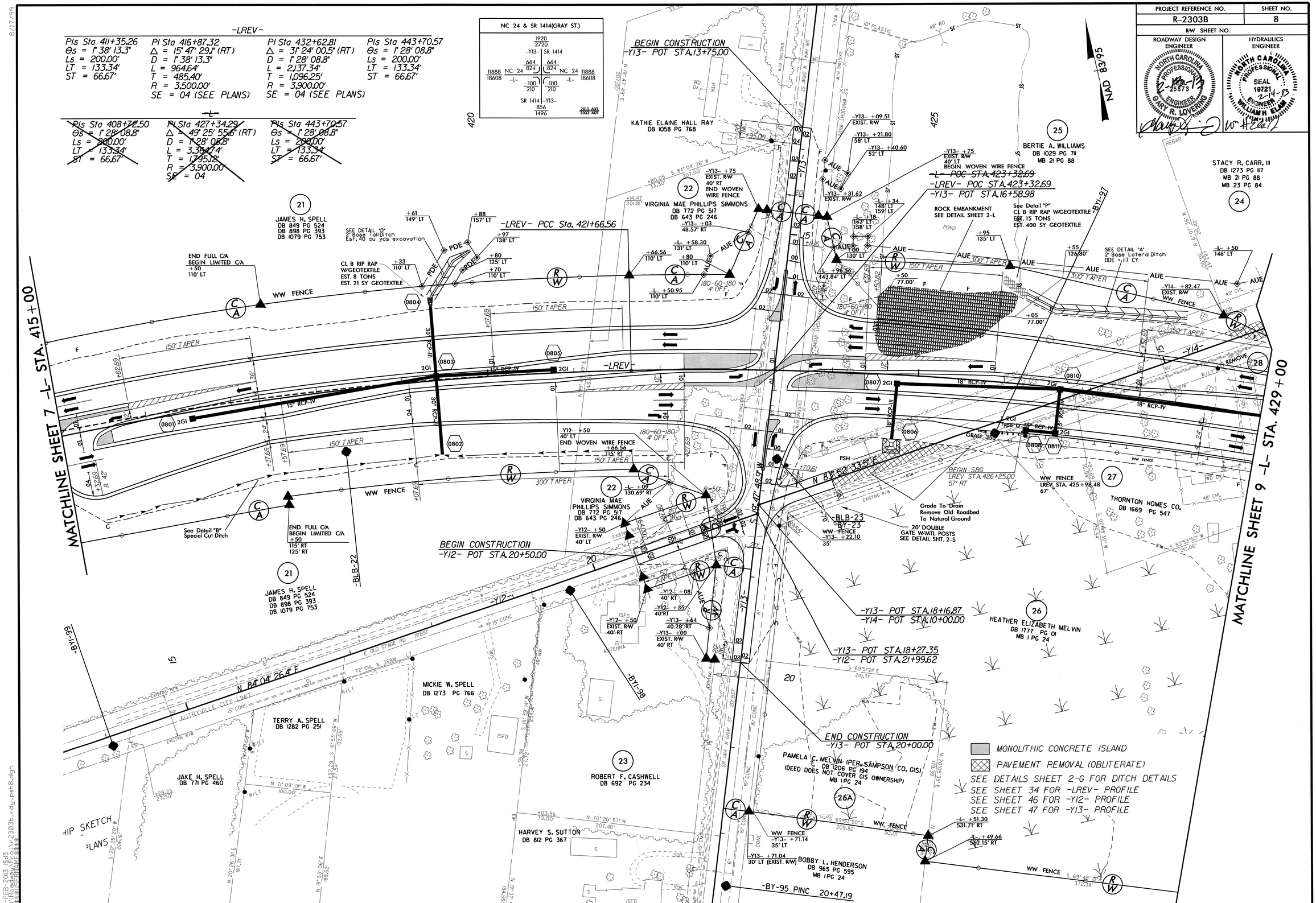
1920/2720 -Y13- | SR 1414

11888/18608 NC 24 664/824 | 664/824 NC 24 11888/18608

-L- 100/210 | 100/210 -L-

SR 1414 -Y13- 856/1496

2013 ADT / 2033 ADT



8/17/99

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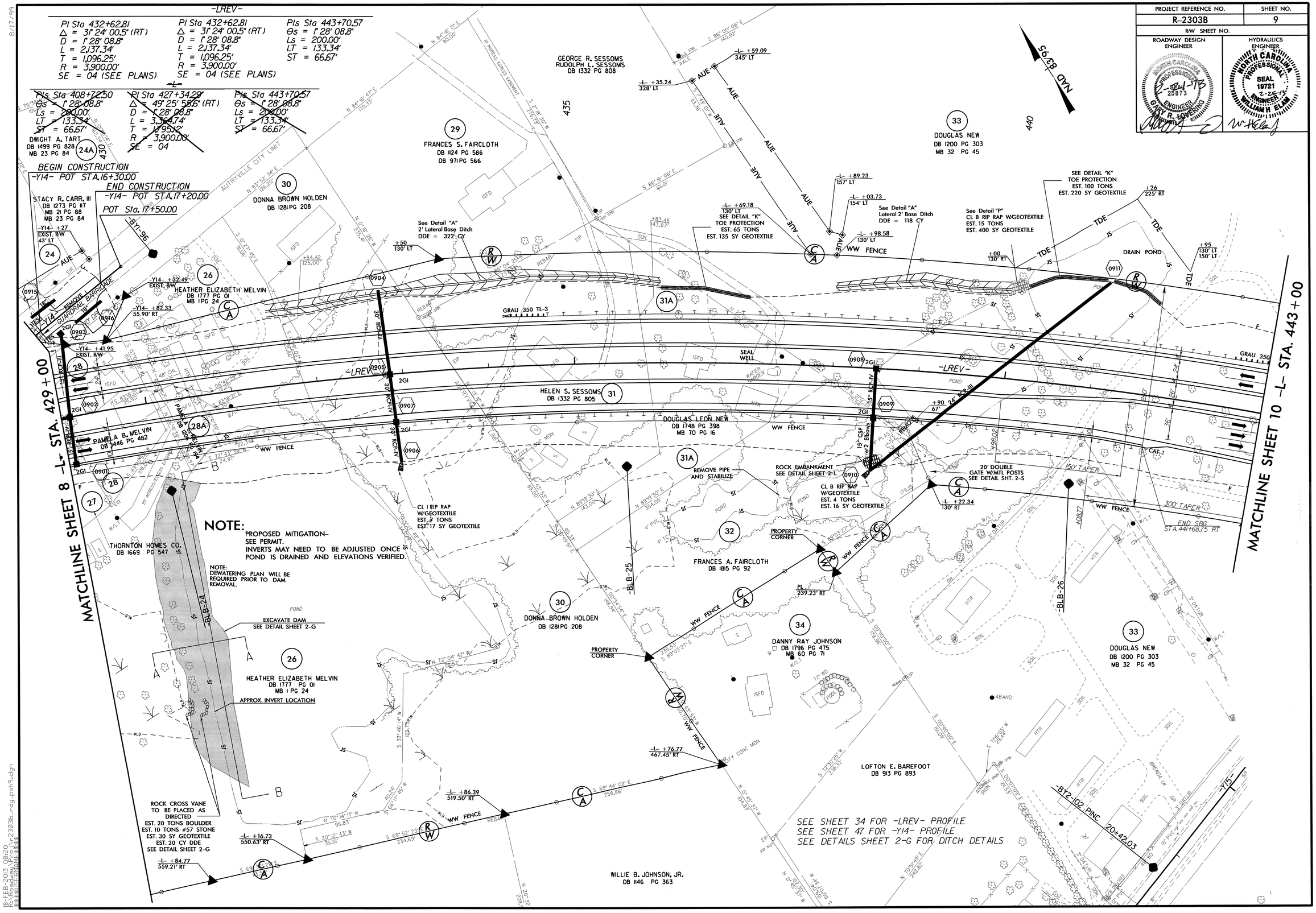
R-2303B	9
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER



8/17/99

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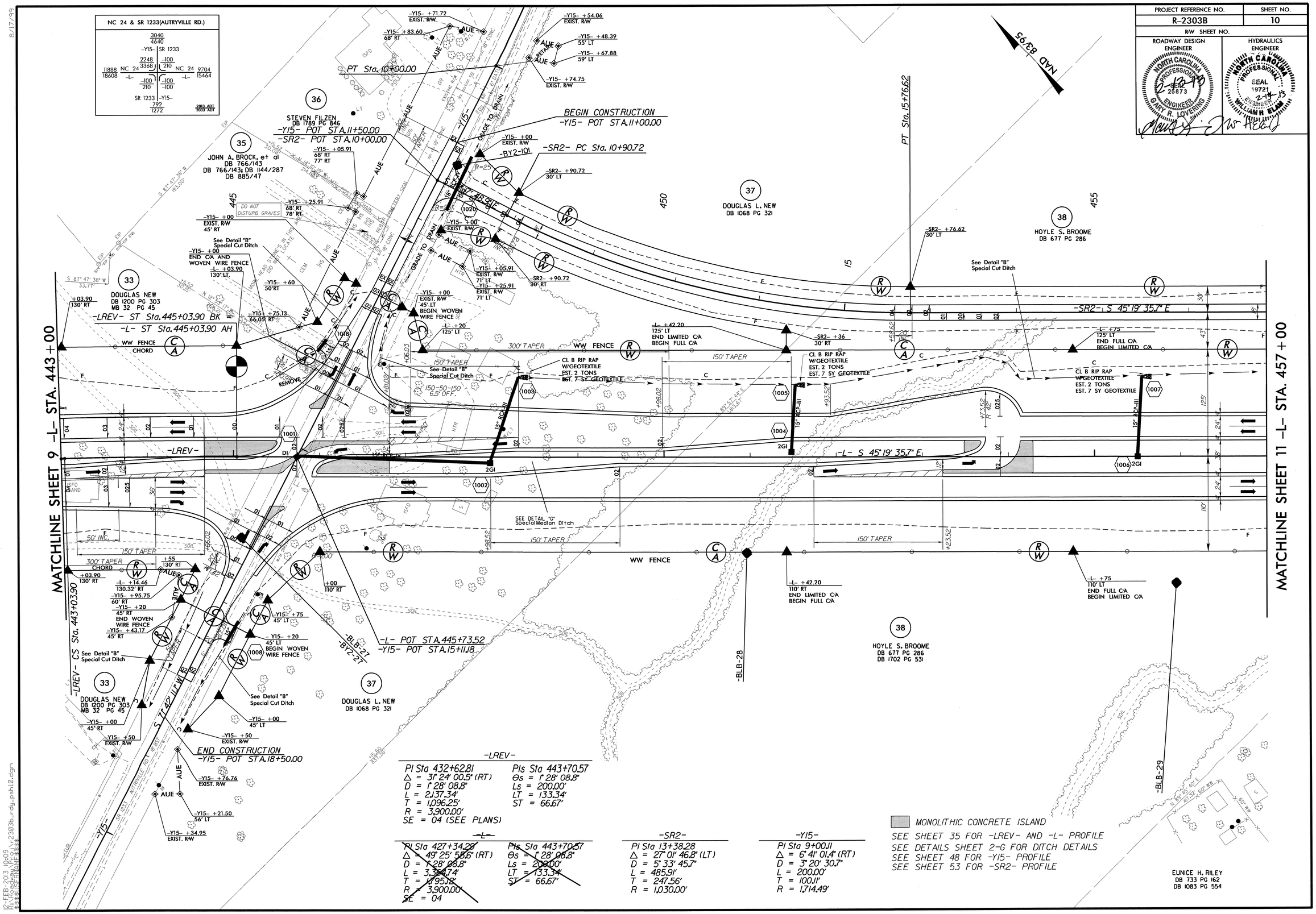
PROJECT REFERENCE NO.	SHEET NO.
R-2303B	10
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 25873 ENGINEER GARY R. LOVERING 2-13-13

NORTH CAROLINA PROFESSIONAL SEAL 19721 ENGINEER WILLIAM ELAM 2-14-13



8/17/99

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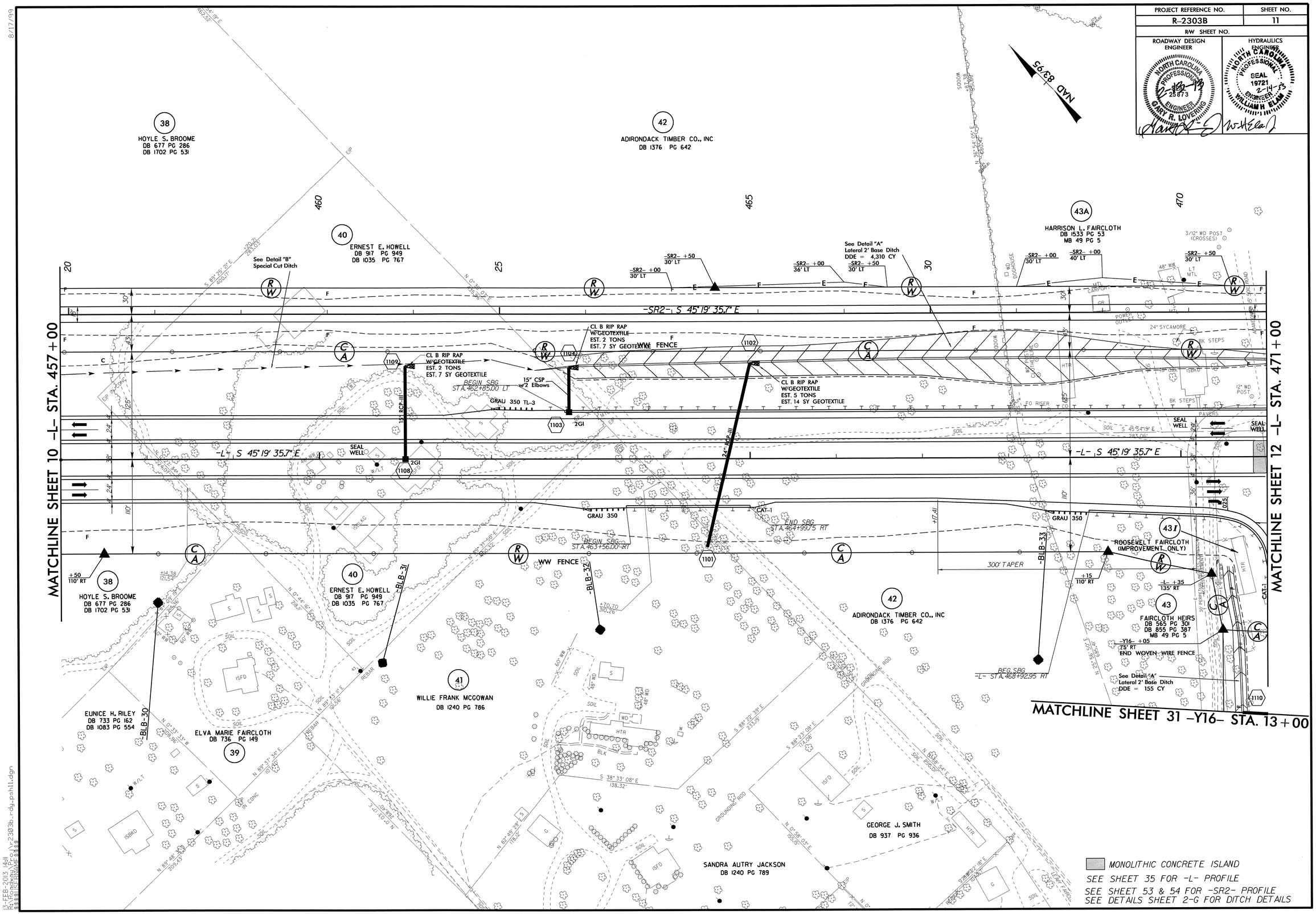
R-2303B	11
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER



8/17/99

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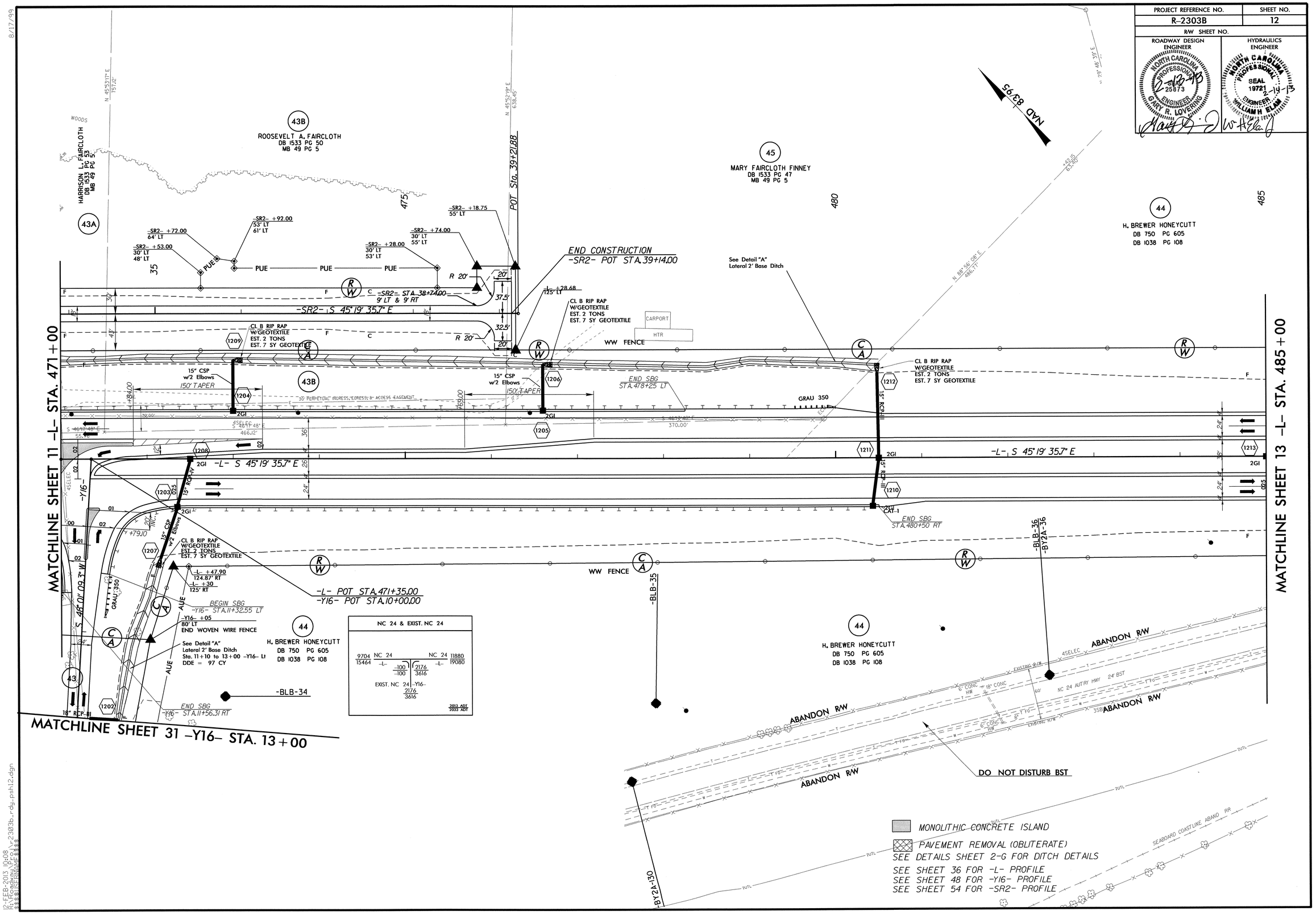
PROJECT REFERENCE NO.	SHEET NO.
R-2303B	12
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 25873 ENGINEER GARY R. LOVERING 2-13-13

NORTH CAROLINA PROFESSIONAL SEAL 19721 ENGINEER WILLIAM H ELAM 2-13-13



8/17/99

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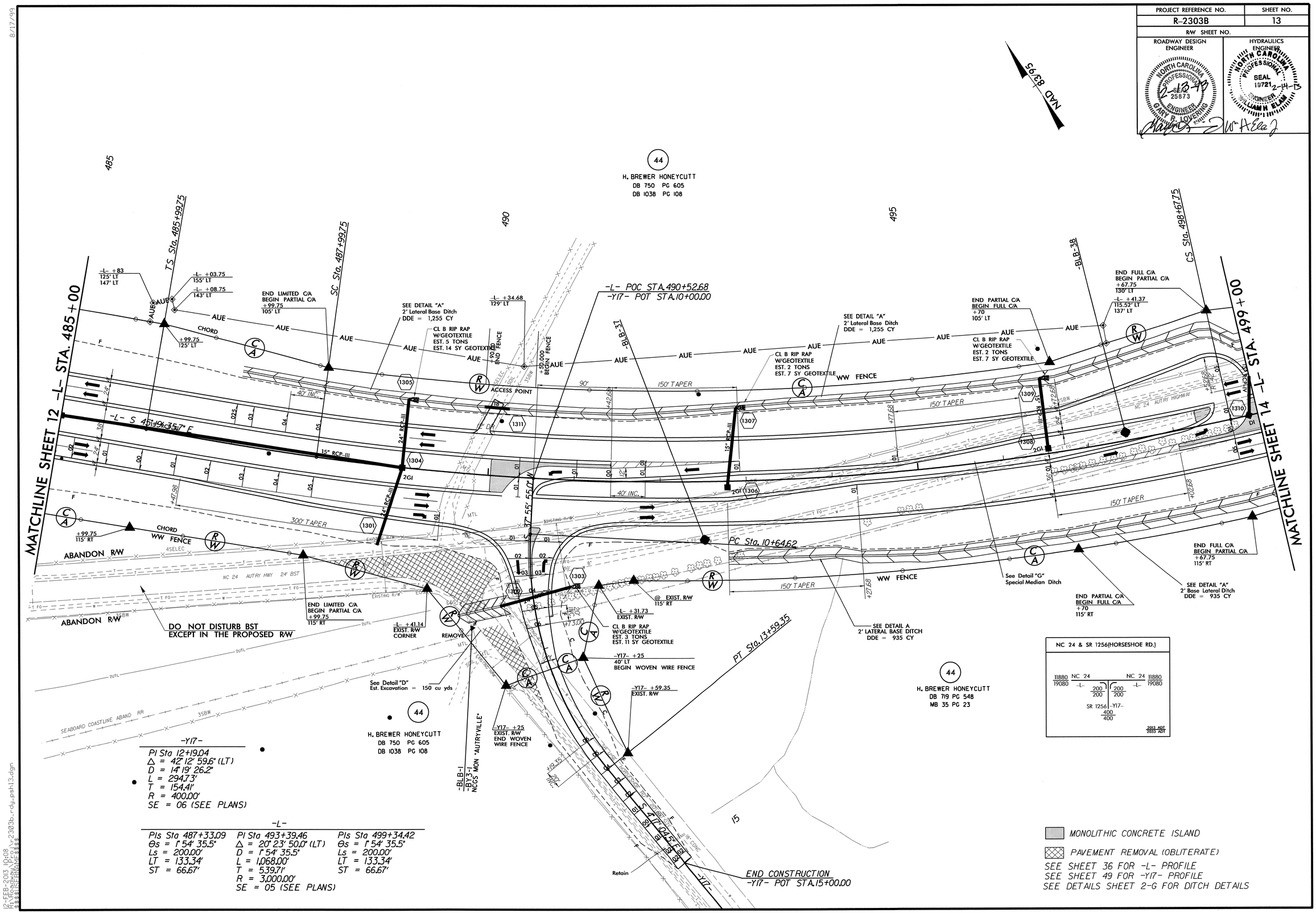
PROJECT REFERENCE NO.	SHEET NO.
R-2303B	13
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 25873 ENGINEER GARY R. LOVERING 2-13-14

NORTH CAROLINA PROFESSIONAL SEAL 19721 ENGINEER WILLIAM H. ELAM 2-14-14



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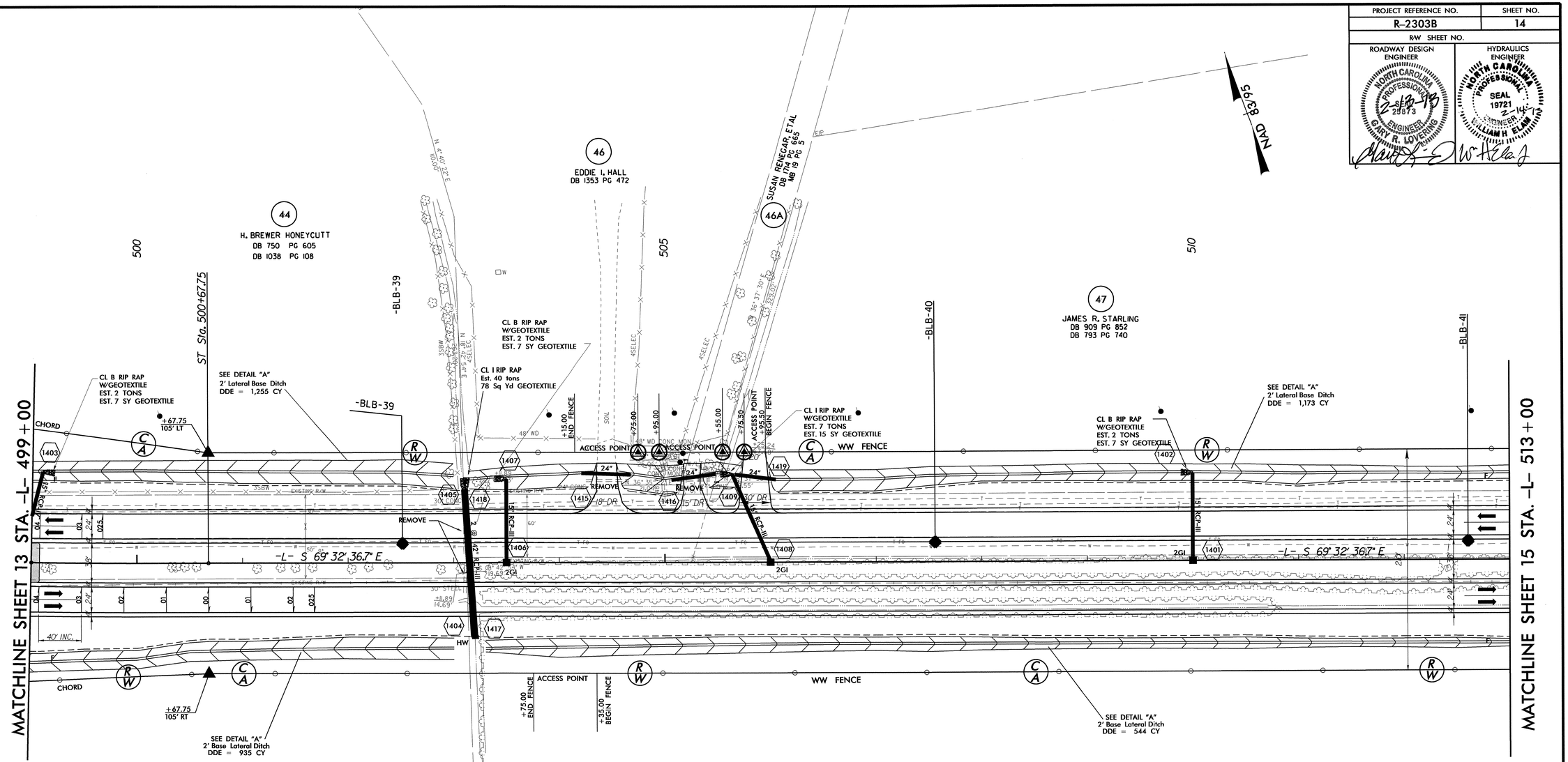
R-2303B	14
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER



-L-

PIs Sta 487+33.09	PI Sta 493+39.46	PIs Sta 499+34.42
Θs = 1° 54' 35.5"	Δ = 20° 23' 50.0" (LT)	Θs = 1° 54' 35.5"
Ls = 200.00'	D = 1° 54' 35.5"	Ls = 200.00'
LT = 133.34'	L = 1,068.00'	LT = 133.34'
ST = 66.67'	T = 539.71'	ST = 66.67'
	R = 3,000.00'	
	SE = 05 (SEE PLANS)	

SEE SHEET 37 FOR -L- PROFILE
SEE DETAILS SHEET 2-G FOR DITCH DETAILS

8/17/99

R-FEB-2013 \N44
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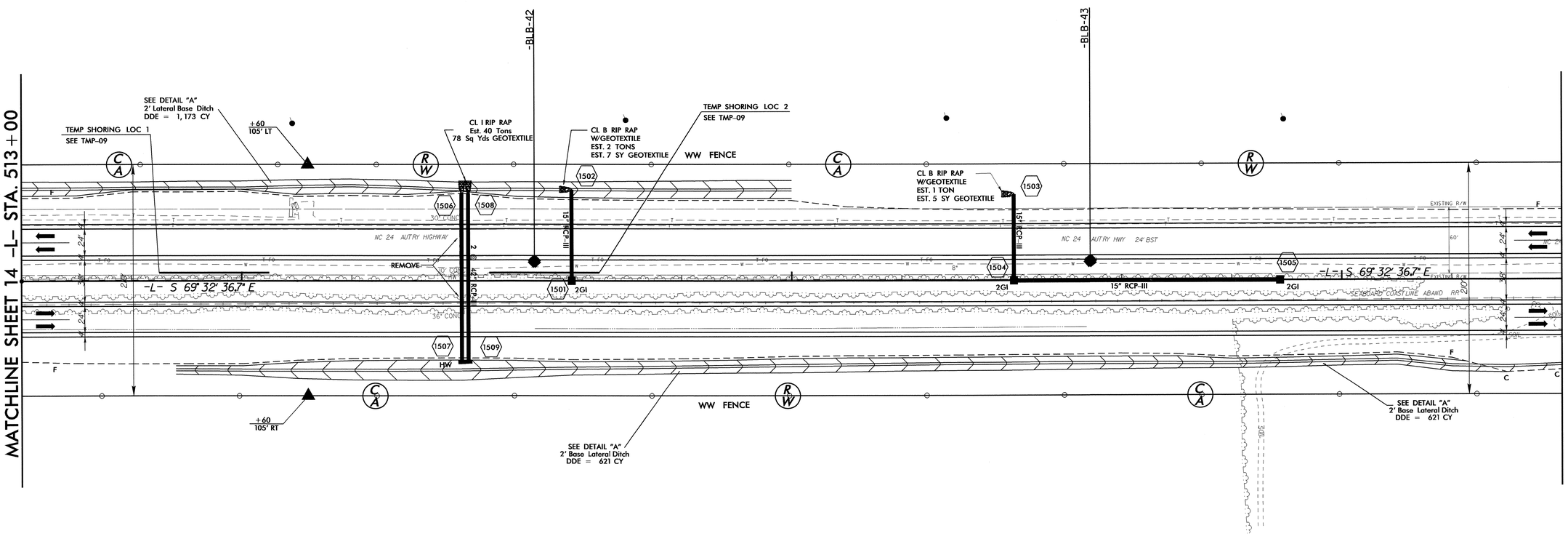
PROJECT REFERENCE NO.	SHEET NO.
R-2303B	15
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 25873 ENGINEER GARY R. LOVERING 2-13-13

NORTH CAROLINA PROFESSIONAL SEAL 19721 ENGINEER WILLIAM H ELAM 2-14-13

NAD 83/95



SEE SHEET 37 FOR -L- PROFILE

SEE DETAILS SHEET 2-G FOR DITCH DETAILS

8/17/99

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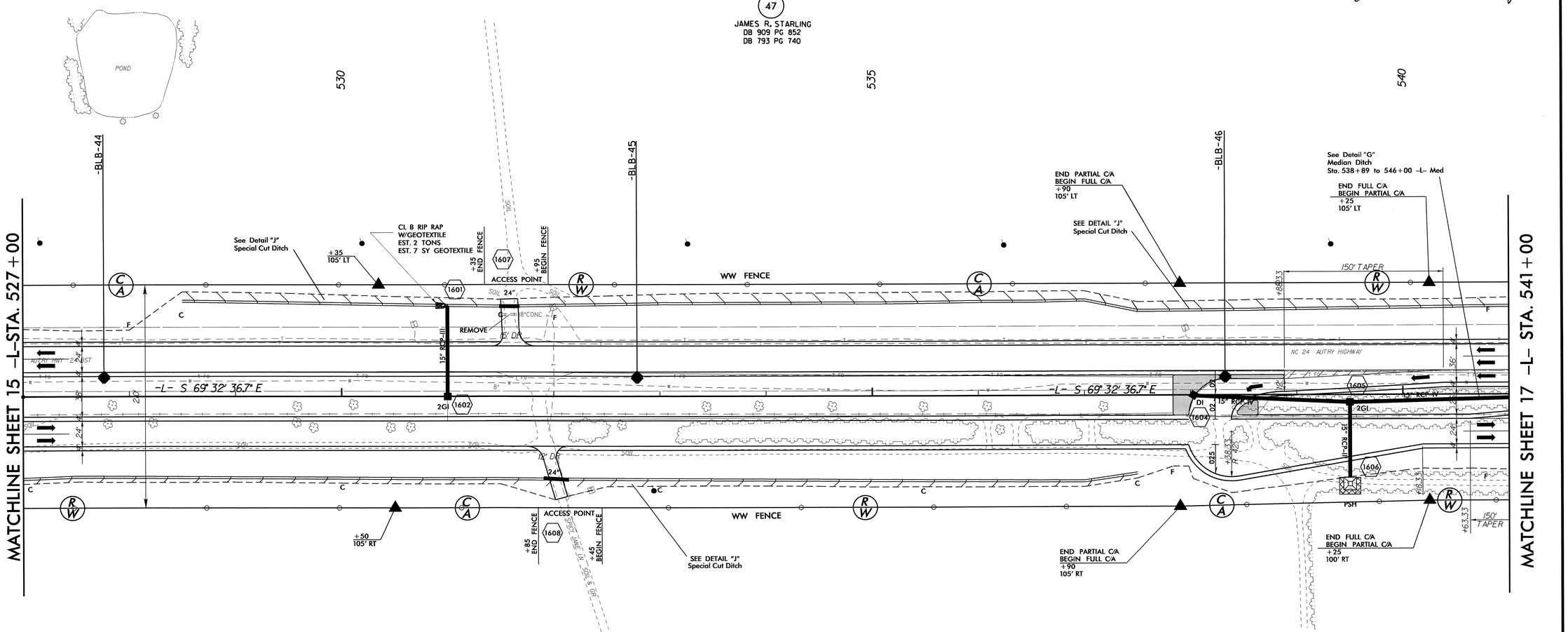
PROJECT REFERENCE NO.	SHEET NO.
R-2303B	16
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 25873 GARY R. LOVERING 2-14-13

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 19721 WILLIAM H. ELAM 2-14-13

NAD 83/95



47
JAMES R. STARLING
DB 909 PG 852
DB 793 PG 740

MONOLITHIC CONCRETE ISLAND

SEE SHEET 38 FOR -L- PROFILE

SEE DETAILS SHEET 2-G FOR DITCH DETAILS

8/17/99

12-FEB-2013 10:08
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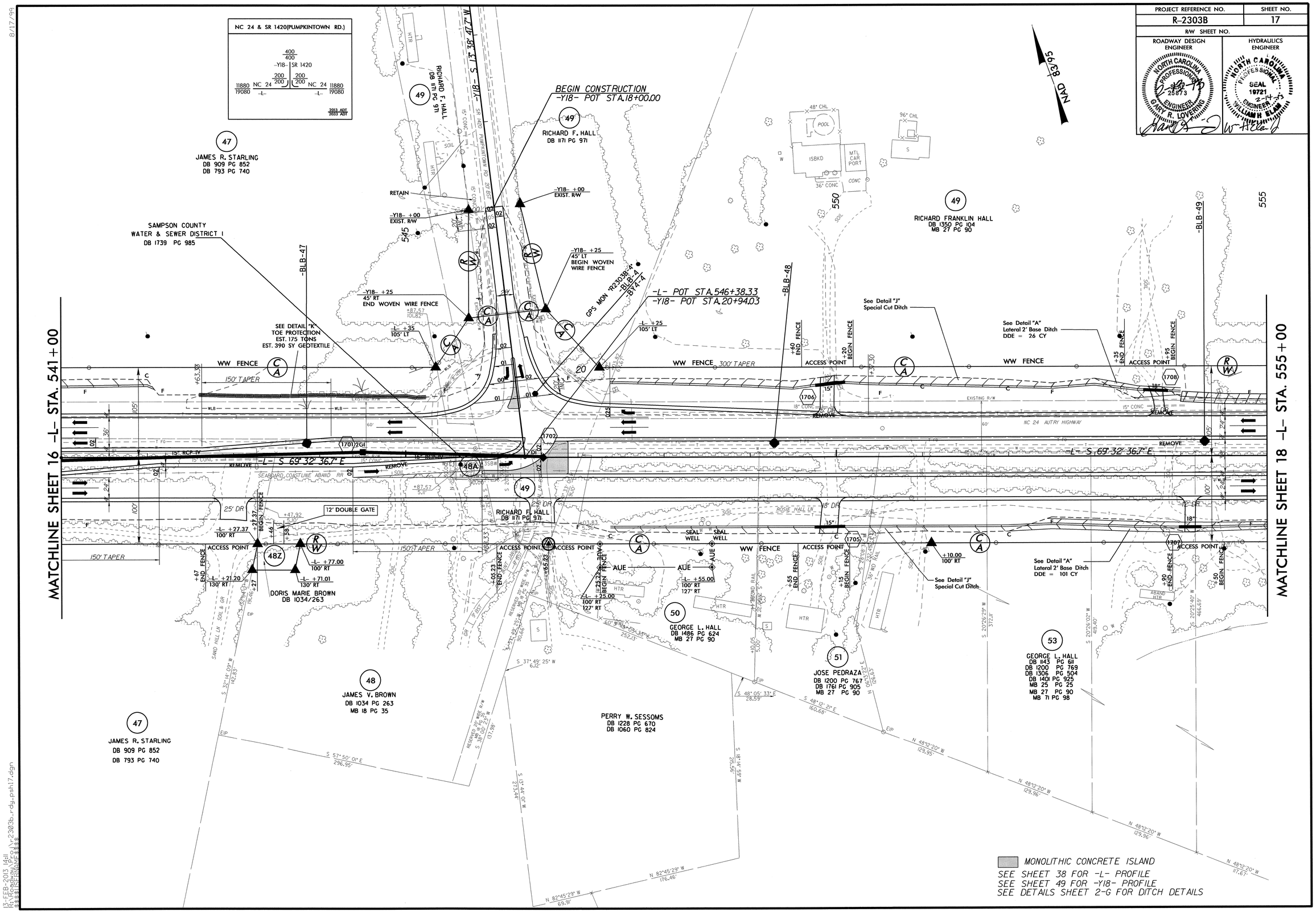
PROJECT REFERENCE NO.	SHEET NO.
R-2303B	17
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 25873 ENGINEER GARY R. LOVERING 2-14-13

NORTH CAROLINA PROFESSIONAL SEAL 19721 ENGINEER WILLIAM H. BLAKE 2-14-13



8/17/99

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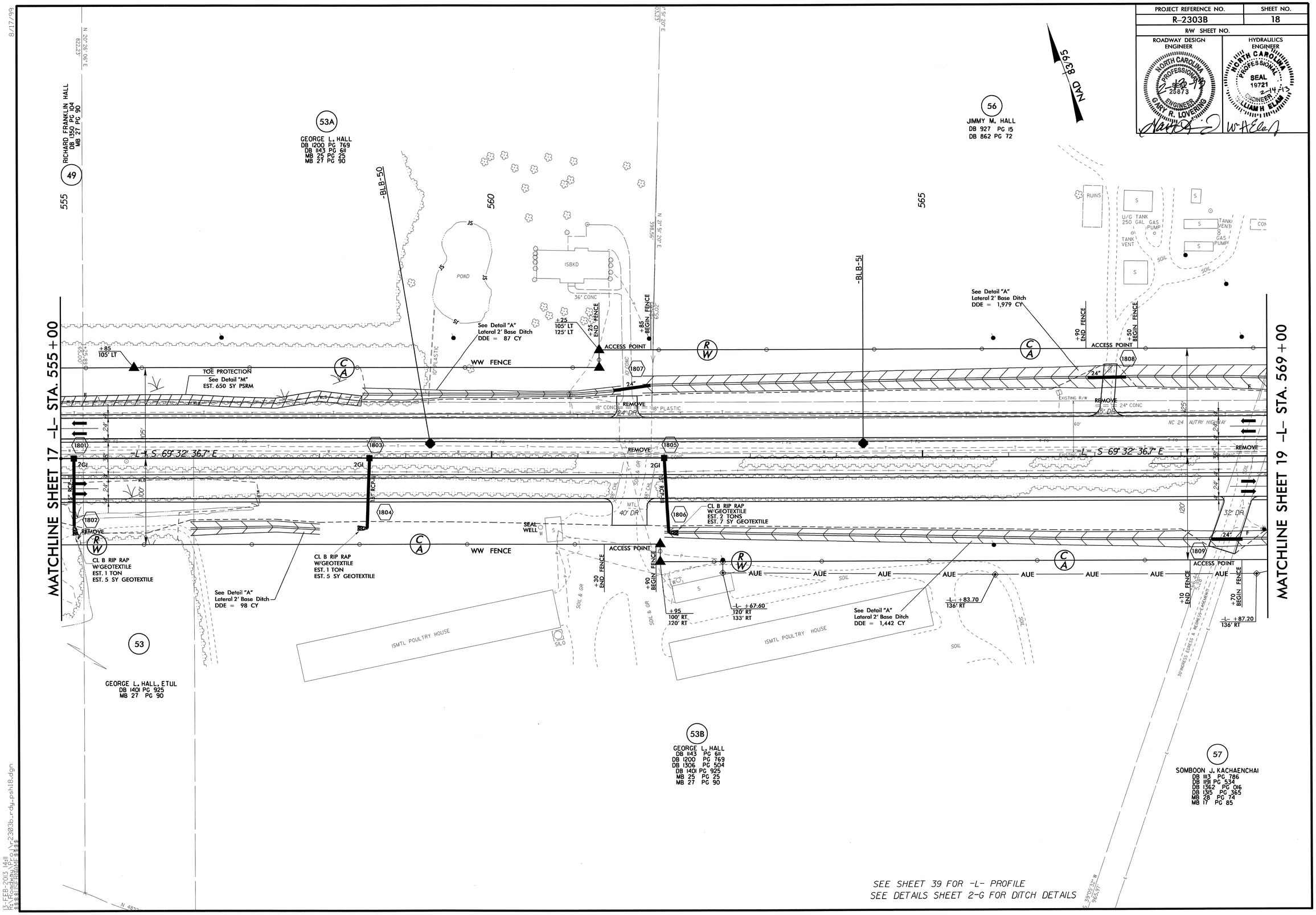
PROJECT REFERENCE NO.	SHEET NO.
R-2303B	18
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER



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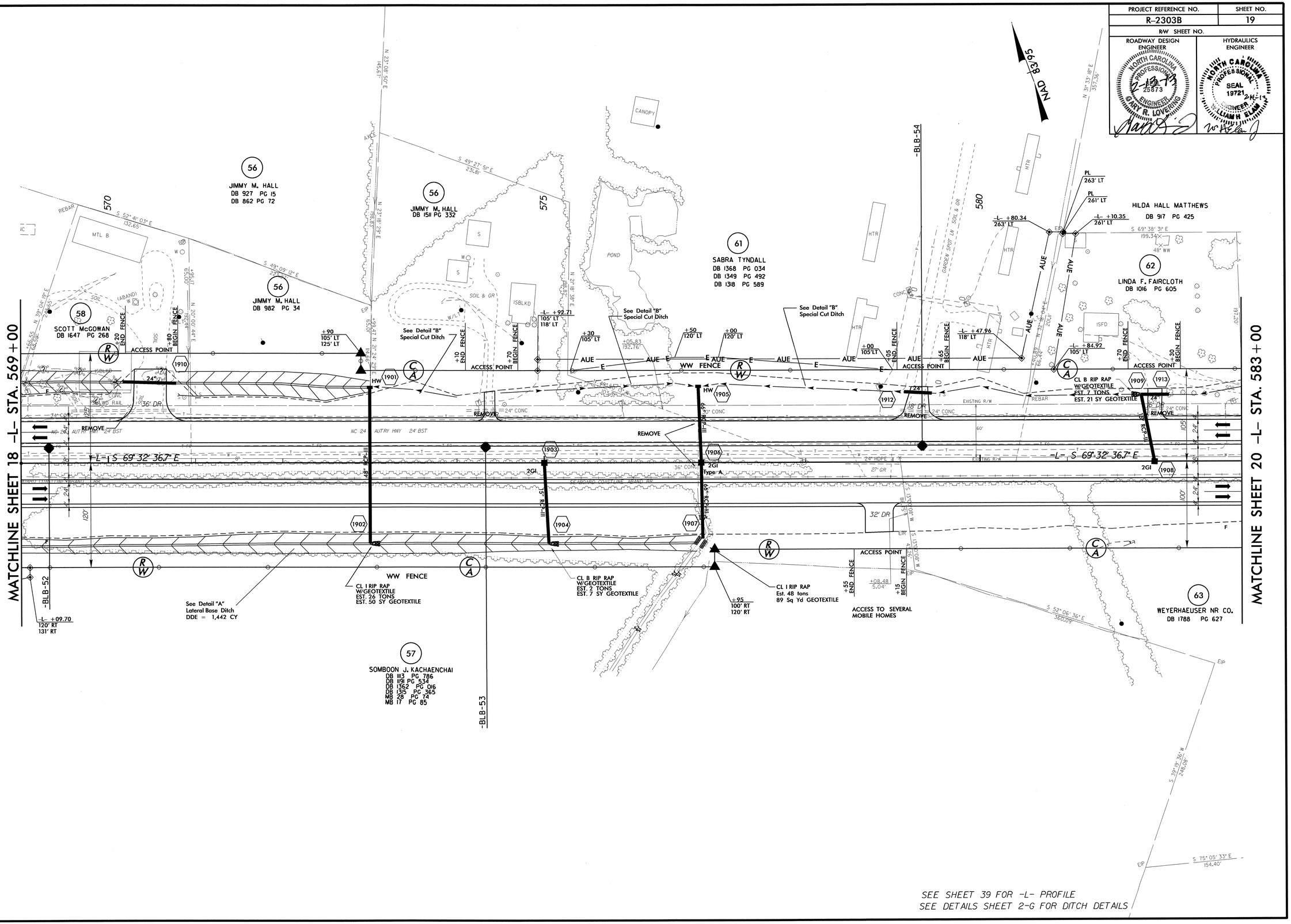
$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
R-2303B	19
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 25873 ENGINEER GARY R. LOVERING 2-13-13

NORTH CAROLINA PROFESSIONAL SEAL 19721 ENGINEER WILLIAM H. ELAM 2-13-13



8/17/99

12-FEB-2013 10:08
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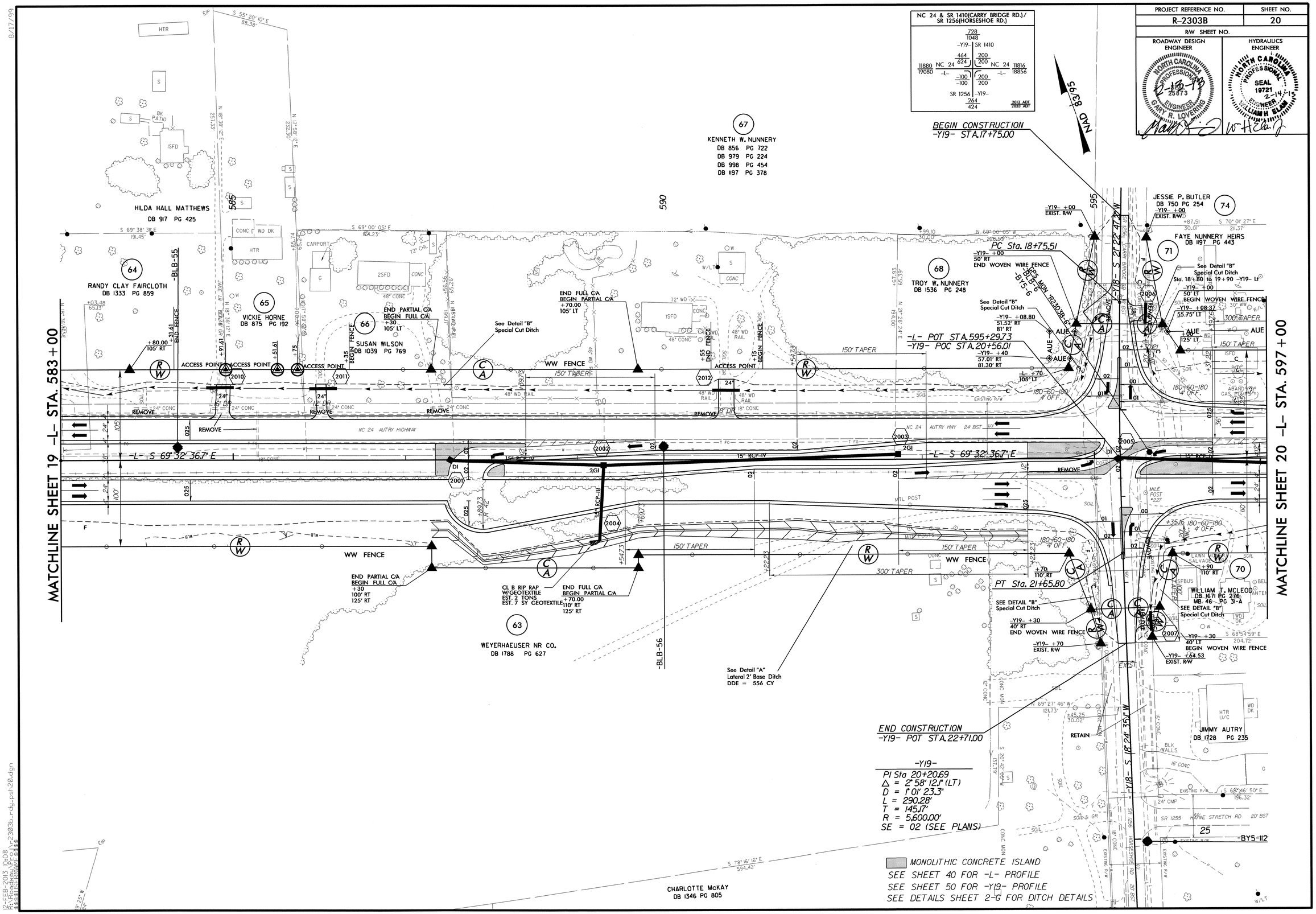
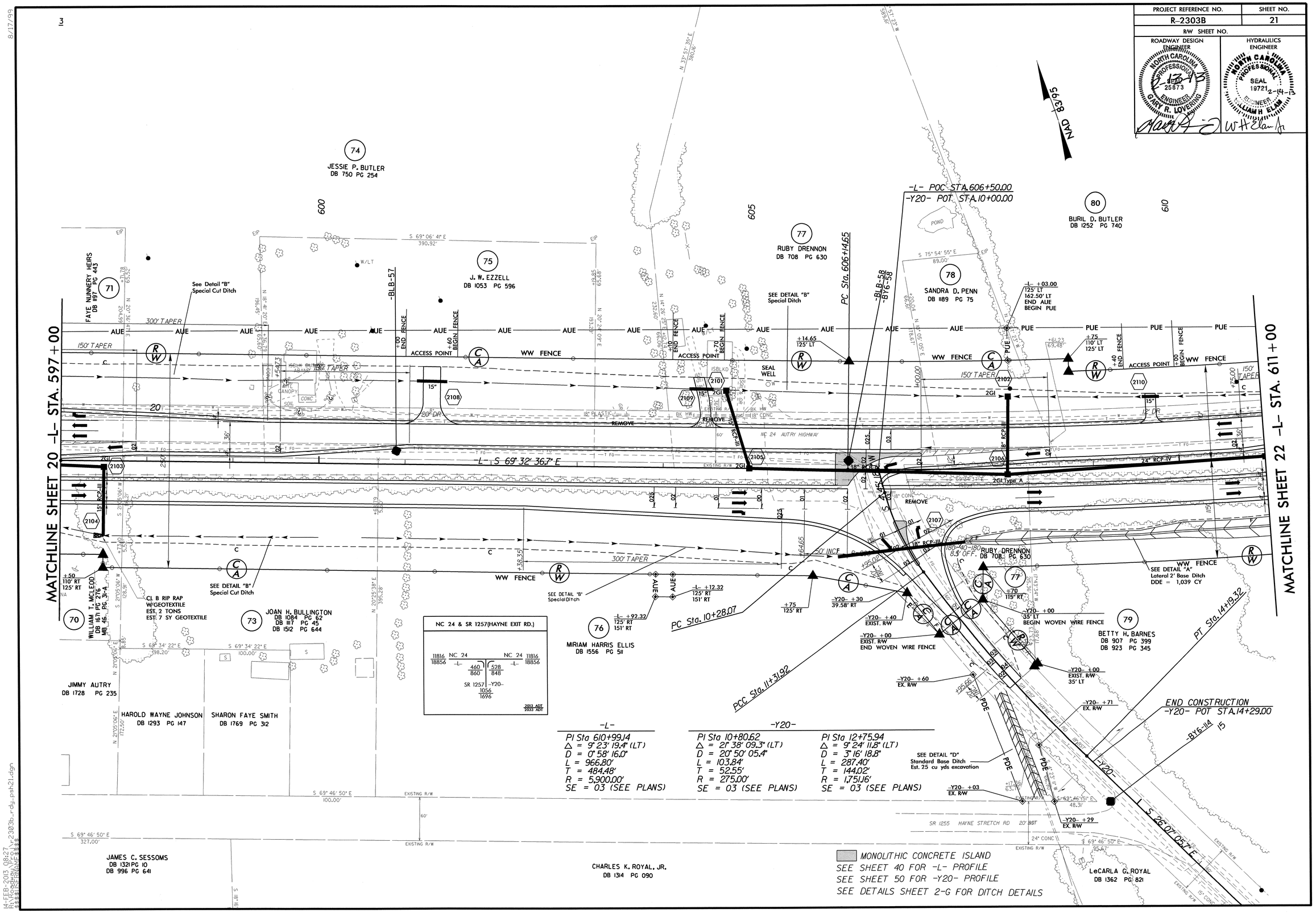
PROJECT REFERENCE NO.	SHEET NO.
R-2303B	20
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER



PROJECT REFERENCE NO.	SHEET NO.
R-2303B	21
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 25873 ENGINEER GARY R. LOVERING

NORTH CAROLINA PROFESSIONAL SEAL 19721 ENGINEER WILLIAM H. ELAM 2-14-13



8/17/99

14-FEB-2013 09:27
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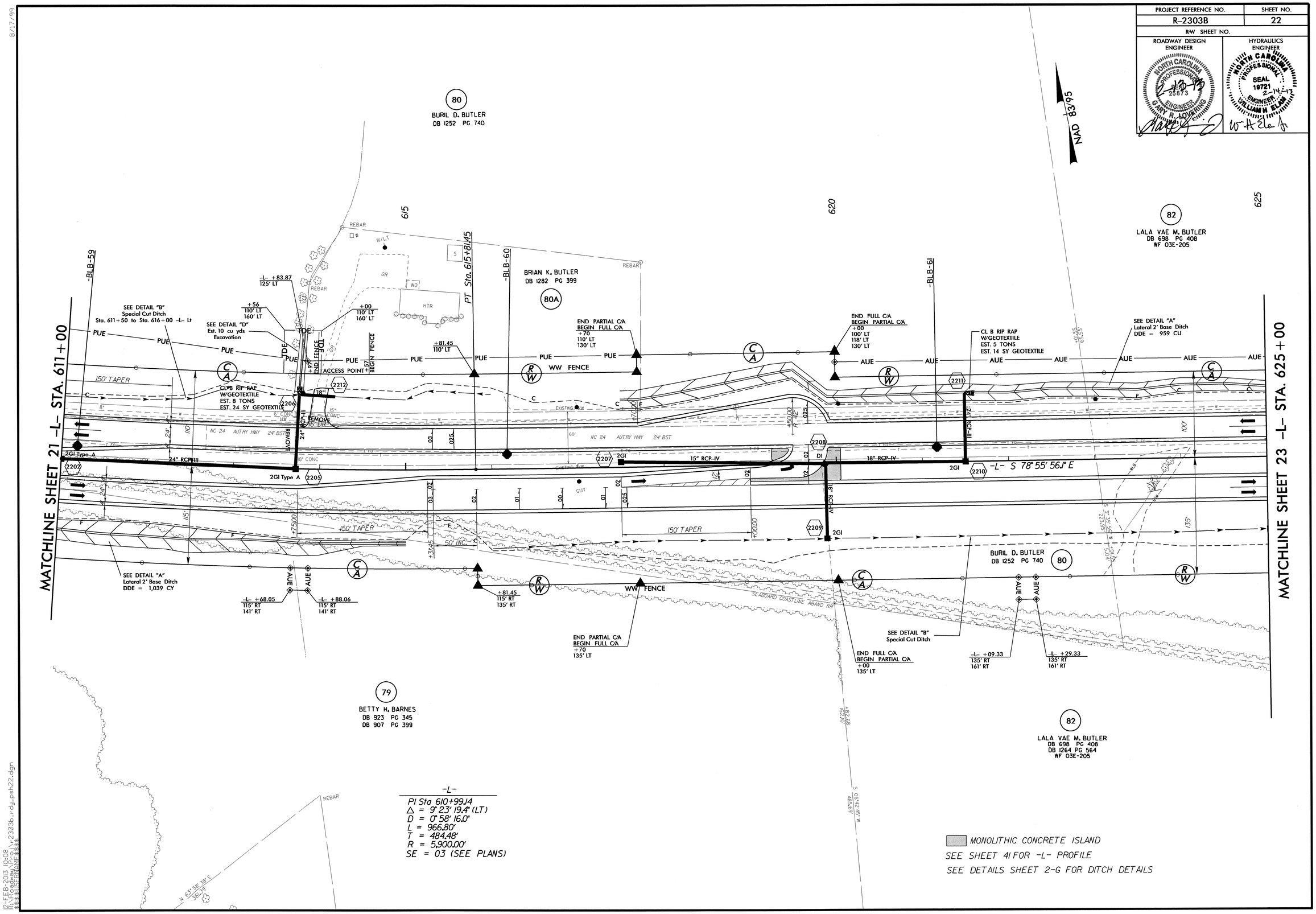
PROJECT REFERENCE NO.	SHEET NO.
R-2303B	22
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER



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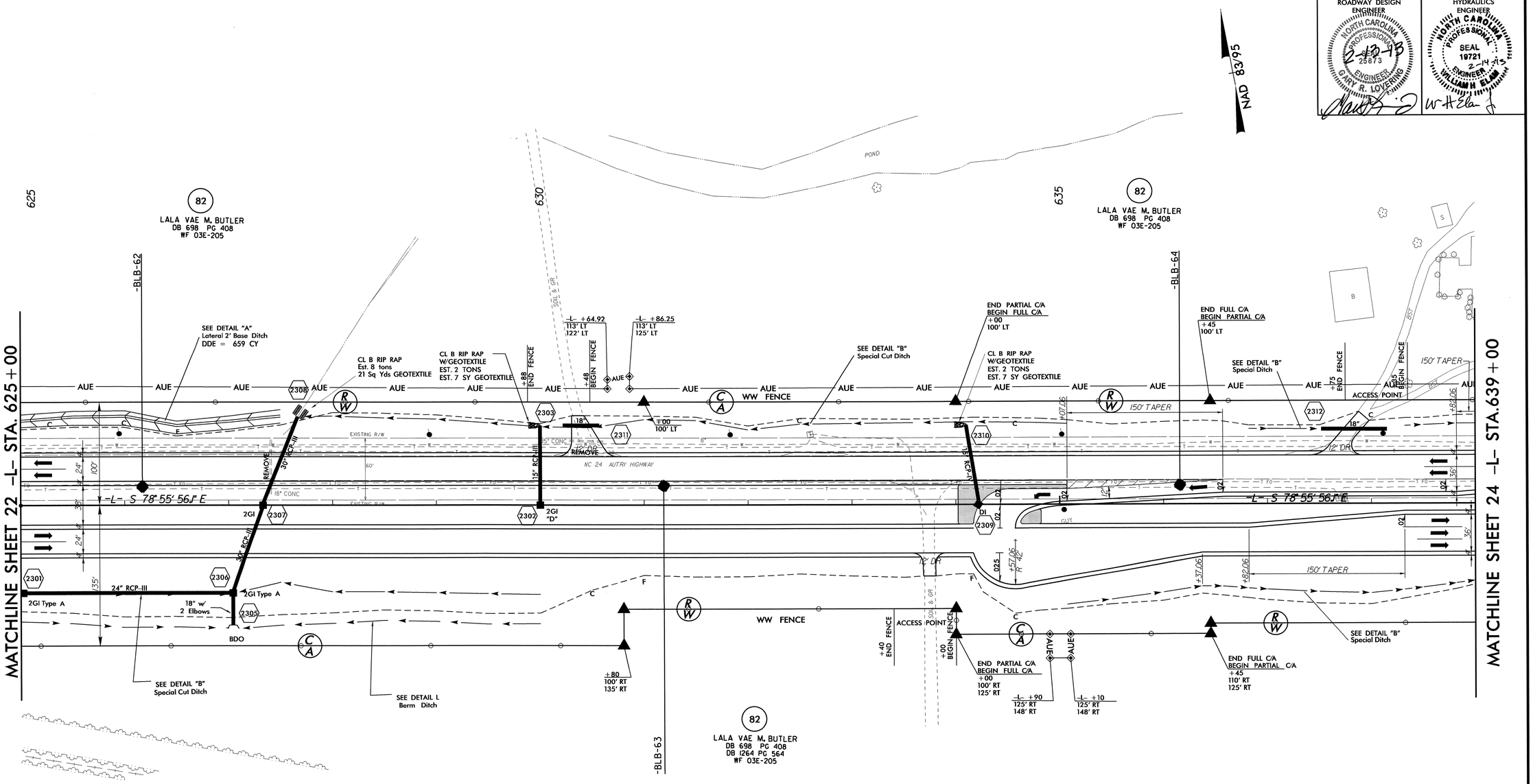
PROJECT REFERENCE NO.	SHEET NO.
R-2303B	23
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 25873 ENGINEER GARY R. LOVERING
2-13-13

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 19721 ENGINEER WILLIAM H ELAM
2-14-13



SEE SHEET 41 FOR -L- PROFILE
SEE DETAILS SHEET 2-G FOR DITCH DETAILS

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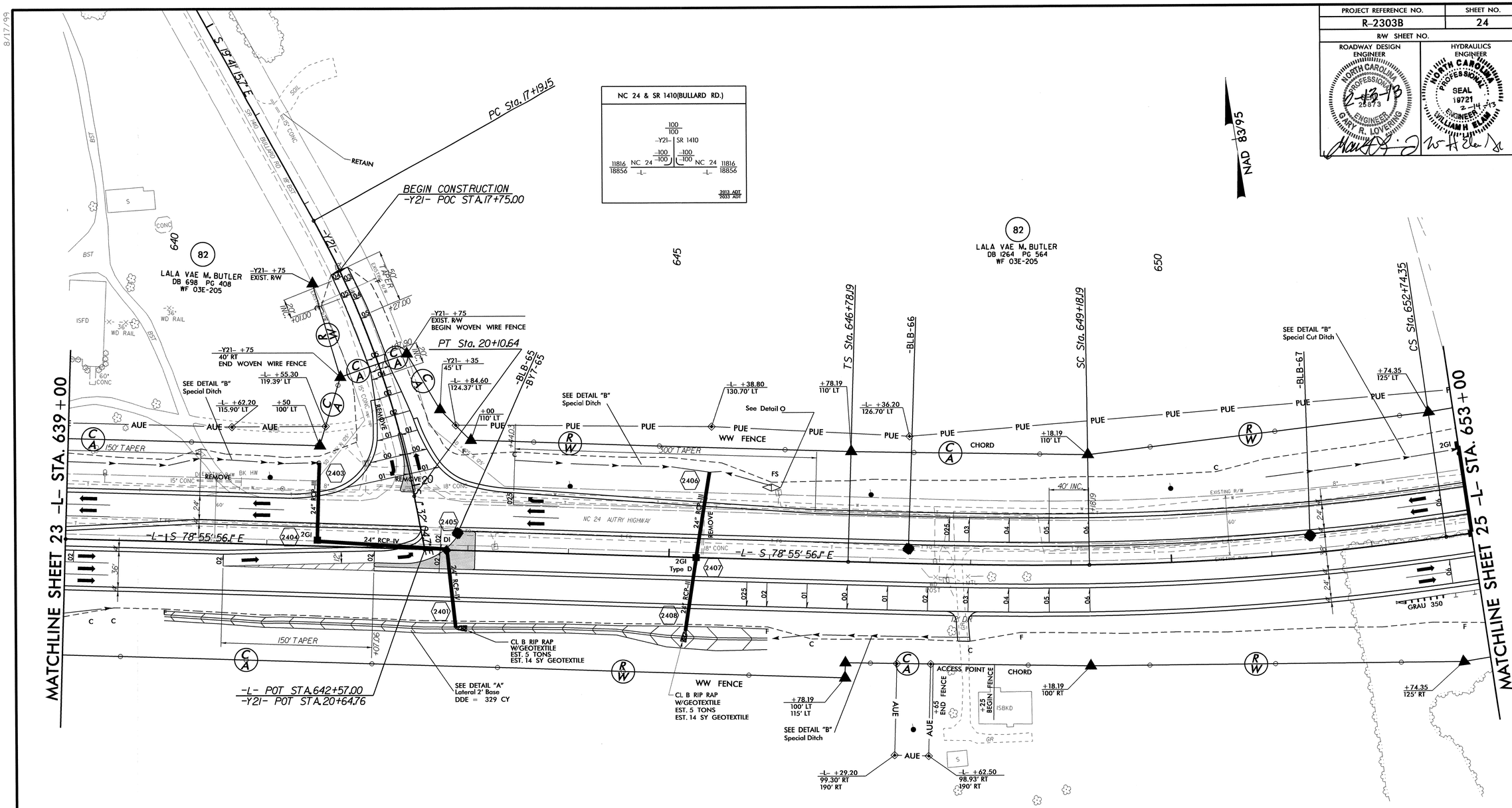
PROJECT REFERENCE NO.	SHEET NO.
R-2303B	24
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER



-Y21-

PI Sta 18+66.13
Δ = 18° 09' 11.0" (RT)
D = 6° 13' 40.1"
L = 291.48'
T = 146.97'
R = 920.00'
SE = 05 (SEE PLANS)

-L-

PIs Sta 648+38.21	PI Sta 650+96.51	PIs Sta 653+54.36
θs = 2° 27' 19.9"	Δ = 7° 17' 16.5" (LT)	θs = 2° 27' 19.9"
Ls = 240.00'	D = 2° 02' 46.6"	Ls = 240.00'
LT = 160.02'	L = 356.15'	LT = 160.02'
ST = 80.01'	T = 178.32'	ST = 80.01'
	R = 2,800.00'	
	SE = 06 (SEE PLANS)	

MONOLITHIC CONCRETE ISLAND
SEE SHEET 42 FOR -L- PROFILE
SEE SHEET 51 FOR -Y21- PROFILE
SEE DETAILS SHEET 2-G FOR DITCH DETAILS

12-FEB-2013 10:08
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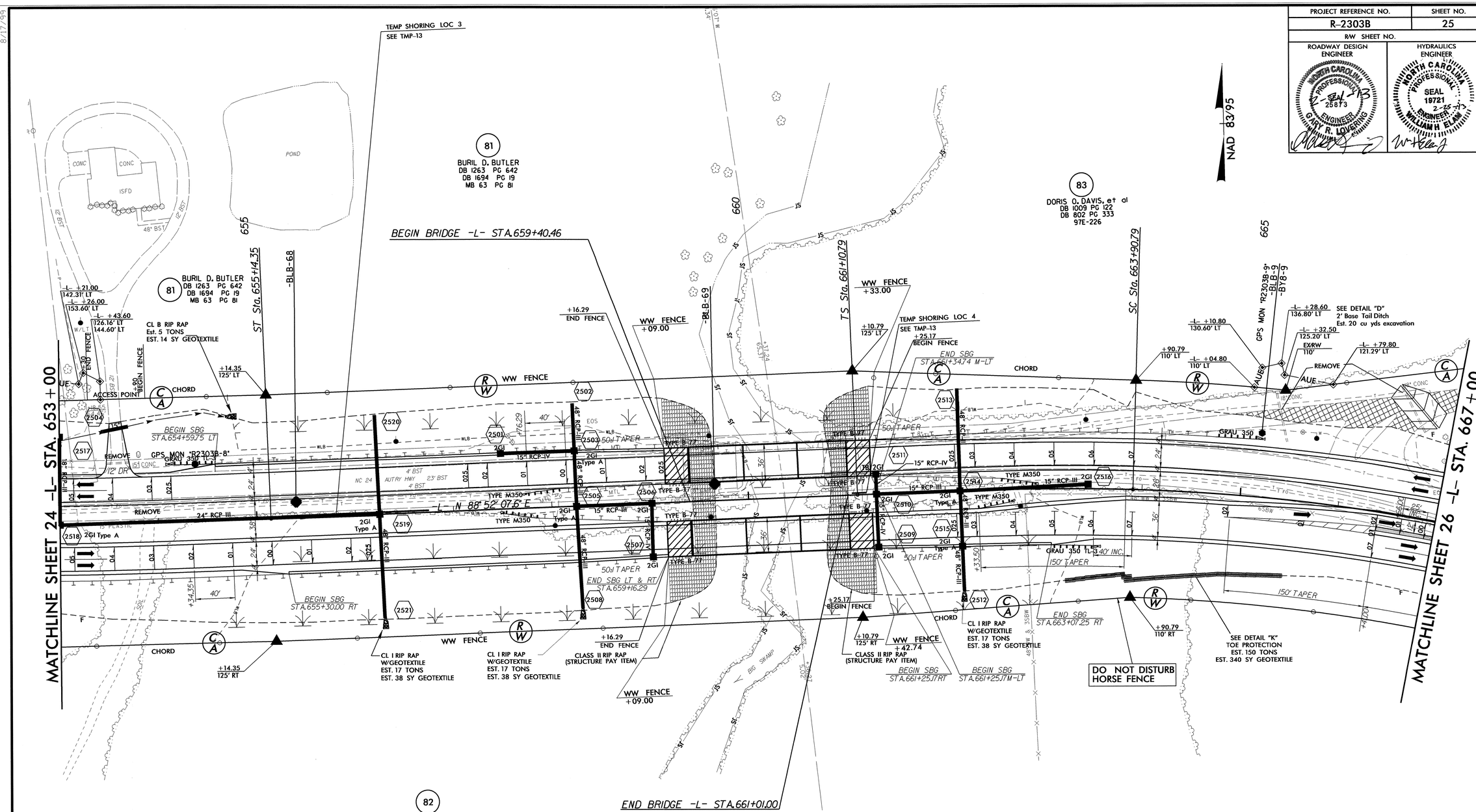
PROJECT REFERENCE NO.	SHEET NO.
R-2303B	25
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 25873 ENGINEER GARY R. LOVERING

NORTH CAROLINA PROFESSIONAL SEAL 19721 ENGINEER WILLIAM H. ELAM



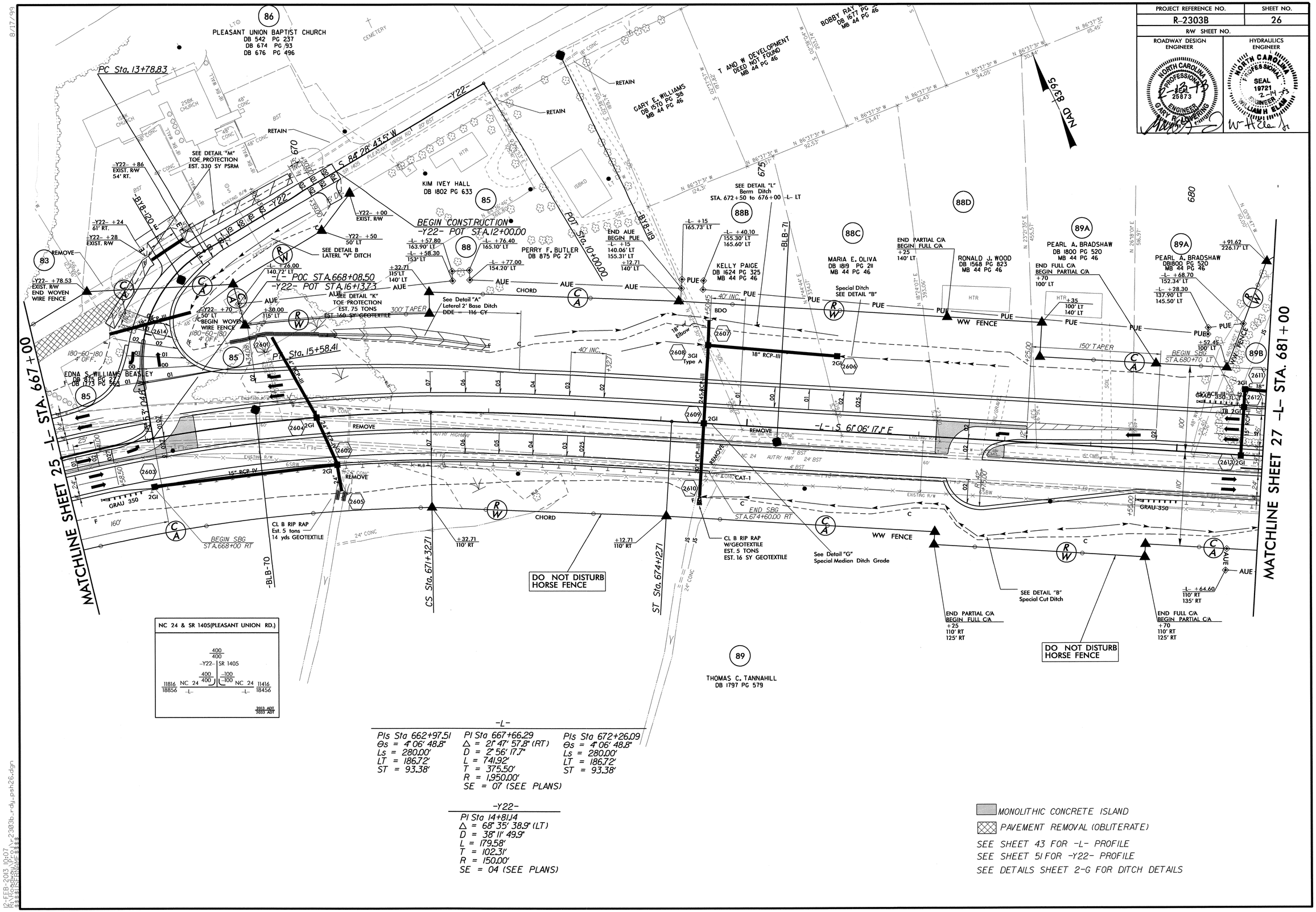
-L-

PIs Sta 648+38.21	PI Sta 650+96.51	PIs Sta 653+54.36
Θs = 2° 27' 19.9"	Δ = 7° 17' 16.5" (LT)	Θs = 2° 27' 19.9"
Ls = 240.00'	D = 2° 02' 46.6"	Ls = 240.00'
LT = 160.02'	L = 356.15'	LT = 160.02'
ST = 80.01'	T = 178.32'	ST = 80.01'
	R = 2,800.00'	
	SE = 06 (SEE PLANS)	
PIs Sta 662+97.51	PI Sta 667+66.29	PIs Sta 672+26.09
Θs = 4° 06' 48.8"	Δ = 21° 47' 57.8" (RT)	Θs = 4° 06' 48.8"
Ls = 280.00'	D = 2° 56' 17.7"	Ls = 280.00'
LT = 186.72'	L = 741.92'	LT = 186.72'
ST = 93.38'	T = 375.50'	ST = 93.38'
	R = 1,950.00'	
	SE = 07 (SEE PLANS)	

19-FEB-2013 12:34
R:\Roadway\Proj\r2303b_rdy_psh25.dgn
$$$$USERNAME$$$$

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-2303B	26
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER



-L-

PIs Sta 662+97.51	PI Sta 667+66.29	PIs Sta 672+26.09
Θs = 4° 06' 48.8"	Δ = 21° 47' 57.8" (RT)	Θs = 4° 06' 48.8"
Ls = 280.00'	D = 2° 56' 17.7"	Ls = 280.00'
LT = 186.72'	L = 741.92'	LT = 186.72'
ST = 93.38'	T = 375.50'	ST = 93.38'
	R = 1,950.00'	
	SE = 07 (SEE PLANS)	

-Y22-

PI Sta 14+81.14
Δ = 68° 35' 38.9" (LT)
D = 38° 11' 49.9"
L = 179.58'
T = 102.31'
R = 150.00'
SE = 04 (SEE PLANS)

MONOLITHIC CONCRETE ISLAND

PAVEMENT REMOVAL (OBLITERATE)

SEE SHEET 43 FOR -L- PROFILE

SEE SHEET 51 FOR -Y22- PROFILE

SEE DETAILS SHEET 2-G FOR DITCH DETAILS

12-FEB-2013 10:07
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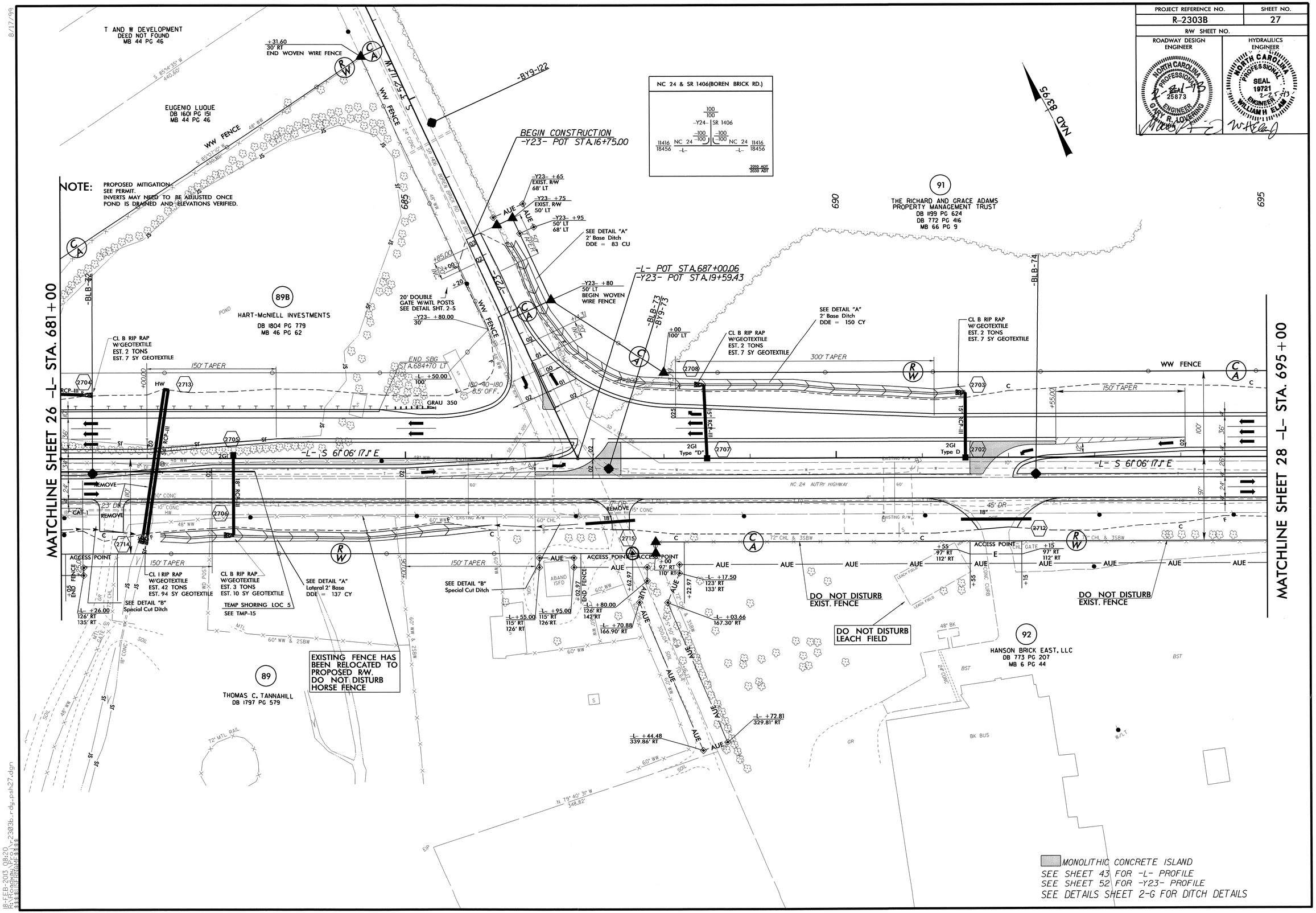
$$$$USERNAME$$$$

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-2303B	27
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 25673 ENGINEER GARY R. LOVERING

NORTH CAROLINA PROFESSIONAL SEAL 19721 ENGINEER WILLIAM H. ELAM



8/17/99

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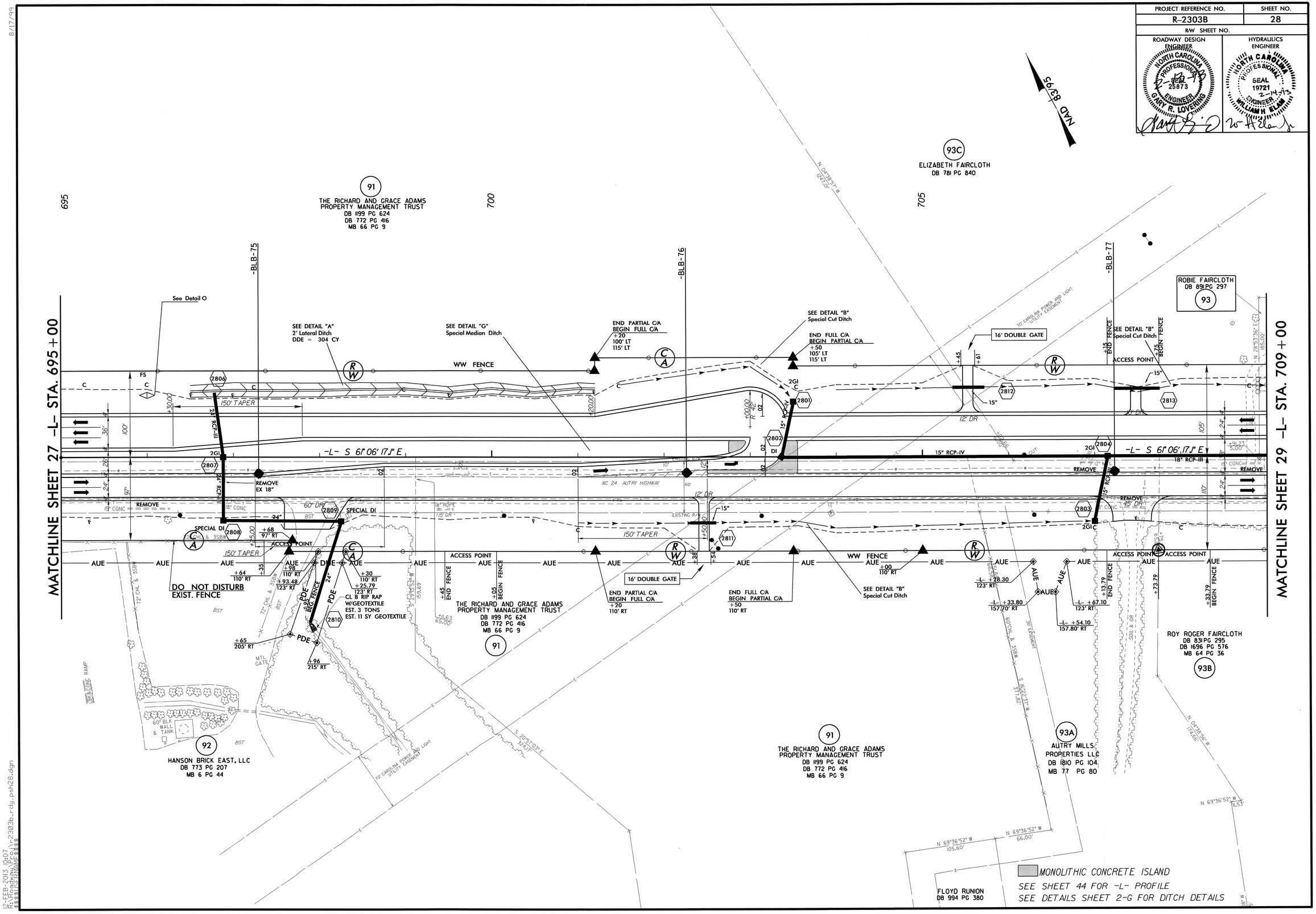
PROJECT REFERENCE NO.	SHEET NO.
R-2303B	28
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 25873 ENGINEER GARY R. LOVERING 2-14-13

NORTH CAROLINA PROFESSIONAL SEAL 19721 ENGINEER WILLIAM ELAM 2-14-13



8/17/99

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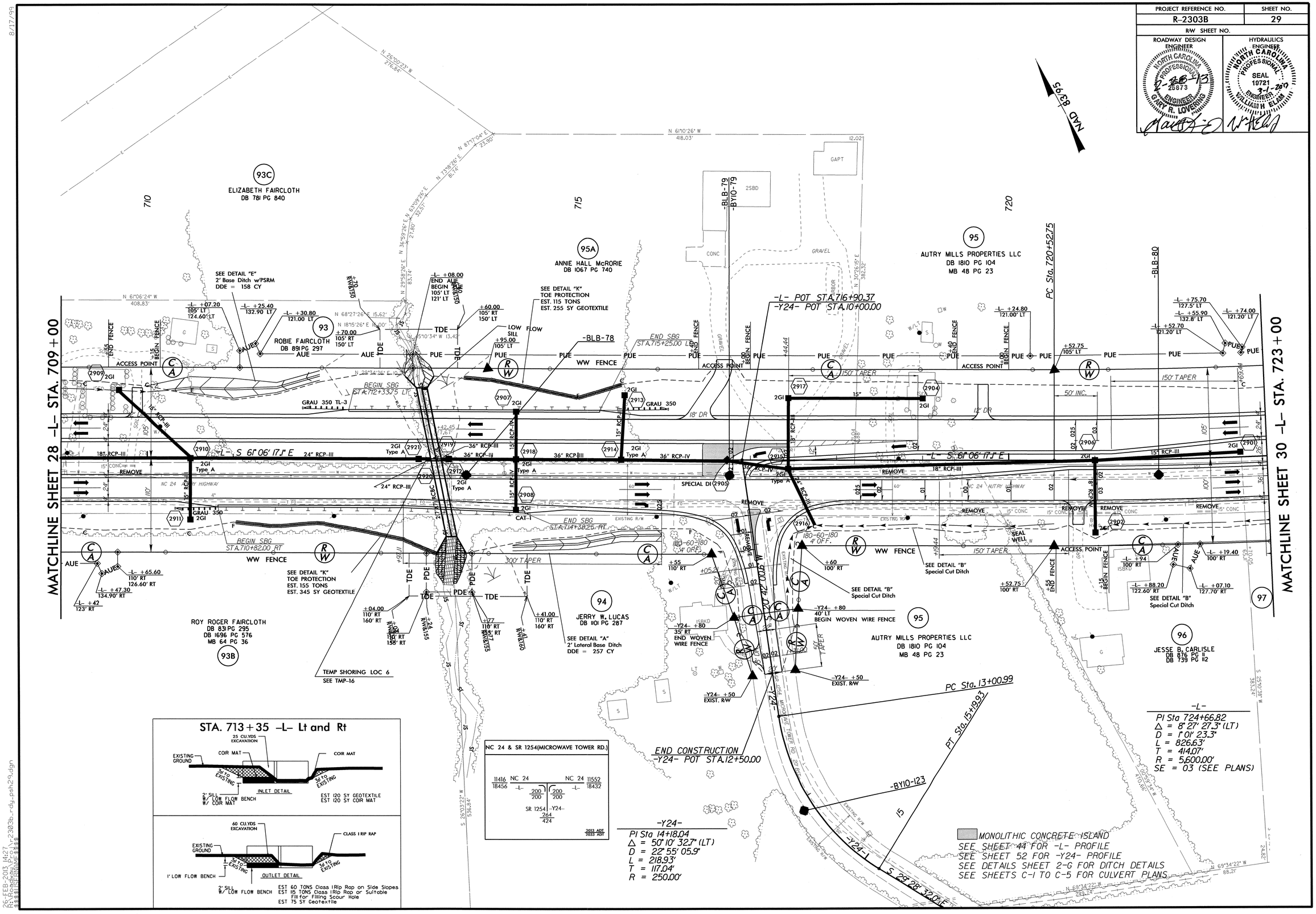
PROJECT REFERENCE NO.	SHEET NO.
R-2303B	29
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER



STA. 713+35 -L- Lt and Rt

25 CU.YDS EXCAVATION
EXISTING GROUND
COIR MAT
3:1 TO EXISTING
INLET DETAIL
2' SILL W/ LOW FLOW BENCH W/ COIR MAT
EST 120 SY GEOTEXTILE
EST 120 SY COIR MAT

60 CU.YDS EXCAVATION
CLASS I RIP RAP
1' LOW FLOW BENCH
OUTLET DETAIL
2' SILL W/ LOW FLOW BENCH
EST 60 TONS Class I Rip Rap on Side Slopes
EST 115 TONS Class I Rip Rap or Suitable Fill for Filling Scour Hole
EST 75 SY Geotextile

8/17/99

26-FEB-2013 14:27
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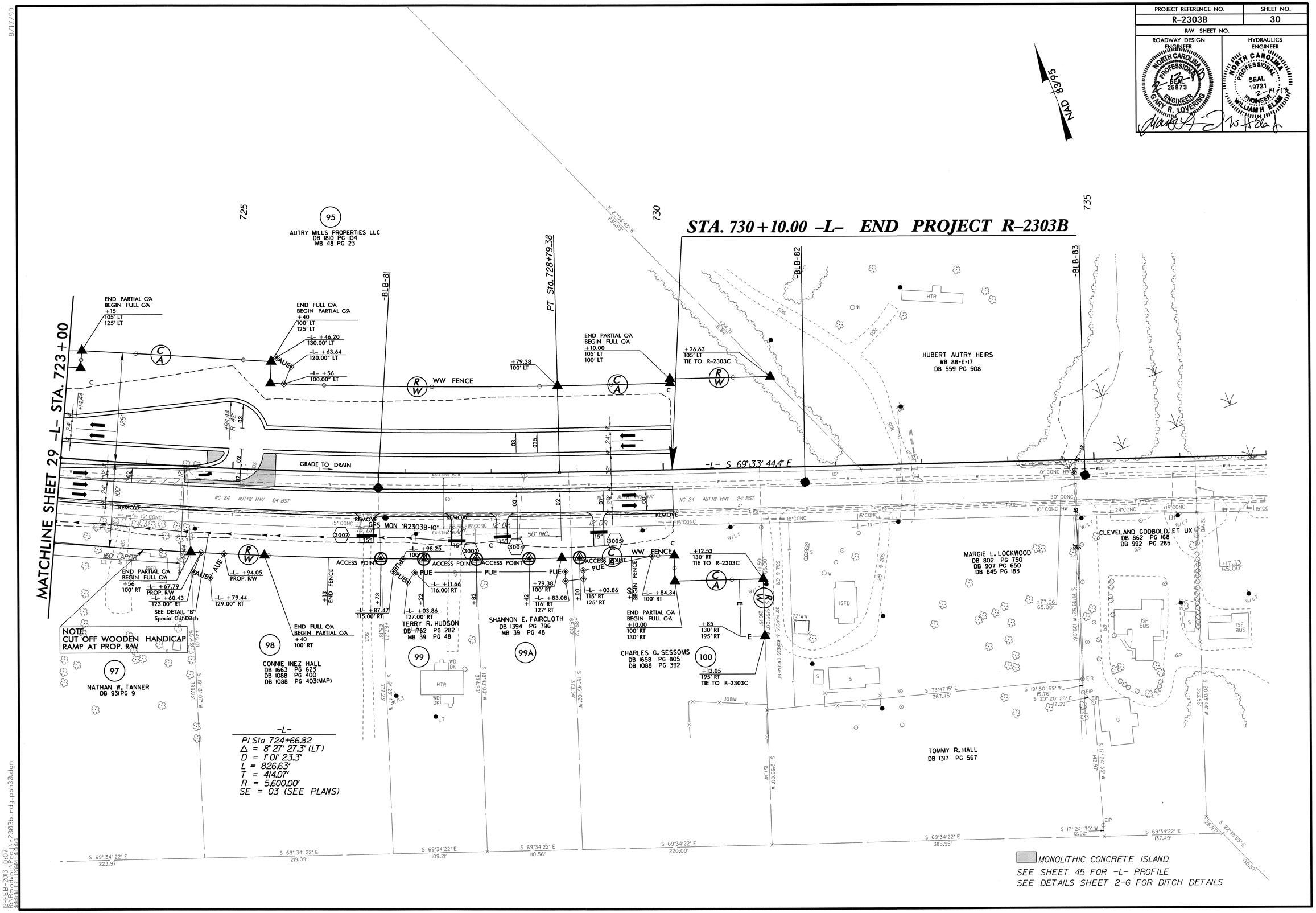
PROJECT REFERENCE NO.	SHEET NO.
R-2303B	30
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 25873 ENGINEER GARY R. LOVERING

NORTH CAROLINA PROFESSIONAL SEAL 19721 ENGINEER WILLIAM H. ELLIS



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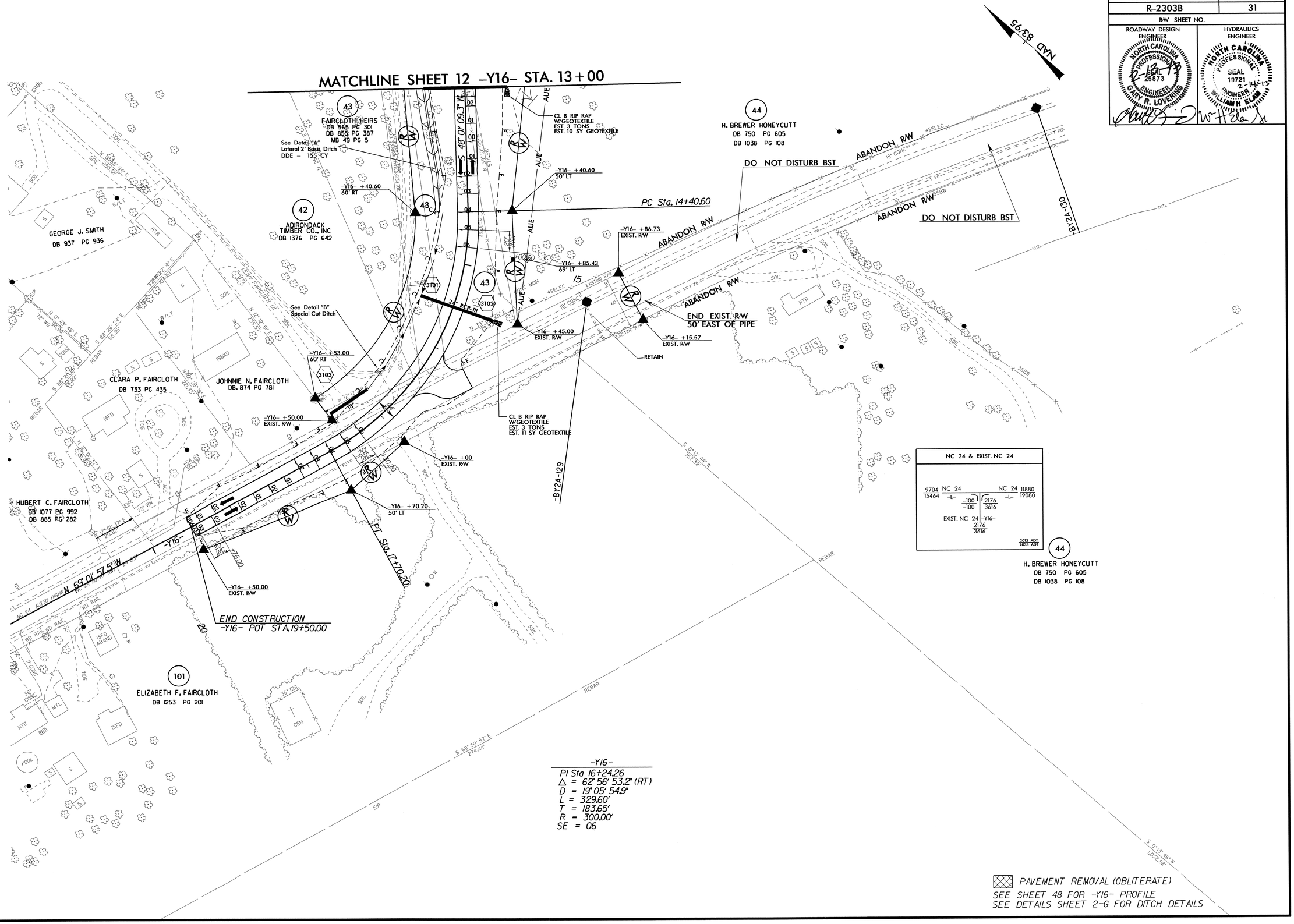
PROJECT REFERENCE NO.	SHEET NO.
R-2303B	31
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 25873 ENGINEER GARY R. LOVERING 2-13-13

NORTH CAROLINA PROFESSIONAL SEAL 19721 ENGINEER WILLIAM H. ELLIS 2-14-13



8/17/99

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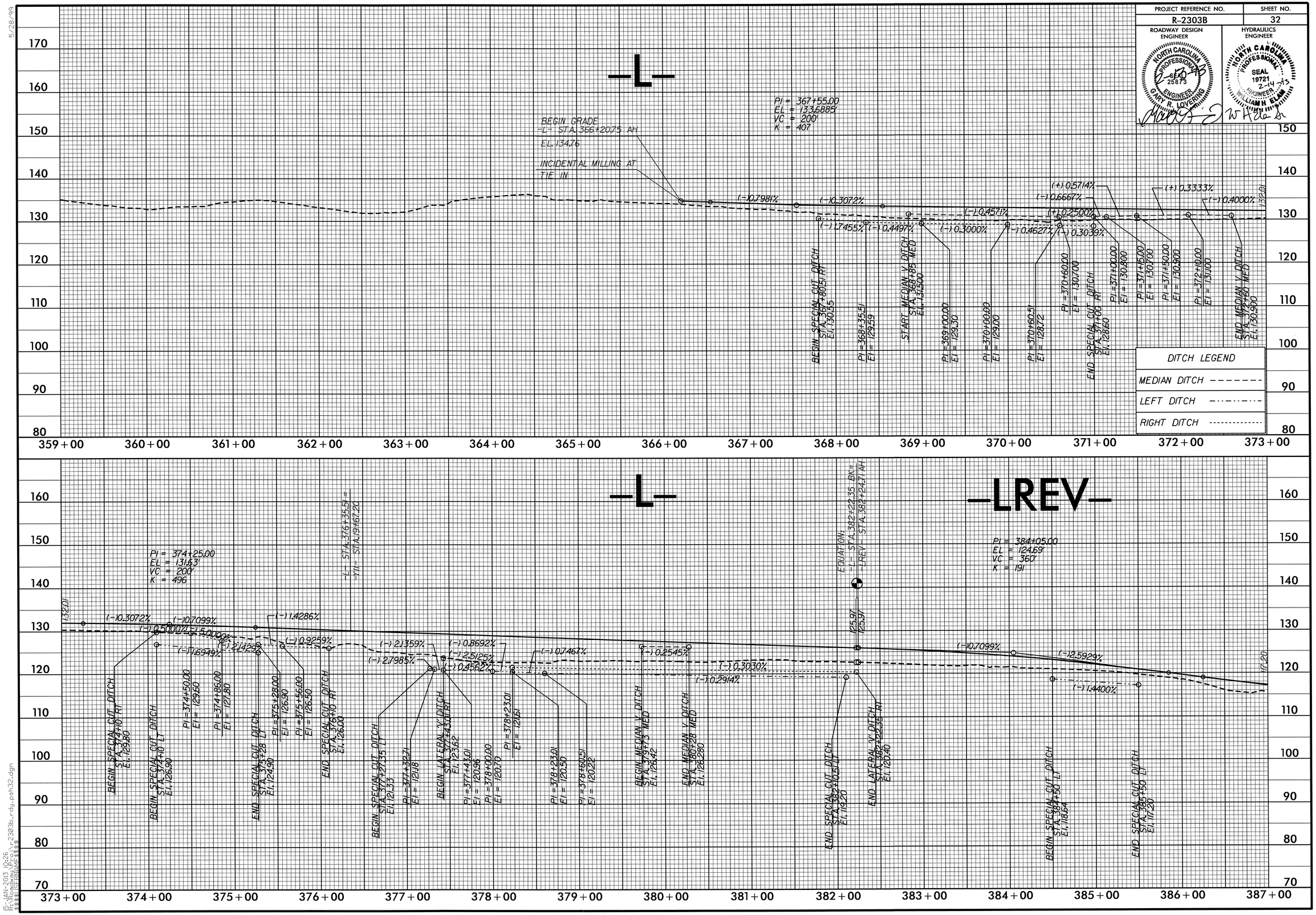
PROJECT REFERENCE NO.	SHEET NO.
R-2303B	32

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 25873 ENGINEER GARY R. LOVERING

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 19721 2-14-13 ENGINEER WILLIAM H. ELLIS



5/28/93

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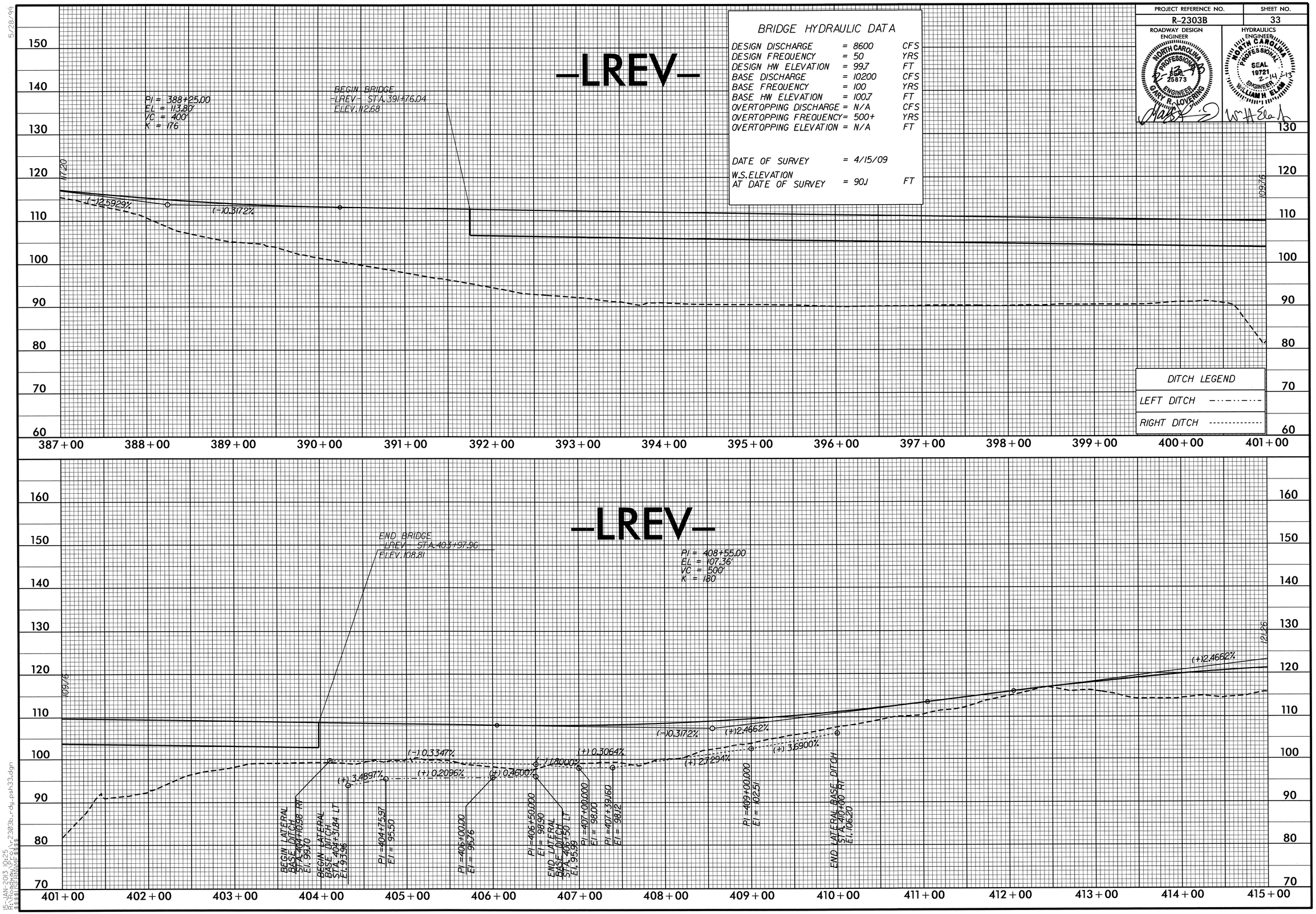
PROJECT REFERENCE NO.	SHEET NO.
R-2303B	33

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 25873 ENGINEER GARY R. LOVERING — 2-13-14

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 19721 ENGINEER WILLIAM H. ELAM — 2-14-13

BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE	= 8600	CFS
DESIGN FREQUENCY	= 50	YRS
DESIGN HW ELEVATION	= 99.7	FT
BASE DISCHARGE	= 10200	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 100.7	FT
OVERTOPPING DISCHARGE	= N/A	CFS
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING ELEVATION	= N/A	FT
DATE OF SURVEY	= 4/15/09	
W.S. ELEVATION AT DATE OF SURVEY	= 90.1	FT



5/28/99

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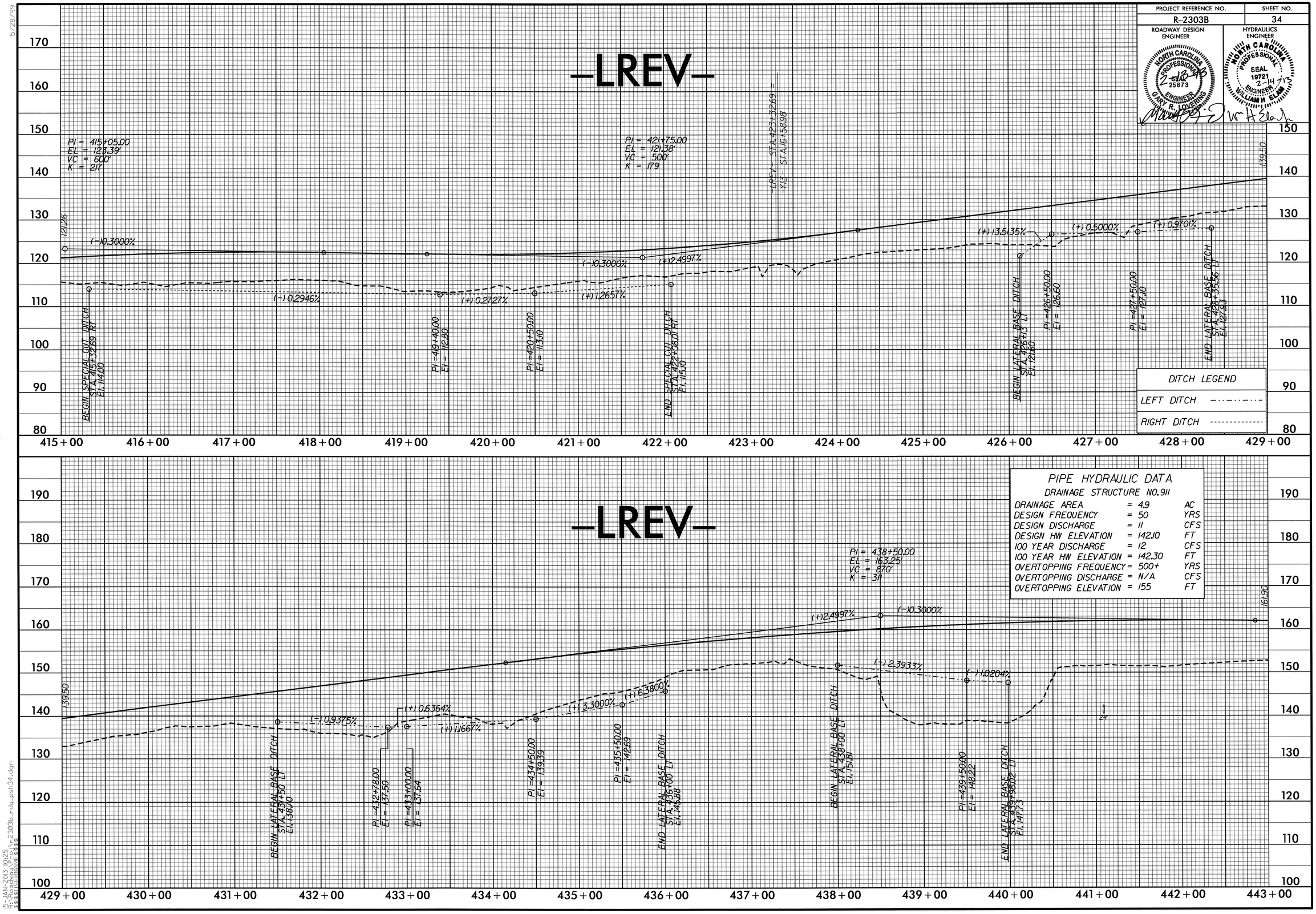
PROJECT REFERENCE NO.	SHEET NO.
R-2303B	34

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 25873 ENGINEER GARY R. LOVERING

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 19721 ENGINEER WILLIAM H. ELAM



5/28/99

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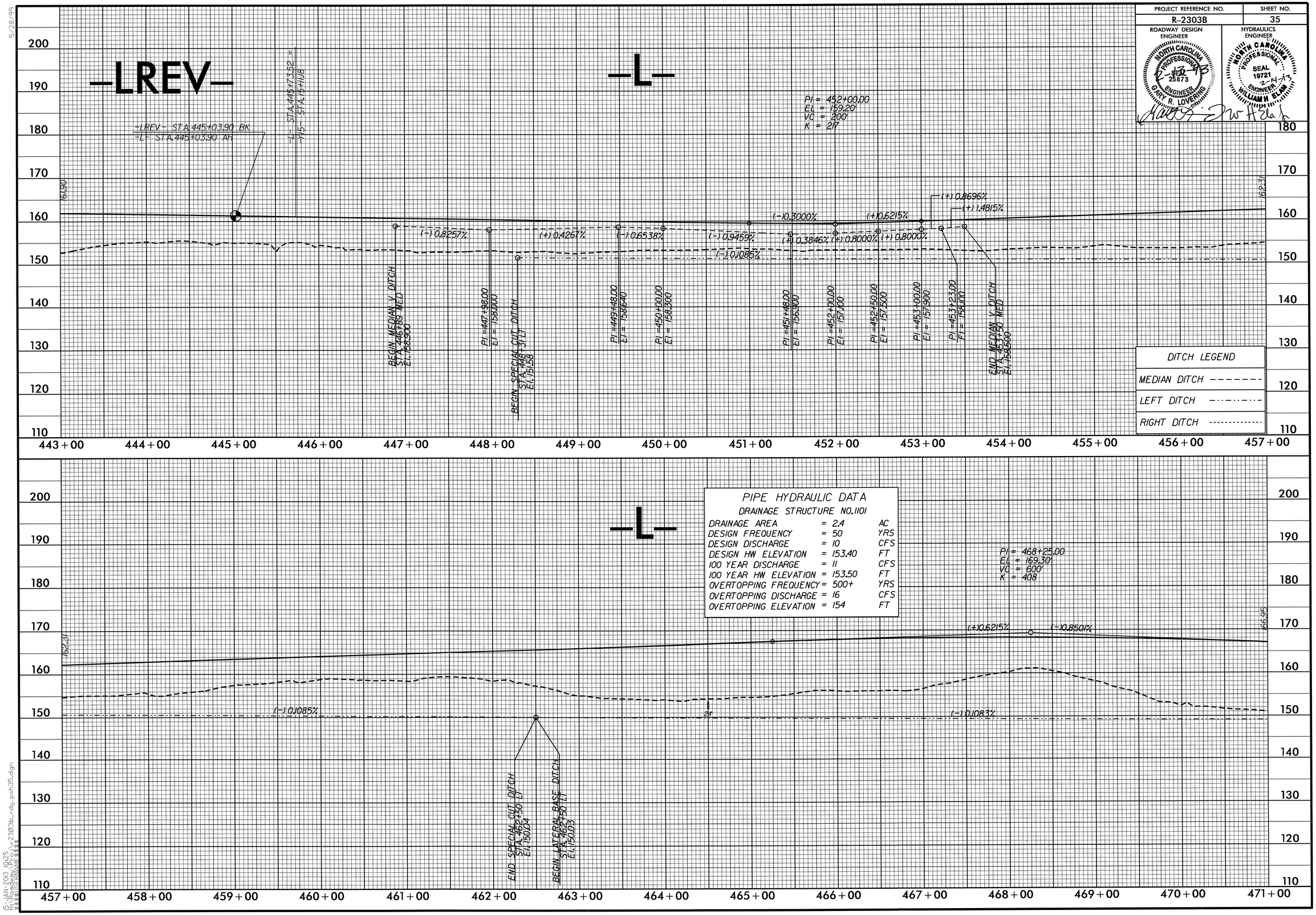
PROJECT REFERENCE NO.	SHEET NO.
R-2303B	35

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 25873 ENGINEER GARY R. LOVERING

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 19721 ENGINEER WILLIAM H. ELAM



5/28/99

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PROJECT REFERENCE NO.	SHEET NO.
R-2303B	36

ROADWAY DESIGN ENGINEER

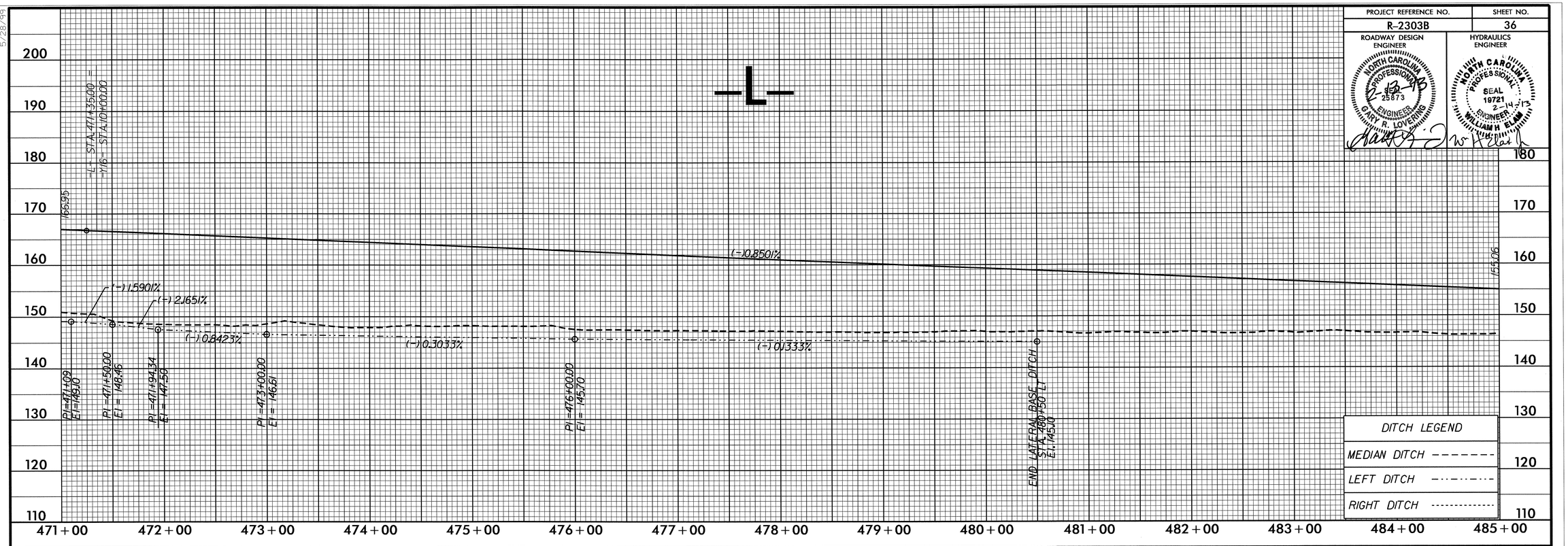
NORTH CAROLINA PROFESSIONAL SEAL 25873 ENGINEER GARY R. LOVERING

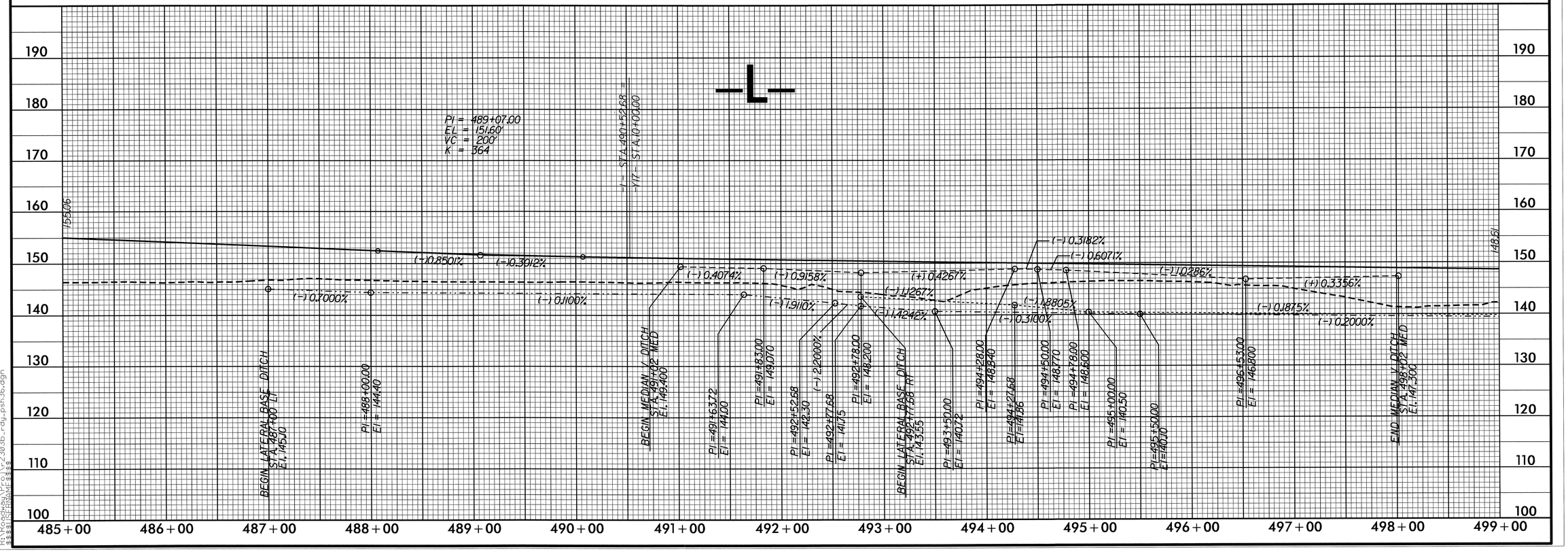
2-13-13

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 19721 ENGINEER WILLIAM H. ELAM

2-14-13





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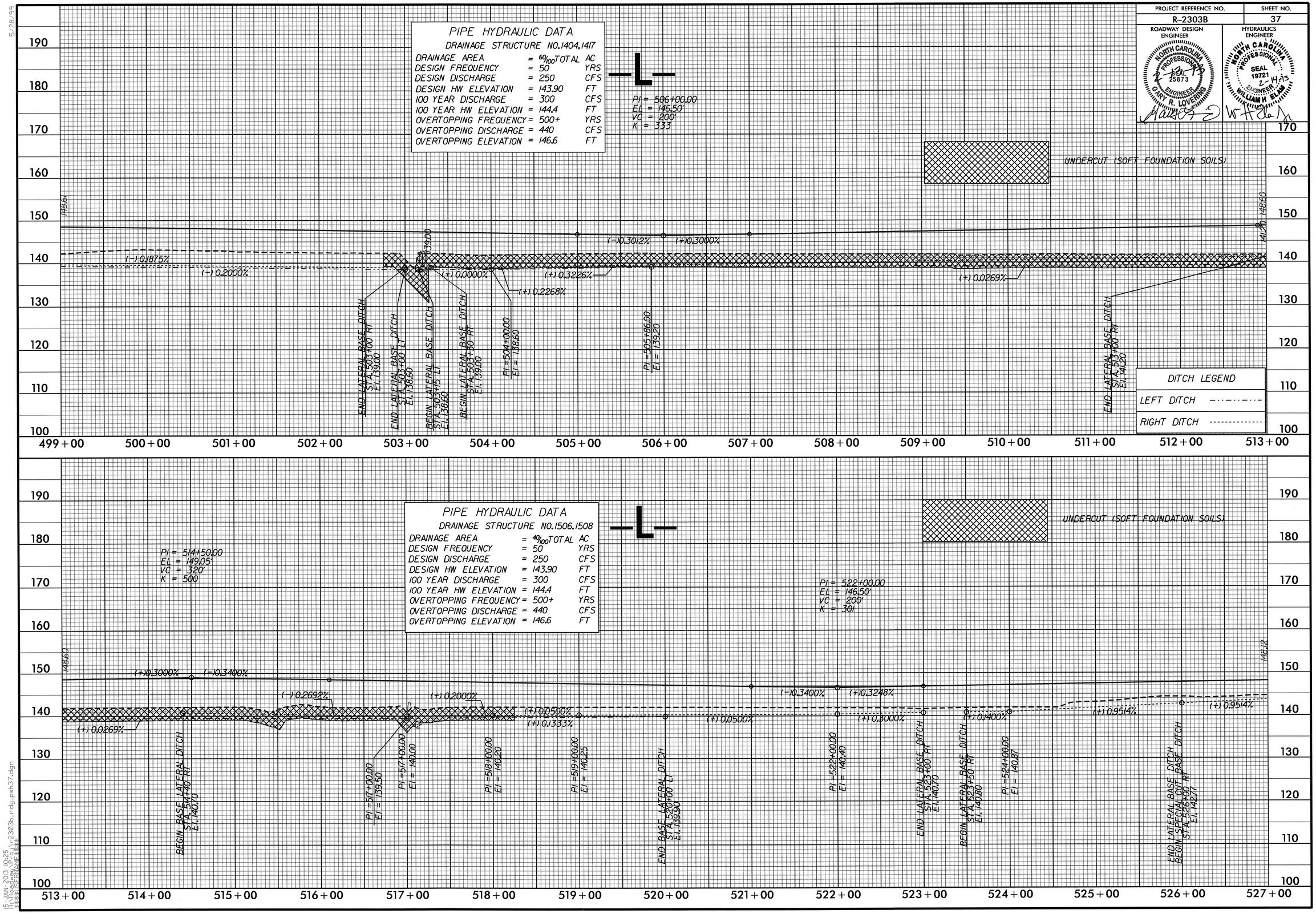
PROJECT REFERENCE NO.	SHEET NO.
R-2303B	37

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER



5/28/99

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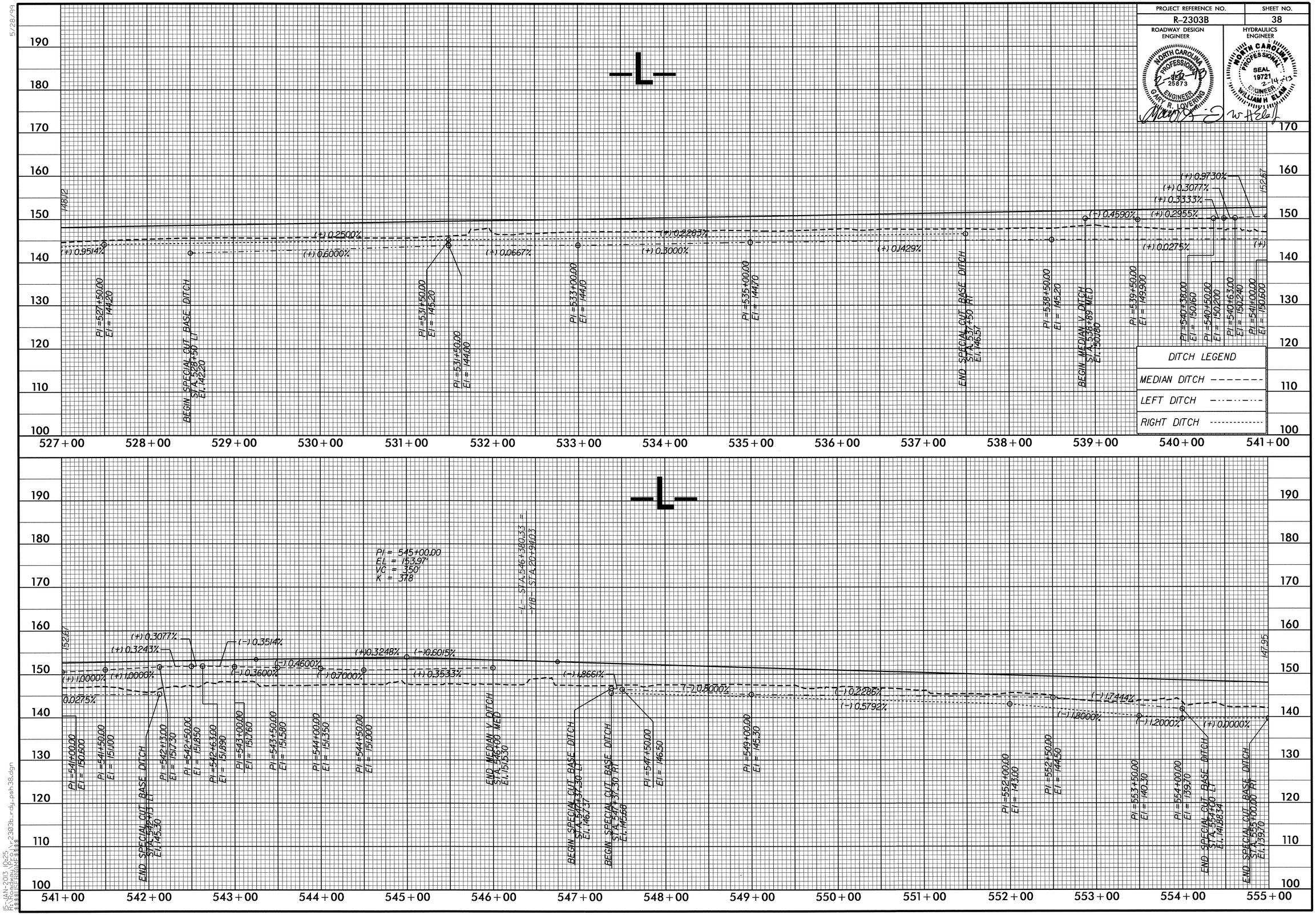
PROJECT REFERENCE NO.	SHEET NO.
R-2303B	38

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER



5/28/99

15-JAN-2013 10:25
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PROJECT REFERENCE NO.	SHEET NO.
R-2303B	39

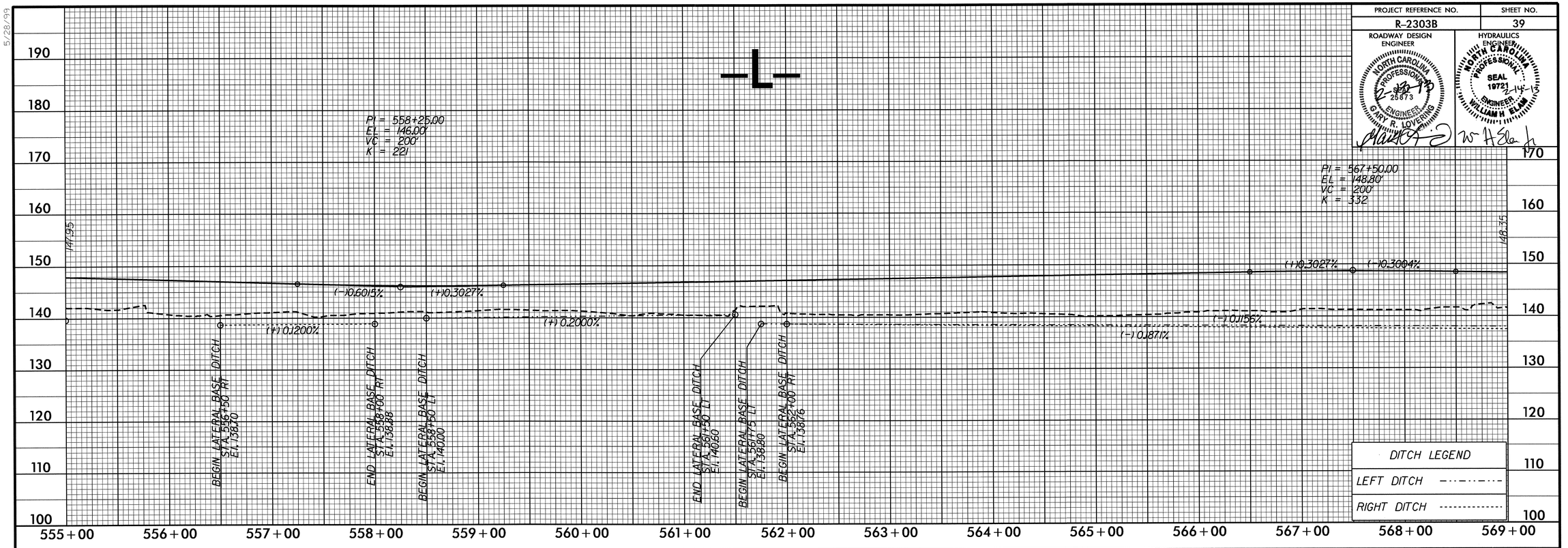
ROADWAY DESIGN ENGINEER

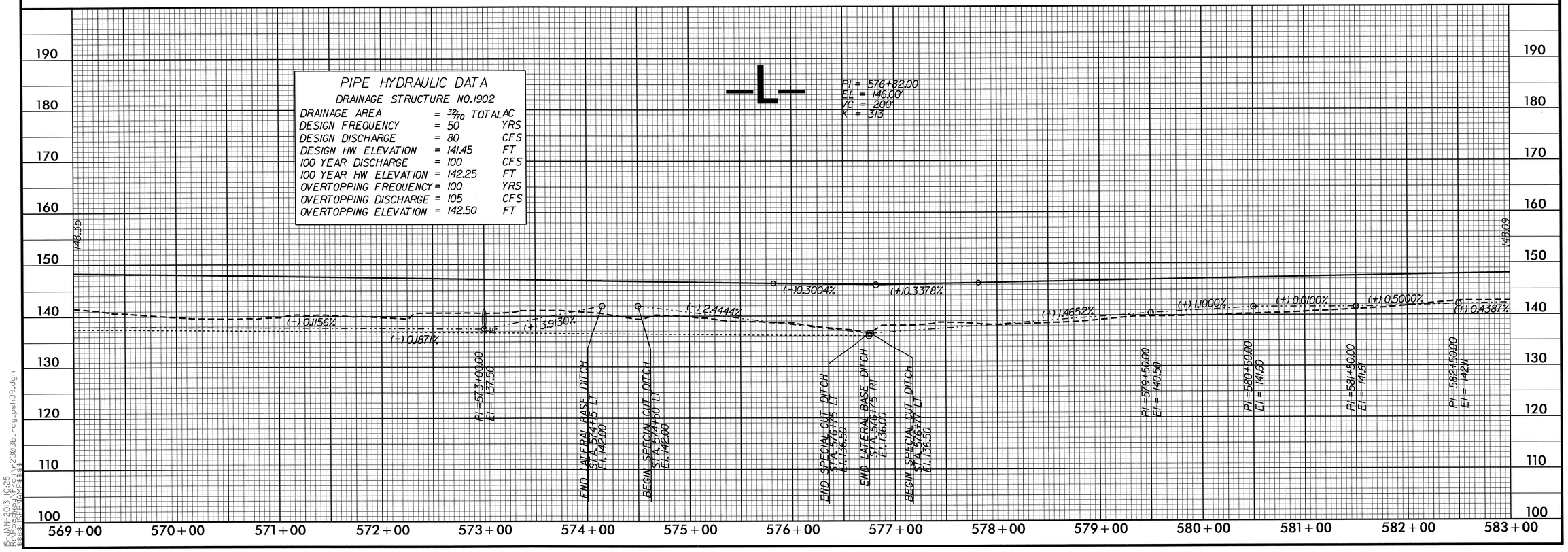
NORTH CAROLINA PROFESSIONAL SEAL 25873 ENGINEER GARY R. LOVERING

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 19721 ENGINEER WILLIAM H. ELAM

2-14-19





5/28/99

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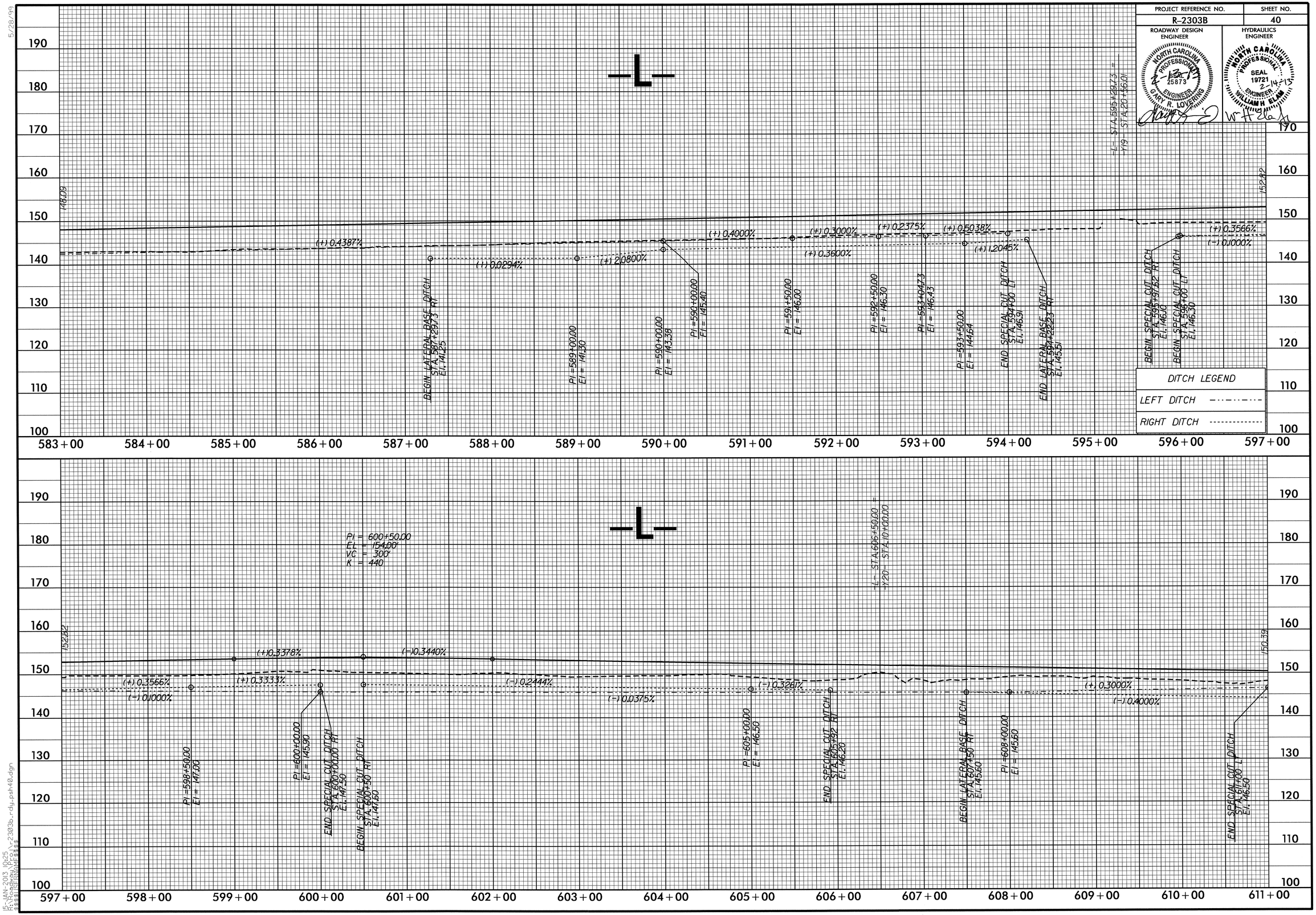
PROJECT REFERENCE NO.	SHEET NO.
R-2303B	40

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 25873 ENGINEER GARY R. LOVERING

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 19721 ENGINEER WILLIAM H. ELAM 2/14/13



5/28/99

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PROJECT REFERENCE NO.	SHEET NO.
R-2303B	41

ROADWAY DESIGN ENGINEER

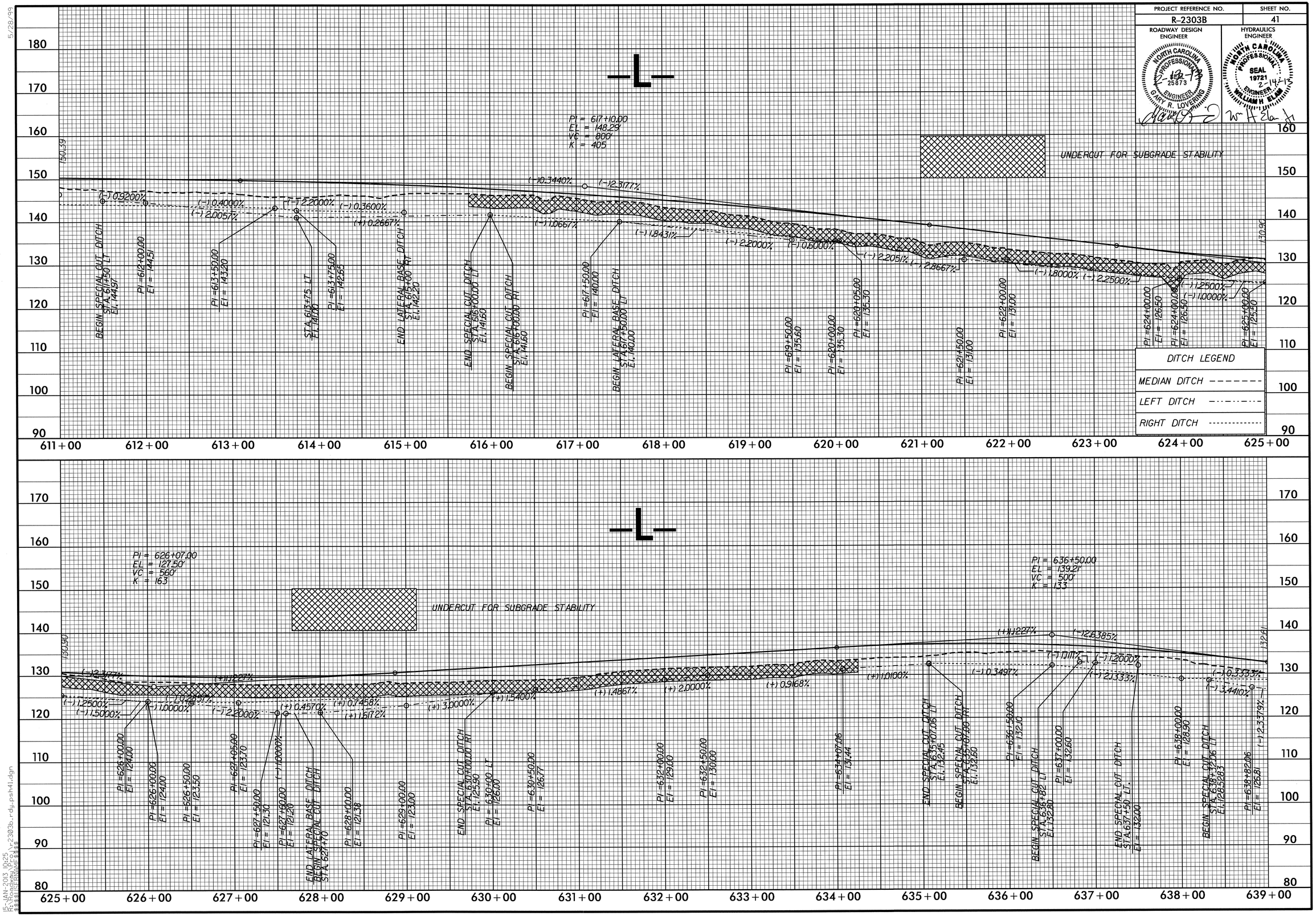
NORTH CAROLINA PROFESSIONAL SEAL 25873 ENGINEER GARY R. LOVERING

2-14-13

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 19721 ENGINEER WILLIAM H ELAM

2-14-13



5/28/99

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PROJECT REFERENCE NO.	SHEET NO.
R-2303B	42

ROADWAY DESIGN ENGINEER

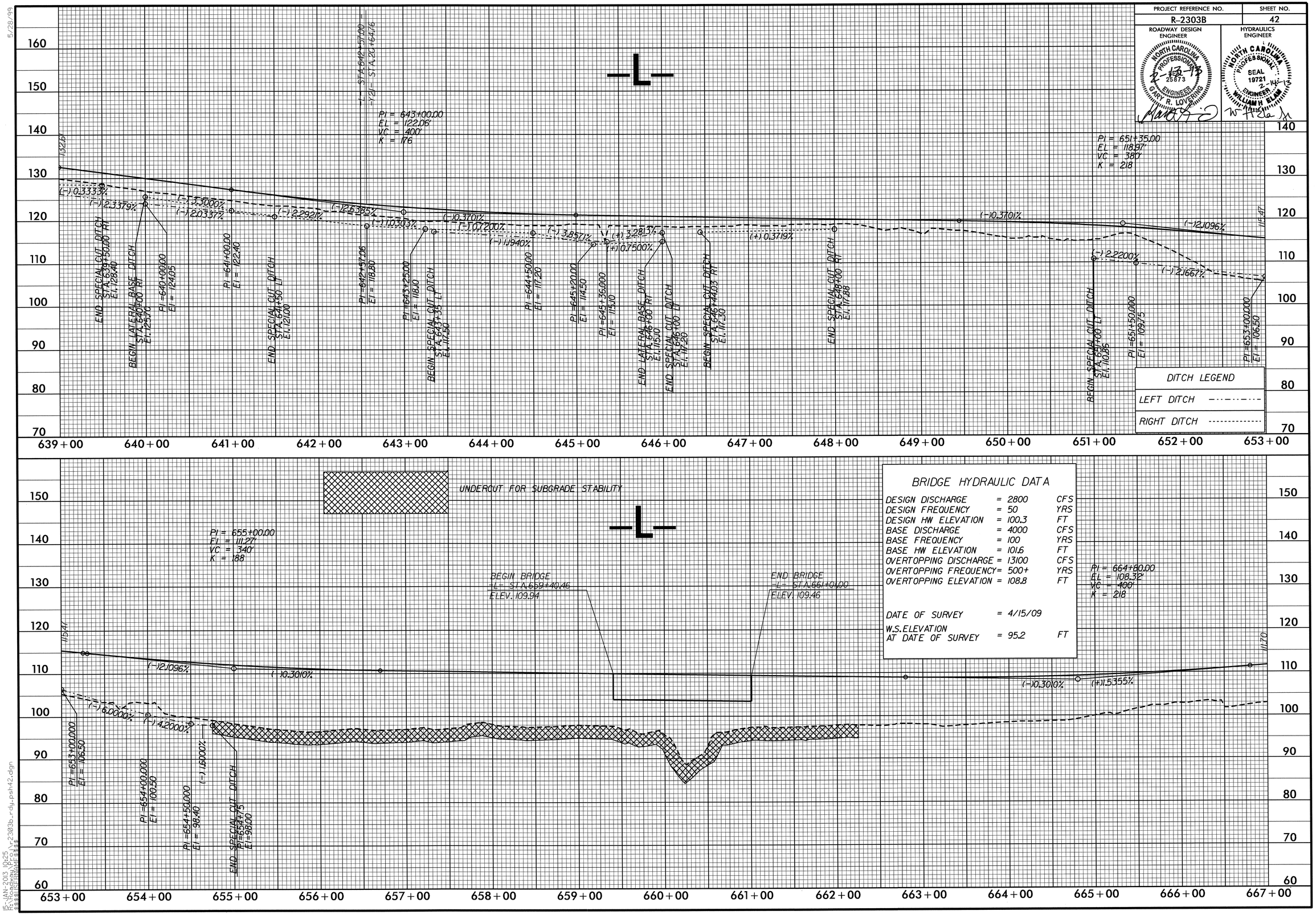
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 25873 GARY R. LOVERING

2-13-14

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 19721 ENGINEER WILLIAM H. ELLIS

2-14-14



BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE	= 2800	CFS
DESIGN FREQUENCY	= 50	YRS
DESIGN HW ELEVATION	= 100.3	FT
BASE DISCHARGE	= 4000	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 101.6	FT
OVERTOPPING DISCHARGE	= 13100	CFS
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING ELEVATION	= 108.8	FT
DATE OF SURVEY	= 4/15/09	
W.S. ELEVATION AT DATE OF SURVEY	= 95.2	FT

5/28/99

15-JAN-2013 10:25
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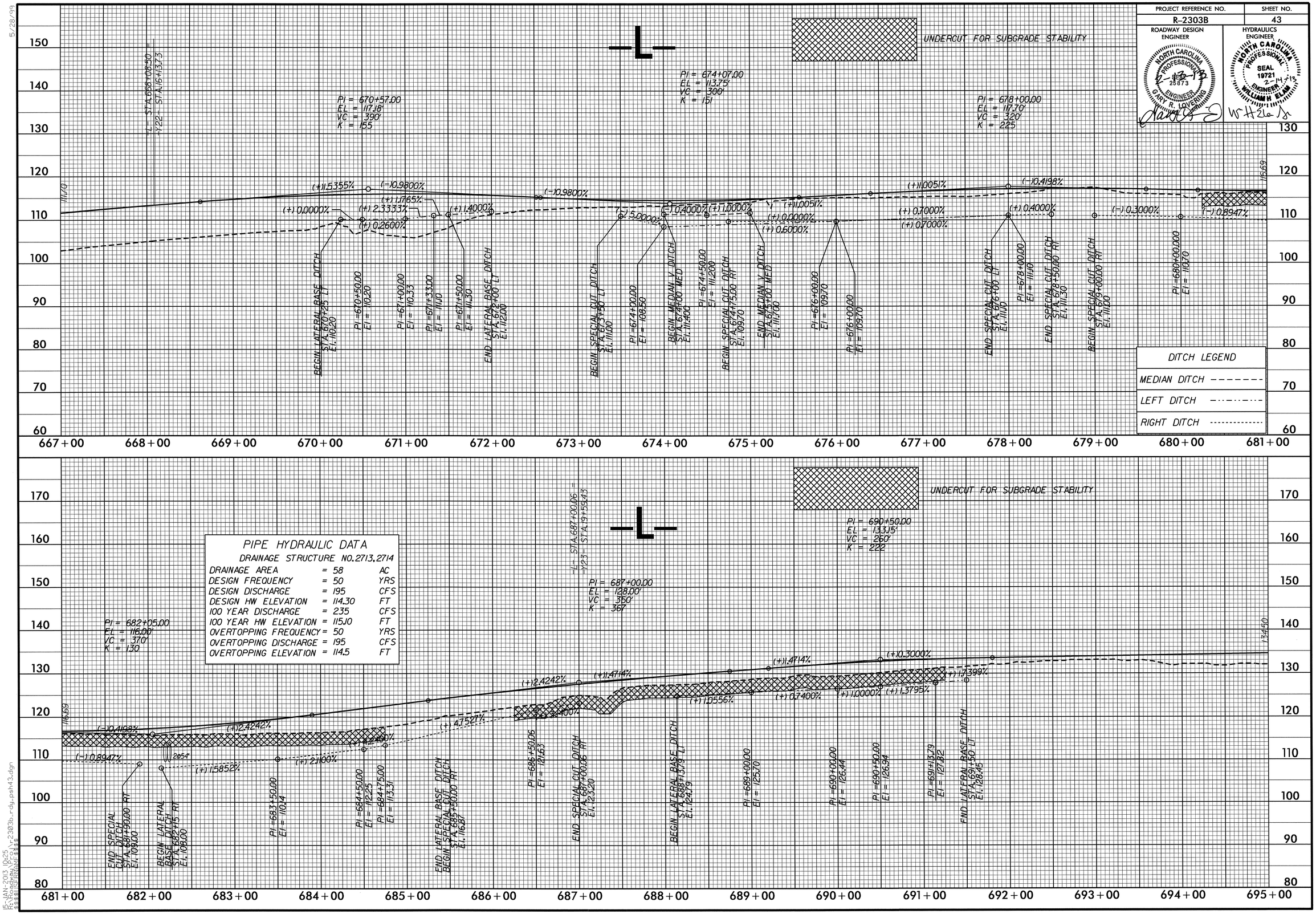
PROJECT REFERENCE NO.	SHEET NO.
R-2303B	43

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER



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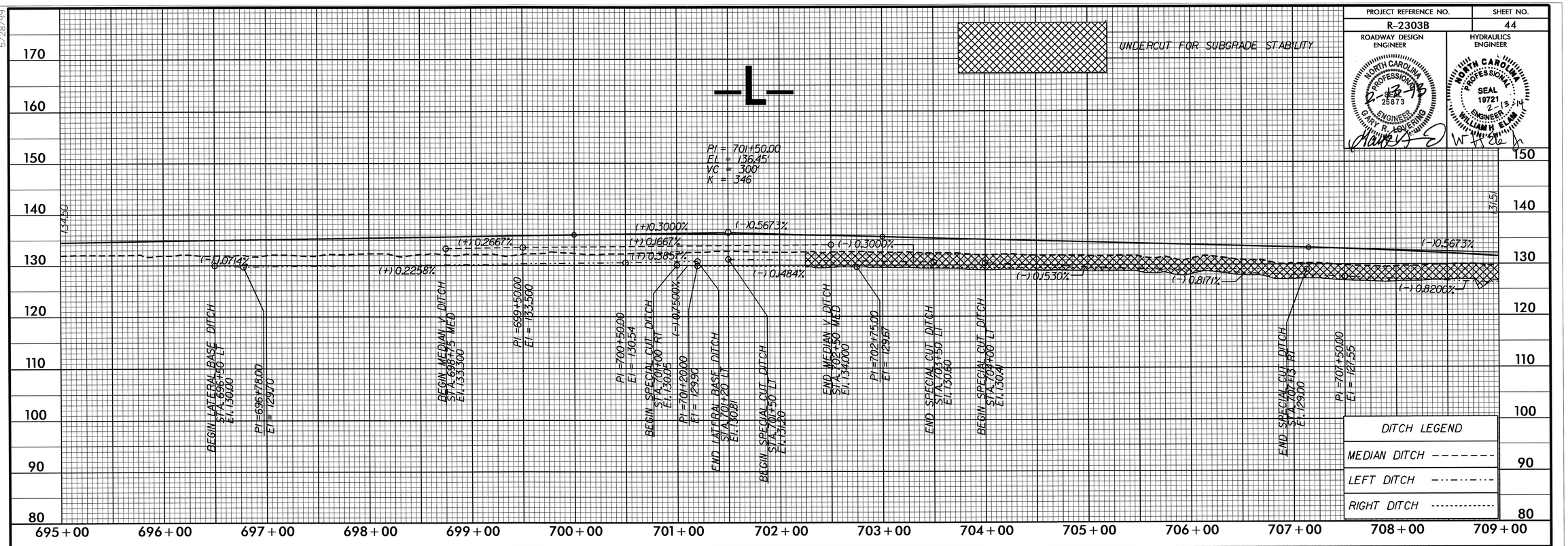
PROJECT REFERENCE NO.	SHEET NO.
R-2303B	44

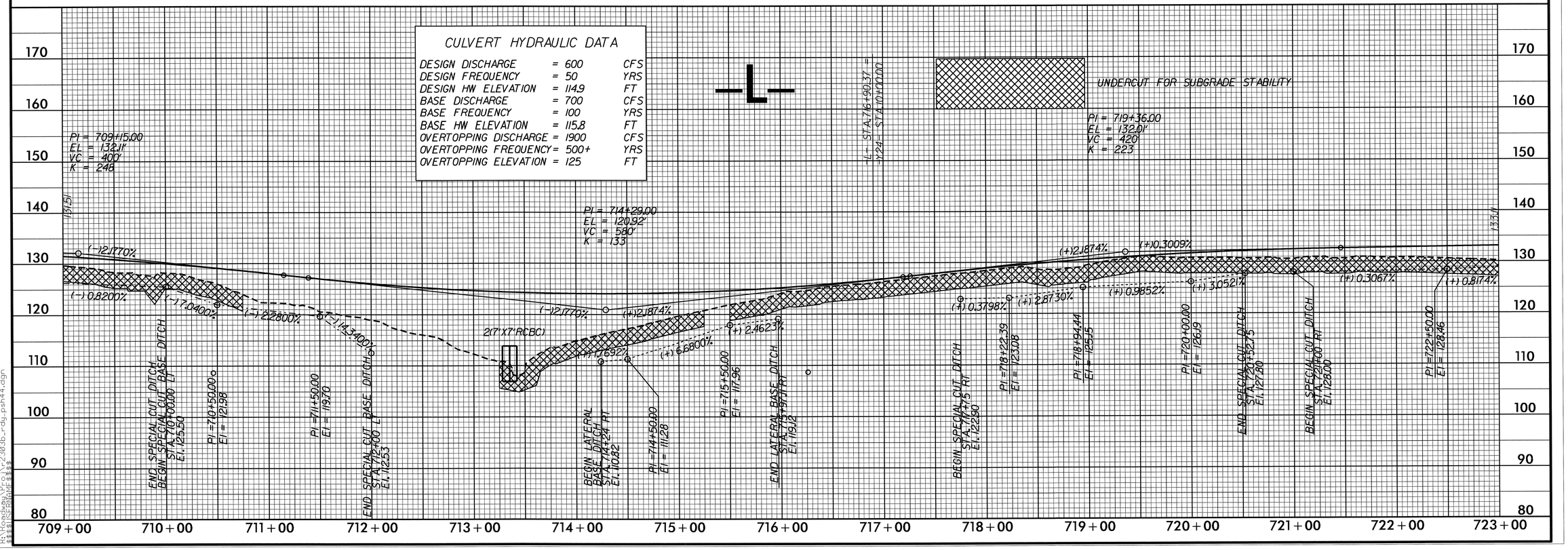
ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 25873 ENGINEER GARY R. SEVERING

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 19721 ENGINEER WILLIAM H. ELLIS





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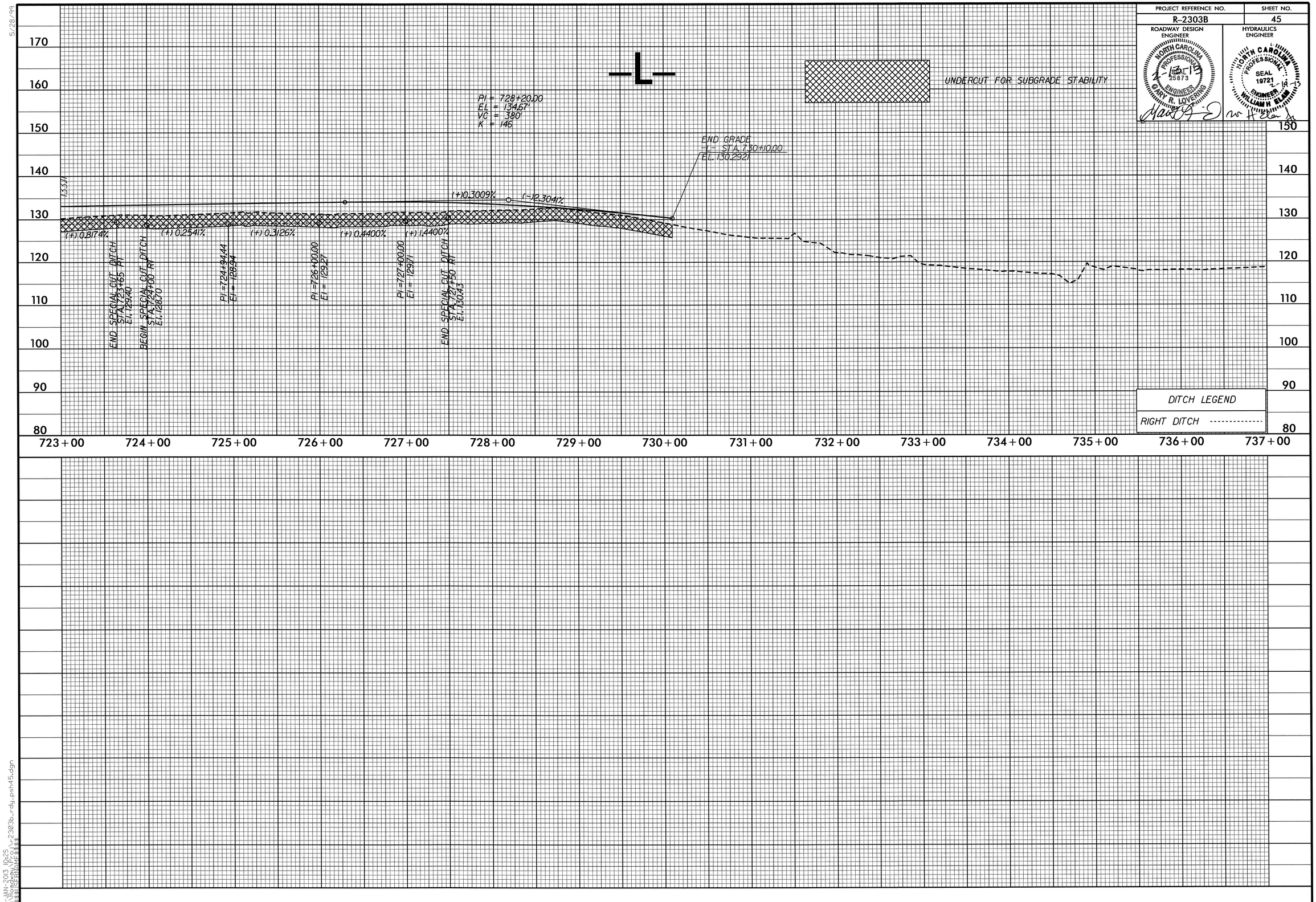
PROJECT REFERENCE NO.	SHEET NO.
R-2303B	45

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 25873 ENGINEER GARY R. LOVERING

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 19721 ENGINEER WILLIAM H. ELLIS



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PROJECT REFERENCE NO.	SHEET NO.
R-2303B	46

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 25873 ENGINEER GARY R. LOVERING

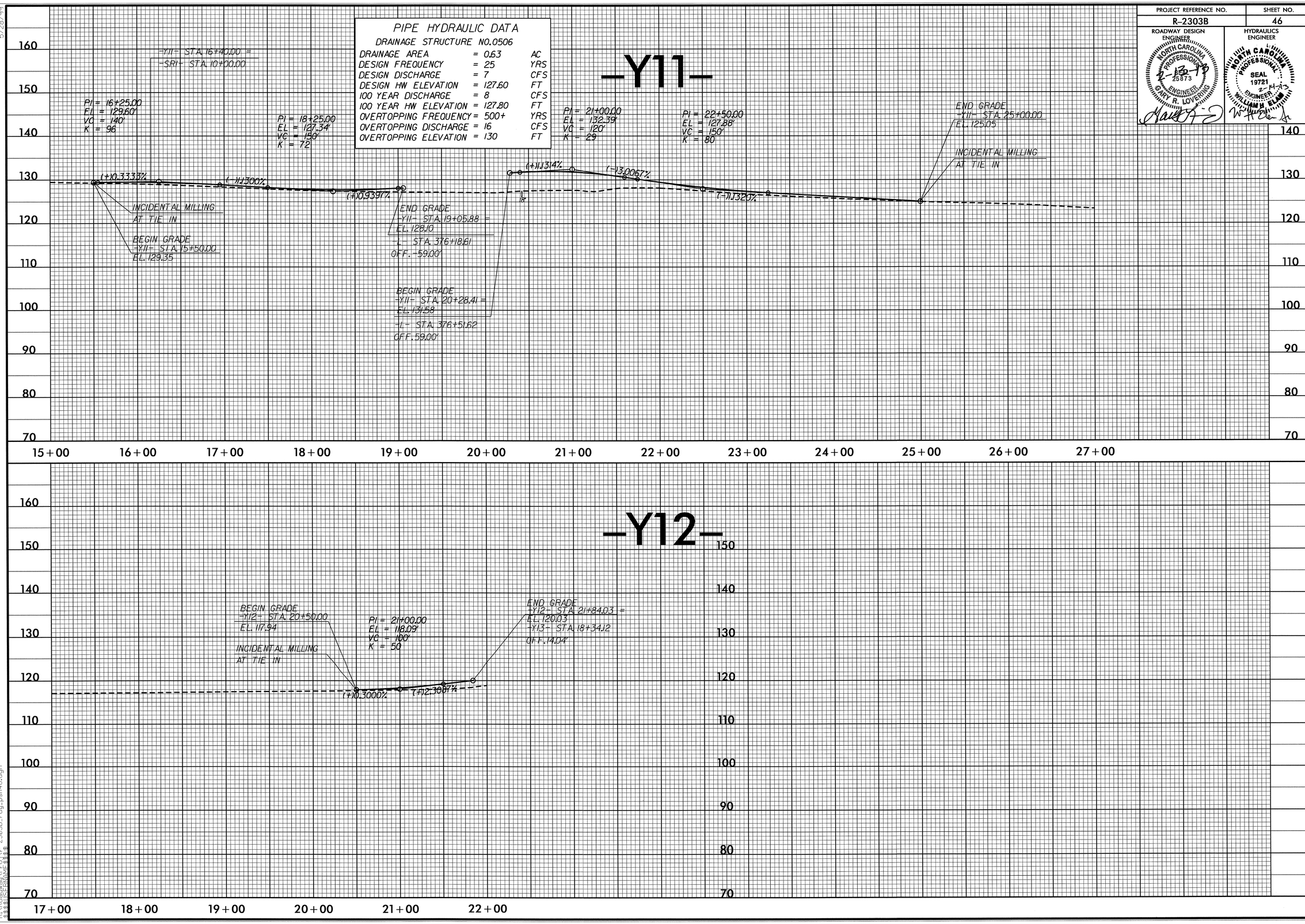
HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 19721 ENGINEER WILLIAM H. ELLIS

PIPE HYDRAULIC DATA

DRAINAGE STRUCTURE NO.0506

DRAINAGE AREA	= 0.63	AC
DESIGN FREQUENCY	= 25	YRS
DESIGN DISCHARGE	= 7	CFS
DESIGN HW ELEVATION	= 127.60	FT
100 YEAR DISCHARGE	= 8	CFS
100 YEAR HW ELEVATION	= 127.80	FT
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING DISCHARGE	= 16	CFS
OVERTOPPING ELEVATION	= 130	FT



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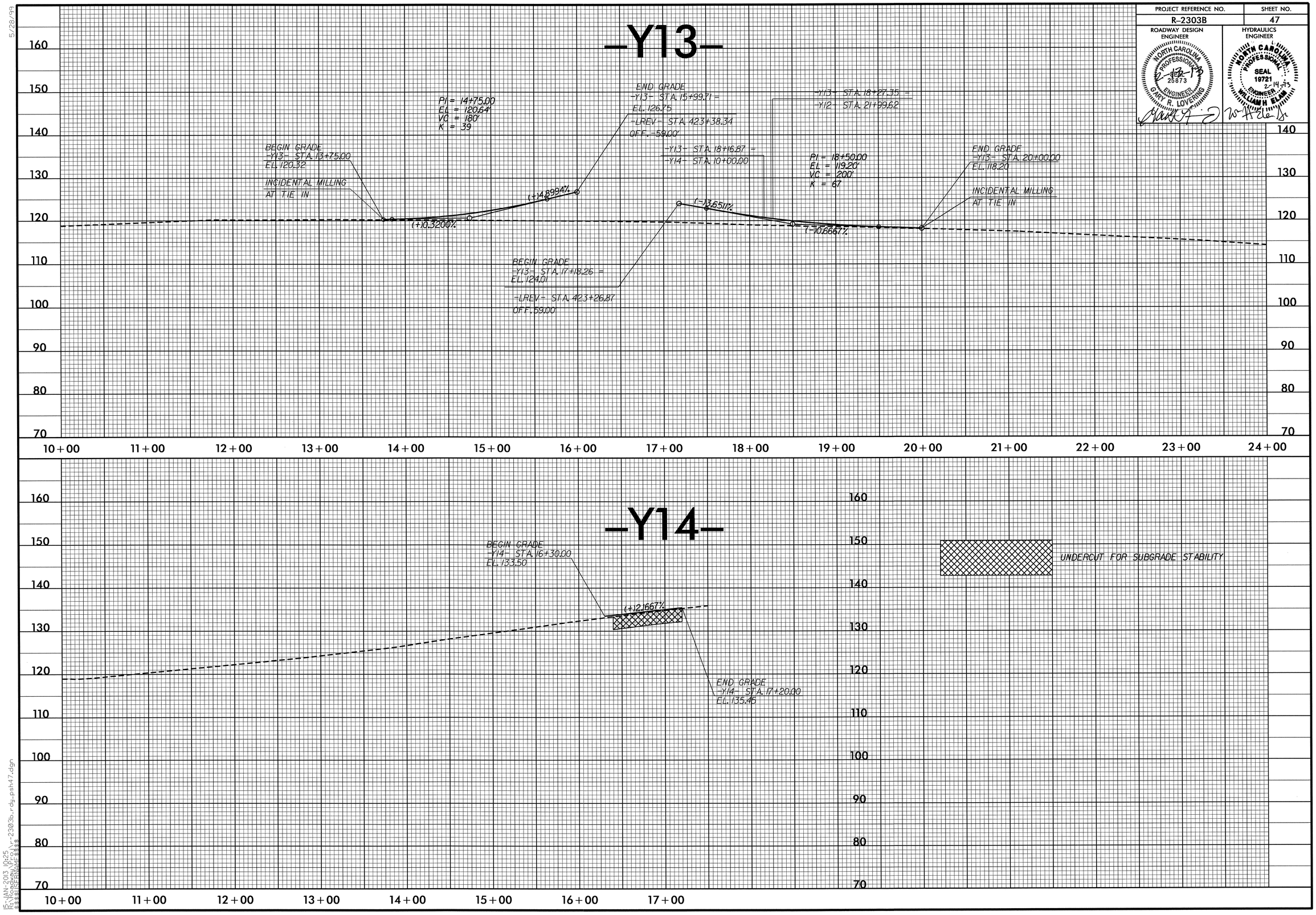
PROJECT REFERENCE NO.	SHEET NO.
R-2303B	47

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 25873 GARY R. LOVERING

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 19721 ENGINEER WILLIAM H ELAM 2-14-13



5/28/99

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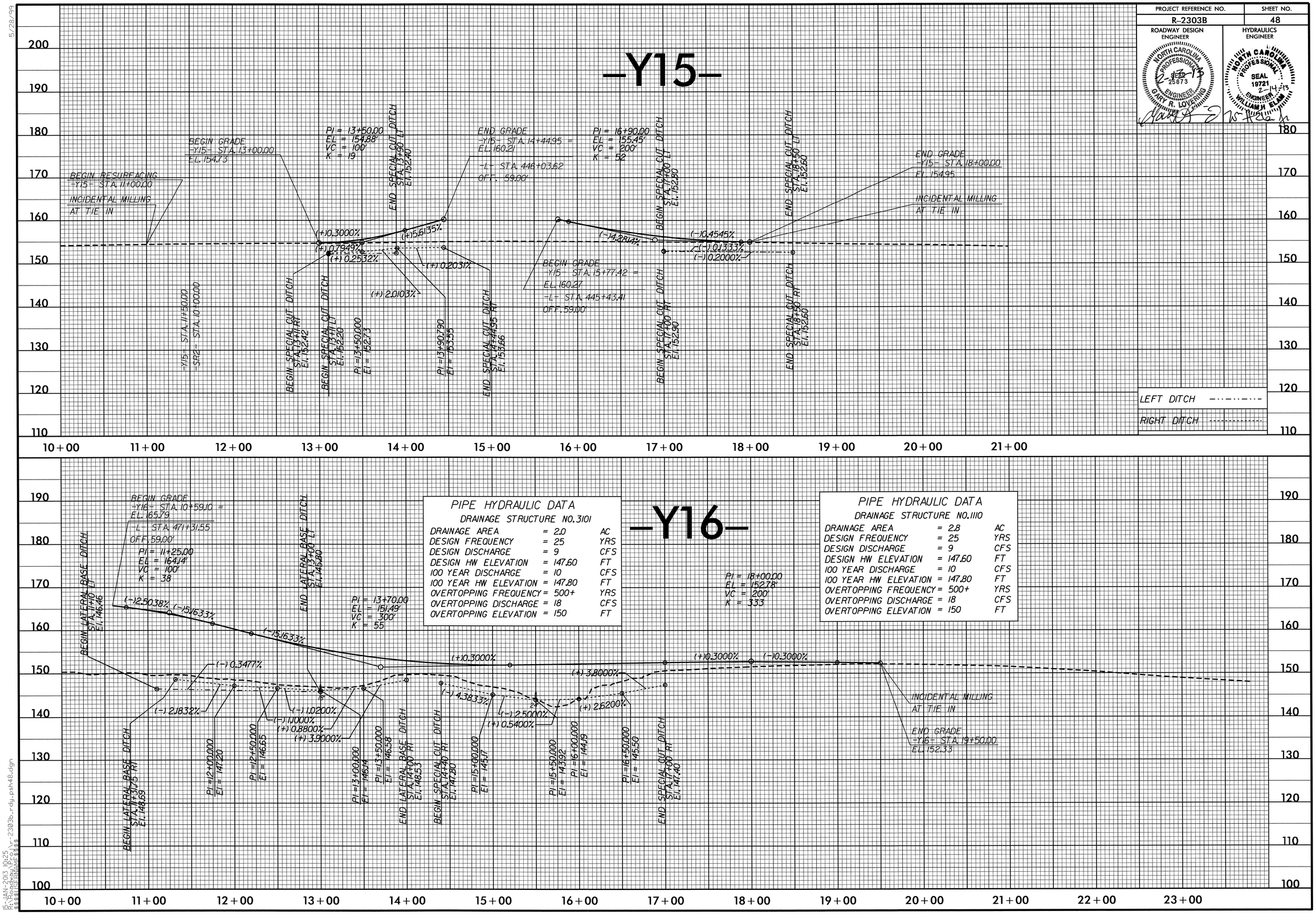
PROJECT REFERENCE NO.	SHEET NO.
R-2303B	48

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 25873 ENGINEER GARY R. LOVERING — 2-14-13

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 19721 ENGINEER WILLIAM H. ELAM — 2-14-13



PIPE HYDRAULIC DATA

DRAINAGE STRUCTURE NO. 3101

DRAINAGE AREA	= 2.0	AC
DESIGN FREQUENCY	= 25	YRS
DESIGN DISCHARGE	= 9	CFS
DESIGN HW ELEVATION	= 147.60	FT
100 YEAR DISCHARGE	= 10	CFS
100 YEAR HW ELEVATION	= 147.80	FT
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING DISCHARGE	= 18	CFS
OVERTOPPING ELEVATION	= 150	FT

PIPE HYDRAULIC DATA

DRAINAGE STRUCTURE NO. 1110

DRAINAGE AREA	= 2.8	AC
DESIGN FREQUENCY	= 25	YRS
DESIGN DISCHARGE	= 9	CFS
DESIGN HW ELEVATION	= 147.60	FT
100 YEAR DISCHARGE	= 10	CFS
100 YEAR HW ELEVATION	= 147.80	FT
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING DISCHARGE	= 18	CFS
OVERTOPPING ELEVATION	= 150	FT

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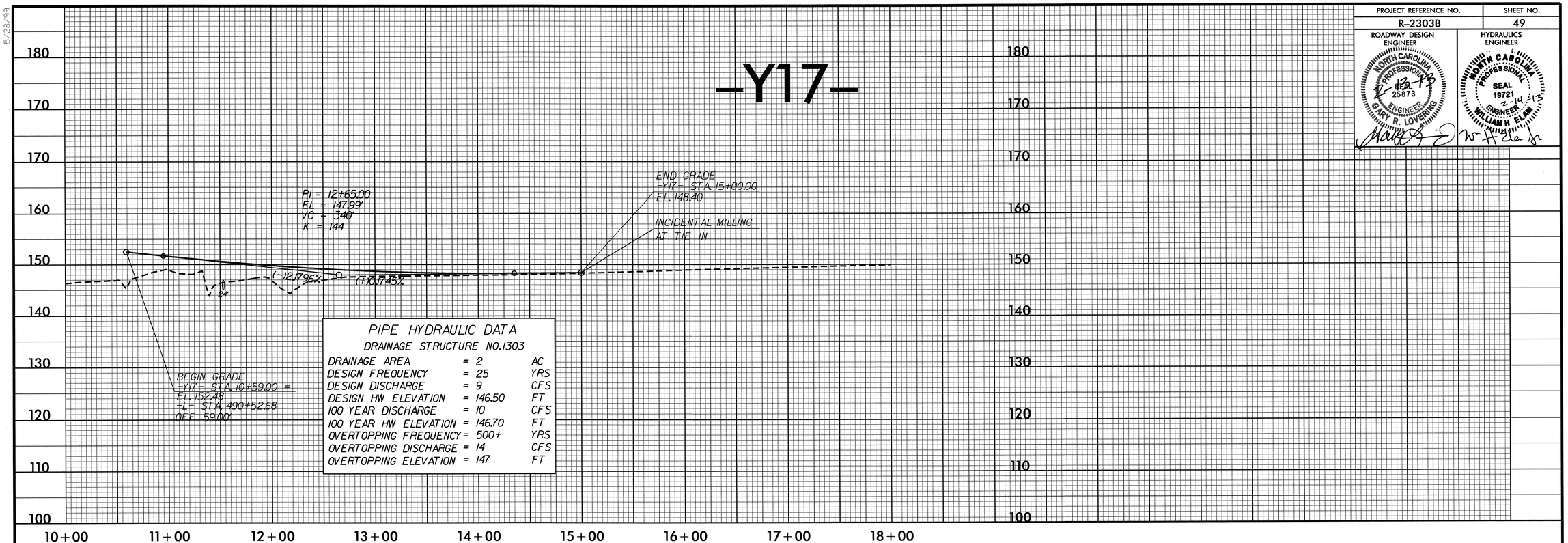
PROJECT REFERENCE NO.	SHEET NO.
R-2303B	49

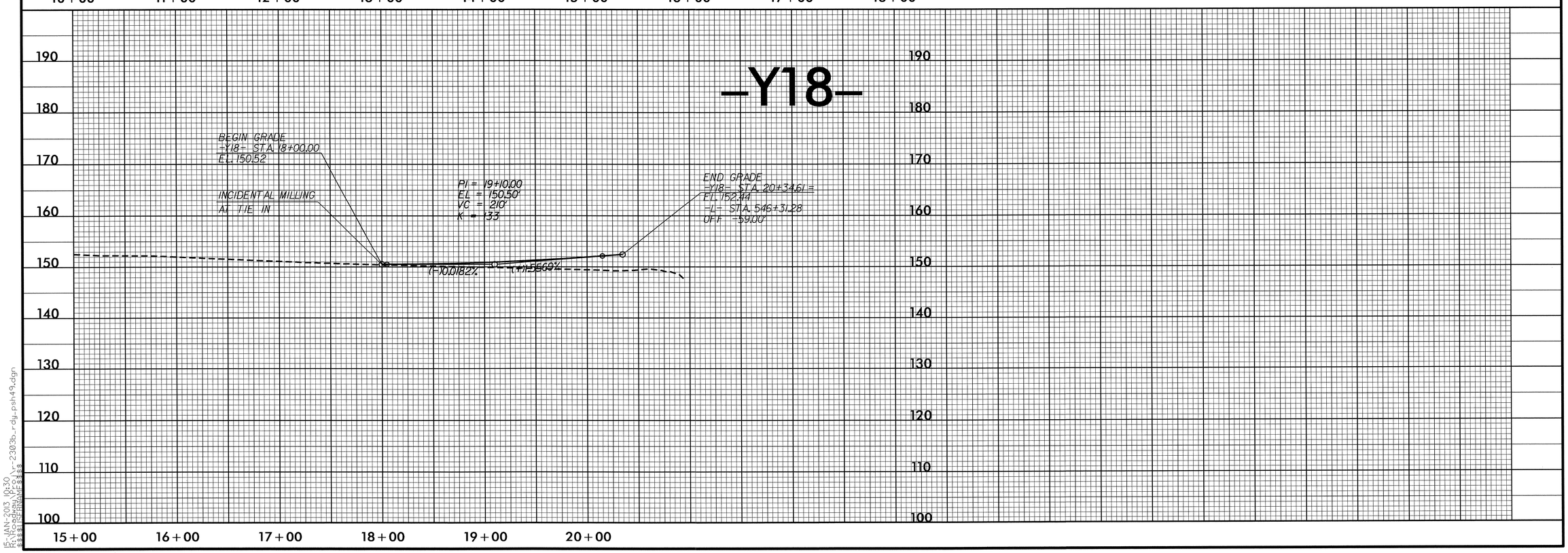
ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 25873 ENGINEER GARY R. LOVERING

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 19721 ENGINEER WILLIAM H. ELM





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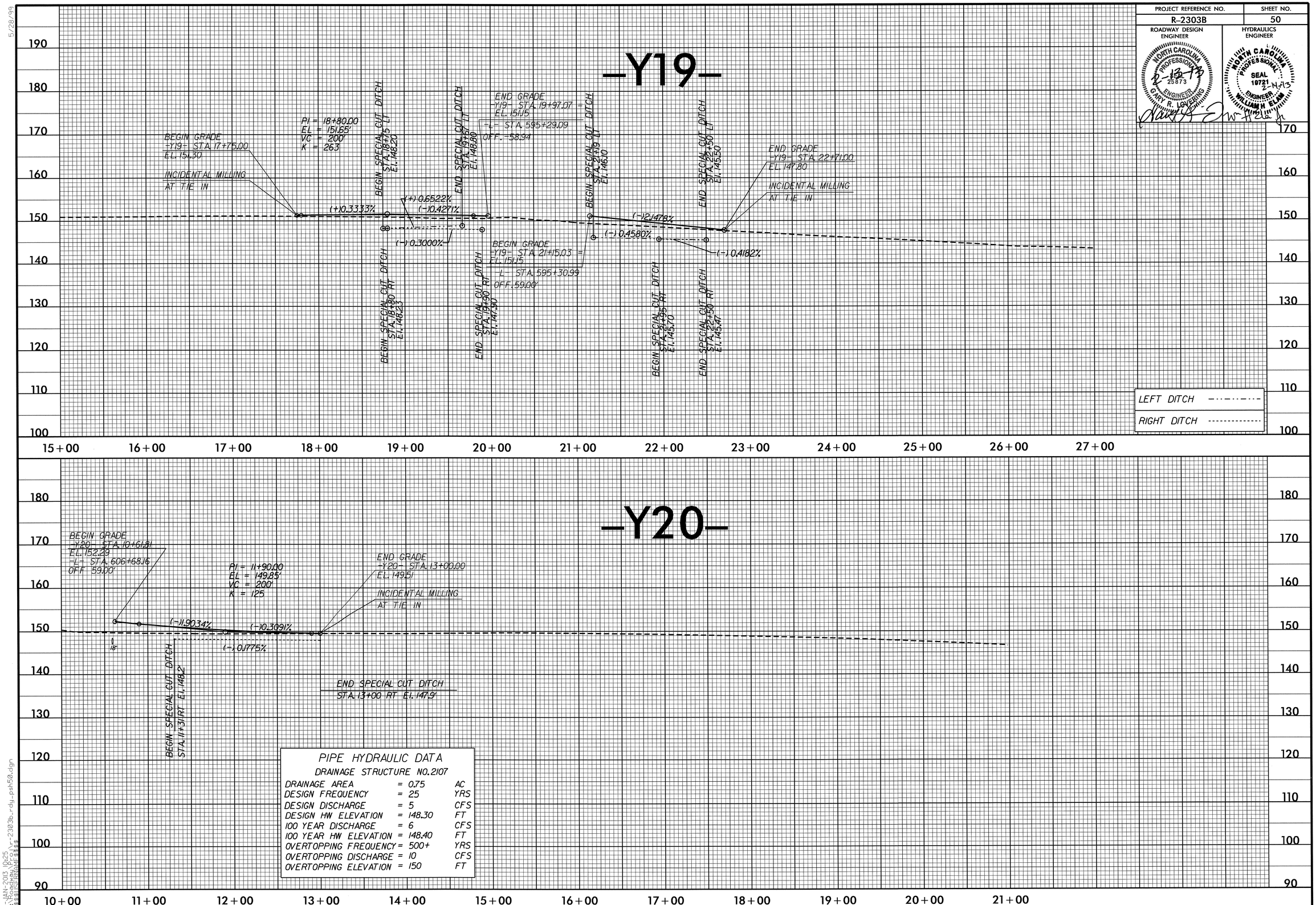
PROJECT REFERENCE NO.	SHEET NO.
R-2303B	50

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 25873 ENGINEER GARY R. LOVEDING 2-13-13

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 19721 ENGINEER WILLIAM H. ELLIS 2-14-13



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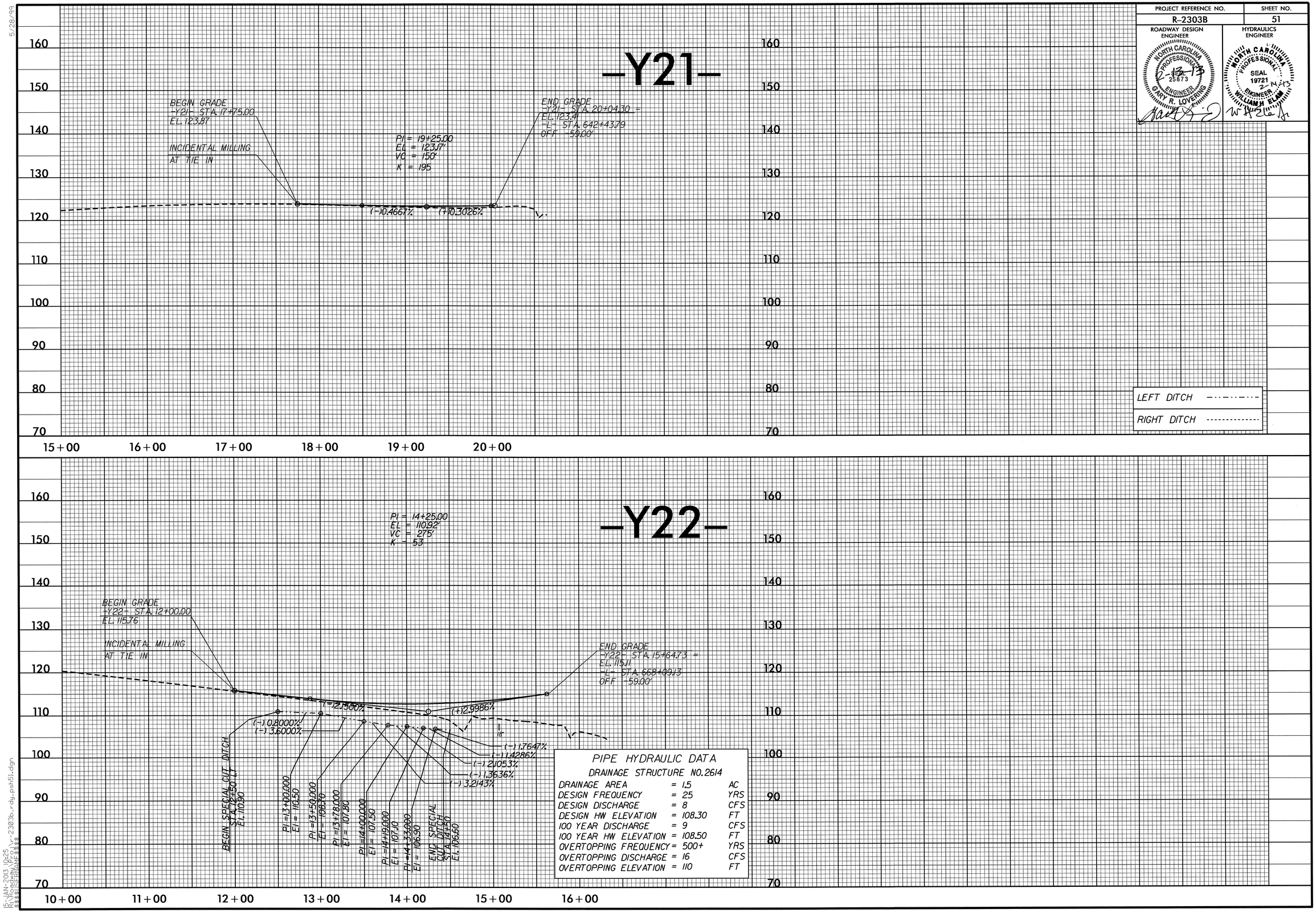
PROJECT REFERENCE NO.	SHEET NO.
R-2303B	51

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 25873 GARY R. LOVERING
2-13-13

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 19721 WILLIAM H. ELLIS
2-14-13



PIPE HYDRAULIC DATA

DRAINAGE STRUCTURE NO. 2614

DRAINAGE AREA	= 1.5	AC
DESIGN FREQUENCY	= 25	YRS
DESIGN DISCHARGE	= 8	CFS
DESIGN HW ELEVATION	= 108.30	FT
100 YEAR DISCHARGE	= 9	CFS
100 YEAR HW ELEVATION	= 108.50	FT
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING DISCHARGE	= 16	CFS
OVERTOPPING ELEVATION	= 110	FT

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PROJECT REFERENCE NO.	SHEET NO.
R-2303B	52

ROADWAY DESIGN ENGINEER

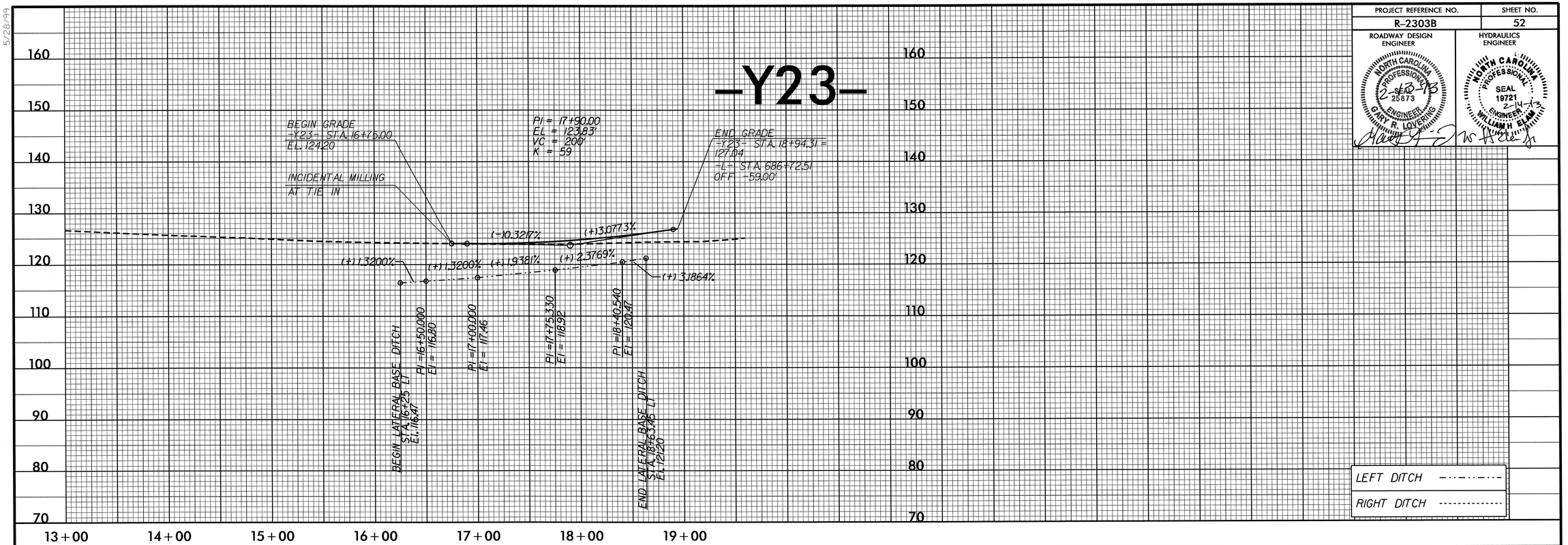
NORTH CAROLINA PROFESSIONAL SEAL 25873 ENGINEER GARY R. LOVERING

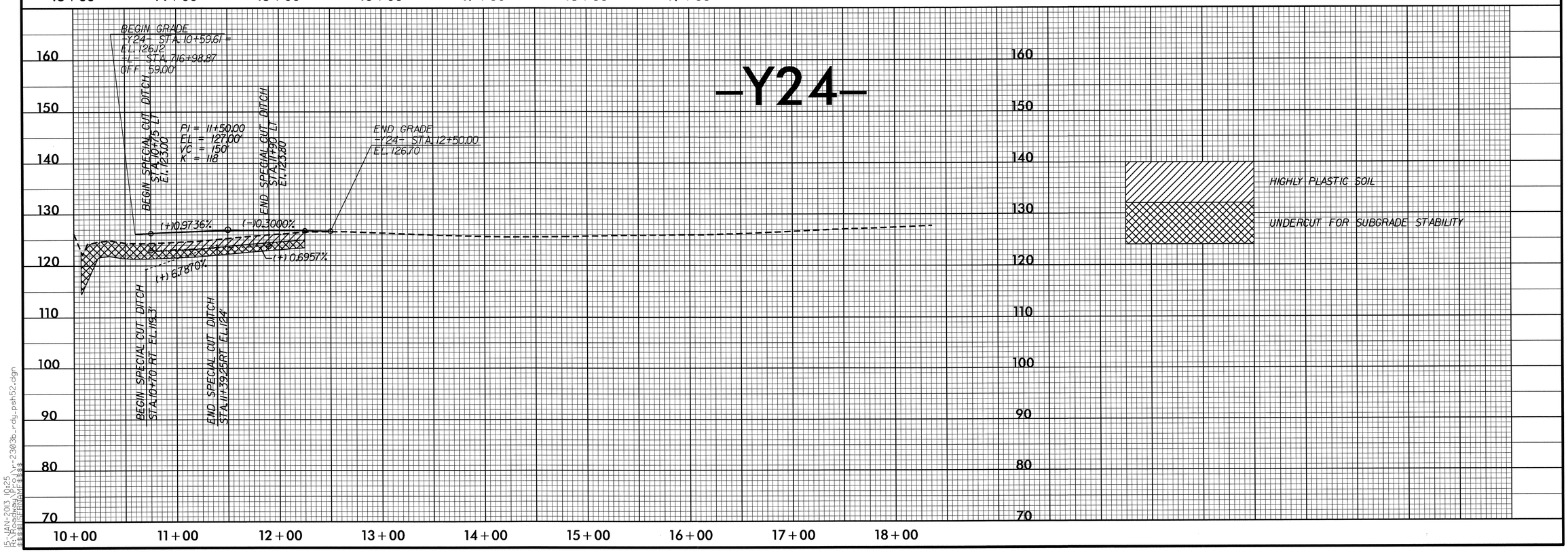
2-14-13

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 19721 ENGINEER WILLIAM H. ELAM

2-14-13





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PROJECT REFERENCE NO.	SHEET NO.
R-2303B	53

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

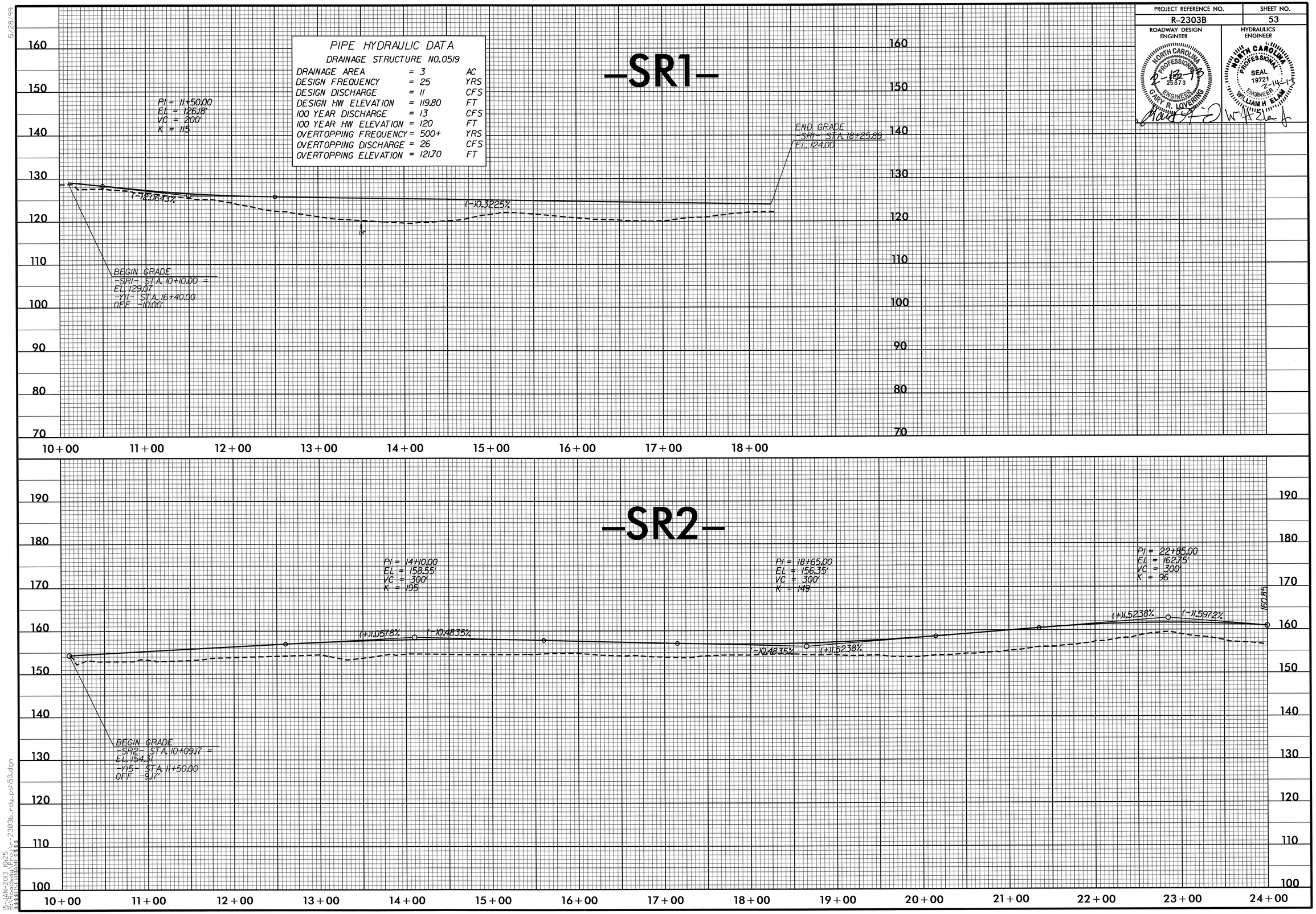
NORTH CAROLINA PROFESSIONAL SEAL 25873 ENGINEER GARY R. LOVERING

NORTH CAROLINA PROFESSIONAL SEAL 19721 ENGINEER WILLIAM H. ELAM JR.

PIPE HYDRAULIC DATA

DRAINAGE STRUCTURE NO.0519

DRAINAGE AREA	= 3	AC
DESIGN FREQUENCY	= 25	YRS
DESIGN DISCHARGE	= 11	CFS
DESIGN HW ELEVATION	= 119.80	FT
100 YEAR DISCHARGE	= 13	CFS
100 YEAR HW ELEVATION	= 120	FT
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING DISCHARGE	= 26	CFS
OVERTOPPING ELEVATION	= 121.70	FT



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PROJECT REFERENCE NO.	SHEET NO.
R-2303B	54

ROADWAY DESIGN ENGINEER

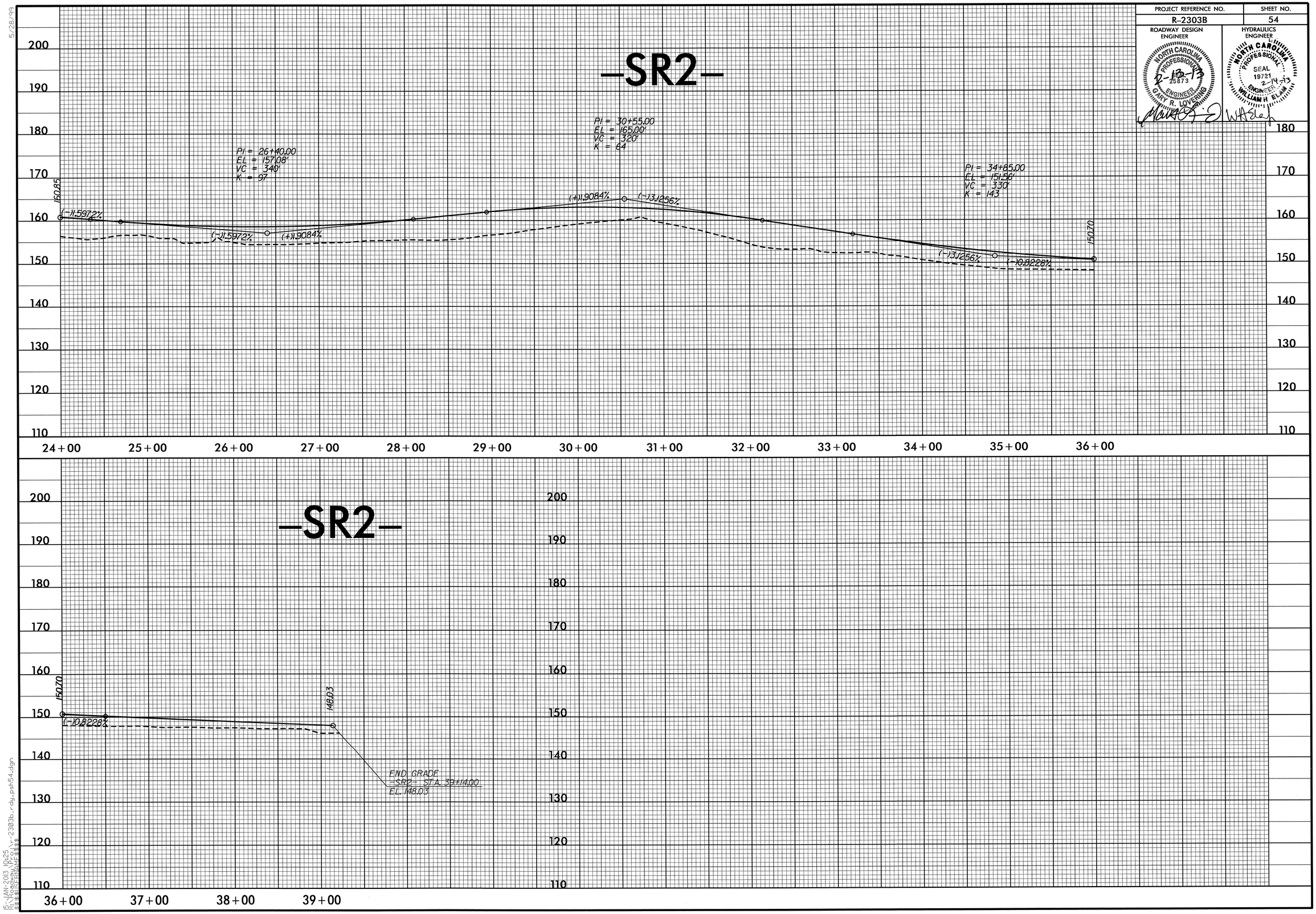
NORTH CAROLINA PROFESSIONAL SEAL 25873 ENGINEER GARY R. LOVERING

2-13-13

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 19721 ENGINEER WILLIAM H. ELAM

2-14-13



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