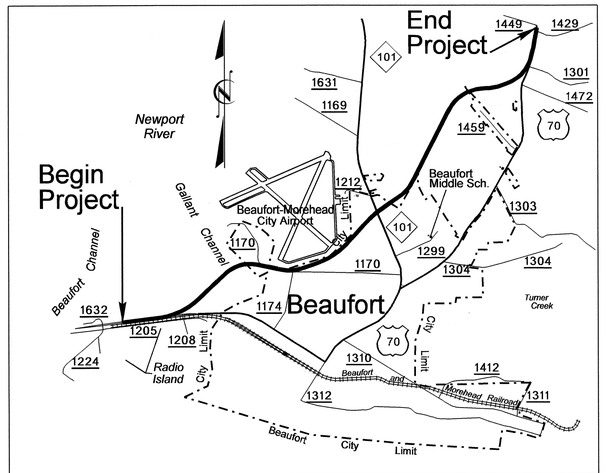
TIP PROJECT: R-3307

CONTRACT: C202848

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



VICINITY MAP

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

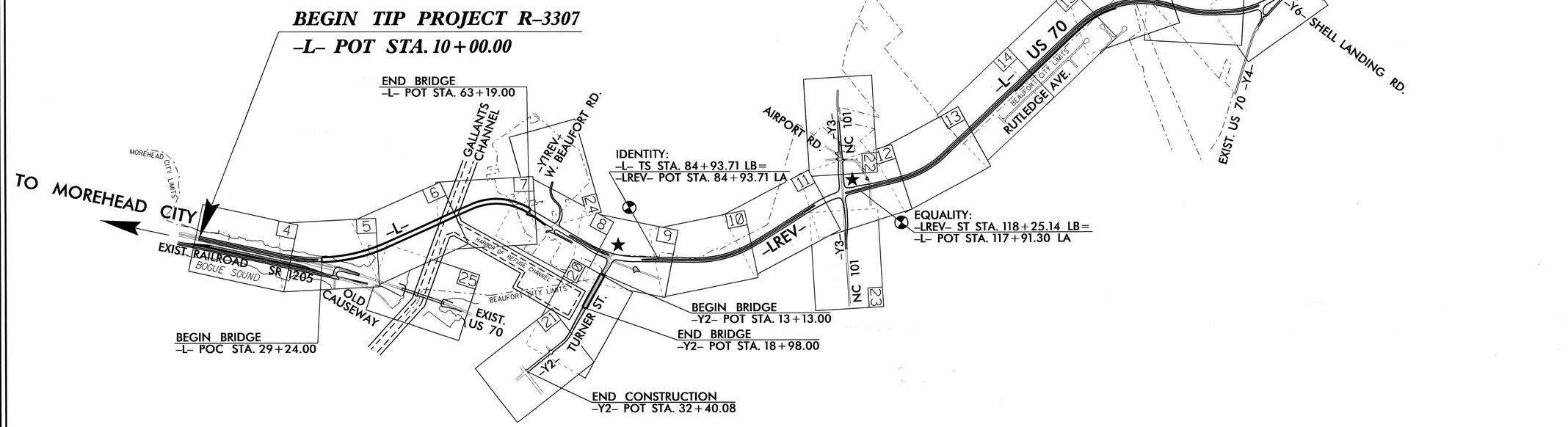
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-3307	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
34528.1.1	STPNHF-70(43)	PE
34528.2.2	STPNHF-70(105)	R/W & UTIL.
34528.3.FR1	STPNHF-70(132)	CONST.

CARTERET COUNTY

LOCATION: US 70 FROM EXISTING FOUR LANES AT RADIO ISLAND TO US 70 NORTH OF SR 1429 (OLGA ROAD)

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



★ PROPOSED TRAFFIC SIGNAL

THIS IS A PARTIAL CONTROLLED-ACCESS PROJECT WITH ACCESS BEING LIMITED TO POINTS AS SHOWN ON THE PLANS.

** DESIGN EXCEPTION REQUIRED FOR HORIZONTAL ALIGNMENT (50 MPH), VERTICAL ALIGNMENT (55 MPH), MAXIMUM GRADE (6%), HORIZONTAL STOPPING SIGHT DISTANCE (38 MPH), AND VERTICAL STOPPING SIGHT DISTANCE (50 MPH).

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 2014 = 29,385
ADT 2034 = 41,154
K = 11 %
D = 60 %
T = 5 % *
V (SHOULDER) = 60 MPH**
V (CURB & GUTTER) = 50 MPH
* (TTST 1 % + DUAL 4) %
FUNC. CLASS = ARTERIAL
STATEWIDE TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT R-3307 = 3.112 MI.
LENGTH STRUCTURE TIP PROJECT R-3307 = 0.643 MI.
TOTAL LENGTH OF TIP PROJECT R-3307 = 3.755 MI.

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

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: JULY 18, 2008

LETTING DATE: JANUARY 21, 2014

REKHA PATEL, P.E. — PROJECT ENGINEER

MICHAEL W. LITTLE, P.E. — PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 19775 ENGINEER RAY D. LOVINGGOOD
Ray D. Lovingood 14 OCT 2013
SIGNATURE:

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 16378 ENGINEER REKHA V. PATEL
10-8-13
Rekha V. Patel
SIGNATURE:

STATE OF NORTH CAROLINA · DEPARTMENT OF TRANSPORTATION

27-SEP-2013 15:19
R:\Roadway\Proj\r3307_rdy_tsh.dgn
$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
R-3307	1-A

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 016378 ENGINEER RUPEKHA V. PATEL

3/13/10

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

INDEX OF SHEETS

SHEET NUMBER	SHEET
1	TITLE SHEET
1-A	INDEX OF SHEETS, GENERAL NOTES AND LIST OF STANDARD DRAWINGS
1-B	CONVENTIONAL SYMBOLS
1-C THRU 1-H	SURVEY CONTROL SHEETS
2 THRU 2-D	TYPICAL SECTIONS
2-E	DRAINAGE DETAILS
2-F	INFILTRATION BASIN DETAIL
2-G	SEQUENCE OF CONSTRUCTION FOR INFILTRATION BASIN, GENERAL NOTES FOR INFILTRATION BASIN AND SAND SPECIFICATIONS
2-H	INFILTRATION BASIN SPLITTER BOX DETAIL
2-I	INFILTRATION BASIN DETAIL OF EMERGENCY OUTLET CONTROL STRUCTURE
2-J	ROCK EMBANKMENT DETAILS
2-K	TRAFFIC BEARING JUNCTION BOX WITH MANHOLE DETAIL
2-L	MIN DEPTH CONCRETE CATCH BASIN DETAIL
2-M	METHOD FOR PLACEMENT OF DROP INLETS IN GRASS MEDIAN USING 2'-9" CURB AND GUTTER
2-N	METHOD FOR PLACEMENT OF DROP INLETS IN CONCRETE ISLANDS
2-O	DETAIL OF SPECIAL JUNCTION BOX
2-P THRU 2-Q	METHOD OF SHOULDER CONSTRUCTION
2-R THRU 2-S	SOUND BARRIER WALL ENVELOPE
2-T	EMBANKMENT MONITORING AND INSTRUMENTATION DETAILS
2-U	GEOTEXTILE FOR EMBANKMENT STABILIZATION FOR RETAINING WALL NO. 1
2-V	STRUCTURE ANCHOR UNITS - GUARDRAIL ANCHOR UNIT TYPE III FOR ATTACHMENT TO BRIDGE
3 (2 SHEETS)	SUMMARY OF QUANTITIES
3-A THRU 3-H	LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 48" & UNDER)
3-I	LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 54" & OVER)
3-J	GUARDRAIL SUMMARY, SUMMARY OF AGGREGATE SUBGRADE / STABILIZATION, SUMMARY OF SUBSURFACE DRAINS AND SUMMARY OF BRIDGE WAITING PERIODS
3-K	SUMMARIES OF PAVEMENT REMOVAL AND BREAK-UP, SHOULDER BERM GUTTER, 2'-6" CURB AND GUTTER AND 2'-9" CURB AND GUTTER
3-L	SUMMARY OF EARTHWORK
3-M THRU 3-N	PARCEL INDEX SHEET
4 THRU 25	PLAN SHEETS
26 THRU 38	PROFILE SHEETS
TMP-1 THRU TMP-30	TRANSPORTATION MANAGEMENT PLANS
SD-1	SPECIAL SIGN DESIGN
PMP-1 THRU PMP-10	PAVEMENT MARKING PLANS
EC-1 THRU EC-48	EROSION CONTROL PLANS
SIGN-1 THRU SIGN-12	SIGNING PLANS
SIG-1 THRU SIG-20	SIGNALS PLANS
UO-1 THRU UO-13	UTILITIES BY OTHERS PLANS
XS-INDEX	CROSS-SECTION INDEX SHEET
X-1A THRU X-1B	CROSS-SECTION SUMMARY SHEET
X-1 THRU X-104	CROSS-SECTIONS
S-1 THRU S-	STRUCTURE PLANS
W-1 THRU W-2	RETAINING WALL PLANS
NW-1 THRU NW-3	SOUND BARRIER WALL DETAILS

GENERAL NOTES:

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

GRADING AND SURFACING OR RESURFACING AND WIDENING:

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

CLEARING:

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

SUPERELEVATION:

ALL CURVES ON THIS PROJECT SHALL BE SUPERELEVATED IN ACCORDANCE WITH STD. NO. 225.04 USING THE RATE OF SUPERELEVATION AND RUNOFF SHOWN ON THE PLANS. SUPERELEVATION IS TO BE REVOLVED ABOUT THE GRADE POINTS SHOWN ON THE TYPICAL SECTIONS.

SHOULDER CONSTRUCTION:

ASPHALT, EARTH, AND CONCRETE SHOULDER CONSTRUCTION ON THE HIGH SIDE OF SUPERELEVATED CURVES SHALL BE IN ACCORDANCE WITH DETAILS IN PLANS.

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.

SUBSURFACE DRAINS:

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

DRIVEWAYS:

DRIVEWAYS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. 848.02 USING 3' RADII OR RADII AS SHOWN ON THE PLANS. LOCATIONS OF DRIVES WILL BE AS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER.

GUARDRAIL:

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

TEMPORARY SHORING:

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

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 CENTURY LINK - TELEPHONE
PROGRESS ENERGY CAROLINAS, INC (DISTRIBUTION & TRANSMISSION) - POWER
TIME WARNER CABLE - TV CABLES. CARTERET CRAVEN EMC - POWER
TOWN OF BEAUFORT - WATER & SEWER. CARTERET COUNTY - WATER
ANY RELOCATION OF EXISTING UTILITIES WILL BE ACCOMPLISHED BY OTHERS.

RIGHT-OF-WAY MARKERS:

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

CURB RAMPS

CURB RAMPS ARE SHOWN ON THE PLANS AT APPROXIMATE LOCATIONS.
CONSTRUCT ALL CURB RAMPS IN ACCORDANCE WITH STD. 848.05 AND/OR 848.06

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
225.02	Guide for Grading Subgrade - Secondary and Local
225.04	Method of Obtaining Superelevation - Two Lane Pavement
DIVISION 3 - PIPE CULVERTS	
300.01	Method of Pipe Installation
310.10	Driveway Pipe Construction
DIVISION 4 - MAJOR STRUCTURES	
422.10	Reinforced Bridge Approach Fills
DIVISION 6 - ASPHALT BASES AND PAVEMENTS	
654.01	Pavement Repairs
DIVISION 8 - INCIDENTALS	
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
838.21	Reinforced Concrete Endwall - for Single 54" Pipe 90 Skew
838.22	Reinforced Concrete Endwall - for Double and Triple 54" Pipes 90 Skew
838.39	Reinforced Concrete Endwall - for Single 72" Pipe 90 Skew
838.51	Reinforced Brick Endwall - for Single 54" Pipe 90 Skew
838.52	Reinforced Brick Endwall - for Double and Triple 54" Pipes 90 Skew
838.69	Reinforced Brick Endwall - for Single 72" Pipe 90 Skew
838.75	Notes for Reinforced Brick Endwall - Std. Dwg 838.51 thru 838.70
838.80	Precast Endwalls - 12" thru 72" Pipe 90 Skew
840.00	Concrete Base Pad for Drainage Structures
840.01	Brick Catch Basin - 12" thru 54" Pipe
840.02	Concrete Catch Basin - 12" thru 54" Pipe
840.03	Frame, Grates and Hood - for Use on Standard Catch Basin
840.17	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
840.31	Concrete Junction Box - 12" thru 66" Pipe
840.32	Brick Junction Box - 12" thru 66" Pipe
840.35	Traffic Bearing Grated Drop Inlet - for Cast Iron Double Frame and Grates
840.45	Precast Drainage Structure
840.46	Traffic Bearing Precast Drainage Structure
840.54	Manhole Frame and Cover
840.66	Drainage Structure Steps
840.71	Concrete and Brick Pipe Plug
840.72	Pipe Collar
846.01	Concrete Curb, Gutter and Curb & Gutter
846.04	Drop Inlet Installation in Shoulder Berm Gutter
848.01	Concrete Sidewalk
848.02	Driveway Turnout - Radius Type
848.05	Curb Ramp - Proposed Curb & Gutter
852.01	Concrete Islands
857.01	Precast Reinforced Concrete Barrier - 41" Single Faced
862.01	Guardrail Placement
862.02	Guardrail Installation
862.03	Structure Anchor Units
862.04	Anchoring End of Guardrail - B-77 and B-83 Anchor Units
866.02	Woven Wire Fence - with Wood Post
876.01	Rip Rap in Channels
876.02	Guide for Rip Rap at Pipe Outlets
876.04	Drainage Ditches with Class 'B' Rip Rap

04/16/11

PROJECT REFERENCE NO.	SHEET NO.
R-3307	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:

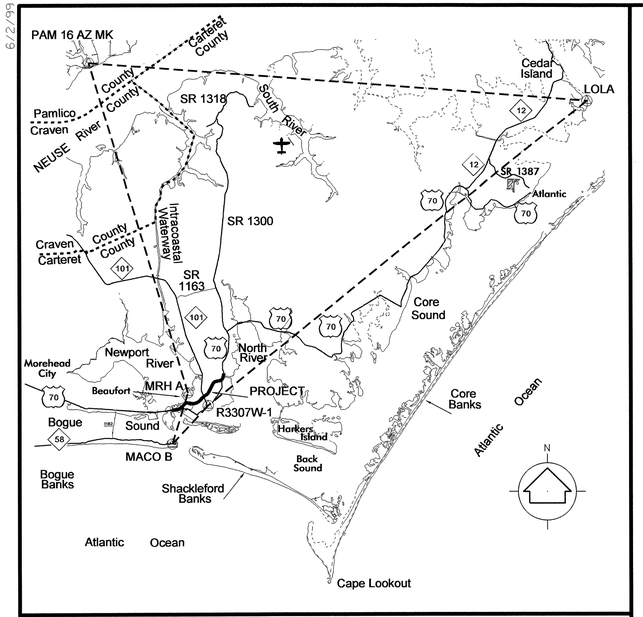
- Sanitary Sewer Manhole
- Sanitary Sewer Cleanout
- U/G Sanitary Sewer Line — SS
- Above Ground Sanitary Sewer — A/G Sanitary Sewer
- Recorded SS Forced Main Line — FSS
- Designated SS Forced Main Line (S.U.E.*) — FSS

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-3307	1-C
Location and Surveys	

SURVEY CONTROL SHEET R-3307



GPS CONTROL NETWORK VICINITY MAP

NC GRID NAD 83/2001

NOTES:

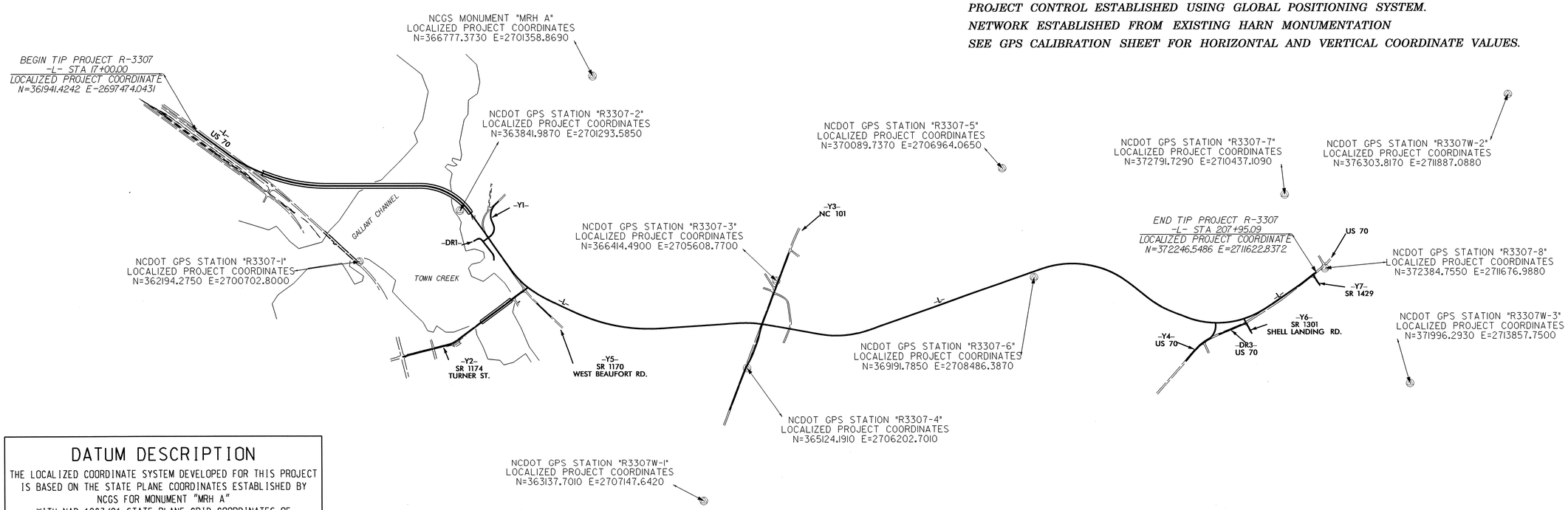
1. THE SITE CALIBRATION SHOWN IS BASED UPON A NETWORK TIED TO THE HARN (HIGH ACCURACY REFERENCE NETWORK) NAD 83/95 ADJUSTMENT. THIS CALIBRATION WILL ALLOW THE END USER TO WORKWITHIN THE SAME COORDINATE SYSTEM WHEN USING RTK (REAL TIME KINEMATIC) GPS AND A LOCAL BASE STATION. IF ANOTHER SYSTEM SUCH AS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

2. THE CONTROL DATA FOR THIS PROJECT CAN BE FOUND ELECTRONICALLY BY SELECTING PROJECT CONTROL DATA AT:
HTTP://WWW.DOH.DOT.STATE.NC.US/PRECONSTRUCT/HIGHWAY/LOCATION/PROJECT/R3307

THE FILES TO BE FOUND ARE AS FOLLOWS:
R3307_LS_GPSCALIB_070501.HTML
R3307_LS_WGS84_070501.TXT
R3307_LS_LOCAL_070501.TXT
R3307_LS_CONTROL_070501.TXT

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

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



DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCGS FOR MONUMENT "MRH A"
WITH NAD 1983/01 STATE PLANE GRID COORDINATES OF
NORTHING: 366777.373(ft) EASTING: 2701358.869(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.999918650
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "MRH A" TO -L- STATION 17+00.00 IS
S 38°46'32.5" W 6203.086 (ft)
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

NOTE: DRAWING NOT TO SCALE

6/2/99
28-FEB-2012 15:20
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$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
R-3307	1-D
Location and Surveys	

SURVEY CONTROL SHEET R-3307

GPS CALIBRATION REPORT

PROJECT : R3307 CALIBRATION

TIP NUMBER	R-3307		
USER NAME	BREIGNER	DATE & TIME	8:02:11 AM 5/1/2007
COORDINATE SYSTEM	US STATE PLANE 1983(AT GROUND)	ZONE	NORTH CAROLINA 3200
HORIZONTAL DATUM	NAD 1983 (CONUS)		
VERTICAL DATUM	NAVD88	GEOID MODEL	GEOID03 (CONUS) NC SUB GRID
COORDINATE UNITS	US SURVEY FEET		
DISTANCE UNITS	US SURVEY FEET		
HEIGHT UNITS	US SURVEY FEET		

LOCAL SITE INFORMATION

LOCALIZED AROUND	MRH A
LATITUDE	34°44'06.42000"N
LONGITUDE	76°39'55.16263"W
SITE SCALE FACTOR	1.0000013570
HEIGHT	-118.952SFT

THE NORTH CAROLINA DEPARTMENT OF TRANSPORTATION USES A LOCALIZED COORDINATE SYSTEM WHICH IS VERY SIMILAR TO NORTH CAROLINA ZONE 3200 FROM WHICH IT IS DERIVED. PLEASE TAKE CARE IN UTILIZING THESE COORDINATES TO ELIMINATE CONFUSION OF THE TWO SYSTEMS. THIS FILE IS TO AID IN THE USE OF REAL TIME KINEMATIC (RTK) GPS DURING CONSTRUCTION LAYOUT.

DATUM TRANSFORMATION PARAMETERS

DATUM TRANSFORMATION COMPUTATION NOT REQUESTED

UPDATED DEFAULT PROJECTION (TRANSVERSE MERCATOR) DEFINITION

UPDATED DEFAULT PROJECTION NOT REQUESTED

HORIZONTAL ADJUSTMENT PARAMETERS

NORTHING COORDINATE OF ROTATION CENTER	367113.468SFT
EASTING COORDINATE OF ROTATION CENTER	2706349.095SFT
ROTATION ABOUT THE CENTER POINT	0°00'00"
TRANSLATION NORTH	-0.020SFT
TRANSLATION EAST	0.005SFT
SCALE FACTOR	1.00000000

VERTICAL ADJUSTMENT PARAMETERS

NORTHING COORDINATE OF ORIGIN POINT	352226.701SFT
EASTING COORDINATE OF ORIGIN POINT	2696914.564SFT
VERTICAL SEPARATION AT ORIGIN	-0.052SFT
SLOPE NORTH	3.182PPM
SLOPE EAST	-0.249PPM

GEOID MODEL DEFINITION

GEOID03 (CONUS) NC SUB GRID

RESIDUAL DIFFERENCES BETWEEN GPS (WGS84) AND LOCAL COORDINATES

SUMMARY

	MAXIMUM ERROR	ROOT MEAN SQUARE ERROR	POINT
HORIZONTAL	0.028SFT	0.004	R3307W-1_GPS
VERTICAL	0.034SFT	0.005	MACO B_GPS
THREE-DIMENSIONAL	0.041SFT	0.006	MACO B_GPS

POINT RESIDUALS

WGS84 COORDINATES	CALCULATED POINT FOR DISPLAY ONLY	LOCAL COORDINATES
POINT MACO B_GPS	NORTHING 352226.701SFT	POINT MACO B
LATITUDE 34°41'43.56620"N	EASTING 2696914.564SFT	NORTHING 352226.685SFT
LONGITUDE 76°40'52.46971"W	ELEVATION 4.227SFT	EASTING 2696914.550SFT
HEIGHT -118.653SFT	HORZ ERROR 0.022SFT	ELEVATION 4.193SFT
	VERT ERROR 0.034SFT	UTILIZED HORZ AND VERT
	3D ERROR 0.041SFT	QUALITY CONTROL QUALITY
POINT R3307-1_GPS	NORTHING 362194.290SFT	POINT R3307-1
LATITUDE 34°43'21.25298"N	EASTING 2700702.803SFT	NORTHING 362194.275SFT
LONGITUDE 76°40'04.31112"W	ELEVATION 8.897SFT	EASTING 2700702.800SFT
HEIGHT -114.040SFT	HORZ ERROR 0.015SFT	ELEVATION 8.899SFT
	VERT ERROR 0.002SFT	UTILIZED HORZ AND VERT
	3D ERROR 0.015SFT	QUALITY ADJUSTED QUALITY
POINT R3307W-1_GPS	NORTHING 363137.729SFT	POINT R3307W-1
LATITUDE 34°43'29.07780"N	EASTING 2707147.635SFT	NORTHING 363137.701SFT
LONGITUDE 76°38'46.85751"W	ELEVATION 7.195SFT	EASTING 2707147.642SFT
HEIGHT -115.786SFT	HORZ ERROR 0.028SFT	ELEVATION 7.221SFT
	VERT ERROR 0.026SFT	UTILIZED HORZ AND VERT
	3D ERROR 0.038SFT	QUALITY CONTROL QUALITY
POINT R3307-4_GPS	NORTHING 365124.195SFT	POINT R3307-4
LATITUDE 34°43'48.94226"N	EASTING 2706202.700SFT	NORTHING 365124.191SFT
LONGITUDE 76°38'57.61125"W	ELEVATION 9.744SFT	EASTING 2706202.701SFT
HEIGHT -113.239SFT	HORZ ERROR 0.004SFT	ELEVATION 9.762SFT
	VERT ERROR 0.018SFT	UTILIZED HORZ AND VERT
	3D ERROR 0.019SFT	QUALITY ADJUSTED QUALITY
POINT MRH A_GPS	NORTHING 366777.354SFT	POINT MRH A
LATITUDE 34°44'06.41999"N	EASTING 2701358.874SFT	NORTHING 366777.373SFT
LONGITUDE 76°39'55.16263"W	ELEVATION 4.010SFT	EASTING 2701358.869SFT
HEIGHT -118.952SFT	HORZ ERROR 0.019SFT	ELEVATION 4.016SFT
	VERT ERROR 0.006SFT	UTILIZED HORZ AND VERT
	3D ERROR 0.020SFT	QUALITY CONTROL QUALITY
POINT R3307-5_GPS	NORTHING 370089.732SFT	POINT R3307-5
LATITUDE 34°44'37.86523"N	EASTING 2706964.064SFT	NORTHING 370089.737SFT
LONGITUDE 76°38'47.08170"W	ELEVATION 9.204SFT	EASTING 2706964.065SFT
HEIGHT -113.807SFT	HORZ ERROR 0.004SFT	ELEVATION 9.206SFT
	VERT ERROR 0.002SFT	UTILIZED HORZ AND VERT
	3D ERROR 0.005SFT	QUALITY ADJUSTED QUALITY
POINT R3307-6_GPS	NORTHING 369191.783SFT	POINT R3307-6
LATITUDE 34°44'28.62859"N	EASTING 2708486.385SFT	NORTHING 369191.785SFT
LONGITUDE 76°38'29.10073"W	ELEVATION 10.701SFT	EASTING 2708486.387SFT
HEIGHT -112.316SFT	HORZ ERROR 0.003SFT	ELEVATION 10.707SFT
	VERT ERROR 0.006SFT	UTILIZED HORZ AND VERT
	3D ERROR 0.006SFT	QUALITY ADJUSTED QUALITY
POINT R3307-8_GPS	NORTHING 372384.751SFT	POINT R3307-8
LATITUDE 34°44'59.45047"N	EASTING 2711676.985SFT	NORTHING 372384.755SFT
LONGITUDE 76°37'49.96724"W	ELEVATION 6.185SFT	EASTING 2711676.988SFT
HEIGHT -116.870SFT	HORZ ERROR 0.006SFT	ELEVATION 6.178SFT
	VERT ERROR 0.007SFT	UTILIZED HORZ AND VERT
	3D ERROR 0.009SFT	QUALITY ADJUSTED QUALITY
POINT R3307-7_GPS	NORTHING 372791.721SFT	POINT R3307-7
LATITUDE 34°45'03.76719"N	EASTING 2710437.106SFT	NORTHING 372791.729SFT
LONGITUDE 76°38'04.70519"W	ELEVATION 9.951SFT	EASTING 2710437.109SFT
HEIGHT -113.098SFT	HORZ ERROR 0.009SFT	ELEVATION 9.942SFT
	VERT ERROR 0.008SFT	UTILIZED HORZ AND VERT
	3D ERROR 0.012SFT	QUALITY ADJUSTED QUALITY
POINT R3307-3_GPS	NORTHING 366414.486SFT	POINT R3307-3
LATITUDE 34°44'01.84027"N	EASTING 2705608.770SFT	NORTHING 366414.490SFT
LONGITUDE 76°39'04.35932"W	ELEVATION 6.588SFT	EASTING 2705608.770SFT
HEIGHT -116.398SFT	HORZ ERROR 0.004SFT	ELEVATION 6.602SFT
	VERT ERROR 0.014SFT	UTILIZED HORZ AND VERT
	3D ERROR 0.015SFT	QUALITY ADJUSTED QUALITY
POINT R3307W-2_GPS	NORTHING 376303.796SFT	POINT R3307W-2
LATITUDE 34°45'38.15390"N	EASTING 2711887.085SFT	NORTHING 376303.817SFT
LONGITUDE 76°37'46.32884"W	ELEVATION 3.933SFT	EASTING 2711887.088SFT
HEIGHT -119.148SFT	HORZ ERROR 0.021SFT	ELEVATION 3.909SFT
	VERT ERROR 0.024SFT	UTILIZED HORZ AND VERT
	3D ERROR 0.032SFT	QUALITY ADJUSTED QUALITY
POINT R3307W-3_GPS	NORTHING 371996.294SFT	POINT R3307W-3
LATITUDE 34°44'55.09368"N	EASTING 2713857.745SFT	NORTHING 371996.293SFT
LONGITUDE 76°37'23.95254"W	ELEVATION 2.028SFT	EASTING 2713857.750SFT
HEIGHT -121.043SFT	HORZ ERROR 0.005SFT	ELEVATION 2.020SFT
	VERT ERROR 0.008SFT	UTILIZED HORZ AND VERT
	3D ERROR 0.009SFT	QUALITY ADJUSTED QUALITY
POINT R3307-2_GPS	NORTHING 363841.987SFT	POINT R3307-2
LATITUDE 34°43'37.40887"N	EASTING 2701293.588SFT	NORTHING 363841.987SFT
LONGITUDE 76°39'56.77155"W	ELEVATION 3.558SFT	EASTING 2701293.585SFT
HEIGHT -119.390SFT	HORZ ERROR 0.003SFT	ELEVATION 3.565SFT
	VERT ERROR 0.007SFT	UTILIZED HORZ AND VERT
	3D ERROR 0.007SFT	QUALITY ADJUSTED QUALITY

NOTES:

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

2. *THE CONTROL DATA FOR THIS PROJECT CAN BE FOUND ELECTRONICALLY BY SELECTING PROJECT CONTROL DATA AT:*
HTTP://WWW.DOH.DOT.STATE.NC.US/PRECONSTRUCT/HIGHWAY/LOCATION/PROJECT/R3307

THE FILES TO BE FOUND ARE AS FOLLOWS:
R3307_LS_GPSCALIB_070501.HTML
R3307_LS_WGS84_070501.TXT
R3307_LS_LOCAL_070501.TXT
R3307_LS_CONTROL_070501.TXT

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

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

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCGS FOR MONUMENT "MRH A"
WITH NAD 1983/01 STATE PLANE GRID COORDINATES OF
NORTHING: 366777.373(ft) EASTING: 2701358.869(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.999918650
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "MRH A" TO -L- STATION 17+00.00 IS
S 38°46'32.5" W 6203.086 (ft)
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

NOTE: DRAWING NOT TO SCALE

SURVEY CONTROL SHEET R-3307

BL

POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
1	BL-1	361863.0495	2696484.3109	6.19	OUTSIDE PROJECT LIMITS	
2	BL-2	361954.0513	2697180.2423	5.86	14+09.91	48.25 LT
3	BL-3	362029.8265	2697862.2331	5.62	20+96.06	40.55 LT
4	BL-4	362116.3820	2698537.0110	5.78	27+78.88	2.07 RT
5	BL-5	362563.9416	2699358.9363	2.92	37+20.61	6.93 LT
6	BL-6	362855.5786	2699921.1478	5.64	43+30.36	157.12 RT
7	BL-7	363961.1444	2701425.2059	5.19	62+93.04	29.35 LT
8	BL-8	363794.7142	2702023.6539	4.01	69+12.66	14.42 RT
9	BL-9	363680.0011	2702484.3129	4.49	73+86.02	36.22 RT
10	BL-10	363880.9676	2703057.6900	5.00	79+95.65	155.87 LT
11	BL-11	364081.0845	2703843.5002	4.66	88+24.23	96.44 LT
12	BL-12	364343.1685	2704459.5603	7.42	95+04.63	13.66 LT
13	BL-13	364936.9035	2705081.3962	8.35	103+67.27	0.30 RT
14	BL-14	365398.2607	2705616.9559	8.18	110+69.80	80.11 RT
15	BL-15	365728.3975	2705946.3657	9.15	115+49.94	58.12 RT
16	BL-16	365889.0663	2705885.1770	9.39	115+92.32	108.42 LT
17	BL-17	366109.5957	2706227.8857	8.56	119+96.43	104.81 LT
R18	BL-18 RESET	366503.0255	2706948.7410	10.22	128+18.12	3.13 RT
19	BL-19	367124.7498	2707336.9038	10.21	135+52.45	9.40 RT
20	BL-20	367809.2900	2707689.3023	10.87	143+22.37	9.27 RT
21	BL-21	368706.4883	2708149.3226	11.45	153+30.63	7.46 RT
22	BL-22	369246.9494	2708415.4192	10.65	159+32.95	3.43 LT
23	BL-23	369720.4606	2708727.0379	11.57	165+00.12	9.78 LT
24	BL-24	370000.1768	2709143.2507	10.62	170+03.08	4.69 RT
25	BL-25	370135.9812	2709666.8429	10.86	175+48.92	6.08 RT
26	BL-26	370215.2906	2710253.1586	10.19	181+41.02	3.78 RT
27	BL-27	370287.3577	2710698.8314	9.30	185+78.90	93.48 RT
28	BL-28	370630.6459	2711033.3270	8.92	190+35.13	11.98 LT
29	BL-29	370855.0444	2711357.9833	9.06	194+02.93	99.98 RT
30	BL-30	371559.4948	2711499.4717	7.45	200+97.07	4.99 RT
31	GPS R3307-8	372384.7550	2711676.9880	6.18	OUTSIDE PROJECT LIMITS	

BY1

POINT	DESC.	NORTH	EAST	ELEVATION	Y1 STATION	OFFSET
52	BY1-52	364312.4317	2701615.5679	4.62	10+49.90	13.19 RT
53	BY1-53	363943.0203	2701666.0554	5.37	13+29.84	151.24 RT
54	BL-8	363794.7142	2702023.6539	4.01	OUTSIDE PROJECT LIMITS	

BY2

POINT	DESC.	NORTH	EAST	ELEVATION	Y2 STATION	OFFSET
55	BL-9	363680.0011	2702484.3129	4.49	10+82.68	389.16 RT
56	BY2-56	363617.6217	2702832.5641	4.97	10+83.71	35.37 RT
57	BY2-57	363227.6047	2702816.9222	3.93	14+70.53	16.88 LT
58	BY2-58	362655.2826	2702717.0256	2.97	20+51.50	17.77 LT
59	BY2-59	362299.9822	2702667.2422	3.08	24+06.38	34.09 LT
60	BY2-60	362023.5829	2702456.5858	3.85	27+45.23	18.90 RT
61	BY-50	361529.2312	2702217.2851	7.34	OUTSIDE PROJECT LIMITS	

BY3

POINT	DESC.	NORTH	EAST	ELEVATION	Y3 STATION	OFFSET
63	BY3-63	367216.7508	2705308.4840	11.23	OUTSIDE PROJECT LIMITS	
64	GPS R3307-3	366414.4900	2705608.7700	6.60	14+76.52	31.10 RT
65	BL-16	365889.0663	2705885.1770	9.39	20+67.91	21.13 LT
66	BL-15	365728.3975	2705946.3657	9.15	22+40.68	11.81 LT
67	GPS R3307-4	365124.1910	2706202.7010	9.76	28+97.52	17.66 LT
68	BY3-68	364606.3683	2706375.6393	9.31	34+43.49	17.69 RT
69	BY3-69	364226.6074	2706585.8557	8.34	OUTSIDE PROJECT LIMITS	

BY4

POINT	DESC.	NORTH	EAST	ELEVATION	Y4 STATION	OFFSET
70	BL-28	370630.6459	2711033.3270	8.92	OUTSIDE PROJECT LIMITS	
71	BY4-71	370423.0128	2711121.1922	9.69	12+13.07	1.93 RT
72	BY4-72	369819.6088	2711106.4846	9.02	OUTSIDE PROJECT LIMITS	
73	BY4-73	369184.8212	2711077.6404	8.96	OUTSIDE PROJECT LIMITS	

NOTE:
THERE WERE NO SUPPLEMENTAL BENCHMARKS SET ON THIS PROJECT.
THE BASELINES WERE LEVELED.

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT
IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY
NCGS FOR MONUMENT "MRH A"
WITH NAD 1983/01 STATE PLANE GRID COORDINATES OF
NORTHING: 366777.373(ft) EASTING: 2701358.869(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT
(GROUND TO GRID) IS: 0.999918650
THE N.C. LAMBERT GRID BEARING AND
LOCALIZED HORIZONTAL GROUND DISTANCE FROM
"MRH A" TO -L- STATION 17+00.00 IS
S 38°46'32.5" W 6203.086 (ft)
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

NOTES:

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

2. *THE CONTROL DATA FOR THIS PROJECT CAN BE FOUND ELECTRONICALLY BY SELECTING PROJECT CONTROL DATA AT:*
HTTP://WWW.DOH.DOT.STATE.NC.US/PRECONSTRUCT/HIGHWAY/LOCATION/PROJECT/R3307

   THE FILES TO BE FOUND ARE AS FOLLOWS:
   R3307_LS_GPSCALIB_070501.HTML
   R3307_LS_WGS84_070501.TXT
   R3307_LS_LOCAL_070501.TXT
   R3307_LS_CONTROL_070501.TXT

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

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

NOTE: DRAWING NOT TO SCALE

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PROJECT REFERENCE NO.	SHEET NO.
R-3307	1-F
Location and Surveys	

SURVEY CONTROL SHEET R-3307

ROW MARKER IRON PIN AND CAP-E

ALIGN	STATION	OFFSET	NORTH	EAST
L	17+00.00	-70.26	362011.1591	2697465.5014
L	20+00.00	-70.26	362047.6327	2697763.2760
L	20+00.00	-80.00	362057.3064	2697762.0910
L	22+83.80	-80.00	362091.8082	2698043.7849
L	33+00.00	75.00	362259.8349	2699050.1890
L	33+00.00	134.25	362208.0775	2699079.0224
L	39+56.20	75.00	362658.0642	2699592.9197
L	39+56.20	-80.00	362770.6513	2699486.3874
L	43+85.00	75.00	362952.7837	2699904.3899
L	48+36.28	-80.00	363375.5396	2700125.6551
L	59+86.18	-82.89	364028.0828	2701104.2853
L	62+70.01	-116.91	364051.7928	2701417.9945
L	63+91.54	-241.30	364149.2027	2701563.9865
L	64+41.42	57.08	363846.8642	2701553.3771
L	64+87.00	-427.43	364312.5532	2701694.6405
L	66+65.05	72.59	363787.0745	2701769.4180
L	67+36.14	77.52	363768.0680	2701838.0950
L	67+55.00	-305.00	364139.1529	2701932.8503
L	67+85.00	122.00	363714.7449	2701877.1114
L	69+00.00	-110.00	363919.1577	2702036.0593
L	71+35.00	110.00	363656.7178	2702222.4762
L	71+35.00	65.00	363700.8143	2702231.4485
L	72+41.86	65.00	363679.5090	2702336.1592
L	72+41.86	-100.00	363841.1974	2702369.0613
L	75+41.86	105.00	363589.7623	2702635.5531
L	75+41.86	-90.00	363783.9819	2702653.0046
L	76+50.00	105.00	363583.9896	2702751.9298
L	79+43.80	-90.00	363806.1154	2703026.1096
L	82+19.37	161.30	363640.7002	2703359.9914
L	82+43.80	-90.00	363887.0031	2703304.4370
L	82+43.80	105.00	363701.8564	2703365.6326
L	83+50.00	85.00	363754.1734	2703460.1906
L	117+91.30	100.00	365826.1251	2706167.3056
L	119+50.00	-89.75	366071.6901	2706197.1347
L	129+25.85	90.98	366530.3899	2707087.8416
L	159+36.00	90.49	369206.6479	2708500.3033
L	162+22.23	-100.00	369552.3115	2708476.4577
L	162+22.23	-90.00	369546.8273	2708484.8198
L	163+00.00	102.00	369500.8161	2708686.6034
L	163+00.00	71.53	369518.8864	2708662.0707
L	164+23.00	78.54	369605.2429	2708740.5964
L	165+75.00	80.00	369706.8491	2708841.9483
L	165+75.00	100.00	369692.1288	2708855.4876
L	173+88.09	-100.00	370219.8489	2709489.4057
L	173+88.09	100.00	370022.9050	2709524.2351
L	176+88.09	90.00	370063.0569	2709811.3314
L	176+88.09	-90.00	370242.6143	2709798.7159
L	179+88.09	-85.00	370267.9955	2710088.4194
L	179+88.09	90.00	370095.6697	2710118.8957
L	181+32.53	90.00	370129.9900	2710268.4744
L	181+32.53	-85.00	370298.3637	2710220.7725
L	184+32.53	90.00	370234.7209	2710559.4904
L	184+32.53	-85.00	370397.1760	2710494.4264
L	185+42.48	100.00	370266.3165	2710665.2766
L	185+42.48	-75.00	370428.7717	2710600.2126
L	189+00.00	100.00	370455.1935	2710998.7464
L	191+62.00	180.00	370593.5468	2711264.7934
L	191+62.00	170.70	370599.7052	2711257.8293
L	194+00.00	109.67	370847.3288	2711364.6346
L	195+50.00	85.00	371000.9503	2711418.4250
L	196+25.00	-75.00	371133.0496	2711300.9685
L	198+01.84	85.00	371253.3792	2711507.0481
L	198+50.00	-125.00	371350.6482	2711314.8030
L	199+00.00	-70.00	371385.9474	2711380.2168
L	199+69.20	-70.00	371453.1119	2711396.8646
L	199+69.20	85.00	371415.8238	2711547.3147
L	200+85.00	85.00	371529.5829	2711574.6584
L	202+50.00	70.00	371695.4243	2711596.1690
L	206+94.95	70.00	372136.7391	2711677.2018
L	207+10.00	-70.00	372173.0250	2711541.1487
L	207+95.09	-30.00	372250.8052	2711593.1453

ROW MARKER IRON PIN AND CAP-E

ALIGN	STATION	OFFSET	NORTH	EAST
LREV	84+93.71	-85.00	363960.6873	2703543.2916
LREV	87+20.00	88.77	363866.7120	2703812.6807
LREV	87+62.00	89.77	363878.9474	2703852.8713
LREV	88+88.70	90.00	363918.4900	2703973.2430
LREV	88+88.70	-85.00	364084.6498	2703918.3256
LREV	90+50.00	120.00	363942.9239	2704138.2619
LREV	91+88.70	120.00	363996.2181	2704274.4054
LREV	91+88.70	-85.00	364184.4361	2704193.1713
LREV	93+00.00	110.00	364055.8863	2704377.6280
LREV	98+63.87	110.00	364412.1925	2704857.4050
LREV	98+63.87	-85.00	364547.4018	2704716.8936
LREV	101+63.87	-90.00	364772.8592	2704902.9219
LREV	101+63.87	110.00	364647.4186	2705058.6931
LREV	103+00.00	-100.00	364885.1557	2704980.5115
LREV	109+38.28	-100.00	365382.2919	2705380.8299
LREV	109+38.28	110.00	365250.5827	2705544.3925
LREV	111+50.00	110.00	365410.2679	2705676.5231
LREV	112+38.28	80.00	365492.9407	2705711.1025
LREV	112+38.28	-100.00	365616.8200	2705580.5090
LREV	114+50.00	80.00	365631.6146	2705858.6055
LREV	114+50.00	-100.00	365769.5947	2705743.0137
LREV	117+00.00	-110.00	365932.8172	2705947.0426

ROW MARKER IRON PIN AND CAP-E

ALIGN	STATION	OFFSET	NORTH	EAST
Y1REV	14+00.00	-28.86	364404.1995	2701664.2455
Y1REV	14+58.16	-42.97	364358.2316	2701686.5779

ROW MARKER IRON PIN AND CAP-E

ALIGN	STATION	OFFSET	NORTH	EAST
Y2	10+86.45	-100.00	363591.4469	2702965.4000
Y2	11+50.00	90.00	363561.8139	2702767.2607
Y2	11+50.00	-90.00	363530.5924	2702944.5322
Y2	13+13.00	90.00	363401.2849	2702738.9878
Y2	13+13.00	-90.00	363370.0628	2702916.2593
Y2	19+50.00	90.00	362773.9402	2702628.4981
Y2	19+50.00	-90.00	362742.7187	2702805.7697
Y2	23+00.00	-50.00	362404.9620	2702705.6674
Y2	23+00.00	-33.32	362407.8550	2702689.2415
Y2	23+43.67	60.00	362381.0344	2702589.7602
Y2	23+43.67	32.70	362376.3025	2702616.6517
Y2	25+41.63	32.65	362202.1576	2702552.9165

ROW MARKER IRON PIN AND CAP-E

ALIGN	STATION	OFFSET	NORTH	EAST
Y3	10+66.00	-35.00	366818.7219	2705511.3302
Y3	10+66.00	-30.00	366816.7924	2705506.7175
Y3	12+75.00	-50.00	366631.7001	2705605.8226
Y3	15+00.00	-50.00	366424.1290	2705692.6515
Y3	16+25.00	-60.00	366312.6716	2705750.1170
Y3	16+25.00	-120.00	366335.8260	2705805.4693
Y3	16+45.73	-120.00	366316.7006	2705813.4697
Y3	16+82.00	76.03	366207.5896	2705646.6147
Y3	17+02.00	-58.60	366241.0960	2705778.5405
Y3	18+00.00	90.00	366093.3407	2705679.2679
Y3	18+25.00	-66.00	366130.4786	2705832.8315
Y3	20+00.00	-70.00	365970.5781	2705904.0552
Y3	20+75.00	110.00	365831.9246	2705766.9413
Y3	22+75.00	-75.00	365727.9231	2706017.7991
Y3	23+00.00	75.00	365634.2493	2705898.0133
Y3	23+61.24	-75.00	365656.7880	2706058.4281
Y3	24+00.00	54.50	365557.9729	2705966.0438
Y3	24+91.82	-50.00	365520.6780	2706099.7393
Y3	26+41.82	-50.00	365382.1687	2706157.3255
Y3	29+25.00	-27.59	365101.7451	2706220.7903

ROW MARKER IRON PIN AND CAP-E

ALIGN	STATION	OFFSET	NORTH	EAST
Y4	11+70.00	-110.00	370493.7358	2711222.0407
Y4	12+00.00	60.00	370427.8443	2711062.2230
Y4	13+04.64	60.00	370349.0906	2711056.6858
Y4	13+40.00	31.10	370305.7683	2711075.0662
Y4	13+57.03	-42.00	370272.5755	2711142.3561

ROW MARKER IRON PIN AND CAP-E

ALIGN	STATION	OFFSET	NORTH	EAST
Y6	11+25.00	55.00	370861.7777	2711400.5711
Y6	11+25.00	-45.00	370956.6935	2711432.0512
Y6	12+00.00	45.00	370847.6592	2711474.9059
Y6	12+00.00	-30.00	370918.8453	2711498.5158
Y6	12+25.00	30.00	370854.0261	2711503.3567

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT
IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY
NCGS FOR MONUMENT "MRH A"
WITH NAD 1983/01 STATE PLANE GRID COORDINATES OF
NORTHING: 366777.373(ft) EASTING: 2701358.869(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT
(GROUND TO GRID) IS: 0.999918650
THE N.C. LAMBERT GRID BEARING AND
LOCALIZED HORIZONTAL GROUND DISTANCE FROM
"MRH A" TO -L- STATION 17+00.00 IS
S 38°46'32.5" W 6203.086 (ft)
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

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PROJECT REFERENCE NO.	SHEET NO.
R-3307	1-G
Location and Surveys	

SURVEY CONTROL SHEET R-3307

ROW MARKER PERMANENT EASEMENT-E

ALIGN	STATION	OFFSET	NORTH	EAST
L	68+65.00	119.26	363701.4800	2701956.0517
L	68+65.00	160.00	363661.5551	2701947.9283
L	69+05.00	117.89	363694.8485	2701995.5220
L	69+05.00	160.00	363653.5798	2701987.1251
L	76+00.00	155.00	363535.5540	2702695.7386
L	76+00.00	105.00	363585.4998	2702698.0651
L	128+80.00	94.04	366490.6556	2707059.2216
L	129+25.00	135.00	366502.3134	2707121.7618
L	129+70.00	89.45	366568.6036	2707115.2427
L	164+47.00	-100.00	369742.2365	2708623.5777
L	164+65.00	-170.00	369804.1342	2708585.4130
L	168+40.00	-143.00	370047.3656	2708922.5403
L	168+40.00	-100.00	370010.8952	2708945.3199
L	169+85.00	-100.00	370086.2757	2709080.8395
L	169+85.00	-144.00	370125.7620	2709061.4274
L	170+15.00	100.00	369918.8387	2709194.2433
L	170+50.00	110.00	369923.0564	2709227.9160
L	170+50.00	-100.00	370115.5292	2709143.9265
L	170+50.00	-144.00	370155.8568	2709126.3286
L	170+70.00	100.00	369939.5420	2709241.0168
L	189+00.00	-75.00	370594.5344	2710892.8732
L	189+00.00	-105.00	370618.4214	2710874.7236
L	191+92.57	185.57	370616.2164	2711291.7364
L	192+00.00	-105.00	370808.8839	2711074.1008
L	192+00.00	-75.00	370789.6613	2711097.1332
L	192+20.00	298.00	370569.5726	2711399.0471
L	192+69.68	715.00	370367.4853	2711770.1197
L	192+80.00	600.00	370448.4629	2711687.0226
L	192+82.00	710.00	370385.6546	2711777.3776
L	195+29.50	105.00	370972.5632	2711427.1651
L	195+88.00	85.00	371037.8962	2711434.8371

ROW MARKER PERMANENT EASEMENT-E

ALIGN	STATION	OFFSET	NORTH	EAST
LREV	87+20.00	-85.00	364031.7042	2703758.1447
LREV	87+50.02	-137.09	364090.5788	2703770.3007
LREV	87+95.00	-85.00	364055.2411	2703829.3575
LREV	87+95.00	-137.00	364104.6147	2703813.0360
LREV	90+60.00	-88.29	364142.2601	2704077.0042
LREV	90+60.00	-125.00	364176.7654	2704064.4870
LREV	90+85.00	-88.19	364150.5205	2704099.7561
LREV	90+85.00	-125.00	364185.0054	2704086.8936
LREV	93+00.00	-150.00	364287.3475	2704259.1978
LREV	93+00.00	-85.00	364229.4822	2704288.8053
LREV	93+60.00	-85.00	364256.3357	2704339.0801
LREV	93+60.00	-150.00	364313.1202	2704307.4491
LREV	94+65.00	-125.00	364341.2128	2704403.0834
LREV	94+65.00	-85.00	364307.5366	2704424.6685
LREV	94+90.00	-85.00	364320.4993	2704444.5687
LREV	94+90.00	-115.00	364345.5156	2704428.0103
LREV	96+20.00	-85.00	364392.5343	2704544.8473
LREV	96+20.00	-120.00	364420.1589	2704523.3558
LREV	96+80.00	-120.00	364455.1702	2704566.7561
LREV	96+80.00	-85.00	364428.3212	2704589.2090
LREV	98+80.00	-86.10	364559.2613	2704726.6791
LREV	98+80.00	-105.00	364572.2396	2704712.9404
LREV	99+20.00	-105.00	364600.0114	2704738.6220
LREV	99+20.00	-88.26	364588.7698	2704751.0270
LREV	100+30.00	-105.00	364679.9181	2704807.8364
LREV	100+30.00	-90.81	364670.8246	2704818.7316
LREV	100+65.00	-105.00	364706.2365	2704829.6158
LREV	100+65.00	-90.86	364697.2615	2704840.5452
LREV	118+18.00	-101.17	365990.9882	2706051.8036
LREV	118+18.00	-130.00	366015.1697	2706036.1095
LREV	118+20.00	-98.70	366008.4303	2706083.2140
LREV	118+20.00	-130.00	366034.6830	2706066.1755

ROW MARKER PERMANENT EASEMENT-E

ALIGN	STATION	OFFSET	NORTH	EAST
Y2	10+84.99	-120.00	363589.4154	2702985.3540
Y2	11+25.00	-120.00	363550.0098	2702978.4138
Y2	11+25.00	-93.93	363554.5311	2702952.7408
Y2	11+80.00	90.00	363532.2687	2702762.0571
Y2	23+43.67	105.00	362388.8403	2702545.4424
Y2	24+00.00	100.00	362342.8835	2702540.0638
Y2	24+38.00	-50.00	362262.7344	2702671.8503
Y2	24+38.00	-35.84	362267.4984	2702658.5107
Y2	24+58.00	-50.00	362242.3512	2702664.1629
Y2	24+58.00	-36.77	362247.2405	2702651.8686
Y2	24+60.00	55.00	362279.4774	2702565.9256
Y2	24+60.00	29.20	362269.8582	2702589.8645
Y2	28+38.00	-33.00	361917.4380	2702450.8264
Y2	28+38.00	-40.00	361913.6944	2702456.7413
Y2	28+48.63	-33.00	361908.4576	2702445.1427
Y2	28+48.63	-40.00	361904.7141	2702451.0576

ROW MARKER PERMANENT EASEMENT-E

ALIGN	STATION	OFFSET	NORTH	EAST
Y3	11+50.00	30.03	366716.1326	2705483.7522
Y3	11+80.00	45.00	366682.6801	2705481.5204
Y3	14+31.00	53.23	366447.9472	2705570.7908
Y3	14+58.80	125.59	366394.3772	2705514.7644

ROW MARKER PERMANENT EASEMENT-E

ALIGN	STATION	OFFSET	NORTH	EAST
Y4	11+74.19	-117.93	370489.7972	2711231.2347
Y4	12+11.01	-77.43	370432.5794	2711200.0075
Y4	12+14.70	-86.18	370428.4609	2711209.1528

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCGS FOR MONUMENT "MRH A"
WITH NAD 1983/01 STATE PLANE GRID COORDINATES OF
NORTHING: 366777.373(ft) EASTING: 2701358.869(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.999918650
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "MRH A" TO -L- STATION 17+00.00 IS
S 38°46'32.5" W 6203.086 (ft)
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

SURVEY CONTROL SHEET R-3307

DESIGN ALIGNMENTS

L

TYPE	STATION	NORTH	EAST
POT	10+00.00	361856.3191	2696779.2358
PC	22+83.80	362012.4017	2698053.5112
PT	39+56.20	362712.5418	2699541.3718
PC	53+85.99	363695.2494	2700579.9326
PT	62+86.98	363933.5891	2701413.4193
TS	72+41.86	363743.2039	2702349.1191
SC	75+41.86	363694.3413	2702644.9463
CS	79+43.80	363718.0555	2703044.7061
ST	82+43.80	363801.5500	2703332.6817
TS	84+93.71	363879.9818	2703569.9677
SC	87+43.71	363962.1552	2703806.0507
CS	98+32.16	364547.0035	2704714.9534
ST	100+82.16	364727.8129	2704887.5674
TS	110+19.89	365416.1812	2705524.3518
SC	113+19.89	365630.7560	2705733.8872
CS	114+79.93	365733.8186	2705856.2546
ST	117+79.93	365903.8203	2706103.3312
TS	123+21.12	366198.4288	2706557.3081
SC	126+21.12	366370.5325	2706802.8454
CS	130+48.54	366686.2653	2707088.4678
ST	133+48.54	366947.7662	2707235.1836
TS	159+22.23	369235.8523	2708413.5569
SC	162+22.23	369497.4685	2708560.0799
CS	173+88.09	370121.3769	2709506.8204
SRS	176+88.09	370152.8353	2709805.0190
SC	179+88.09	370184.2936	2710103.2175
CS	181+32.53	370216.5818	2710243.9396
ST	184+32.53	370318.2676	2710526.0247
PC	185+42.48	370359.1485	2710628.0983
PT	198+01.84	371273.8286	2711424.5468
PC	199+69.20	371436.2706	2711464.8106
PT	207+95.10	372246.5539	2711622.8379
POT	208+76.12	372326.7633	2711634.3253

LREV

TYPE	STATION	NORTH	EAST
POT	10+00.00	361856.3191	2696779.2358
PC	22+83.80	362012.4017	2698053.5112
PT	39+56.20	362712.5418	2699541.3718
PC	53+85.99	363695.2494	2700579.9326
PT	62+86.98	363933.5891	2701413.4193
TS	72+41.86	363743.2039	2702349.1191
SC	75+41.86	363694.3413	2702644.9463
CS	79+43.80	363718.0555	2703044.7061
ST	82+43.80	363801.5500	2703332.6817
POT	84+93.71	363879.9818	2703569.9677
TS	88+88.70	364003.9443	2703945.0017
SC	91+88.70	364106.3952	2704226.8555
CS	98+63.87	364488.4644	2704778.1421
ST	101+63.87	364716.4124	2704973.0202
TS	109+38.28	365319.5703	2705458.7145
SC	112+38.28	365547.9946	2705653.0589
CS	115+25.14	365740.0097	2705865.7948
EQB	118+25.14	365910.0114	2706112.8714
EQA	117+91.30	365910.0114	2706112.8714
TS	123+21.12	366198.4288	2706557.3081
SC	126+21.12	366370.5325	2706802.8454
CS	130+48.54	366686.2653	2707088.4678
ST	133+48.54	366947.7662	2707235.1836
TS	159+22.23	369235.8523	2708413.5569
SC	162+22.23	369497.4685	2708560.0799
CS	173+88.09	370121.3769	2709506.8204
SRS	176+88.09	370152.8353	2709805.0190
SC	179+88.09	370184.2936	2710103.2175
CS	181+32.53	370216.5818	2710243.9396
ST	184+32.53	370318.2676	2710526.0247
PC	185+42.48	370359.1485	2710628.0983
PT	198+01.84	371273.8286	2711424.5468
PC	199+69.20	371436.2706	2711464.8106
PT	207+95.10	372246.5539	2711622.8379
POT	208+76.12	372326.7633	2711634.3253

Y1

TYPE	STATION	NORTH	EAST
POT	10+00.00	364361.4716	2701631.6736
PC	10+71.92	364289.6805	2701627.4399
PT	13+53.18	364062.5179	2701763.4619
PC	14+23.41	364033.0614	2701827.2121
PT	16+24.21	363866.9827	2701911.2822

Y1A

TYPE	STATION	NORTH	EAST
POT	10+00.00	364238.0776	2701715.0973
PC	11+10.64	364154.9291	2701642.1144
PT	11+49.94	364129.1050	2701612.6353
POT	13+15.65	364037.1312	2701474.7919

Y1REV

TYPE	STATION	NORTH	EAST
PC	10+00.00	364781.3560	2701531.8450
PRC	13+77.88	364424.8466	2701635.3395
PRC	16+67.03	364196.7691	2701782.1756
PT	19+93.21	363931.9799	2701924.5107
POT	20+93.54	363833.6692	2701904.5029

Y2

TYPE	STATION	NORTH	EAST
POT	10+00.00	363693.9295	2702881.9144
PC	23+43.66	362370.6321	2702648.8516
PT	25+62.02	362168.2844	2702570.5322
POT	32+60.43	361578.1393	2702197.0317

Y3

TYPE	STATION	NORTH	EAST
POT	10+00.00	366866.1027	2705453.5715
PC	21+34.00	365819.9445	2705891.1890
PRC	23+61.21	365617.7596	2705994.3829
PT	24+91.82	365501.4830	2706053.5705
PC	26+41.82	365362.9768	2706111.1555
PRC	27+75.78	365235.7466	2706152.6436
PT	30+14.18	365009.3816	2706226.6249
POT	36+14.18	364455.6636	2706457.7014

Y4

TYPE	STATION	NORTH	EAST
POT	10+00.00	370607.0055	2711025.3077
PC	10+51.07	370569.1152	2711059.5464
PRC	13+04.64	370332.5394	2711114.3578
PT	15+88.44	370052.0084	2711080.0163
POT	17+83.44	369857.1338	2711087.0068

Y5

TYPE	STATION	NORTH	EAST
POT	10+00.00	363612.0526	2703143.4391
POT	13+10.00	363610.1138	2703453.4330

Y6

TYPE	STATION	NORTH	EAST
POT	10+00.00	370953.3315	2711299.2404
POT	12+65.00	370869.9094	2711550.7667

Y7

TYPE	STATION	NORTH	EAST
POT	10+00.00	372183.4289	2711613.5466
POT	12+00.00	372135.2860	2711807.6649

DR1

TYPE	STATION	NORTH	EAST
POT	10+00.00	363637.1328	2701775.0091
PC	10+65.26	363698.9672	2701795.8672
PT	11+48.94	363739.1230	2701861.6392
POT	15+34.47	363681.8109	2702242.8892

DR2

TYPE	STATION	NORTH	EAST
POT	10+00.00	363833.6692	2701904.5029
POT	11+00.00	363735.6753	2701884.5736

DR3

TYPE	STATION	NORTH	EAST
POT	10+00.00	370505.1004	2711181.7666
POT	14+64.78	370929.2965	2711371.7086

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT
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NCGS FOR MONUMENT "MRH A"
WITH NAD 1983/01 STATE PLANE GRID COORDINATES OF
NORTHING: 366777.373(ft) EASTING: 2701358.869(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT
(GROUND TO GRID) IS: 0.999918650
THE N.C. LAMBERT GRID BEARING AND
LOCALIZED HORIZONTAL GROUND DISTANCE FROM
"MRH A" TO -L- STATION 17+00.00 IS
S 38°46'32.5" W 6203.086 (ft)
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

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PROJECT REFERENCE NO.	SHEET NO.
R-3307	2
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 16378 ENGINEER REKHA V. PATEL — Rekha V. Patel — 10/9/13

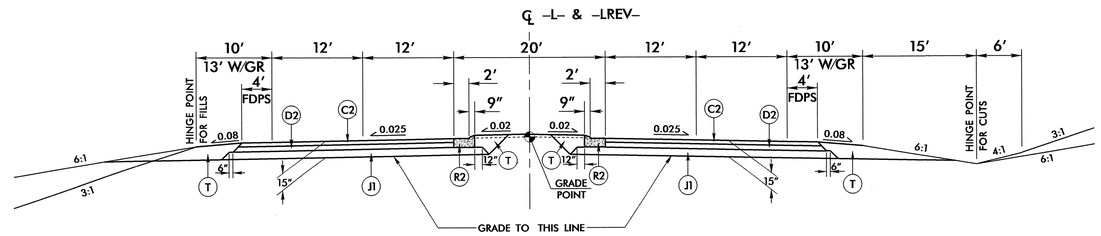
NORTH CAROLINA PROFESSIONAL SEAL 22896 ENGINEER CLARK S. MORRISON — Clark S. Morrison — 10/9/13

PAVEMENT SCHEDULE

C1	PROP. APPROX. 2" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 224 LBS. PER SQ. YD.
C2	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
C3	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1" DEPTH TO BE PLACED IN LAYERS NOT LESS THAN 1½" OR GREATER THAN 2" IN DEPTH.
C4	PROP. APPROX. 1½" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
D1	PROP. APPROX. 2½" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 285 LBS. PER SQ. YD.
D2	PROP. APPROX. 4" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
D3	PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH TO BE PLACED IN LAYERS NOT LESS THAN 2½" OR GREATER THAN 4" IN DEPTH.
E1	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
E2	PROP. APPROX. 5" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 570 LBS. PER SQ. YD.
E3	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH TO BE PLACED IN LAYERS NOT LESS THAN 3" OR GREATER THAN 5½" IN DEPTH.
J1	PROP. 8" AGGREGATE BASE COURSE
J2	PROP. VAR. DEPTH AGGREGATE BASE COURSE
P	PRIME COAT AT THE RATE OF 0.35 GAL. PER SQ. YD.
R1	2'-6" CONCRETE CURB AND GUTTER
R2	2'-9" CONCRETE CURB AND GUTTER
R3	5" MONOLITHIC CONCRETE ISLAND (SURFACE MOUNTED)
R4	SHOULDER BERM GUTTER
R5	SINGLE FACED CONCRETE BARRIER
S	4" CONCRETE SIDEWALK

T	EARTH MATERIAL
U	EXISTING PAVEMENT
W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE WEDGING DETAIL)

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

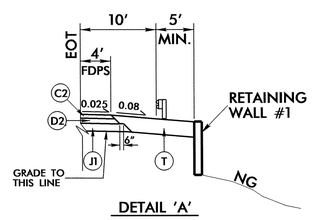


TYPICAL SECTION NO. 1

USE TYPICAL SECTION NO. 1

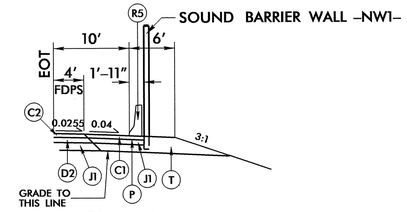
-L- STA. 19+50.00 TO -L- STA. 23+00.00 LT.
-L- STA. 25+50.00 TO -L- STA. 29+24.00 (BEGIN BRIDGE) LT.
-L- STA. 19+50.00 TO -L- STA. 29+24.00 (BEGIN BRIDGE) RT.
-L- STA. 63+19.00 (END BRIDGE) TO -L- STA. 84+93.71 LB=
-LREV- STA. 84+93.71 LA TO -LREV- STA. 118+25.14 LB=
-L- STA. 117+91.30 LA TO -L- STA. 184+82.50

NOTE FOR DETAIL 'A'
-L- 63+00.00 TO -L- STA. 66+50.00 RT.
USE 8' POSTS AT 6'-3" POST SPACING WHEN THE GUARDRAIL IS OFFSET BETWEEN 5'-6" AND 5' FROM FACE OF GUARDRAIL TO THE NEAREST WALL SURFACE



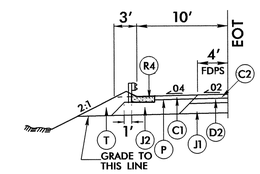
DETAIL 'A'

USE DETAIL 'A'
-L- STA. 63+00.00 TO -L- STA. 66+50.00 RT.



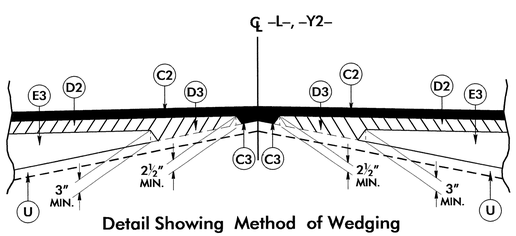
DETAIL 'B'

USE DETAIL 'B'
-L- STA. 145+49.89 TO -L- STA. 169+94.55 RT.

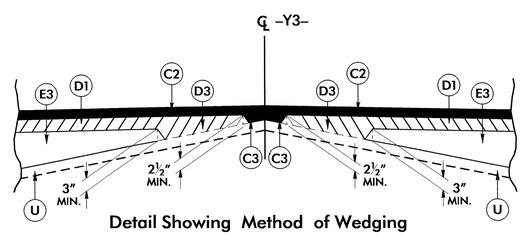


DETAIL 'C'

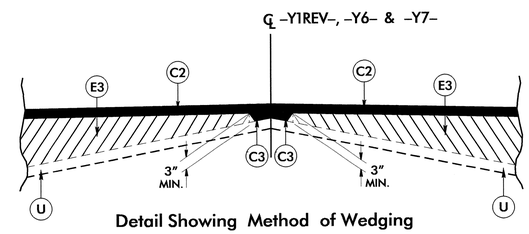
USE DETAIL 'C'
-L- STA. 26+45.00 TO -L- STA. 29+00.00 LT.
-L- STA. 63+43.00 TO -L- STA. 67+25.00 RT.
-L- STA. 63+43.00 TO -L- STA. 66+70.00 LT.
-L- STA. 135+00.00 TO -L- STA. 145+49.89 RT.
-L- STA. 169+94.55 TO -L- STA. 171+07.75 RT.



Detail Showing Method of Wedging



Detail Showing Method of Wedging



Detail Showing Method of Wedging

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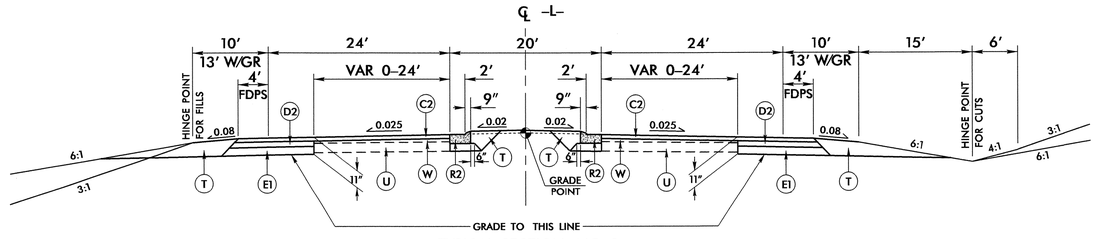
PROJECT REFERENCE NO.	SHEET NO.
R-3307	2-A

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 036378 ENGINEER CHETAN V. PATEL
Chetan V. Patel

PAVEMENT DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 22896 ENGINEER CLARK S. MORRISON
Clark S. Morrison 11/10/13

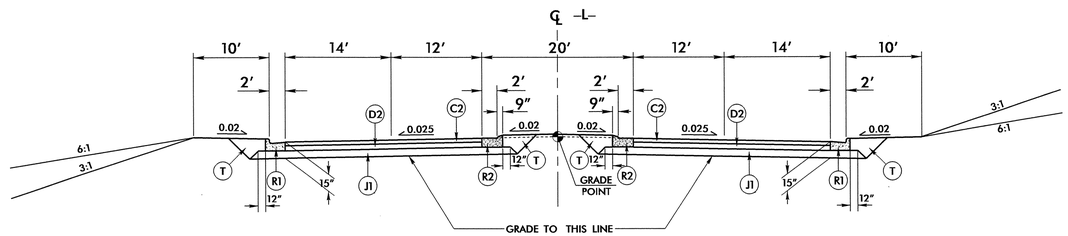
PAVEMENT SCHEDULE	
C2	3" S9.5B
C4	1½" S9.5B
D2	4" I19.0B
E1	4" B25.0B
J1	8" ABC
R1	2'-6" C & G
R2	2'-9" C & G
T	EARTH MATERIAL
U	EXIST. PAVEMENT
W	WEDGING



TYPICAL SECTION NO. 2

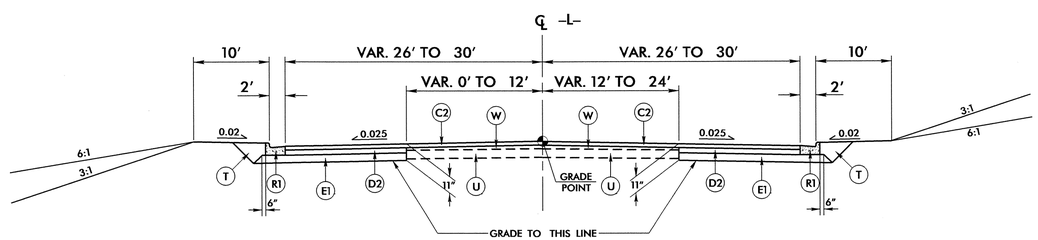
USE TYPICAL SECTION NO. 2
-L- STA. 17+00.00 TO -L- STA. 19+50.00
-L- STA. 23+00.00 TO -L- STA. 25+50.00 LT.

NOTES:
THERE IS A TEMPORARY CROSS OVER CALLED FOR IN THE TCM PLANS.
-L- STA. 10+00.00 TO -L- STA. 17+00.00 (USE THIS RANGE FOR NOTES)
USE TEMPORARY PAVEMENT DESIGN IN MEDIAN, USE DETAIL 'D' AND DETAIL 'E'
REPLACE 2'-9" CURB REMOVED FOR TEMP CROSS OVER AND
RESHAPE MEDIAN
RESURFACE WITH 3" S9.5B (C2) AFTER TEMP CROSS OVER REMOVAL



TYPICAL SECTION NO. 3

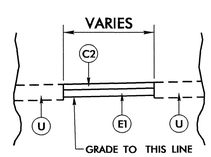
USE TYPICAL SECTION NO. 3
-L- STA. 184+82.50 TO -L- STA. 202+00.00



TYPICAL SECTION NO. 4

USE TYPICAL SECTION NO. 4
-L- STA. 202+00.00 TO -L- STA. 207+00.00

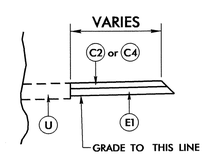
NOTE:
TRANSITION FROM T.S.NO. 4 TO EXISTING
-L- STA. 207+00.00 TO -L- STA. 207+95.09



DETAIL 'D'

USE DETAIL 'D' (TEMPORARY PAVEMENT)
-L- STA. 10+00.00 TO -L- STA. 17+00.00
-L- STA. 27+50.00 TO -L- STA. 34+40.00

NOTE:
SEE TRANSPORTATION MANAGEMENT PLANS FOR LOCATION
AND TEMPORARY PAVEMENT TIES TO EXISTING PAVEMENT



DETAIL 'E'

USE DETAIL 'E' (TEMPORARY PAVEMENT)
-L- STA. 65+00 +/- TO -L- STA. 76+00 +/- (C4)
-Y3- STA. 15+00.00 TO -Y3- STA. 23+50.00 (C2) (REVERSE)
-L- STA. 198+50.00 TO -L- STA. 207+00.00 (C4)

NOTE:
SEE TRANSPORTATION MANAGEMENT PLANS FOR LOCATION
AND TEMPORARY PAVEMENT TIES TO EXISTING PAVEMENT

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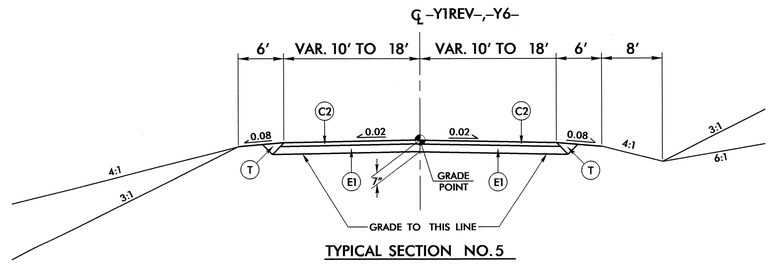
PROJECT REFERENCE NO.	SHEET NO.
R-3307	2-B

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 16378 ENGINEER
10/16/13 SEALED
REKHA V. PATEL
Rekha V. Patel

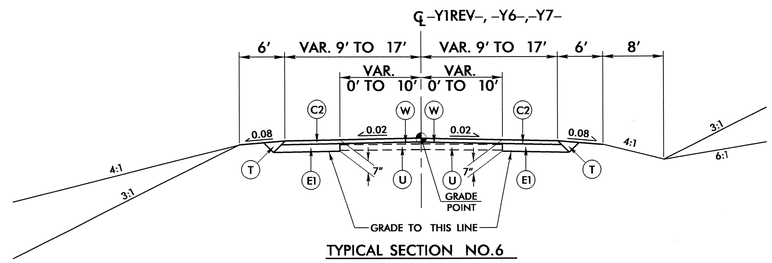
PAVEMENT DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 22896 ENGINEER
CLARK S. MORRISON
10/16/13
Clark S. Morrison

PAVEMENT SCHEDULE	
C2	3" S9.5B
D2	4" I19.0B
E1	4" B25.0B
J1	8" ABC
R1	2'-6" C & G
R3	ISLAND
S	4" SIDEWALK
T	EARTH MATERIAL
U	EXIST. PAVEMENT
W	WEDGING



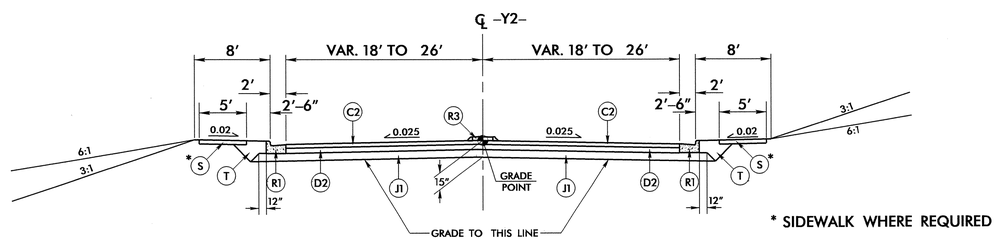
TYPICAL SECTION NO. 5

USE TYPICAL SECTION NO. 5
-Y1REV- STA. 14+50.00 TO -Y1REV- STA. 20+59.54
-Y6- STA. 10+36.59 TO -Y6- STA. 12+00.00



TYPICAL SECTION NO.6

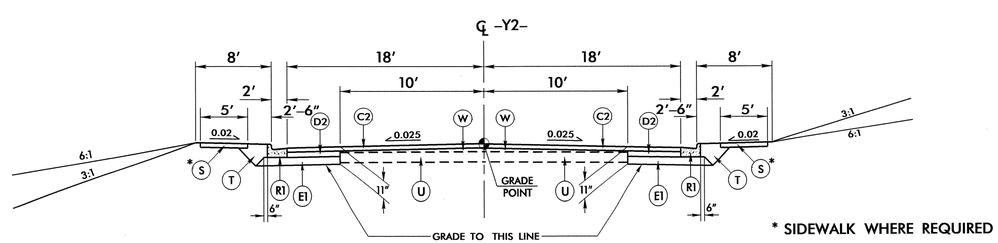
USE TYPICAL SECTION NO. 6
-Y1REV- STA. 13+27.88 TO -Y1REV- 14+50.00
-Y6- STA. 12+00.00 TO -Y6- STA. 12+35.00
-Y7- STA. 10+26.11 TO -Y7- STA. 11+60.29



* SIDEWALK WHERE REQUIRED

TYPICAL SECTION NO.7

USE TYPICAL SECTION NO. 7
-Y2- STA. 10+53.74 TO -Y2- STA. 13+13.00 (BEGIN BRIDGE)
-Y2- STA. 18+98.00 (END BRIDGE) TO -Y2- STA. 25+50.00



* SIDEWALK WHERE REQUIRED

TYPICAL SECTION NO.8

USE TYPICAL SECTION NO. 8
-Y2- STA. 25+50.00 TO -Y2- STA. 32+40.08

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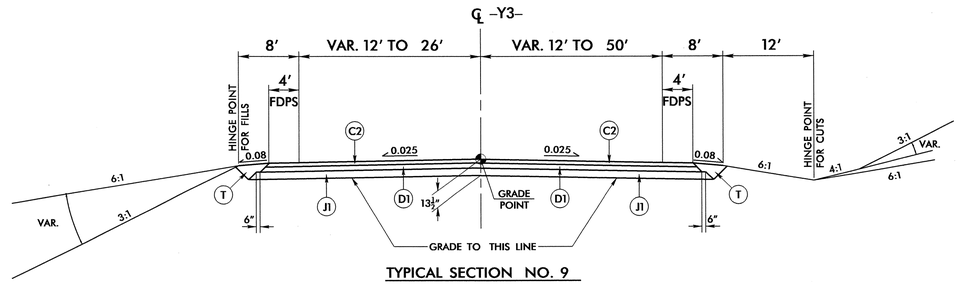
PROJECT REFERENCE NO.	SHEET NO.
R-3307	2-C

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 16378 ENGINEER REKHA V. PATEL
10/9/13

PAVEMENT DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 22886 ENGINEER CLARK S. MORRISON
10/9/13

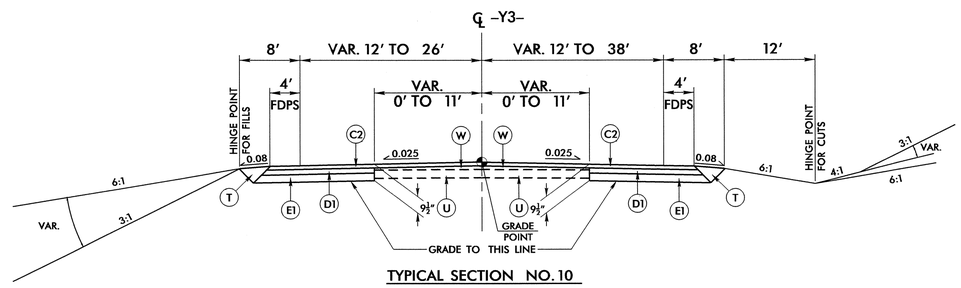
PAVEMENT SCHEDULE	
C1	2" S9.5B
C2	3" S9.5B
D1	2½" I19.0B
E1	4" B25.0B
E2	5" B25.0B
J1	8" ABC
T	EARTH MATERIAL
U	EXIST. PAVEMENT
W	WEDGING



TYPICAL SECTION NO. 9

USE TYPICAL SECTION NO. 9

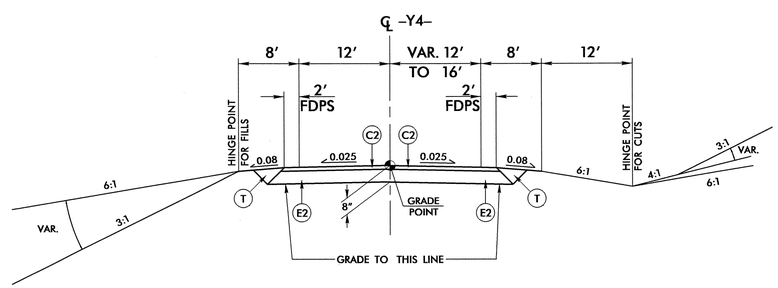
-Y3- STA. 15+50.00 TO -Y3- STA. 21+30.88
-Y3- STA. 22+24.82 TO -Y3- STA. 23+50.00
-Y3- STA. 24+50.00 TO -Y3- STA. 27+50.00



TYPICAL SECTION NO. 10

USE TYPICAL SECTION NO. 10

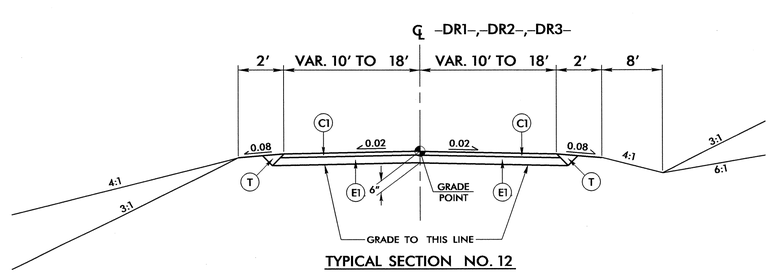
-Y3- STA. 10+66.00 TO -Y3- STA. 15+50.00
-Y3- STA. 23+50.00 TO -Y3- STA. 24+50.00
-Y3- STA. 27+50.00 TO -Y3- STA. 30+50.00



TYPICAL SECTION NO. 11

USE TYPICAL SECTION NO. 11

-Y4- STA. 10+48.00 TO -Y4- STA. 13+40.00



TYPICAL SECTION NO. 12

USE TYPICAL SECTION NO. 12

-DR1- STA. 10+65.26 TO -DR1- STA. 15+11.47
-DR2- STA. 10+46.00 TO -DR2- STA. 10+89.89
-DR3- STA. 9+36.72 TO -DR3- STA. 11+62.00
-DR3- STA. 13+50.00 TO -DR3- STA. 14+54.73

NOTE:
-DR3- STA. 11+62.00 TO -DR3- 13+50.00 RESURFACE WITH 2" S9.5B (C1)

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PROJECT REFERENCE NO.	SHEET NO.
R-3307	2-D
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

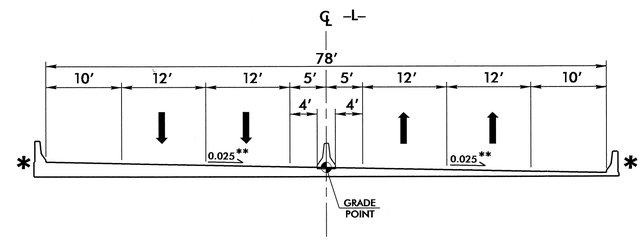
NORTH CAROLINA PROFESSIONAL SEAL 16378 ENGINEER R. REKHA V. PATEL

STRUCTURE TYPICAL SECTIONS

-L- DESIGN DATA		
ADT 2011	=	27620
ADT 2031	=	39389
D	=	60%
DHV	=	11%
TTST	=	1%
DUAL	=	4%
V	=	60 mph

FUNC CLASS–ARTERIAL

* BRIDGE RAIL TO BE DETERMINED BY STRUCTURE DESIGN UNIT



TYPICAL SECTION NO. 13
(Revised)

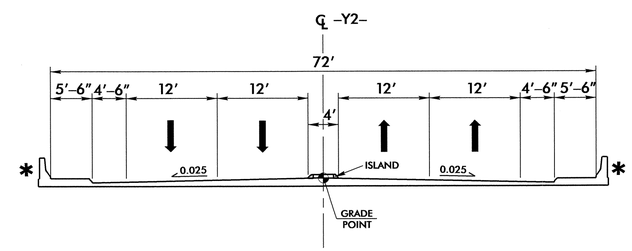
USE TYPICAL SECTION NO. 13
-L- STA. 29+24.00 TO -L- STA. 63+19.00

** SEE PLAN SHEETS 5 THRU 8 FOR SUPERELEVATION TRANSITION.

-Y2- DESIGN DATA		
ADT 2011	=	15167
ADT 2031	=	18782
D	=	65%
DHV	=	9%
TTST	=	1%
DUAL	=	3%
V	=	40 mph

FUNC CLASS–LOCAL

* BRIDGE RAIL TO BE DETERMINED BY STRUCTURE DESIGN UNIT



TYPICAL SECTION NO. 14
(Revised)

USE TYPICAL SECTION NO. 14
-Y2- STA. 13+13.00 TO -Y2- STA. 18+98.00

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PROJECT REFERENCE NO.	SHEET NO.
R-3307	2-E

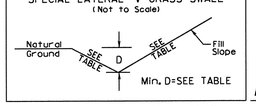
HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 19778 ENGINEER RAY D. LAVINGOOD

26 SEP 2012

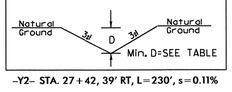
DRAINAGE DITCH and SWALE DETAILS

DETAIL "A"
SPECIAL LATERAL 'V' GRASS SWALE
(Not to Scale)



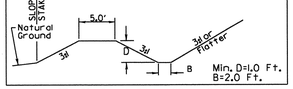
	MIN. D	FRONT SLOPE	BACK SLOPE
-L- STA. 17+00 TO -L- STA. 19+00 LT	1.0'	6:1	6:1
-L- STA. 22+50 TO -L- STA. 24+69 LT	1.0'	6:1	6:1
-L- STA. 24+69 TO -L- STA. 27+50 LT	1.1'	Varies 6:1 to 3:1	3:1
-L- STA. 184+40 TO -L- STA 185+60 RT	1.0'	3:1	3:1
-L- STA. 188+50 TO -L- STA. 190+67 LT	1.0'	3:1	3:1
-L- STA. 194+69 TO -L- STA. 197+44 LT	1.3'	3:1	3:1
-L- STA. 200+50 TO -L- STA. 201+07 LT	1.0'	3:1	3:1
-L- STA. 201+08 TO -L- STA. 202+50 RT	1.0'	3:1	3:1
-L- STA. 204+00 TO -L- STA. 207+18 LT	1.0'	3:1	3:1
-L- STA. 204+98 TO -L- STA. 205+45 RT	1.0'	3:1	3:1
-Y2- STA. 11+29 TO -Y2- STA. 12+13 RT	1.2'	3:1	3:1
-Y3- STA. 10+00 TO -Y3- STA. 14+50 LT	1.0'	3:1	3:1
-Y3- STA. 17+00 TO -Y3- STA. 21+25 RT	1.0'	3:1	3:1
-Y3- STA. 17+00 TO -Y3- STA. 20+00 LT	1.0'	4:1	3:1
-Y4- STA. 11+29 TO -Y4- STA. 13+13 RT	1.0'	MATCH XSECT.	3:1

DETAIL "B"
STANDARD 'V' GRASS SWALE
(Not to Scale)



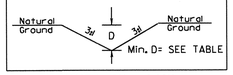
	MIN. D
-Y2- STA. 27+42, 39' RT, L=230', s=0.11%	1.9'

DETAIL "C"
STANDARD FALSE CUT GRASS SWALE
(Not to Scale)



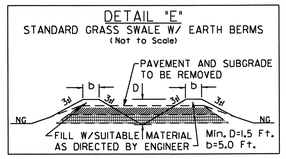
-L- STA. 31+06, 45' RT, L=100', s=0.3%

DETAIL "D"
STANDARD 'V' DITCH
(Not to Scale)



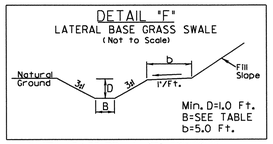
	MIN. D
-L- STA. 194+69, 69' LT, L=50', s=2.98%	2.0
-L- STA. 201+07, 65' LT, L=50', s=1.82%	1.5
-L- STA. 201+08 TO STA. 203+05, 90' LT, L=195', s=0.70%	1.5
-L- STA. 205+02, 56' LT, L=50', s=2.7%	1.5
-Y4- STA. 12+04, 68' LT, L=50', s=0.0%	1.0

DETAIL "E"
STANDARD GRASS SWALE W/ EARTH BERMS
(Not to Scale)



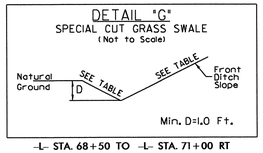
-L- STA. 65+36 78' LT, L=135', s=0.4%

DETAIL "F"
LATERAL BASE GRASS SWALE
(Not to Scale)



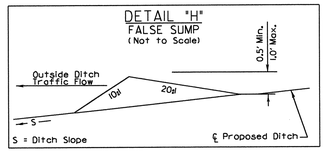
	BASE
-L- STA. 68+80 TO -L- STA. 73+50 LT	3.0'
-L- STA. 73+50 TO -L- STA. 78+82 LT	2.0'
-LREV- STA. 90+73 TO -LREV- STA. 91+50 RT	2.0'
-L- STA. 128+34 TO -L- STA. 133+00 LT	0' (V Base)

DETAIL "G"
SPECIAL CUT GRASS SWALE
(Not to Scale)



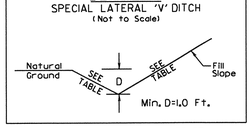
	FRONT SLOPE	BACK SLOPE
-L- STA. 68+50 TO -L- STA. 71+00 RT	6:1	Varies 13:1 to 6:1
-L- STA. 71+00 TO -L- STA. 73+17 RT	6:1	6:1
-DR3- STA. 11+14 TO -DR3- STA. 13+25 RT	Varies 3:1 to 5:1	3:1
-DR3- STA. 11+13 TO -DR3- STA. 12+97 LT	Varies 4:1 to 3:1	3:1

DETAIL "H"
FALSE SUMP
(Not to Scale)



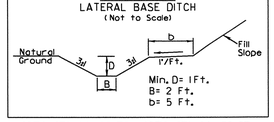
-L- STA. 77+50 LT

DETAIL "I"
SPECIAL LATERAL 'V' DITCH
(Not to Scale)



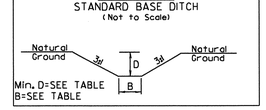
	MIN. D	FRONT SLOPE	BACK SLOPE
-L- STA. 79+44 TO -L- STA. 82+55 RT	1.0'	4.2:1 to 4.9:1	3:1
-L- STA. 159+44 TO -L- STA. 160+00 LT	1.0'	4:1	3:1
-L- STA. 197+44 TO -L- STA. 200+50 LT	1.3'	3:1	3:1
-L- STA. 198+61 TO -L- STA. 201+08 RT	1.0'	3:1	3:1
-L- STA. 203+65 TO -L- STA. 204+98 RT	1.0'	3:1	3:1
-L- STA. 206+00 TO -Y7- STA. 11+50 RT	1.0'	3:1 to 4:1	3:1
-Y1REV- STA. 13+27.88 TO -Y1REV- STA. 15+70 LT	1.0'	3:1	3:1
-Y3- STA. 22+65 TO -Y3- STA. 24+00 RT	1.0'	6:1	6:1
-Y3- STA. 22+88 TO -Y3- STA. 24+50 LT	1.0'	6:1	6:1
-Y6- STA. 12+00 LT TO -L- STA. 198+61 RT	1.0'	3:1	3:1

DETAIL "J"
LATERAL BASE DITCH
(Not to Scale)



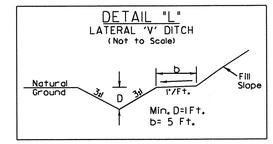
-LREV- STA. 94+00 TO -LREV- STA. 96+50 RT	
-LREV- STA. 97+00 TO -LREV- STA. 99+00 RT	
-LREV- STA. 99+50 TO -LREV- STA. 101+00 RT	
-LREV- STA. 101+50 TO -LREV- STA. 104+60 RT	
-LREV- STA. 105+50 TO -LREV- STA. 111+16 RT	
-L- STA. 164+00 TO -L- STA. 164+90 LT	

DETAIL "K"
STANDARD BASE DITCH
(Not to Scale)



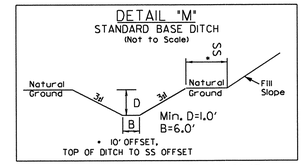
	MIN. D	B
-L- STA. 135+50 RT, L=45, s=0%	1.0'	6.0'
-L- STA. 185+70, 105' LT, L=50', s=0.66%	1.5'	3.0'
-L- STA. 185+95, 80' LT, L=45', s=1.19%	1.2'	3.0'
-L- STA. 201+07, 63' RT, L=105', s=0.30%	1.5'	2.0'
-L- STA. 204+98, 56' RT, L=373', s=0.20%	1.5'	2.0'
-Y3- STA. 15+45, 53' LT, L=70', s=5%	1.0'	2.0'
-Y3- STA. 16+45, 60' LT, L=60', s=2.83%	1.0'	6.0'
-Y4- STA. 12+50, 34.4' LT, L=113', s=0.52%	1.0'	4.0'

DETAIL "L"
LATERAL 'V' DITCH
(Not to Scale)



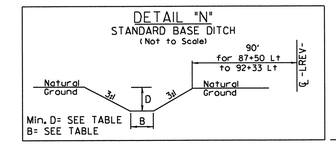
-L- STA. 120+50 TO -L- STA. 128+00 LT
-L- STA. 166+00 TO -L- STA. 170+00 RT

DETAIL "M"
STANDARD BASE DITCH
(Not to Scale)



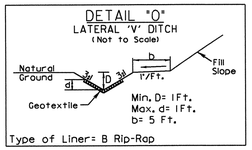
-L- STA. 165+00 TO -L- STA. 168+20 LT

DETAIL "N"
STANDARD BASE DITCH
(Not to Scale)



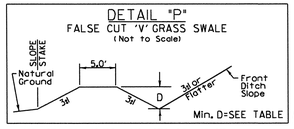
	B	MIN. D
-LREV- STA. 87+50 TO -LREV- STA. 92+33 LT	8'	1'
-LREV- STA. 90+73 LT L= 14', s=0%	2'	1'
-LREV- STA. 93+30 LT L= 35', s=1.7%	2'	1'
-LREV- STA. 94+60 LT L= 38', s=0%	5'	1'
-LREV- STA. 96+50 LT L= 36', s=0.3%	5'	1'
-LREV- STA. 99+00 LT L= 75', s=1.20%	2'	1'
-LREV- STA. 110+45 LT L= 60', s=0.1%	VARIES, 5' MAX	1'
-LREV- STA. 111+25 RT L= 50', s=0.1%	VARIES, 5' MAX	1'
-L- STA. 143+50 TO -L- STA. 153+25 LT	3'	1'
-L- STA 146+00 LT L= 35', s=1.2%	2'	1'
-L- STA 147+94 LT L= 35', s=0.9%	2'	1'
-L- STA 150+50 LT L= 20', s=1.59%	2'	1'
-L- STA 166+00 LT L= 24', s=0%	2'	1'
-L- STA 170+10 LT L= 35', s=0%	6'	1'

DETAIL "O"
LATERAL 'V' DITCH
(Not to Scale)



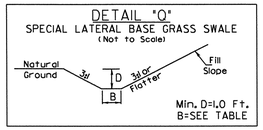
-L- STA. 120+20 TO -L- STA. 120+50 LT
-L- STA. 170+00 TO -L- STA. 170+37 RT
-L- STA. 170+47 TO -L- STA. 171+00 RT

DETAIL "P"
FALSE CUT 'V' GRASS SWALE
(Not to Scale)



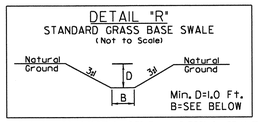
	MIN. D
-Y2- STA. 19+31 TO -Y2- STA. 20+40 LT	1.8'

DETAIL "Q"
SPECIAL LATERAL BASE GRASS SWALE
(Not to Scale)



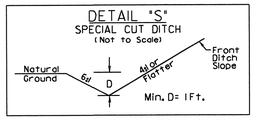
	BASE
-Y2- STA. 24+45 RT, L=86', s=1.0%	2'
-Y3- STA. 12+00 TO -Y3- STA. 15+20 RT	2'

DETAIL "R"
STANDARD GRASS BASE SWALE
(Not to Scale)



	BASE
-L- STA. 31+05, 64' RT, L=35' @ s=1.53%, L=124' @ s=0.85%	4'
-Y2- STA. 27+82.4 RT, L=161' @ s=0.66%, L=106' @ s=0.25%	2'

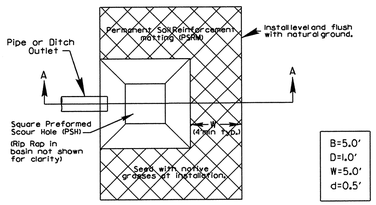
DETAIL "S"
SPECIAL CUT DITCH
(Not to Scale)



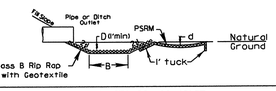
-Y3- STA. 24+00 TO -Y3- STA. 27+00 RT

PREFORMED SCOUR HOLE
(Not to Scale)

PLAN VIEW



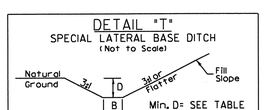
SECTION A-A



5/05

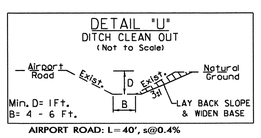
-L- STA. 30+66, 40' RT
-L- STA. 30+85, 85' RT
-Y2- STA. 11+00, 74.5' LT
-Y2- STA. 22+50, 47' LT

DETAIL "T"
SPECIAL LATERAL BASE DITCH
(Not to Scale)



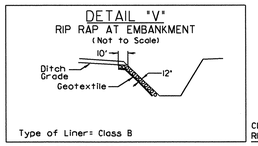
	MIN. D	B
-Y6- STA. 11+21 TO -Y6- STA. 12+00 RT	2.0'	2.0'
-Y4- STA. 12+50 TO -Y4- STA.13+13 LT	1.7'	4.0'
-DR3- STA. 10+00 TO -DR3- STA. 11+10 RT	2.0'	4.0'

DETAIL "U"
DITCH CLEAN OUT
(Not to Scale)



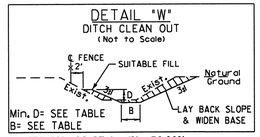
AIRPORT ROAD: L=40', s@0.4%

DETAIL "V"
RIP RAP AT EMBANKMENT
(Not to Scale)



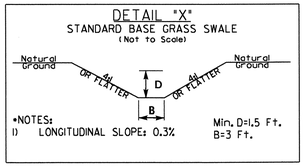
	TYPE OF LINER CLASS RIP RAP	TONS	GEOTEXTILE (SY)
-L- STA. 164+91 LT	CL 'B'	6	18
-L- STA. 201+00 LT	CL 'B'	6	18
-Y2- STA 10+94 LT	CL 'B'	11	27
-Y2- STA 11+08 LT	CL 'B'	5	12

DETAIL "W"
DITCH CLEAN OUT
(Not to Scale)



	MIN. D	B
-L- STA 191+28 RT: L=41', s@1.00%, SUITABLE FILL=11 CY	1.4'	6.0'
-DR3- STA 11+11 RT: L=413', s@0.53%, L=140', s@0.3%, SUITABLE FILL=45 CY	1.3'	4.0'

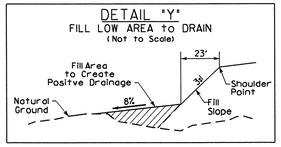
DETAIL "X"
STANDARD BASE GRASS SWALE
(Not to Scale)



*NOTES:
1) LONGITUDINAL SLOPE: 0.3%

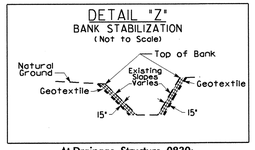
-L- STA. 61+30 RT Min Length: 115'
-L- STA. 62+70 RT Min Length: 115'

DETAIL "Y"
FILL LOW AREA to DRAIN
(Not to Scale)



-L- STA. 169+00 TO -L- STA. 169+50 LT

DETAIL "Z"
BANK STABILIZATION
(Not to Scale)



At Drainage Structure 0830:
-L- STA. 68+75 RT w/7.5 Tons CL 'I' Rip Rap & 18 SY Geotextile
-L- STA. 68+95 RT w/10.1 Tons CL 'I' Rip Rap & 22 SY Geotextile

At Drainage Structure 2014:
-Y2- STA. 23+98 RT w/5 Tons CL 'B' Rip Rap & 16 SY Geotextile
-Y2- STA. 24+20 RT w/5 Tons CL 'B' Rip Rap & 16 SY Geotextile

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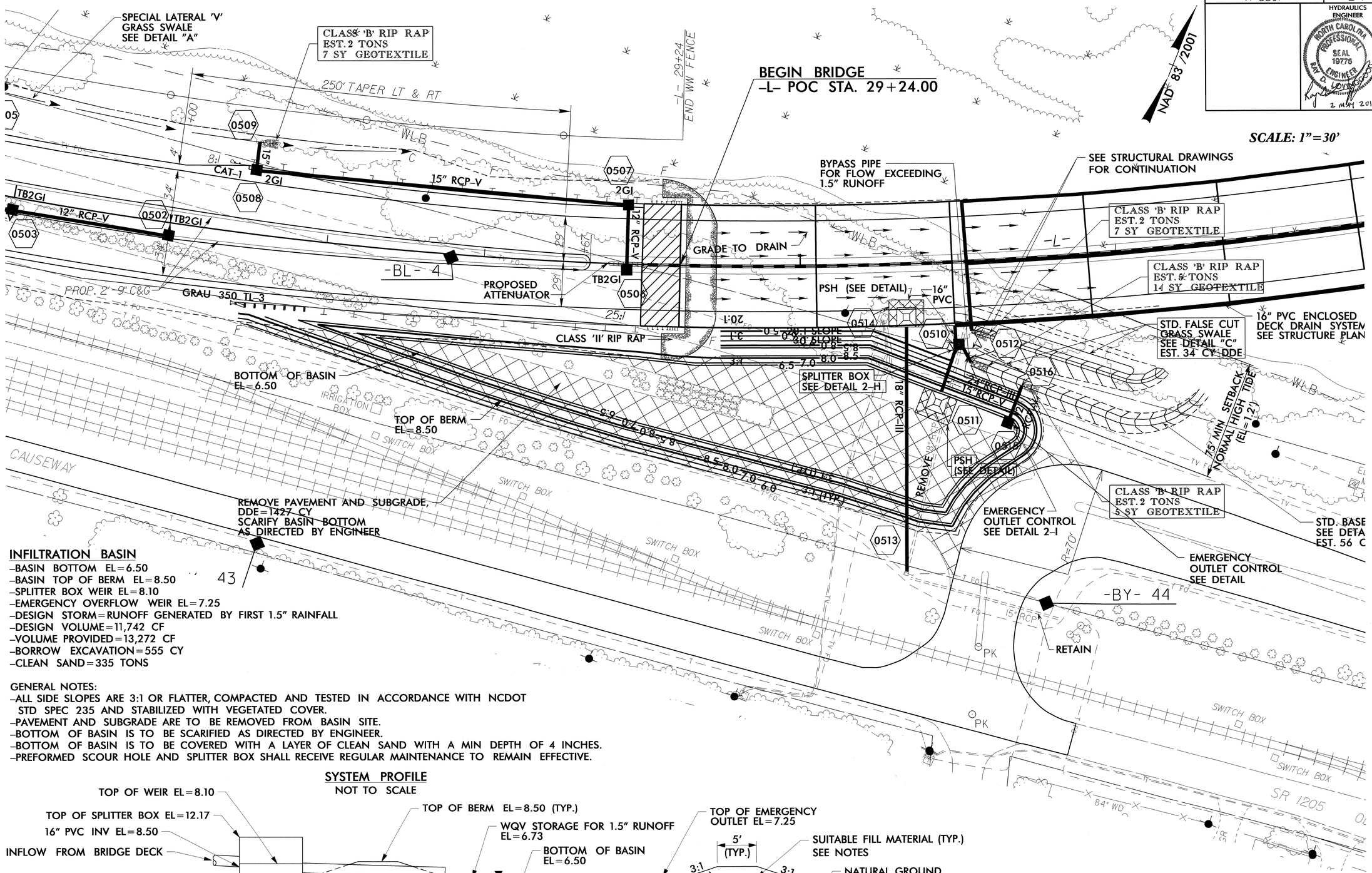
PROJECT REFERENCE NO.	SHEET NO.
R-3307	2-F

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 19775 ENGINEER RAY D. LOVINGGOOD

2 MAY 2012



INFILTRATION BASIN

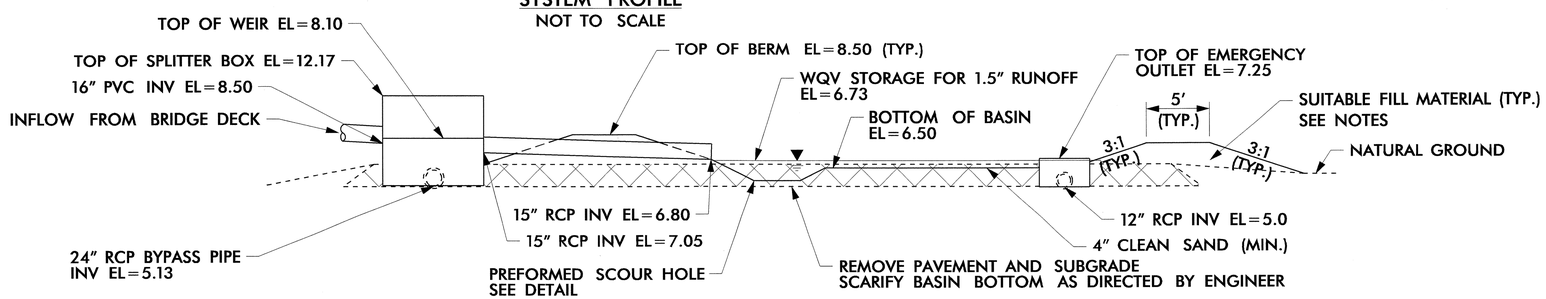
- BASIN BOTTOM EL=6.50
- BASIN TOP OF BERM EL=8.50
- SPLITTER BOX WEIR EL=8.10
- EMERGENCY OVERFLOW WEIR EL=7.25
- DESIGN STORM=RUNOFF GENERATED BY FIRST 1.5" RAINFALL
- DESIGN VOLUME=11,742 CF
- VOLUME PROVIDED=13,272 CF
- BORROW EXCAVATION=555 CY
- CLEAN SAND=335 TONS

GENERAL NOTES:

- ALL SIDE SLOPES ARE 3:1 OR FLATTER, COMPACTED AND TESTED IN ACCORDANCE WITH NCDOT STD SPEC 235 AND STABILIZED WITH VEGETATED COVER.
- PAVEMENT AND SUBGRADE ARE TO BE REMOVED FROM BASIN SITE.
- BOTTOM OF BASIN IS TO BE SCARIFIED AS DIRECTED BY ENGINEER.
- BOTTOM OF BASIN IS TO BE COVERED WITH A LAYER OF CLEAN SAND WITH A MIN DEPTH OF 4 INCHES.
- PREFORMED SCOUR HOLE AND SPLITTER BOX SHALL RECEIVE REGULAR MAINTENANCE TO REMAIN EFFECTIVE.

SYSTEM PROFILE

NOT TO SCALE



INFILTRATION BASIN

REMOVE PAVEMENT AND SUBGRADE SCARIFY BASIN BOTTOM AS DIRECTED BY ENGINEER

8/17/99
25-APR-2012 13:49
R:\Drainage\r3307_hyd_drn_bmp1.dgn
$$$$USERNAME$$$$
RD238353 4/25/2012 r3307_hyd_drn_DTL_2F rwdunn RD-Oce860-34

PROJECT REFERENCE NO.	SHEET NO.
R-3307	2-G

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 19775 ENGINEER RAY D. LOVINGGOOD

2 MAY 2012

SEQUENCE OF CONSTRUCTION FOR INFILTRATION BASIN -L- STA 30+85 RT.

1. RELOCATE UTILITY LINES.
2. INSTALL ALL EROSION CONTROL MEASURES. (AS NEEDED THROUGH CONSTRUCTION STAGES, INCLUDING INLET AND OUTLET PROTECTION).
3. REMOVE ROADWAY PAVEMENT AND SUBGRADE AS DIRECTED BY ENGINEER.
4. INSTALL DRAINAGE STRUCTURES AND PIPES.
5. INSTALL PREFORMED SCOUR HOLE AT FINAL GRADE.
6. SCARIFY BASIN BOTTOM AND GRADE AS SHOWN ON PLANS. AFTERWARD, CARE SHOULD BE TAKEN TO ENSURE HEAVY EQUIPMENT DOES NOT CROSS BASIN BOTTOM.
7. INSTALL CLEAN SAND TO FINAL ELEVATIONS, AS SHOWN ON PLANS.
8. CONSTRUCT AND OBTAIN PROPER COMPACTION OF BERM.
9. ADD GRATES ON ALL DRAINAGE STRUCTURES.

GENERAL NOTES FOR INFILTRATION BASIN

1. TEMPORARILY BYPASS USAGE OF BASINS DURING CONSTRUCTION UNTIL VEGETATION IS ESTABLISHED AND/OR CONSTRUCTION IS COMPLETE. (CAN BE OBTAINED BY BLOCKING PIPE IN SPLITTER BOX)
2. APPLY COMPOST BLANKET OVER THE SIDE SLOPES AND TOP OF BERMS AND ANY EXPOSED SURFACE THAT NEEDS EROSION CONTROL PROTECTION.
3. THE SURVEYOR SHALL CREATE A DTM FILE SUITABLE TO VERIFY BASIN CAPACITY TO THE ENGINEER, INCLUDING VERIFICATION OF INVERTS AND ELEVATIONS AT THE FOLLOWING POINTS:
   - -PIPE INVERTS, WEIR ELEVATIONS, TOP OF DRAINAGE STRUCTURE ELEVATIONS.
   - -BASIN BOTTOM, INCLUDING HORIZONTAL EXTENTS OF BASIN.
   - -TOP OF INFILTRATION BASIN BERM, ALSO VERIFY 5' WIDTH AT TOP OF BERM.
4. THE INFILTRATION BASIN BERM SHALL BE CONSTRUCTED WITH SUITABLE FILL MATERIAL APPROVED BY THE ENGINEER AND SHALL BE CONSTRUCTED COMPACTED AND TESTED IN ACCORDANCE WITH NCDOT STD SECTION 235.

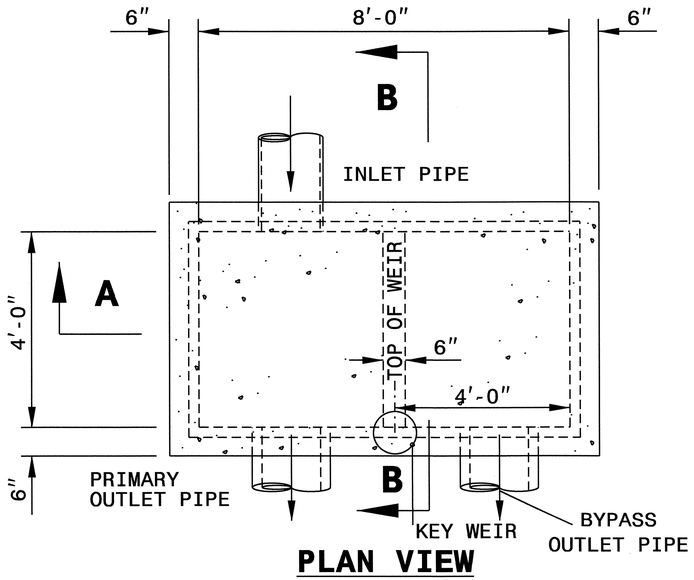
SAND SPECIFICATIONS

WASHED ASTM C33 OR AASHTO M-6 FINE AGGREGATE CONCRETE SAND. IN ADDITION TO THESE SPECIFICATIONS, SAND MUST MEET ALL THE FOLLOWING CONDITIONS:

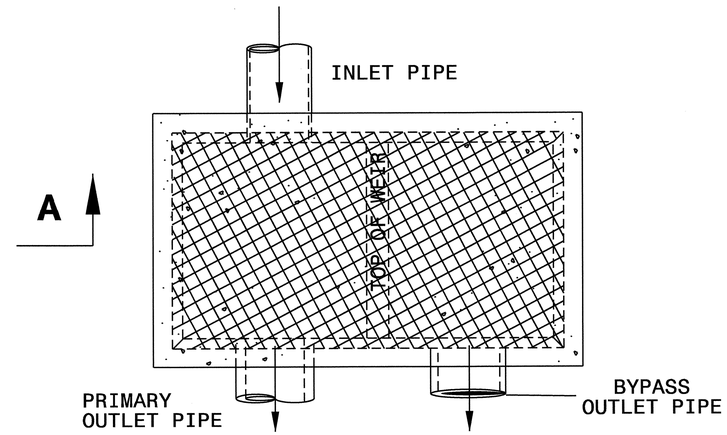
1. SAND MUST BE SILICA BASED. NO LIMESTONE BASED PRODUCTS MAY BE USED. IF THE MATERIAL IS WHITE OR GRAY IN COLOR, IT IS PROBABLY NOT ACCEPTABLE.
2. SAND MUST BE CLEAN. NATURAL UNWASHED SAND DEPOSITS MAY NOT BE USED. LIKEWISE, SAND THAT HAS BECOME CONTAMINATED BY IMPROPER STORAGE OR INSTALLATION PRACTICES SHALL BE REJECTED.
3. MANUFACTURED SAND OR STONE DUST IS NOT ACCEPTABLE UNDER ANY CIRCUMSTANCES.

8/17/99
30-MAR-2012 06:14
R:\Drainage\r3307_hyd_drn_bmp1.dgn
$$$$USERNAME$$$$
RD238353 3/30/2012 r3307_hyd_DTL_2G rwdunn RD Qce860.34

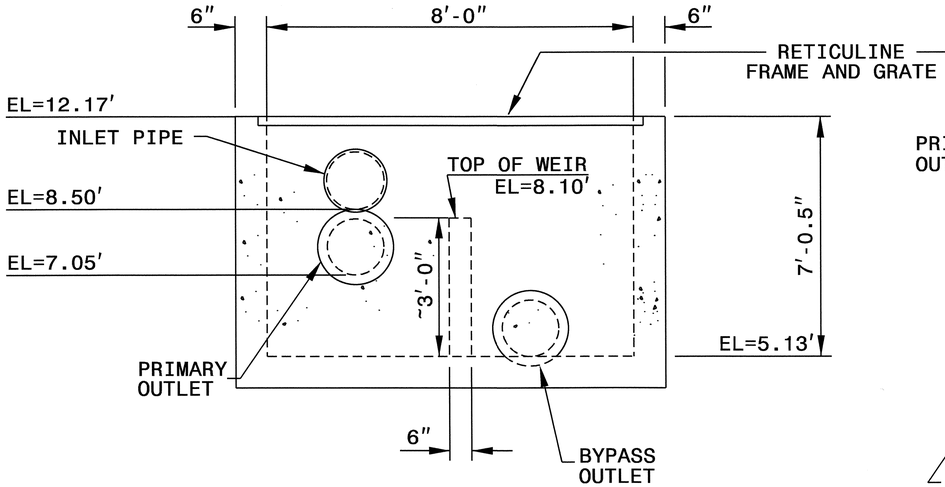
PROJECT REFERENCE NO.	SHEET NO.
R-3307	2-H



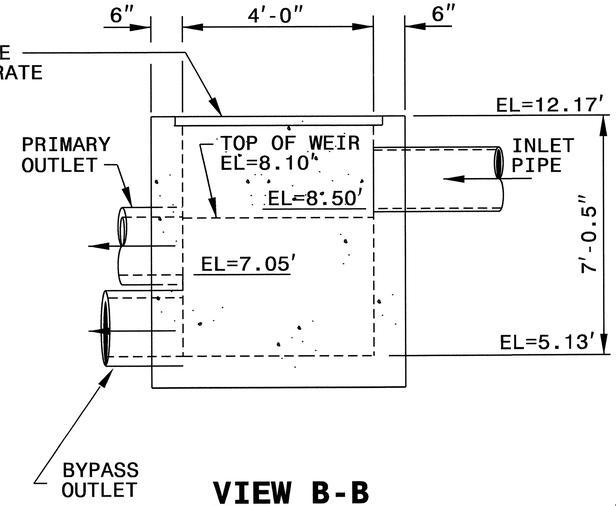
PLAN VIEW



TOP VIEW OF RETICULINE FRAME AND GRATE



VIEW A-A



VIEW B-B

NOTES:

USE CLASS 'B' CONCRETE THROUGHOUT.

PLACE STEPS IN ALL STRUCTURES OVER 3' IN HEIGHT IN ACCORDANCE WITH STD.NO. 840.66. (12" ON CENTERS)

RETICULINE FRAMES AND GRATES TO BE APPROVED BY THE ENGINEER.

USE REBAR PLACEMENT AND QUANTITIES AS SHOWN BY THE ENGINEER.

USE REBAR PLACEMENT AS SHOWN IN STD.NO. 840.31.

NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER JOEL S. HOWERTON 4/24/12

CONCRETE QTY. (YD.^{3})
4.7

DRAINAGE STRUTURE 0510

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

INFILTRATION BASIN SPLITTER BOX DETAIL

ORIGINAL BY: TSpell DATE: Jan.16,2006
MODIFIED BY: LMJ DATE: 3-18-08
CHECKED BY: DATE:
FILE SPEC.: details/tspell/splitter box2.dgn

5/14/99

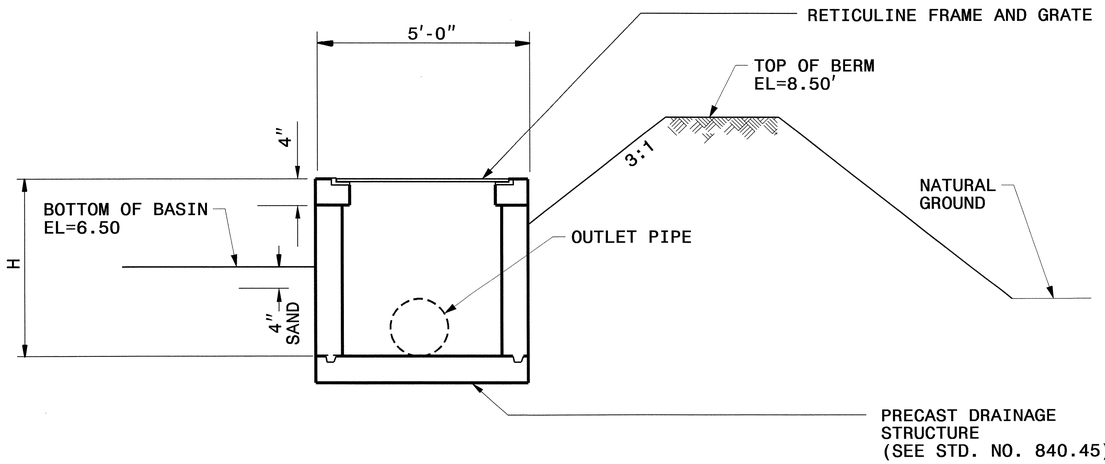
24-APR-2012 10:57
R:\Drainage\r3307_hyd_drn_splitter box.dgn
$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
R-3307	2-1

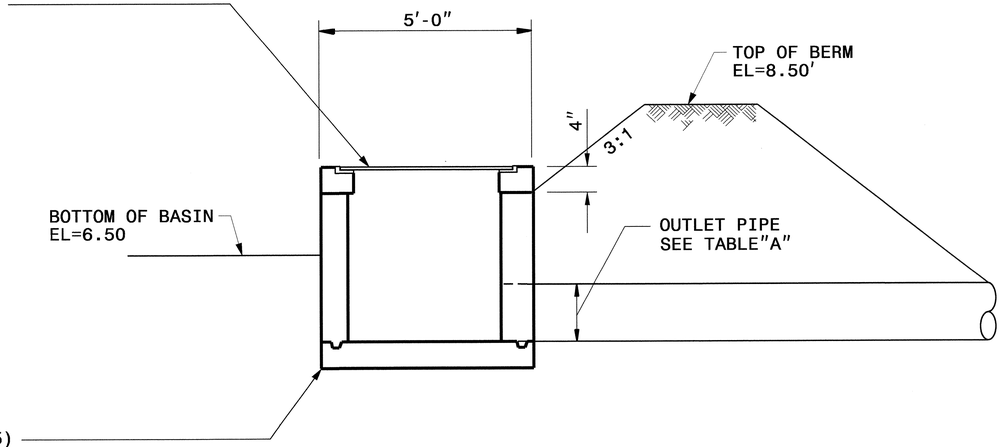
HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 19775 ENGINEER

2 MAY 2012



SOUTH ELEVATION



EAST ELEVATION

GENERAL NOTES:

* CHANGES IN ELEVATIONS MUST BE APPROVED BY THE ENGINEER.
* PRECAST CONCRETE STRUCTURES. USE STD. 840.45
* FORMS ARE TO BE USED FOR THE CONSTRUCTION OF THE BOTTOM SLAB.
* ALL DRAWDOWN STRUCTURES OVER 3 FEET IN DEPTH TO BE PROVIDED WITH STEPS 12 INCH ON CENTERS. STEPS SHALL BE INSTALLED IN ACCORDANCE WITH STANDARD 840.66.
* RETICULINE FRAME AND GRATE TO BE APPROVED BY THE ENGINEER.

TABLE "A"

MINIMUM DIMENSIONS FOR OUTLET CONTROL STRUCTURE

BASIN	PIPE D	OUTLET PIPE INVERT	BOX INVERT	TOP OF GRATE ELEV.	UNDER DRAIN INVERT	BOX DIMENSIONS H	BOX DIMENSIONS L	BOX DIMENSIONS W	BASIN BOTTOM ELEV. @ BOX
INFILTRATION	12"	5.00	5.00	7.25	N/A	2.25'	5'	5'	6.50

*NOT TO SCALE

INFILTRATION BASIN DETAIL OF EMERGENCY OUTLET CONTROL STRUCTURE

ORIGINAL BY: _____ DATE: _____
MODIFIED BY: LMJ DATE: 9-30-10
CHECKED BY: _____ DATE: _____
FILE SPEC.: R3307 hyd drn det emergencyoutlet.dgn

24-APR-2012 10:57
R:\Drainage\r3307_hyd_drn_det_emergencyoutlet.dgn
$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET
R-3307	2-J

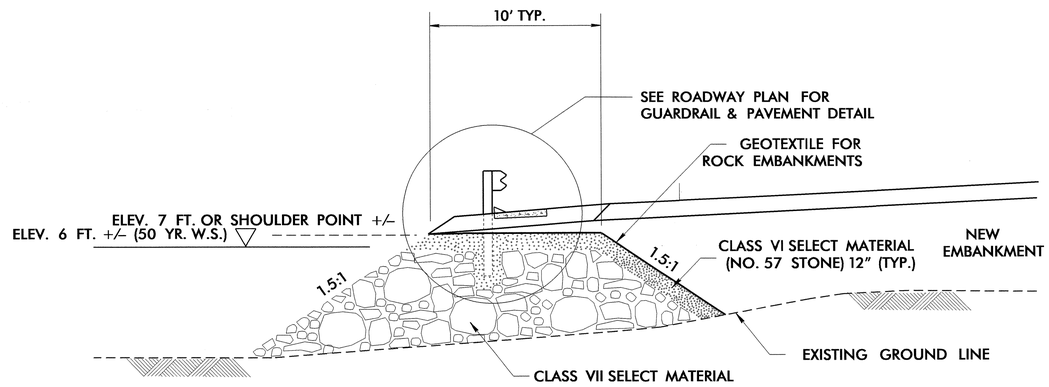
GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 30943 ENGINEER THEIN TUN ZAN

SIGNATURE 4/24/12 DATE

ENGINEER

SIGNATURE DATE



ROCK EMBANKMENTS DETAILS NO. 1

(FROM STA. 27+50 +/- TO 29+24 +/- -L-, LEFT)

N.T.S

USE ROCK EMBANKMENTS AT FOLLOWING LOCATIONS:

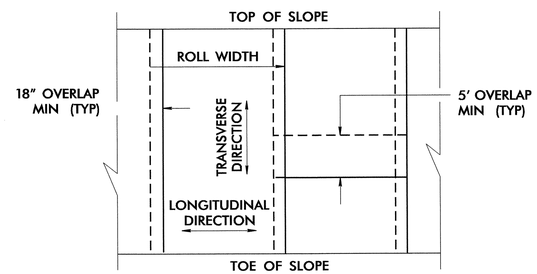
LOCATION NO.	APPROX. BEGIN STA.	APPROX. END STA.	LOCATION
1	27+50 +/- -L-	29+24 +/- -L-	LEFT
2	12+14 +/- -Y2-	13+13 +/- -Y2-	RIGHT
3	18+98 +/- -Y2-	22+50 +/- -Y2-	RIGHT

CONSTRUCT ROCK EMBANKMENTS TO THE ELEVATION 7 FT AS SHOWN IN THE ROCK EMBANKMENTS DETAILS OR TO THE SHOULDER POINT, WHICHEVER IS LOWER AND ACCORDING TO THE ROCK EMBANKMENTS SPECIAL PROVISION.

CLASS VII SELECT MATERIAL SHALL MEET THE GRADATION REQUIREMENTS AS INDICATED IN SECTION 1016 OF THE STANDARD SPECIFICATIONS WITH THE EXCEPTION THAT THE MAXIMUM DIAMETER OF THE ROCK DOES NOT EXCEED TWO FEET.

FOR ROCK EMBANKMENTS, SEE ROCK EMBANKMENTS SPECIAL PROVISION.

USE HOLES FILLED WITH #57 STONE TO INSTALL GUARDRAIL POSTS FROM STA. 27+50 -L- TO STA. 29+24 -L-, LEFT.



GEOTEXTILE OVERLAP DETAIL

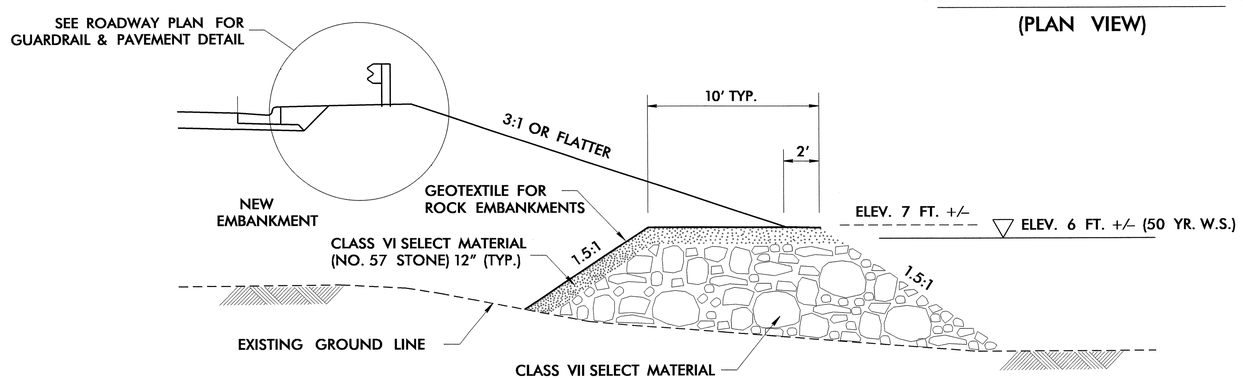
(PLAN VIEW)

ESTIMATED MATERIAL QUANTITIES FOR ROCK EMBANKMENT

ROCK EMBANKMENTS (SELECT MATERIAL, CLASS VII) = 2,600 TONS

#57 STONE (SELECT MATERIAL, CLASS VI) = 1,150 TONS

GEOTEXTILE FOR ROCK EMBANKMENTS = 1,200 SY



ROCK EMBANKMENTS DETAILS NO. 2

(FROM STA. 12+40 +/- TO 13+13 +/- -Y2-, RIGHT)

(FROM STA. 18+98 +/- TO 22+50 +/- -Y2-, RIGHT)

N.T.S

PROJECT NO.: R-3307

CARTERET COUNTY

STATION: SEE TABLE

SHEET 1 OF 1

GEOTECHNICAL ENGINEERING UNIT

■ EASTERN REGIONAL OFFICE

☐ WESTERN REGIONAL OFFICE

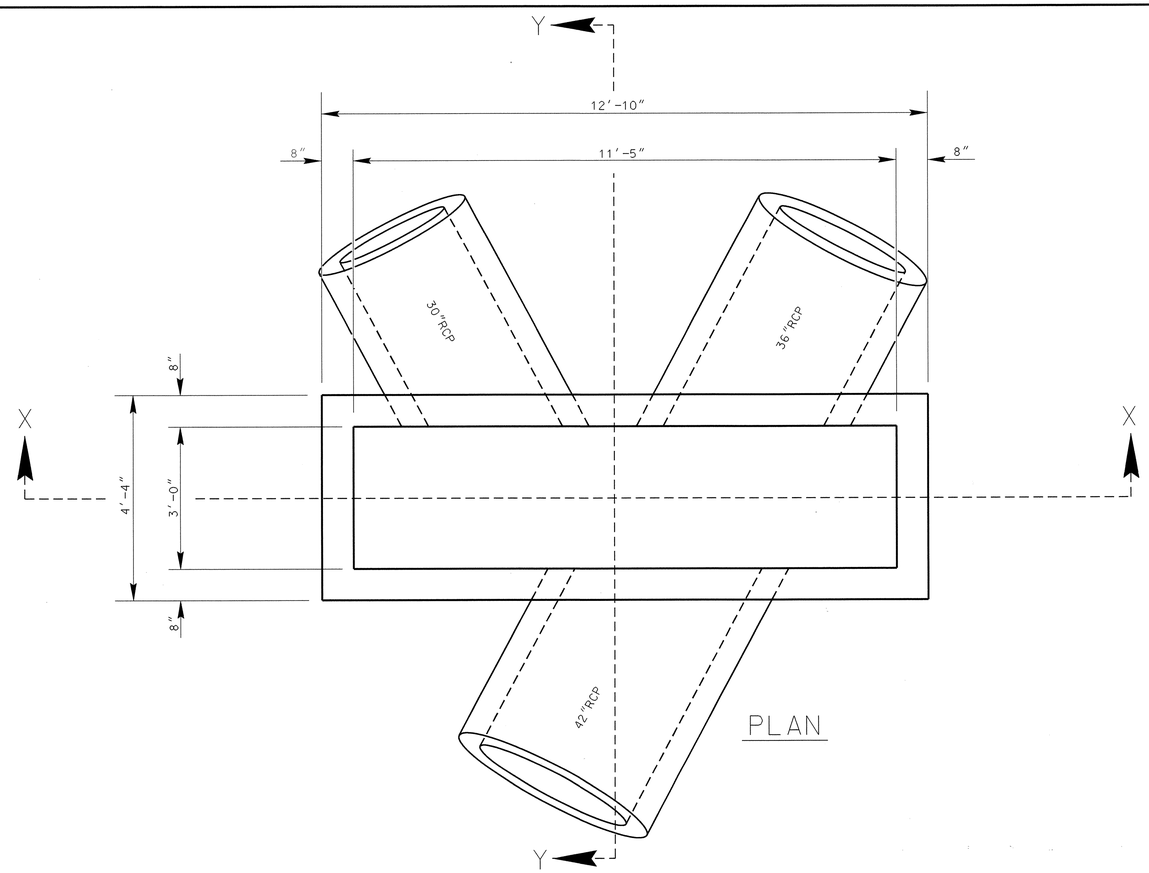
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH

ROCK EMBANKMENTS DETAILS

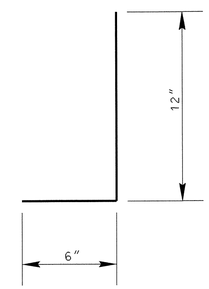
REVISIONS					
NO.	BY	DATE	NO.	BY	DATE
1			3		
2			4		

PREPARED BY: THEIN T ZAN, PE	DATE: 02/2012
REVIEWED BY: JAMES R BATTS, PE	DATE: 02/2012

PROJECT REFERENCE NO.	SHEET NO.
R-3307	2-K



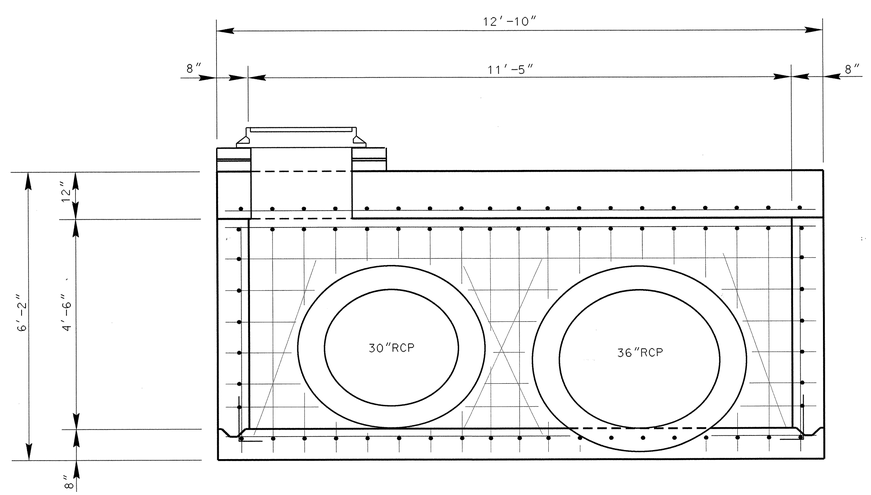
PLAN



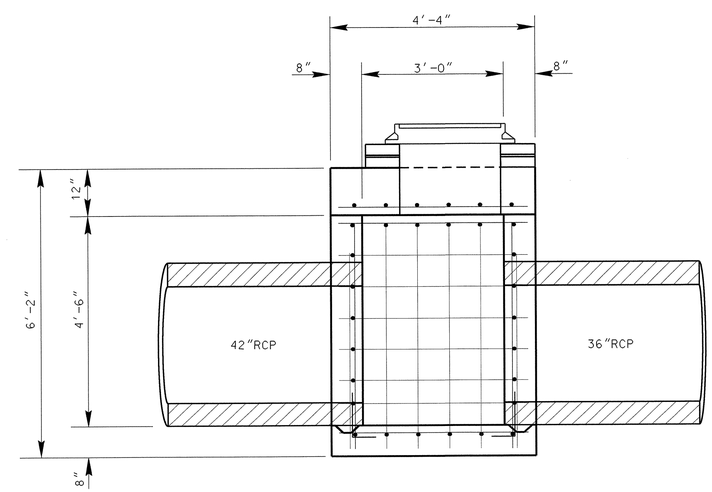
DOWEL

BILL OF MATERIALS

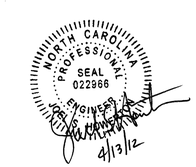
BAR	SIZE	NO.	LENGTH	WEIGHT
H	#4	30	12'-6"	251
H1	#4	69	4'-0"	185
V	#4	50	4'-10"	162
Z	#4	6	4'-0"	16
TOTAL REINF. STEEL (LBS.)				614
TOTAL CONC. (CU. YDS.)				7
DEDUCTIONS FOR ONE PIPE				
30" RCP (CU. YDS.)				-0.3
36" RCP (CU. YDS.)				-0.4
42" RCP (CU. YDS.)				-0.4
TOTAL CONC. (CU. YDS.)				5.9



SECTION X-X



SECTION Y-Y



DRAINAGE STRUCTURE 2211

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

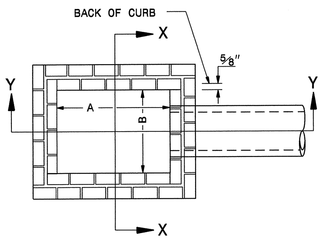
TRAFFIC BEARING JUNCTION BOX WITH MANHOLE

ORIGINAL BY: _____ DATE: _____
MODIFIED BY: rnbritt DATE: 02-29-12
CHECKED BY: DATE: 2/29/12
FILE SPEC.: details/english/rural/r3307trafficbearingjb.dgn

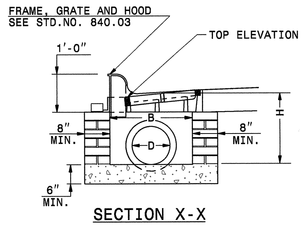
5/14/99

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

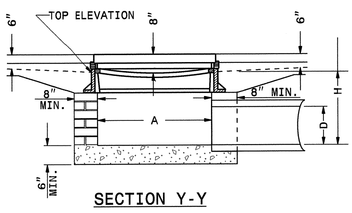
ENGLISH DETAIL DRAWING FOR
MINIMUM DEPTH BRICK CATCH BASIN
12" THRU 24" PIPE



PLAN



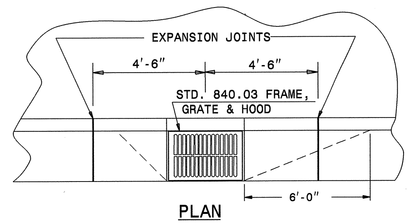
SECTION X-X



SECTION Y-Y

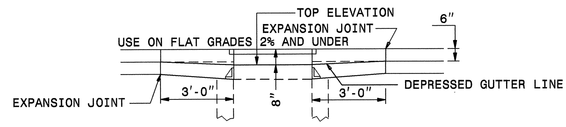
GENERAL NOTES:

MORTAR JOINTS ½" TO ⅝" THICK.
USE CLASS "B" CONCRETE THROUGHOUT.
USE FORMS FOR CONSTRUCTION OF THE BOTTOM SLAB.
DEDUCT FOR PIPE(S) FROM TOTAL CU. YDS. OF BRICK MASONRY.
USE TYPE "E", "F" AND "G" GRATES UNLESS OTHERWISE INDICATED.
USE BRICK OR CONCRETE BLOCK WHICH COMPLIES WITH THE REQUIREMENTS OF SECTION 840 OF THE STANDARD SPECIFICATIONS.
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.
CHAMFER ALL EXPOSED CORNERS 1".
DRAWING NOT TO SCALE.



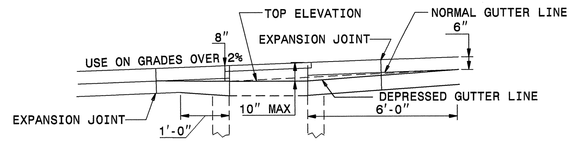
PLAN

CURB AND GUTTER WITH CATCH BASIN ON STEEP GRADES



ELEVATION

NORMAL CURB AND GUTTER ON LIGHT GRADES



ELEVATION

NORMAL CURB AND GUTTER ON STEEP GRADES

MINIMUM DIMENSIONS AND QUANTITIES FOR BRICK CATCH BASIN									
DIMENSIONS OF BOX AND PIPE				CU. YDS. CONC. IN BOX		BRICK MASONRY		DEDUCTIONS ONE PIPE	
PIPE	SPAN	WIDTH	MIN. HEIGHT	BOTTOM SLAB	TOTAL CONC.	BRICK MSNR. IN WALLS	TOTAL BRICK AND CONCRETE	C.M.	R.C.
D	A	B	H						
12"	3'-0"	2'-2"	1'-9"	0.281	0.281	0.481	0.762	0.020	0.042
15"	3'-0"	2'-2"	1'-11"	0.281	0.281	0.562	0.843	0.031	0.047
18"	3'-0"	2'-2"	2'-2"	0.281	0.281	0.642	0.923	0.044	0.065
24"	3'-0"	2'-2"	2'-9"	0.281	0.281	0.828	1.109	0.078	0.121

SHEET 1 OF 1
840D01

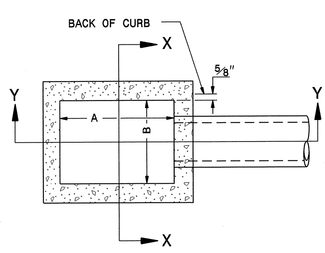
STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ENGLISH DETAIL DRAWING FOR
MINIMUM DEPTH BRICK CATCH BASIN
12" THRU 24" PIPE

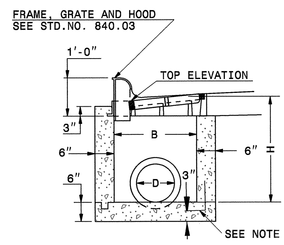
SHEET 1 OF 1
840D01

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

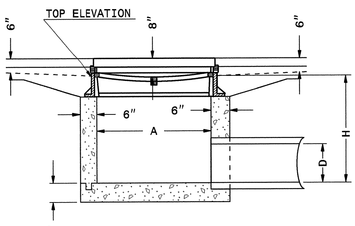
ENGLISH DETAIL DRAWING FOR
MINIMUM DEPTH CONCRETE CATCH BASIN
12" THRU 24" PIPE



PLAN



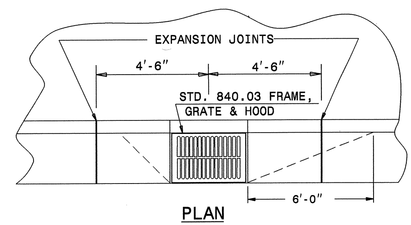
SECTION X-X



SECTION Y-Y

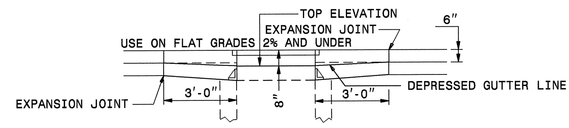
GENERAL NOTES:

USE CLASS "B" CONCRETE THROUGHOUT.
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.
USE TYPE "E", "F" AND "G" GRATES UNLESS OTHERWISE INDICATED.
CONSTRUCT WITH PIPE CROWNS MATCHING.
CHAMFER ALL EXPOSED CORNERS 1".
DRAWING NOT TO SCALE.



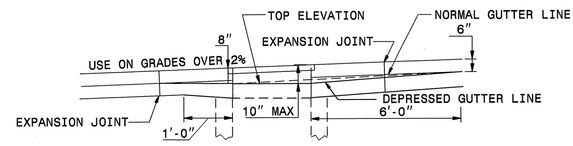
PLAN

CURB AND GUTTER WITH CATCH BASIN ON STEEP GRADES



ELEVATION

NORMAL CURB AND GUTTER ON LIGHT GRADES



ELEVATION

NORMAL CURB AND GUTTER ON STEEP GRADES

MINIMUM DIMENSIONS AND QUANTITIES FOR CONCRETE CATCH BASIN								
DIMENSIONS OF BOX AND PIPE				CU. YDS. CONC. IN BOX			DEDUCTIONS ONE PIPE	
PIPE	SPAN	WIDTH	MIN. HEIGHT	BOTTOM SLAB	CONCRETE IN WALLS	TOTAL CONC.	C.M.	R.C.
D	A	B	H					
12"	3'-0"	2'-2"	1'-9"	0.235	0.343	0.578	0.015	0.026
15"	3'-0"	2'-2"	1'-11"	0.235	0.400	0.635	0.023	0.036
18"	3'-0"	2'-2"	2'-2"	0.235	0.457	0.692	0.033	0.049
24"	3'-0"	2'-2"	2'-9"	0.235	0.590	0.825	0.059	0.085

SHEET 1 OF 1
840D02

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

ENGLISH DETAIL DRAWING FOR
MINIMUM DEPTH CONCRETE CATCH BASIN
12" THRU 24" PIPE

SHEET 1 OF 1
840D02

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

SEE PLATE FOR TITLE

ORIGINAL BY: 2002 STD. 840.01 DATE:
MODIFIED BY: E.F. WARD DATE: 3-1-02
CHECKED BY: DATE: 2/29/12
FILE SPEC:

NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER
4/13/12

PROJECT REFERENCE NO. R-3307
SHEET NO. 2-L

PROJECT REFERENCE NO.	SHEET NO.
R-3307	2-M

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

ENGLISH DETAIL DRAWING FOR

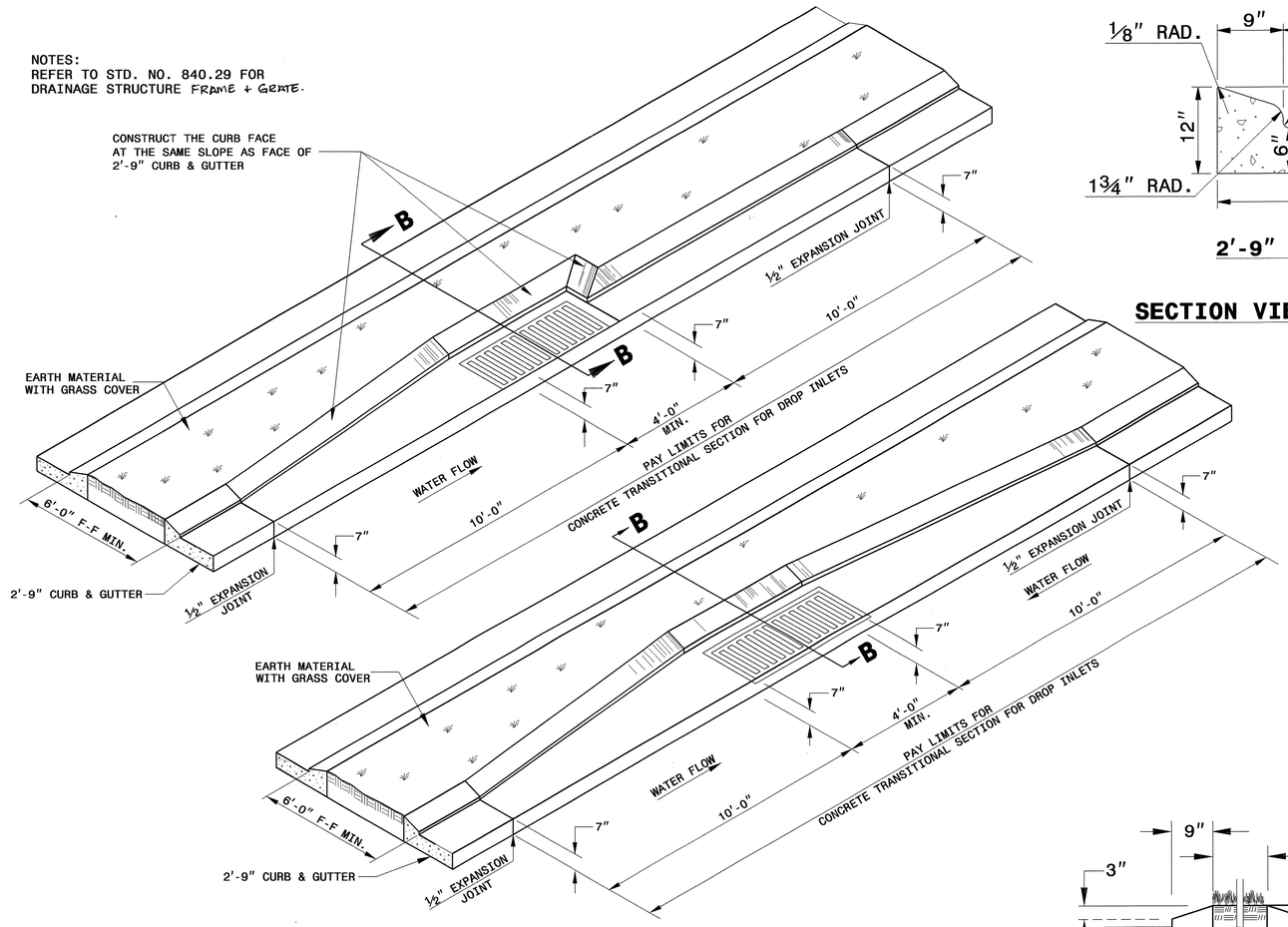
METHOD FOR PLACEMENT OF DROP INLETS IN GRASSED MEDIAN

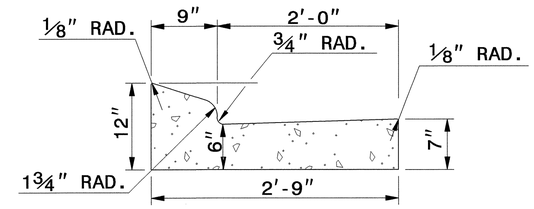
(USING 2'-9" CURB & GUTTER)

SHEET 1 OF 1

852D04

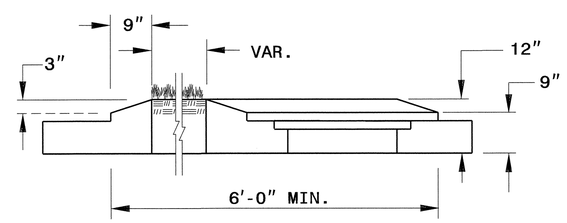
NOTES:
REFER TO STD. NO. 840.29 FOR DRAINAGE STRUCTURE FRAME + GRATE.





2'-9" CURB AND GUTTER

SECTION VIEW OF CURB AND GUTTER



SECTION B-B

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

ENGLISH DETAIL DRAWING FOR

METHOD FOR PLACEMENT OF DROP INLETS IN GRASSED MEDIAN

(USING 2'-9" CURB & GUTTER)

SHEET 1 OF 1

852D04

NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER JOEL S. HOMERTON
4/3/12

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

SEE PLATE FOR TITLE

ORIGINAL BY:	T.Spell	DATE:	Aug.21,2006
MODIFIED BY:	rnbritt	DATE:	02-29-12
CHECKED BY:	[signature]	DATE:	2/29/12
FILE SPEC.:	rnbritt\english\rural\r3307 med di.dgn		

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

PROJECT REFERENCE NO.	SHEET NO.
R-3307	2-N

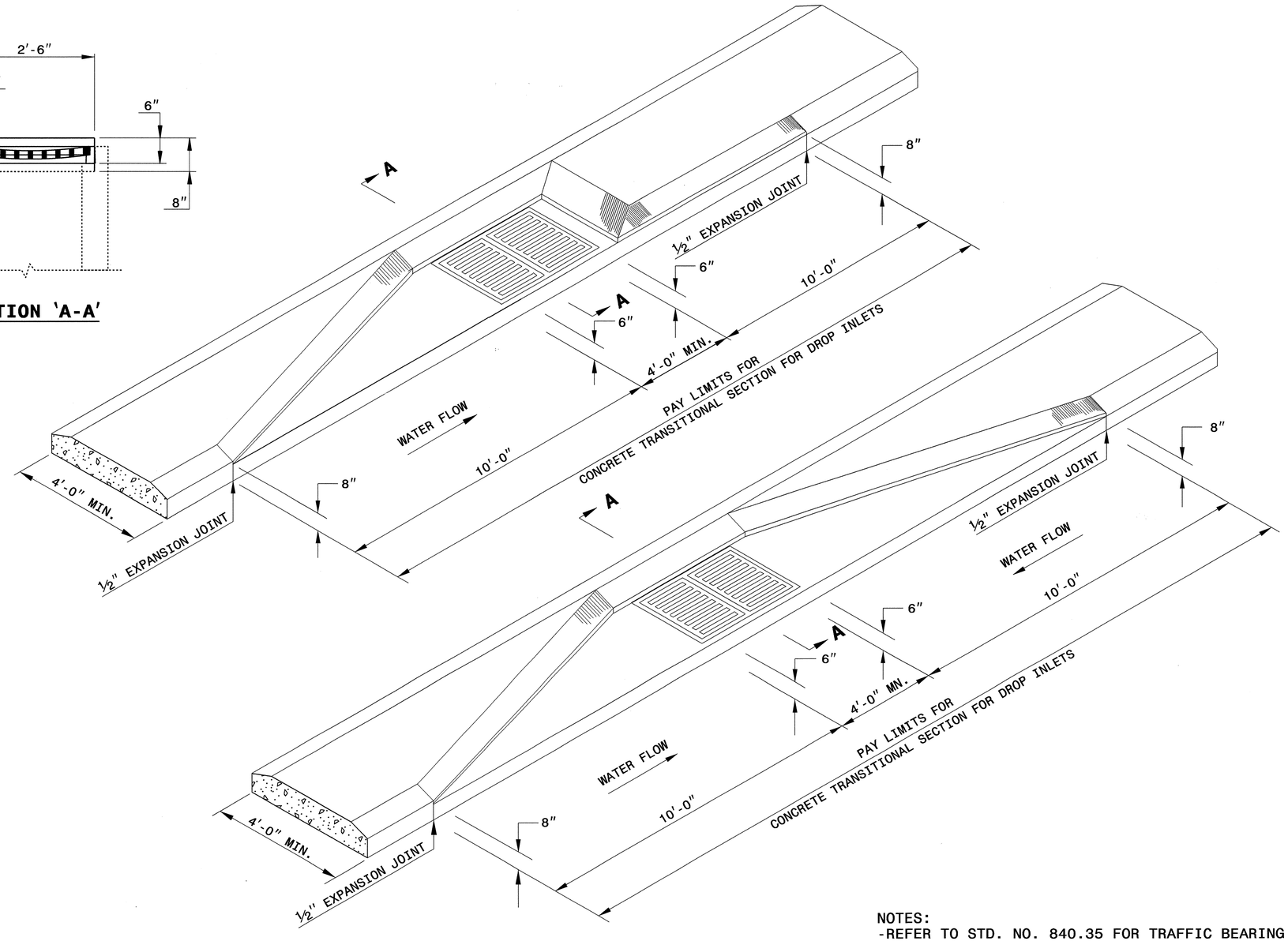
STATE OF
NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ENGLISH DETAIL DRAWING FOR

METHOD FOR PLACEMENT OF DROP INLETS IN CONCRETE ISLANDS

SHEET 1 OF 1

852D06



NOTES:
-REFER TO STD. NO. 840.35 FOR TRAFFIC BEARING DRAINAGE STRUCTURE.
-REFER TO STD. NO. 840.29 FOR GRATE AND FRAME.

STATE OF
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DIVISION OF HIGHWAYS
RALEIGH, N.C.

ENGLISH DETAIL DRAWING FOR

METHOD FOR PLACEMENT OF DROP INLETS IN CONCRETE ISLANDS

SHEET 1 OF 1

852D06

NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER JOEL E. HOWERTON
4/13/12

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

SEE TITLE PLATE

ORIGINAL BY: KKEMPF DATE: 8/2/10
MODIFIED BY: DATE:
CHECKED BY: DATE: 3/5/12
FILE SPEC.: KKEMPF\ENGLISH\852D0601.DGN

05-MAR-2012 15:07
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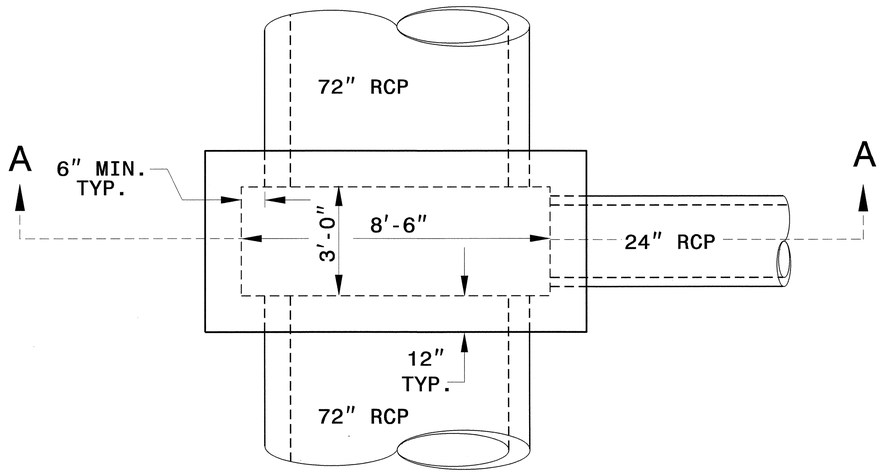
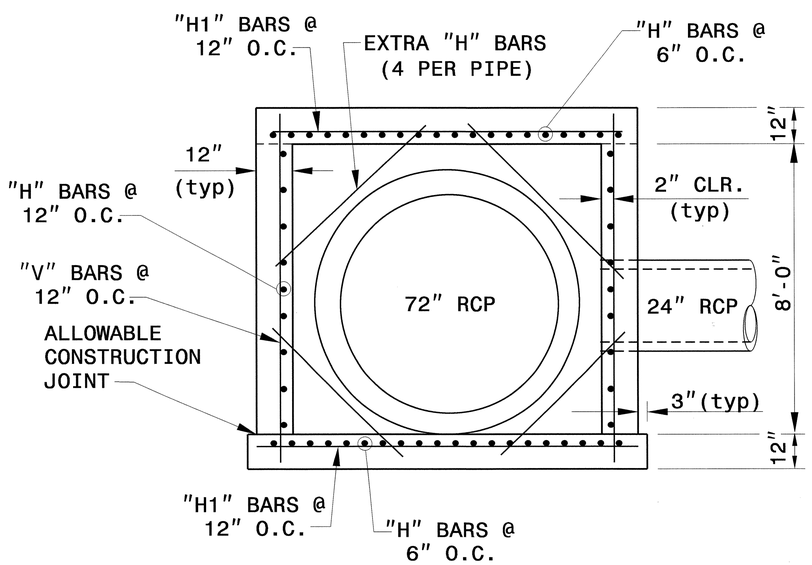
PROJECT REFERENCE NO.	SHEET NO.
R-3307	2-0



PLAN



SECTION A-A

BILL OF MATERIAL

BAR	NO.	SIZE	LENGTH	WEIGHT
H	62	#5	4'-8"	301.8
H1	26	#5	10'-2"	275.7
V	10	#5	9'-8"	100.8
TOTAL REINF. STEEL (lbs.)				678.3
CLASS "B" CONC. (cu. yds.)				12.2

NO DEDUCTIONS HAVE BEEN MADE FOR PIPE OPENINGS

GENERAL NOTES:

-CONSTRUCT THE BASE SLAB BY FORMING.

-SEE STD. DWG. 840.00 FOR CONSTRUCTION OF BASE SLAB IF PIPE IS SET INTO BASE SLAB.

-USE CLASS 'B' CONCRETE THROUGHOUT.

-CONSTRUCTION OPTIONS: MONOLITHIC POUR; CONSTRUCTION JOINTS AT UNION OF WALLS WITH FLOOR AND/OR TOP SLAB.

-CUT, BEND OR RELOCATE REINFORCING STEEL AS NEEDED TO POSITION PIPE AS DIRECTED BY THE ENGINEER.

-CHAMFER ALL EXPOSED CORNERS 1".

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

-JUNCTION BOXES OVER 3'-6" IN DEPTH WITH MANHOLES REQUIRE STEPS TO BE PLACED ON 1'-2" CTRS. REFERENCE STD. NO. 840.66.

DRAINAGE STRUCTURE 1619

NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER JOHN E. HOUSTON 4/13/12

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

DETAIL OF SPECIAL JUNCTION BOX

ORIGINAL BY: rnbritt DATE: 05-10-06
MODIFIED BY: kakempf DATE: 02-29-12
CHECKED BY: [signature] DATE: 3/2/12
FILE SPEC.: details/kkempf/english/72jb90sk.dgn

02-MAR-2012 09:05
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PROJECT REFERENCE NO.	SHEET NO.
R-3307	2-P

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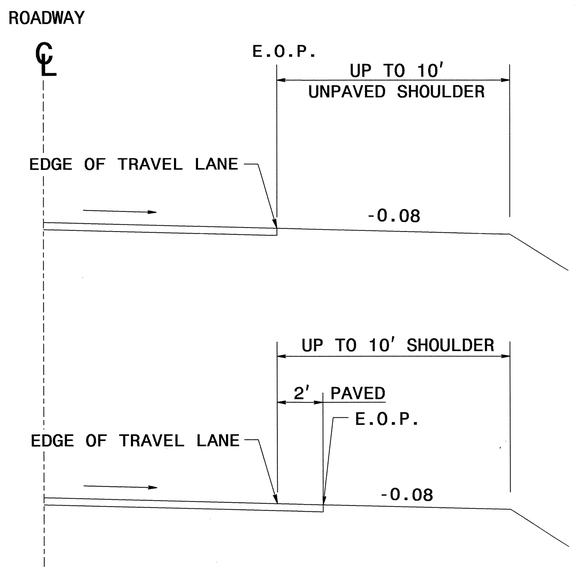
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ENGLISH DETAIL DRAWING FOR
METHOD OF SHOULDER CONSTRUCTION
HIGH SIDE OF SUPERELEVATED CURVE
METHOD I (SHOULDERS UP TO 10')

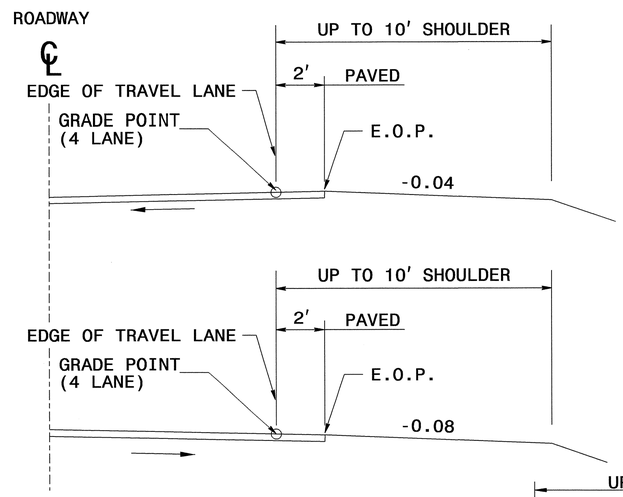
SHEET 1 OF 1

560D01

NORMAL OUTSIDE SHOULDER SLOPES

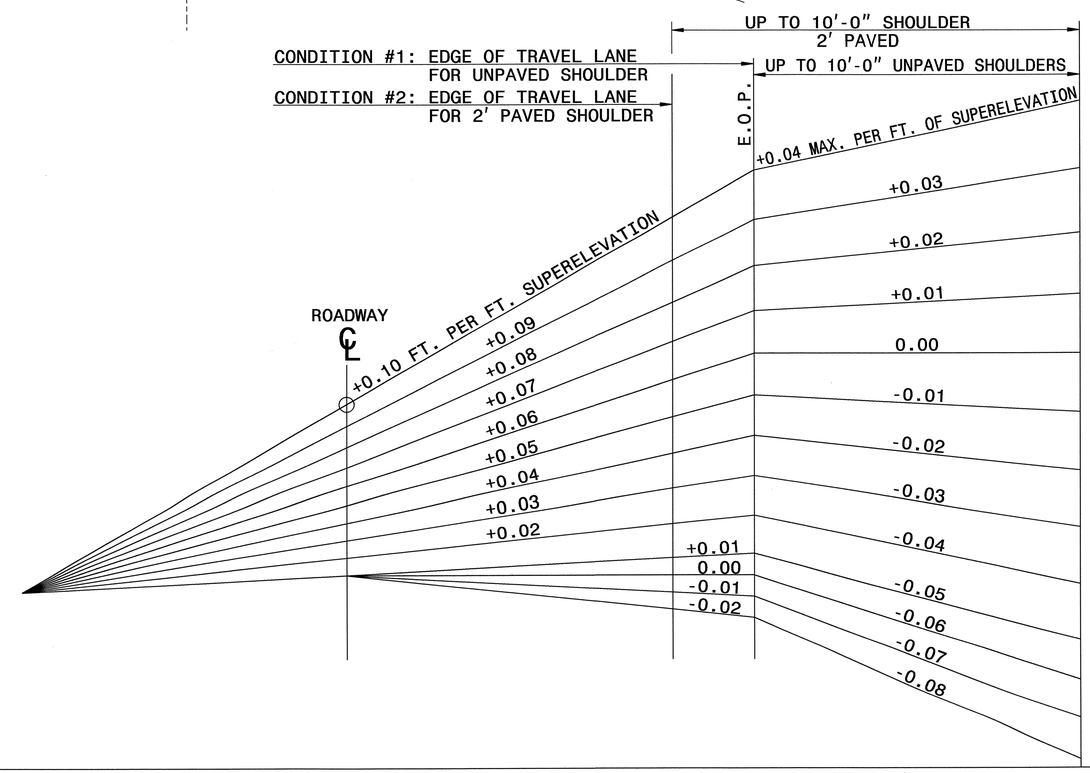


NORMAL MEDIAN SHOULDER SLOPES



NOTE: ON LOW SIDE OF SUPERELEVATED PAVEMENT USE NORMAL SHOULDER SLOPE UNLESS NORMAL SHOULDER SLOPE IS FLATTER THAN SUPERELEVATION, THEN USE SUPER-ELEVATION RATE ON SHOULDER.

NOTE: "ROLL-OVER" ALGEBRAIC DIFFERENCE IN RATES OF CROSS SLOPE NOT TO EXCEED 0.06 AS SHOWN. IF SUPER-ELEVATION IS REVOLVED ABOUT CENTER LINE OF PAVEMENT, SAME APPLIES. ON DIVIDED ROADWAYS, GRADE POINT TO BE AT THE MEDIAN EDGE OF TRAVEL LANE.



STATE OF
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RALEIGH, N.C.

ENGLISH DETAIL DRAWING FOR
METHOD OF SHOULDER CONSTRUCTION
HIGH SIDE OF SUPERELEVATED CURVE
METHOD I (SHOULDERS UP TO 10')

SHEET 1 OF 1

560D01

NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER JOHN L. HOWERTON
4/13/12

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

SEE PLATE FOR TITLE

ORIGINAL BY: KKempf DATE: 5-15-09
MODIFIED BY: DATE:
CHECKED BY: DATE: 3/16/12
FILE SPEC: /engdward/stds/stdstodetails/3000f/0300d01.dgn

5/14/99

16-MAR-2012 09:48
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PROJECT REFERENCE NO.	SHEET NO.
R-3307	2-Q

STATE OF
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DIVISION OF HIGHWAYS
RALEIGH, N.C.

ENGLISH DETAIL DRAWING FOR

METHOD OF SHOULDER CONSTRUCTION

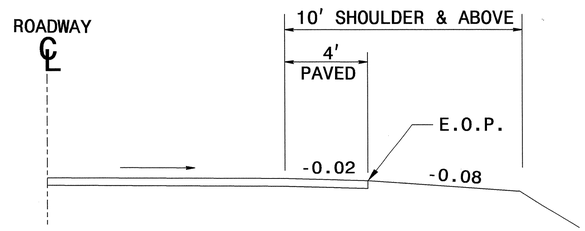
HIGH SIDE OF SUPERELEVATED CURVE

METHOD II (SHOULDERS 10' AND ABOVE)

SHEET 1 OF 1

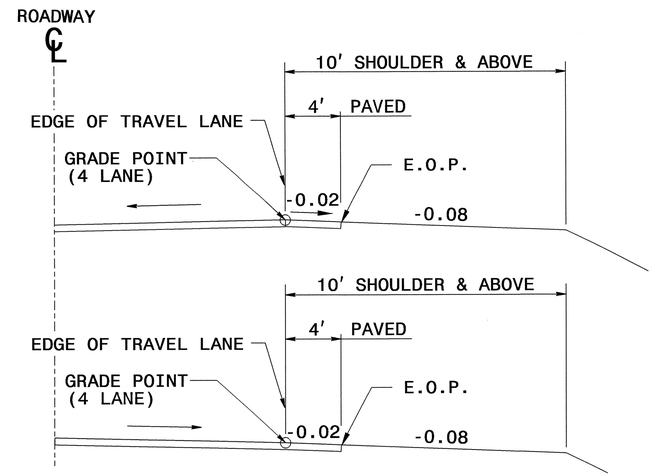
560D02

NORMAL OUTSIDE SHOULDER SLOPES

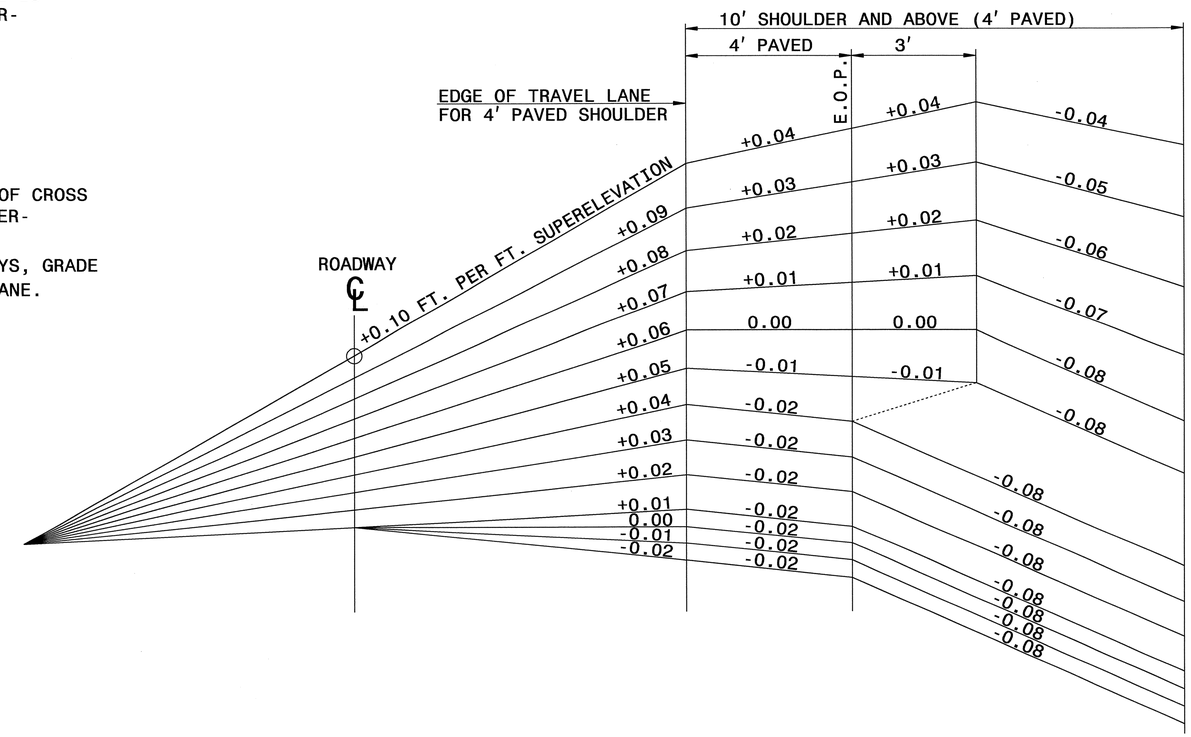


NOTE: ON LOW SIDE OF SUPERELEVATED PAVEMENT USE NORMAL SHOULDER SLOPE UNLESS NORMAL SHOULDER SLOPE IS FLATTER THAN SUPERELEVATION, THEN USE SUPER-ELEVATION RATE ON SHOULDER.

NORMAL MEDIAN SHOULDER SLOPES



NOTE: "ROLL-OVER" ALGEBRAIC DIFFERENCE IN RATES OF CROSS SLOPE NOT TO EXCEED 0.06 AS SHOWN. IF SUPER-ELEVATION IS REVOLVED ABOUT CENTER LINE OF PAVEMENT, SAME APPLIES. ON DIVIDED ROADWAYS, GRADE POINT TO BE AT THE MEDIAN EDGE OF TRAVEL LANE.



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

ENGLISH DETAIL DRAWING FOR

METHOD OF SHOULDER CONSTRUCTION

HIGH SIDE OF SUPERELEVATED CURVE

METHOD II (SHOULDERS 10' AND ABOVE)

SHEET 1 OF 1

560D02

NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER JOEL S. HOWERTON
4/13/12

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

SEE PLATE FOR TITLE

ORIGINAL BY: KKempf DATE: 5-15-09
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CHECKED BY: DATE: 3/16/12
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5/14/99

16-MAR-2012 09:55
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$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
R-3307	2-R
R/W SHEET NO.	

Stantec

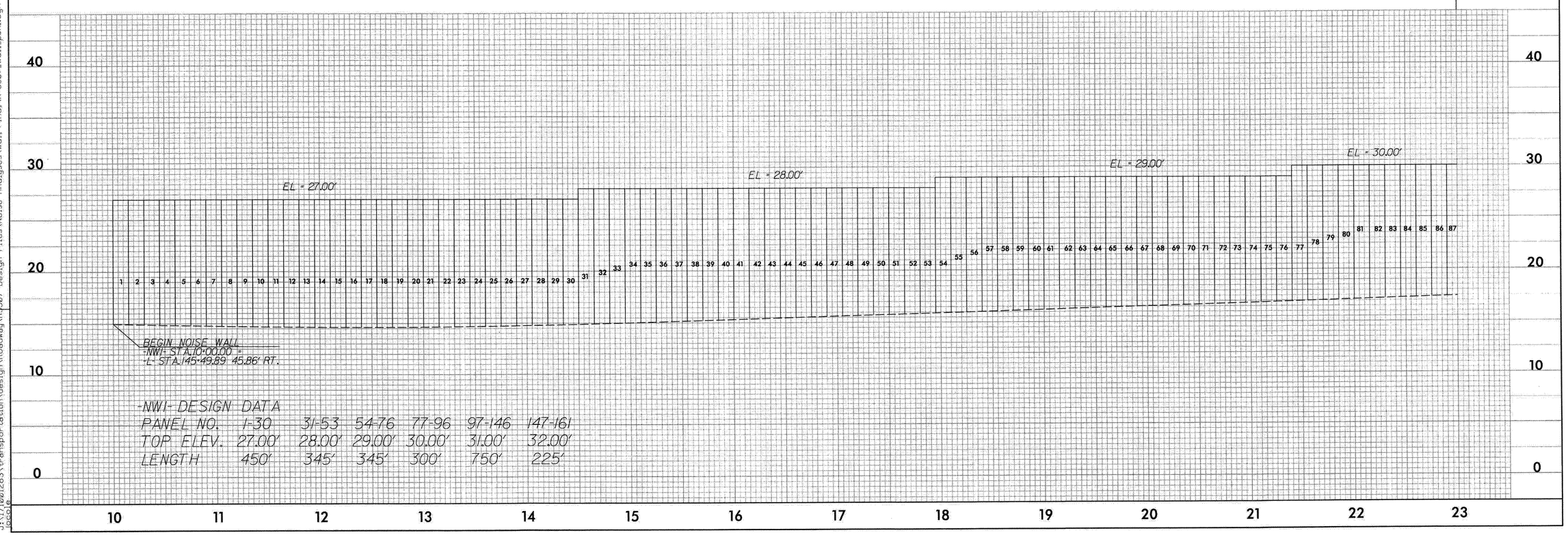
Stantec Consulting Services Inc.
801 Jones Franklin Road
Suite 300
Raleigh, NC 27606
Tel. (919) 851-6866
Fax. (919) 851-7024
www.stantec.com
License No. F-0672

NORTH CAROLINA PROFESSIONAL SEAL 20188 ENGINEER PAUL R. KOCH

BEGIN NOISE WALL
-NW1- STA.10+00.00 =
-L- STA.145+49.89 45.86' RT.

10+00 15+00 20+00

MATCH LINE SEE SHEET 2
-NW1- STA. 23+00.00



REVISIONS

8/17/99

10/2/2012
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PROJECT REFERENCE NO.	SHEET NO.
R-3307	2-S
R/W SHEET NO.	

Stantec

Stantec Consulting Services Inc.
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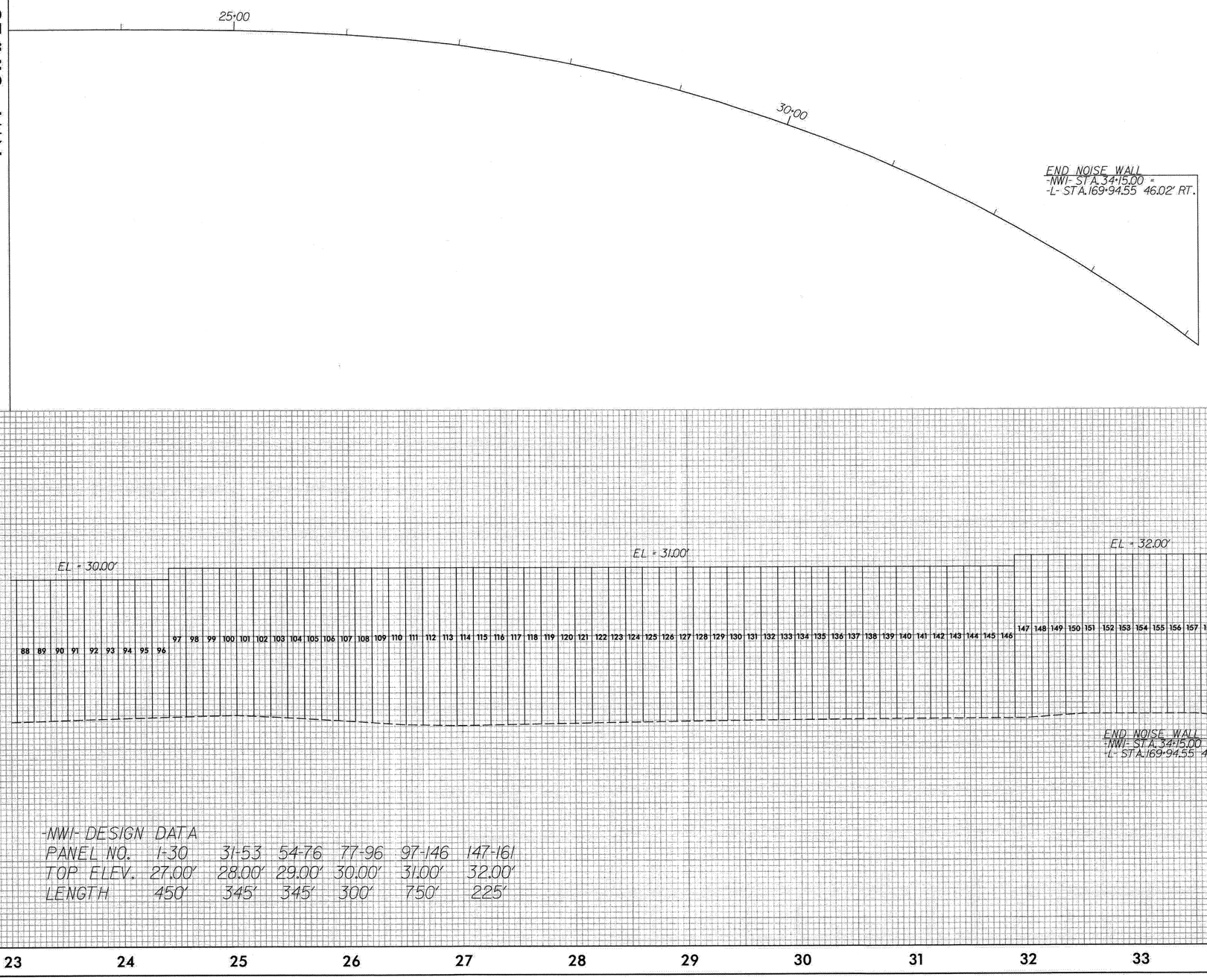
www.stantec.com
License No. F-0672

NORTH CAROLINA PROFESSIONAL SEAL 20188 ENGINEER PAUL R. KOCH

8/17/99

REVISIONS

MATCH LINE SEE SHEET 1 -NW1- STA. 23+00.00



-NW1- DESIGN DATA

PANEL NO.	1-30	31-53	54-76	77-96	97-146	147-161
TOP ELEV.	27.00'	28.00'	29.00'	30.00'	31.00'	32.00'
LENGTH	450'	345'	345'	300'	750'	225'

10/2/2012
J:\170018283\transportation\design\Roadway\R3307 Design Files\Noise Analyses\Wall Final\R-3307_Wall_psh2.dgn
jacole

PROJECT REFERENCE NO.	SHEET
(R-3307)	2-T

GEOTECHNICAL ENGINEER

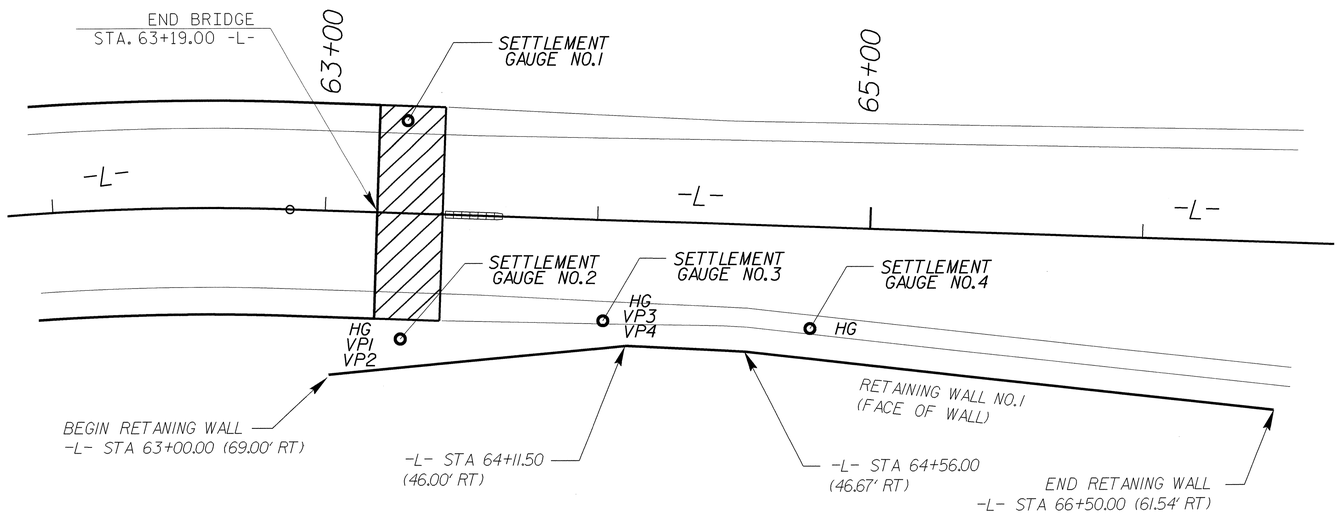
NORTH CAROLINA PROFESSIONAL SEAL 30943 ENGINEER THEIN TUN TAN

9/26/13

SIGNATURE DATE

ENGINEER

SIGNATURE



SETTLEMENT GAUGE, VW PIEZOMETER & HYDRAULIC SETTLEMENT GAUGE LOCATIONS

NOT TO SCALE

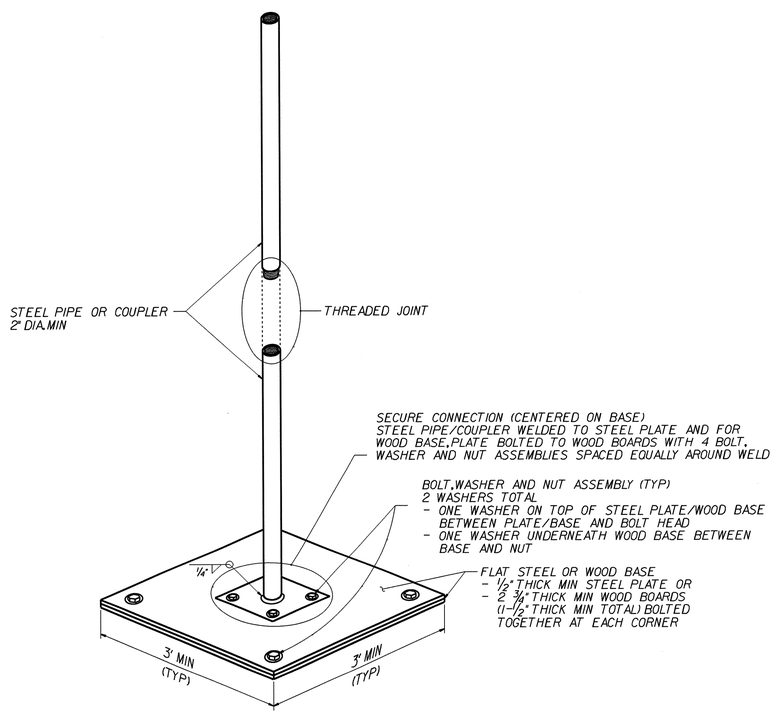
NAD 83 / 2001

SETTLEMENT GAUGE LOCATIONS		
GAUGE NO.	STATION	OFFSET
1	63+30.00± -L-	30 FT. ±, LT
2	63+30.00± -L-	45 FT. ±, RT
3	64+00.00± -L-	40 FT. ±, RT
4	64+75.00± -L-	40 FT. ±, RT

NOTES

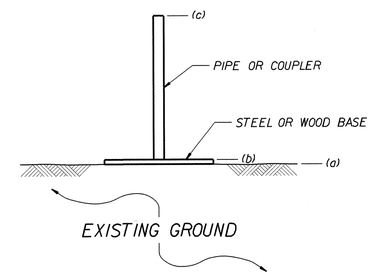
1. FOR STANDARD EMBANKMENT MONITORING, SEE EMBANKMENT SETTLEMENT GAUGES PROVISION.
2. INSTALL SETTLEMENT GAUGES AFTER CLEARING AND GRUBBING GAUGE LOCATIONS AND BEFORE CONSTRUCTING EMBANKMENTS WITH EMBANKMENT MONITORING.
3. THE ENGINEER WILL INSTALL A HYDRAULIC SETTLEMENT GAUGE (HG) WITHIN TEN FEET OF THE CONVENTIONAL SETTLEMENT GAUGES. SEE THE EMBANKMENT MONITORING SPECIAL PROVISION.
4. FOR VW PIEZOMETERS (VP) AND HYDRAULIC SETTLEMENT GAUGES (HG), SEE EMBANKMENT INSTRUMENTATION SPECIAL PROVISION.
5. LOCATIONS OF ALL INSTRUMENTS SHOWN IN THE PLAN ARE APPROXIMATE. THE ENGINEER WILL DETERMINE THE EXACT LOCATIONS AT THE TIME OF INSTALLATION.

QUANTITIES	
EMBANKMENT SETTLEMENT GAUGE	4 EA.
VW PIEZOMETER	4 EA.

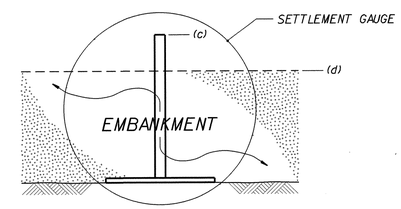


SETTLEMENT GAUGE

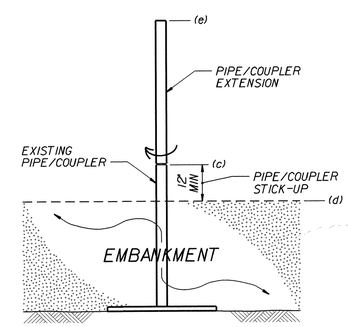
EMBANKMENT MONITORING SEQUENCE



1. PLACE STEEL/WOOD BASE AT APPROXIMATE GAUGE LOCATIONS SHOWN IN THE PLANS AS DETERMINED BY THE ENGINEER.
2. SET BASE ON LEVEL GROUND SO PIPE/COUPLER IS PLUMB.
3. BEFORE CONSTRUCTING EMBANKMENT, NOTIFY ENGINEER TO SURVEY AND RECORD THE FOLLOWING:
   (a) EXISITING GROUND ELEVATION.
   (b) TOP OF BASE ELEVATION AND
   (c) TOP OF PIPE ELEVATION.



4. MAKE SETTLEMENT GAUGE HIGHLY VISIBLE SO GAUGE IS NOT HIT OR DAMAGED.
5. PLACE AND COMPACT FILL MATERIAL AROUND SETTLEMENT GAUGE WITHOUT DISTURBING GAUGE.
6. NOTIFY ENGINEER WEEKLY TO SURVEY AND RECORD THE FOLLOWING:
   (c) TOP OF PIPE ELEVATION AND
   (d) EMBANKMENT ELEVATION.



7. CONNECT PIPE/COUPLER EXTENSION TO EXISTING PIPE/COUPLER AS NEEDED TO MAINTAIN A PIPE/COUPLER STICK-UP OF AT LEAST 12" WHILE MONITORING SETTLEMENT.
8. SCREW PIPES/COUPLERS TOGETHER HAND TIGHT AND THEN TIGHTEN 2 TO 3 FULL TURNS WITH A WRENCH.
9. NOTIFY ENGINEER TO SURVEY AND RECORD THE FOLLOWING:
   (c) TOP OF PIPE ELEVATION.
   (d) EMBANKMENT ELEVATION AND
   (e) TOP OF EXTENSION ELEVATION.
10. RETURN TO STEP 4 WITH NEW TOP OF PIPE ELEVATION EQUAL TO TOP OF EXTENSION ELEVATION.

PREPARED BY: TTZ	DATE: 09/2013
REVIEWED BY: JRB	DATE: 09/2013

GEOTECHNICAL ENGINEERING UNIT

☒ EASTERN REGIONAL OFFICE
☐ WESTERN REGIONAL OFFICE

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH

EMBANKMENT MONITORING & INSTRUMENTATION

REVISIONS

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

PROJECT REFERENCE NO.	SHEET
R-3307	2-U

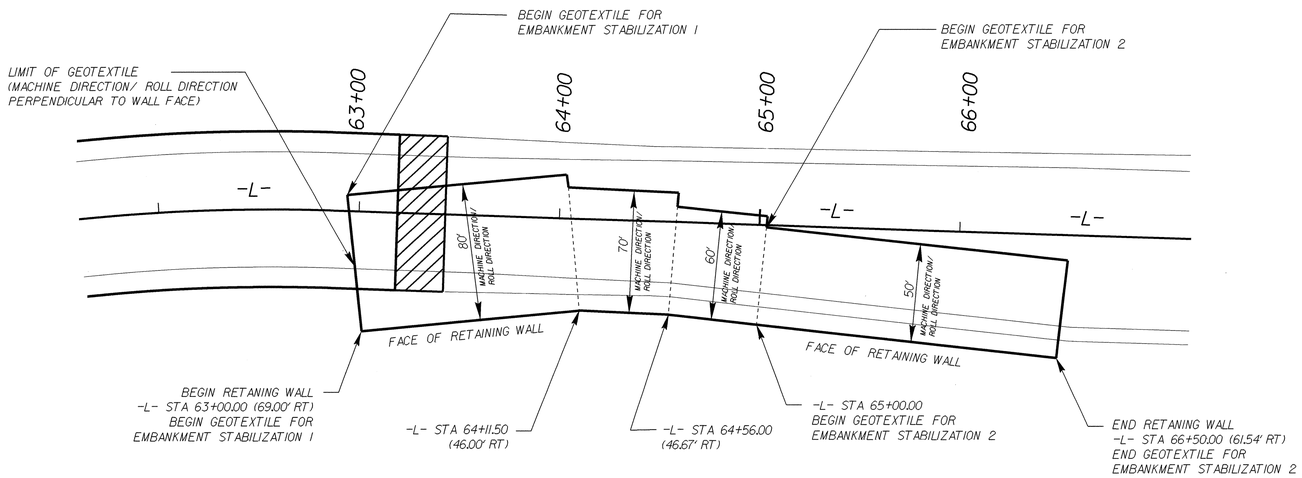
GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 30943 ENGINEER HEIN TUN ZAN

SIGNATURE 9/26/13 DATE

ENGINEER

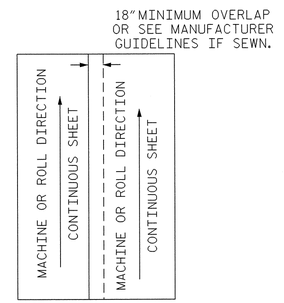
SIGNATURE DATE



GEOTEXTILE LAYOUT PLAN FOR RETAINING WALL NO. 1

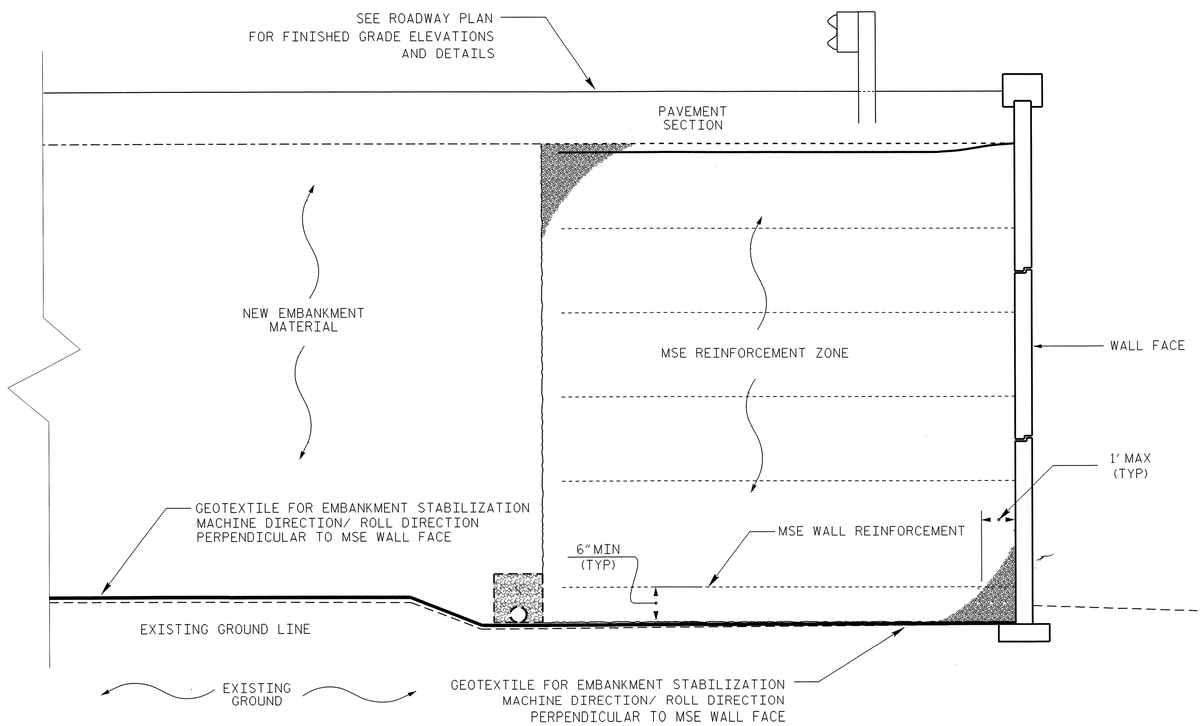
NTS

NAD 83 / 2001



GEOTEXTILE OVERLAP DETAIL

NTS



GEOTEXTILE TYPICAL SECTION VIEW FOR RETAINING WALL NO. 1

SEE STRUCTURE PLANS FOR MSE RETAINING WALL DETAILS.
SEE ROADWAY PLANS FOR ROADWAY DETAILS.

NOTES:

FOR GEOTEXTILES, SEE GEOTEXTILE FOR EMBANKMENT STABILIZATION SPECIAL PROVISION.

PLACE GEOTEXTILE WITHOUT ANY WRINKLES OR CREASES.

NO SEAMS OR JOINTS ARE ALLOWED IN THE GEOTEXTILE MACHINE/ROLL DIRECTION.

MAINTAIN A MINIMUM SPACE OF 6" BETWEEN GEOTEXTILE AND WALL REINFORCEMENT WITHIN MSE REINFORCEMENT ZONE.

THE MINIMUM OVERLAP BETWEEN ADJACENT GEOTEXTILE OF THE SAME MACHINE/ROLL DIRECTION IS 18" UNLESS SEWING IS USED TO ACHIEVE THE REQUIRED SEAM STRENGTH.

GEOTEXTILE FOR EMBANKMENT STABILIZATION 1 WITH MACHINE/ROLL DIRECTION PERPENDICULAR TO WALL FACE MUST HAVE A CONTINUOUS LENGTH OF 80 FEET FROM STA. 63+00± -L- TO STA. 64+11.50± -L-.

GEOTEXTILE FOR EMBANKMENT STABILIZATION 1 WITH MACHINE/ROLL DIRECTION PERPENDICULAR TO WALL FACE MUST HAVE A CONTINUOUS LENGTH OF 70 FEET FROM STA. 64+11.50± -L- TO STA. 64+56± -L-.

GEOTEXTILE FOR EMBANKMENT STABILIZATION 1 WITH MACHINE/ROLL DIRECTION PERPENDICULAR TO WALL FACE MUST HAVE A CONTINUOUS LENGTH OF 60 FEET FROM STA. 64+56± -L- TO STA. 65+00± -L-.

GEOTEXTILE FOR EMBANKMENT STABILIZATION 2 WITH MACHINE/ROLL DIRECTION PERPENDICULAR TO WALL FACE MUST HAVE A CONTINUOUS LENGTH OF 50 FEET FROM STA. 65+00± -L- TO STA. 66+50± -L-.

FOR RETAINING WALL NO. 1, SEE RETAINING WALL NO. 1 PLANS.

ESTIMATED QUANTITY (SQUARE YARD)	
GEOTEXTILE FOR EMBANKMENT STABILIZATION 1	1,750 SY
GEOTEXTILE FOR EMBANKMENT STABILIZATION 2	850 SY

PREPARED BY: T.T.ZAN	DATE: 09/2013
REVIEWED BY: J.R.BATTS	DATE: 09/2013

GEOTECHNICAL ENGINEERING UNIT

☒ EASTERN REGIONAL OFFICE
☐ WESTERN REGIONAL OFFICE
☐ CONTRACT OFFICE

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH

GEOTEXTILE FOR EMBANKMENT STABILIZATION FOR RETAINING WALL NO. 1

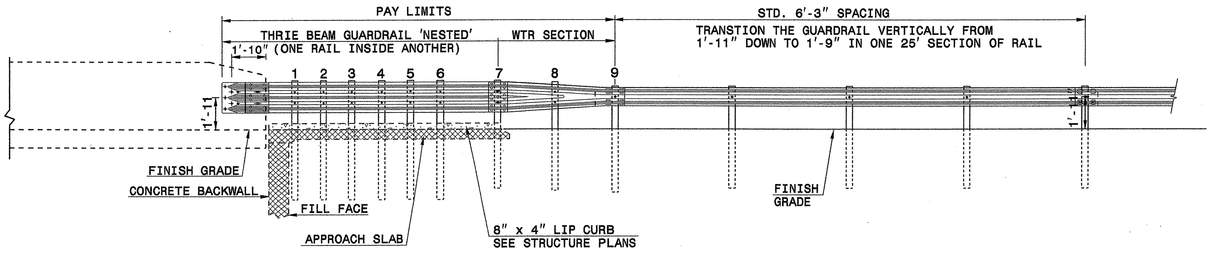
REVISIONS

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

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

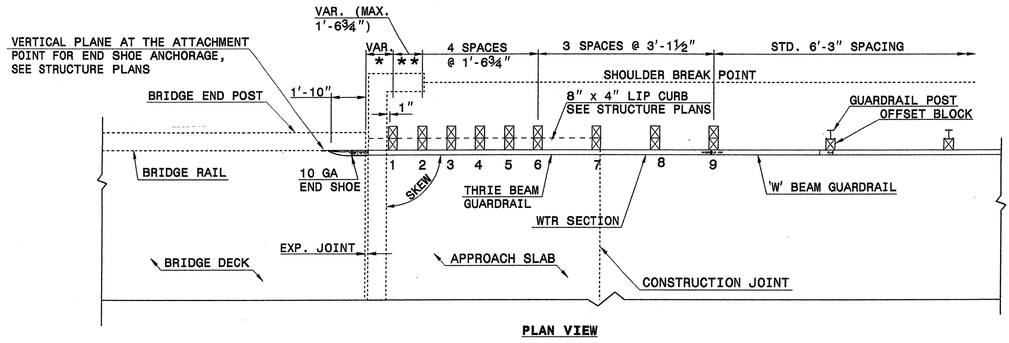
STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ENGLISH DETAIL DRAWING FOR
STRUCTURE ANCHOR UNITS
GUARDRAIL ANCHOR UNIT, TYPE III FOR ATTACHMENT TO BRIDGE



ELEVATION

NOTE:
**POST NOT REQUIRED FOR SKEW ANGLES GREATER THAN 150° OR LESS THAN 30° UNLESS OTHERWISE DIRECTED BY THE ENGINEER.
*THE DISTANCE FROM END OF BRIDGE RAIL TO CENTER LINE OF THE FIRST POST SHOULD BE 11½" IF CONCRETE BACKWALL IS NOT PRESENT.
-SHOULDER BERM GUTTER MUST BE INSTALLED TO THE LIMITS 8" x 4" LIP CURB IS SHOWN IF ANCHOR UNIT IS NOT ADJACENT TO AN APPROACH SLAB.
-MEASURE GUARDRAIL HEIGHT FROM THE TOP OF ADJACENT SURFACE (SHOULDER, BERM, OR GUTTER).
-LAP JOINTS IN THE DIRECTION OF TRAFFIC FLOW.
-SEE SHEET 5 FOR POST SECTIONS 1 THRU 9.



PLAN VIEW

GUARDRAIL ANCHOR UNIT, TYPE III FOR ATTACHMENT TO RAIL ON BRIDGE - SUB REGIONAL TIER

SHEET 2 OF 7
862d03

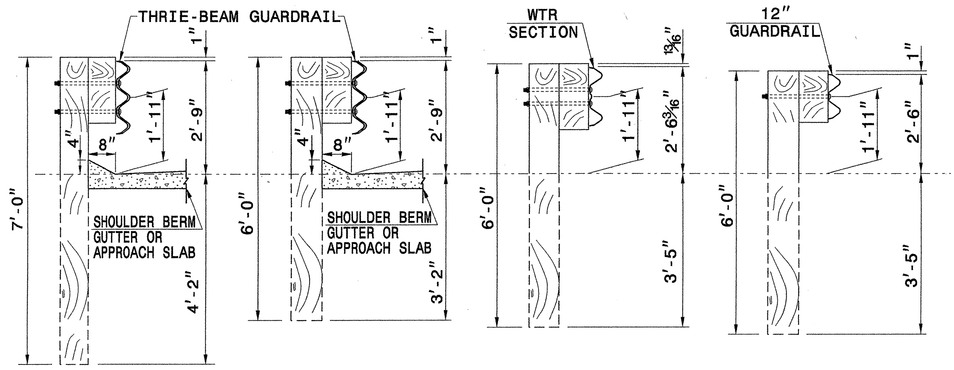
STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ENGLISH DETAIL DRAWING FOR
STRUCTURE ANCHOR UNITS
GUARDRAIL ANCHOR UNIT, TYPE III FOR ATTACHMENT TO BRIDGE -

SHEET 2 OF 7
862d03

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

ENGLISH DETAIL DRAWING FOR
STRUCTURE ANCHOR UNITS
GUARDRAIL ANCHOR UNIT, TYPE III

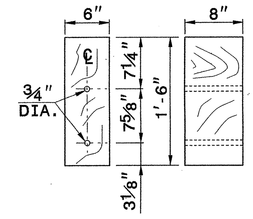


SECTION OF THRIE BEAM POSTS 1 THRU 6

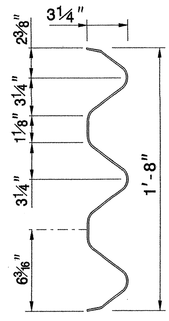
SECTION OF THRIE BEAM POST 7

SECTION OF WTR BEAM POST 8

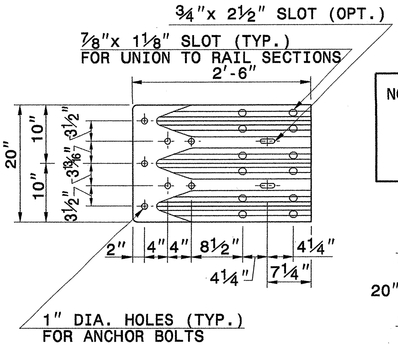
SECTION OF 'W' BEAM POST 9



THRIE BEAM OFFSET BLOCK

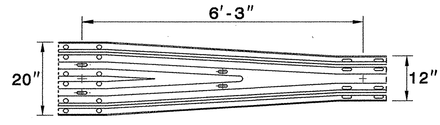


THRIE-BEAM SECTION

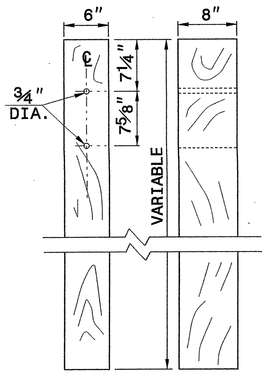


END SHOE

NOTE: THE MID POST AND OFFSET BLOCK OF THE WTR SECTION WILL REQUIRE SPECIAL BOLT HOLE DRILLING IN THE THRIE BEAM OFFSET BLOCK AND LINE POST.



WTR SECTION
ELEVATION VIEW



THRIE BEAM LINE POST

SHEET 3 OF 7
862d03

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

ENGLISH DETAIL DRAWING FOR
STRUCTURE ANCHOR UNITS
GUARDRAIL ANCHOR UNIT, TYPE III

SHEET 3 OF 7
862d03

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

SEE TITLE BLOCK

ORIGINAL BY: J. HOMERTON DATE: 06-22-12
MODIFIED BY: DATE:
CHECKED BY: DATE: 11/3/12
FILE SPEC.:

NORTH CAROLINA PROFESSIONAL SEAL 022969 ENGINEER
10/8/13

PROJECT REFERENCE NO. R-3307
SHEET NO. 2-V

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SUMMARY OF QUANTITIES

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
ROADWAY SUMMARY OF QUANTITIES FOR CONTRACT - C202848

ItemNumber	Sec #	Quantity	Unit	Description
0000100000-N	800	Lump Sum		MOBILIZATION
0000400000-N	801	Lump Sum		CONSTRUCTION SURVEYING
0000700000-N	SP	Lump Sum		FIELD OFFICE
0015000000-N	205	4	EA	SEALING ABANDONED WELLS
0029000000-N	SP	Lump Sum		REINFORCED BRIDGE APPROACH FILL, STATION ********** (16+05.50-Y2-)
0029000000-N	SP	Lump Sum		REINFORCED BRIDGE APPROACH FILL, STATION ********** (46+21.50-L-)
0036000000-E	225	5,000	CY	UNDERCUT EXCAVATION
0050000000-E	226	2	ACR	SUPPLEMENTARY CLEARING & GRUBBING
0063000000-N	SP	Lump Sum		GRADING
0106000000-E	230	580,000	CY	BORROW EXCAVATION
0127000000-N	SP	4	EA	EMBANKMENT SETTLEMENT GAUGES
0134000000-E	240	14,000	CY	DRAINAGE DITCH EXCAVATION
0192000000-N	260	23	HR	PROOF ROLLING
0195000000-E	265	5,000	CY	SELECT GRANULAR MATERIAL
0196000000-E	270	5,300	SY	GEOTEXTILE FOR SOIL STABILIZATION
0220000000-E	SP	2,600	TON	ROCK EMBANKMENTS
0222000000-E	SP	1,200	SY	GEOTEXTILE FOR ROCK EMBANKMENTS
0241000000-E	SP	1,750	SY	GENERIC GRADING ITEM GEOTEXTILE FOR EMBANKMENT STABILIZATION 1
0241000000-E	SP	850	SY	GENERIC GRADING ITEM GEOTEXTILE FOR EMBANKMENT STABILIZATION 2
0255000000-E	SP	335	TON	GENERIC GRADING ITEM CLEAN SAND
0262000000-N	SP	4	EA	GENERIC GRADING ITEM VW PIEZOMETER
0318000000-E	300	1,750	TON	FOUNDATION CONDITIONING MATERIAL, MINOR STRUCTURES
0320000000-E	300	5,510	SY	FOUNDATION CONDITIONING GEOTEXTILE
0342000000-E	310	152	LF	**" SIDE DRAIN PIPE (12")
0342000000-E	310	24	LF	**" SIDE DRAIN PIPE (30")
0342000000-E	310	140	LF	**" SIDE DRAIN PIPE (42")
0343000000-E	310	1,292	LF	15" SIDE DRAIN PIPE
0344000000-E	310	236	LF	18" SIDE DRAIN PIPE
0345000000-E	310	200	LF	24" SIDE DRAIN PIPE
0354000000-E	310	884	LF	***" RC PIPE CULVERTS, CLASS ***** (12", V)
0354000000-E	310	3,600	LF	***" RC PIPE CULVERTS, CLASS ***** (15", V)
0354000000-E	310	242	LF	***" RC PIPE CULVERTS, CLASS ***** (24", V)
0354000000-E	310	92	LF	***" RC PIPE CULVERTS, CLASS ***** (42", V)
0360000000-E	310	156	LF	12" RC PIPE CULVERTS, CLASS III
0366000000-E	310	1,776	LF	15" RC PIPE CULVERTS, CLASS III
0372000000-E	310	520	LF	18" RC PIPE CULVERTS, CLASS III
0378000000-E	310	1,916	LF	24" RC PIPE CULVERTS, CLASS III
0384000000-E	310	1,212	LF	30" RC PIPE CULVERTS, CLASS III
0390000000-E	310	436	LF	36" RC PIPE CULVERTS, CLASS III
0396000000-E	310	432	LF	42" RC PIPE CULVERTS, CLASS III
0402000000-E	310	932	LF	48" RC PIPE CULVERTS, CLASS III
0408000000-E	310	552	LF	54" RC PIPE CULVERTS, CLASS III
0426000000-E	310	420	LF	72" RC PIPE CULVERTS, CLASS III
0448000000-E	310	216	LF	****" RC PIPE CULVERTS, CLASS IV (48")
0448000000-E	310	192	LF	****" RC PIPE CULVERTS, CLASS IV (72")
0448200000-E	310	476	LF	15" RC PIPE CULVERTS, CLASS IV
0448400000-E	310	64	LF	24" RC PIPE CULVERTS, CLASS IV
0448600000-E	310	300	LF	36" RC PIPE CULVERTS, CLASS IV
0448700000-E	310	40	LF	42" RC PIPE CULVERTS, CLASS IV
0453000000-E	310	1	EA	**" PIPE END SECTION (15")
0995000000-E	340	1,674	LF	PIPE REMOVAL
0996000000-N	350	1	EA	PIPE CLEAN-OUT
1077000000-E	SP	1,150	TON	#57 STONE
1111000000-E	SP	7,000	TON	CLASS IV AGGREGATE STABILIZATION
1121000000-E	520	56,600	TON	AGGREGATE BASE COURSE
1220000000-E	545	1,000	TON	INCIDENTAL STONE BASE
1275000000-E	600	1,133	GAL	PRIME COAT
1330000000-E	607	1,300	SY	INCIDENTAL MILLING
1489000000-E	610	4,600	TON	ASPHALT CONC BASE COURSE, TYPE B25.0B
1498000000-E	610	26,200	TON	ASPHALT CONC INTERMEDIATE COURSE, TYPE I19.0B
1519000000-E	610	24,900	TON	ASPHALT CONC SURFACE COURSE, TYPE S9.5B
1575000000-E	620	2,955	TON	ASPHALT BINDER FOR PLANT MIX
1693000000-E	654	700	TON	ASPHALT PLANT MIX, PAVEMENT REPAIR
2022000000-E	815	604.8	CY	SUBDRAIN EXCAVATION
2026000000-E	815	2,700	SY	GEOTEXTILE FOR SUBSURFACE DRAINS
2036000000-E	815	453.6	CY	SUBDRAIN COARSE AGGREGATE
2044000000-E	815	2,700	LF	6" PERFORATED SUBDRAIN PIPE
2070000000-N	815	6	EA	SUBDRAIN PIPE OUTLET
2077000000-E	815	36	LF	6" OUTLET PIPE
2209000000-E	838	30	CY	ENDWALLS
2220000000-E	838	33.4	CY	REINFORCED ENDWALLS
2253000000-E	840	2.866	CY	PIPE COLLARS
2275000000-E	SP	4.85	CY	FLOWABLE FILL
2286000000-N	840	125	EA	MASONRY DRAINAGE STRUCTURES
2297000000-E	840	31.705	CY	MASONRY DRAINAGE STRUCTURES
2308000000-E	840	30.96	LF	MASONRY DRAINAGE STRUCTURES
2366000000-N	840	3	EA	FRAME WITH TWO GRATES, STD 840.24
2367000000-N	840	84	EA	FRAME WITH TWO GRATES, STD 840.29
2374000000-N	840	4	EA	FRAME WITH GRATE & HOOD, STD 840.03, TYPE ** (E)
2374000000-N	840	15	EA	FRAME WITH GRATE & HOOD, STD 840.03, TYPE ** (F)
2374000000-N	840	16	EA	FRAME WITH GRATE & HOOD, STD 840.03, TYPE ** (G)
2396000000-N	840	3	EA	FRAME WITH COVER, STD 840.54
2451000000-N	852	60	EA	CONCRETE TRANSITIONAL SECTION FOR DROP INLET
2473000000-N	SP	2	EA	GENERIC DRAINAGE ITEM RETICULINE FRAME AND GRATE
2538000000-E	846	24,700	LF	**'-**" CONCRETE CURB & GUTTER (2'-9")
2549000000-E	846	7,400	LF	2'-6" CONCRETE CURB & GUTTER
2556000000-E	846	2,200	LF	SHOULDER BERM GUTTER
2591000000-E	848	2,200	SY	4" CONCRETE SIDEWALK
2605000000-N	848	13	EA	CONCRETE CURB RAMP
2612000000-E	848	530	SY	6" CONCRETE DRIVEWAY
2647000000-E	852	1,800	SY	5" MONOLITHIC CONCRETE ISLANDS (SURFACE MOUNTED)
2724000000-E	857	2,500	LF	PRECAST REINFORCED CONCRETE BARRIER, SINGLE FACED
3000000000-N	SP	2	EA	IMPACT ATTENUATOR UNIT, TYPE 350
3030000000-E	862	3,700	LF	STEEL BM GUARDRAIL
3105000000-N	862	6	EA	STEEL BM GUARDRAIL TERMINAL SECTIONS
3150000000-N	862	10	EA	ADDITIONAL GUARDRAIL POSTS
3210000000-N	862	5	EA	GUARDRAIL ANCHOR UNITS, TYPE CAT-1
3215000000-N	862	6	EA	GUARDRAIL ANCHOR UNITS, TYPE III
3270000000-N	SP	7	EA	GUARDRAIL ANCHOR UNITS, TYPE 350
3317000000-N	862	2	EA	GUARDRAIL ANCHOR UNITS, TYPE B-77
3435000000-N	SP	102	EA	GENERIC GUARDRAIL ITEM EXTRA LENGTH GUARDRAIL POSTS (8' STEEL)
3503000000-E	866	28,800	LF	WOVEN WIRE FENCE, 47" FABRIC
3509000000-E	866	1,850	EA	4" TIMBER FENCE POSTS, 7'-6" LONG
3515000000-E	866	400	EA	5" TIMBER FENCE POSTS, 8'-0" LONG
3564000000-E	866	1	EA	SINGLE GATES, **" HIGH, **' WIDE, **' OPENING (47" HIGH, 16' WIDE, 16' OPENING)
3564000000-E	866	1	EA	SINGLE GATES, **" HIGH, **' WIDE, **' OPENING (47" HIGH, 8' WIDE, 8' OPENING)
3628000000-E	876	60	TON	RIP RAP, CLASS I
3649000000-E	876	700	TON	RIP RAP, CLASS B
3656000000-E	876	8,300	SY	GEOTEXTILE FOR DRAINAGE
3659000000-N	SP	4	EA	PREFORMED SCOUR HOLES WITH LEVEL SPREADER APRON
4048000000-E	902	7	CY	REINFORCED CONCRETE SIGN FOUNDATIONS
4060000000-E	903	5,884	LB	SUPPORTS, BREAKAWAY STEEL BEAM
4072000000-E	903	482	LF	SUPPORTS, 3-LB STEEL U-CHANNEL
4080000000-N	903	9	EA	SUPPORTS, BARRIER (LARGE)
4082000000-E	903	3,122	LF	SUPPORTS, WOOD
4096000000-N	904	21	EA	SIGN ERECTION, TYPE D
4102000000-N	904	128	EA	SIGN ERECTION, TYPE E
4108000000-N	904	60	EA	SIGN ERECTION, TYPE F
4109000000-N	904	2	EA	SIGN ERECTION, TYPE *** (OVERHEAD) (B)
4110000000-N	904	4	EA	SIGN ERECTION, TYPE *** (GROUND MOUNTED) (A)
4110000000-N	904	6	EA	SIGN ERECTION, TYPE *** (GROUND MOUNTED) (B)
4157000000-N	907	2	EA	STOCKPILE SIGN SYSTEM, WOOD
4158000000-N	907	83	EA	DISPOSAL OF SIGN SYSTEM, WOOD
4234000000-N	907	2	EA	DISPOSAL OF SIGN, A OR B (OVERHEAD)
4238000000-N	907	3	EA	DISPOSAL OF SIGN, D, E OR F
4400000000-E	1110	1,500	SF	WORK ZONE SIGNS (STATIONARY)
4405000000-E	1110	400	SF	WORK ZONE SIGNS (PORTABLE)
4410000000-E	1110	370	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	20	DAY	PORTABLE CHANGEABLE MESSAGE SIGN (SHORT TERM)
4430000000-N	1130	550	EA	DRUMS
4435000000-N	1135	20	EA	CONES
4445000000-E	1145	340	LF	BARRICADES (TYPE III)
4455000000-N	1150	300	DAY	FLAGGER
4465000000-N	1160	1	EA	TEMPORARY CRASH CUSHIONS
4480000000-N	1165	2	EA	TMA

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STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SUMMARY OF QUANTITIES

ItemNumber	Sec #	Quantity	Unit	Description
4485000000-E	1170	1,300	LF	PORTABLE CONCRETE BARRIER
4510000000-N	SP	96	HR	LAW ENFORCEMENT
4650000000-N	1251	700	EA	TEMPORARY RAISED PAVEMENT MARKERS
4685000000-E	1205	14,813	LF	THERMOPLASTIC PAVEMENT MARKING LINES (4", 90 MILS)
4686000000-E	1205	22,575	LF	THERMOPLASTIC PAVEMENT MARKING LINES (4", 120 MILS)
4688000000-E	1205	32,707	LF	THERMOPLASTIC PAVEMENT MARKING LINES (6", 90 MILS)
4690000000-E	1205	10,797	LF	THERMOPLASTIC PAVEMENT MARKING LINES (6", 120 MILS)
4695000000-E	1205	597	LF	THERMOPLASTIC PAVEMENT MARKING LINES (8", 90 MILS)
4697000000-E	1205	587	LF	THERMOPLASTIC PAVEMENT MARKING LINES (8", 120 MILS)
4705000000-E	1205	120	LF	THERMOPLASTIC PAVEMENT MARKING LINES (16", 120 MILS)
4710000000-E	1205	736	LF	THERMOPLASTIC PAVEMENT MARKING LINES (24", 120 MILS)
4721000000-E	1205	10	EA	THERMOPLASTIC PAVEMENT MARKING CHARACTER (120 MILS)
4725000000-E	1205	129	EA	THERMOPLASTIC PAVEMENT MARKING SYMBOL (90 MILS)
4770000000-E	1205	15,000	LF	COLD APPLIED PLASTIC PAVEMENT MARKING LINES, TYPE ** (4") (IV)
4810000000-E	1205	260,000	LF	PAINT PAVEMENT MARKING LINES (4")
4820000000-E	1205	2,000	LF	PAINT PAVEMENT MARKING LINES (8")
4835000000-E	1205	1,500	LF	PAINT PAVEMENT MARKING LINES (24")
4840000000-N	1205	16	EA	PAINT PAVEMENT MARKING CHARACTER
4845000000-N	1205	300	EA	PAINT PAVEMENT MARKING SYMBOL
4847000000-E	1205	2,774	LF	POLYUREA PAVEMENT MARKING LINES (4", **********) (HIGHLY REFLECTIVE ELEMENTS)
4847100000-E	1205	15,502	LF	POLYUREA PAVEMENT MARKING LINES (6", **********) (HIGHLY REFLECTIVE ELEMENTS)

ItemNumber	Sec #	Quantity	Unit	Description
4850000000-E	1205	5,000	LF	REMOVAL OF PAVEMENT MARKING LINES (4")
4870000000-E	1205	200	LF	REMOVAL OF PAVEMENT MARKING LINES (24")
4875000000-N	1205	30	EA	REMOVAL OF PAVEMENT MARKING SYMBOLS & CHARACTERS
4900000000-N	1251	204	EA	PERMANENT RAISED PAVEMENT MARKERS
4905000000-N	1253	1,301	EA	SNOWPLOWABLE PAVEMENT MARKERS
4915000000-E	1264	15	EA	7' U-CHANNEL POSTS
4955000000-N	1264	15	EA	OBJECT MARKERS (END OF ROAD)
6000000000-E	1605	70,000	LF	TEMPORARY SILT FENCE
6006000000-E	1610	6,720	TON	STONE FOR EROSION CONTROL, CLASS A
6009000000-E	1610	12,475	TON	STONE FOR EROSION CONTROL, CLASS B
6012000000-E	1610	6,980	TON	SEDIMENT CONTROL STONE
6015000000-E	1615	90	ACR	TEMPORARY MULCHING
6018000000-E	1620	2,400	LB	SEED FOR TEMPORARY SEEDING
6021000000-E	1620	10.5	TON	FERTILIZER FOR TEMPORARY SEEDING
6024000000-E	1622	6,000	LF	TEMPORARY SLOPE DRAINS
6029000000-E	SP	6,500	LF	SAFETY FENCE
6030000000-E	1630	14,000	CY	SILT EXCAVATION
6036000000-E	1631	13,500	SY	MATTING FOR EROSION CONTROL
6037000000-E	SP	135	SY	COIR FIBER MAT
6038000000-E	SP	170	SY	PERMANENT SOIL REINFORCEMENT MAT
6042000000-E	1632	5,700	LF	1/4" HARDWARE CLOTH
6043000000-E	SP	250	SY	LOW PERMEABILITY GEOTEXTILE
6048000000-E	SP	2,000	SY	FLOATING TURBIDITY CURTAIN
6071012000-E	SP	3,600	LF	COIR FIBER WATTLE
6071020000-E	SP	1,200	LB	POLYACRYLAMIDE (PAM)
6071030000-E	1640	4,000	LF	COIR FIBER BAFFLE

ItemNumber	Sec #	Quantity	Unit	Description
6071050000-E	SP	8	EA	**" SKIMMER (1-1/2")
6084000000-E	1660	90	ACR	SEEDING & MULCHING
6087000000-E	1660	45	ACR	MOWING
6090000000-E	1661	1,300	LB	SEED FOR REPAIR SEEDING
6093000000-E	1661	5.25	TON	FERTILIZER FOR REPAIR SEEDING
6096000000-E	1662	2,600	LB	SEED FOR SUPPLEMENTAL SEEDING
6108000000-E	1665	77.5	TON	FERTILIZER TOPDRESSING
6114500000-N	1667	30	MHR	SPECIALIZED HAND MOWING
6117000000-N	SP	150	EA	RESPONSE FOR EROSION CONTROL
6135000000-E	SP	1.5	ACR	GENERIC EROSION CONTROL ITEM DISKING
6135000000-E	SP	1.5	ACR	GENERIC EROSION CONTROL ITEM RIPPING
6135000000-E	SP	1.5	ACR	GENERIC EROSION CONTROL ITEM WETLAND GRASS PLANTING
7060000000-E	1705	2,995	LF	SIGNAL CABLE
7120000000-E	1705	21	EA	VEHICLE SIGNAL HEAD (12", 3 SECTION)
7132000000-E	1705	2	EA	VEHICLE SIGNAL HEAD (12", 4 SECTION)
7144000000-E	1705	1	EA	VEHICLE SIGNAL HEAD (12", 5 SECTION)
7264000000-E	1710	1,150	LF	MESSENGER CABLE (3/8")
7300000000-E	1715	1,770	LF	UNPAVED TRENCHING (**********) (1, 2")
7300000000-E	1715	40	LF	UNPAVED TRENCHING (**********) (2, 2")
7300100000-E	1715	410	LF	UNPAVED TRENCHING FOR TEMPORARY LEAD-IN
7324000000-N	1716	16	EA	JUNCTION BOX (STANDARD SIZE)
7420000000-E	1722	1	EA	2" RISER WITH WEATHERHEAD
7444000000-E	1725	4,488	LF	INDUCTIVE LOOP SAWCUT
7456000000-E	1726	9,170	LF	LEAD-IN CABLE (**********) (14-2)
7575142000-N	1736	2	EA	900MHZ RADIO
7575142060-N	SP	1	EA	MODIFY RADIO INSTALLATION
7576000000-N	SP	8	EA	METAL STRAIN SIGNAL POLE
7613000000-N	SP	8	EA	SOIL TEST
7614100000-E	SP	56	CY	DRILLED PIER FOUNDATION
7636000000-N	1745	7	EA	SIGN FOR SIGNALS
7684000000-N	1750	2	EA	SIGNAL CABINET FOUNDATION
7756000000-N	1751	2	EA	CONTROLLER WITH CABINET (TYPE 2070L, BASE MOUNTED)
7780000000-N	1751	14	EA	DETECTOR CARD (TYPE 2070L)
7901000000-N	1753	2	EA	CABINET BASE EXTENDER

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COMPUTED BY: PWR	DATE: 09-04-2013
CHECKED BY: MWL	DATE: 09-04-2013

PROJECT REFERENCE NO.	SHEET NO.
R-3307	3-A

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

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

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

Part 1 – Station, structures, elevations and side drain pipe (RCP, CSP, CAAP, HDPE, or PVC)

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 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- 24+20	RT.	0501		8.9															
		0501	0504		6.0	5.8													
-L- 24+69	RT.	0504		8.9															
-L- 24+69	LT.	0504	0505		5.6	3.0													
		0504	0503		5.6	5.7													
-L- 25+00	RT.	0503		8.9															
		0503	0502		5.9	6.2													
-L- 26+00	RT.	0502		9.1															
-L- 26+50	LT.	0508		6.6															
-L- 26+50	LT.	0508	0509		3.8	2.5			16'								✓		
		0508	0507		3.8	6.4													
-L- 28+90	LT.	0507		9.1															
		0507	0506		6.6	8.6													
-L- 28+90	RT.	0506		11.5															
-L- 30+63	RT.	0513	0514		1.4	1.1													
-L- 30+66	RT.	0514																	
-L- 30+83	RT.																		
-L- 30+98	RT.	0510		12.6															
		0510	0511		7.1	6.8													
-L- 30+85	RT.	0511																	
-L- 31+03	RT.	0510	0512		5.1	5.1													
-L- 31+26	RT.	0515		7.3															
-L- 31+31	RT.	0515	0516		5.0	4.6													
-L- 61+95	RT.	0701								40'							✓		
-L- 62+52	RT.	0801								40'							✓		
-L- 64+04	RT.	0819		19.9															
		0819	0820		17.4	17.3													
-L- 64+04	LT.	0820		21.2															
		0820	0821		17.0	16.9													
-L- 64+04	LT.	0821		21.1															
		0821	0825		16.9	6.0			152'								✓		
-L- 65+60	LT.	0825		14.7															
-L- 65+48	LT.	0825	0826		6.0	4.9			44'								✓		
		0825	0824		6.0	6.5			104'								✓		
-L- 66+68	LT.	0824		11.4															
		0824	0823		6.5	7.0													
-L- 66+68	RT.	0823		11.1															
		0823	0822		7.2	7.5		48'									✓		
-L- 67+20	RT.	0822		10.0															
-Y1REV- 18+13		0827			1.0	1.0													
-L- 68+79	RT.	0831	0830		-1.9	-2.2													
-L- 68+79	RT.	0831		3.8															
-L- 68+79		0832	0831		-1.3	-1.9													
-L- 69+00	LT.	0802								8'							✓		
-L- 73+17	RT.	0834	0833		5.6	5.2													
-L- 73+17	RT.	0834		8.8															
		0834	0835		5.6	5.8													
-L- 73+54	RT.	0835		9.0															
SHEET TOTALS								48'	316'	88'									

Part 2 – R.C. pipe and endwalls

STATION	FROM	TO	R.C. PIPE (CLASS III) 12"	15"	18"	24"	30"	36"	42"	48"	R.C. PIPE (CLASS IV) 15"	18"	24"	30"	36"	42"	48"	R.C. PIPE (CLASS V) 12"	15"	18"	24"	30"	36"	42"	48"	ENDWALLS STD. 838.01, STD. 838.11 OR STD. 838.80 (UNLESS NOTED OTHERWISE) CU. YDS. R.C.P.	C.S.P.
-L- 24+20	0501																										
	0501	0504																44'									
-L- 24+69	0504																										
-L- 24+69	0504	0505																	72'								
	0504	0503																	28'								
-L- 25+00	0503																										
	0503	0502																96'									
-L- 26+00	0502																										
-L- 26+50	0508																										
-L- 26+50	0508	0509																									
	0508	0507																	232'								
-L- 28+90	0507																										
	0507	0506																40'									
-L- 28+90	0506																										
-L- 30+63	0513	0514			156'																						
-L- 30+66	0514																										
-L- 30+83																											
-L- 30+98	0510																										
	0510	0511																	32'								
-L- 30+85	0511																										
-L- 31+03	0510	0512				12'																					
-L- 31+26	0515																										
-L- 31+31	0515	0516																24'									
-L- 61+95	0701																										
-L- 62+52	0801																										
-L- 64+04	0819																										
	0819	0820																40'									
-L- 64+04	0820																										
	0820	0821									32'																
-L- 64+04	0821																										
	0821	0825																									
-L- 65+60	0825																										
-L- 65+48	0825	0826																									
	0825	0824																									
-L- 66+68	0824																										
	0824	0823									96'																
-L- 66+68	0823																										
	0823	0822																									
-L- 67+20	0822																										
-Y1REV- 18+13	0827							68'																			
-L- 68+79	0831	0830															68'										
-L- 68+79	0831																										
-L- 68+79	0832	0831								160'																6.0	
-L- 69+00	0802																										
-L- 73+17	0834	0833																	56'								
-L- 73+17	0834																										
	0834	0835																	36'								
-L- 73+54	0835																										
SHEET TOTALS					156'	12'		68'		160'	128'						68'	244'	456'							6.0	

Part 3 – Drainage structures and remarks

STATION	FROM	TO	QUANTITIES FOR DRAINAGE STRUCTURES PER EACH (0' THRU 5.0')	* TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL.'B') LIN. *FT. A 5.0' THRU 10.0'	B 10.0' AND ABOVE	C.B. STD. 840.01 OR STD. 840.02 (UNLESS NOTED OTHERWISE)	FRAME, GRATES AND HOOD STANDARD 840.03 TYPE OF GRATE E	F	G	CONCRETE TRANSITIONAL SECTION DROP INLET (SEE DETAIL SHEET 2-M)	DROP INLET (SEE DETAIL SHEET 2-N)	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. (N.S.S.G.) FRAME WITH TWO GRATES STD. 840.24	G.D.I. (N.S.F.G.) FRAME WITH TWO GRATES STD. 840.29	TRAFFIC BEARING D.I. STD. 840.35 OR 840.46	J.B. STD. 840.31 OR 840.32	CROSS PIPE END SECTION STD. 310.03	MANHOLE FRAME & COVER STD. 840.54	PRECAST DRAINAGE STRUCTURE STD. 840.45	RETICULINE FRAME AND GRATE	MASONRY DRAINAGE STRUCTURES C.Y.	PREFORMED SCOUR HOLE (SEE DETAIL SHEET 2-E)	FLOWABLE FILL C.Y.	SIDE DRAIN PIPE ELBOWS NO. & SIZE	CONC. COLLARS CL. "B" C.Y. STD 840.72	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	PIPE REMOVAL LIN.FT.	REMARKS
-L- 24+20	0501		1							1						1	1													TB2GI
	0501	0504																												12" RCP V
-L- 24+69	0504		1							1						1	1													TB2GI
-L- 24+69	0504	0505																	1											15" RCP V
	0504	0503																												15" RCP V
-L- 25+00	0503		1							1						1	1													TB2GI
	0503	0502																												12" RCP V
-L- 26+00	0502		1							1						1	1													TB2GI
-L- 26+50	0508		1										1			1														2GI
-L- 26+50	0508	0509																												15" ALTERNATE PIPE
	0508	0507																												15" RCP V
-L- 28+90	0507		1										1			1														2GI
	0507	0506																												12" RCP V
-L- 28+90	0506		1													1	1													TB2GI
-L- 30+63	0513	0514																												18" RCP III
-L- 30+66	0514																							1						PSH
-L- 30+83																													175'	REMOVE EXISTING 18" RCP
-L- 30+98	0510																					1	4.7							SPLITTER BOX (SEE DETAIL 2-H)
	0510	0511																												15" RCP V
-L- 30+85	0511																							1						PSH
-L- 31+03	0510	0512																												24" RCP III
-L- 31+26	0515		1																		1	1								EMERGENCY OUTLET CONTROL (SEE DETAIL 2-I)
-L- 31+31	0515	0516																												12" RCP V
-L- 61+95	0701																													18" ALTERNATE PIPE
-L- 62+52	0801																													18" ALTERNATE PIPE
-L- 64+04	0819		1										1			1														2GI
	0819	0820																												12" RCP V
-L- 64+04	0820		1								1					1	1													TB2GI
	0820	0821																												15" RCP IV
-L- 64+04	0821		1										1			1														2GI
	0821	0825																												15" ALTERNATE PIPE
-L- 65+60	0825		1	3.7									1			1														2GI-ED
-L- 65+48	0825	0826																												15" ALTERNATE PIPE
	0825	0824																												15" ALTERNATE PIPE
-L- 66+68	0824		1										1			1														2GI
	0824	0823																												15" RCP IV
-L- 66+68	0823		1										1			1														2GI
	0823	0822																												12" ALTERNATE PIPE
-L- 67+20	0822		1										1			1														2GI
-Y1REV- 18+13	0827																													36" RCP III
-L- 68+79	0831	0830																												48" RCP IV
-L- 68+79	0831		1									1			1															2GI TYPE A
-L- 68+79	0832	0831																												48" RCP III W/HW
-L- 69+00	0802																													18" ALTERNATE PIPE
-L- 73+17	0834	0833																												15" RCP V
-L- 73+17	0834		1							1						1	1													TB2GI
	0834	0835																												15" RCP V
-L- 73+54	0835		1							1						1	1													TB2GI
SHEET TOTALS			18	3.7						6	1	1	8		1	16	8		1		1	2	4.7	2					175'	

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

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COMPUTED BY: PWR DATE: 09-04-2013
CHECKED BY: MWL DATE: 09-04-2013

PROJECT REFERENCE NO.	SHEET NO.
R-3307	3-B

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

STATEWIDE

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

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

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
		0835	0836		5.8	6.0													
-L- 73+92	RT.	0836		9.1															
		0836	0954		6.0	6.1													
-L- 74+50	RT.	0954		9.3															
		0954	0953		6.1	6.3													
-L- 75+17	RT.	0953		9.5															
		0953	0951		6.3	6.7													
-L- 76+00	RT.	0951		9.6															
-L- 76+95	LT.	0916							8'								✓		
-Y2- 11+22	RT.	0905	0906		9.6	4.0			40'							✓	✓		
-Y2- 11+16	RT.	0905		12.6															
		0905	0904		9.6	10.3													
-Y2- 12+80	RT.	0904		13.5															
		0904	0903		10.5	10.7													
-Y2- 12+80	LT.	0903		13.4															
-Y2- 10+88	LT.	0901		12.5															
-Y2- 10+94	LT.	0901	0902		9.4	4.3			36'							✓	✓		
-Y2- 11+00	LT.	0902																	
		0901	0915		9.4	9.4													
-Y2- 11+02	LT.	0915		12.5															
		0915	0914		9.7	9.8													
-Y2- 11+52	LT.	0914		12.6															
-L- 78+17	LT.	0912	0913		5.7	2.5													
-L- 78+16	RT.	0912		10.7															
-L- 78+57	RT.																		
		0912	0911		7.1	7.5													
-L- 79+44	RT.	0911		11.1															
		0911	0910		7.5	8.0													
-L- 81+00	RT.	0910		11.3															
		0910	0909		8.0	8.1													
-L- 81+31	RT.	0909		11.3															
		0909	0908		8.3	8.5													
-L- 82+06	RT.	0908		11.4															
-Y5- 10+90		0907						12'									✓		
-L- 82+76		0947	0952		2.4	1.9													
-LREV- 87+64		1001	1013		1.9	1.0													
-LREV- 89+64	RT.	1002		13.8															
		1002	1003		11.3	11.1													
-LREV- 90+25	RT.	1003		14.1															
-LREV- 90+73		1005	1014		2.7	1.6													
		1003	1004		11.1	10.8													
-LREV- 91+50	RT.	1004		14.6															
-LREV- 91+50	RT.	1004	1017		10.8	2.9													
-LREV- 93+31		1006	1015		5.9	2.8													
-LREV- 95+00	RT.	1007		15.8															
-LREV- 95+00	RT.	1007	1008		12.1	7.0													
-LREV- 95+14	LT.	1011	1010		3.1	3.9								60'			✓		
-LREV- 95+46	LT.	1010		9.8															
-LREV- 95+89	LT.	1010	1012		3.9	3.4								80'			✓		
SHEET TOTALS								12'	84'					140'					

STATION	STRUCTURE NO. FROM	STRUCTURE NO. TO	R.C. PIPE (CLASS III) 12"	15"	18"	24"	30"	36"	42"	48"	R.C. PIPE (CLASS IV) 15"	18"	24"	30"	36"	42"	48"	R.C. PIPE (CLASS V) 12"	15"	18"	24"	30"	36"	42"	48"	ENDWALLS STD. 838.01, STD. 838.11 OR STD. 838.80 (UNLESS NOTED OTHERWISE) CU. YDS. R.C.P.	C.S.P.
	0835	0836																	32'								
-L- 73+92	0836																										
	0836	0954																	52'								
-L- 74+50	0954																										
	0954	0953																	64'								
-L- 75+17	0953																										
	0953	0951																80'									
-L- 76+00	0951																										
-L- 76+95	0916																										
-Y2- 11+22	0905	0906																									
-Y2- 11+16	0905																										
	0905	0904																	160'								
-Y2- 12+80	0904																										
	0904	0903																56'									
-Y2- 12+80	0903																										
-Y2- 10+88	0901																										
-Y2- 10+94	0901	0902																									
-Y2- 11+00	0902																										
	0901	0915																	12'								
-Y2- 11+02	0915																										
	0915	0914																48'									
-Y2- 11+52	0914																										
-L- 78+17	0912	0913																	92'								
-L- 78+16	0912																										
-L- 78+57																											
	0912	0911									124'																
-L- 79+44	0911																										
	0911	0910																	152'								
-L- 81+00	0910																										
	0910	0909																	28'								
-L- 81+31	0909																										
	0909	0908																72'									
-L- 82+06	0908																										
-Y5- 10+90	0907																										
-L- 82+76	0947	0952			180'																						
-LREV- 87+64	1001	1013				180'																					
-LREV- 89+64	1002																										
	1002	1003																60'									
-LREV- 90+25	1003																										
-LREV- 90+73	1005	1014				184'																					
	1003	1004																	120'								
-LREV- 91+50	1004																										
-LREV- 91+50	1004	1017																	84'								
-LREV- 93+31	1006	1015				184'																					
-LREV- 95+00	1007																										
-LREV- 95+00	1007	1008	76'																								
-LREV- 95+14	1011	1010																								4.5	
-LREV- 95+46	1010																										
-LREV- 95+89	1010	1012																								4.5	
SHEET TOTALS			76'		180'	548'					124'							316'	796'							9.0	

STATION	STRUCTURE NO. FROM	STRUCTURE NO. TO	QUANTITIES FOR DRAINAGE STRUCTURES PER EACH (0' THRU 5.0')	LIN. *FT. A 5.0' THRU 10.0' (* TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL.'B'))	LIN. *FT. B 10.0' AND ABOVE	C.B. STD. 840.01 OR STD. 840.02 (UNLESS NOTED OTHERWISE)	FRAME, GRATES AND HOOD STANDARD 840.03 TYPE OF GRATE E	F	G	CONCRETE TRANSITIONAL SECTION DROP INLET (SEE DETAIL SHEET 2-M)	DROP INLET (SEE DETAIL SHEET 2-N)	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. (N.S.S.G.) FRAME WITH TWO GRATES STD. 840.24	G.D.I. (N.S.F.G.) FRAME WITH TWO GRATES STD. 840.29	TRAFFIC BEARING D.I. STD. 840.35 OR 840.46	J.B. STD. 840.31 OR 840.32	CROSS PIPE END SECTION STD. 310.03	MANHOLE FRAME & COVER STD. 840.54	PRECAST DRAINAGE STRUCTURE STD. 840.45	RETICULINE FRAME AND GRATE	MASONRY DRAINAGE STRUCTURES C.Y.	PREFORMED SCOUR HOLE (SEE DETAIL SHEET 2-E)	FLOWABLE FILL C.Y.	SIDE DRAIN PIPE ELBOWS NO. & SIZE	CONC. COLLARS CL. "B" C.Y. STD 840.72	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	PIPE REMOVAL LIN.FT.	REMARKS
	0835	0836																												15" RCP V
-L- 73+92	0836		1							1						1	1													TB2GI
	0836	0954																												15" RCP V
-L- 74+50	0954		1							1						1	1													TB2GI
	0954	0953																												15" RCP V
-L- 75+17	0953		1							1						1	1													TB2GI
	0953	0951																												12" RCP V
-L- 76+00	0951		1							1						1	1													TB2GI
-L- 76+95	0916																													15" ALTERNATE PIPE
-Y2- 11+22	0905	0906																												15" ALTERNATE PIPE
-Y2- 11+16	0905		1			1			1																					CB
	0905	0904																												15" RCP V
-Y2- 12+80	0904		1			1		1																						CB
	0904	0903																												12" RCP V
-Y2- 12+80	0903		1			1			1																					CB
-Y2- 10+88	0901		1			1		1																						CB
-Y2- 10+94	0901	0902																												15" ALTERNATE PIPE
-Y2- 11+00	0902																						1							PSH
	0901	0915																												15" RCP V
-Y2- 11+02	0915		1			1		1																						CB
	0915	0914																												12" RCP V
-Y2- 11+52	0914		1			1	1																							CB
-L- 78+17	0912	0913																												15" RCP V
-L- 78+16	0912		1								1					1	1													TB2GI
-L- 78+57																													42'	REMOVE EXISTING 48" RCP
	0912	0911																												15" RCP IV
-L- 79+44	0911		1								1					1	1													TB2GI
	0911	0910																												15" RCP V
-L- 81+00	0910		1								1					1	1													TB2GI
	0910	0909																												15" RCP V
-L- 81+31	0909		1								1					1	1													TB2GI
	0909	0908																												12" RCP V
-L- 82+06	0908		1								1					1	1													TB2GI
-Y5- 10+90	0907																													12" ALTERNATE PIPE
-L- 82+76	0947	0952																												18" RCP III
-LREV- 87+64	1001	1013																												24" RCP III
-LREV- 89+64	1002		1							1						1	1													TB2GI
	1002	1003																												12" RCP V
-LREV- 90+25	1003		1							1						1	1													TB2GI
-LREV- 90+73	1005	1014																												24" RCP III
	1003	1004																												15" RCP V
-LREV- 91+50	1004		1							1						1	1													TB2GI
-LREV- 91+50	1004	1017																												15" RCP V
-LREV- 93+31	1006	1015																												24" RCP III
-LREV- 95+00	1007		1							1						1	1													TB2GI
-LREV- 95+00	1007	1008																												12" RCP III
-LREV- 95+14	1011	1010																												42" ALTERNATE PIPE W/HW
-LREV- 95+46	1010		1															1		1										JB W/MH
-LREV- 95+89	1010	1012																												42" ALTERNATE PIPE W/HW
SHEET TOTALS			20			6	1	3	2	8	5					13	13	1		1				1					42'	

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

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COMPUTED BY: PWR	DATE: 02-16-2012
CHECKED BY: MWL	DATE: 03-09-2012

PROJECT REFERENCE NO.	SHEET NO.
R-3307	3-C

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

STATEWIDE

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

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

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	R.C. PIPE (CLASS III) 12"	15"	18"	24"	30"	36"	42"	48"	R.C. PIPE (CLASS IV) 15"	18"	24"	30"	36"	42"	48"	R.C. PIPE (CLASS V) 12"	15"	18"	24"	30"	36"	42"	48"	ENDWALLS STD. 838.01, STD. 838.11 OR STD. 838.80 (UNLESS NOTED OTHERWISE) CU. YDS. R.C.P.	C.S.P.	QUANTITIES FOR DRAINAGE STRUCTURES PER EACH (0' THRU 5.0')	LIN. *FT. A 5.0' THRU 10.0' (* TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL.'B'))	B 10.0' AND ABOVE	C.B. STD. 840.01 OR STD. 840.02 (UNLESS NOTED OTHERWISE)	FRAME, GRATES AND HOOD STANDARD 840.03 TYPE OF GRATE E	F	G	CONCRETE TRANSITIONAL SECTION DROP INLET (SEE DETAIL SHEET 2-M)	DROP INLET (SEE DETAIL SHEET 2-N)	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. (N.S.S.G.) FRAME WITH TWO GRATES STD. 840.24	G.D.I. (N.S.F.G.) FRAME WITH TWO GRATES STD. 840.29	TRAFFIC BEARING D.I. STD. 840.35 OR 840.46	J.B. STD. 840.31 OR 840.32	CROSS PIPE END SECTION STD. 310.03	MANHOLE FRAME & COVER STD. 840.54	PRECAST DRAINAGE STRUCTURE STD. 840.45	RETICULINE FRAME AND GRATE	MASONRY DRAINAGE STRUCTURES C.Y.	PREFORMED SCOUR HOLE (SEE DETAIL SHEET 2-E)	FLOWABLE FILL C.Y.	SIDE DRAIN PIPE ELBOWS NO. & SIZE	CONC. COLLARS CL. "B" C.Y. STD 840.72	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	PIPE REMOVAL LIN.FT.	REMARKS
-LREV- 96+50		1009	1016		6.0	3.4																	188'																																																	24" RCP III
-LREV- 99+00		1101	1110		5.8	4.2																	188'																																																	24" RCP III
-LREV- 100+50	RT.	1102		17.1																																									1							1						1	1													TB2GI
-LREV- 100+50	RT.	1102	1103		13.1	6.2														80'																																																			12" RCP III
-LREV- 101+00		1104	1111		5.5	3.1																	176'																																																	24" RCP III
-LREV- 101+52	LT.	1105			3.1	2.8																																			92'																															42" RCP V
-LREV- 102+02		1106	1112		5.5	3.3																		352'																																															2 - 30" RCP III
-LREV- 110+13	LT.	1107		15.7																																									1							1						1	1													TB2GI
		1107	1108		12.5	12.2																														60'																																					15" RCP V
-LREV- 110+76	LT.	1108		15.7																																									1	5	.2					1						1	1													TB2GI-ED
-LREV- 110+25	LT.	1108	1113		5.5	5.4																			76'																																															36" RCP III
-LREV- 110+83	RT.	1109	1108		5.6	5.5	YES																		108'																		4.5																														36" RCP III W/HW
		1114	1115		5.5	5.4																			184'																																															36" RCP III W/HW
-LREV- 110+87	RT.																																																																					20'	REMOVE EXISTING 15" RCP
-LREV- 112+44	LT.																																																																					24'	REMOVE EXISTING 15" RCP
-LREV- 112+44	LT.	1201																																		36'																																					15" RCP V
-LREV- 112+32		1202	1217		6.6	5.4																184'																																																		18" RCP III
-LREV- 114+25	LT.	1203		15.1																																									1								1					1	1													TB2GI
		1203	1204		11.9	11.7																														56'																																					15" RCP V
-LREV- 114+84	LT.	1204		15.1																																									1	4.1							1					1	1													TB2GI-ED
-LREV- 114+80	LT.	1204	1205		6.0	5.9																		76'																																																30" RCP III
-LREV- 114+86	RT.	1206	1204		6.0	6.0																		80'																																																30" RCP III
-Y3- 18+63	LT.	1214							20'								✓																																																								15" ALTERNATE PIPE
-Y3- 19+61	RT.	1215							24'								✓																																																										15" ALTERNATE PIPE
-Y3- 22+35	RT.																																																																					41'	REMOVE EXISTING 15" RCP
-Y3- 22+67																																																																								34'	REMOVE EXISTING 18" CMP
-Y3- 22+77	RT.	1222	1218		6.2	6.0																																60'																																					24" RCP V
-Y3- 22+81	RT.	1222		11.7																																									1	0.5							1					1	1													TB2GI-ED
-Y3- 22+85		1207	1222		6.4	6.2																																54'																																					24" RCP V
-Y3- 23+45	RT.	1223		11.3																																									1								1					1	1													TB2GI
		1223	1225		8.4	8.3																													24'																																						12" RCP V
-Y3- 23+71	RT.	1225		11.3																																									1								1					1	1													TB2GI
-Y3- 23+71		1225	1226		8.0	7.3																														52'																																					15" RCP V
		1224	1225		8.4	8.3																													24'																																						12" RCP V
-Y3- 24+00	RT.	1224		11.3																																									1								1					1	1													TB2GI
-LREV- 116+45	LT.	1208		14.7																																									1							1						1	1													TB2GI
		1208	1209		11.5	11.2																														100'																																					15" RCP V
-LREV- 117+50	LT.	1209		15.0																																									1							1						1	1													TB2GI
		1209	1210		11.2	11.0																					60'																																																	15" RCP IV
-LREV- 118+12	LT.	1210		15.1																																									1	4.0						1						1	1													TB2GI-ED
-LREV- 118+03	RT.	1212	1210		6.2	6.2																		100'																																															30" RCP III
-LREV- 118+22	LT.	1210	1211		6.2	6.1																		104'																																															30" RCP III
-LREV- 118+17		1219	1220		6.2	6.1																		204'																																															30" RCP III
-L- 119+32	RT.																																																																					22'	REMOVE EXISTING 12" RCP
-L- 119+91	RT.																																																																					46'	REMOVE EXISTING 15" CMP
-L- 120+69		1213	1221		5.6	5.2																				432'																	6.0																														2 - 42" RCP III W/HW
-L- 123+96	RT.	1216		17.5																																									1							1						1	1													TB2GI
		1216	1301		14.3	14.2																														48'																																					15" RCP V
SHEET TOTALS									44'											80'		184'	552'	916'	368'	432'		60'							48'	352'		114'			92'		10.5		13	13.6	0.2					7	6					13	13												187'	

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

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COMPUTED BY:	PWR	DATE:	02-16-2012
CHECKED BY:	MWL	DATE:	03-09-2012

PROJECT REFERENCE NO.	SHEET NO.
R-3307	3-D

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

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

STATEWIDE

LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 48" & 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	R.C. PIPE (CLASS III) 12"	15"	18"	24"	30"	36"	42"	48"	R.C. PIPE (CLASS IV) 15"	18"	24"	30"	36"	42"	48"	R.C. PIPE (CLASS V) 12"	15"	18"	24"	30"	36"	42"	48"	ENDWALLS STD. 838.01, STD. 838.11 OR STD. 838.80 (UNLESS NOTED OTHERWISE) CU. YDS. 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 (UNLESS NOTED OTHERWISE)	FRAME, GRATES AND HOOD STANDARD 840.03 TYPE OF GRATE E	F	G	CONCRETE TRANSITIONAL SECTION DROP INLET (SEE DETAIL SHEET 2-M)	DROP INLET (SEE DETAIL SHEET 2-N)	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. (N.S.S.G.) FRAME WITH TWO GRATES STD. 840.24	G.D.I. (N.S.F.G.) FRAME WITH TWO GRATES STD. 840.29	TRAFFIC BEARING D.I. STD. 840.35 OR 840.46	J.B. STD. 840.31 OR 840.32	CROSS PIPE END SECTION STD. 310.03	MANHOLE FRAME & COVER STD. 840.54	PRECAST DRAINAGE STRUCTURE STD. 840.45	RETICULINE FRAME AND GRATE	MASONRY DRAINAGE STRUCTURES C.Y.	PREFORMED SCOUR HOLE (SEE DETAIL SHEET 2-E)	FLOWABLE FILL C.Y.	SIDE DRAIN PIPE ELBOWS NO. & SIZE	CONC. COLLARS CL. "B" C.Y. STD 840.72	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	PIPE REMOVAL LIN.FT.	REMARKS
SIZE / THICKNESS OR GAUGE																																																																								
-L- 124+50	RT.	1301		17.8																																									1							1						1	1													TB2GI
		1301	1302		14.2	13.9																						96'																																												15" RCP IV
-L- 125+50	RT.	1302		18.3																																									1							1						1	1													TB2GI
		1302	1303		13.9	13.0															284'																																																					15" RCP III
-L- 128+35	RT.	1303		19.5																																									1	1.0						1						1	1													TB2GI-ED
-L- 128+30		1303	1304		13.0	7.5															80'																																																					15" RCP III
-L- 130+42	RT.																																																																						20'	REMOVE EXISTING 18" RCP
-L- 132+06	RT.																																																																						21'	REMOVE EXISTING 12" RCP
-L- 132+75	RT.	1306		20.3																																									1							1						1	1													TB2GI
		1306	1307		17.5	17.4																														20'																																								15" RCP V
-L- 133+00	RT.	1307		20.2																																									1							1						1	1													TB2GI
-L- 133+00		1307	1308		17.4	9.9															88'																																																					15" RCP III
-L- 133+74	RT.																																																																						20'	REMOVE EXISTING 12" RCP
-L- 137+76	RT.	1401		17.5																																									1										1			1														2GI
-L- 137+76		1401	1402		12.5	7.5															128'																																																					15" RCP III
-L- 141+22	RT.	1403		16.4																																									1										1			1														2GI
-L- 141+22		1403	1404		11.4	7.5															132'																																																					15" RCP III
-L- 143+17	RT.	1405		15.8																																									1										1			1														2GI
-L- 143+17		1405	1406		10.8	7.9															128'																																																					15" RCP III
-L- 146+00	RT.	1407		14.9																																									1										1			1														2GI
-L- 146+00		1407	1408		9.9	9.3															128'																																																					15" RCP III
-L- 147+94	RT.	1409		14.7																																									1										1			1														2GI
-L- 147+94		1409	1410		11.7	7.5																														128'																																								15" RCP V
		1409	1411		12.0	12.3																													100'																																									12" RCP V
-L- 149+00	RT.	1411		14.8																																									1										1			1														2GI
-L- 150+50	RT.	1501		15.1																																									1										1			1														2GI
-L- 150+50		1501	1502		12.3	6.9																														132'																																							15" RCP V
-L- 153+30	RT.	1503		15.9																																									1										1			1														2GI
-L- 153+30		1503	1504		13.2	6.0																														128'																																							15" RCP V
-L- 156+84	RT.	1505		17.0																																									1										1			1														2GI
-L- 156+84		1505	1506		14.2	7.9																														128'																																							15" RCP V
-L- 160+00	LT.	1507		19.3																																									1							1						1	1													TB2GI
-L- 160+00		1507	1508		14.3	9.5															68'																																																					15" RCP III
-L- 160+50	LT.	1509		19.5																																									1							1						1	1													TB2GI
		1509	1510		16.7	16.6																														48'																																							15" RCP V
-L- 161+00	LT.	1510		19.7																																									1							1						1	1													TB2GI
		1510	1511		16.6	15.7																														120'																																							15" RCP V
-L- 162+22	LT.	1511		20.2																																									1							1						1	1													TB2GI
		1511	1512		15.7	15.8																														48'																																							15" RCP V
-L- 162+22	RT.	1512		18.6																																									1										1			1														2GI
		1511	1601		15.7	15.1	YES														172'																																																					15" RCP III
-L- 164+00	LT.	1601		20.6																																									1	0.4						1						1	1													TB2GI-ED
-L- 164+00		1601	1602		15.1	10.3															72'																																																					15" RCP III
-L- 163+68	RT.	1604	1619		7.0	6.9					32'						✓																																																								24" ALTERNATE PIPE
-L- 164+00	RT.	1605		17.5																																									1										1			1														2GI
		1605	1606		14.7	14.1																														192'																																							15" RCP V
-L- 166+00	RT.	1606		17.7																																									1										1			1														2GI
SHEET TOTALS											32'										1,280'							96'							100'	944'									22	1.4						10			12			22	10												61'	

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

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COMPUTED BY:	PWR	DATE:	02-16-2012
CHECKED BY:	MWL	DATE:	03-09-2012

PROJECT REFERENCE NO.	SHEET NO.
R-3307	3-E

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

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

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

Side Drain Pipe (RCP, CSP, CAAP, HDPE, or PVC)

STATION (SIZE / THICKNESS OR GAUGE)	LOCATION (LT, RT, OR CL)	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	12"	15"	18"	24"	30"	36"	42"	48"	DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE
		1606	1607		14.1	14.0													
-L- 166+00	LT.	1607		20.8															
-L- 166+00	LT.	1607	1608		10.8	5.7													
-L- 170+00	RT.	1610	1609		12.5	7.4			40'							✓	✓		
-L- 170+24	RT.	1610		17.5															
		1610	1611		12.5	15.8													
-L- 170+00	LT.	1611		20.8															
-L- 171+00	RT.	1613		17.6															
-L- 171+00	RT.	1613	1614		12.6	10.0		28'									✓		
-L- 173+68	LT.	1615		20.3															
-L- 173+68	LT.	1615	1616		15.3	11.3													
-L- 173+88		1617			10.5	10.4													
-L- 175+00	LT.	1701		19.8															
		1701	1702		16.6	16.5													
-L- 175+55	LT.	1702		19.5															
-L- 175+75		1703			10.6	10.7													
		1702	1704		16.5	16.3													
-L- 176+13	LT.	1704		19.2															
-L- 176+13	LT.	1704	1705		14.2	11.0													
-L- 177+00		1711			10.0	10.3													
-L- 179+30	RT.	1706		18.6															
-L- 179+30		1706	1714		13.6	10.5													
-L- 179+50		1715			9.9	9.6													
-L- 180+80	RT.	1707		18.2															
-L- 180+80		1707	1716		13.2	10.4													
-L- 181+00		1717			7.9	7.4													
-L- 182+73	RT.	1709	1708		8.5	9.1													
-L- 182+73	RT.	1709		17.3															
		1709	1710		9.1	9.4													
-L- 183+09	RT.	1710		17.1															
-L- 183+04		1718	1719		8.7	8.2													
-L- 184+40	RT.	1712		16.7															
-L- 184+40	RT.	1712	1713		14.0	8.7													
-L- 186+55	RT.	1815		16.3															
-L- 186+55	RT.	1815	1839		11.3	9.3													
-L- 186+77		1814	1816		8.5	7.9													
-L- 188+50	RT.	1817		15.7															
		1817	1818		13.0	9.8													
-L- 188+50	LT.	1818		13.1															
-L- 188+50	LT.	1818	1819		9.8	7.7			28'								✓		
-Y4- 11+29	RT.	1820		15.2															
-Y4- 11+29	RT.	1820	1821		10.2	8.0			36'								✓		
-Y4- 12+18	LT.																		
-Y4- 13+13		1822	1823		6.5	6.3													
-L- 190+03	RT.	1824		15.2															
		1824	1825		12.5	8.7													
-L- 190+03	LT.	1825		12.7															
SHEET TOTALS								28'	104'										

R.C. Pipe (Class III), R.C. Pipe (Class IV), R.C. Pipe (Class V)

STATION	FROM	TO	III 12"	III 15"	III 18"	III 24"	III 30"	III 36"	III 42"	III 48"	IV 15"	IV 18"	IV 24"	IV 30"	IV 36"	IV 42"	IV 48"	V 12"	V 15"	V 18"	V 24"	V 30"	V 36"	V 42"	V 48"
	1606	1607									48'														
-L- 166+00	1607																								
-L- 166+00	1607	1608		84'																					
-L- 170+00	1610	1609																							
-L- 170+24	1610																								
	1610	1611		52'																					
-L- 170+00	1611																								
-L- 171+00	1613																								
-L- 171+00	1613	1614																							
-L- 173+68	1615																								
-L- 173+68	1615	1616		64'																					
-L- 173+88	1617									148'															
-L- 175+00	1701																								
	1701	1702																	52'						
-L- 175+55	1702																								
-L- 175+75	1703									148'															
	1702	1704																	56'						
-L- 176+13	1704																								
-L- 176+13	1704	1705		64'																					
-L- 177+00	1711									148'															
-L- 179+30	1706																								
-L- 179+30	1706	1714		80'																					
-L- 179+50	1715																148'								
-L- 180+80	1707																								
-L- 180+80	1707	1716		76'																					
-L- 181+00	1717									156'															
-L- 182+73	1709	1708					64'																		
-L- 182+73	1709																								
	1709	1710					32'																		
-L- 183+09	1710																								
-L- 183+04	1718	1719								172'															
-L- 184+40	1712																								
-L- 184+40	1712	1713																	68'						
-L- 186+55	1815																								
-L- 186+55	1815	1839		76'																					
-L- 186+77	1814	1816				208'																			
-L- 188+50	1817																								
	1817	1818																	44'						
-L- 188+50	1818																								
-L- 188+50	1818	1819																							
-Y4- 11+29	1820																								
-Y4- 11+29	1820	1821																							
-Y4- 12+18																									
-Y4- 13+13	1822	1823																			56'				
-L- 190+03	1824																								
	1824	1825																	44'						
-L- 190+03	1825																								
SHEET TOTALS				496'		208'	96'			772'	48'						148'		264'		56'				

Endwalls (Std. 838.01, Std. 838.11 or Std. 838.80 (unless noted otherwise)) Cu. Yds.; Quantities for Drainage Structures; Frame, Grates and Hood Standard 840.03; Concrete Transitional Section; and other items

STATION	FROM	TO	ENDWALLS R.C.P.	ENDWALLS C.S.P.	PER EACH (0' THRU 5.0')	A: 5.0' THRU 10.0' (LIN. *FT.)	B: 10.0' AND ABOVE (LIN. *FT.)	C.B. STD. 840.01 OR STD. 840.02 (UNLESS NOTED OTHERWISE)	TYPE OF GRATE E	TYPE OF GRATE F	TYPE OF GRATE G	DROP INLET (SEE DETAIL SHEET 2-M)	DROP INLET (SEE DETAIL SHEET 2-N)	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. (N.S.S.G.) FRAME WITH TWO GRATES STD. 840.24	G.D.I. (N.S.F.G.) FRAME WITH TWO GRATES STD. 840.29	TRAFFIC BEARING D.I. STD. 840.35 OR 840.46	J.B. STD. 840.31 OR 840.32	CROSS PIPE END SECTION STD. 310.03	MANHOLE FRAME & COVER STD. 840.54	PRECAST DRAINAGE STRUCTURE STD. 840.45	RETICULINE FRAME AND GRATE	MASONRY DRAINAGE STRUCTURES C.Y.	PREFORMED SCOUR HOLE (SEE DETAIL SHEET 2-E)	FLOWABLE FILL C.Y.	SIDE DRAIN PIPE ELBOWS NO. & SIZE	CONC. COLLARS CL. "B" C.Y. STD 840.72	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	PIPE REMOVAL LIN.FT.	REMARKS
	1606	1607																														15" RCP IV
-L- 166+00	1607				1	5.0						1						1	1													TB2GI-ED
-L- 166+00	1607	1608																														15" RCP III
-L- 170+00	1610	1609																														15" ALTERNATE PIPE
-L- 170+24	1610				1										1			1														2GI
	1610	1611																														15" RCP III
-L- 170+00	1611				1							1						1	1													TB2GI
-L- 171+00	1613				1										1			1														2GI
-L- 171+00	1613	1614																														12" ALTERNATE PIPE
-L- 173+68	1615				1							1						1	1													TB2GI
-L- 173+68	1615	1616																														15" RCP III
-L- 173+88	1617																															48" RCP III
-L- 175+00	1701				1							1						1	1													TB2GI
	1701	1702																														15" RCP V
-L- 175+55	1702				1							1						1	1													TB2GI
-L- 175+75	1703																															48" RCP III
	1702	1704																														15" RCP V
-L- 176+13	1704				1							1						1	1													TB2GI
-L- 176+13	1704	1705																														15" RCP III
-L- 177+00	1711																															48" RCP III
-L- 179+30	1706				1							1						1	1													TB2GI
-L- 179+30	1706	1714																														15" RCP III
-L- 179+50	1715																															48" RCP IV
-L- 180+80	1707				1							1						1	1													TB2GI
-L- 180+80	1707	1716																														15" RCP III
-L- 181+00	1717																															48" RCP III
-L- 182+73	1709	1708																														30" RCP III
-L- 182+73	1709				1	3.2						1						1	1													TB2GI-ED
	1709	1710																														30" RCP III
-L- 183+09	1710				1	2.7						1						1	1													TB2GI-ED
-L- 183+04	1718	1719																														48" RCP III
-L- 184+40	1712				1							1						1	1													TB2GI
-L- 184+40	1712	1713																														15" RCP V
-L- 186+55	1815				1							1						1	1													TB2GI
-L- 186+55	1815	1839																														15" RCP III
-L- 186+77	1814	1816																														24" RCP III
-L- 188+50	1817				1							1						1	1													TB2GI
	1817	1818																														15" RCP V
-L- 188+50	1818				1			1			1																					CB
-L- 188+50	1818	1819																														15" ALTERNATE PIPE
-Y4- 11+29	1820				1			1		1																						CB
-Y4- 11+29	1820	1821																														15" ALTERNATE PIPE
-Y4- 12+18																															17'	REMOVE EXISTING 15" RCP
-Y4- 13+13	1822	1823																														24" RCP V
-L- 190+03	1824				1								1					1	1													TB2GI
	1824	1825																														15" RCP V
-L- 190+03	1825				1			1			1																					CB
SHEET TOTALS					19	10.9		3		1	2	13	1		2			16	14												17'	

* TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL.'B')

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

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COMPUTED BY: PWR	DATE: 02-16-2012
CHECKED BY: MWL	DATE: 03-09-2012

PROJECT REFERENCE NO.	SHEET NO.
R-3307	3-F

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

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

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

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- 190+03	LT.	1825	1826		8.7	6.5			32'								✓		
-L- 190+87	LT.	1840								32'							✓		
-L- 190+99		1827	1828		6.1	5.4													
-L- 191+22	RT.																		
-L- 191+22	RT.	1841							32'								✓		
-L- 191+41	RT.																		
-L- 191+47	RT.	1829			5.0	4.8													
-L- 191+47	RT.																		
-L- 191+50	RT.	1830			5.0	4.8													
-L- 191+67	RT.																		
-DR3- 13+28	LT.	1833	1842		7.2	6.8			64'								✓		
-DR3- 13+60	LT.	1833		9.4															
		1833	1831		7.2	8.6													
-L- 194+00	RT.	1831		13.9															
		1831	1832		8.6	9.1													
-L- 194+00	LT.	1832		11.4															
-L- 194+57		1834	1835		5.6	4.6													
-L- 194+83	LT.	1844							28'								✓		
-L- 194+64	RT.																		
-L- 194+83	RT.																		
-L- 196+05	RT.																		
-L- 196+77	RT.																		
-L- 197+13	RT.																		
-L- 197+00	LT.	1836		12.5															
		1836	1838		7.9	6.7													
-L- 197+50	LT.	1838		8.9															
-L- 197+47	LT.	1838	1837		6.7	6.4													
-L- 197+15	RT.	1843								20'							✓		
		1836	1939		8.1	9.4													
-L- 197+92	LT.																		
-L- 198+06	LT.	1939		12.2															
-L- 198+13	RT.																		
-L- 198+81	RT.																		
-L- 198+81	RT.	1959							24'								✓		
-L- 199+18	RT.																		
-L- 199+19	RT.	1960							24'								✓		
-L- 200+26	RT.																		
-L- 200+29	RT.	1961							32'								✓		
-L- 200+50	LT.	1943		10.4															
-L- 200+50	LT.	1943	1944		6.6	6.0		28'									✓		
-L- 200+69	LT.																		
-L- 201+06	LT.	1945	1946		3.9	3.3													
-L- 201+06	LT.	1946				3.3													
-L- 201+07	RT.	1967			3.3														
-L- 201+07	RT.	1967	1968		3.3	3.3													
-L- 201+99	RT.	1962							20'								✓		
-L- 202+00	RT.																		
-L- 202+50	RT.	1947			9.9														
SHEET TOTALS								28'	256'	52'									

STATION	R.C. PIPE (CLASS III) 12"	15"	18"	24"	30"	36"	42"	48"	R.C. PIPE (CLASS IV) 15"	18"	24"	30"	36"	42"	48"	R.C. PIPE (CLASS V) 12"	15"	18"	24"	30"	36"	42"	48"
-L- 190+03																							
-L- 190+87																							
-L- 190+99				328'																			
-L- 191+22																							
-L- 191+22																							
-L- 191+41																							
-L- 191+47				60'																			
-L- 191+47																							
-L- 191+50				60'																			
-L- 191+67																							
-DR3- 13+28																							
-DR3- 13+60																							
																	72'						
-L- 194+00																							
																	40'						
-L- 194+00																							
-L- 194+57					196'																		
-L- 194+83																							
-L- 194+64																							
-L- 194+83																							
-L- 196+05																							
-L- 196+77																							
-L- 197+13																							
-L- 197+00																							
																	84'						
-L- 197+50																							
-L- 197+47																	20'						
-L- 197+15																							
																104'							
-L- 197+92																							
-L- 198+06																							
-L- 198+13																							
-L- 198+81																							
-L- 198+81																							
-L- 199+18																							
-L- 199+19																							
-L- 200+26																							
-L- 200+29																							
-L- 200+50																							
-L- 200+50																							
-L- 200+69																							
-L- 201+06				64'																			
-L- 201+06																							
-L- 201+07																							
-L- 201+07				20'																			
-L- 201+99																							
-L- 202+00																							
-L- 202+50																							
SHEET TOTALS				532'	196'												104'	216'					

STATION	ENDWALLS STD. 838.01, STD. 838.11 OR STD. 838.80 (UNLESS NOTED OTHERWISE) CU. YDS. R.C.P.	C.S.P.	QUANTITIES FOR DRAINAGE STRUCTURES PER EACH (0' THRU 5.0')	LIN. *FT. A 5.0' THRU 10.0'	B 10.0' AND ABOVE	C.B. STD. 840.01 OR STD. 840.02 (UNLESS NOTED OTHERWISE)	FRAME, GRATES AND HOOD STANDARD 840.03 TYPE OF GRATE E	F	G	CONCRETE TRANSITIONAL SECTION DROP INLET (SEE DETAIL SHEET 2-M)	DROP INLET (SEE DETAIL SHEET 2-N)	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. (N.S.S.G.) FRAME WITH TWO GRATES STD. 840.24	G.D.I. (N.S.F.G.) FRAME WITH TWO GRATES STD. 840.29	TRAFFIC BEARING D.I. STD. 840.35 OR 840.46	J.B. STD. 840.31 OR 840.32	CROSS PIPE END SECTION STD. 310.03	MANHOLE FRAME & COVER STD. 840.54	PRECAST DRAINAGE STRUCTURE STD. 840.45	RETICULINE FRAME AND GRATE	MASONRY DRAINAGE STRUCTURES C.Y.	PREFORMED SCOUR HOLE (SEE DETAIL SHEET 2-E)	FLOWABLE FILL C.Y.	SIDE DRAIN PIPE ELBOWS NO. & SIZE	CONC. COLLARS CL. "B" C.Y. STD 840.72	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	PIPE REMOVAL LIN.FT.	REMARKS
-L- 190+03																														15" ALTERNATE PIPE
-L- 190+87																														18" ALTERNATE PIPE
-L- 190+99																														2 - 24" RCP III
-L- 191+22																													32'	REMOVE EXISTING 15" RCP
-L- 191+22																														15" ALTERNATE PIPE
-L- 191+41																													50'	REMOVE EXISTING 24" RCP
-L- 191+47																														24" RCP III
-L- 191+47																													24'	REMOVE EXISTING 12" HDPE
-L- 191+50																														24" RCP III
-L- 191+67																													40'	REMOVE EXISTING 15" RCP
-DR3- 13+28																														15" ALTERNATE PIPE
-DR3- 13+60			1			1		1																						CB
																														15" RCP V
-L- 194+00			1	0.3							1					1	1													TB2GI-ED
																														15" RCP V
-L- 194+00			1			1			1																					MIN. DEPTH CB (SEE SPECIAL DETAIL SHEET 2-L)
-L- 194+57																														30" RCP III
-L- 194+83																														15" ALTERNATE PIPE
-L- 194+64																													89'	REMOVE EXISTING 24" RCP
-L- 194+83																													11'	REMOVE EXISTING 18" RCP
-L- 196+05																													15'	REMOVE EXISTING 15" RCP
-L- 196+77																													35'	REMOVE EXISTING 15" RCP
-L- 197+13																													20'	REMOVE EXISTING 18" RCP
-L- 197+00			1								1					1	1													TB2GI
																														15" RCP V
-L- 197+50			1			1			1																					MIN. DEPTH CB (SEE SPECIAL DETAIL SHEET 2-L)
-L- 197+47																														15" RCP V
-L- 197+15																														18" ALTERNATE PIPE
																														12" RCP V
-L- 197+92																													33'	REMOVE EXISTING 15" RCP
-L- 198+06			1								1					1	1													TB2GI
-L- 198+13																													20'	REMOVE EXISTING 15" RCP
-L- 198+81																													20'	REMOVE EXISTING 15" RCP
-L- 198+81																														15" ALTERNATE PIPE
-L- 199+18																													18'	REMOVE EXISTING 15" RCP
-L- 199+19																														15" ALTERNATE PIPE
-L- 200+26																													33'	REMOVE EXISTING 15" RCP
-L- 200+29																														15" ALTERNATE PIPE
-L- 200+50			1			1			1																					CB
-L- 200+50																														12" ALTERNATE PIPE
-L- 200+69																													21'	REMOVE EXISTING 18" RCP
-L- 201+06																														24" RCP III
-L- 201+06																											.5526			COLLAR FOR EXTENDING 24" RCP
-L- 201+07																											.5526			COLLAR FOR EXTENDING 24" RCP
-L- 201+07																														24" RCP III
-L- 201+99																														15" ALTERNATE PIPE
-L- 202+00																													27'	REMOVE EXISTING PIPE
-L- 202+50			1			1		1																						CB
SHEET TOTALS			8	0.3		5		2	3		3					3	3										1.1052		488'	

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

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COMPUTED BY: PWR	DATE: 02-16-2012
CHECKED BY: MWL	DATE: 03-09-2012

PROJECT REFERENCE NO.	SHEET NO.
R-3307	3-G

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

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

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

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- 202+50	RT.	1947	1948		6.9	6.4			24'								✓		
-L- 202+77	LT.	1966							32'								✓		
-L- 202+78	LT.																		
-L- 203+17	LT.																		
-L- 203+85	RT.																		
-L- 204+00	LT.	1949		9.5															
-L- 204+00	LT.	1949	1950		6.5	6.4													
-L- 204+11	RT.	1963							20'								✓		
-L- 204+11	RT.																		
-L- 204+66	RT.	1964							16'								✓		
-L- 204+66	RT.																		
-L- 205+00	LT.	1951			3.9	3.9													
-L- 204+99	RT.	1952			3.4	3.4													
-L- 205+45	LT.	1953		9.0															
-L- 205+45	LT.	1953	1954		6.0	4.3			24'								✓		
-L- 205+45	RT.	1955		9.2															
-L- 205+45	RT.	1955	1956		4.8	4.7			24'								✓		
-L- 205+73	RT.																		
-L- 205+84	LT.																		
-L- 206+22	RT.																		
-L- 206+94	LT.	1957		8.5															
-L- 206+91	LT.	1957	1958		6.3	5.8													
-Y2- 19+31	RT.	2001		11.5															
		2001	2002		8.5	8.3	YES												
-Y2- 19+31	LT.	2002		11.5															
-Y2- 19+31	LT.	2002	2003		6.5	3.5				32'							✓		
-Y2- 22+39	LT.	2007		7.4															
		2007	2005		4.4	4.0													
-Y2- 22+50	RT.	2004		7.1															
		2004	2005		4.1	4.0													
-Y2- 22+50	LT.	2005		7.3															
		2005	2006		4.0	3.6			20'								✓		
-Y2- 22+50	LT.	2006																	
-Y2- 24+33		2013	2014	0.0	0.5	0.3													
-Y2- 24+48	LT.	2013		5.5															
		2013	2012		0.5	0.6	YES	12'									✓		
-Y2- 24+48	LT.	2012		2.6															
-Y2- 24+40																			
-Y2- 24+45	RT.	2019		3.2															
-Y2- 24+45	RT.	2019	2020		1.0	0.9	YES												
-Y2- 24+57																			
		2019	2018		1.0	1.1													
-Y2- 24+84	RT.	2018		3.1															
		2018	2117		1.1	1.8													
-Y2- 26+76	RT.	2117		3.9															
		2117	2116		1.8	1.9													
-Y2- 26+76	LT.	2116		3.9															
-Y2- 27+45		2128																	
SHEET TOTALS								12'	160'	32'									

STATION	R.C. PIPE (CLASS III) 12"	15"	18"	24"	30"	36"	42"	48"	R.C. PIPE (CLASS IV) 15"	18"	24"	30"	36"	42"	48"	R.C. PIPE (CLASS V) 12"	15"	18"	24"	30"	36"	42"	48"
-L- 202+50																							
-L- 202+77																							
-L- 202+78																							
-L- 203+17																							
-L- 203+85																							
-L- 204+00																							
-L- 204+00									20'														
-L- 204+11																							
-L- 204+11																							
-L- 204+66																							
-L- 204+66																							
-L- 205+00				36'																			
-L- 204+99				28'																			
-L- 205+45																							
-L- 205+45																							
-L- 205+45																							
-L- 205+45																							
-L- 205+73																							
-L- 205+84																							
-L- 206+22																							
-L- 206+94																							
-L- 206+91																	24'						
-Y2- 19+31																							
																	56'						
-Y2- 19+31																							
-Y2- 19+31																							
-Y2- 22+39																							
																	8'						
-Y2- 22+50																							
																	36'						
-Y2- 22+50																							
-Y2- 22+50																							
-Y2- 24+33											64'												
-Y2- 24+48																							
-Y2- 24+48																							
-Y2- 24+40																							
-Y2- 24+45																							
-Y2- 24+45																	16'						
-Y2- 24+57																							
																	32'						
-Y2- 24+84																							
																	184'						
-Y2- 26+76																							
																36'							
-Y2- 26+76																							
-Y2- 27+45																			72'				
SHEET TOTALS				64'					20'		64'					36'	356'		72'				

STATION	ENDWALLS STD. 838.01, STD. 838.11 OR STD. 838.80 (UNLESS NOTED OTHERWISE) CU. YDS. 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 (UNLESS NOTED OTHERWISE)	FRAME, GRATES AND HOOD STANDARD 840.03 TYPE OF GRATE E	F	G	CONCRETE TRANSITIONAL SECTION DROP INLET (SEE DETAIL SHEET 2-M)	DROP INLET (SEE DETAIL SHEET 2-N)	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. (N.S.S.G.) FRAME WITH TWO GRATES STD. 840.24	G.D.I. (N.S.F.G.) FRAME WITH TWO GRATES STD. 840.29	TRAFFIC BEARING D.I. STD. 840.35 OR 840.46	J.B. STD. 840.31 OR 840.32	CROSS PIPE END SECTION STD. 310.03	MANHOLE FRAME & COVER STD. 840.54	PRECAST DRAINAGE STRUCTURE STD. 840.45	RETICULINE FRAME AND GRATE	MASONRY DRAINAGE STRUCTURES C.Y.	PREFORMED SCOUR HOLE (SEE DETAIL SHEET 2-E)	FLOWABLE FILL C.Y.	SIDE DRAIN PIPE ELBOWS NO. & SIZE	CONC. COLLARS CL. "B" C.Y. STD 840.72	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	PIPE REMOVAL LIN.FT.	REMARKS
-L- 202+50																														15" ALTERNATE PIPE
-L- 202+77																														15" ALTERNATE PIPE
-L- 202+78																													31'	REMOVE EXISTING 18" RCP
-L- 203+17																													27'	REMOVE EXISTING 18" RCP
-L- 203+85																													15'	REMOVE EXISTING 12" RCP
-L- 204+00			1			1			1																					CB
-L- 204+00																														15" RCP IV
-L- 204+11																														15" ALTERNATE PIPE
-L- 204+11																													15'	REMOVE EXISTING 18" RCP
-L- 204+66																														15" ALTERNATE PIPE
-L- 204+66																													15'	REMOVE EXISTING 18" RCP
-L- 205+00																											.5526			COLLAR AND EXTEND 24" RCP
-L- 204+99																											.5526			COLLAR AND EXTEND 24" RCP
-L- 205+45			1			1			1																					CB
-L- 205+45																														15" ALTERNATE PIPE
-L- 205+45			1			1		1																						CB
-L- 205+45																														15" ALTERNATE PIPE
-L- 205+73																													20'	REMOVE EXISTING 15" RCP
-L- 205+84																													14'	REMOVE EXISTING 12" RCP
-L- 206+22																													21'	REMOVE EXISTING 15" RCP
-L- 206+94			1			1			1																					MIN. DEPTH CB (SEE SPECIAL DETAIL SHEET 2-L)
-L- 206+91																														15" RCP V
-Y2- 19+31			1			1		1																						CB
																														15" RCP V
-Y2- 19+31			1			1			1																					CB
-Y2- 19+31																														18" ALTERNATE PIPE
-Y2- 22+39			1			1	1																							CB
																														15" RCP V
-Y2- 22+50			1			1		1																						CB
																														15" RCP V
-Y2- 22+50			1			1	1																							CB
																														15" ALTERNATE PIPE
-Y2- 22+50																								1						PSH
-Y2- 24+33																														24" RCP IV
-Y2- 24+48			1															1		1										JB W/MH
																														12" ALTERNATE PIPE
-Y2- 24+48			1			1	1																							MIN. DEPTH CB (SEE SPECIAL DETAIL SHEET 2-L)
-Y2- 24+40																													43'	REMOVE EXISTING 18" RCP
-Y2- 24+45			1			1		1																						MIN. DEPTH CB (SEE SPECIAL DETAIL SHEET 2-L)
-Y2- 24+45																														15" RCP V
-Y2- 24+57																													32'	REMOVE EXISTING 18" RCP
																														15" RCP V
-Y2- 24+84			1			1			1																					MIN. DEPTH CB (SEE SPECIAL DETAIL SHEET 2-L)
																														15" RCP V
-Y2- 26+76			1			1			1																					MIN. DEPTH CB (SEE SPECIAL DETAIL SHEET 2-L)
																														12" RCP V
-Y2- 26+76			1			1		1																						MIN. DEPTH CB (SEE SPECIAL DETAIL SHEET 2-L)
-Y2- 27+45																														24" RCP V
SHEET TOTALS			15			14	3	5	6									1		1				1			1.1052		233'	

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

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COMPUTED BY: PWR DATE: 09-04-2013
CHECKED BY: MWL DATE: 09-04-2013

PROJECT REFERENCE NO.	SHEET NO.
R-3307	3-H

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

STATEWIDE

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

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

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
-Y2- 27+47	LT.	2127		3.9															
-Y2- 27+47	RT.	2133									44'						✓		
		2127	2126		0.9	1.0													
-Y2- 27+73																			
-Y2- 27+79	LT.																		
-Y2- 27+81	RT.	2126		3.7															
-Y2- 27+83	RT.	2131							24'								✓		
-Y2- 27+85	RT.	2132								64'							✓		
-Y2- 27+88	RT.	2123	2130		2.1	1.9			16'								✓		
-Y2- 27+89																			
-Y2- 27+89	LT.																		
-Y2- 27+93	RT.	2123		4.2															
		2126	2125		1.7	2.2			40'								✓		
-Y2- 28+22	LT.	2125		4.5															
		2125	2124		2.5	2.7		24'									✓		
-Y2- 28+44	LT.	2124		4.7															
		2123	2122		2.1	2.7													
-Y2- 28+75	RT.	2122		4.8															
		2122	2121		2.7	3.2	YES												
-Y2- 29+85	RT.	2121		5.6															
		2121	2120		3.5	3.6	YES												
-Y2- 29+85	LT.	2120		5.6															
-Y3- 11+70	LT.	2207							168'								✓		
-Y3- 11+75	LT.																		
-Y3- 12+54	RT.	2214							40'								✓		
-Y3- 12+60	RT.																		
-Y3- 13+84	RT.	2213							40'								✓		
-Y3- 13+84	RT.																		
-Y3- 14+04	LT.																		
-Y3- 14+05	LT.	2206									28'						✓		
-Y3- 14+70	LT.																		
-Y3- 14+71	LT.	2201	2202		6.3	4.3	YES				48'						✓		
-Y3- 14+97	LT.	2201		7.8															
-Y3- 15+18	LT.																		
		2201	2203		4.3	4.1	YES				48'						✓		
-Y3- 15+45	LT.	2204	2203		4.3	4.1						24'					✓		
-Y3- 15+46	LT.	2203		9.9															
-Y3- 15+34	RT.	2211	2212		3.9	3.8													
-Y3- 15+49	RT.	2211		9.7															
		2211	2210		3.9	3.9													
-Y3- 15+49	RT.	2210																	
-Y3- 15+74																			
-Y3- 15+98		2209	2211		4.0	3.9													
-Y3- 15+85		2205	2208		4.0	3.8													
SHEET TOTALS								24'	328'	64'	168'	24'							
PROJECT TOTALS								152'	1,292'	236'	200'	24'		140'					

STATION	R.C. PIPE (CLASS III) 12"	15"	18"	24"	30"	36"	42"	48"	R.C. PIPE (CLASS IV) 15"	18"	24"	30"	36"	42"	48"	R.C. PIPE (CLASS V) 12"	15"	18"	24"	30"	36"	42"	48"	ENDWALLS STD. 838.01, STD. 838.11 OR STD. 838.80 (UNLESS NOTED OTHERWISE) CU. YDS. R.C.P.	C.S.P.
-Y2- 27+47																									
-Y2- 27+47																									
																	28'								
-Y2- 27+73																									
-Y2- 27+79																									
-Y2- 27+81																									
-Y2- 27+83																									
-Y2- 27+85																									
-Y2- 27+88																									
-Y2- 27+89																									
-Y2- 27+89																									
-Y2- 27+93																									
-Y2- 28+22																									
-Y2- 28+44																									
																	80'								
-Y2- 28+75																									
																	108'								
-Y2- 29+85																									
																36'									
-Y2- 29+85																									
-Y3- 11+70																									
-Y3- 11+75																									
-Y3- 12+54																									
-Y3- 12+60																									
-Y3- 13+84																									
-Y3- 13+84																									
-Y3- 14+04																									
-Y3- 14+05																									
-Y3- 14+70																									
-Y3- 14+71																									
-Y3- 14+97																									
-Y3- 15+18																									
-Y3- 15+45																									
-Y3- 15+46																									
-Y3- 15+34															40'										
-Y3- 15+49																									
					4'																				
-Y3- 15+49																									
-Y3- 15+74																									
-Y3- 15+98													128'												
-Y3- 15+85													172'											4.5	
SHEET TOTALS					4'								300'	40'		36'	216'							4.5	
PROJECT TOTALS	156'	1,776'	520'	1,916'	1,212'	436'	432'	932'	476'		64'		300'	40'	216'	884'	3,600'		242'			92'		30.0	

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 (UNLESS NOTED OTHERWISE)	FRAME, GRATES AND HOOD STANDARD 840.03 TYPE OF GRATE E	F	G	CONCRETE TRANSITIONAL SECTION DROP INLET (SEE DETAIL SHEET 2-M)	DROP INLET (SEE DETAIL SHEET 2-N)	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. (N.S.S.G.) FRAME WITH TWO GRATES STD. 840.24	G.D.I. (N.S.F.G.) FRAME WITH TWO GRATES STD. 840.29	TRAFFIC BEARING D.I. STD. 840.35 OR 840.46	J.B. STD. 840.31 OR 840.32	CROSS PIPE END SECTION STD. 310.03	MANHOLE FRAME & COVER STD. 840.54	PRECAST DRAINAGE STRUCTURE STD. 840.45	RETICULINE FRAME AND GRATE	MASONRY DRAINAGE STRUCTURES C.Y.	PREFORMED SCOUR HOLE (SEE DETAIL SHEET 2-E)	FLOWABLE FILL C.Y.	SIDE DRAIN PIPE ELBOWS NO. & SIZE	CONC. COLLARS CL. "B" C.Y. STD 840.72	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	PIPE REMOVAL LIN.FT.	REMARKS
-Y2- 27+47	1			1		1																						MIN. DEPTH CB (SEE SPECIAL DETAIL SHEET 2-L)
-Y2- 27+47																												24" ALTERNATE PIPE
																												15" RCP V
-Y2- 27+73																											68'	REMOVE EXISTING 12" RCP
-Y2- 27+79																											25'	REMOVE EXISTING 12" RCP
-Y2- 27+81	1			1		1																						MIN. DEPTH CB (SEE SPECIAL DETAIL SHEET 2-L)
-Y2- 27+83																												15" ALTERNATE PIPE
-Y2- 27+85																												18" ALTERNATE PIPE
-Y2- 27+88																												15" ALTERNATE PIPE
-Y2- 27+89																											20'	REMOVE EXISTING 15" RCP
-Y2- 27+89																											14'	REMOVE EXISTING 12" RCP
-Y2- 27+93	1			1			1																					MIN. DEPTH CB (SEE SPECIAL DETAIL SHEET 2-L)
																												15" ALTERNATE PIPE
-Y2- 28+22	1			1		1																						MIN. DEPTH CB (SEE SPECIAL DETAIL SHEET 2-L)
																												12" ALTERNATE PIPE
-Y2- 28+44	1											1		1														2GI TYPE D
																												15" RCP V
-Y2- 28+75	1			1			1																					MIN. DEPTH CB (SEE SPECIAL DETAIL SHEET 2-L)
																												15" RCP V
-Y2- 29+85	1			1			1																					MIN. DEPTH CB (SEE SPECIAL DETAIL SHEET 2-L)
																												12" RCP V
-Y2- 29+85	1			1		1																						MIN. DEPTH CB (SEE SPECIAL DETAIL SHEET 2-L)
-Y3- 11+70																												15" ALTERNATE PIPE
-Y3- 11+75																											157'	REMOVE EXISTING 18" RCP
-Y3- 12+54																												15" ALTERNATE PIPE
-Y3- 12+60																											40'	REMOVE EXISTING 15" RCP
-Y3- 13+84																												15" ALTERNATE PIPE
-Y3- 13+84																											36'	REMOVE EXISTING 15" RCP
-Y3- 14+04																											26'	REMOVE EXISTING 15" RCP
-Y3- 14+05																												18" ALTERNATE PIPE
-Y3- 14+70																											41'	REMOVE EXISTING 24" RCP
-Y3- 14+71																												18" ALTERNATE PIPE
-Y3- 14+97	1										1		1															2GI
-Y3- 15+18																											44'	REMOVE EXISTING 24" RCP
																												24" ALTERNATE PIPE
-Y3- 15+45																												30" ALTERNATE PIPE
-Y3- 15+46	1	0.8														1		1										JB W/MH-ED
-Y3- 15+34																												42" RCP IV
-Y3- 15+49																					5.9							JB (SEE SPECIAL DETAIL SHEET 2-L)
																												30" RCP III
-Y3- 15+49																									.6560			COLLAR & EXTEND 30" RCP III
-Y3- 15+74																							4.85					FILL EXISTING 24" RCP W/FLOWABLE FILL
-Y3- 15+98																												36" RCP IV W/HW
-Y3- 15+85																												36" RCP IV W/HW
SHEET TOTALS	10	0.8		7		4	3				1	1	1	1		1		1			5.9		4.85		.6560		471'	
PROJECT TOTALS	125	30.7	0.2	35	4	15	16	44	16	1	23	1	2	84	61	3	1	3	1	2	10.6	4	4.85		2.8664		1,674'	
PROJECT TOTALS (combined)		30.96						60																				

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

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CHECKED BY: MWL DATE: 03-09-2012

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PROJECT REFERENCE NO.	SHEET NO.
R-3307	3-I

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

LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 54" & OVER)

STATION	LOCATION (LT,RT, OR CL)	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	CLASS III R.C. PIPE 54"	CLASS III R.C. PIPE 60"	CLASS III R.C. PIPE 66"	CLASS III R.C. PIPE 72"	CLASS III R.C. PIPE 78"	CLASS III R.C. PIPE 84"	CLASS IV R.C. PIPE 54"	CLASS IV R.C. PIPE 60"	CLASS IV R.C. PIPE 66"	CLASS IV R.C. PIPE 72"	CLASS IV R.C. PIPE 78"	CLASS IV R.C. PIPE 84"
SIZE																			
THICKNESS OR GAUGE																			
-L- 78+45	RT.	0949		5.9															
-L- 78+43	RT.	0949	0950		-1.8	-1.8											8'		
-L- 78+66		0948	0949		-1.7	-1.8											184'		
-L- 128+81		1305	1310		6.2	6.0		184'											
-L- 135+42		1309	1311		5.0	4.5					180'								
-L- 163+43	RT.	1618	1619		4.9	4.9					28'								
-L- 163+53	RT.	1619		12.7															
-L- 164+20		1619	1603		4.9	4.7					212'								
-L- 170+25		1612	1620		5.9	4.9		368'											
MASONARY DRAINAGE STRUCTURES CUBIC YARDS – TOTALS FROM SHEET 3-H																			
G.D.I. (N.S.S.G.) FRAME WITH TWO GRATES STD. 840.24 – TOTALS FROM SHEET 3-H																			
PROJECT TOTALS								552'			420'						192'		

STATION	C.S. PIPE 54" .109	C.S. PIPE 54" .138	C.S. PIPE 54" .168	C.S. PIPE 54" SHOP ELON-GATED .138	C.S. PIPE 54" SHOP ELON-GATED .168	C.S. PIPE 60" .138	C.S. PIPE 60" .168	C.S. PIPE 66" .138	C.S. PIPE 66" .168	C.S. PIPE 72" .138	C.S. PIPE 72" .168	STRUCTURAL PLATE PIPE 60" 12	STRUCTURAL PLATE PIPE 60" 10	STRUCTURAL PLATE PIPE 66" 12	STRUCTURAL PLATE PIPE 66" 10	STRUCTURAL PLATE PIPE 72" 12	STRUCTURAL PLATE PIPE 72" 10	REINFORCED ENDWALLS WITH R.C. – C.Y.	REINFORCED ENDWALLS WITH C.S. – C.Y.	MASONARY DRAINAGE STRUCTURES CUBIC YARDS	G.D.I. TYPE "A" STD. 840.17 OR 840.26	G.D.I. (N.S.S.G.) FRAME WITH TWO GRATES STD. 840.24	REINF. CONC. FLARED END SECTIONS NO. & SIZE	CORR. STEEL FLARED END SECTIONS NO. & SIZE	REINF. CONC. ELBOWS NO. & SIZE	CORR. STEEL ELBOWS NO. & SIZE	CONC. COLLARS CL. "B" C.Y. STD 840.72	PIPE REMOVAL LIN.FT.	REMARKS
-L- 78+45																				8.905	1	1							MIN. DEPTH 2GI TYPE A
-L- 78+43																													72" RCP IV
-L- 78+66																		7.1											72" RCP IV W/HW
-L- 128+81																		5.0											54" RCP III W/HW
-L- 135+42																		7.1											72" RCP III W/HW
-L- 163+43																		7.1											72" RCP III W/HW
-L- 163+53																				12.2									JB W/SLAB LID (SEE SPECIAL DETAIL SHEET 2-O)
-L- 164+20																													72" RCP III
-L- 170+25																		7.1											2 - 54" RCP III W/HW
MASONARY DRAINAGE STRUCTURES CUBIC YARDS – TOTALS FROM SHEET 3-H																				10.6									
G.D.I. (N.S.S.G.) FRAME WITH TWO GRATES STD. 840.24 – TOTALS FROM SHEET 3-H																						2							
PROJECT TOTALS																		33.4		31.705	1	3							

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

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COMPUTED BY: PWR DATE: 02/13/2012
CHECKED BY: MWL DATE: 03/09/2012

PROJECT REFERENCE NO.	SHEET NO.
R-3307	3-J

"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

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

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			SINGLE FACED CONCRETE BARRIERS	REMOVE EXISTING GUARDRAIL	8' EXTRA LENGTH GUARDRAIL POSTS (EA)	REMARKS
				STRAIGHT	SHOP CURVED	DOUBLE FACED	APPROACH END	TRAILING END			APPROACH END	TRAILING END	APPROACH END	TRAILING END	GRAU 350 TL-3	CAT-1	TYPE III	B-77	TES				NO.	PERMITTED G	PERMITTED NG				
-L-	26+15.00	29+15.00	LT	300.00			29+15.00	26+15.00	10.00	13.00						1	1												TIE TO BRIDGE RAIL
-L-	26+33.75	29+15.00	RT	281.25			29+15.00		10.00	13.00	50.00		1.00		1		1												TIE TO BRIDGE RAIL
-L-		29+00.00	CL	NA			29+00.00		N/A	N/A													1		1				TIE TO MEDIAN BARRIER ON BRIDGE
-L-	63+28.00	67+21.75	LT	393.75			65+50.00	63+28.00	10.00	13.00	50.00		1.00		1		1												TIE TO BRIDGE RAIL
-L-	63+28.00	67+31.25	RT	403.25			63+28.00	67+31.25	10.00	13.00						1	1											102	TIE TO BRIDGE RAIL, SEE NOTE ABOUT POSTS
-L-	63+43.00		CL	NA			63+43.00		N/A	N/A													1		1				TIE TO MEDIAN BARRIER ON BRIDGE
-LREV-	101+25.00	104+56.25	LT	331.25			103+31.25	101+25.00	10.00	13.00	50.00		1.00		1	1													
-L-	119+75+/-		LT	25.00					N/A	N/A									2										BLOCK OFF BUNCH RD.
-L-	134+43.64	145+49.89	RT	1,106.25			135+68.75	145+49.89	10.00	13.00	50.00		1.00		1			1											TIE TO SINGLE FACED CONCRETE BARRIER
-L-	145+49.89	169+94.55	RT	NA			145+49.89	169+94.55																		2,444.66			SINGLE FACED CONCRETE BARRIER
-L-	163+90.00	171+71.25	LT	781.25			170+46.25	163+90.00	10.00	13.00	50.00		1.00		1	1													
-L-	169+94.55	171+19.55	RT	125.00			169+94.55	171+19.55	10.00	13.00						1		1											TIE TO SINGLE FACED CONCRETE BARRIER
-L-	38+20 +/-		RT	50.00					N/A	N/A									2										BLOCK OFF OLD US 70
-L-	45+35 +/-		RT	50.00					N/A	N/A									2										BLOCK OFF OLD US 70
-Y2-	11+40.00	12+90.00	RT	150.00			12+90.00		VARIES	VARIES	50.00		1.00		1		1												TIE TO BRIDGE RAIL
-Y2-	19+21.00	20+71.00	LT	150.00			19+21.00		VARIES	VARIES	50.00		1.00		1		1												TIE TO BRIDGE RAIL
			SUBTOTAL	4,147.00 Ft.										TOTALS	7	5	6	2	6				2			2,444.66		102	
																								SAY		2,500.00			

LESS ANCHOR DEDUCTIONS		
GRAU-350	7 @ 50.00 Ft.	350 Ft.
CAT-1	5 @ 6.25 Ft.	31.25 Ft.
TYPE III	6 @ 18.75 Ft.	112.50 Ft.
B-77	2 @ 18.75 Ft.	37.50 Ft.
SUBTOTAL		-531.25 Ft.
PROJECT TOTAL		3,615.75 Ft.
SAY		3,700.00 Ft.
ADDITIONAL GUARDRAIL POSTS		10 EA.

NOTE: WHEN THE OFFSET DISTANCE FROM THE RETAINING WALL SURFACE TO THE FACE OF THE GUARDRAIL IS BETWEEN 5' AND 5'-6", USE EXTRA LONG GUARDRAIL POSTS (8' STEEL) AT 6'-3" POST SPACING WITHIN THE LIMITS OF THE WALL

SUMMARY OF AGGREGATE SUBGRADE / STABILIZATION

BEGIN STATION	END STATION	AGGREGATE TYPE * ASU / AST	AGGREGATE THICKNESS (INCHES)	SHALLOW UNDERCUT (CY)	CLASS IV SUBGRADE STABILIZATION (TONS)	GEOTEXTILE FOR SOIL STABILIZATION (SY)	STABILIZER AGGREGATE (TONS)	CLASS IV AGGREGATE STABILIZATION (TONS)
	CONTINGENCY	AST	3					7,000.00
			TOTAL (CY,TONS or SY)	0	0	0	0	7,000.00

* ASU = AGGREGATE SUBGRADE
* AST = AGGREGATE STABILIZATION

SUMMARY OF SUBSURFACE DRAINS
IN FEET

BEGIN STATION	END STATION	LOCATION	LENGTH
-L- STA. 17+00.00	-L- STA. 29+00.00	RT.	1,200.00
CONTINGENCY			1,500.00
TOTAL			2,700.00

SUMMARY OF BRIDGE WAITING PERIODS

BRIDGE DESCRIPTION	END BENT / BENT NO.	MONTHS
NEW BRIDGE ON -L- OVER GALLANTS CHANNEL	END BENT NO. 2	4
BRIDGE ON SR 1174 (TURNER ST.) OVER TOWN CREEK	END BENT NO. 1	3
BRIDGE ON SR 1174 (TURNER ST.) OVER TOWN CREEK	END BENT NO. 2	1

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COMPUTED BY: PWR DATE: 03/07/2012
CHECKED BY: MWL DATE: 03/09/2012

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PROJECT REFERENCE NO.	SHEET NO.
R-3307	3-K

SUMMARY OF PAVEMENT REMOVAL AND BREAK-UP
IN SQUARE YARDS

BEGIN STATION	END STATION	LOCATION	ASPHALT REMOVAL	ASPHALT BREAK-UP
-L- STA. 10+00.00	-L- STA. 17+00.00	CL	1,135.00	
-L- STA. 20+00.00	-L- STA. 27+75.00	RT		1,990.00
-L- STA. 20+50.00	-L- STA. 22+50.00	LT		554.00
-L- STA. 24+00.00	-L- STA. 29+40.00	RT & LT		1,132.00
-L- STA. 26+45.00	-L- STA. 31+80.00	RT	2,546.00	
-L- STA. 38+13.00	-L- STA. 39+15.00	RT	421.00	
-L- STA. 43+80.00	-L- STA. 45+44.00	RT	650.00	
-L- STA. 65+00.00	-L- STA. 78+75.00	RT & LT		4,455.00
-L- STA. 78+32.00	-L- STA. 81+00.00	RT	562.00	
-L- STA. 119+05.00	-L- STA. 119+70.00	RT	470.00	
-L- STA. 119+50.00	-L- STA. 119+90.00	RT & LT		328.00
-L- STA. 119+70.00	-L- STA. 119+93.00	LT	60.00	
-L- STA. 190+87.00	-L- STA. 191+42.00	RT & LT		161.00
-L- STA. 194+93.00	-L- STA. 202+00.00	RT		1,911.00
-L- STA. 198+50.00	-L- STA. 207+00.00	LT	1,304.00	
-Y1REV- STA. 14+00.00	-Y1REV- STA. 20+60.00	RT	940.00	
-Y2- STA. 10+67.00	-Y2- STA. 12+89.00	CL		643.00
-Y2- STA. 12+89.00	-Y2- STA. 19+22.00	CL	1,385.00	
-Y2- STA. 19+22.00	-Y2- STA. 23+50.00	CL		950.00
-Y2- STA. 23+50.00	-Y2- STA. 25+50.00	CL	531.00	
-Y3- STA. 15+00.00	-Y3- STA. 23+50.00	LT	2,597	
-Y3- STA. 16+00.00	-Y3- STA. 17+00.00	CL	584.00	
-Y3- STA. 17+00.00	-Y3- STA. 22+37.00	CL		1,312.00
-Y3- STA. 22+38.00	-Y3- STA. 29+50.00	RT	1,329.00	
-Y4- STA. 11+38.00	-Y4- STA. 12+90.00	LT	428.00	
-Y6- STA. 10+52.00	-Y6- STA. 11+50.00	CL		468.00
-DR3- STA. 11+00.00	-DR3- STA. 11+38.00	LT	83.00	
TOTAL			15,025.00	13,904.00
SAY			15,100.00	14,000.00

NOTE: Approximate quantities only. Unclassified excavation, fine grading, clearing and grubbing, breaking of existing pavement and removal of existing pavement will be paid for at the lump sum price for "Grading".

SUMMARY OF SHOULDER BERM GUTTER
IN FEET

BEGIN STATION	END STATION	LOCATION	LENGTH
-L- STA. 26+45.00	-L- STA. 29+00.00	LT.	255.00
-L- STA. 63+43.00	-L- STA. 66+70.00	LT.	327.00
-L- STA. 63+43.00	-L- STA. 67+25.00	RT.	382.00
-L- STA. 135+00.00	-L- STA. 145+49.89	RT.	1,049.89
-L- STA. 169+94.55	-L- STA. 171+07.75	RT.	113.20
TOTAL			2,127.09
SAY			2,200.00

SUMMARY OF 2'-6" CURB AND GUTTER
IN FEET

BEGIN STATION	END STATION	LOCATION	LENGTH
-L- STA. 184+83.69	-L- STA. 207+00.00	LT.	2,158.53
-L- STA. 184+83.69	-L- STA. 189+33.69	RT.	464.83
-L- STA. 191+19.42	-L- STA. 194+36.00	RT.	337.50
-L- STA. 195+17.20	-L- STA. 206+81.23	RT.	1,004.03
-Y2- STA. 10+83.00	-Y2- STA. 12+89.00	LT.	206.00
-Y2- STA. 11+10.00	-Y2- STA. 12+89.00	RT.	179.00
-Y2- STA. 19+22.00	-Y2- STA. 23+42.00	LT.	427.00
-Y2- STA. 19+22.00	-Y2- STA. 27+49.00	RT.	811.00
-Y2- STA. 23+64.70	-Y2- STA. 24+49.33	LT.	136.00
-Y2- STA. 24+72.00	-Y2- STA. 27+47.00	LT.	279.00
-Y2- STA. 27+75.00	-Y2- STA. 32+38.00	RT.	493.00
-Y2- STA. 27+81.00	-Y2- STA. 32+38.00	LT.	358.00
-Y4- STA. 10+51.76	-Y4- STA. 11+36.58	RT.	107.48
-Y4- STA. 10+33.63	-Y4- STA. 11+36.58	LT.	164.85
-DR3- STA. 13+50.00	-DR3- STA. 14+32.00	LT.	83.00
-Y6- STA. 10+47.24	-Y6- STA. 10+80.00	LT.	56.00
-Y7- STA. 10+32.39	-Y7- STA. 10+60.29	RT.	46.40
TOTAL			7,311.62
SAY			7,400.00

SUMMARY OF 2'-9" CURB AND GUTTER
IN FEET

BEGIN STATION	END STATION	LOCATION	LENGTH
-L- STA. 17+00.00	-L- STA. 28+65.00	RT.	1,069.00
-L- STA. 17+00.00	-L- STA. 28+65.00	LT.	1,165.00
-L- STA. 70+35.00	-L- STA. 77+19.00	RT.	540.00
-L- STA. 70+35.00	-L- STA. 77+19.00	LT.	684.00
-L- STA. 82+29.00	-L- STA. 84+93.71	RT.	264.71
-L- STA. 82+29.00	-L- STA. 84+93.71	LT.	264.71
-LREV- STA. 84+93.71	-LREV- STA. 111+08.00	RT.	2,494.29
-LREV- STA. 84+93.71	-LREV- STA. 111+08.00	LT.	2,566.29
-LREV- STA. 116+27.00	-LREV- STA. 118+25.14	RT.	198.14
-LREV- STA. 116+27.00	-LREV- STA. 118+25.14	LT.	126.14
-L- STA. 117+91.30	-L- STA. 189+96.00	RT.	6,892.70
-L- STA. 117+91.30	-L- STA. 189+96.00	LT.	6,942.70
CURB NEEDED TO REPLACE CURB REMOVED FOR TEMP CROSS OVER (TCM PLANS)			
-L- STA. 10+00.00	-L- STA. 17+00.00	RT.	700.00
-L- STA. 10+00.00	-L- STA. 17+00.00	LT.	700.00
TOTAL			24,607.68
SAY			24,700.00

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PROJECT REFERENCE NO.	SHEET NO.
R-3307	3-L

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SUMMARY OF EARTHWORK

IN CUBIC YARDS

LOCATION	UNCLASSIFIED EXCAVATION	UNDERCUT	EMBT+%	BORROW	WASTE
-L- STA. 17+00.00 TO -L- STA. 29+24.00	426		8,429	8,003	
ADJUST FOR ROCK EMBANKMENT (SHEET 2-J)			-910	-910	
SUBTOTAL 1	426		7,519	7,093	
-L- STA. 63+19.00 TO -L- STA. 85+00.00	450		68,862	68,412	
-Y1REV- STA. 13+27.88 TO -Y1REV- STA. 20+35.23	28		4,677	4,649	
-DR2- STA. 10+46.00 TO -DR2- STA. 10+89.89			368	368	
-DR1- STA. 10+65.26 TO -DR1- STA. 15+11.47	256		142		114
SUBTOTAL 2	734		74,049	73,429	114
-L- STA. 85+00.00 TO -L- STA. 114+00.00			116,709	116,709	
-Y2- STA. 10+53.74 TO -Y2- STA. 13+13.00	116		13,454	13,338	
-Y2- STA. 18+98.00 TO -Y2- STA. 32+40.88	671		13,761	13,090	
ADJUST FOR ROCK EMBANKMENT (SHEET 2-J)			-1,040	-1,040	
SUBTOTAL 3	787		142,884	142,097	
-L- STA. 114+00.00 TO -L- STA. 143+00.00	2		99,705	99,703	
-Y3- STA. 10+66.00 TO -Y3- STA. 21+30.88	511		9,811	9,300	
-Y3- STA. 22+24.82 TO -Y3- STA. 30+50.00	356		2,508	2,152	
SUBTOTAL 4	869		112,024	111,155	
-L- STA. 143+00.00 TO -L- STA. 173+00.00	52		105,577	105,525	
-Y4- STA. 10+48.00 TO -Y4- STA. 13+40.00	168		3,972	3,804	
SUBTOTAL 5	220		109,549	109,329	
-L- STA. 173+00.00 TO -L- STA. 207+95.09	1,642		85,457	83,815	
-Y6- STA. 10+36.59 TO -Y6- STA. 12+35.00	157		1,518	1,361	
-DR3- STA. 10+50.00 TO -DR3- STA. 14+54.73	17		231	214	
-Y7- STA. 10+12.05 TO -Y7- STA. 11+60.29	3		178	175	
SUBTOTAL 6	1,819		87,384	85,565	
PROJECT SUBTOTAL	4,855		533,409	528,668	114
MATERIAL FOR SHOULDER CONSTRUCTION			17,940	17,940	
BORROW FOR INFILTRATION BASIN (SHEET 2-F)			722	722	
WASTE IN LIEU OF BORROW				-114	-114
PROJECT TOTAL	4,855		552,071	547,216	
EST. 5% TO REPLACE TOPSOIL ON BORROW PIT				27,361	
GRAND TOTAL	4,855		552,071	574,577	
SAY	5,000 CY			580,000 CY	
EST. DDE = 14,000 CY					
PER DIVISION REQUEST, ESTIMATED 5,000 CUBIC YARDS OF UNDERCUT TO BE USED AT THE DISCRETION OF THE RESIDENT ENGINEER					

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.

NOTE: Approximate quantities only. Unclassified excavation, fine grading, clearing and grubbing, breaking of existing pavement and removal of existing pavement will be paid for at the lump sum price for "Grading".

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PROJ. REFERENCE NO.	SHEET NO.
R-3307	3-M

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PARCEL INDEX SHEET

PARCEL No.	SHEET No.	PROPERTY OWNER NAME
1	4,5,6	JOSEPH EUDY, et ux.
2	7,8,24	FRIENDS OF THE MUSEUM, N.C. MARITIME MUSEUM, INC.
3	8	H.C.PAGE, JR
4	8	CONSCIENCE BAY, LLC
5	8	ADA L. HINSON
6	8, 9	CARTERET COUNTY
7	9, 20	N/A
8	9	JUDITH CAPALBO
9	9, 20	MAINSAIL OF BEAUFORT, LLC
10	9	JOHN J MCCANN, SR.
11	9	GLENN ADAIR
12	9	C. M. VELLINES, et ux.
13	9	CHARLES R. ELLIOTT, et ux.
14	9	C. M. VELLINES, et ux.
15	9	KIM WILLIS
16	9, 10	G & P ENTERPRISES, INC.
17	9	KATHY B. MCCALL
18	9, 10	DOROTHY H. LEWIS HEIRS
19	9, 10	ROCHELLE L. SIMON
20	10	JOHN E. WAY
21	10	ROBERT E. MELTON, et ux.
22	10	JAMES H. MILLER, SR., et ux.
23	10, 11	DANIEL L. HEAVNER, JR., et al.
24	11	GEORGE ROBERTS LAUGHTON, et ux.
25	11	MELTON LAWRENCE
26	11, 12	MELTON LAWR- ENCE, JR., et ux.
26A	11, 12	MELTON LAWR- ENCE, JR., et ux.
28	12	GUY D. LEWIS, JR., et ux.
29	12	BOBBIE J. WHITBECK
30	12	CHARLES B. PARK, IV.
31	12	DENNY RIGGS, et ux.
32	12	THERESA VINCENZO DIBIASI
33	12	SERENA R. SULLIVAN
34	12	STEVEN N. BERNARD
35	12, 22	SEAN M. CONNER, et ux.
36	12	STEPHEN MAIER et ux.
37	12	N/A
38	12	STEVEN C. JARMAN
39	12	GUY SENTER et ux.
40	12	GEORGE T.SPARKS, et ux.
41	12	DEBORAH F. GILLIKIN, ET VIR
42	12	BRENT R. MASEY
43	11, 12, 23	TERRY O'PRAY, et ux.
44	12	REBECCA S. NEWTON
45	12	TIMOTHY E. HOWLAND, et ux.
46	12	LOIS D. HOWLAND
47	12	GREG FRADY, et ux
48	12	DENISE G. WARREN
49	12	REBECCA L. TAYLOR, et al.
50	12	SARAH R. BROADMAN, et al.
51	12	THOMAS V. WOMACK, JR.
52	12	PEGGY McKAY, et al.
53	12, 13, 14	TRADITIONAL FARMS LLC
53A	13	GARY MERCER, et ux.
54	13	CARTERET COUNTY
55	15, 16	JOSEPH G. BRODA JR., et al.
56	16	J. BRINSON WEBB, JR. et al.
57	16	SIXTY SPLENDID SETTINGS, LLC
58	16, 17	GRACE PRESBYTERIAN CHURCH
59	16, 17	ALTON G. WILLIS, et al.

PARCEL No.	SHEET No.	PROPERTY OWNER NAME
60	16	BRETT NIELSEN, et ux.
61	16	ANGELA C. DAVIS
62	16	DONALD D. KINTZ, II
63	16	MERCER BUILDING CO.
64	16	BEAUFORT MEADOWS INC
65	17	LENA W. PERRY, HEIRS
66	17	EMMA P. WILLIS
67	17	NANCY PERRY
68	17	ROLAND WILLIS
69	17, 18	RICKY MAY, et ux.
70	17	ELIZABETH P. BYRD, et al.
71	17	ETHEL K. GOLDEN
72	17, 18	CEDRIC D. BEACHEM
73	18	HOBERT M. KELLY, et ux.
74	18	JENNIFER GRASSI
75	18	FRANCIS WADE, et ux.
76	18, 19	FRANCIS WADE, et ux.
77	18	JIMMY G. NOBLING
78	18	OWNER UNKNOWN
79	18	LARRY W. STYRON, et ux.
80	18	CORRENA S. GOODING, et al.
81	18	GUY KALM, et ux.
82	18	CHRIS NEWMAN, et ux.
83	18	CECIL LEROY SWAIN,JR.
85	18, 19	LOUIS JAMES NOE,IV,et al.
86	19	JOHNNY W. SOKOLOSKY, et ux.
87	19	JOHN SOKOLOSKY, et ux.
88	19	JAMES A. PINER
89	19	THOMAS L. WILLIS, et al.
90	19	MILTON R. BROWN
91	19	BRADLEY C. WILKES, et ux.
92	19	LARRY W. STYRON, et ux.
93	19	GINA P. GRIFFIN
94	19	PATRICIA FOWLER
95	19	ROBERT K. SELLERS, et ux.
96	19	MILDRED BEACHAM, et al.
97	19	ELBRIDGE M. BEACHAM,JR.
98	19	TYXH, INC.
99	19	UNKNOWN
100	19	JESSE H. CREECH, JR.
101	19	NEW HOPE BAPTIST CHURCH
102	20	HUGHES DEVELOPMENT, LLC
104	20, 21	THE HOUSING AUTHORITY OF THE TOWN OF BEAUFORT
105	20	TOWN OF BEAUFORT
106	20	WALLACE W. GARNER, et ux.
107	20	TAYLORS CREEK
108	21	FRANCES W. CARTER
109	21	DAMIAN HOFFMAN, et ux.
110	22	GRAHAM M. FINCH, et ux.
111	22	CONSCIENCE BAY, LLC
113	22	LYDIA WARREN
114	22	ROBERT N. CAMPEN
115	22	CALVARY BAPTIST CHURCH OF BEAUFORT NC A NC NON-PROFIT CORPORATION
116	22, 23	JOSEPH L. ROSE, et ux.
117	22	FAITH TABERNACLE OF PRAISE, INC.
118	22	MARANATHA PENTECOSTAL HOLINESS CHURCH
119	22	TINKER TOY PROPERTIES, LLC
120	20, 21	EDNA B. WESLEY
120 & 121	23	PAUL A. LOCKWOOD, et ux.
122	23	JESSAN HAGER

PROJ. REFERENCE NO.	SHEET NO.
R-3307	3-N

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PARCEL INDEX SHEET

PARCEL No.	SHEET No.	PROPERTY OWNER NAME
901	13	NCDOT FORMERLY-TRADITIONAL FARMS LLC
902	13, 14	NCDOT FORMERLY-PIER 7 LLC
903	15	NCDOT FORMERLY-PPJ INVESTMENTS INC.
904	15	NCDOT FORMERLY-LUCILLE WRIGHT BOWEN
907	7,8,24	NCDOT
910	10, 11	BEAUFORT-MOREHEAD CITY AIRPORT AUTHORITY

PARCEL No.	SHEET No.	PROPERTY OWNER NAME

PROJECT REFERENCE NO.	SHEET NO.
R-3307	4
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 16378 ENGINEER VRUKHA V. PATEL
9-26-12
Rukha V. Patel

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 19775 ENGINEER RAY DAVID OVIEDO
26 SEP 2012

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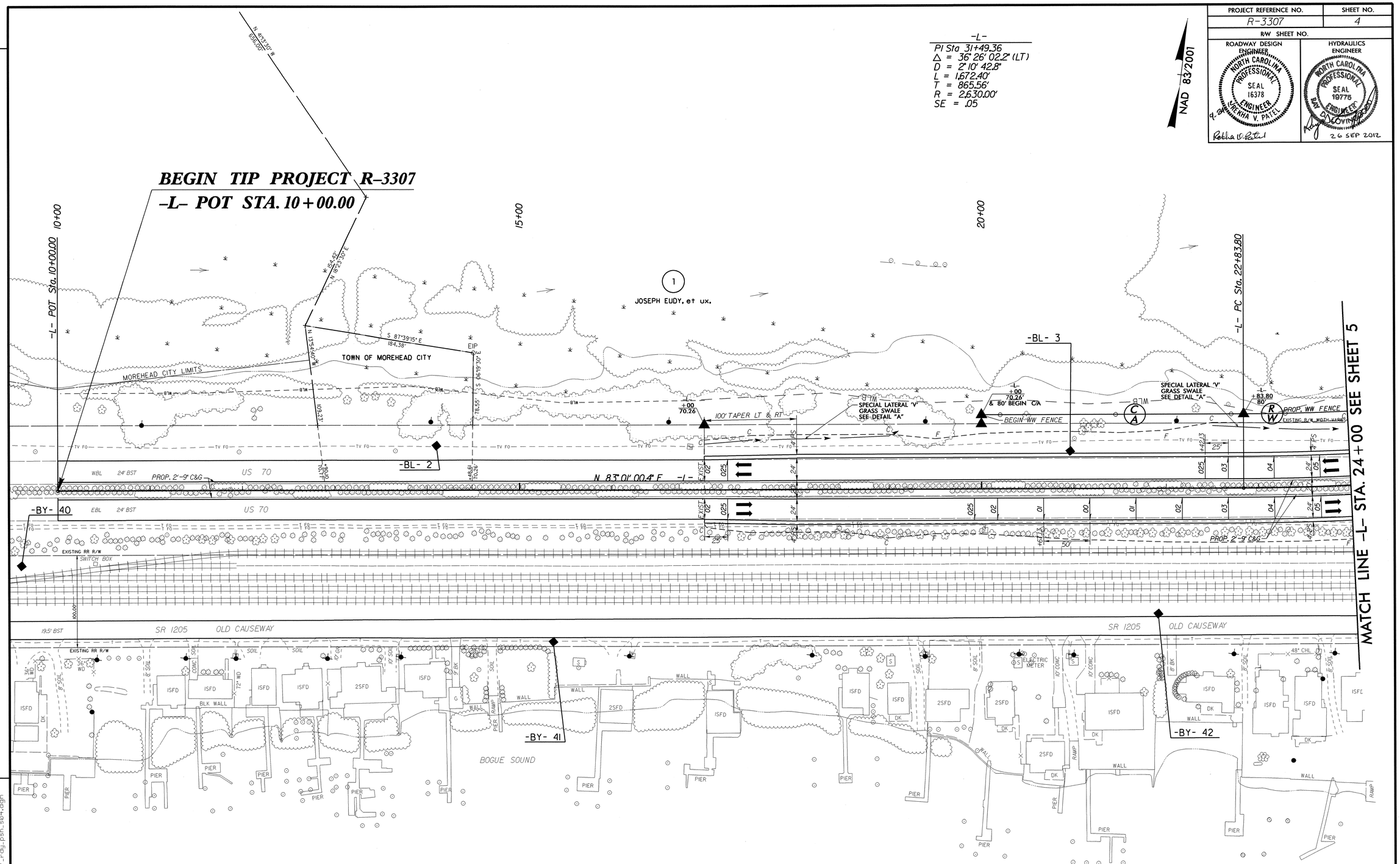
PI Sta 31+49.36
Δ = 36° 26' 02.2" (LT)
D = 2° 10' 42.8"
L = 1,672.40'
T = 865.56'
R = 2,630.00'
SE = .05

NAD 83/2001



NOTES: (1) SEE SHEET 26 FOR -L- PROFILE
(2) SEE SHEET 2-E FOR DRAINAGE DETAILS
(3) SEE TCM PLANS FOR TEMPORARY CROSSOVER -L- STA.10+00.00 TO -L- STA.17+00.00
(4) RESURFACE OLD CAUSEWAY RD.(SR 1205) FROM INTERSECTION OF RIVERS RD. (SR 1208) TO THE INTERSECTION OF RADIO ISLAND RD. (SR 1224) WITH 3" S9.5B AFTER TEMPORARY CROSSOVER REMOVAL.

REVISIONS

20-SEP-2012 11:29
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$$$$USERNAME$$$$

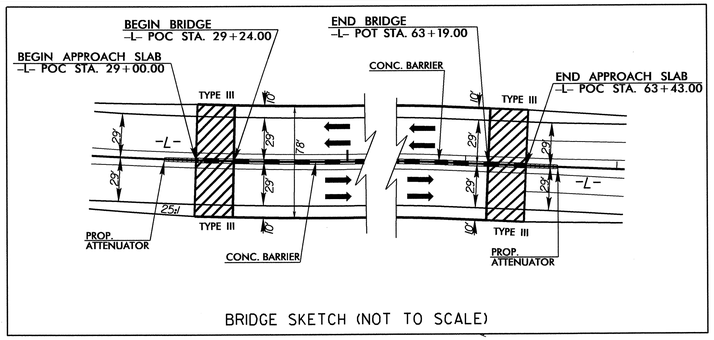
PROJECT REFERENCE NO.	SHEET NO.
R-3307	5
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 16378 ENGINEER REKHA V. PATEL

NORTH CAROLINA PROFESSIONAL SEAL 19776 ENGINEER RAY DOLOVICH JR.

26 SEP 2012

REVISIONS



BRIDGE SKETCH (NOT TO SCALE)

NAD 83/2001

-L-
PI Sta 31+49.36
Δ = 36° 26' 02.2" (LT)
D = 2° 10' 42.8"
L = 1,672.40'
T = 865.56'
R = 2,630.00'
SE = .05

25+00 30+00 35+00

MATCH LINE -L- STA. 24+00 SEE SHEET 4

MATCH LINE -L- STA. 37+00 SEE SHEET 6

CLASS 'B' RIP RAP
EST. 2 TONS
7 SY GEOTEXTILE

SPECIAL LATERAL 'V'
GRASS SWALE
SEE DETAIL "A"

BEGIN SBG 26+45 LT.

CLASS 'B' RIP RAP
EST. 2 TONS
7 SY GEOTEXTILE

END SBG 29+00 LT.

BEGIN BRIDGE
-L- POC STA. 29+24.00

SEE STRUCTURAL DRAWINGS
FOR CONTINUATION

CLASS 'B' RIP RAP
EST. 2 TONS
7 SY GEOTEXTILE

CLASS 'B' RIP RAP
EST. 5 TONS
14 SY GEOTEXTILE

STD. FALSE CUT
GRASS SWALE
SEE DETAIL "C"
EST. 34 CY DDE

SPLITTER BOX
SEE DETAIL 2-H

INFILTRATION BASIN
SEE DETAIL SHEETS 2-E & 2-F

CLASS 'B' RIP RAP
EST. 2 TONS
5 SY GEOTEXTILE

EMERGENCY
OUTLET CONTROL
SEE DETAIL 2-I

STD. BASE GRASS SWALE
SEE DETAIL "K"
EST. 56 CY DDE

PROPOSED
ATTENUATOR

GRADE TO DRAIN

CLASS 'II' RIP RAP

PROP. 2'-9" C&G

GRAU 350 TL-3

PSH (SEE DETAIL)

PSH (SEE DETAIL)

16" PVC

18" RCP

15" RCP-V

12" RCP-V

-BL- 4

-BY- 43

-BY- 44

-BY- 45

JOSEPH EUDY, et ux.

JOSEPH EUDY, et ux.

BEGIN C/A

SR 1205 OLD CAUSEWAY

US 70

SR 1208 RIVERS ISLAND RD.

EXISTING R/W WIDTH VARIES

NOTES: (1) SEE SHEET 26 FOR -L- PROFILE
(2) SEE SHEET 2-E FOR DRAINAGE DETAILS
(3) SEE STRUCTURE PLANS
(4) RESURFACE OLD CAUSEWAY RD. (SR 1205) FROM INTERSECTION OF RIVERS RD. (SR 1208) TO THE INTERSECTION OF RADIO ISLAND RD. (SR 1224) WITH 3" S9.5B AFTER TEMPORARY CROSSOVER REMOVAL.
(5) SEE SHEET 2-J FOR ROCK EMBANKMENT DETAIL

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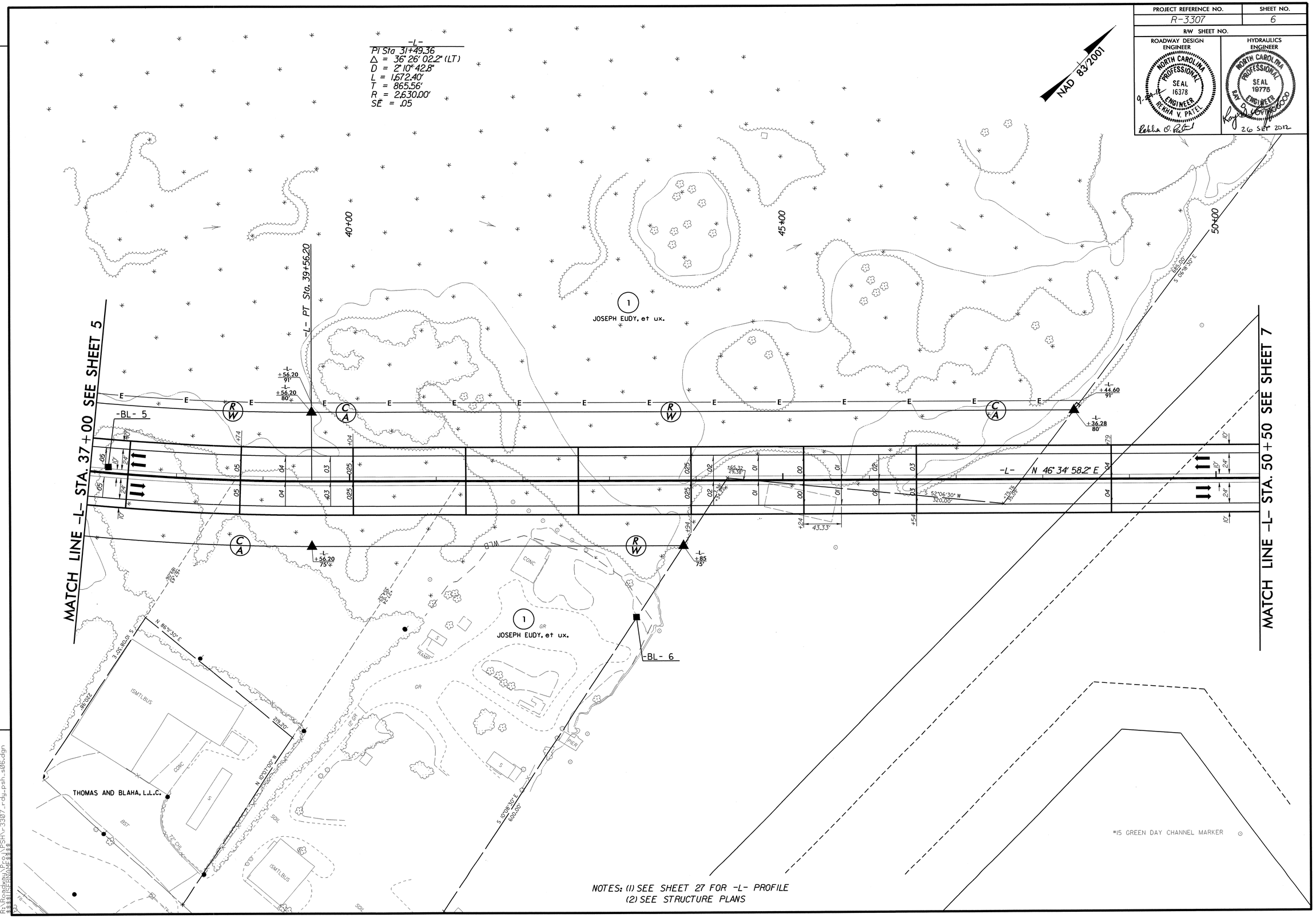
PROJECT REFERENCE NO.	SHEET NO.
R-3307	6
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 16378 ENGINEER REKHA V. PATEL
Rekha V. Patel

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 19775 ENGINEER RAY D. LOVINGWOOD
Ray D. Lovingwood
26 SEP 2012

REVISIONS



NOTES: (1) SEE SHEET 27 FOR -L- PROFILE
(2) SEE STRUCTURE PLANS

20-SEP-2012 11:29
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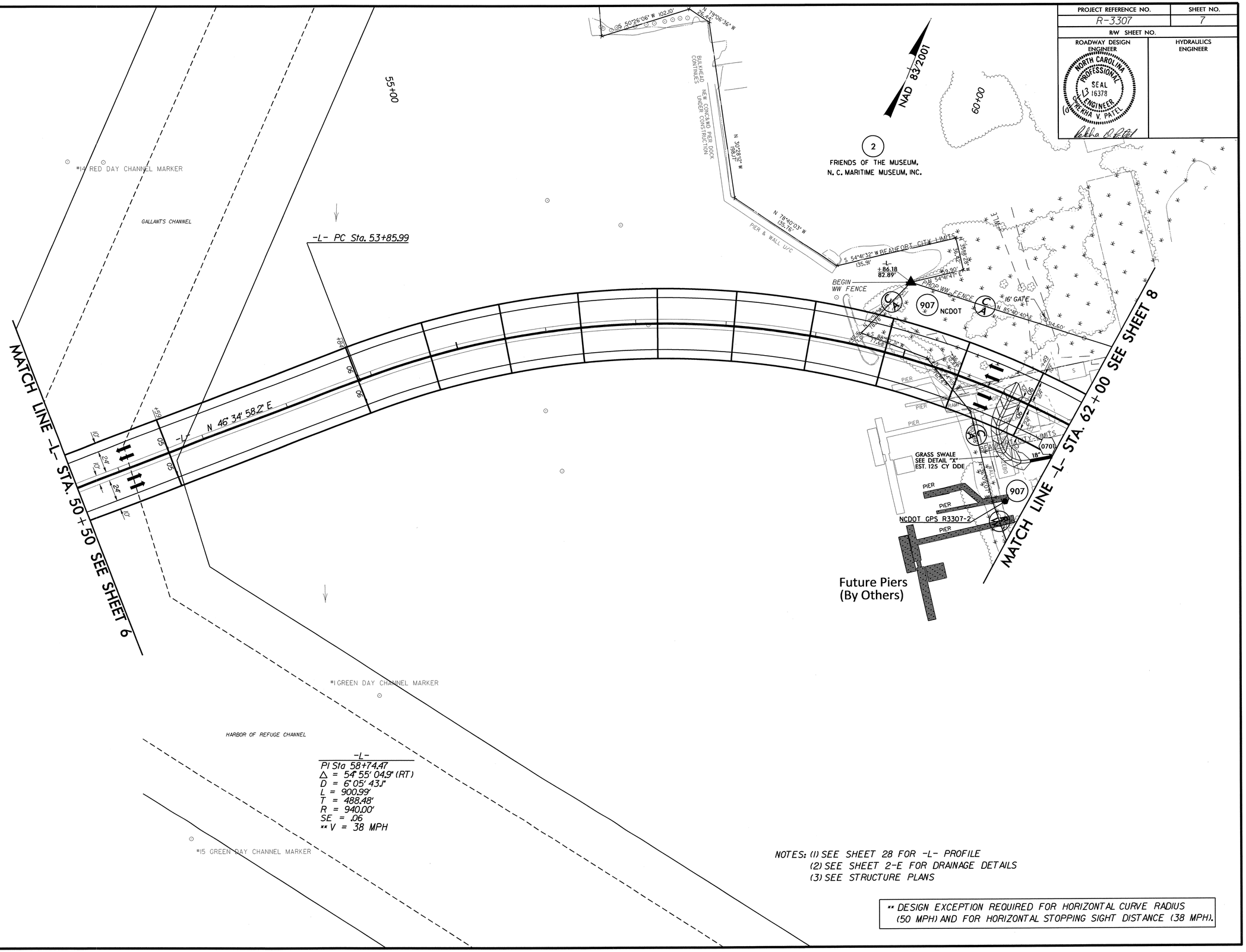
PROJECT REFERENCE NO.	SHEET NO.
R-3307	7
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 16378 ENGINEER (OM) REKHA V. PATEL



-L-
PI Sta 58+74.47
Δ = 54° 55' 04.9" (RT)
D = 6° 05' 43.1"
L = 900.99'
T = 488.48'
R = 940.00'
SE = .06
** V = 38 MPH

NOTES: (1) SEE SHEET 28 FOR -L- PROFILE
(2) SEE SHEET 2-E FOR DRAINAGE DETAILS
(3) SEE STRUCTURE PLANS

** DESIGN EXCEPTION REQUIRED FOR HORIZONTAL CURVE RADIUS (50 MPH) AND FOR HORIZONTAL STOPPING SIGHT DISTANCE (38 MPH).

REVISIONS

27-MAR-2013 09:24
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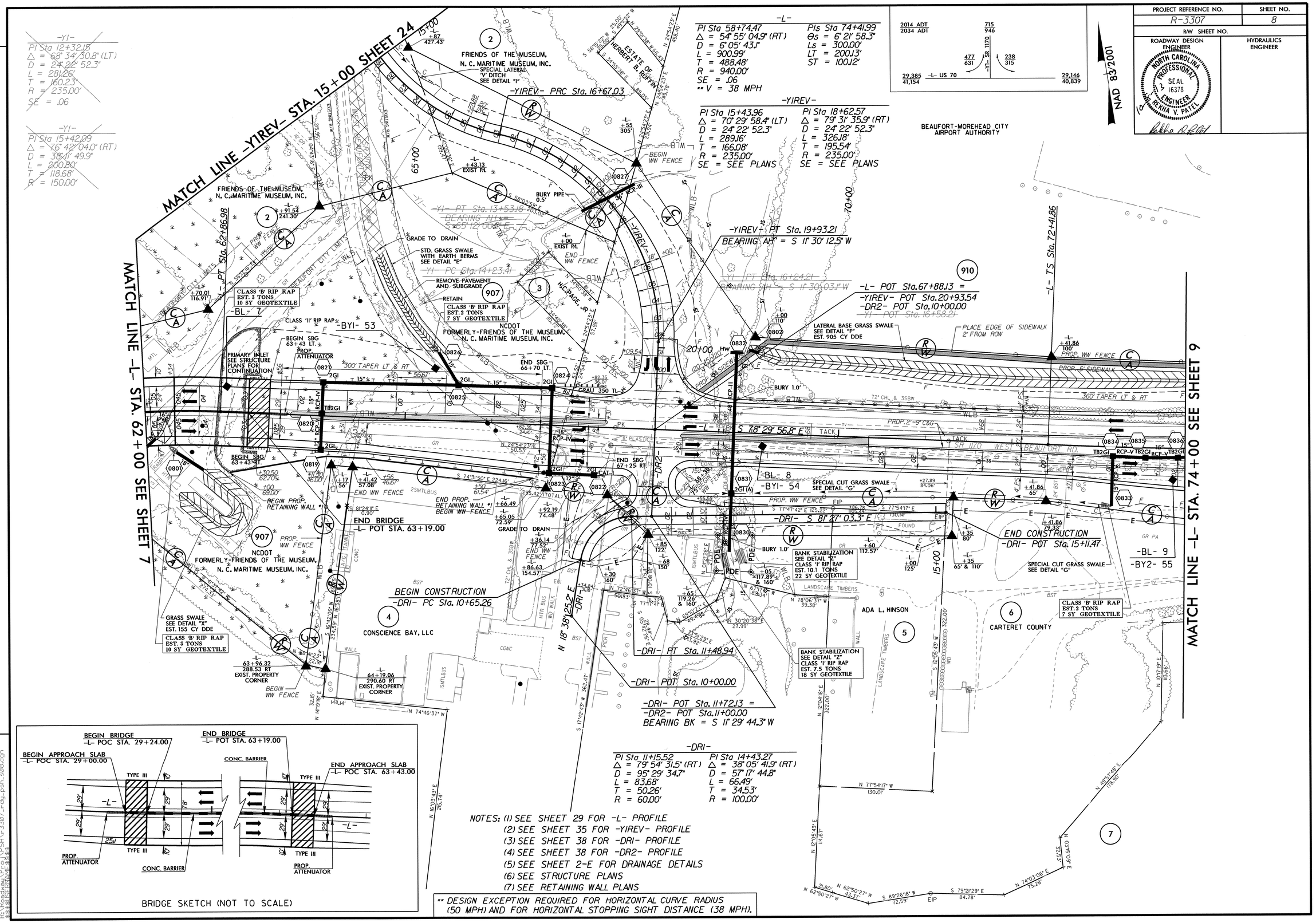
$$$$$ USER NAME $$$$

RD261644 3/27/2013 r3307_rdy_psh_s07 mydunn RD_Oco860_34

PROJECT REFERENCE NO.	SHEET NO.
R-3307	8
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 16378 ENGINEER REKHA V. PATEL

REVISIONS



NOTES: (1) SEE SHEET 29 FOR -L- PROFILE
(2) SEE SHEET 35 FOR -YIREV- PROFILE
(3) SEE SHEET 38 FOR -DRI- PROFILE
(4) SEE SHEET 38 FOR -DR2- PROFILE
(5) SEE SHEET 2-E FOR DRAINAGE DETAILS
(6) SEE STRUCTURE PLANS
(7) SEE RETAINING WALL PLANS

** DESIGN EXCEPTION REQUIRED FOR HORIZONTAL CURVE RADIUS (50 MPH) AND FOR HORIZONTAL STOPPING SIGHT DISTANCE (38 MPH).

04-SEP-2013 11:25
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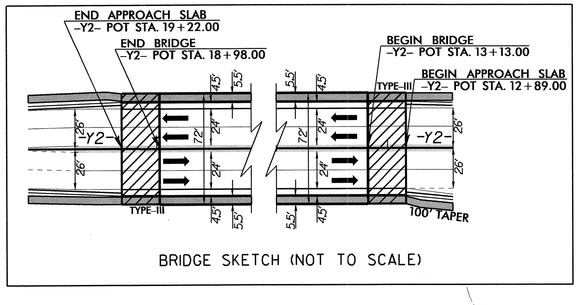
PROJECT REFERENCE NO.	SHEET NO.
R-3307	9
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 16378 ENGINEER REKHA V. PATEL

NORTH CAROLINA PROFESSIONAL SEAL 19775 2012 ENGINEER RAY D. LOVINGOOD

★ PROPOSED SIGNAL

NAD 83/2001

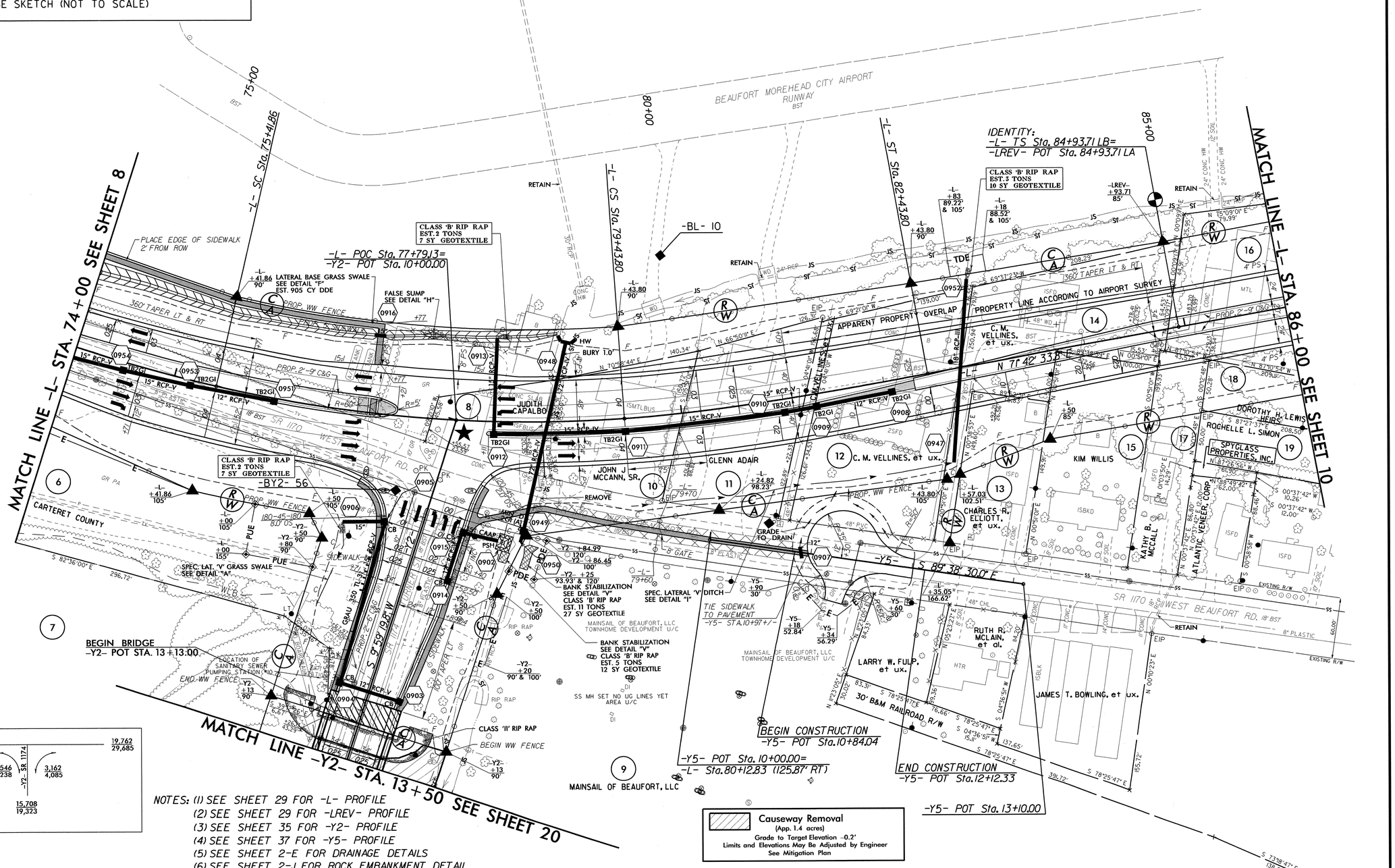


BRIDGE SKETCH (NOT TO SCALE)

-L-

Pls Sta 74+41.99	PI Sta 77+44.33	Pls Sta 80+43.92	~~Pls Sta 86+60.40~~
Θs = 6° 21' 58.3"	Δ = 17° 03' 32.8" (LT)	Θs = 6° 21' 58.3"	~~Θs = 2° 42' 09.5"~~
Ls = 300.00'	D = 4° 14' 38.9"	Ls = 300.00'	~~Ls = 250.00'~~
LT = 200.13'	L = 401.95'	LT = 200.13'	~~LT = 166.69'~~
ST = 100.12'	T = 202.47'	ST = 100.12'	~~ST = 83.35'~~
	R = 1,350.00'		
	SE = .04		

910 BEAUFORT-MOREHEAD CITY AIRPORT AUTHORITY



NOTES: (1) SEE SHEET 29 FOR -L- PROFILE
(2) SEE SHEET 29 FOR -LREV- PROFILE
(3) SEE SHEET 35 FOR -Y2- PROFILE
(4) SEE SHEET 37 FOR -Y5- PROFILE
(5) SEE SHEET 2-E FOR DRAINAGE DETAILS
(6) SEE SHEET 2-J FOR ROCK EMBANKMENT DETAIL
(7) SEE STRUCTURE PLANS

REVISIONS

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RD261644 9/4/2013 r3307_rdy_psh_s09 mydunn RD Qcc860.24

PROJECT REFERENCE NO.	SHEET NO.
R-3307	10
R/W SHEET NO.	
ROADWAY DESIGN	HYDRAULICS
ENGINEER NORTH CAROLINA PROFESSIONAL SEAL 019770 ENGINEER REKHA V. PATEL	ENGINEER NORTH CAROLINA PROFESSIONAL SEAL 19770 ENGINEER RAY DALLAWAY GOOD
Rekha V. Patel	20 APR 2012

-L-

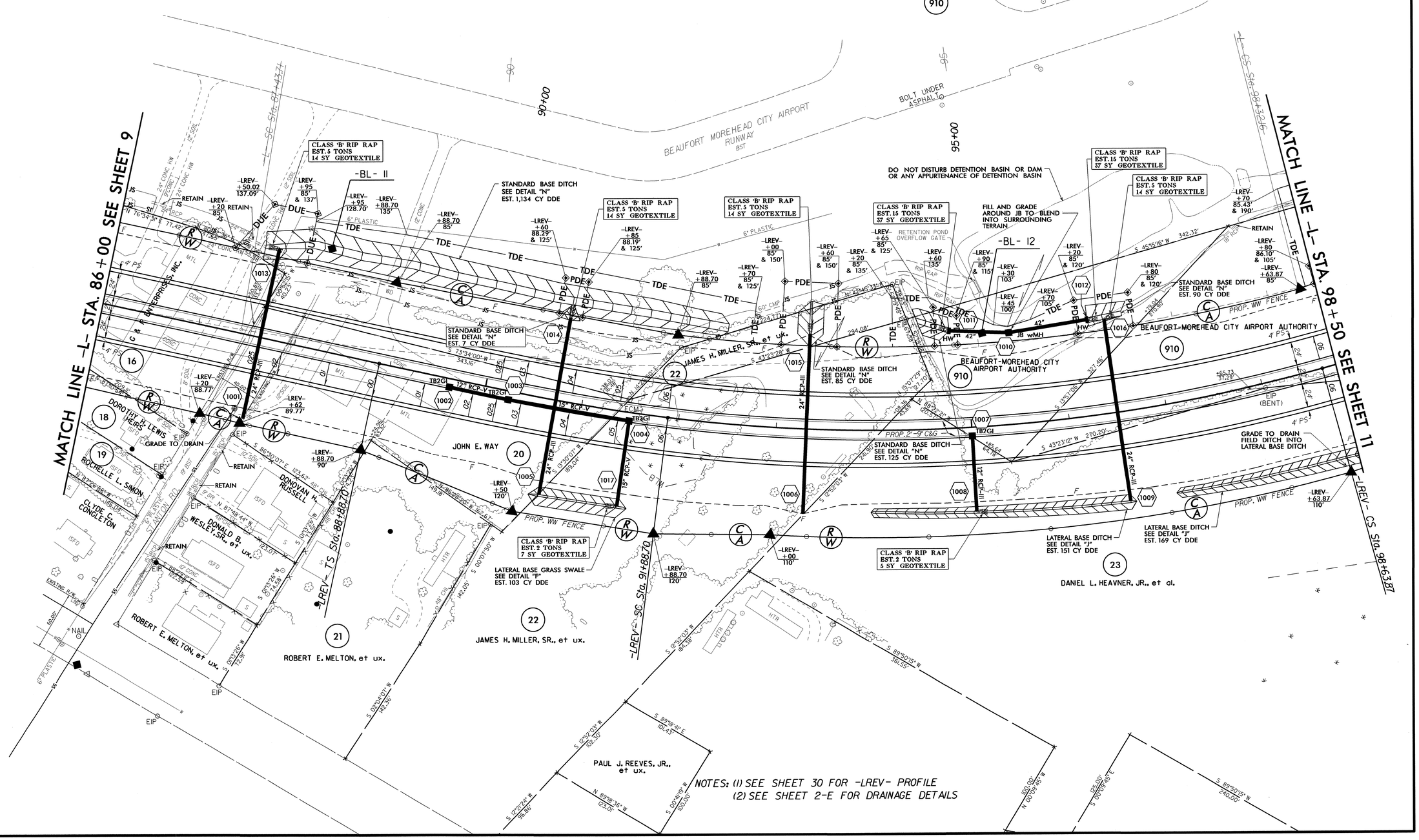
PIs Sta 86+60.40	PI Sta 92+95.72	PIs Sta 99+15.51
Θs = 2° 42' 09.5"	Δ = 23° 32' 00.0" (LT)	Θs = 2° 42' 09.5"
Ls = 250.00'	D = 2° 09' 43.6"	Ls = 250.00'
LT = 166.69'	L = 1,088.45'	LT = 166.69'
ST = 83.35'	T = 552.01'	ST = 83.35'
	R = 2,650.00'	
	SE = .05	

-LREV-

PIs Sta 90+88.79	PI Sta 95+30.80	PIs Sta 99+63.95
Θs = 5° 03' 19.8"	Δ = 22° 45' 19.9" (LT)	Θs = 5° 03' 19.8"
Ls = 300.00'	D = 3° 22' 13.2"	Ls = 300.00'
LT = 200.08'	L = 675.17'	LT = 200.08'
ST = 100.07'	T = 342.09'	ST = 100.07'
	R = 1,700.00'	
	SE = .06	

BEAUFORT-MOREHEAD CITY AIRPORT AUTHORITY

NAD 83/2001



REVISIONS

30-MAR-2012 08:46
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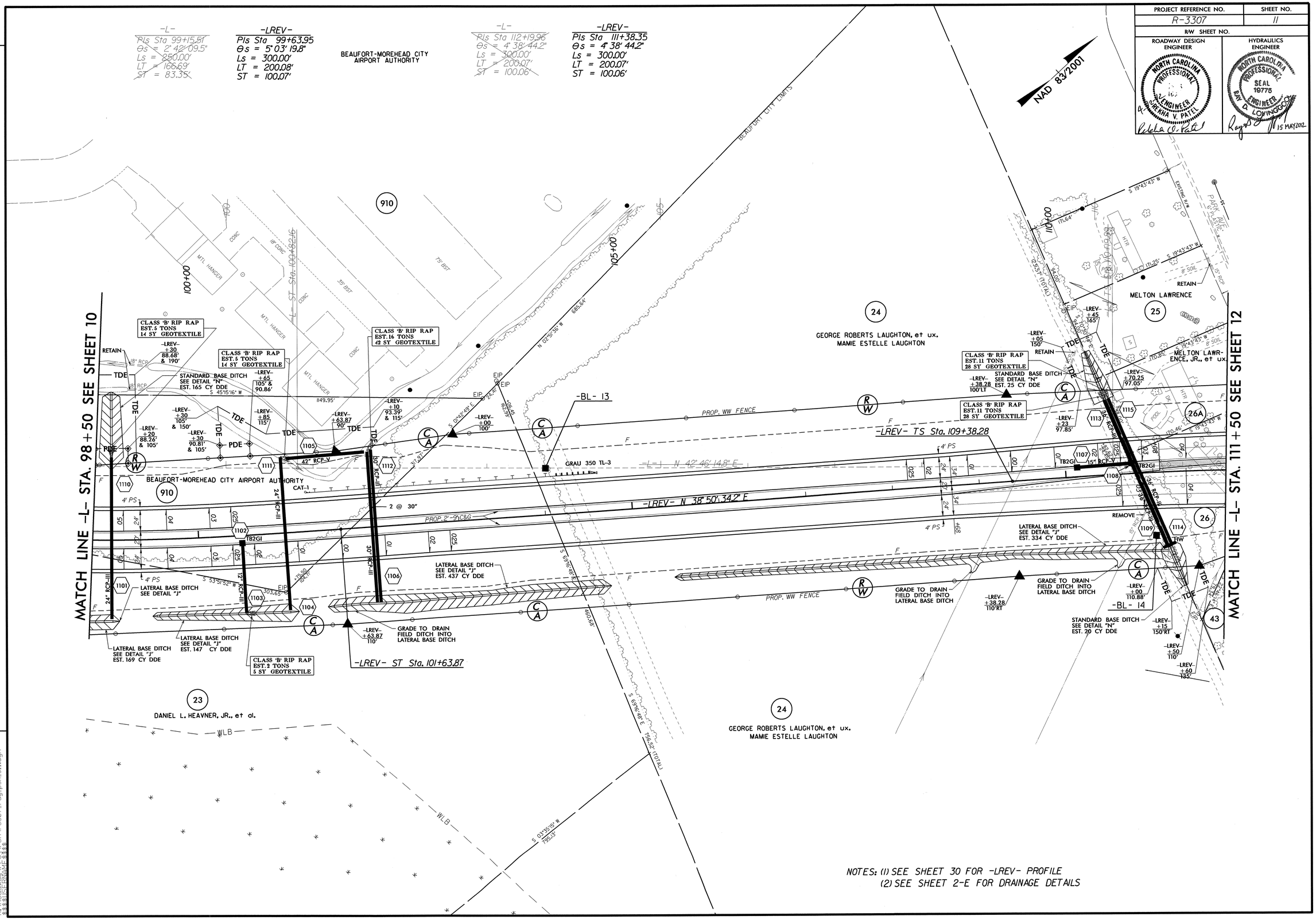
PROJECT REFERENCE NO.	SHEET NO.
R-3307	11
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL ENGINEER SUREKHA V. PATEL	NORTH CAROLINA PROFESSIONAL SEAL 19775 ENGINEER RAY D. LOVINGGOOD
Rekha V. Patel	Ray D. Lovinggood 15 MAY 2012

REVISIONS



NOTES: (1) SEE SHEET 30 FOR -LREV- PROFILE
(2) SEE SHEET 2-E FOR DRAINAGE DETAILS

30-MAR-2012 08:46
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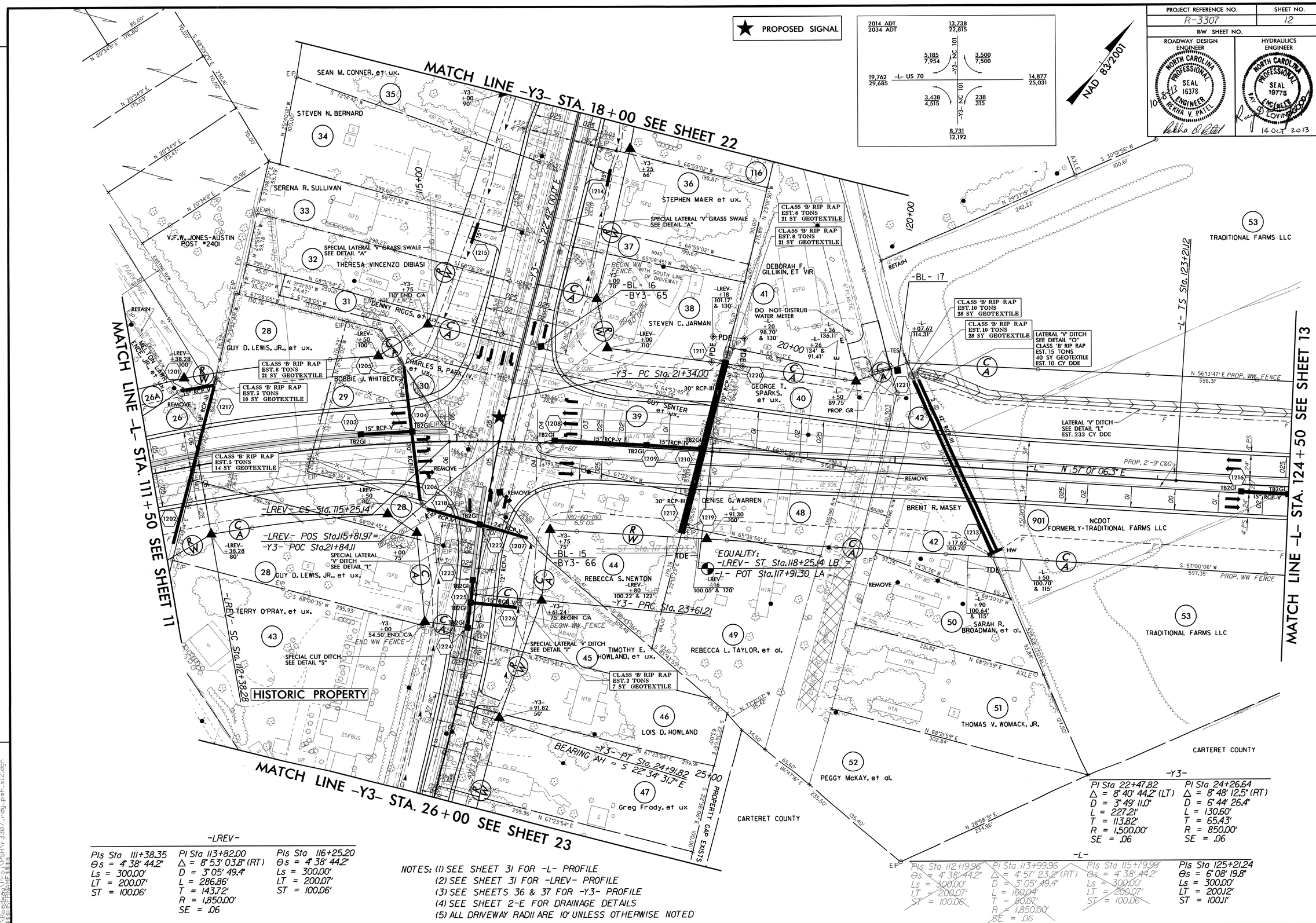
$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
R-3307	12
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 16378 ENGINEER REKHA V. PATEL 10-8-13

NORTH CAROLINA PROFESSIONAL SEAL 19773 ENGINEER RAY D. LOVINGOOD 14 OCT 2013



NOTES:
(1) SEE SHEET 31 FOR -L- PROFILE
(2) SEE SHEET 31 FOR -LREV- PROFILE
(3) SEE SHEETS 36 & 37 FOR -Y3- PROFILE
(4) SEE SHEET 2-E FOR DRAINAGE DETAILS
(5) ALL DRIVEWAY RADII ARE 10' UNLESS OTHERWISE NOTED

REVISIONS

04-SEP-2013 11:25
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PROJECT REFERENCE NO.	SHEET NO.
R-3307	13
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 19776 ENGINEER — R. V. PATEL

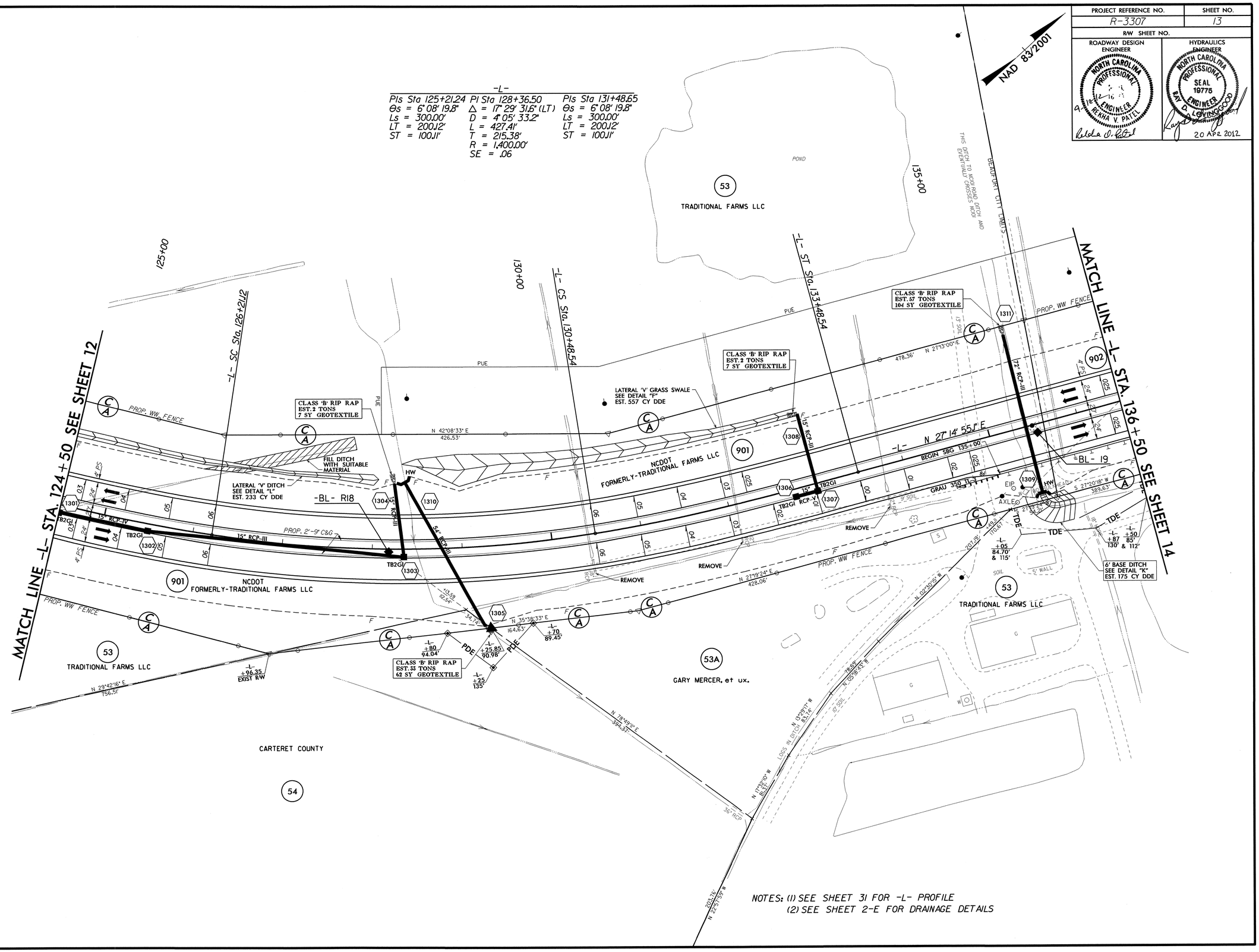
NORTH CAROLINA PROFESSIONAL SEAL 19775 ENGINEER — RAY D. LOVINGGOOD

20 APR 2012

REVISIONS

-L-

Pls Sta 125+21.24	Pl Sta 128+36.50	Pls Sta 131+48.65
Θs = 6° 08' 19.8"	Δ = 17° 29' 31.6" (LT)	Θs = 6° 08' 19.8"
Ls = 300.00'	D = 4° 05' 33.2"	Ls = 300.00'
LT = 200.12'	L = 427.41'	LT = 200.12'
ST = 100.11'	T = 215.38'	ST = 100.11'
	R = 1,400.00'	
	SE = .06	



NOTES: (1) SEE SHEET 31 FOR -L- PROFILE
(2) SEE SHEET 2-E FOR DRAINAGE DETAILS

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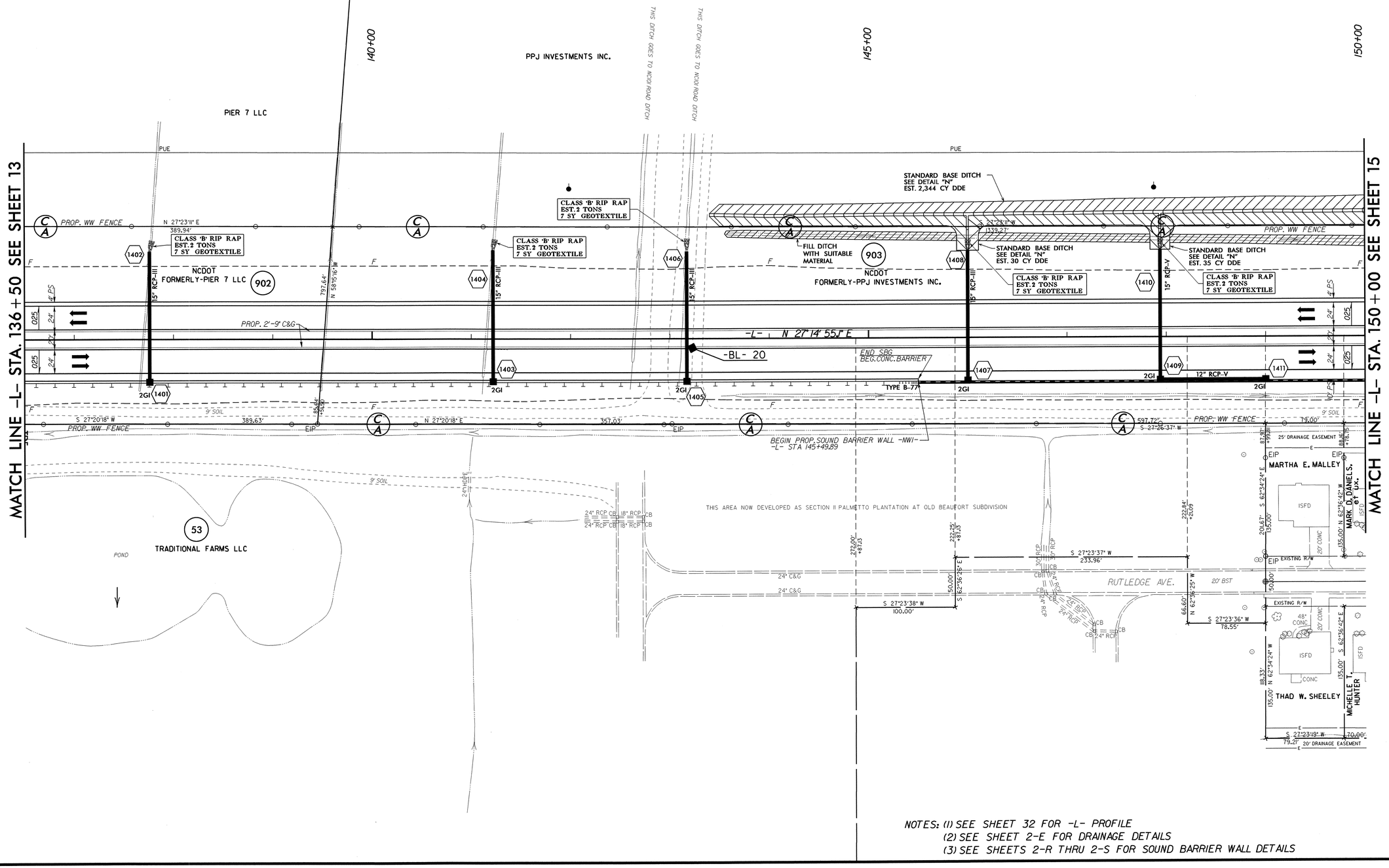
PROJECT REFERENCE NO.	SHEET NO.
R-3307	14
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 19775 ENGINEER A. REKHA V. PATEL

NORTH CAROLINA PROFESSIONAL SEAL 19775 ENGINEER RAY D. LOWINGWOOD

20 APR 2012

NAD 83/2001



NOTES: (1) SEE SHEET 32 FOR -L- PROFILE
(2) SEE SHEET 2-E FOR DRAINAGE DETAILS
(3) SEE SHEETS 2-R THRU 2-S FOR SOUND BARRIER WALL DETAILS

REVISIONS

02-APR-2012 11:44
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RS9317\PWWMS\RS9

PROJECT REFERENCE NO.	SHEET NO.
R-3307	15
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL ENGINEER 12 MEKHA V. PATEL

NORTH CAROLINA PROFESSIONAL SEAL 19778 ENGINEER RAY D. LOVINGGOOD

20 APR 2012

REVISIONS

-L-

PIs Sta 161+22.35	PI Sta 168+39.75	PIs Sta 174+88.19
Θs = 6° 00' 36.2"	Δ = 46° 42' 44.3" (RT)	Θs = 6° 00' 36.2"
Ls = 300.00'	D = 4° 00' 24.1"	Ls = 300.00'
LT = 200.12'	L = 1,165.86'	LT = 200.12'
ST = 100.10'	T = 617.52'	ST = 100.10'
	R = 1,430.00'	
	SE = .06	

NAD 83/2001

MATCH LINE -L- STA. 150+00 SEE SHEET 14

MATCH LINE -L- STA. 162+50 SEE SHEET 16

150+00 155+00 160+00

-L- TS Sta. 159+22.23

-L- SC Sta. 162+22.23

PPJ INVESTMENTS INC.

LUCILLE WRIGHT BOWEN

JOSEPH G. BRODA JR., et al.

STANDARD BASE DITCH SEE DETAIL "N" EST. 2,344 CY DDE

CLASS 'B' RIP RAP EST. 2 TONS 7 SY GEOTEXTILE

PUE

PROP. WW FENCE

STANDARD BASE DITCH SEE DETAIL "N" EST. 25 CY DDE

FILL DITCH WITH SUITABLE MATERIAL

N 27°23'11" E 646.26'

NCDOT FORMERLY-PPJ INVESTMENTS INC.

NCDOT FORMERLY-LUCILLE WRIGHT BOWEN

-BL- 21

-BL- 22

-L- N 27°14'55.1" E

PROP. 2'-9" C&G

PROP. SOUND BARRIER WALL -NW1-

SPECIAL LATERAL "V" DITCH SEE DETAIL "I"

-L- +45.93 EXIST R/W

-L- +22.23 90° & 100'

15" RCP-V 15" RCP-VI 15" RCP-III 15" RCP-IV

NCDOT GPS R3307-6

-L- +36 90.49'

RUTLEDGE AVE.

KIRKLAND LN.

CHARLES GOODWIN, JR., et ux.

BRUNELLA L. DAVIS

CLYDE A. TWEED, JR., et ux.

MARK D. DANIELS, et ux.

BRUCE P. PRUNER, et ux.

ALEXANDER JOHNSON, et ux.

MAURICE RENAUD, et ux.

BRIAN DEANER

STEVEN J. MURRAY, et ux.

PAMELA J. VAUGHEN

AMIT MALHOTRA, et ux.

IAN PATRICK HOGAN

CHRISTOPHER C. ELLIOTT, et ux.

AMANDA M. VIERECK

TRACY C. RODGERS

ROGER D. PITTMAN, JR.

ROALD N. EIDE

CANDACE M. STYRON

MICHELLE T. HUNTER

CLIFFORD J. GUTHRIE, et ux.

SANDRA B. TREADWAY

SUSAN MANTIPLY

WILLIAM C. LAMM, et ux.

SANDRA L. YORK

WALLACE L. HOBBS, et ux.

RONALD W. ROLISON, et ux.

B. KYLE MAREK, et ux.

WILLIAM VAN PELT et ux.

JONATHAN P. ROOP

ELISE BEAUCHEMIN

H. F. LITTLE, JR.

ELTON L. MASON, JR.

MICHAEL C. MERRILL, et ux.

EUGENE P. SANCHEZ, et ux.

PAMELA RENEA KELLY, et al.

INGRID ESCHMAN

CORAN I. TAYLOR

MARVIN L. GUTHRIE, et ux.

HEATHER ANCILLOTTI

JAMES K. VINCENT

MARIA L. WISE, et al.

NOTES: (1) SEE SHEET 32 FOR -L- PROFILE
(2) SEE SHEET 2-E FOR DRAINAGE DETAILS
(3) SEE SHEETS 2-R THRU 2-S FOR SOUND BARRIER WALL DETAILS

02-APR-2012 11:44
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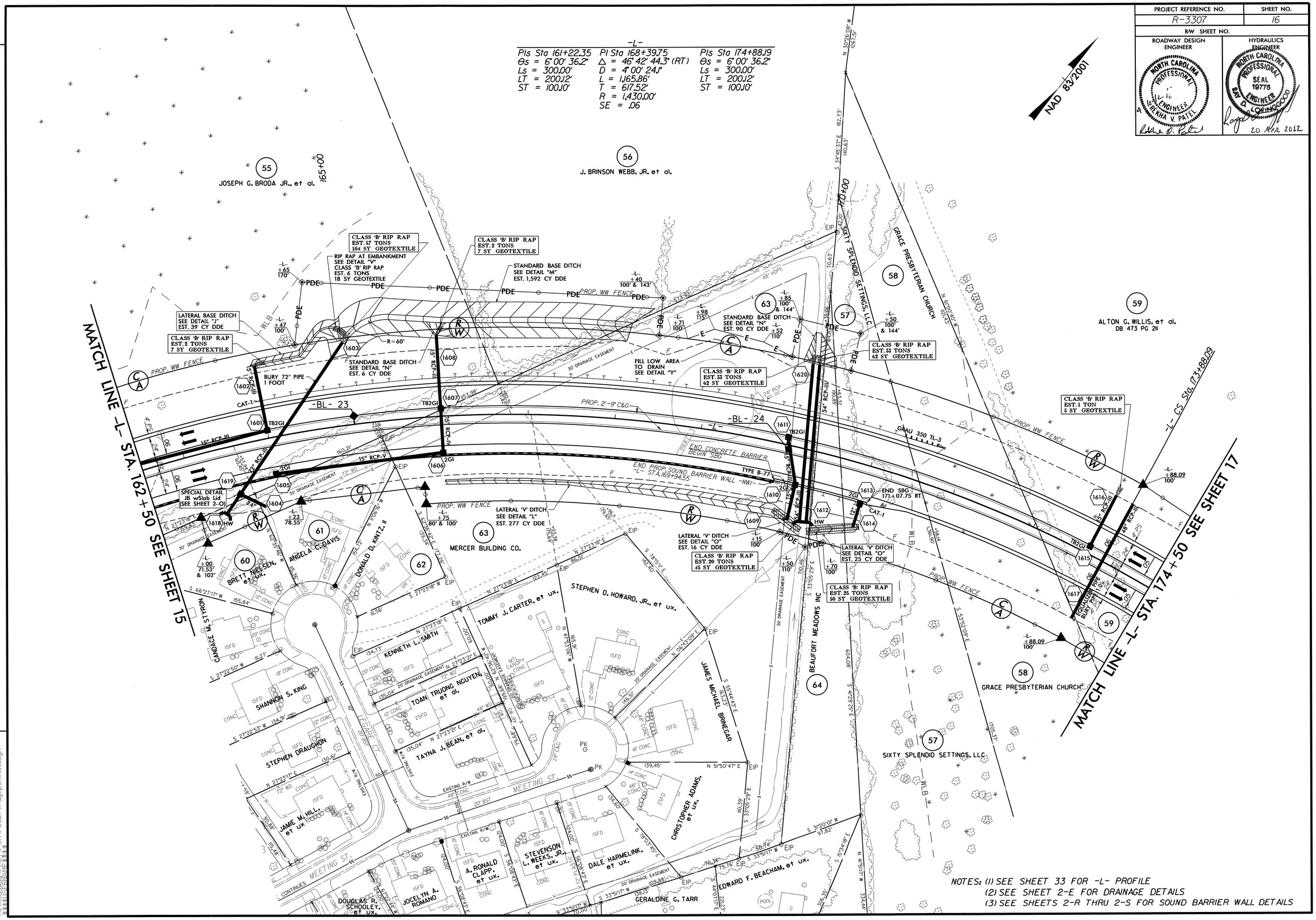
PROJECT REFERENCE NO.	SHEET NO.
R-3307	16
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 19775 SHEKHA V. PATEL

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 19775 RAY D. LOVINGGOOD

20 APR 2012



NOTES: (1) SEE SHEET 33 FOR -L- PROFILE
(2) SEE SHEET 2-E FOR DRAINAGE DETAILS
(3) SEE SHEETS 2-R THRU 2-S FOR SOUND BARRIER WALL DETAILS

REVISIONS

02-APR-2012 11:44
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RD238353 4/2/2012 r3307_rdy_psh_s16 rwdunn RD-Oce860-34

PROJECT REFERENCE NO.	SHEET NO.
R-3307	17
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL ENGINEER 16378 REKHA V. PATEL

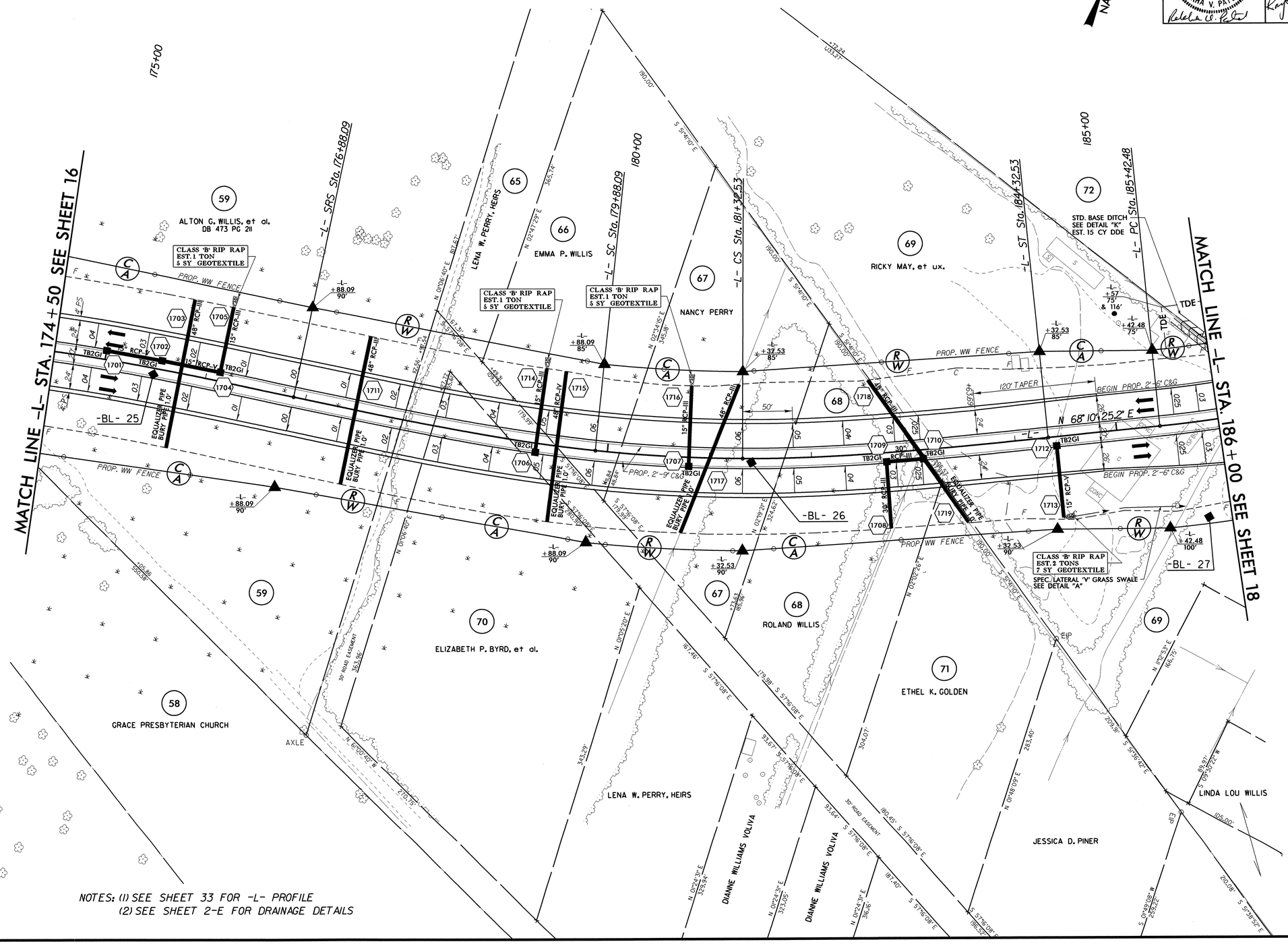
NORTH CAROLINA PROFESSIONAL SEAL 19775 ENGINEER RAY D. KOVINGOOD

20 APR 2012

-L-

PIs Sta 174+88.19	PIs Sta 178+88.20	PI Sta 180+60.37	PIs Sta 182+32.63	PI Sta 192+23.85
Θs = 6° 00' 36.2"	Θs = 6° 00' 36.2"	Δ = 5° 47' 14.2" (LT)	Θs = 6° 00' 36.2"	Δ = 54° 15' 09.2" (LT)
Ls = 300.00'	Ls = 300.00'	D = 4° 00' 24.1"	Ls = 300.00'	D = 4° 18' 28.6"
LT = 200.12'	LT = 200.12'	L = 144.44'	LT = 200.12'	L = 1,259.36'
ST = 100.10'	ST = 100.10'	T = 72.28'	ST = 100.10'	T = 681.37'
		R = 1,430.00'		R = 1,330.00'
		SE = .06		SE = SEE PLANS

NAD 83/2001



NOTES: (1) SEE SHEET 33 FOR -L- PROFILE
(2) SEE SHEET 2-E FOR DRAINAGE DETAILS

REVISIONS

30-MAR-2012 08:46
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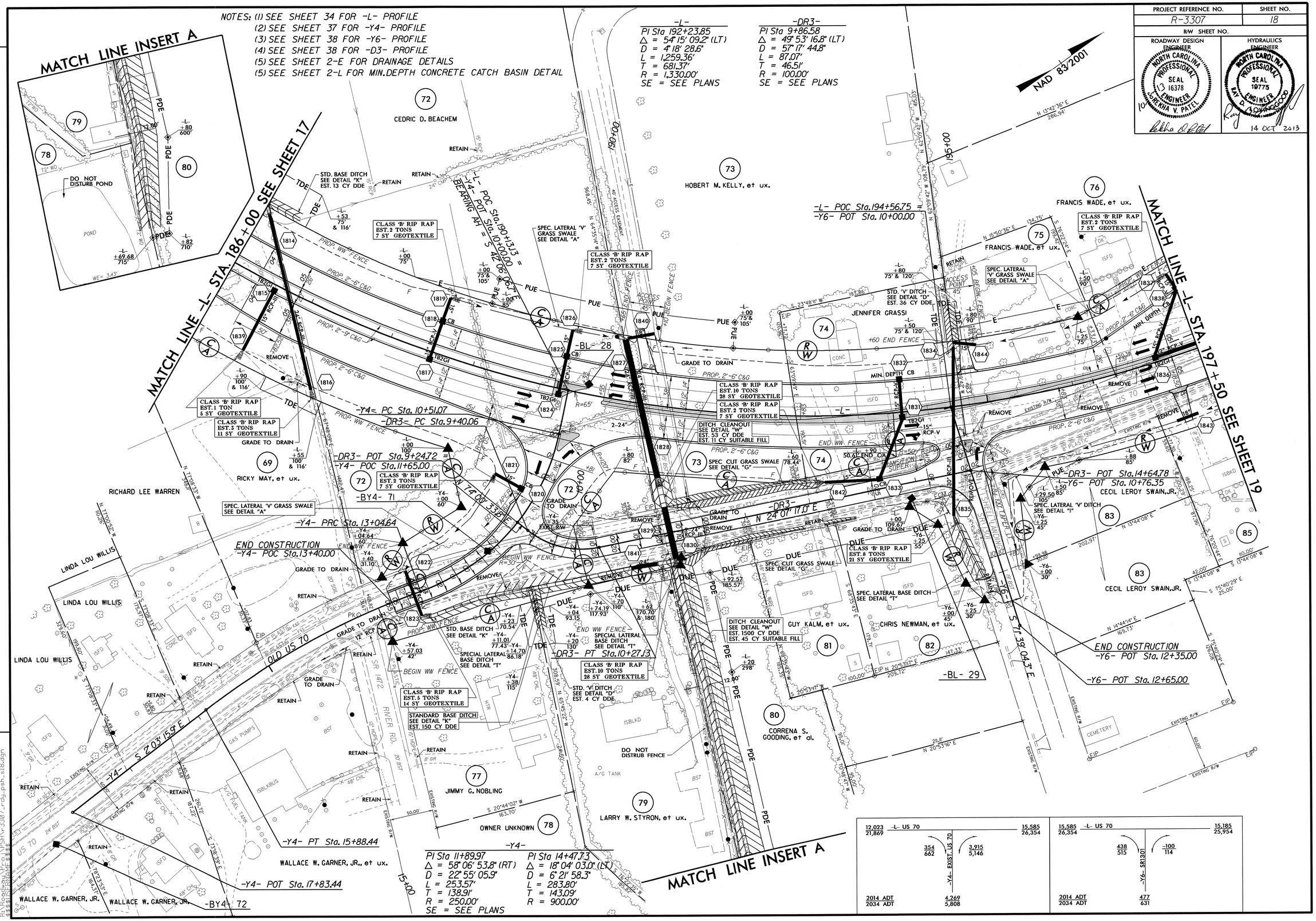
RD238253 3/30/2012 r3307_rdy_psh_s17_mydyrn RD Qcs860_34

PROJECT REFERENCE NO.	SHEET NO.
R-3307	18
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 16378 ENGINEER REKHA V. PATEL	NORTH CAROLINA PROFESSIONAL SEAL 19775 ENGINEER RAY D. LOVINGGOOD
Rekha V. Patel	Ray D. Lovinggood 14 OCT 2013

NOTES: (1) SEE SHEET 34 FOR -L- PROFILE
(2) SEE SHEET 37 FOR -Y4- PROFILE
(3) SEE SHEET 38 FOR -Y6- PROFILE
(4) SEE SHEET 38 FOR -D3- PROFILE
(5) SEE SHEET 2-E FOR DRAINAGE DETAILS
(5) SEE SHEET 2-L FOR MIN.DEPTH CONCRETE CATCH BASIN DETAIL

-L-
PI Sta 192+23.85
Δ = 54° 15' 09.2" (LT)
D = 4° 18' 28.6"
L = 1,259.36'
T = 681.37'
R = 1,330.00'
SE = SEE PLANS

-DR3-
PI Sta 9+86.58
Δ = 49° 53' 16.8" (LT)
D = 57° 17' 44.8"
L = 87.07'
T = 46.51'
R = 100.00'
SE = SEE PLANS



-Y4-
PI Sta 11+89.97
Δ = 58° 06' 53.8" (RT)
D = 22° 55' 05.9"
L = 253.57'
T = 138.91'
R = 250.00'
SE = SEE PLANS

PI Sta 14+47.73
Δ = 18° 04' 03.0" (LT)
D = 6° 21' 58.3"
L = 283.80'
T = 143.09'
R = 900.00'

REVISIONS

04-SEP-2013 11:25
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PROJECT REFERENCE NO.	SHEET NO.
R-3307	19
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 16378 ENGINEER REKHA V. PATEL

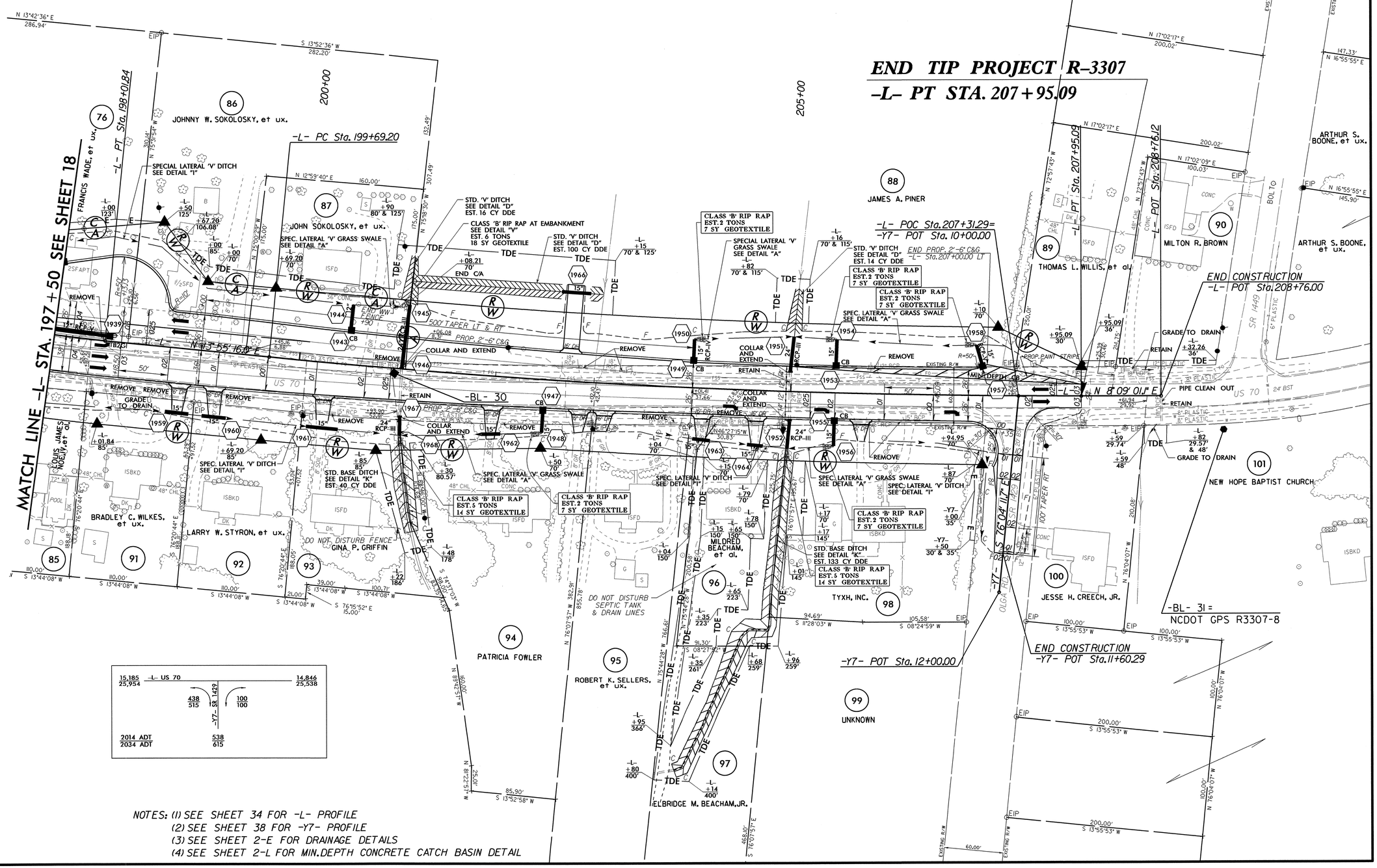
NORTH CAROLINA PROFESSIONAL SEAL 19773 ENGINEER RAY D. LOVINGGOOD

14 Oct 2013

-L-

PI Sta 192+23.85	PI Sta 203+82.50
Δ = 54° 15' 09.2" (LT)	Δ = 5° 46' 14.8" (LT)
D = 4° 18' 28.6"	D = 0° 41' 55.4"
L = 1,259.36'	L = 825.90'
T = 681.37'	T = 413.30'
R = 1,330.00'	R = 8,200.00'
SE = SEE PLANS	SE = SEE PLANS

NAD 83/2001



NOTES: (1) SEE SHEET 34 FOR -L- PROFILE
(2) SEE SHEET 38 FOR -Y7- PROFILE
(3) SEE SHEET 2-E FOR DRAINAGE DETAILS
(4) SEE SHEET 2-L FOR MIN.DEPTH CONCRETE CATCH BASIN DETAIL

REVISIONS

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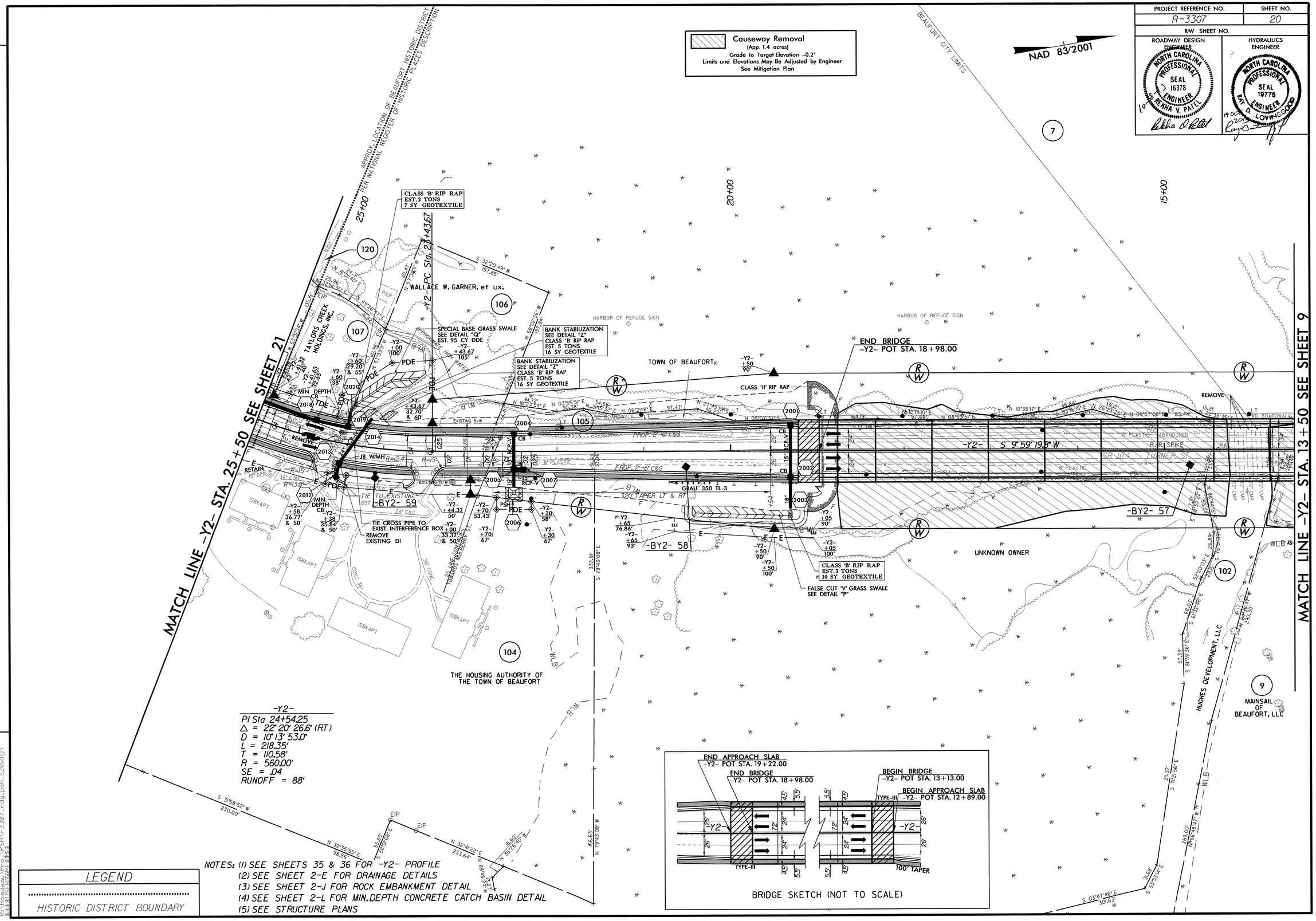
PROJECT REFERENCE NO.	SHEET NO.
R-3307	20
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER



NOTES: (1) SEE SHEETS 35 & 36 FOR -Y2- PROFILE
(2) SEE SHEET 2-E FOR DRAINAGE DETAILS
(3) SEE SHEET 2-J FOR ROCK EMBANKMENT DETAIL
(4) SEE SHEET 2-L FOR MIN. DEPTH CONCRETE CATCH BASIN DETAIL
(5) SEE STRUCTURE PLANS

LEGEND

HISTORIC DISTRICT BOUNDARY

REVISIONS

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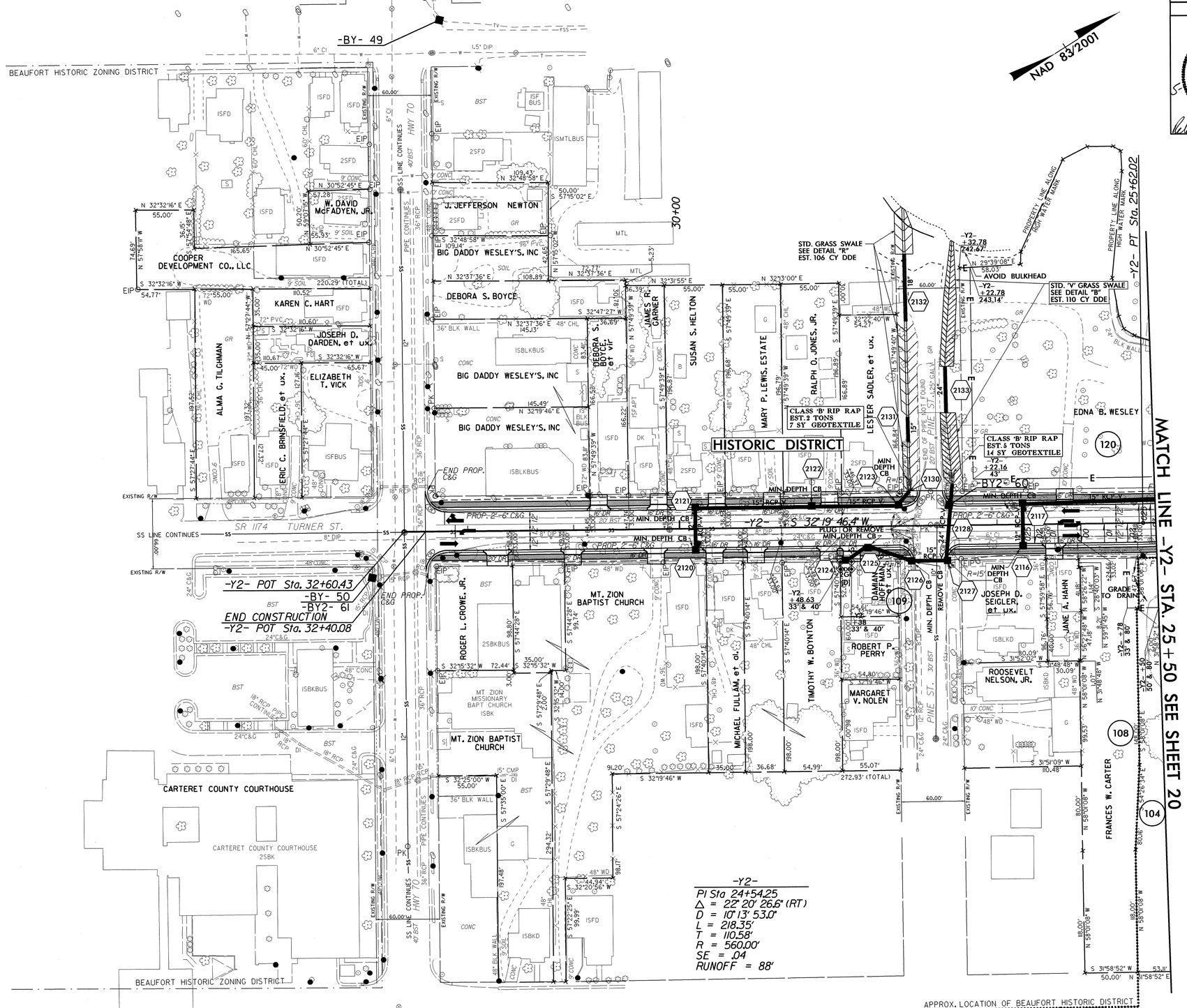
PROJECT REFERENCE NO.	SHEET NO.
R-3307	21
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 16378 ENGINEER REKHA V. PATEL
5/17/12

NORTH CAROLINA PROFESSIONAL SEAL 19776 ENGINEER RAY A. LOWINGSOOD
17 MAY 2012



LEGEND

HISTORIC DISTRICT BOUNDARY

NOTES: (1) SEE SHEET 36 FOR -Y2- PROFILE
(2) SEE SHEET 2-E FOR DRAINAGE DETAILS
(3) SEE SHEET 2-L FOR MIN.DEPTH CONCRETE CATCH BASIN DETAIL

REVISIONS

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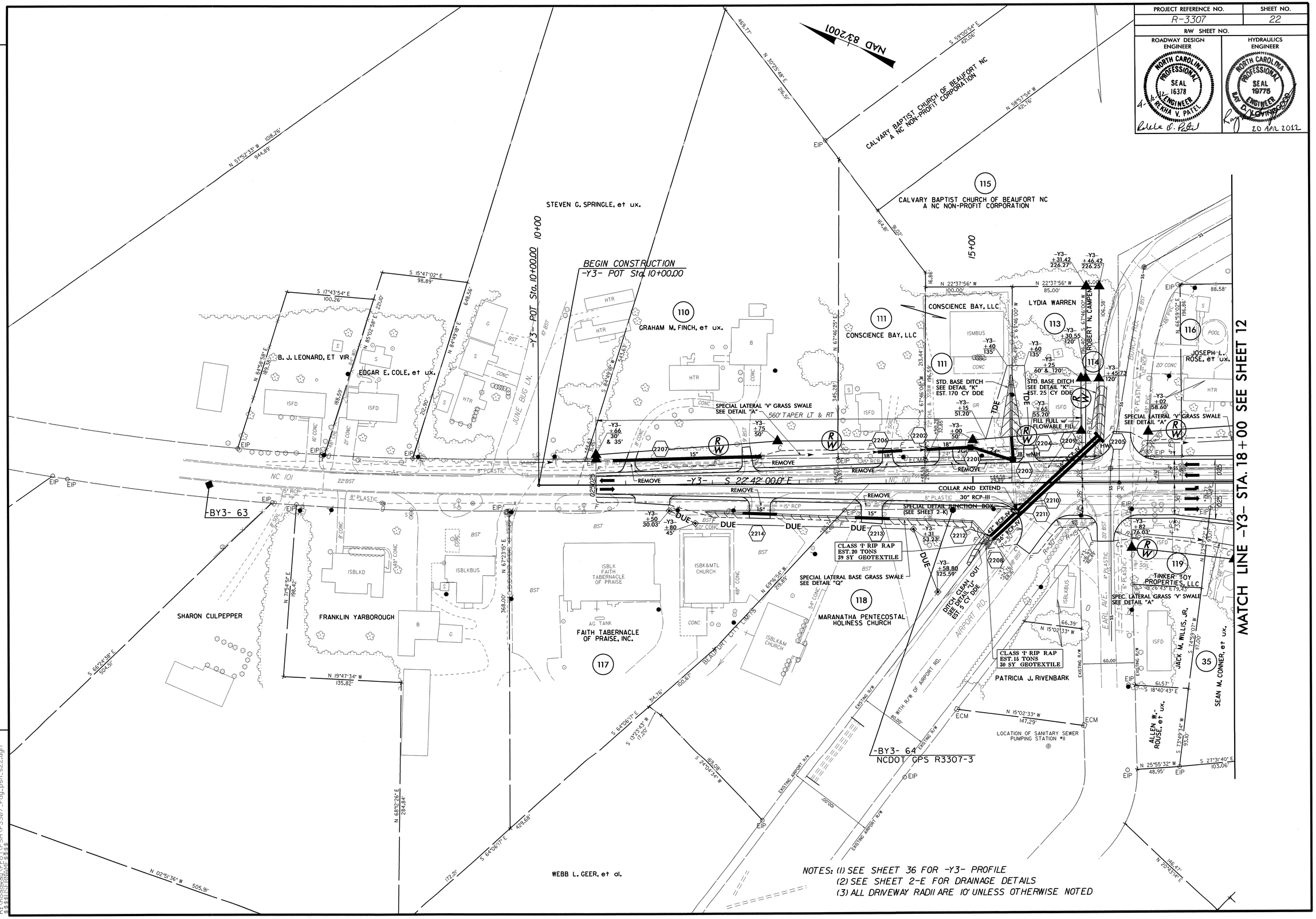
PROJECT REFERENCE NO.	SHEET NO.
R-3307	22
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 16378 ENGINEER N. REKHA V. PATEL

NORTH CAROLINA PROFESSIONAL SEAL 19776 ENGINEER RAY D. LOVINGOOD

20 APR 2012

REVISIONS



NOTES: (1) SEE SHEET 36 FOR -Y3- PROFILE
(2) SEE SHEET 2-E FOR DRAINAGE DETAILS
(3) ALL DRIVEWAY RADII ARE 10' UNLESS OTHERWISE NOTED

30-MAR-2012 08:45
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RD238252 3/30/2012 r3307_rdy_psh_s22 mudwarp RD_Qss860_24

PROJECT REFERENCE NO.	SHEET NO.
R-3307	23
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 16378 ENGINEER REKHA V. PATEL

NORTH CAROLINA PROFESSIONAL SEAL 19776 ENGINEER RAY D. LOVINGWOOD

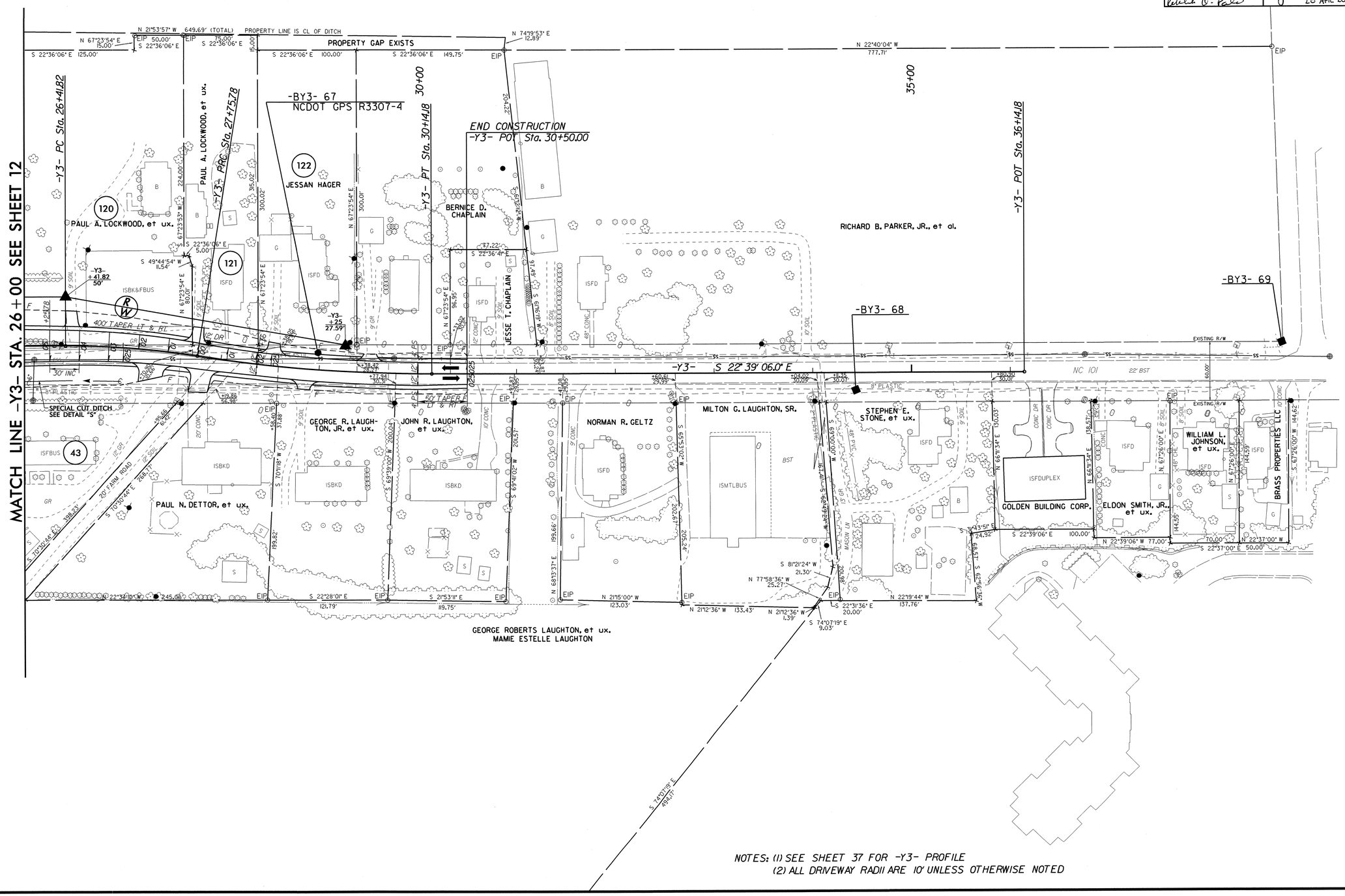
20 APR 2012

NAD 83/2001

REVISIONS

-Y3-

PI Sta 27+08.94	PI Sta 28+95.23
Δ = 9° 01' 47.9" (RT)	Δ = 9° 06' 22.2" (LT)
D = 6° 44' 26.4"	D = 3° 49' 11.0"
L = 133.96'	L = 238.40'
T = 67.12'	T = 119.45'
R = 850.00'	R = 1,500.00'
SE = .06	SE = .06



NOTES: (1) SEE SHEET 37 FOR -Y3- PROFILE
(2) ALL DRIVEWAY RADII ARE 10' UNLESS OTHERWISE NOTED

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PROJECT REFERENCE NO.	SHEET NO.
R-3307	24
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER

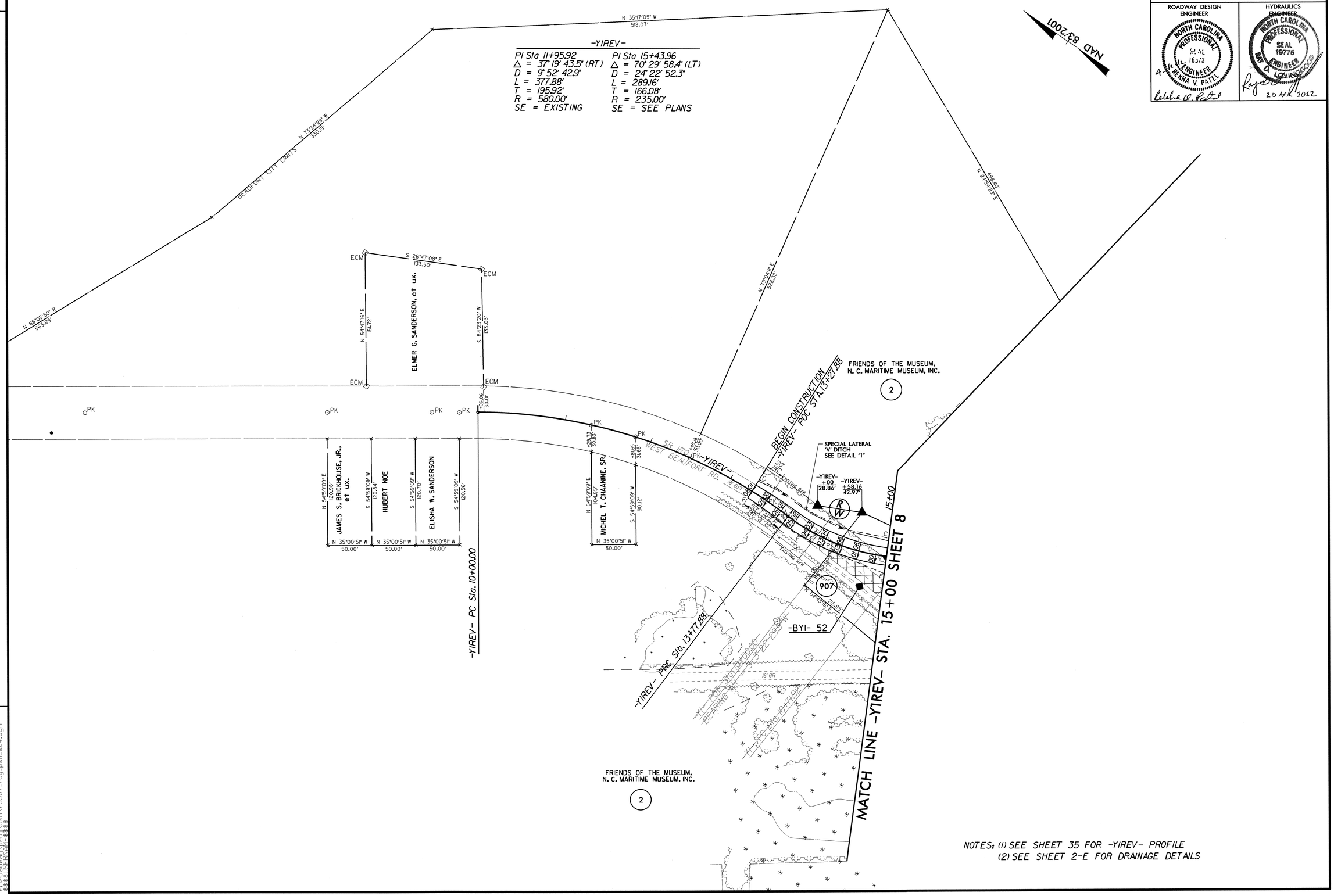
NORTH CAROLINA PROFESSIONAL SEAL 16378 ENGINEER REKHA V. PATEL

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 19775 ENGINEER RAY D. LOVINGGOOD

20 APR 2012

REVISIONS



NOTES: (1) SEE SHEET 35 FOR -YIREV- PROFILE
(2) SEE SHEET 2-E FOR DRAINAGE DETAILS

30-MAR-2012 08:45
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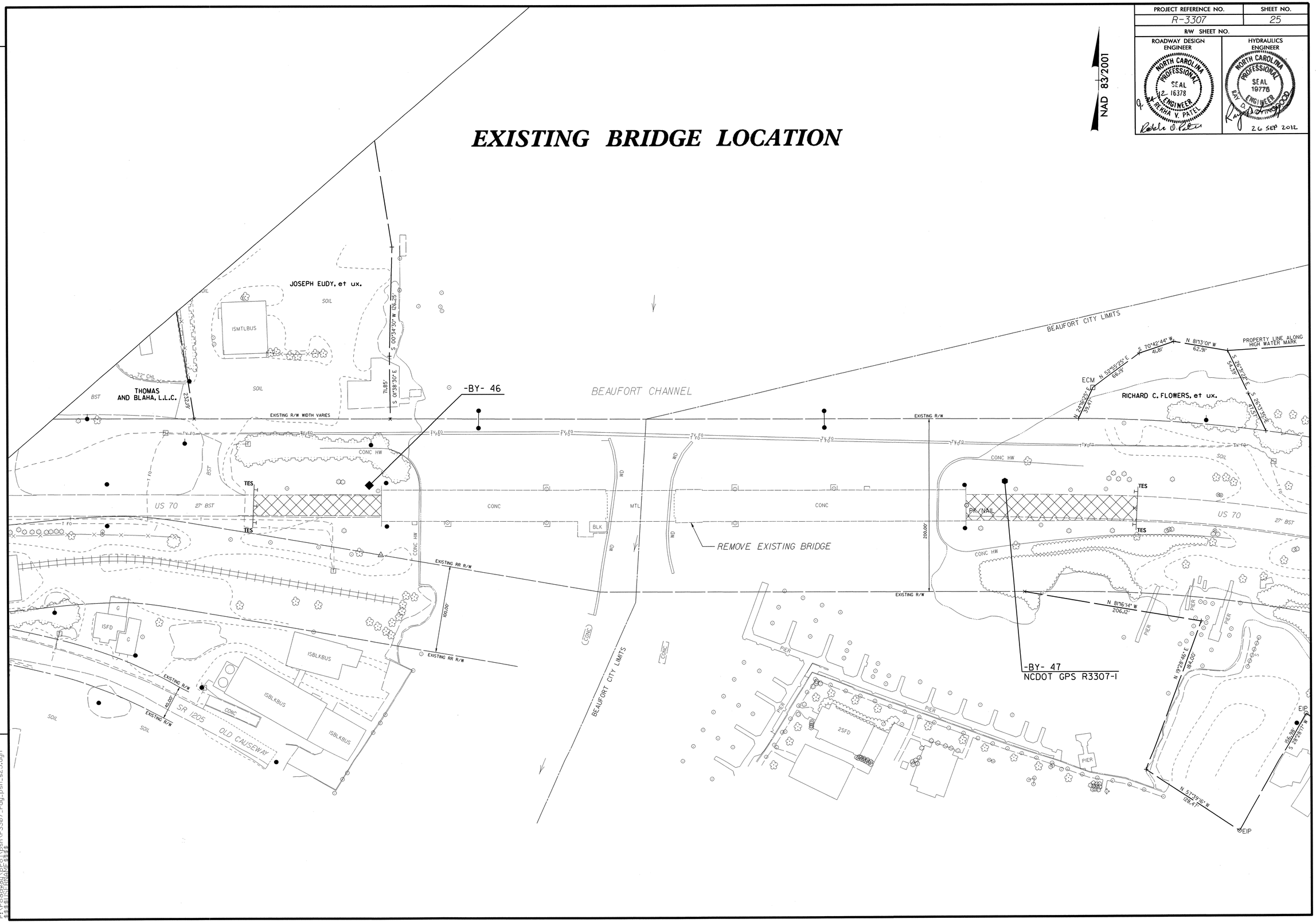
PROJECT REFERENCE NO.	SHEET NO.
R-3307	25
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 16378 ENGINEER
ALI R. KHA V. PATEL

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 19776 ENGINEER
RAY D. DAVENWOOD
26 SEP 2012

NAD 83/2001

EXISTING BRIDGE LOCATION



REVISIONS

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PROJECT REFERENCE NO.	SHEET NO.
R-3307	26

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL ENGINEER REKHA V. PATEL

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 19775 ENGINEER RAY D. LOVINGGOOD

20 APR 2012

5/28/99

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PROJECT REFERENCE NO.	SHEET NO.
R-3307	27

ROADWAY DESIGN ENGINEER

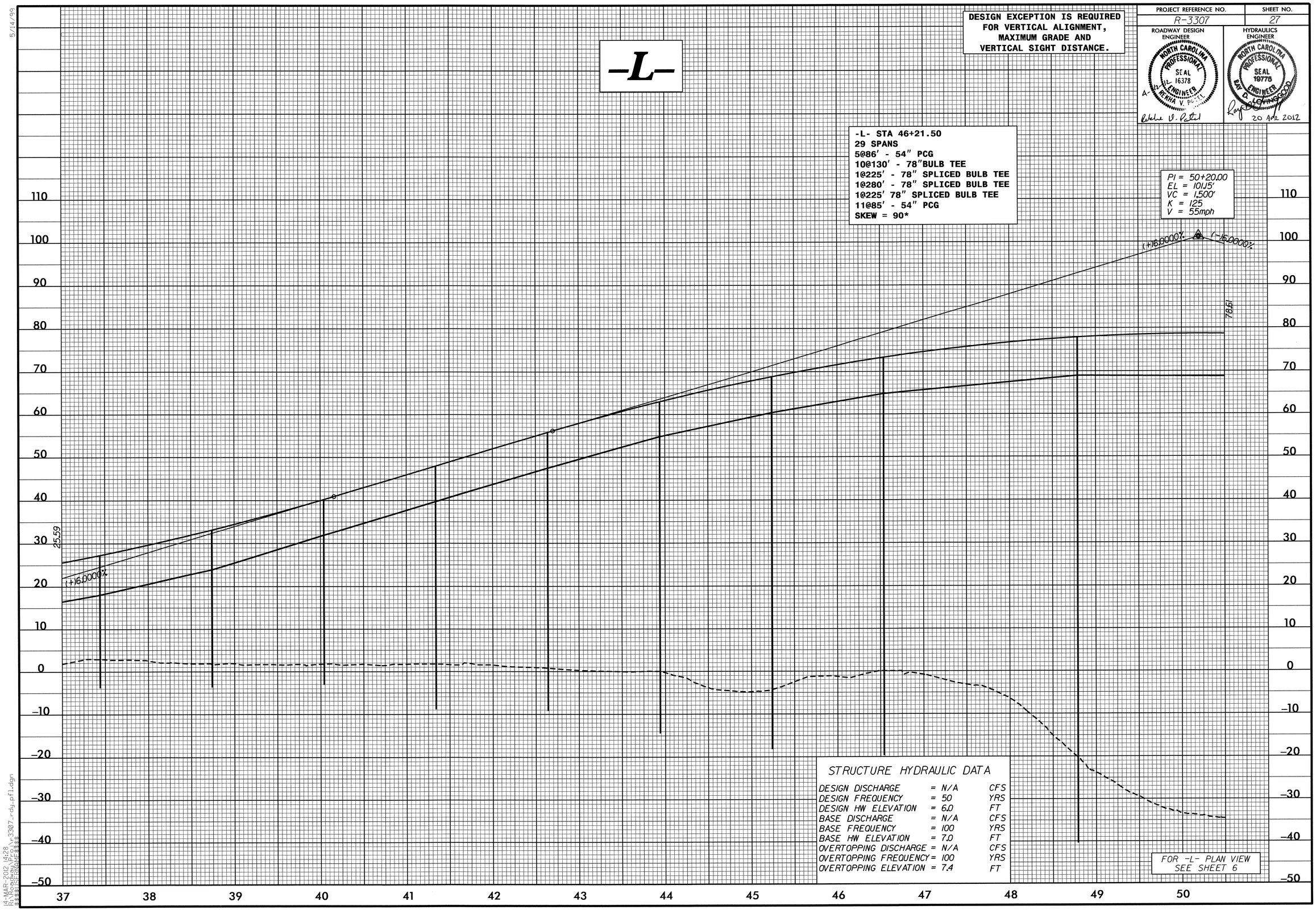
NORTH CAROLINA PROFESSIONAL SEAL 16378 ENGINEER REKHA V. PATEL

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 19775 ENGINEER RAY D. LOVINGGOOD

20 APR 2012

DESIGN EXCEPTION IS REQUIRED FOR VERTICAL ALIGNMENT, MAXIMUM GRADE AND VERTICAL SIGHT DISTANCE.



STRUCTURE HYDRAULIC DATA

DESIGN DISCHARGE	= N/A	CFS
DESIGN FREQUENCY	= 50	YRS
DESIGN HW ELEVATION	= 6.0	FT
BASE DISCHARGE	= N/A	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 7.0	FT
OVERTOPPING DISCHARGE	= N/A	CFS
OVERTOPPING FREQUENCY	= 100	YRS
OVERTOPPING ELEVATION	= 7.4	FT

FOR -L- PLAN VIEW SEE SHEET 6

5/14/99

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DESIGN EXCEPTION IS REQUIRED FOR VERTICAL ALIGNMENT, MAXIMUM GRADE AND VERTICAL SIGHT DISTANCE.

PROJECT REFERENCE NO.	SHEET NO.
R-3307	28

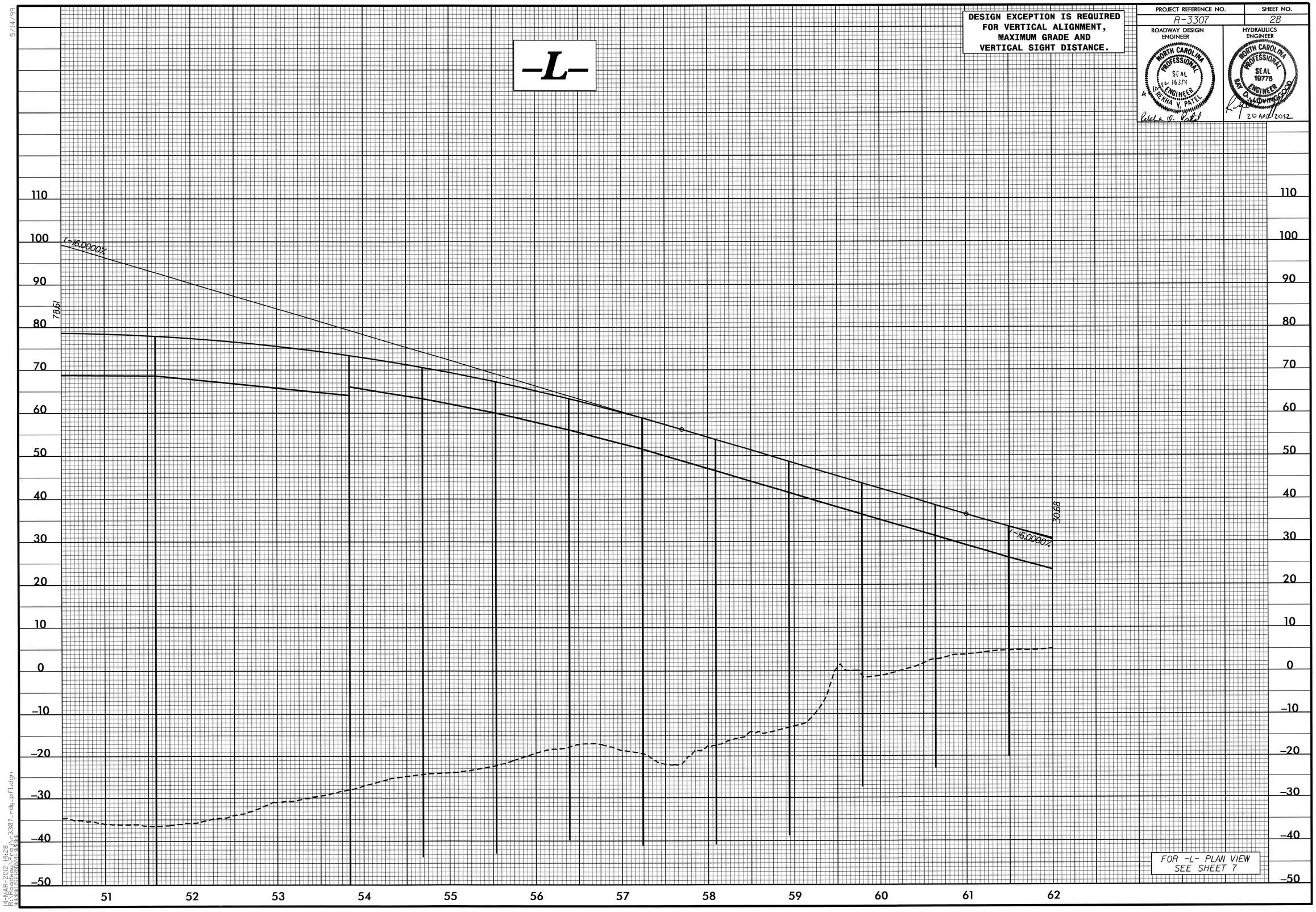
ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 16374 ENGINEER REKHA Y. PATEL

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 19778 ENGINEER RAY D. LOVINGWOOD

20 APR 2012



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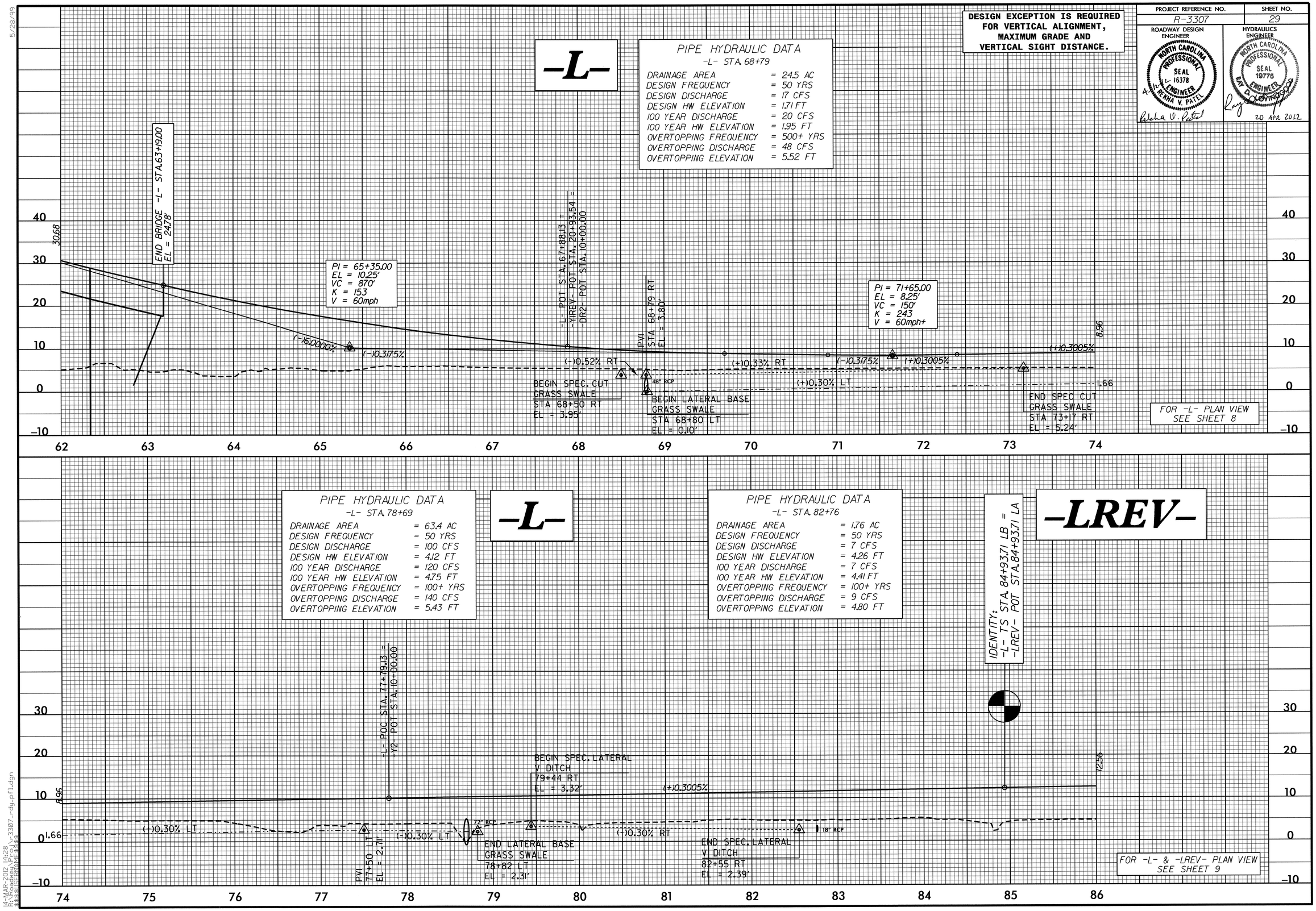
PROJECT REFERENCE NO.	SHEET NO.
R-3307	29

ROADWAY DESIGN ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 16378 ENGINEER REKHA V. PATEL

HYDRAULICS ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 19775 ENGINEER RAY D. LOVINGOOD

20 APR 2012

DESIGN EXCEPTION IS REQUIRED FOR VERTICAL ALIGNMENT, MAXIMUM GRADE AND VERTICAL SIGHT DISTANCE.



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PROJECT REFERENCE NO.	SHEET NO.
R-3307	30

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 16... ENGINEER NEHA V. PATEL

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 19778 ENGINEER RAY D. LOWINGOOD

-LREV-

PIPE HYDRAULIC DATA
-LREV- STA. 87+64

DRAINAGE AREA	= 2.07 AC
DESIGN FREQUENCY	= 50 YRS
DESIGN DISCHARGE	= 11 CFS
DESIGN HW ELEVATION	= 3.17 FT
100 YEAR DISCHARGE	= 12 CFS
100 YEAR HW ELEVATION	= 3.31 FT
OVERTOPPING FREQUENCY	= 500+ YRS
OVERTOPPING DISCHARGE	= 13+ CFS
OVERTOPPING ELEVATION	= 5+/- FT

PIPE HYDRAULIC DATA
-LREV- STA. 90+73

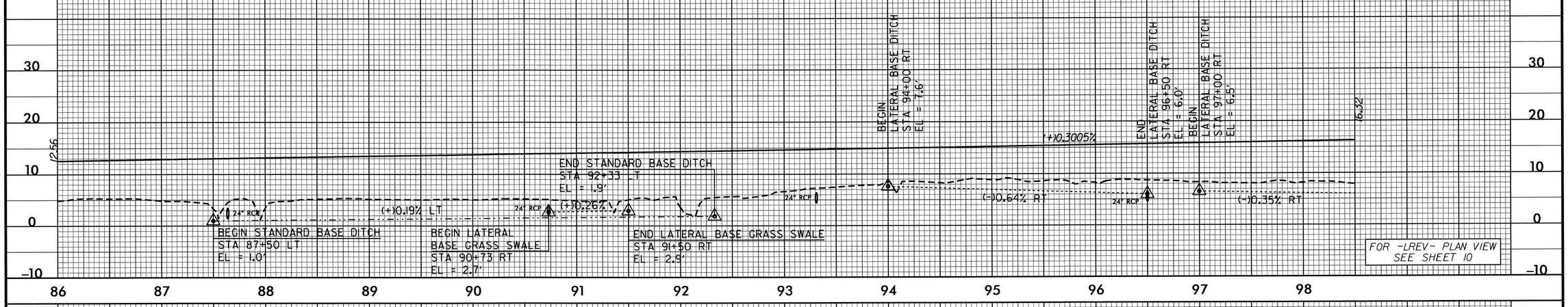
DRAINAGE AREA	= 5.9 AC
DESIGN FREQUENCY	= 50 YRS
DESIGN DISCHARGE	= 15 CFS
DESIGN HW ELEVATION	= 4.91 FT
100 YEAR DISCHARGE	= 16 CFS
100 YEAR HW ELEVATION	= 5.16 FT
OVERTOPPING FREQUENCY	= 50+ YRS
OVERTOPPING DISCHARGE	= 15+ CFS
OVERTOPPING ELEVATION	= 5+/- FT

PIPE HYDRAULIC DATA
-LREV- STA. 93+31

DRAINAGE AREA	= 2.1 AC
DESIGN FREQUENCY	= 50 YRS
DESIGN DISCHARGE	= 8.0 CFS
DESIGN HW ELEVATION	= 7.3 FT
100 YEAR DISCHARGE	= 9.0 CFS
100 YEAR HW ELEVATION	= 7.4 FT
OVERTOPPING FREQUENCY	= 500+ YRS
OVERTOPPING DISCHARGE	= 10+ CFS
OVERTOPPING ELEVATION	= 8 FT

PIPE HYDRAULIC DATA
-LREV- STA. 96+50

DRAINAGE AREA	= 3.7 AC
DESIGN FREQUENCY	= 50 YRS
DESIGN DISCHARGE	= 13.0 CFS
DESIGN HW ELEVATION	= 8.0 FT
100 YEAR DISCHARGE	= 14.0 CFS
100 YEAR HW ELEVATION	= 8.1 FT
OVERTOPPING FREQUENCY	= 200+/-YRS
OVERTOPPING DISCHARGE	= 15+/- CFS
OVERTOPPING ELEVATION	= 8.3 FT



-LREV-

PIPE HYDRAULIC DATA
-LREV- STA. 99+00

DRAINAGE AREA	= 4.6 AC
DESIGN FREQUENCY	= 50 YRS
DESIGN DISCHARGE	= 15.0 CFS
DESIGN HW ELEVATION	= 7.93 FT
100 YEAR DISCHARGE	= 16.0 CFS
100 YEAR HW ELEVATION	= 8.03 FT
OVERTOPPING FREQUENCY	= 100 YRS
OVERTOPPING DISCHARGE	= 16.0 CFS
OVERTOPPING ELEVATION	= 8.0 FT

PIPE HYDRAULIC DATA
-LREV- STA. 101+00

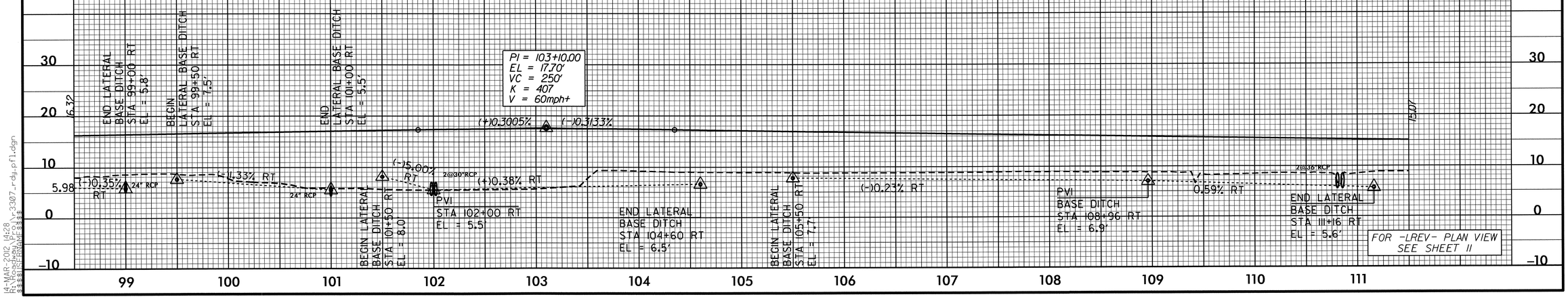
DRAINAGE AREA	= 5.0 AC
DESIGN FREQUENCY	= 50 YRS
DESIGN DISCHARGE	= 15.0 CFS
DESIGN HW ELEVATION	= 7.62 FT
100 YEAR DISCHARGE	= 17.0 CFS
100 YEAR HW ELEVATION	= 7.79 FT
OVERTOPPING FREQUENCY	= 200 YRS
OVERTOPPING DISCHARGE	= 18 CFS
OVERTOPPING ELEVATION	= 8.0 FT

PIPE HYDRAULIC DATA
-LREV- STA. 102+00

DRAINAGE AREA	= 15.9 AC
DESIGN FREQUENCY	= 50 YRS
DESIGN DISCHARGE	= 46.0 CFS
DESIGN HW ELEVATION	= 7.9 FT
100 YEAR DISCHARGE	= 50.0 CFS
100 YEAR HW ELEVATION	= 8.1 FT
OVERTOPPING FREQUENCY	= 500+/-YRS
OVERTOPPING DISCHARGE	= >34 CFS
OVERTOPPING ELEVATION	= 9.0 FT

PIPE HYDRAULIC DATA
-LREV- STA. 110+83

DRAINAGE AREA	= 13.3 AC
DESIGN FREQUENCY	= 50 YRS
DESIGN DISCHARGE	= 37.0 CFS
DESIGN HW ELEVATION	= 8.6 FT
100 YEAR DISCHARGE	= 43.0 CFS
100 YEAR HW ELEVATION	= 8.9 FT
OVERTOPPING FREQUENCY	= 100 YRS
OVERTOPPING DISCHARGE	= 43 CFS
OVERTOPPING ELEVATION	= 8.8+/- FT



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PROJECT REFERENCE NO.	SHEET NO.
R-3307	31

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 16378 ENGINEER REKHA V. PATEL
Rekha V. Patel

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 19776 ENGINEER RAY D. KOVINDOOR
Ray D. Kovindoor
20 APR 2012

-LREV-

PIPE HYDRAULIC DATA
-LREV- STA. 112+33

DRAINAGE AREA	= 1.3 AC
DESIGN FREQUENCY	= 50 YRS
DESIGN DISCHARGE	= 7.0 CFS
DESIGN HW ELEVATION	= 8.24 FT
100 YEAR DISCHARGE	= 7.0 CFS
100 YEAR HW ELEVATION	= 8.24 FT
OVERTOPPING FREQUENCY	= 100+ YRS
OVERTOPPING DISCHARGE	= 7+ CFS
OVERTOPPING ELEVATION	= 8.8+/- FT

PIPE HYDRAULIC DATA
-LREV- STA. 114+84

DRAINAGE AREA	= 4.4 AC
DESIGN FREQUENCY	= 50 YRS
DESIGN DISCHARGE	= 19.0 CFS
DESIGN HW ELEVATION	= 8.4 FT
100 YEAR DISCHARGE	= 21.0 CFS
100 YEAR HW ELEVATION	= 8.6 FT
OVERTOPPING FREQUENCY	= 500+ YRS
OVERTOPPING DISCHARGE	= >34.3 CFS
OVERTOPPING ELEVATION	= 11.30 FT

-L-

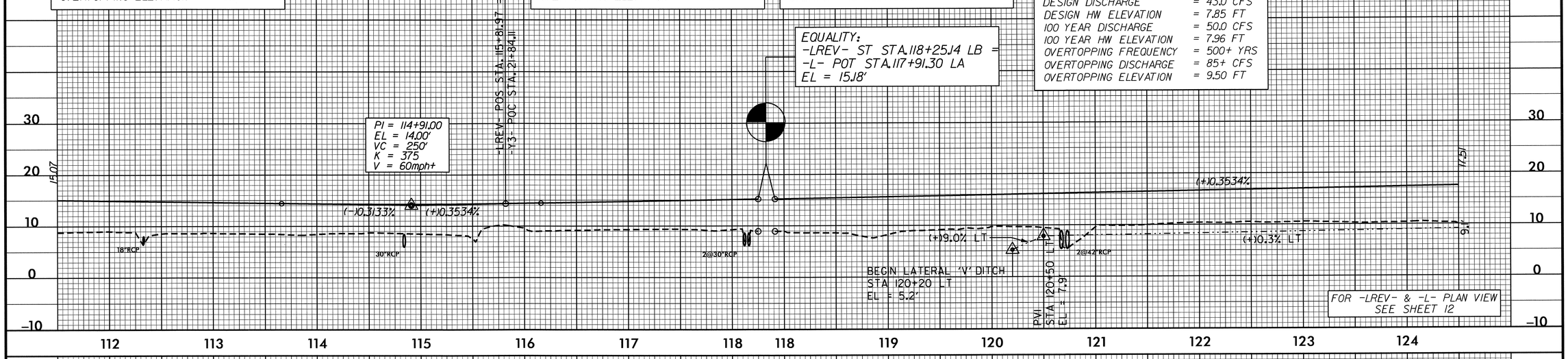
PIPE HYDRAULIC DATA
-LREV- STA. 118+14

DRAINAGE AREA	= 9.0 AC
DESIGN FREQUENCY	= 50 YRS
DESIGN DISCHARGE	= 21.0 CFS
DESIGN HW ELEVATION	= 8.1 FT
100 YEAR DISCHARGE	= 24.0 CFS
100 YEAR HW ELEVATION	= 8.2 FT
OVERTOPPING FREQUENCY	= 500+ YRS
OVERTOPPING DISCHARGE	= >38.5 CFS
OVERTOPPING ELEVATION	= 11.32 FT

PIPE HYDRAULIC DATA
-LREV- STA. 120+70

DRAINAGE AREA	= 22.2 AC
DESIGN FREQUENCY	= 50 YRS
DESIGN DISCHARGE	= 43.0 CFS
DESIGN HW ELEVATION	= 7.85 FT
100 YEAR DISCHARGE	= 50.0 CFS
100 YEAR HW ELEVATION	= 7.96 FT
OVERTOPPING FREQUENCY	= 500+ YRS
OVERTOPPING DISCHARGE	= 85+ CFS
OVERTOPPING ELEVATION	= 9.50 FT

EQUALITY:
-LREV- ST STA.118+25.14 LB =
-L- POT STA.117+91.30 LA
EL = 15.18'



FOR -LREV- & -L- PLAN VIEW
SEE SHEET 12

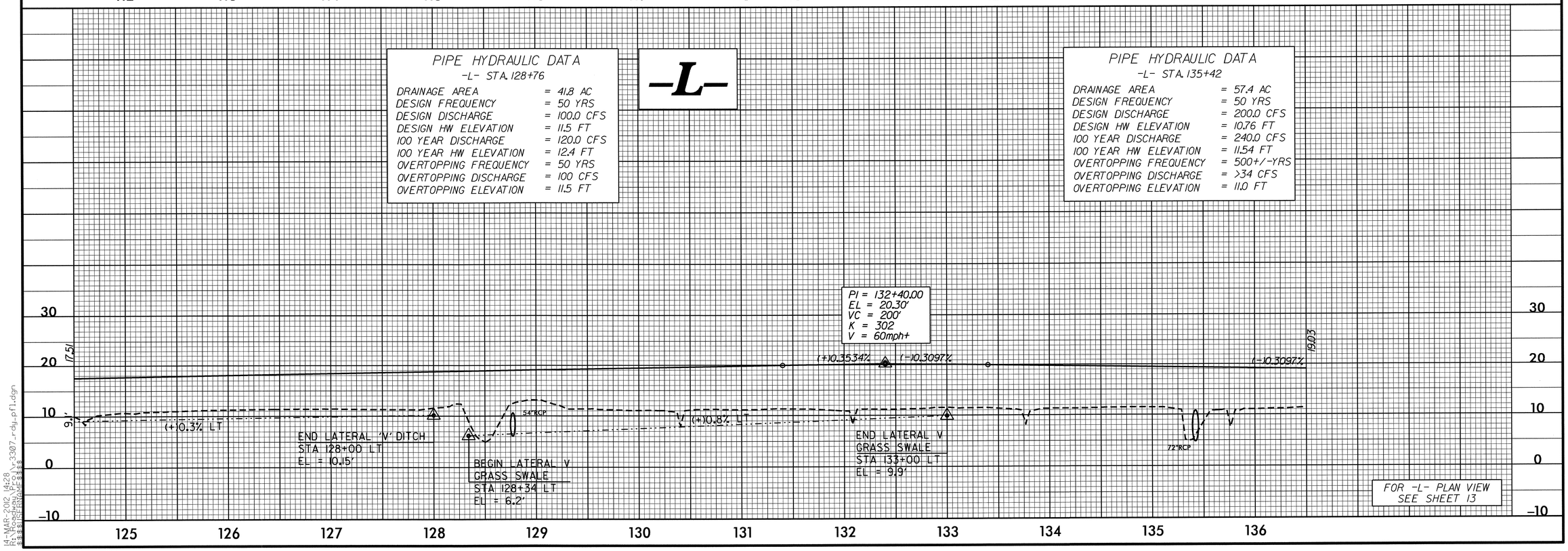
PIPE HYDRAULIC DATA
-L- STA. 128+76

DRAINAGE AREA	= 41.8 AC
DESIGN FREQUENCY	= 50 YRS
DESIGN DISCHARGE	= 100.0 CFS
DESIGN HW ELEVATION	= 11.5 FT
100 YEAR DISCHARGE	= 120.0 CFS
100 YEAR HW ELEVATION	= 12.4 FT
OVERTOPPING FREQUENCY	= 50 YRS
OVERTOPPING DISCHARGE	= 100 CFS
OVERTOPPING ELEVATION	= 11.5 FT

-L-

PIPE HYDRAULIC DATA
-L- STA. 135+42

DRAINAGE AREA	= 57.4 AC
DESIGN FREQUENCY	= 50 YRS
DESIGN DISCHARGE	= 200.0 CFS
DESIGN HW ELEVATION	= 10.76 FT
100 YEAR DISCHARGE	= 240.0 CFS
100 YEAR HW ELEVATION	= 11.54 FT
OVERTOPPING FREQUENCY	= 500+/-YRS
OVERTOPPING DISCHARGE	= >34 CFS
OVERTOPPING ELEVATION	= 11.0 FT



FOR -L- PLAN VIEW
SEE SHEET 13

5/28/99

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PROJECT REFERENCE NO.	SHEET NO.
R-3307	32

ROADWAY DESIGN ENGINEER

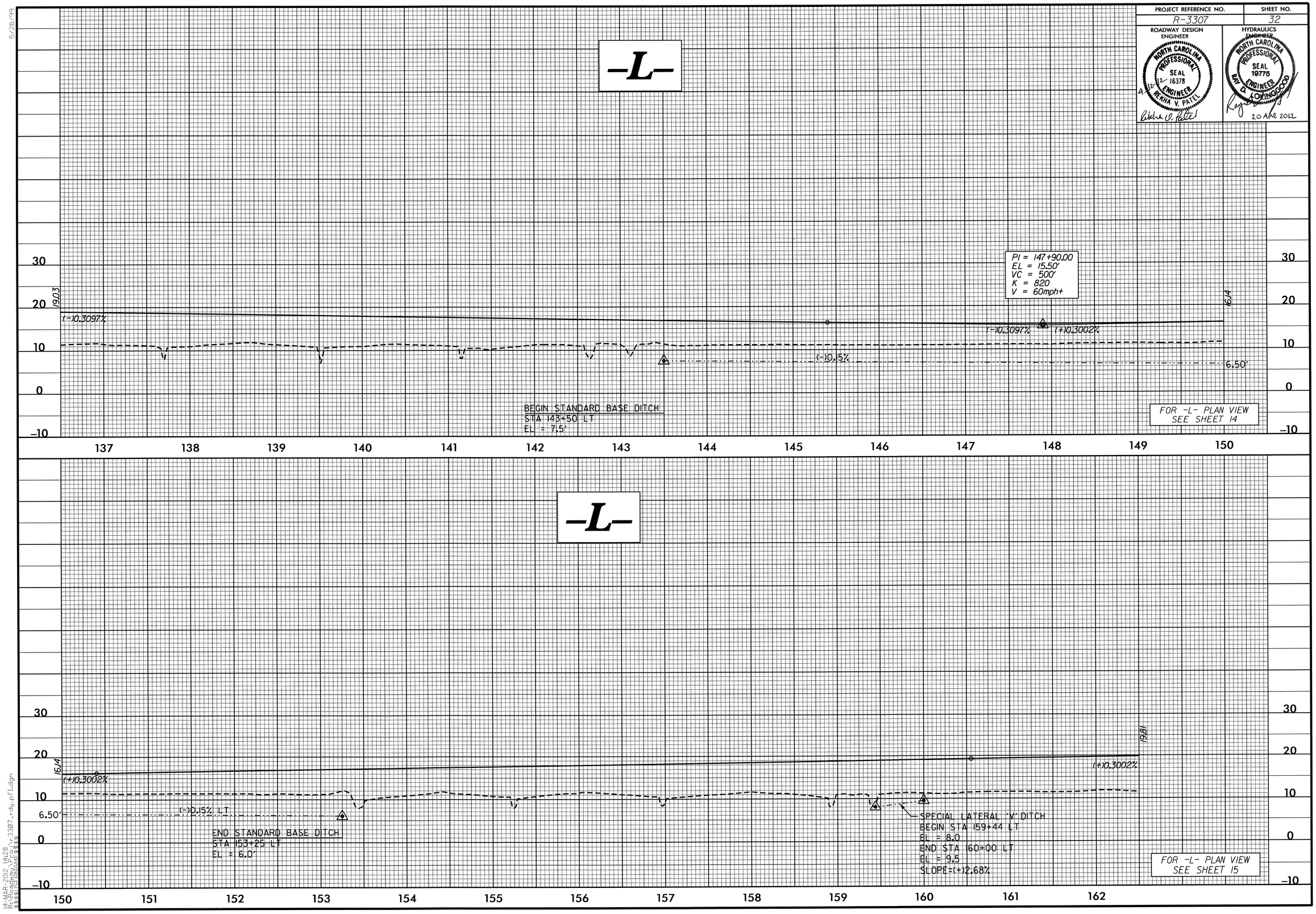
NORTH CAROLINA PROFESSIONAL SEAL 16378 ENGINEER REKHA V. PATEL

4/12/12

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 19775 ENGINEER RAY D. LOVINGGOOD

20 APR 2012



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PROJECT REFERENCE NO.	SHEET NO.
R-3307	33

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 16378 ENGINEER NEEKHA V. PATEL

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 19778 ENGINEER RAY D. LOWINGOOD

20 APR 2012

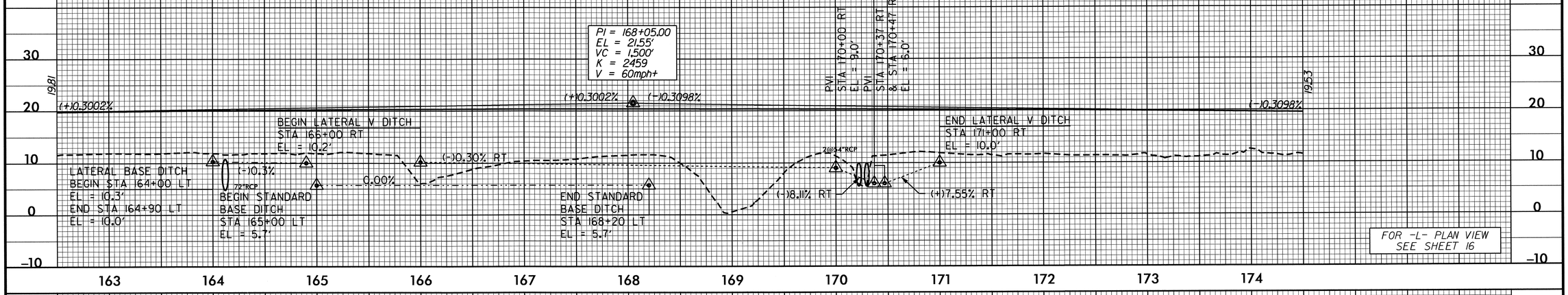
-L-

PIPE HYDRAULIC DATA
-L- STA. 164+12

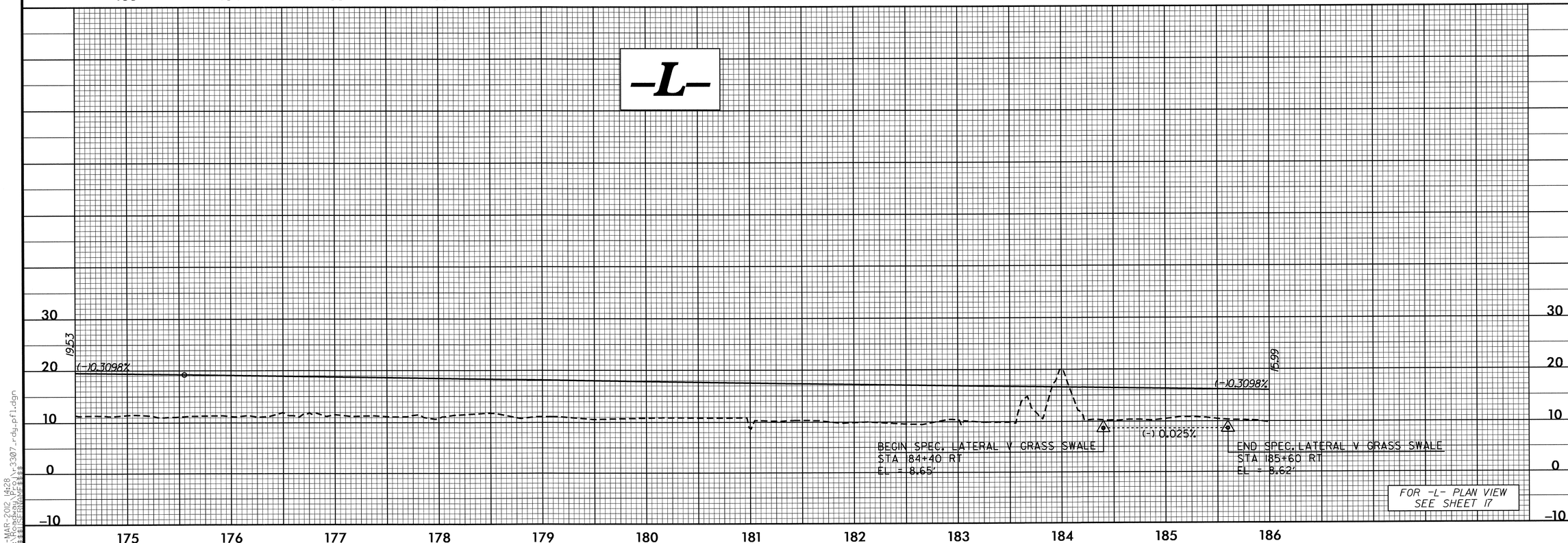
DRAINAGE AREA	= 36.4 AC
DESIGN FREQUENCY	= 50 YRS
DESIGN DISCHARGE	= 65 CFS
DESIGN HW ELEVATION	= 8.64 FT
100 YEAR DISCHARGE	= 75 CFS
100 YEAR HW ELEVATION	= 8.84 FT
OVERTOPPING FREQUENCY	= 500+ YRS
OVERTOPPING DISCHARGE	= 130+ CFS
OVERTOPPING ELEVATION	= 11.30 FT

PIPE HYDRAULIC DATA
-L- STA. 170+26

DRAINAGE AREA	= 73.6 AC
DESIGN FREQUENCY	= 50 YRS
DESIGN DISCHARGE	= 110 CFS
DESIGN HW ELEVATION	= 9.97 FT
100 YEAR DISCHARGE	= 130 CFS
100 YEAR HW ELEVATION	= 10.70 FT
OVERTOPPING FREQUENCY	= 100+ YRS
OVERTOPPING DISCHARGE	= >130 CFS
OVERTOPPING ELEVATION	= 11.3 FT



-L-



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PROJECT REFERENCE NO.	SHEET NO.
R-3307	34

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 16372 ENGINEER REKHA V. PATEL

Rekha V. Patel

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 19775 ENGINEER

20 APR 2012

PIPE HYDRAULIC DATA
-L- STA. 186+68

DRAINAGE AREA	= 2.21 AC
DESIGN FREQUENCY	= 50 YRS
DESIGN DISCHARGE	= 5 CFS
DESIGN HW ELEVATION	= 9.63 FT
100 YEAR DISCHARGE	= 6 CFS
100 YEAR HW ELEVATION	= 9.72 FT
OVERTOPPING FREQUENCY	= 500+ YRS
OVERTOPPING DISCHARGE	= 4.2 CFS
OVERTOPPING ELEVATION	= 8.46 FT

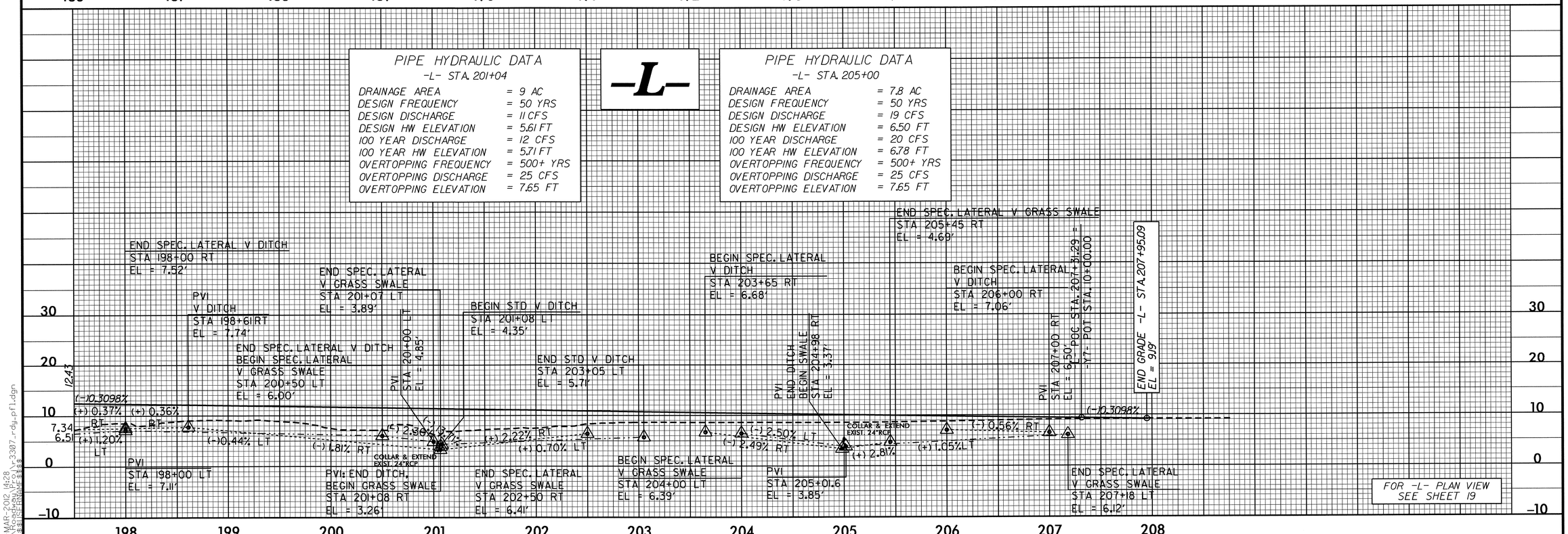
PIPE HYDRAULIC DATA
-L- STA. 190+98

DRAINAGE AREA	= 16.8 AC
DESIGN FREQUENCY	= 50 YRS
DESIGN DISCHARGE	= 32 CFS
DESIGN HW ELEVATION	= 8.36 FT
100 YEAR DISCHARGE	= 38 CFS
100 YEAR HW ELEVATION	= 8.92 FT
OVERTOPPING FREQUENCY	= 100+ YRS
OVERTOPPING DISCHARGE	= 38+ CFS
OVERTOPPING ELEVATION	= 9.30 FT

-L-

PIPE HYDRAULIC DATA
-L- STA. 194+60

DRAINAGE AREA	= 12.81 AC
DESIGN FREQUENCY	= 50 YRS
DESIGN DISCHARGE	= 24 CFS
DESIGN HW ELEVATION	= 8.06 FT
100 YEAR DISCHARGE	= 28 CFS
100 YEAR HW ELEVATION	= 8.31 FT
OVERTOPPING FREQUENCY	= 100+ YRS
OVERTOPPING DISCHARGE	= 31 CFS
OVERTOPPING ELEVATION	= 9.02 FT



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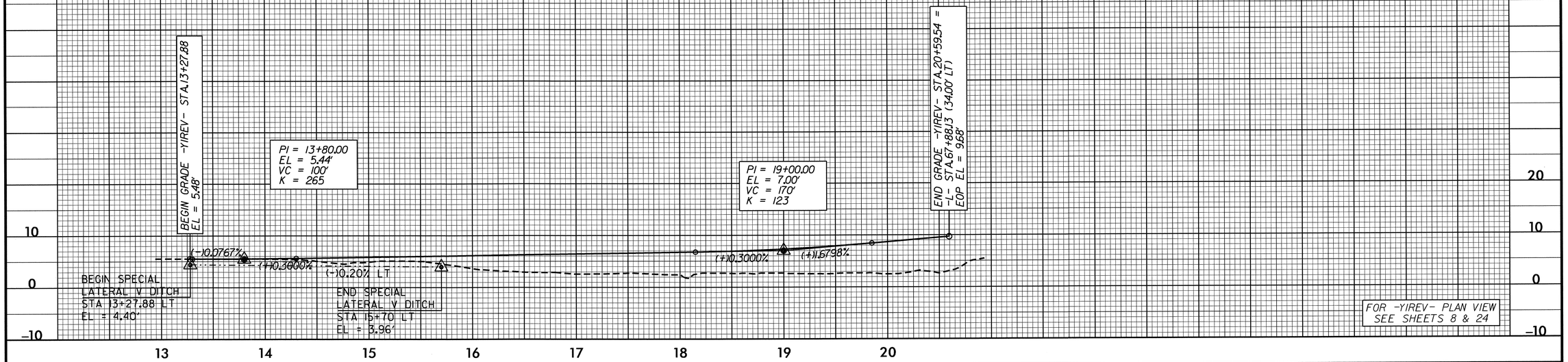
PROJECT REFERENCE NO.	SHEET NO.
R-3307	35

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 16378 ENGINEER
REKHA V. PATEL
5/11/12

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 19776 ENGINEER
BAY D. LOVINGOOD
2 MAY 2012

-Y1REV-

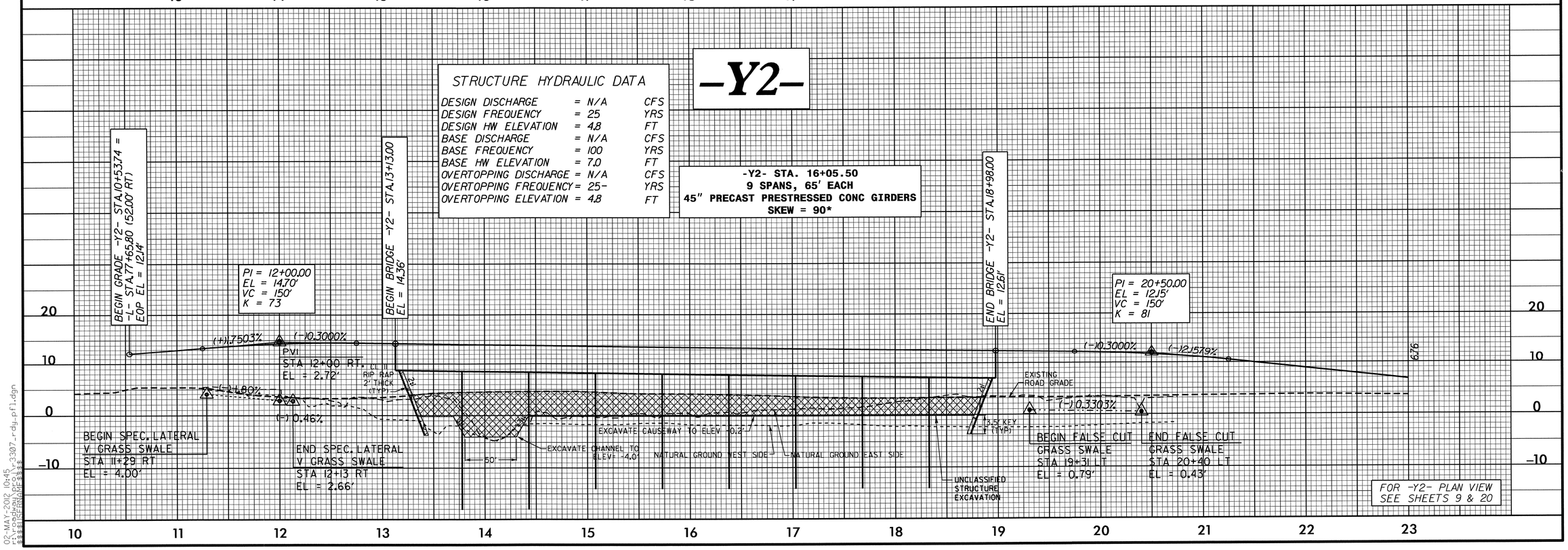


-Y2-

STRUCTURE HYDRAULIC DATA

DESIGN DISCHARGE	= N/A	CFS
DESIGN FREQUENCY	= 25	YRS
DESIGN HW ELEVATION	= 4.8	FT
BASE DISCHARGE	= N/A	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 7.0	FT
OVERTOPPING DISCHARGE	= N/A	CFS
OVERTOPPING FREQUENCY	= 25-	YRS
OVERTOPPING ELEVATION	= 4.8	FT

-Y2- STA. 16+05.50
9 SPANS, 65' EACH
45" PRECAST PRESTRESSED CONC GIRDERS
SKEW = 90*



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PROJECT REFERENCE NO.	SHEET NO.
R-3307	36

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 16378 ENGINEER RAKHA V. PATEL

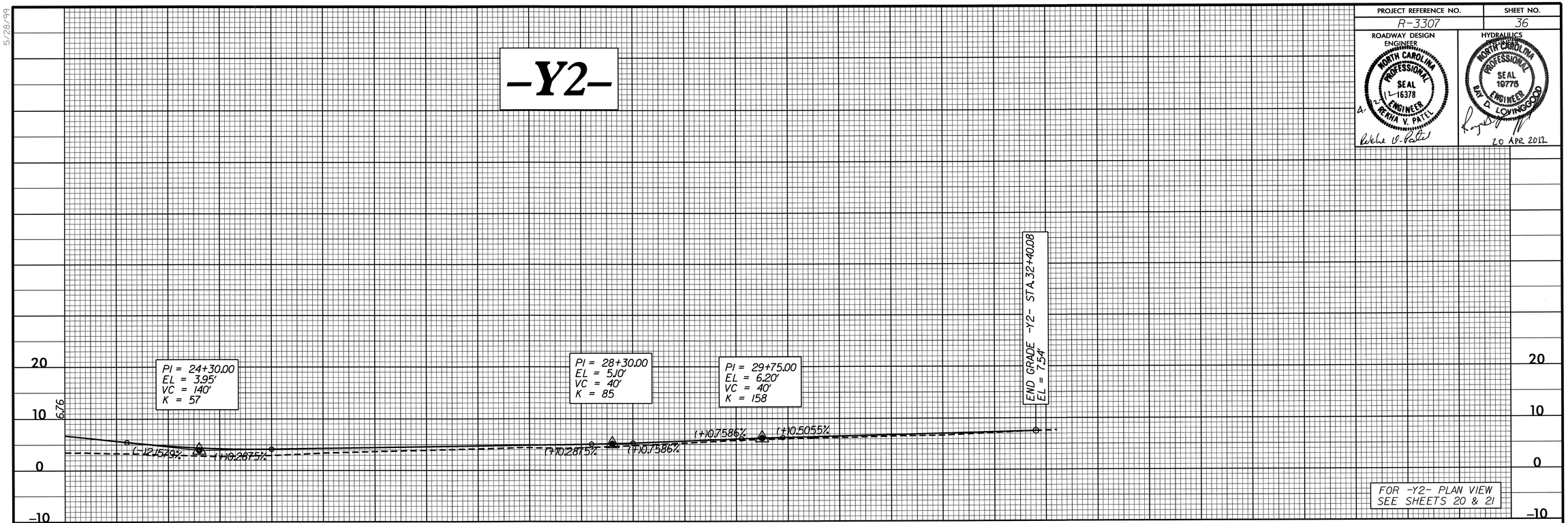
Rakha V. Patel

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 19775 ENGINEER RAY D. LOVINGGOOD

20 APR 2012

-Y2-

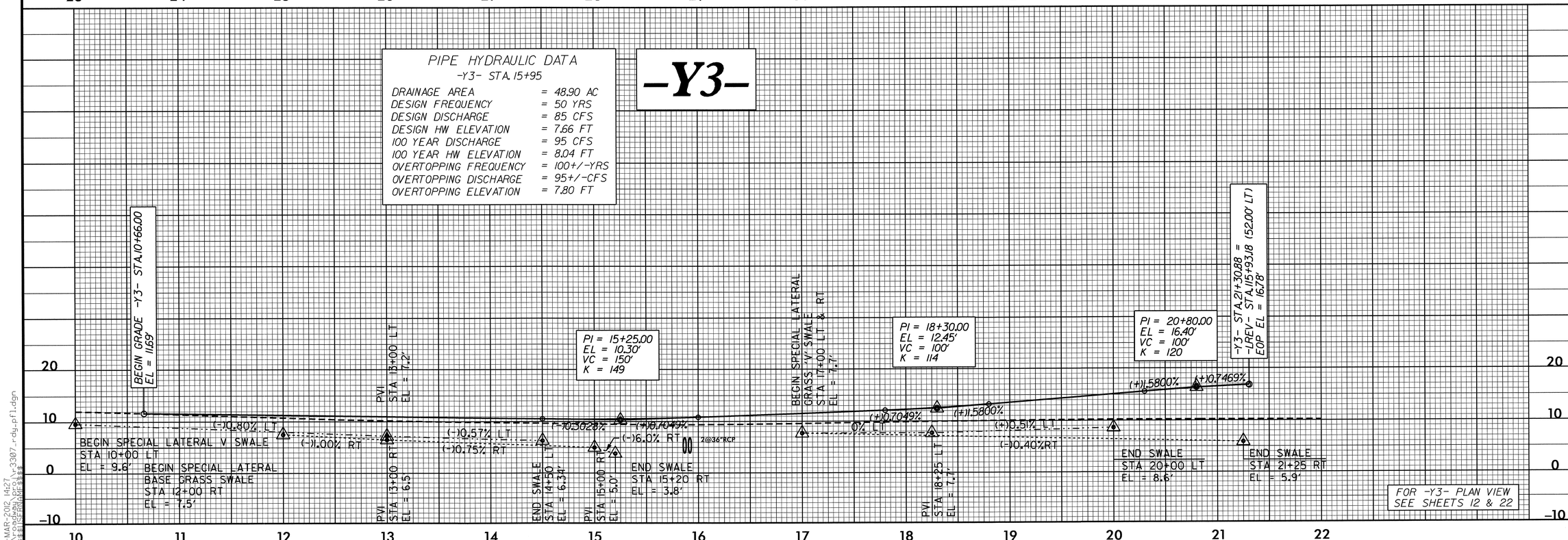


FOR -Y2- PLAN VIEW SEE SHEETS 20 & 21

-Y3-

PIPE HYDRAULIC DATA
-Y3- STA. 15+95

DRAINAGE AREA	= 48.90 AC
DESIGN FREQUENCY	= 50 YRS
DESIGN DISCHARGE	= 85 CFS
DESIGN HW ELEVATION	= 7.66 FT
100 YEAR DISCHARGE	= 95 CFS
100 YEAR HW ELEVATION	= 8.04 FT
OVERTOPPING FREQUENCY	= 100+/-YRS
OVERTOPPING DISCHARGE	= 95+/-CFS
OVERTOPPING ELEVATION	= 7.80 FT



FOR -Y3- PLAN VIEW SEE SHEETS 12 & 22

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PROJECT REFERENCE NO.	SHEET NO.
R-3307	37

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 12-16378 ENGINEER REKHA V. PATEL

Rekha V. Patel

HYDRAULICS ENGINEER

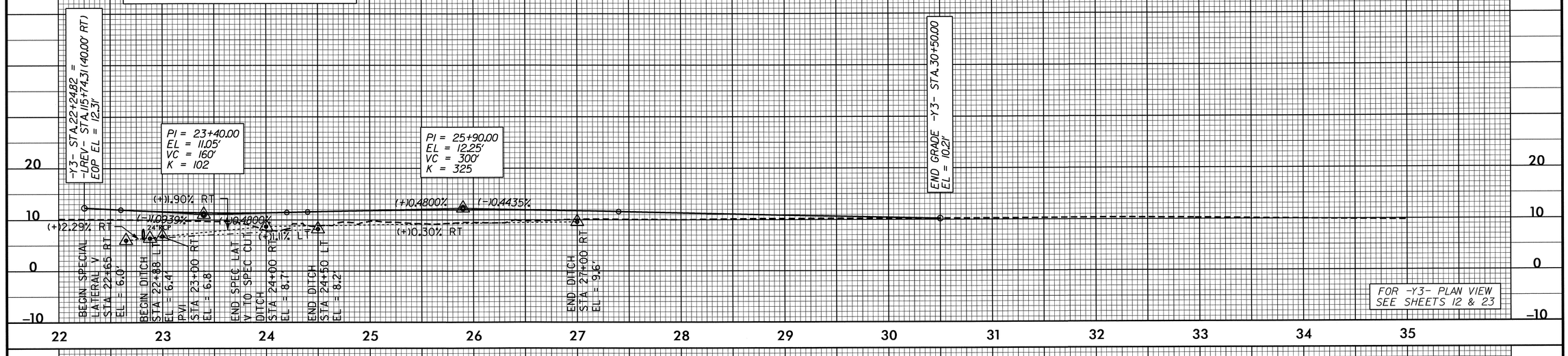
NORTH CAROLINA PROFESSIONAL SEAL 19778 ENGINEER RAY POLVINO JR.

26 SEP 2012

-Y3-

PIPE HYDRAULIC DATA
-Y3- STA. 22+82

DRAINAGE AREA	= 2.1 AC
DESIGN FREQUENCY	= 50 YRS
DESIGN DISCHARGE	= 9 CFS
DESIGN HW ELEVATION	= 8.8 FT
100 YEAR DISCHARGE	= 10 CFS
100 YEAR HW ELEVATION	= 9.0 FT
OVERTOPPING FREQUENCY	= 100 YRS
OVERTOPPING DISCHARGE	= 10 CFS
OVERTOPPING ELEVATION	= 9.0 FT

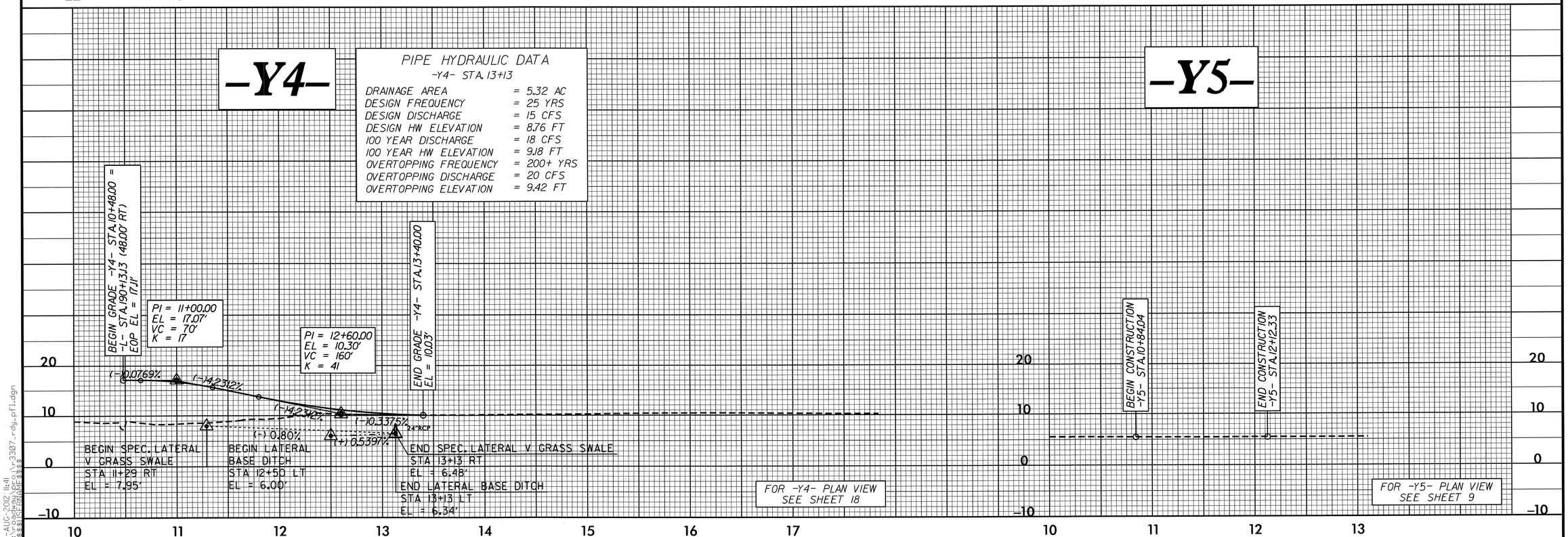


-Y4-

PIPE HYDRAULIC DATA
-Y4- STA. 13+13

DRAINAGE AREA	= 5.32 AC
DESIGN FREQUENCY	= 25 YRS
DESIGN DISCHARGE	= 15 CFS
DESIGN HW ELEVATION	= 8.76 FT
100 YEAR DISCHARGE	= 18 CFS
100 YEAR HW ELEVATION	= 9.18 FT
OVERTOPPING FREQUENCY	= 200+ YRS
OVERTOPPING DISCHARGE	= 20 CFS
OVERTOPPING ELEVATION	= 9.42 FT

-Y5-



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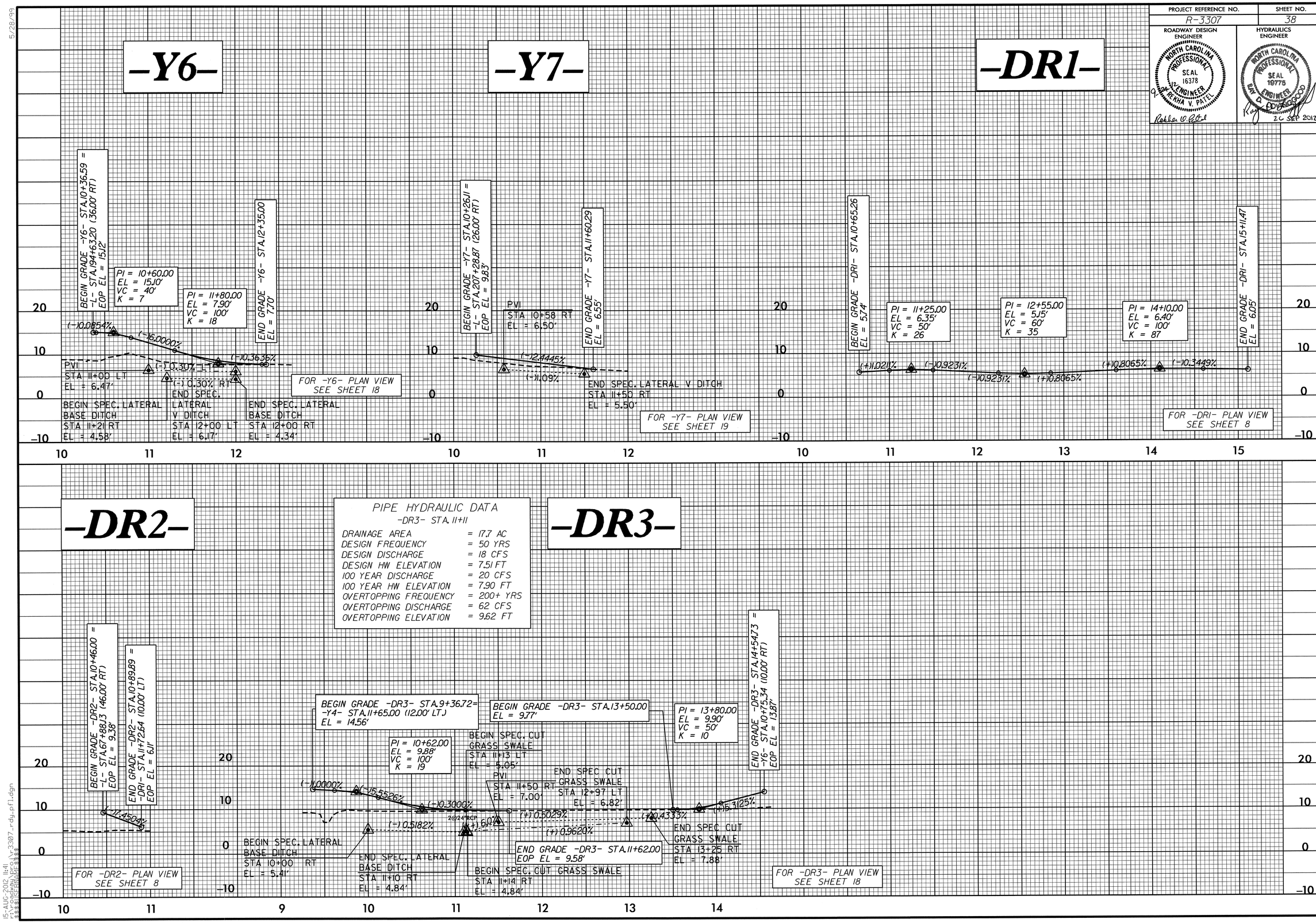
PROJECT REFERENCE NO.	SHEET NO.
R-3307	38

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 16378 ENGINEER REKHA V. PATEL

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 19775 ENGINEER RAY D. ODYNGGOOD

26 SEP 2012



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