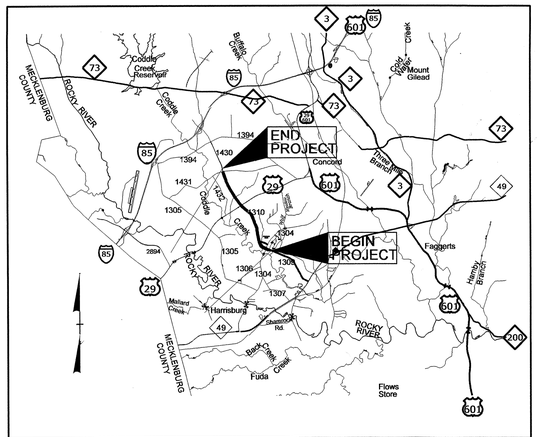
TIP PROJECT: R-2246B

CONTRACT: C203093

See Sheet 1-A For Index of Sheets



VICINITY MAP

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

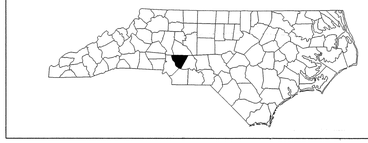
CABARRUS COUNTY

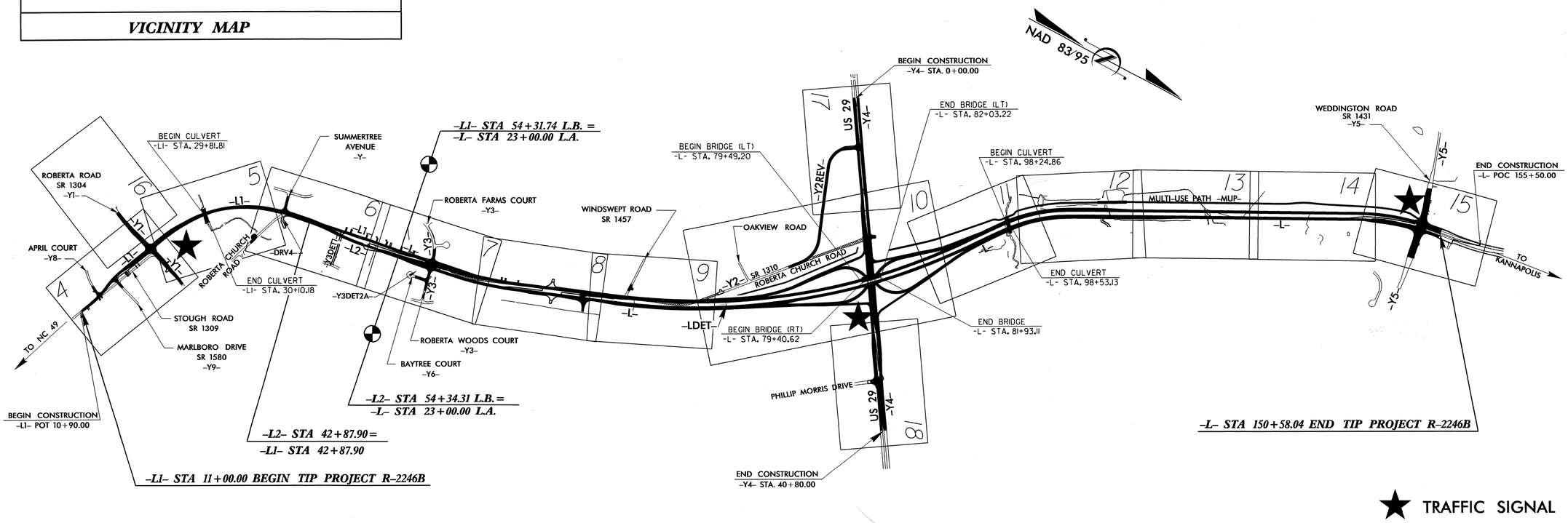
LOCATION: GEORGE LILES PARKWAY FROM SOUTH OF SR 1304 (ROBERTA ROAD) TO SR 1431 (WEDDINGTON ROAD)

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

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-2246B	1	

STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION
34408.1.1	STP-000S(46)	PE
34408.2.6	STP-000S(684)	R/W & UTIL
34408.3.5	STP-1304(13)	CONST.





NOTE: PART OF THIS PROJECT IS A PARTIAL CONTROLLED ACCESS PROJECT WITH ACCESS BEING LIMITED TO POINTS AS SHOWN ON THE PLANS AND THE OTHER PART IS A FULL CONTROLLED ACCESS PROJECT WITH ACCESS BEING LIMITED TO THE INTERCHANGE.

GRAPHIC SCALES

50 25 0 50 100 — PLANS

50 25 0 50 100 — PROFILE (HORIZONTAL)

10 5 0 10 20 — PROFILE (VERTICAL)

DESIGN DATA

ADT 2013	=	23,600
ADT 2035	=	42,000
DHV	=	10 %
DIR	=	55 %
T	=	5 % *
V	=	60 MPH

* TTST 1% DUAL 4%

REGIONAL TIER
URBAN ARTERIAL

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT R-2246B = 3.178 MILES

LENGTH STRUCTURE TIP PROJECT R-2246B = 0.059 MILES

TOTAL LENGTH TIP PROJECT R-2246B = 3.237 MILES

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

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: MARCH 18, 2011

LETTING DATE: MAY 21, 2013

G.E. BREW, PE
PROJECT ENGINEER

I.T. YOUNIS
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER
SIGNATURE: 1/3/13

ROADWAY DESIGN ENGINEER
1-22-13
SIGNATURE:

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

09/08/06
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$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
R-2246B	1-A

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 18908 ENGINEER GREGORY E. SHEW

2-25-13

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
1-I	CENTERLINE COORDINATE LIST
2 THRU 2-H	PAVEMENT SCHEDULE, TYPICAL SECTIONS, AND WEDGING DETAILS
2-I THRU 2-J	DRAINAGE DITCH DETAILS
2-K	TEMPORARY DETOUR DETAIL (-L-)
2-L THRU 2-P	INTERSECTION & CHANNELIZATION DETAILS
2-Q	DETAIL OF SPECIAL DROP INLET
2-R	DETAIL OF EXTRA DEPTH 2-GI
2-S	DETAIL OF MODIFIED CONCRETE FLUME
2-T	DETAIL OF METHOD OF SHOULDER CONSTRUCTION
2-U	DETAIL OF INTERCHANGE SHEAR POINT DIAGRAM/CROSS-SECTION LAYOUT
2-V	DETAIL OF STRUCTURE ANCHOR UNIT TYPE B-77
2-W	TEMPORARY DETOUR DETAIL (-Y3-)
2-X THRU 2-Z	NOISE WALL ENVELOPE
3	SUMMARY OF QUANTITIES
3-A THRU 3-J	SUMMARY OF DRAINAGE QUANTITIES
3-K	SUMMARY OF EARTHWORK
3-L	SUMMARY OF REMOVAL OF ASPHALT PAVEMENT & FENCE SUMMARY
3-M	SUMMARY OF GUARDRAIL
3-N	SHOULDER DRAIN SUMMARY
3-O THRU 3-P	PARCEL INDEX SHEETS
4 THRU 18	PLAN SHEETS
19 THRU 38	PROFILE SHEETS
TMP-1 THRU TMP-43	TRAFFIC CONTROL PLANS
PMP-1A THRU PMP-18	PAVEMENT MARKING PLANS
EC-1 THRU EC-35	EROSION CONTROL PLANS
RF-1 THRU RF-3	REFORESTATION PLANS
SIGN-1 THRU SIGN-22	SIGNING PLANS
SIG-1 THRU SIG-36	SIGNAL PLANS
E-1 THRU E-3	LIGHTING PLANS
UC-1 THRU UC-21	UTILITIES CONSTRUCTION PLANS
UO-1 THRU UO-16	UTILITIES BY OTHERS PLANS
X-1A	CROSS-SECTION INDEX SHEET
X-1B THRU X-1G	CROSS-SECTION SUMMARY SHEETS
X-1 THRU X-171	CROSS-SECTIONS
S-1 THRU S-56	STRUCTURE PLANS
C-1 THRU C-12	CULVERT PLANS
W-1 THRU W-7	NOISE WALL PLANS

GENERAL NOTES

GENERAL NOTES:

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

GRADING AND SURFACING OR RESURFACING AND WIDENING:

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

CLEARING:

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

SUPERELEVATION:

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

SHOULDER CONSTRUCTION:
ASPHALT, EARTH SHOULDER CONSTRUCTION ON THE HIGH SIDE OF SUPERELEVATED CURVES SHALL BE IN ACCORDANCE WITH DETAIL 560D01 IN THE 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.

UNDERDRAINS:

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

SHOULDER DRAINS:

SHOULDER DRAINS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. 816.02 AT LOCATIONS DIRECTED BY THE ENGINEER.

DRIVEWAYS:

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

STREET TURNOUT:

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

GUARDRAIL:

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

TEMPORARY SHORING:

SHORING REQUIRED FOR THE MAINTENANCE OF TRAFFIC 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 :

DUKE ENERGY, WINDSTREAM, CITY OF MONROE, CITY OF CONCORD, PSNC, TIME WARNER CABLE.

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

RIGHT-OF-WAY MARKERS:

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

CURB RAMPS

CURB RAMPS ARE SHOWN ON THE PLANS AT APPROXIMATE LOCATIONS.
CONSTRUCT ALL CURB RAMPS ACCORDANCE WITH STD 848.05 and/or 848.06.

LIST OF STANDARD DRAWINGS

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

2012 ROADWAY ENGLISH STANDARD DRAWINGS

The following Roadway Standards as appear in "Roadway Standard Drawings" Highway Design Branch - N. C. Department of Transportation - Raleigh, N. C., Dated January, 2012 are applicable to this project and by reference hereby are considered a part of these plans:

STD.NO.	TITLE
200.03	Method of Clearing - Method III
225.01	Guide for Grading Subgrade - Interstate and Freeway
225.02	Guide for Grading Subgrade - Secondary and Local
225.03	Deceleration and Acceleration Lanes
225.04	Method of Obtaining Superelevation - Two Lane Pavement
225.05	Method of Obtaining Superelevation - Divided Highways
225.06	Method of Grading Sight Distance at Intersections
300.01	Method of Pipe Installation
310.10	Driveway Pipe Construction
654.01	Pavement Repairs
815.03	Pipe Underdrain and Blind Drain
816.01	Concrete Pads - for Shoulder Drain Installation
816.02	Aggregate Shoulder Drain
816.04	Markers for Drainage Structure and Concrete Pad
838.01	Concrete Endwall for Single and Double Pipe Culverts - 15" thru 48" Pipe 90 Skew
838.11	Brick Endwall for Single and Double Pipe Culverts - 15" thru 48" Pipe 90 Skew
838.21	Reinforced Concrete Endwall - for Single 54" Pipe 90 Skew
838.45	Notes for Reinforced Concrete Endwall - Std. Dwg 838.21 thru 838.40
838.51	Reinforced Brick Endwall - for Single 54" Pipe 90 Skew
838.75	Notes for Reinforced Brick Endwall - Std. Dwg 838.51 thru 838.70
838.80	Precast Endwalls - 12" thru 72" Pipe 90 Skew
840.00	Concrete Base Pad for Drainage Structures
840.01	Brick Catch Basin - 12" thru 54" Pipe
840.02	Concrete Catch Basin - 12" thru 54" Pipe
840.03	Frame, Grates and Hood - for Use on Standard Catch Basin
840.04	Concrete Open Throat Catch Basin - 12" thru 48" Pipe
840.05	Brick Open Throat Catch Basin - 12" thru 48" Pipe
840.14	Concrete Drop Inlet - 12" thru 30" Pipe
840.15	Brick Drop Inlet - 12" thru 30" Pipe
840.16	Drop Inlet Frame and Grates - for use with Std. Dwg 840.14 and 840.15
840.17	Concrete Grated Drop Inlet Type 'A' - 12" thru 72" Pipe
840.18	Concrete Grated Drop Inlet Type 'B' - 12" thru 36" Pipe
840.19	Concrete Grated Drop Inlet Type 'D' - 12" thru 36" Pipe
840.20	Frames and Wide Slot Flat Grates
840.22	Frames and Wide Slot Sag Grates
840.25	Anchorage for Frames - Brick or Concrete or Precast
840.26	Brick Grated Drop Inlet Type 'A' - 12" thru 72" Pipe
840.27	Brick Grated Drop Inlet Type 'B' - 12" thru 36" Pipe
840.28	Brick Grated Drop Inlet Type 'D' - 12" thru 36" Pipe
840.29	Frames and Narrow Slot Flat Grates
840.31	Concrete Junction Box - 12" thru 66" Pipe
840.32	Brick Junction Box - 12" thru 66" Pipe
840.34	Traffic Bearing Junction Box - for Use with Pipes 42" and Under
840.45	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
848.03	Driveway Turnout - Drop Curb Type
848.04	Street Turnout
848.05	Curb Ramp - Proposed Curb & Gutter
850.01	Concrete Paved Ditches
852.01	Concrete Islands
852.06	Method for Placement of Drop Inlets in Concrete Islands
852.10	Median Construction - with Curb and Gutter
857.01	Precast Reinforced Concrete Barrier - 41" Single Faced
862.01	Guardrail Placement
862.02	Guardrail Installation
862.04	Anchoring End of Guardrail - B-77 and B-83 Anchor Units
866.01	Chain Link Fence - 4', 5' and 6' High Fence
876.01	Rip Rap in Channels
876.02	Guide for Rip Rap at Pipe Outlets
876.04	Drainage Ditches with Class 'B' Rip Rap

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kssiv(Chandler)$$$$

PROJECT REFERENCE NO.	SHEET NO.
R-2246B	1-B

04/16/11

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
- 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:

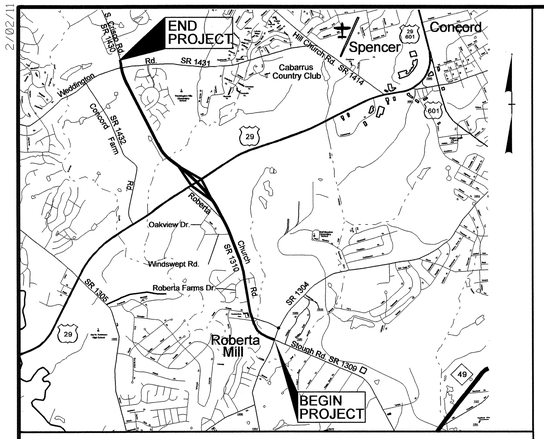
- Sanitary Sewer Manhole
- Sanitary Sewer Cleanout
- U/G Sanitary Sewer Line — SS
- Above Ground Sanitary Sewer — A/G Sanitary Sewer
- Recorded SS Forced Main Line — FSS
- Designated SS Forced Main Line (S.U.E.*) — FSS

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-2246B	1-C
Location and Surveys	

SURVEY CONTROL SHEET



VICINITY MAP

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCGS FOR MONUMENT "WINDSOR"
WITH NAD 83 STATE PLANE GRID COORDINATES OF
NORTHING: 626437.435(ft) EASTING: 1510910.502(ft)
ELEVATION: (ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.999849030
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "WINDSOR" TO -L1- STATION 11+00.00 IS
S 5°01'00.27" E 36,329.1943 (ft)
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NGVD 29

NOTES:

1. *THE CONTROL DATA FOR THIS PROJECT CAN BE FOUND ELECTRONICALLY BY SELECTING PROJECT CONTROL DATA AT:*
   HTTP:/WWW.NCDOT.ORG/DOH/PRECONSTRUCT/HIGHWAY/LOCATION/PROJECT/

   THE FILES TO BE FOUND ARE AS FOLLOWS:
   R2246B_LS_CONTROL.TXT
   R2246B_LS_LOCAL.TXT

2. *SITE CALIBRATION INFORMATION HAS NOT BEEN PROVIDED FOR THIS PROJECT. IF FURTHER INFORMATION IS NEEDED, PLEASE CONTACT THE LOCATION & SURVEYS UNIT.*

3. *PROJECT CONTROL ESTABLISHED USING GLOBAL POSITIONING SYSTEM. NETWORK ESTABLISHED FROM EXISTING (NON-HARN) MONUMENTATION. SEE SURVEY CONTROL SHEET 1E FOR HORIZONTAL AND VERTICAL COORDINATE VALUES.*

INDICATES GEODETIC CONTROL MONUMENTS USED OR SET FOR HORIZONTAL AND/OR VERTICAL PROJECT CONTROL BY THE NCDOT LOCATION & SURVEYS UNIT.

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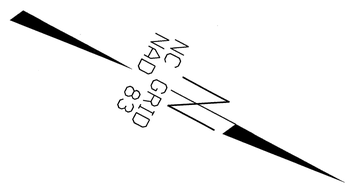
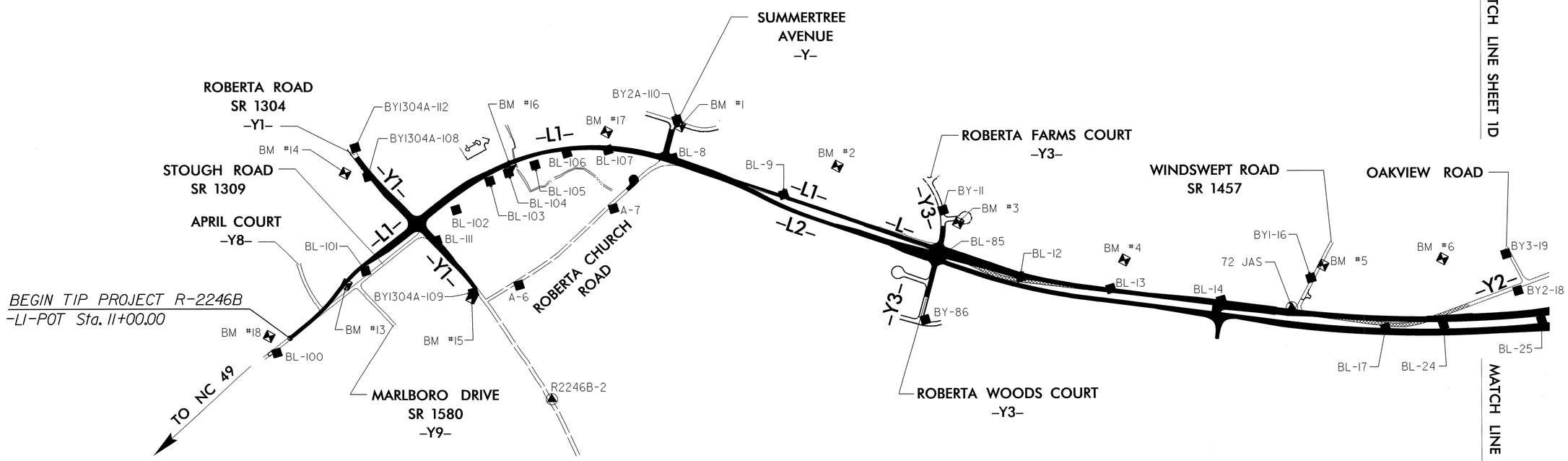
INDICATES BENCHMARKS USED OR SET FOR VERTICAL PROJECT CONTROL BY THE NCDOT LOCATION & SURVEYS UNIT.





NOTE: DRAWING NOT TO SCALE

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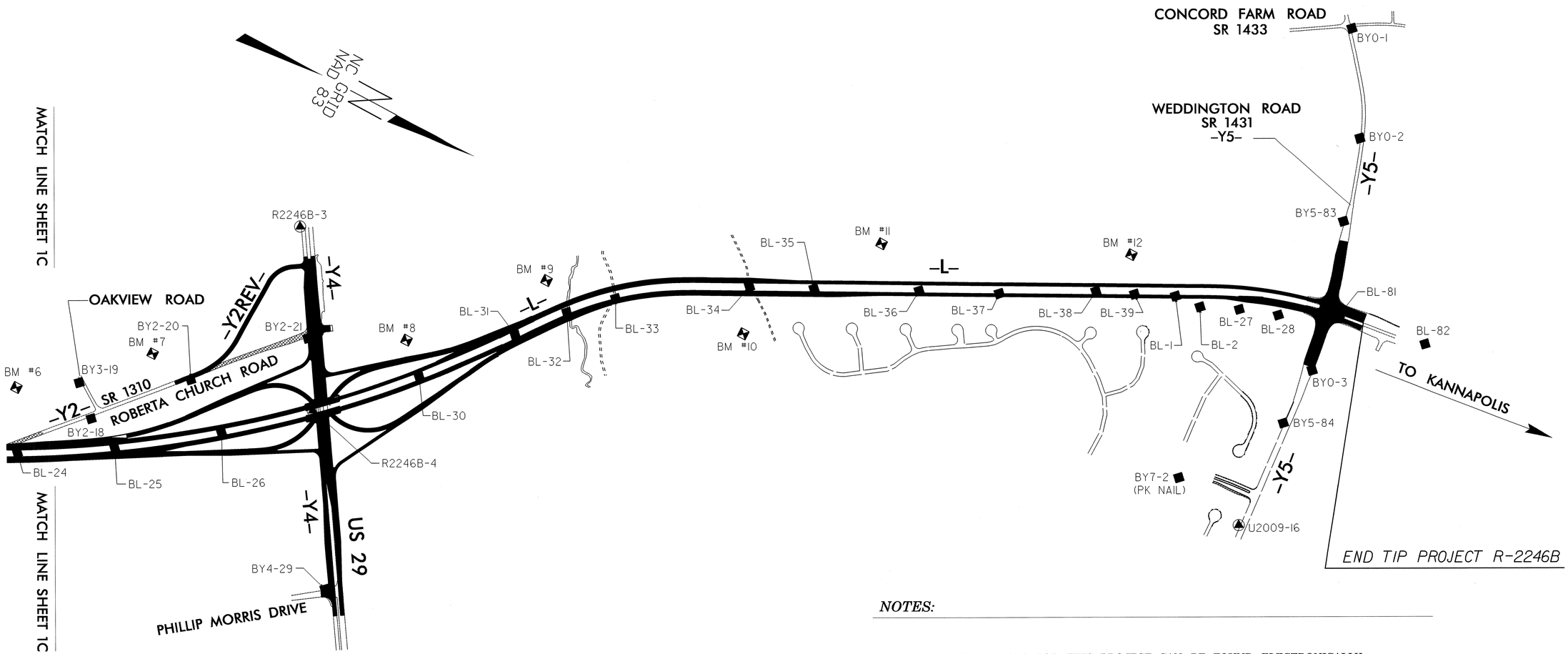
PROJECT REFERENCE NO.	SHEET NO.
R-2246B	1-D
Location and Surveys	

SURVEY CONTROL SHEET



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INDICATES BASELINE TRAVERSE MONUMENTS USED OR SET FOR HORIZONTAL PROJECT CONTROL BY THE NCDOT LOCATION & SURVEYS UNIT.

INDICATES BENCHMARKS USED OR SET FOR VERTICAL PROJECT CONTROL BY THE NCDOT LOCATION & SURVEYS UNIT.

NOTE: DRAWING NOT TO SCALE

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PROJECT REFERENCE NO.	SHEET NO.
R-2246B	1-E
Location and Surveys	

SURVEY CONTROL SHEET

BM1 ELEVATION - 589.51
N 591828 E 1511675
Y STATION 10-15 45 LEFT
2" CHISELED SQUARE IN A BOX CULVERT ON
THE EAST SIDE OF CEDAR SPRINGS DRIVE

BM2 ELEVATION - 599.49
N 592850 E 1511423
L1 STATION 50-43 299 LEFT
RR SPIKE SET IN THE BASE OF A 12"
QUADRUPLE ELM

BM3 ELEVATION - 605.88
N 593714 E 1511377
Y3 STATION 10-83 100 LEFT
RR SPIKE SET IN THE BASE OF A 16" ELM

BM4 ELEVATION - 622.41
N 594780 E 1511087
L STATION 39-27 239 LEFT
RR SPIKE SET IN THE BASE OF A 16"
SWEETGUM

BM5 ELEVATION - 619.30
N 595932 E 1510511
L STATION 52-22 365 LEFT
1" CHISELED SQAURE ON THE EDGE OF A 12"
CONCRETE PIPE

BM6 ELEVATION - 621.67
N 596597 E 1510111
L STATION 60-37 435 LEFT
RR SPIKE SET IN THE BASE OF A 50" OAK

BM7 ELEVATION - 619.88
N 597281 E 1509497
Y2REV STATION 25-29 229 LEFT
RR SPIKE SET IN THE BASE OF A 26"
WILLOW OAK

BM8 ELEVATION - 618.91
N 598704 E 1508633
L STATION 87-39 250 LEFT
RR SPIKE SET IN THE BASE OF A 14" ASH

BM9 ELEVATION - 599.99
N 599331 E 1507857
L STATION 97-48 231 LEFT
RR SPIKE SET IN THE BASE OF A 48" OAK

BM10 ELEVATION - 617.04
N 600629 E 1507553
L STATION 109-72 306 RIGHT
RR SPIKE SET IN THE BASE OF A 30" OAK

BM11 ELEVATION - 619.03
N 601155 E 1506608
L STATION 118-75 289 LEFT
RR SPIKE SET IN THE BASE OF A 28" OAK

BM12 ELEVATION - 639.59
N 602632 E 1505901
L STATION 135-11 234 LEFT
RR SPIKE SET IN THE BASE OF A 44" OAK

BM13 ELEVATION - 584.77
N 590405 E 1513606
L1 STATION 16-08 12 RIGHT
RR SPIKE IN BASE OF 18" OAK

BM14 ELEVATION - 587.58
N 590258 E 1512971
Y1 STATION 10-86 120 RIGHT
RR SPIKE IN BASE OF 36" TRIPLE WILD
CHERRY

BM15 ELEVATION - 610.33
N 591164 E 1513301
Y1 STATION 22-14
S 83-56'12.59" E DIST 61.02
RR SPIKE IN BASE OF 24" OAK

BM16 ELEVATION - 566.45
N 590982 E 1512428
L1 STATION 29-35 23 RIGHT
RR SPIKE IN BASE OF 12" BOX ELDER

BM17 ELEVATION - 583.26
N 591428 E 1511935
L1 STATION 35-78 99 LEFT
RR SPIKE IN BASE OF 24" ELM

BM18 ELEVATION - 559.72
N 590123 E 1514141
L1 STATION 10-01 93 LEFT
RR SPIKE IN BASE OF 14" BIRCH

BL

POINT	DESC.	NORTH	EAST	ELEVATION	L1 STATION	OFFSET
6	A-6	591393.9332	1513081.2802	617.39	25-11.20	727.71 RT
7	A-7	591699.4348	1512350.6215	577.77	36-67.45	391.47 RT
8	BL-8	591886.2055	1511879.7284	594.01	40-17.79	13.17 LT
9	BL-9	592628.4082	1511748.2585	612.70	47-71.24	14.02 LT

BL

POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
6	A-6	591393.9332	1513081.2802	617.39	OUTSIDE PROJECT LIMITS	
7	A-7	591699.4348	1512350.6215	577.77	OUTSIDE PROJECT LIMITS	
8	BL-8	591886.2055	1511879.7284	594.01	OUTSIDE PROJECT LIMITS	
9	BL-9	592628.4082	1511748.2585	612.70	OUTSIDE PROJECT LIMITS	
85	BL-85	593725.2140	1511617.1860	607.89	27-43.09	1.53 LT
12	BL-12	594236.1345	1511501.0431	608.98	32-68.12	19.86 LT
13	BL-13	594788.6347	1511291.4062	620.51	38-62.31	45.28 LT
14	BL-14	595457.7902	1511021.4010	639.25	45-83.73	60.42 LT
15	72 JAS	595882.6700	1510849.1140	626.79	50-43.00	70.19 LT
17	BL-17	596481.3475	1510680.0835	631.67	56-61.25	17.12 RT
24	BL-24	596804.3565	1510487.0078	624.78	60-36.67	4.68 LT
25	BL-25	597352.2977	1510161.2141	622.29	66-74.40	2.10 RT
26	BL-26	597922.4704	1509743.1564	630.25	73-81.40	3.70 RT
4	R2246B-4	598378.1800	1509329.3080	627.67	79-97.17	6.10 LT
30	BL-30	598888.1878	1508804.7313	615.06	87-29.28	1.23 RT
31	BL-31	599313.1476	1508265.9147	601.61	94-15.66	0.01 RT
32	BL-32	599544.0240	1507977.1245	589.04	97-85.63	10.73 RT
33	BL-33	599782.9995	1507744.7002	596.05	101-21.99	23.70 RT
34	BL-34	600520.3800	1507261.3905	609.76	110-10.00	2.97 LT
35	BL-35	600900.3766	1507074.3367	620.12	114-33.43	6.80 RT
36	BL-36	601513.5193	1506761.4839	626.54	121-21.75	12.77 RT
37	BL-37	601984.7116	1506529.2057	631.67	126-46.95	24.59 RT
38	BL-38	602536.4697	1506219.3951	655.14	132-79.43	4.89 RT
39	BL-39	602769.2987	1506116.6296	642.14	135-33.39	21.38 RT
61	BL-1 R2246C	603011.5925	1506000.9250	647.18	138-01.73	30.76 RT
62	BL-2 R2246C	603186.6480	1505988.4970	652.46	139-62.77	100.65 RT
27	BL-27 R2246C	603421.8040	1505881.7960	664.20	142-28.61	107.33 RT
28	BL-28 R2246C	603664.2454	1505795.3775	662.27	144-97.25	110.79 RT
81	BL-81	604016.6130	1505607.9310	651.19	148-92.32	8.11 RT
82	BL-82	604600.4690	1505508.2310	640.40	OUTSIDE PROJECT LIMITS	

BL1

POINT	DESC.	NORTH	EAST	ELEVATION	L1 STATION	OFFSET
100	BL-100	590217.6010	1514212.3430	557.72	9-73.49	22.40 RT
101	BL-101	590473.9848	1513470.6651	586.81	17-61.86	36.57 RT
111	BL-111	590786.9477	1513075.7459	608.77	22-48.64	169.42 RT
102	BL-102	590803.8269	1512841.2709	613.91	24-73.33	91.46 RT
103	BL-103	590908.7076	1512573.1446	588.13	27-70.90	53.37 RT
104	BL-104	590989.2145	1512468.0770	566.12	29-08.17	54.81 RT
105	BL-105	591118.0260	1512342.8402	571.69	30-94.97	63.89 RT
106	BL-106	591263.6015	1512177.7583	580.81	33-19.21	28.54 RT
107	BL-107	591487.1832	1512033.2709	577.62	35-89.36	15.61 RT
EO08	BL-8	591886.2055	1511879.7284	594.01	40-17.79	13.17 LT

BY

POINT	DESC.	NORTH	EAST	ELEVATION	Y STATION	OFFSET
110	BY2A-110	591792.1303	1511648.9592	589.20	OUTSIDE PROJECT LIMITS	
EO8	BL-8	591886.2055	1511879.7284	594.01	12-28.07	54.95 LT

BY1

POINT	DESC.	NORTH	EAST	ELEVATION	Y1 STATION	OFFSET
112	BY1304A-112	590038.4124	1512796.0416	583.15	OUTSIDE PROJECT LIMITS	
108	BY1304A-108	590197.9955	1512920.1474	590.59	11-90.55	18.18 RT
EO111	BL-111	590786.9477	1513075.7459	608.77	17-97.48	21.44 LT
109	BY1304A-109	591156.1360	1513262.6742	610.59	22-10.96	26.04 RT
2	R2246B-2	591929.6400	1513635.1390	0.00	OUTSIDE PROJECT LIMITS	

BY2

POINT	DESC.	NORTH	EAST	ELEVATION	Y2REV STATION	OFFSET
68	BL-17	596481.3475	1510680.0835	631.67	OUTSIDE PROJECT LIMITS	
18	BY2-18	597124.5660	1510061.3727	623.28	OUTSIDE PROJECT LIMITS	
20	BY2-20	597580.0515	1509528.4780	626.03	27-02.77	16.80 RT
21	BY2-21	598127.8538	1508927.1677	619.39	33-43.42	399.03 RT

BY2A

POINT	DESC.	NORTH	EAST	ELEVATION	Y2REV STATION	OFFSET
19	BY3-19	596944.3810	1509888.8729	617.52	OUTSIDE PROJECT LIMITS	
69	BY2-18	597124.5660	1510061.3727	623.28	OUTSIDE PROJECT LIMITS	

BY3

POINT	DESC.	NORTH	EAST	ELEVATION	Y3 STATION	OFFSET
11	BY-11	593588.5959	1511351.6443	604.20	OUTSIDE PROJECT LIMITS	
78	BL-85	593725.2140	1511617.1860	607.89	12-92.40	34.23 LT
86	BY-86	593821.6020	1512036.8350	590.36	OUTSIDE PROJECT LIMITS	

BY4

POINT	DESC.	NORTH	EAST	ELEVATION	Y4 STATION	OFFSET
3	R2246B-3	597743.1940	1508310.9630	608.54	10-01.23	42.70 RT
70	BY2-21	598127.8538	1508927.1677	619.39	17-27.57	52.63 RT
74	R2246B-4	598378.1800	1509329.3080	627.67	22-01.21	59.70 RT
29	BY4-29	598999.5353	1510325.3431	633.26	33-75.05	76.09 RT

BY5

POINT	DESC.	NORTH	EAST	ELEVATION	Y5 STATION	OFFSET
71	BY0-1 R2246C	603210.9392	1503913.1503	634.14	OUTSIDE PROJECT LIMITS	
72	BY0-2 R2246C	603594.6491	1504522.9949	639.26	OUTSIDE PROJECT LIMITS	
83	BY5-83	603755.7500	1505056.1520	635.48	12-72.62	35.49 RT
77	BL-81	604016.6130	1505607.9310	651.19	18-69.50	63.58 LT
84	BY5-84	604023.8930	1506402.6530	657.78	26-59.00	31.63 RT
63	U2009-16	604081.3607	1507131.0441	666.86	OUTSIDE PROJECT LIMITS	

BY1457

POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
16	BY1-16	595901.1729	1510620.0347	622.15	51-48.01	275.83 LT
67	72 JAS	595882.6700	1510849.1140	626.79	50-43.00	70.19 LT

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT
IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY
NCGS FOR MONUMENT "WINDSOR"
WITH NAD 83 STATE PLANE GRID COORDINATES OF
NORTHING: 626437.435(ft) EASTING: 1510910.502(ft)
ELEVATION: (ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT
(GROUND TO GRID) IS: 0.999849030
THE N.C. LAMBERT GRID BEARING AND
LOCALIZED HORIZONTAL GROUND DISTANCE FROM
"WINDSOR" TO -L1- STATION 11+00.00 IS
S 5°01'00.27" E 36,329.1943 (ft)
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NGVD 29

NOTES:

1. *THE CONTROL DATA FOR THIS PROJECT CAN BE FOUND ELECTRONICALLY BY SELECTING PROJECT CONTROL DATA AT:*
   HTTP://WWW.NCDOT.ORG/DOH/PRECONSTRUCT/HIGHWAY/LOCATION/PROJECT/

   THE FILES TO BE FOUND ARE AS FOLLOWS:
   R2246B_LS_CONTROL.TXT
   R2246B_LS_LOCAL.TXT

2. *SITE CALIBRATION INFORMATION HAS NOT BEEN PROVIDED FOR THIS PROJECT. IF FURTHER INFORMATION IS NEEDED, PLEASE CONTACT THE LOCATION & SURVEYS UNIT.*

3. *PROJECT CONTROL ESTABLISHED USING GLOBAL POSITIONING SYSTEM. NETWORK ESTABLISHED FROM EXISTING (NON-HARN) MONUMENTATION.*

2/02/11
20-DEC-2012 13:46
R:\Roadway\Proj\r2246b_ls_1e.dgn
$$$$USERNAME$$$$
RD266404 12/20/2012 r2246b_ls_1e kdaldridge RD-Oce860-34

PROJECT REFERENCE NO.	SHEET NO.
R-2246B	1-F
Location and Surveys	

SURVEY CONTROL SHEET: DESIGN ALIGNMENTS

EL

TYPE	STATION	NORTH	EAST
POT	23+50.00	591545.9561	1512724.2712
POT	29+00.00	591719.3857	1512202.3305
PC	30+22.72	591759.7087	1512086.4277
PT	30+59.12	591773.0951	1512052.5870
PC	30+91.66	591786.3213	1512022.8551
PT	31+24.63	591802.6844	1511994.2982
PC	31+38.94	591811.0260	1511982.6654
PT	31+95.72	591850.6885	1511942.3613
PC	32+13.81	591865.2215	1511931.5827
PT	32+28.24	591877.3391	1511923.7802
PC	32+29.74	591878.6550	1511923.0510
PT	33+43.62	591985.0524	1511883.7091
POT	34+75.96	592114.6982	1511857.1127
POT	35+70.95	592208.1580	1511840.1260
POT	39+64.24	592595.1030	1511769.7971
PC	50+45.59	593661.8526	1511592.6634
PT	53+39.20	593954.1957	1511569.7571
PC	53+84.31	593999.3042	1511570.1251
PT	56+12.47	594222.3481	1511529.0828
POT	62+51.67	594817.8043	1511296.6818
POT	66+53.67	595190.8986	1511147.0025
POT	70+24.85	595535.9851	1511010.2923
POT	79+14.02	596368.5573	1510698.1167

L

TYPE	STATION	NORTH	EAST
POT	23+00.00	593288.1721	1511690.1336
TS	28+49.45	593830.4336	1511601.5408
SC	30+49.45	594027.5160	1511567.5409
CS	36+01.67	594560.3748	1511424.5092
ST	38+01.67	594747.9920	1511355.2467
PC	49+44.08	595816.1464	1510950.0925
PT	93+13.88	599252.6033	1508347.7237
TS	95+67.26	599403.3176	1508144.0441
SC	98+47.26	599575.0358	1507922.9589
CS	104+73.78	600049.3955	1507517.6006
ST	107+53.78	600294.5501	1507382.4523
TS	139+37.37	603117.6555	1505910.9482
SC	141+34.22	603293.3284	1505822.1557
CS	148+61.19	603984.6389	1505604.8917
ST	150+58.04	604179.5227	1505577.2263
TS	152+30.85	604350.8998	1505555.0794
SC	154+27.70	604545.7836	1505527.4139
PT	159+73.73	605071.0815	1505382.0129

L1

TYPE	STATION	NORTH	EAST
POT	9+52.95	590188.8790	1514222.2735
PC	12+38.61	590302.5816	1513960.2225
PRC	15+12.36	590376.0306	1513697.3945
PT	17+80.38	590447.2156	1513439.8255
TS	23+11.39	590655.7848	1512951.4969
SC	26+37.07	590794.1985	1512656.8753
CS	38+46.33	591721.4509	1511930.4604
ST	41+71.99	592040.6196	1511866.5964
POT	42+87.90	592155.0107	1511847.9075
POT	47+67.97	592627.4402	1511762.6176
POT	54+31.74	593282.5287	1511655.5916

L2

TYPE	STATION	NORTH	EAST
PC	42+87.90	592156.9456	1511859.7505
PRC	46+04.46	592472.0898	1511833.5948
PT	49+21.02	592787.2341	1511807.4391
POT	54+34.31	593293.8155	1511724.6756

Y

TYPE	STATION	NORTH	EAST
POT	10+00.00	591780.8095	1511670.1436
POT	12+39.36	591835.2615	1511903.2302

RPA

TYPE	STATION	NORTH	EAST
POT	10+00.00	599339.1493	1508151.7460
TS	12+61.75	599169.1577	1508350.7834
SC	14+61.75	599037.2624	1508501.1095
CS	16+70.59	598889.1599	1508648.2610
ST	18+70.59	598737.9872	1508779.1852
TS	19+40.19	598684.7691	1508824.0475
SC	21+40.19	598541.8841	1508963.3893
PT	27+03.56	598520.4001	1509491.7670

SPURA

TYPE	STATION	NORTH	EAST
POT	10+00.00	598677.0366	1508814.8710
POT	14+73.90	598314.7031	1509120.3141

RPB

TYPE	STATION	NORTH	EAST
CS	10+00.00	597124.3680	1510235.7113
SC	12+00.00	597291.1211	1510125.3546
CS	16+03.39	597591.0845	1509856.7724
ST	18+03.39	597719.8041	1509703.7319
TS	21+23.16	597921.3058	1509455.4428
SC	23+23.16	598062.1752	1509314.6952
PT	28+27.36	598505.7282	1509409.8221

SPURB

TYPE	STATION	NORTH	EAST
POT	10+00.00	597911.9896	1509447.8791
PC	14+14.02	598172.8878	1509126.4019
PT	15+64.44	598180.6279	1508985.8541
POT	16+69.92	598123.5550	1508897.1485

RPC

TYPE	STATION	NORTH	EAST
POT	10+00.00	597144.9209	1510347.7166
TS	21+40.78	598127.1530	1509767.5394
SC	23+40.78	598290.3424	1509652.7872
PT	29+16.56	598350.6833	1509124.4879

SPURC

TYPE	STATION	NORTH	EAST
POT	10+00.00	598133.2534	1509777.8730
POT	15+08.76	598571.3006	1509519.1307

RPD

TYPE	STATION	NORTH	EAST
TS	10+00.00	599438.8910	1508195.1572
SC	12+00.00	599322.6356	1508357.8710
CS	13+04.14	599267.2332	1508446.0417
ST	15+04.14	599171.0715	1508621.3815
TS	19+95.04	598942.2246	1509055.6709
SC	21+95.04	598831.5917	1509221.2438
PT	27+62.21	598338.9547	1509165.3997

SPURD

TYPE	STATION	NORTH	EAST
POT	10+00.00	598952.8405	1509061.2658
PC	15+37.04	598702.4834	1509536.3757
PT	16+63.84	598707.7294	1509657.2471
POT	17+08.53	598731.9124	1509694.8335

Y1

TYPE	STATION	NORTH	EAST
POT	10+00.00	590031.0710	1512824.8472
PC	10+63.08	590087.9327	1512852.1627
PT	13+54.85	590359.9960	1512956.6814
PC	14+31.37	590433.4128	1512978.2497
PT	15+97.60	590591.5218	1513029.4975
PC	17+33.66	590719.7442	1513075.0203
PT	18+68.31	590847.1639	1513118.5328
PC	20+34.62	591005.1868	1513170.3737
PT	21+57.43	591119.0816	1513216.0806
POT	22+14.39	591170.4636	1513240.6650

Y2REV

TYPE	STATION	NORTH	EAST
POT	10+00.00	597317.7344	1509802.5930
PC	13+98.18	597580.0188	1509503.0044
PT	17+75.44	597644.3924	1509149.5556
PC	26+56.16	597335.1320	1508324.9159
PT	29+95.63	597433.9427	1508026.8870
POT	31+44.70	597559.3016	1507946.2314

Y3

TYPE	STATION	NORTH	EAST
PC	10+00.00	593579.6658	1511359.1301
PT	12+28.11	593678.4864	1511562.2431
POT	12+91.47	593691.7028	1511624.2062
POT	17+48.88	593797.6340	1512069.1870

Y4

TYPE	STATION	NORTH	EAST
POT	0+00.00	597237.3596	1507445.8532
POT	45+00.00	599672.2168	1511230.2294

Y5

TYPE	STATION	NORTH	EAST
POT	10+00.00	603703.1226	1504786.3175
POT	12+82.83	603792.6515	1505054.6028
PC	15+80.28	603888.5883	1505336.1602
PT	18+31.04	603947.9890	1505579.4447
PC	22+56.15	604011.7491	1505999.7457
PT	25+80.75	604049.1388	1506322.1104
POT	33+22.24	604108.6802	1507061.2083

Y6

TYPE	STATION	NORTH	EAST
POT	10+00.00	593736.4091	1511812.0020
POT	12+19.32	593519.9670	1511847.4400

Y8

TYPE	STATION	NORTH	EAST
POT	10+00.00	590067.0420	1513635.1808
PC	10+67.93	590116.7255	1513681.5099
PT	13+30.99	590336.0402	1513824.3871
POT	13+44.80	590348.7337	1513829.8189

Y9

TYPE	STATION	NORTH	EAST
POT	10+00.00	590405.1255	1513558.5796
POT	14+25.89	590808.2895	1513695.8280

DET

TYPE	STATION	NORTH	EAST
POT	10+00.00	590411.8211	1513706.1358
PC	10+62.96	590436.5888	1513648.2568
PT	11+75.95	590468.9766	1513540.2546
PC	12+91.63	590489.4988	1513426.4133
PT	13+65.68	590507.9751	1513354.7737
POT	17+00.25	590615.2701	1513037.8683

DRV1

TYPE	STATION	NORTH	EAST
POT	10+00.00	590454.1343	1513423.6267
POT	12+05.86	590647.8777	1513493.2087

DRV2

TYPE	STATION	NORTH	EAST
POT	10+00.00	590464.6207	1513399.0745
POT	11+88.06	590643.0124	1513458.5972

DRV3

TYPE	STATION	NORTH	EAST
POT	10+00.00	590521.3345	1513266.2890
POT	12+00.00	590705.2608	1513344.8455

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCGS FOR MONUMENT "WINDSOR"
WITH NAD 83 STATE PLANE GRID COORDINATES OF
NORTHING: 626437.435(ft) EASTING: 1510910.502(ft)
ELEVATION: (ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.999849030
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "WINDSOR" TO -L1- STATION 11+00.00 IS
S 5°01'00.27" E 36,329.1943 (ft)
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NGVD 29

NOTES:

SEE SURVEY CONTROL SHEET 1C FOR COMPLETE NOTES.

20-DEC-2012 13:46
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PROJECT REFERENCE NO.	SHEET NO.
R-2246B	1-G
Location and Surveys	

–Preliminary– SURVEY CONTROL SHEET: R/W COORDINATE TABLES

ROW MARKER IRON PIN AND CAP

ALIGN	STATION	OFFSET	NORTH	EAST
EL	26+54.50	-30.00	591613.5024	1512425.8494
EL	28+16.11	-63.63	591632.5502	1512261.8736

ROW MARKER IRON PIN AND CAP

ALIGN	STATION	OFFSET	NORTH	EAST
L	23+00.00	-100.00	593272.0482	1511591.4421
L	23+00.00	120.00	593307.5208	1511808.5635
L	25+14.00	-100.00	593483.2481	1511556.9370
L	26+62.05	120.00	593664.8335	1511750.1870
L	27+70.55	100.00	593768.6890	1511712.9542
L	28+49.45	100.00	593846.5567	1511700.2325
L	28+55.72	-107.00	593819.3654	1511494.9304
L	30+49.45	100.00	594046.2656	1511665.7675
L	30+49.45	-105.00	594007.8289	1511464.4031
L	32+00.00	100.00	594197.4659	1511633.7480
L	33+00.00	120.00	594302.1888	1511628.4871
L	36+01.67	-105.00	594525.7677	1511325.3762
L	36+01.67	120.00	594599.9259	1511537.8040
L	38+01.67	120.00	594790.5498	1511467.4467
L	38+01.67	-105.00	594710.7539	1511257.0717
L	40+90.00	-105.00	594980.3413	1511154.8164
L	42+65.00	-115.00	595140.4198	1511083.4030
L	49+44.08	-115.00	595775.3595	1510842.5685
L	49+44.08	120.00	595858.7018	1511062.2934
L	51+55.08	-172.00	595946.9631	1510713.4741
L	51+70.00	-166.00	595962.7366	1510713.4602
L	51+70.00	-115.00	595982.2238	1510760.5903
L	51+70.00	-130.00	595976.4923	1510746.7285
L	53+90.00	-115.00	596181.2559	1510674.9238
L	53+90.00	-130.00	596175.1282	1510661.2326
L	61+94.49	-182.17	596852.4551	1510255.7283
L	62+01.55	-161.71	596868.7010	1510269.9478
L	62+54.87	-201.80	596893.3263	1510209.0344
L	62+61.76	-181.27	596909.5556	1510223.2825
L	64+41.64	-115.00	597094.6973	1510188.2185
L	95+67.26	135.00	599511.8382	1508224.3452
L	95+67.26	120.00	599499.7804	1508215.4229
L	98+47.26	135.97	599678.4120	1508011.2834
L	98+47.26	120.00	599666.2702	1508000.9095
L	98+90.00	-110.00	599521.0586	1507817.5382
L	98+90.00	-135.00	599502.4028	1507800.8960
L	102+00.00	96.00	599887.4874	1507750.5172
L	104+73.78	-110.00	599991.8538	1507423.8512
L	104+73.78	96.00	600099.6137	1507599.4183
L	107+53.78	96.00	600338.9227	1507467.5820
L	107+53.78	-110.00	600243.7064	1507284.9078
L	110+50.00	-110.00	600506.3812	1507147.9922
L	110+91.83	96.00	600638.6920	1507311.3330
L	111+00.00	-100.00	600555.3417	1507133.7492
L	121+50.00	-100.00	601486.4479	1506648.4231
L	125+00.00	97.00	601887.8730	1506661.3411
L	127+00.00	-100.00	601974.1701	1506394.2048
L	135+00.00	-100.00	602683.5844	1506024.4326
L	136+60.97	-98.42	602827.0591	1505951.4250
L	138+73.48	98.55	603106.5530	1506027.8740

ROW MARKER IRON PIN AND CAP

ALIGN	STATION	OFFSET	NORTH	EAST
SPURA	11+98.79	88.00	598468.3259	1508875.7156

ROW MARKER IRON PIN AND CAP

ALIGN	STATION	OFFSET	NORTH	EAST
SPURB	14+14.02	-88.00	598104.5584	1509070.9485
SPURB	15+85.00	-75.00	598106.4304	1509009.1446

ROW MARKER IRON PIN AND CAP

ALIGN	STATION	OFFSET	NORTH	EAST
SPURC	13+13.05	68.15	598437.4540	1509677.3409

ROW MARKER IRON PIN AND CAP

ALIGN	STATION	OFFSET	NORTH	EAST
SPURD	16+48.00	-65.00	598758.8783	1509615.7306

ROW MARKER IRON PIN AND CAP

ALIGN	STATION	OFFSET	NORTH	EAST
L1	9+94.19	-192.62	590028.5971	1514107.7678
L1	13+75.04	-138.03	590215.2698	1513794.5434
L1	14+49.51	-140.00	590228.3309	1513731.7515
L1	21+00.00	-85.00	590494.5865	1513112.5098
L1	21+02.00	102.43	590667.7341	1513184.2878
L1	22+79.00	-107.00	590544.6626	1512939.2546
L1	23+24.93	127.60	590778.4388	1512989.1840
L1	25+97.70	138.76	590898.0889	1512756.2858
L1	26+64.83	-115.00	590708.6660	1512574.7907
L1	26+82.59	-50.00	590774.1389	1512591.7790
L1	27+04.30	146.37	590952.7688	1512675.9973
L1	28+25.00	146.50	591013.9229	1512585.6534
L1	28+36.00	-36.00	590873.5171	1512468.5827
L1	29+50.00	-70.00	590921.0137	1512355.4200
L1	30+27.98	127.00	591117.9775	1512431.8595
L1	34+67.88	142.25	591442.9093	1512198.5437
L1	34+71.09	127.00	591437.9408	1512183.8362
L1	38+46.33	-70.00	591702.8755	1511862.9700
L1	39+07.58	130.00	591810.7141	1512041.8315
L1	39+32.19	-70.00	591789.5224	1511841.4919
L1	41+18.30	-91.11	591972.6860	1511785.4300
L1	41+72.00	127.00	592061.1047	1511991.9333
L1	42+59.09	-95.02	592111.2560	1511758.7800
L1	43+90.70	-65.00	592244.6320	1511765.6770
L1	44+02.05	-97.40	592250.0380	1511731.7800
L1	46+75.07	134.00	592559.8308	1511910.9897
L1	46+75.09	155.00	592563.5833	1511931.6517
L1	47+67.97	-65.00	592615.8956	1511698.6510
L1	47+70.00	155.00	592654.4392	1511915.2616

ROW MARKER IRON PIN AND CAP

ALIGN	STATION	OFFSET	NORTH	EAST
RPA	10+00.00	85.00	599274.5145	1508096.5433
RPA	14+61.75	100.00	598963.8792	1508433.1763
RPA	16+70.59	100.00	598821.7008	1508574.4418
RPA	18+70.59	100.00	598673.5341	1508702.7274

ROW MARKER IRON PIN AND CAP

ALIGN	STATION	OFFSET	NORTH	EAST
RPB	16+03.39	-100.00	597516.8600	1509789.7595
RPB	18+03.39	-100.00	597642.1570	1509640.7166

ROW MARKER IRON PIN AND CAP

ALIGN	STATION	OFFSET	NORTH	EAST
RPC	10+55.81	71.75	597229.4642	1510381.1055
RPC	11+04.94	81.62	597276.7842	1510364.6240
RPC	13+51.67	75.15	597485.9339	1510233.5703

ROW MARKER IRON PIN AND CAP

ALIGN	STATION	OFFSET	NORTH	EAST
RPD	14+87.98	-79.47	599248.9052	1508644.1543

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT
IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY
NCGS FOR MONUMENT "WINDSOR"
WITH NAD 83 STATE PLANE GRID COORDINATES OF
NORTHING: 626437.435(ft) EASTING: 1510910.502(ft)
ELEVATION: (ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT
(GROUND TO GRID) IS: 0.999849030
THE N.C. LAMBERT GRID BEARING AND
LOCALIZED HORIZONTAL GROUND DISTANCE FROM
"WINDSOR" TO -L1- STATION 11+00.00 IS
S 5°01'00.27" E 36,329.1943 (ft)
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NGVD 29

ROW MARKER IRON PIN AND CAP

ALIGN	STATION	OFFSET	NORTH	EAST
Y	11+50.64	-29.82	591844.1150	1511810.0520

ROW MARKER IRON PIN AND CAP

ALIGN	STATION	OFFSET	NORTH	EAST
Y1	10+10.65	30.00	590027.6839	1512856.5021
Y1	10+10.74	70.00	590010.4384	1512892.5937
Y1	10+11.34	-30.00	590054.2811	1512802.7150
Y1	10+14.18	-70.00	590074.1643	1512767.8905
Y1	10+63.08	70.00	590057.6196	1512915.2588
Y1	10+63.08	-70.00	590118.2415	1512789.0646
Y1	13+54.85	70.00	590340.2653	1513023.8432
Y1	13+54.85	-70.00	590379.7267	1512889.5197
Y1	15+08.00	70.00	590485.2120	1513067.4216
Y1	17+75.00	70.00	590735.8205	1513154.8439
Y1	18+68.31	70.00	590825.3439	1513185.0451
Y1	20+34.62	70.00	590983.3668	1513236.8860
Y1	21+57.43	70.00	591088.8694	1513279.2251
Y1	21+96.84	70.00	591124.4211	1513296.2353
Y1	21+97.89	34.75	591140.5848	1513264.8969
Y1	22+00.00	-35.87	591172.9670	1513202.0947
Y1	22+00.00	-85.00	591194.1702	1513157.7793

ROW MARKER IRON PIN AND CAP

ALIGN	STATION	OFFSET	NORTH	EAST
Y2REV	13+06.85	-40.00	597489.7617	1509545.3738
Y2REV	13+11.04	-30.00	597500.0491	1509548.8040
Y2REV	13+35.89	30.00	597561.5636	1509569.6279
Y2REV	13+40.08	40.00	597571.8452	1509573.0652
Y2REV	13+98.18	-40.00	597549.9229	1509476.6560
Y2REV	13+98.18	40.00	597610.1147	1509529.3528
Y2REV	17+75.44	-40.00	597606.9395	1509163.6013
Y2REV	17+75.44	40.00	597681.8452	1509135.5098
Y2REV	26+56.16	-40.00	597297.6792	1508338.9616
Y2REV	26+56.16	40.00	597372.5849	1508310.8701
Y2REV	29+95.63	-40.00	597412.2995	1507993.2481
Y2REV	29+95.63	40.00	597455.5859	1508060.5258

ROW MARKER IRON PIN AND CAP

ALIGN	STATION	OFFSET	NORTH	EAST
Y3	11+75.00	29.93	593636.1167	1511520.5429
Y3	11+85.00	-30.31	593696.5152	1511511.5417
Y3	14+18.00	-30.27	593750.4579	1511740.2890
Y3	14+55.71	51.25	593679.8800	1511795.8580

ROW MARKER IRON PIN AND CAP

ALIGN	STATION	OFFSET	NORTH	EAST
Y4	5+00.00	-85.00	597579.3817	1507820.3474
Y4	5+00.00	-60.00	597558.3577	1507833.8742
Y4	5+04.51	60.00	597459.8797	1507902.5947
Y4	5+51.34	83.84	597465.1724	1507954.8756
Y4	6+40.00	90.00	597507.9627	1508032.7723
Y4	12+24.85	90.00	597824.4127	1508524.6146
Y4	12+44.06	-60.00	597960.9543	1508459.6099
Y4	12+45.16	-85.00	597982.5745	1508447.0098
Y4	13+23.35	115.00	597856.6847	1508620.9773
Y4	16+47.16	-60.00	598179.0623	1508798.6041
Y4	25+80.44	105.00	598545.2793	1509672.7438
Y4	40+00.00	60.00	599351.2169	1510842.2053
Y4	40+00.00	105.00	599313.3733	1510866.5537
Y4	40+00.00	-105.00	599489.9774	1510752.9271
Y4	40+00.00	-60.00	599452.1340	1510777.2755

NOTES:

SEE SURVEY CONTROL SHEET 1C FOR COMPLETE NOTES.

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PROJECT REFERENCE NO.	SHEET NO.
R-2246B	1-H
Location and Surveys	

–Preliminary– SURVEY CONTROL SHEET: PERMANENT EASEMENTS

PERMANENT EASEMENT MARKER IRON PIN AND CAP

ALIGN	STATION	OFFSET	NORTH	EAST
L	23+00.00	-115.00	593269.6296	1511576.6383
L	23+00.00	131.50	593309.3750	1511819.9130
L	23+82.00	120.00	593388.4478	1511795.3419
L	23+82.00	130.00	593390.0602	1511805.2110
L	24+25.00	130.00	593432.4976	1511798.2778
L	24+25.00	120.00	593430.8852	1511788.4086
L	25+13.99	-115.00	593480.8214	1511542.1346
L	26+63.63	130.00	593668.0012	1511759.8020
L	27+55.64	116.00	593756.5539	1511731.1490
L	27+70.94	-123.14	593733.0928	1511492.6722
L	30+49.45	115.00	594049.0780	1511680.5015
L	30+49.45	-120.00	594005.0165	1511449.6691
L	32+00.00	115.00	594200.8674	1511648.3572
L	33+00.00	135.00	594305.9787	1511643.0005
L	36+01.67	-120.00	594520.8238	1511311.2143
L	36+01.67	135.00	594604.8697	1511551.9659
L	38+01.67	-120.00	594705.4342	1511243.0467
L	38+01.67	135.00	594795.8695	1511481.4717
L	40+70.00	-120.00	594956.3216	1511147.8844
L	42+65.00	-130.00	595135.1001	1511069.3780
L	49+44.08	-130.00	595770.0421	1510828.5426
L	49+44.08	135.00	595864.0239	1511076.3175
L	51+30.00	135.00	596040.0916	1511007.0758
L	51+30.00	120.00	596034.4326	1510993.1842
L	51+30.00	142.00	596042.7325	1511013.5585
L	51+38.30	-130.00	595947.6734	1510758.5746
L	52+10.00	142.00	596118.0340	1510982.4231
L	52+10.00	135.00	596115.3255	1510975.9683
L	52+10.00	120.00	596109.5216	1510962.1367
L	58+12.61	120.00	596664.0046	1510703.3392
L	58+16.67	135.00	596674.5463	1510714.7790
L	64+41.65	-130.00	597086.7566	1510175.4927
L	97+80.00	137.74	599639.4648	1508061.1001
L	97+80.00	167.59	599662.7236	1508079.8108
L	98+20.00	-165.00	599430.6386	1507838.2542
L	98+20.00	-130.94	599456.8150	1507860.0386
L	98+47.26	165.99	599701.2356	1508030.7843
L	98+90.00	-165.00	599480.0158	1507780.9254
L	108+95.00	-185.00	600334.2660	1507153.1280
L	108+95.00	-110.00	600368.9322	1507219.6356
L	109+40.00	-185.00	600374.1706	1507132.3283
L	109+70.00	-168.00	600408.6313	1507133.5369
L	110+10.00	-110.00	600470.9105	1507166.4809
L	121+50.00	-125.00	601474.8925	1506626.2540
L	121+78.00	-132.50	601496.2554	1506606.6612
L	122+04.00	-100.00	601534.3333	1506623.4635
L	122+90.00	112.00	601708.5850	1506771.7078
L	122+90.00	97.08	601701.6908	1506758.4811
L	123+35.00	97.16	601741.6300	1506737.7479
L	123+35.00	112.00	601748.4895	1506750.9081
L	136+20.00	-98.83	602790.5394	1505970.0083
L	136+37.70	-120.00	602796.4464	1505943.0510

PERMANENT EASEMENT MARKER IRON PIN AND CAP

ALIGN	STATION	OFFSET	NORTH	EAST
L1	10+90.00	55.00	590293.8858	1514118.4405
L1	10+90.00	29.54	590270.5333	1514108.3080
L1	13+60.00	61.00	590402.5198	1513863.5284
L1	14+42.00	49.96	590412.9789	1513776.9324
L1	21+05.00	127.00	590691.5123	1513191.1815
L1	41+15.00	128.91	592005.5833	1512002.9977
L1	41+15.00	139.00	592007.2434	1512012.9542
L1	41+71.99	137.00	592062.7093	1512001.8038
L1	43+21.11	143.00	592213.1011	1511982.7319
L1	43+26.27	127.82	592215.4765	1511966.8797
L1	43+98.06	-86.00	592248.1362	1511743.7049
L1	46+75.09	148.00	592562.3325	1511924.7643
L1	46+75.11	170.00	592566.2637	1511946.4103
L1	47+67.97	-80.00	592614.5411	1511683.6644
L1	47+70.77	169.98	592657.6168	1511929.9179
L1	49+93.00	155.00	592874.5213	1511879.3054
L1	50+26.00	170.00	592909.5081	1511888.7882
L1	50+48.00	180.00	592932.8326	1511895.1101
L1	51+50.60	166.50	593031.9134	1511865.2437
L1	52+38.00	155.00	593116.3156	1511839.8019

PERMANENT EASEMENT MARKER IRON PIN AND CAP

ALIGN	STATION	OFFSET	NORTH	EAST
EL	27+95.62	-136.47	591556.9631	1512258.3508
EL	27+96.74	-206.83	591490.5499	1512235.1093
EL	28+16.22	-135.36	591564.5148	1512239.1534
EL	28+16.33	-206.50	591497.0343	1512216.6185

PERMANENT EASEMENT MARKER IRON PIN AND CAP

ALIGN	STATION	OFFSET	NORTH	EAST
RPA	10+00.00	110.00	599255.5042	1508080.3073
RPA	10+23.00	155.00	599206.3485	1508068.5718
RPA	10+23.00	111.00	599239.8066	1508097.1473
RPA	10+94.00	160.00	599156.4360	1508119.3137
RPA	10+94.00	113.00	599192.1753	1508149.8375
RPA	14+61.75	125.00	598945.5334	1508416.1931
RPA	16+70.59	125.00	598804.8361	1508555.9870
RPA	18+70.59	125.00	598657.4193	1508683.6143

PERMANENT EASEMENT MARKER IRON PIN AND CAP

ALIGN	STATION	OFFSET	NORTH	EAST
RPB	11+29.00	-79.62	597188.4017	1510099.7754
RPB	11+40.00	-153.17	597155.9374	1510032.9460
RPB	11+49.00	-82.75	597202.6506	1510086.3266
RPB	11+60.00	-157.96	597168.6339	1510018.4436

PERMANENT EASEMENT MARKER IRON PIN AND CAP

ALIGN	STATION	OFFSET	NORTH	EAST
RPC	11+25.00	145.00	597326.2917	1510408.9916
RPC	11+25.00	81.09	597293.7906	1510353.9677
RPC	13+70.00	127.00	597528.0861	1510268.8917

PERMANENT EASEMENT MARKER IRON PIN AND CAP

ALIGN	STATION	OFFSET	NORTH	EAST
RPD	10+17.00	-120.00	599525.2694	1508280.1676
RPD	10+17.00	-64.99	599481.0338	1508247.4597
RPD	13+17.14	-142.00	599383.2566	1508528.8667
RPD	14+42.93	-150.00	599332.0657	1508637.8219
RPD	16+22.00	-173.00	599269.1801	1508806.2971
RPD	16+22.00	-161.00	599258.5639	1508800.7029
RPD	16+42.00	-162.00	599250.1249	1508818.8628
RPD	16+42.00	-173.00	599259.8565	1508823.9908

PERMANENT EASEMENT MARKER IRON PIN AND CAP

ALIGN	STATION	OFFSET	NORTH	EAST
SPURA	11+80.00	113.00	598466.5805	1508844.4892

PERMANENT EASEMENT MARKER IRON PIN AND CAP

ALIGN	STATION	OFFSET	NORTH	EAST
SPURC	13+08.00	120.00	598459.4757	1509724.5528

PERMANENT EASEMENT MARKER IRON PIN AND CAP

ALIGN	STATION	OFFSET	NORTH	EAST
Y1	10+15.25	-85.00	590081.6205	1512754.8314
Y1	10+63.08	-85.00	590124.7388	1512775.5448
Y1	13+16.44	-70.00	590344.4227	1512878.7377
Y1	13+18.31	-85.00	590350.6548	1512864.9768
Y1	17+80.00	85.00	590735.7038	1513170.6770
Y1	18+68.31	85.00	590820.6682	1513199.2977
Y1	20+34.62	85.00	590978.6911	1513251.1387
Y1	21+57.43	85.00	591082.3953	1513292.7560

PERMANENT EASEMENT MARKER IRON PIN AND CAP

ALIGN	STATION	OFFSET	NORTH	EAST
Y2REV	12+98.46	-60.00	597469.1863	1509538.5132
Y2REV	13+98.18	-60.00	597534.8750	1509463.4818

PERMANENT EASEMENT MARKER IRON PIN AND CAP

ALIGN	STATION	OFFSET	NORTH	EAST
Y3	11+65.20	-30.35	593689.8620	1511491.5408
Y3	14+35.00	53.01	593673.3753	1511776.1142
Y3	15+40.00	29.88	593720.1914	1511872.9035

PERMANENT EASEMENT MARKER IRON PIN AND CAP

ALIGN	STATION	OFFSET	NORTH	EAST
Y4	5+00.00	-110.00	597600.4060	1507806.8204
Y4	6+39.15	100.00	597499.0949	1508037.4711
Y4	6+58.00	-110.00	597685.8964	1507939.6940
Y4	6+58.00	-120.00	597694.3062	1507934.2832
Y4	6+75.00	90.00	597526.9004	1508062.2063
Y4	6+75.00	115.00	597505.8761	1508075.7332
Y4	6+75.00	100.00	597518.4907	1508067.6171
Y4	6+77.00	-110.00	597696.1769	1507955.6724
Y4	6+77.00	-120.00	597704.5867	1507950.2616
Y4	6+95.00	90.00	597537.7226	1508079.0266
Y4	6+95.00	115.00	597516.6983	1508092.5535
Y4	6+95.00	100.00	597529.3116	1508084.4357
Y4	10+28.00	-120.00	597894.5054	1508245.4427
Y4	10+28.00	-110.00	597886.0956	1508250.8535
Y4	10+48.00	-120.00	597905.3269	1508262.2622
Y4	10+48.00	-110.00	597896.9172	1508267.6730
Y4	11+50.00	115.00	597762.8886	1508475.1949
Y4	11+50.00	100.00	597775.5032	1508467.0787
Y4	11+50.00	90.00	597783.9129	1508461.6679
Y4	11+70.00	90.00	597794.7345	1508478.4873
Y4	11+70.00	115.00	597773.7102	1508492.0143
Y4	11+70.00	100.00	597786.3248	1508483.8981
Y4	11+95.14	90.00	597808.3372	1508499.6293
Y4	11+96.56	100.00	597800.6957	1508506.2341
Y4	12+46.27	-110.00	598004.1951	1508434.4095
Y4	15+65.00	-60.00	598134.6068	1508729.5091
Y4	26+38.38	105.00	598576.6294	1509721.4697
Y4	27+27.00	-130.00	598822.2082	1509668.8431
Y4	39+30.00	140.00	599246.0638	1510826.6235
Y4	39+40.00	105.00	599280.9086	1510816.0954
Y4	39+50.00	145.00	599252.6805	1510846.1483
Y4	39+60.00	105.00	599291.7302	1510832.9148
Y4	39+95.00	-130.00	599508.2963	1510735.1953
Y4	40+03.00	-165.00	599542.0589	1510722.9853
Y4	40+15.00	-125.00	599514.9130	1510754.7201
Y4	40+23.00	-160.00	599548.6757	1510742.5102
Y4	40+80.00	-92.00	599522.3311	1510827.2389
Y4	40+80.00	-60.00	599495.4204	1510844.5532

PERMANENT EASEMENT MARKER IRON PIN AND CAP

ALIGN	STATION	OFFSET	NORTH	EAST
Y6	10+77.00	45.00	593653.1498	1511780.0349
Y6	10+77.00	25.11	593656.3633	1511799.6617
Y6	10+82.00	-24.96	593659.5192	1511849.8813

PERMANENT EASEMENT MARKER IRON PIN AND CAP

ALIGN	STATION	OFFSET	NORTH	EAST
Y9	11+20.00	30.81	590508.7948	1513626.4164
Y9	11+20.00	-29.19	590528.1308	1513569.6175

NOTES:

SEE SURVEY CONTROL SHEET 1C FOR COMPLETE NOTES.

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PROJ. REFERENCE NO.	SHEET NO.
R-2246B	1-I

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CENTERLINE COORDINATE LIST

Point #	Chain	Station	Northing (Y)	Easting (X)
1	L1	11+00.00	590247.4110	1514087.3746
2	L1	12+00.00	590287.2151	1513995.6379
3	L1	13+00.00	590325.2755	1513903.1865
4	L1	14+00.00	590354.6228	1513807.6334
5	L1	15+00.00	590374.2841	1513709.6278
6	L1	16+00.00	590391.6688	1513611.1869
7	L1	17+00.00	590418.6458	1513514.9377
8	L1	18+00.00	590454.9205	1513421.7858
9	L1	19+00.00	590494.1988	1513329.8226
10	L1	20+00.00	590533.4770	1513237.8595
11	L1	21+00.00	590572.7552	1513145.8963
12	L1	22+00.00	590612.0334	1513053.9332
13	L1	23+00.00	590651.3116	1512961.9700
14	L1	24+00.00	590690.8041	1512870.0989
15	L1	25+00.00	590731.9263	1512778.9490
16	L1	26+00.00	590776.4723	1512689.4296
17	L1	27+00.00	590826.0592	1512602.6099
18	L1	28+00.00	590881.2070	1512519.2123
19	L1	29+00.00	590941.6941	1512439.6025
20	L1	30+00.00	591007.2613	1512364.1216
21	L1	31+00.00	591077.6275	1512293.0932
22	L1	32+00.00	591152.4911	1512226.8220
23	L1	33+00.00	591231.5310	1512165.5920
24	L1	34+00.00	591314.4085	1512109.6657
25	L1	35+00.00	591400.7682	1512059.2829
26	L1	36+00.00	591490.2399	1512014.6596
27	L1	37+00.00	591582.4400	1511975.9870
28	L1	38+00.00	591676.9732	1511943.4310
29	L1	39+00.00	591773.4219	1511917.0808
30	L1	40+00.00	591871.1679	1511896.0085
31	L1	41+00.00	591969.5899	1511878.3277
32	L1	42+00.00	592068.2611	1511862.0804
33	L1	43+00.00	592166.9184	1511845.7578
34	L1	44+00.00	592265.3276	1511827.9915
35	L1	45+00.00	592363.7367	1511810.2253
36	L1	46+00.00	592462.1459	1511792.4590
37	L1	47+00.00	592560.5550	1511774.6927
38	L1	48+00.00	592659.0546	1511757.4526
39	L1	49+00.00	592757.7462	1511741.3287
40	L1	50+00.00	592856.4377	1511725.2048
41	L1	51+00.00	592955.1292	1511709.0809
42	L1	52+00.00	593053.8208	1511692.9571
43	L1	53+00.00	593152.5123	1511676.8332
44	L1	54+00.00	593251.2039	1511660.7093
45	L1	54+31.74	593282.5287	1511655.5916
46	L2	43+00.00	592168.8931	1511857.8357
47	L2	44+00.00	592268.0273	1511844.7848
48	L2	45+00.00	592367.6899	1511836.7049
49	L2	46+00.00	592467.6318	1511833.6161
50	L2	47+00.00	592567.5864	1511830.9630
51	L2	48+00.00	592667.2840	1511823.3275
52	L2	49+00.00	592766.4754	1511810.7187
53	L2	50+00.00	592865.1844	1511794.7039
54	L2	51+00.00	592963.8759	1511778.5800
55	L2	52+00.00	593062.5675	1511762.4561
56	L2	53+00.00	593161.2590	1511746.3322
57	L2	54+00.00	593259.9506	1511730.2084
58	L2	54+34.31	593293.8155	1511724.6756
59	L	23+00.00	593288.1721	1511690.1336
60	L	24+00.00	593386.8636	1511674.0097
61	L	25+00.00	593485.5552	1511657.8858
62	L	26+00.00	593584.2467	1511641.7620
63	L	27+00.00	593682.9383	1511625.6381
64	L	28+00.00	593781.6298	1511609.5142
65	L	29+00.00	593880.3167	1511593.3620
66	L	30+00.00	593978.8872	1511576.5187
67	L	31+00.00	594077.1033	1511557.7288
68	L	32+00.00	594174.7890	1511536.3531
69	L	33+00.00	594271.8700	1511512.3804
70	L	34+00.00	594368.2772	1511485.8277
71	L	35+00.00	594463.9422	1511456.7139
72	L	36+00.00	594558.7969	1511425.0596
73	L	37+00.00	594652.8471	1511391.0857
74	L	38+00.00	594746.4294	1511355.8394
75	L	39+00.00	594839.9294	1511320.3746
76	L	40+00.00	594933.4294	1511284.9097
77	L	41+00.00	595026.9294	1511249.4449
78	L	42+00.00	595120.4294	1511213.9801
79	L	43+00.00	595213.9293	1511178.5153
80	L	44+00.00	595307.4293	1511143.0505

Point #	Chain	Station	Northing (Y)	Easting (X)
81	L	45+00.00	595400.9293	1511107.5856
82	L	46+00.00	595494.4293	1511072.1208
83	L	47+00.00	595587.9293	1511036.6560
84	L	48+00.00	595681.4292	1511001.1912
85	L	49+00.00	595774.9292	1510965.7263
86	L	50+00.00	595868.3563	1510930.0706
87	L	51+00.00	595961.3556	1510893.3150
88	L	52+00.00	596053.8666	1510855.3468
89	L	53+00.00	596145.8733	1510816.1726
90	L	54+00.00	596237.3601	1510775.7991
91	L	55+00.00	596328.3114	1510734.2332
92	L	56+00.00	596418.7115	1510691.4819
93	L	57+00.00	596508.5451	1510647.5527
94	L	58+00.00	596597.7969	1510602.4529
95	L	59+00.00	596686.4514	1510556.1903
96	L	60+00.00	596774.4937	1510508.7728
97	L	61+00.00	596861.9086	1510460.2086
98	L	62+00.00	596948.6813	1510410.5058
99	L	63+00.00	597034.7968	1510359.6730
100	L	64+00.00	597120.2405	1510307.7189
101	L	65+00.00	597204.9978	1510254.6524
102	L	66+00.00	597289.0542	1510200.4825
103	L	67+00.00	597372.3954	1510145.2185
104	L	68+00.00	597455.0070	1510088.8698
105	L	69+00.00	597536.8750	1510031.4461
106	L	70+00.00	597617.9854	1509972.9571
107	L	71+00.00	597698.3244	1509913.4129
108	L	72+00.00	597777.8781	1509852.8236
109	L	73+00.00	597856.6331	1509791.1996
110	L	74+00.00	597934.5758	1509728.5514
111	L	75+00.00	598011.6929	1509664.8898
112	L	76+00.00	598087.9713	1509600.2255
113	L	77+00.00	598163.3979	1509534.5697
114	L	78+00.00	598237.9598	1509467.9336
115	L	79+00.00	598311.6444	1509400.3285
116	L	80+00.00	598384.4389	1509331.7661
117	L	81+00.00	598456.3310	1509262.2579
118	L	82+00.00	598527.3084	1509191.8160
119	L	83+00.00	598597.3590	1509120.4523
120	L	84+00.00	598666.4707	1509048.1790
121	L	85+00.00	598734.6318	1508975.0085
122	L	86+00.00	598801.8306	1508900.9533
123	L	87+00.00	598868.0557	1508826.0260
124	L	88+00.00	598933.2957	1508750.2394
125	L	89+00.00	598997.5395	1508673.6066
126	L	90+00.00	599060.7760	1508596.1405
127	L	91+00.00	599122.9946	1508517.8545
128	L	92+00.00	599184.1846	1508438.7618
129	L	93+00.00	599244.3354	1508358.8761
130	L	94+00.00	599303.8276	1508278.4977
131	L	95+00.00	599363.3097	1508198.1119
132	L	96+00.00	599422.8002	1508117.7323
133	L	97+00.00	599482.8315	1508037.7569
134	L	98+00.00	599544.7392	1507959.2296
135	L	99+00.00	599609.8196	1507883.3180
136	L	100+00.00	599678.5894	1507810.7327
137	L	101+00.00	599750.9011	1507741.6751
138	L	102+00.00	599826.5738	1507676.3180
139	L	103+00.00	599905.4184	1507614.8246
140	L	104+00.00	599987.2379	1507557.3486
141	L	105+00.00	600071.8250	1507504.0291
142	L	106+00.00	600158.6857	1507454.4902
143	L	107+00.00	600246.8776	1507407.3531
144	L	108+00.00	600335.5329	1507361.0905
145	L	109+00.00	600424.2097	1507314.8690
146	L	110+00.00	600512.8865	1507268.6475
147	L	111+00.00	600601.5633	1507222.4259
148	L	112+00.00	600690.2400	1507176.2044
149	L	113+00.00	600778.9168	1507129.9829
150	L	114+00.00	600867.5936	1507083.7614
151	L	115+00.00	600956.2704	1507037.5398
152	L	116+00.00	601044.9471	1506991.3183
153	L	117+00.00	601133.6239	1506945.0968
154	L	118+00.00	601222.3007	1506898.8753
155	L	119+00.00	601310.9775	1506852.6537
156	L	120+00.00	601399.6542	1506806.4322
157	L	121+00.00	601488.3310	1506760.2107
158	L	122+00.00	601577.0078	1506713.9892
159	L	123+00.00	601665.6846	1506667.7676
160	L	124+00.00	601754.3613	1506621.5461
161	L	125+00.00	601843.0381	1506575.3246
162	L	126+00.00	601931.7149	1506529.1031

Point #	Chain	Station	Northing (Y)	Easting (X)
163	L	127+00.00	602020.3917	1506482.8815
164	L	128+00.00	602109.0685	1506436.6600
165	L	129+00.00	602197.7452	1506390.4385
166	L	130+00.00	602286.4220	1506344.2170
167	L	131+00.00	602375.0988	1506297.9954
168	L	132+00.00	602463.7756	1506251.7739
169	L	133+00.00	602552.4523	1506205.5524
170	L	134+00.00	602641.1291	1506159.3309
171	L	135+00.00	602729.8059	1506113.1093
172	L	136+00.00	602818.4827	1506066.8878
173	L	137+00.00	602907.1594	1506020.6663
174	L	138+00.00	602995.8362	1505974.4448
175	L	139+00.00	603084.5130	1505928.2232
176	L	140+00.00	603173.2263	1505882.0720
177	L	141+00.00	603262.4983	1505837.0154
178	L	142+00.00	603353.1019	1505794.7089
179	L	143+00.00	603445.2459	1505755.8725
180	L	144+00.00	603538.8024	1505720.5741
181	L	145+00.00	603633.6355	1505688.8650
182	L	146+00.00	603729.6076	1505660.7911
183	L	147+00.00	603826.5794	1505636.3933
184	L	148+00.00	603924.4102	1505615.7069
185	L	149+00.00	604022.9551	1505598.7433
186	L	150+00.00	604121.9662	1505584.7279
187	L	151+00.00	604221.1333	1505571.8490
188	L	152+00.00	604320.3086	1505559.0327
189	L	153+00.00	604419.4701	1505546.1106
190	L	154+00.00	604518.4463	1505531.8533
191	L	155+00.00	604616.9203	1505514.4846
192	L	156+00.00	604714.6627	1505493.3842
193	L	157+00.00	604811.5304	1505468.5761
194	L	158+00.00	604907.3828	1505440.0961
195	L	159+00.00	605002.0808	1505407.9858
196	L	159+73.73	605071.0815	1505382.0129

Point #	Chain	Station	Northing (Y)	Easting (X)

Point #	Chain	Station	Northing (Y)	Easting (X)

PROJECT REFERENCE NO.	SHEET NO.
R-2246B	2

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 14903 ENGINEER GREGORY E. BREW

1-22-13

PAVEMENT DESIGN ENGINEER

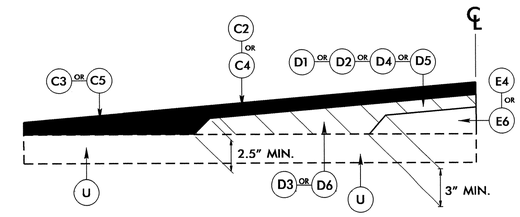
NORTH CAROLINA PROFESSIONAL SEAL 13368 ENGINEER PONG-CHI CHEN

1/22/13

NOTES:
1. ALL PAVEMENT EDGE SLOPES ARE 1:1 UNLESS OTHERWISE NOTED.
2. SHOULDER ROLLOVER NOT TO EXCEED 0.06 (TYP).
3. SEE PLANS FOR LOCATION OF TURN LANES AND
4. INTERSECTION TURNOUTS.

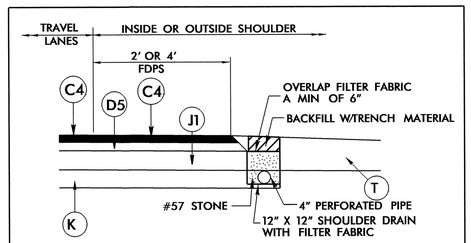
FINAL PAVEMENT SCHEDULE

C1	PROP. APPROX. 1.5" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.	E6	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 3" IN DEPTH OR GREATER THAN 5.5" IN DEPTH.
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.	J1	PROP. 8" AGGREGATE BASE COURSE.
C3	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, S9.5B, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT TO EXCEED 2" IN DEPTH.	J2	PROP. VAR. DEPTH AGGREGATE BASE COURSE.
C4	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.	K	SUBGRADE TO BE STABILIZED TO A DEPTH OF 8in WITH LIME AT A RATE OF APPROX. 20 LBS. PER SQ. yd. @ 8" DEPTH AS DIRECTED BY THE ENGINEER. OR SUBGRADE TO BE STABILIZED TO A DEPTH OF 7in WITH PORTLAND CEMENT AT A RATE OF APPROX. 55 LBS. PER SQ. yd. @ 7" DEPTH AS DIRECTED BY THE ENGINEER.
C5	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, S9.5C, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT TO EXCEED 2" IN DEPTH.		
D1	PROP. APPROX. 2.5" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 285 LBS. PER SQ. YD.	N	GEOTEXTILE FOR PAVEMENT STABILIZATION.
D2	PROP. APPROX. 4" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.	P	PRIME COAT AT THE RATE OF 0.35 GAL. PER SQ. YARD.
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 2.5" IN DEPTH OR GREATER THAN 4" IN DEPTH.	R1	2'-6" CONCRETE CURB AND GUTTER.
D4	PROP. APPROX. 3.0" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 342 LBS. PER SQ. YD.	R2	5" MONOLITHIC ISLAND.
D5	PROP. APPROX. 4" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.	R3	STD. CONCRETE BARRIER (SINGLE FACE).
D6	PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 2.5" IN DEPTH OR GREATER THAN 4" IN DEPTH.	R4	SHOULDER BERM GUTTER.
E1	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.	R5	CONCRETE VALLEY GUTTER.
E2	PROP. APPROX. 5" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 570 LBS. PER SQ. YD.	S	PROP 4" CONCRETE SIDEWALK
E3	PROP. APPROX. 5.5" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 627 LBS. PER SQ. YD.	T	EARTH MATERIAL.
E4	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 3" IN DEPTH OR GREATER THAN 5.5" IN DEPTH.	U	EXISTING PAVEMENT.
E5	PROP. APPROX. 7.5" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 427.50 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.	V	MILLING ASPHALT PAVEMENT, 0"-3"
		W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE WEDGING DETAIL).



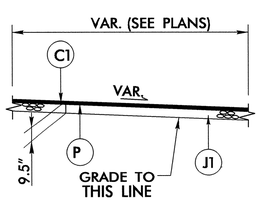
LINE	SURFACE C3	SURFACE C5	INTERMEDIATE D3	INTERMEDIATE D6		BASE E4	BASE E6
L1 (USE WITH T.S. 1 & 3)		X		X			X
L (USE WITH T.S. 5)		X		X			X
Y, Y3, Y6, Y8, Y9 (USE WITH T.S. 6, 11, 17 & 18)	X					X	
Y1, Y2REV (USE WITH T.S. 8, 9)	X		X			X	
Y4 & Y5 (USE WITH T.S. 14 THRU 16)	X		X			X	

DETAIL SHOWING METHOD OF WEDGING



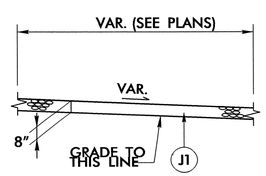
SHOULDER DRAIN DETAIL

USE IN CONJUNCTION WITH TYPICAL SECTIONS 2, 3, 4
SEE SHEET 3-N FOR SUMMARY OF SHOULDER DRAINS



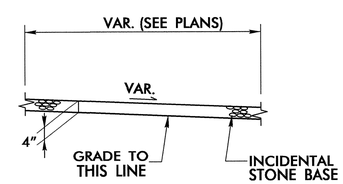
ROADWAY
MISC. PAVED PRIVATE DRIVES AND TURNAROUNDS

REMARKS
SEE PLANS FOR LOCATIONS



ROADWAY
MISC. UNPAVED PRIVATE DRIVES

REMARKS
SEE PLANS FOR LOCATIONS



ROADWAY
MISC. UNPAVED GRAVEL PATH (UTILITIY EASEMENT ACCESS)

REMARKS
SEE PLANS FOR LOCATIONS

6/2/99
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PROJECT REFERENCE NO.	SHEET NO.
R-2246B	2-A

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 19903 ENGINEER GREGORY E. BREW

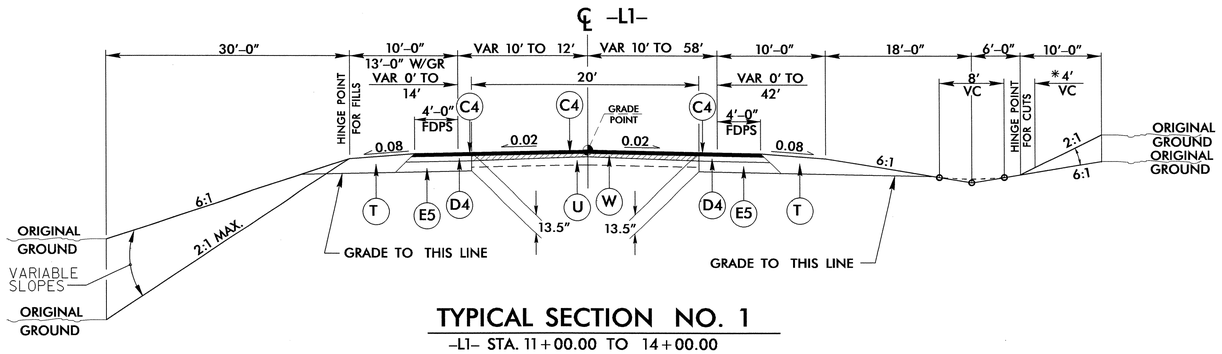
1-22-13

PAVEMENT DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 13368 ENGINEER DOUGLAS CHI CHEN

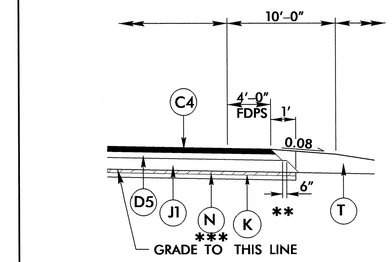
1/22/13

NOTES:
1. ALL PAVEMENT EDGE SLOPES ARE 1:1 UNLESS OTHERWISE NOTED.
2. SHOULDER ROLLOVER NOT TO EXCEED 0.06 (TYP).
3. SEE PLANS FOR LOCATION OF TURN LANES AND
4. INTERSECTION TURNOUTS.



TYPICAL SECTION NO. 1

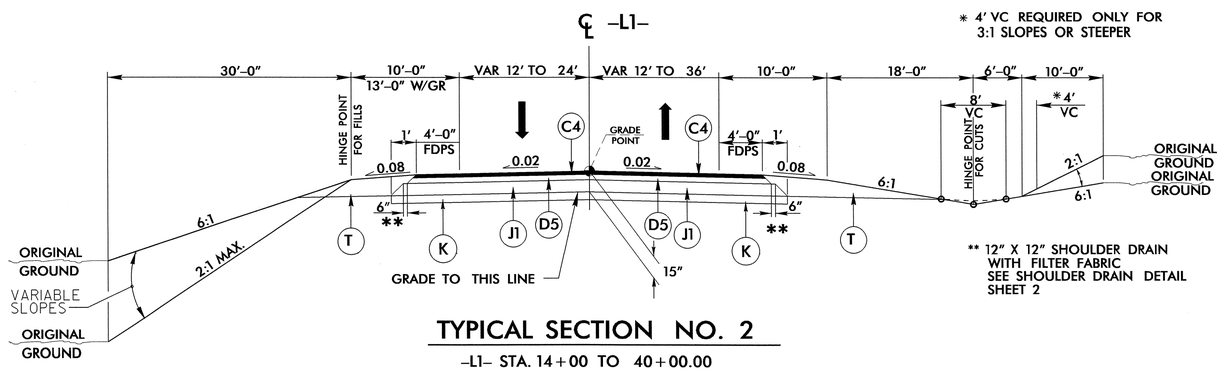
-L1- STA. 11+00.00 TO 14+00.00
-L1- STA. 40+00.00 TO 46+00.00



DETAIL 'A'

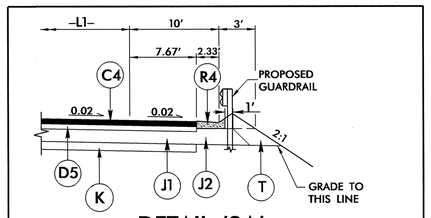
USE WITH TYPICAL SECTIONS: 2, 3 & 4

*** MAY USE AT THE FOLLOWING LOCATIONS AS DIRECTED BY THE ENGINEER:
-L1- STA. 18+00 TO 21+50.00
-L- STA. 28+00.00 TO 31+00.00
-L- STA. 49+00.00 TO 54+50.00
-L- STA. 71+00.00 TO 100+00.00



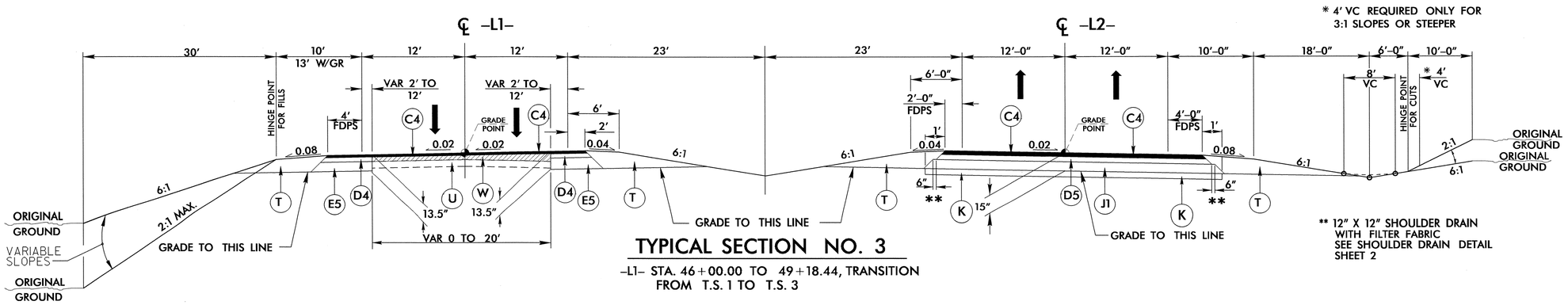
TYPICAL SECTION NO. 2

-L1- STA. 14+00 TO 40+00.00



DETAIL '2A'

GUARDRAIL WHERE SHOULDER BERM GUTTER IS REQUIRED (USE IN CONJUNCTION W/TS NO. 2)
(SEE PLANS FOR LOCATIONS)



TYPICAL SECTION NO. 3

-L1- STA. 46+00.00 TO 49+18.44, TRANSITION FROM T.S. 1 TO T.S. 3

-L1- STA. 49+18.44 TO 54+31.74 L.B. &
-L2- STA. 49+21.02 TO 54+34.31 L.B.

PAVEMENT SCHEDULE	
C1	1.5" S9.5B
C2	3.0" S9.5B
C3	VAR S9.5B
C4	3.0" S9.5C
C5	VAR S9.5C
D1	2.5" I19.0B
D2	4.0" I19.0B
D3	VAR. I19.0B
D4	3.0" I19.0C
D5	4.0" I19.0C
D6	VAR. I19.0C
E1	4.0" B25.0B
E2	5.0" B25.0B
E3	5.5" B25.0B
E4	VAR. B25.0B
E5	7.5" B25.0C
E6	VAR. B25.0C
J1	8.0" ABC
J2	VAR. ABC
K	STABILIZATION
N	GEOTEXTILE FOR PAVEMENT STABILIZATION
P	PRIME COAT
R1	2'-6" C & G
R2	5" MONOLITHIC CONC ISLAND
R3	STD. CONC. BARRIER (SINGLE FACE)
R4	SHOULDER BERM GUTTER
R5	VALLEY GUTTER
T	EARTH MATERIAL
U	EXISTING PAVEMENT
V	MILLING
W	WEDGING

6/2/99

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PROJECT REFERENCE NO.	SHEET NO.
R-2246B	2-B

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 18903 ENGINEER GREGORY E. BREW

1-22-13

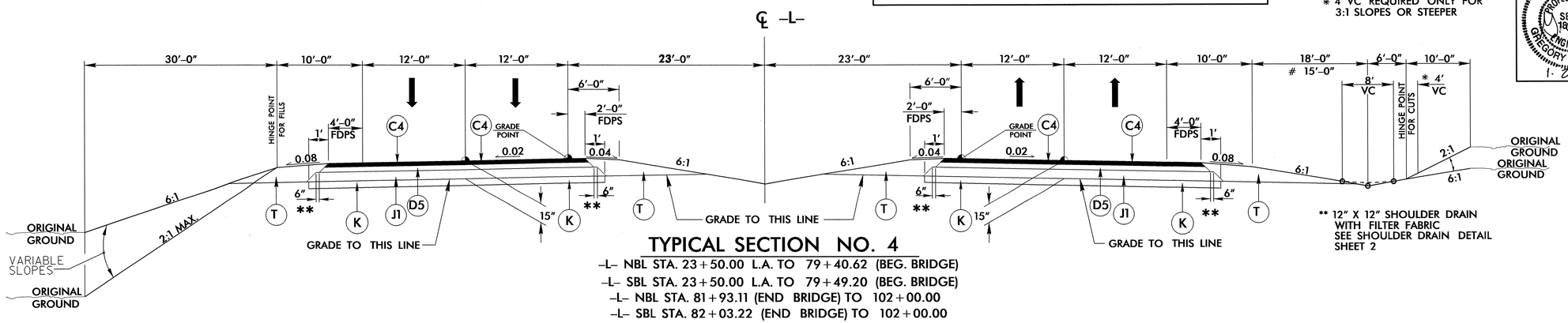
PAVEMENT DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 13368 ENGINEER FONG-CHI CHEN

1/22/13

NOTES: 1. ALL PAVEMENT EDGE SLOPES ARE 1:1 UNLESS OTHERWISE NOTED.
2. SHOULDER ROLLOVER NOT TO EXCEED 0.06 (TYP).
3. SEE PLANS FOR LOCATION OF TURN LANES AND
4. INTERSECTION TURNOUTS.

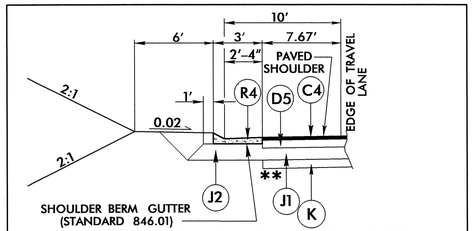
* 4' VC REQUIRED ONLY FOR 3:1 SLOPES OR STEEPER



TYPICAL SECTION NO. 4

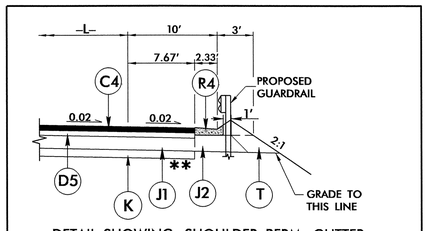
-L- NBL STA. 23+50.00 L.A. TO 79+40.62 (BEG. BRIDGE)
-L- SBL STA. 23+50.00 L.A. TO 79+49.20 (BEG. BRIDGE)
-L- NBL STA. 81+93.11 (END BRIDGE) TO 102+00.00
-L- SBL STA. 82+03.22 (END BRIDGE) TO 102+00.00
-L- STA. 102+00.00 TO 110+00.00 RT.
-L- STA. 110+00.00 TO 146+50.00

** 12" X 12" SHOULDER DRAIN WITH FILTER FABRIC



DETAIL SHOWING SHOULDER BERM GUTTER

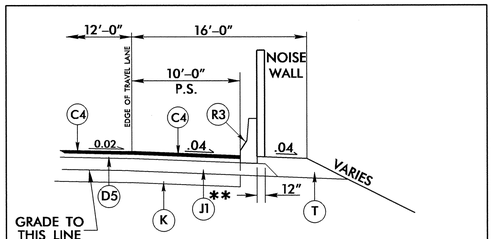
USE WITH TYPICAL SECTION NO. 4
-L- STA. 102+00.00 TO 109+50.00 RIGHT
-L- STA. 141+00.00 TO 147+32.65 LEFT



DETAIL SHOWING SHOULDER BERM GUTTER

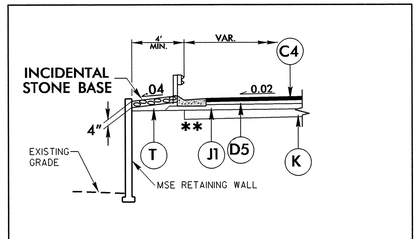
GUARDRAIL WHERE SHOULDER BERM GUTTER IS REQUIRED
(USE IN CONJUNCTION W/TS NO. 4)
(SEE PLANS FOR LOCATIONS)

** 12" X 12" SHOULDER DRAIN WITH FILTER FABRIC



NOISE WALL DETAIL

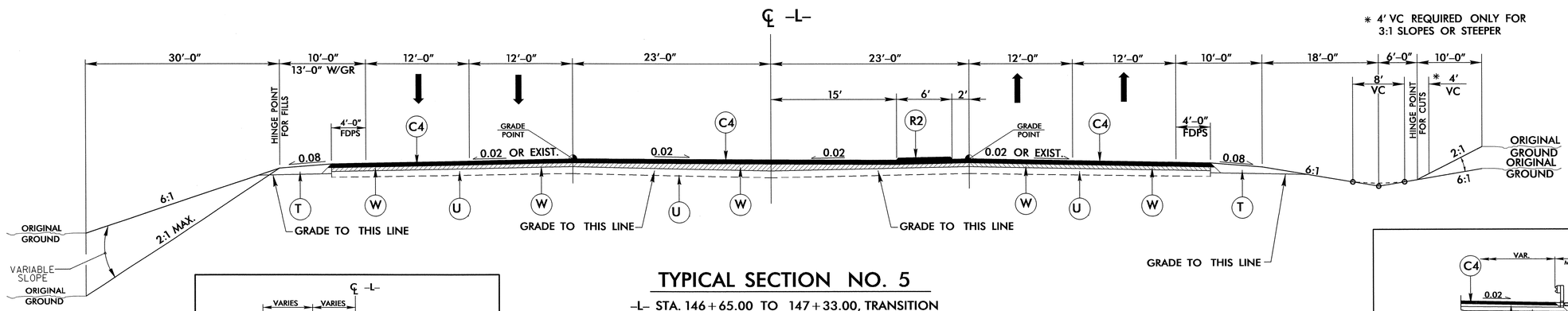
TO BE USED IN CONJUNCTION WITH TYPICAL SECTION 4
(SEE PLANS FOR LOCATIONS)



DETAIL '4A' TREATMENT OF SHOULDER AT MSE WALL
(USE IN CONJUNCTION WITH TYPICAL SECTION 4)
(SEE PLANS FOR LOCATIONS)

PAVEMENT SCHEDULE	
C1	1.5" S9.5B
C2	3.0" S9.5B
C3	VAR S9.5B
C4	3.0" S9.5C
C5	VAR S9.5C
D1	2.5" I19.0B
D2	4.0" I19.0B
D3	VAR. I19.0B
D4	3.0" I19.0C
D5	4.0" I19.0C
D6	VAR. I19.0C
E1	4.0" B25.0B
E2	5.0" B25.0B
E3	5.5" B25.0B
E4	VAR. B25.0B
E5	7.5" B25.0C
E6	VAR. B25.0C
J1	8.0" ABC
J2	VAR. ABC
K	STABILIZATION
N	GEOTEXTILE FOR PAVEMENT STABILIZATION
P	PRIME COAT
R1	2'-6" C & G
R2	5" MONOLITHIC CONC ISLAND
R3	STD. CONC. BARRIER (SINGLE FACE)
R4	SHOULDER BERM GUTTER
R5	VALLEY GUTTER
T	EARTH MATERIAL
U	EXISTING PAVEMENT
V	MILLING
W	WEDGING

* 4' VC REQUIRED ONLY FOR 3:1 SLOPES OR STEEPER

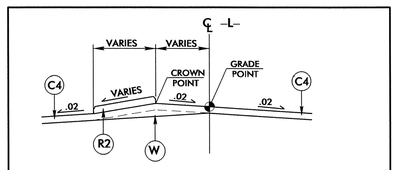


TYPICAL SECTION NO. 5

-L- STA. 146+65.00 TO 147+33.00, TRANSITION FROM T.S. 5 OR T.S. 5A TO T.S. 5

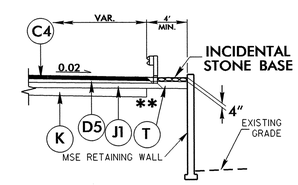
-L- STA. 147+33.00 TO 150+50.00

-L- STA. 150+50.00 TO 155+50.00, TRANSITION FROM T.S. 5 TO EXIST.



SUPERELEVATION TREATMENT ADJACENT TO PROPOSED CHANNELIZATION DETAIL

TO BE USED IN CONJUNCTION WITH TYPICAL SECTION 5
(SEE PLANS FOR LOCATIONS)



DETAIL '4B' TREATMENT OF SHOULDER AT MSE WALL
(USE IN CONJUNCTION WITH TYPICAL SECTION 4)
(SEE PLANS FOR LOCATIONS)

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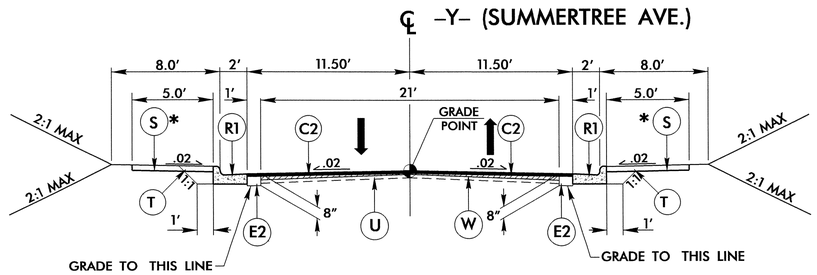
NOTES:
1. ALL PAVEMENT EDGE SLOPES ARE 1:1 UNLESS OTHERWISE NOTED.
2. SHOULDER ROLLOVER NOT TO EXCEED 0.06 (TYP).
3. SEE PLANS FOR LOCATION OF TURN LANES AND
4. INTERSECTION TURNOUTS.

PROJECT REFERENCE NO.	SHEET NO.
R-2246B	2-C

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 18903 ENGINEER GREGORY E. BREW
1-22-13

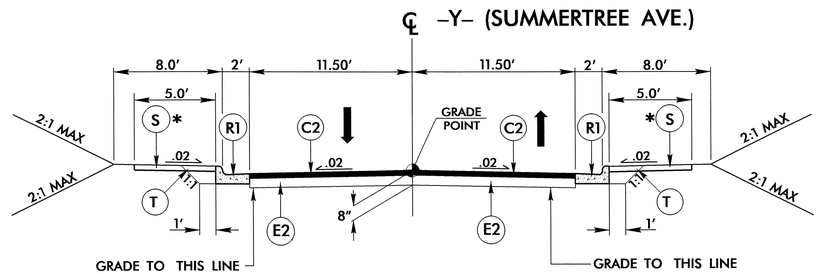
PAVEMENT DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 13368 ENGINEER DONG CHI CHEN
1/22/13



TYPICAL SECTION NO. 6

-Y- STA. 10+50.00 TO 11+50.00

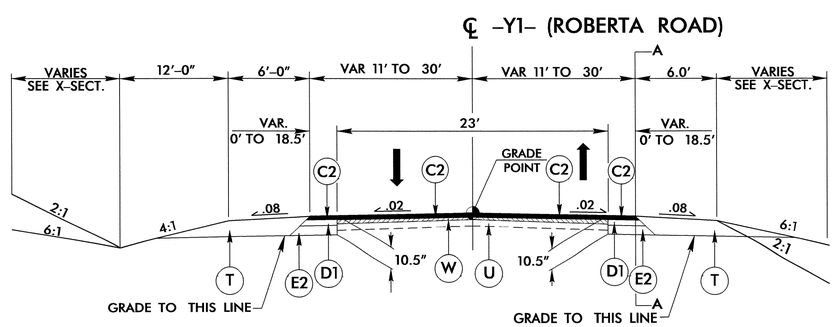
* SEE PLANS FOR LOCATION OF SIDEWALK



TYPICAL SECTION NO. 7

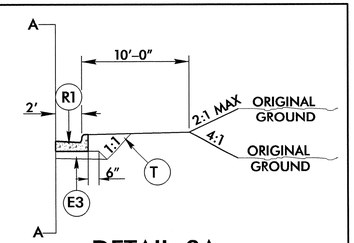
-Y- STA. 11+50.00 TO 12+00.00

* SEE PLANS FOR SIDEWALK LOCATION



TYPICAL SECTION NO. 8

-Y1- STA 10+50 TO 22+00



DETAIL 8A

TO BE USED IN CONJUNCTION WITH TYPICAL SECTION 8

-Y1- STA. 10+50.00 TO 12+60.00 RT.

PAVEMENT SCHEDULE	
C1	1.5" S9.5B
C2	3.0" S9.5B
C3	VAR S9.5B
C4	3.0" S9.5C
C5	VAR S9.5C
D1	2.5" I19.0B
D2	4.0" I19.0B
D3	VAR. I19.0B
D4	3.0" I19.0C
D5	4.0" I19.0C
D6	VAR. I19.0C
E1	4.0" B25.0B
E2	5.0" B25.0B
E3	5.5" B25.0B
E4	VAR. B25.0B
E5	7.5" B25.0C
E6	VAR. B25.0C
J1	8.0" ABC
J2	VAR. ABC
K	STABILIZATION
R1	2'-6" C & G
R2	5" MONOLITHIC CONC ISLAND
R3	STD. CONC. BARRIER (SINGLE FACE)
R4	SHOULDER BERM GUTTER
R5	VALLEY GUTTER
T	EARTH MATERIAL
U	EXISTING PAVEMENT
V	MILLING
W	WEDGING

6/2/99

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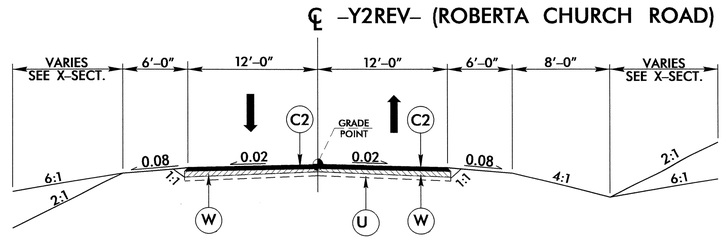
NOTES:
1. ALL PAVEMENT EDGE SLOPES ARE 1:1 UNLESS OTHERWISE NOTED.
2. SHOULDER ROLLOVER NOT TO EXCEED 0.06 (TYP).
3. SEE PLANS FOR LOCATION OF TURN LANES AND
4. INTERSECTION TURNOUTS.

PROJECT REFERENCE NO.	SHEET NO.
R-2246B	2-D

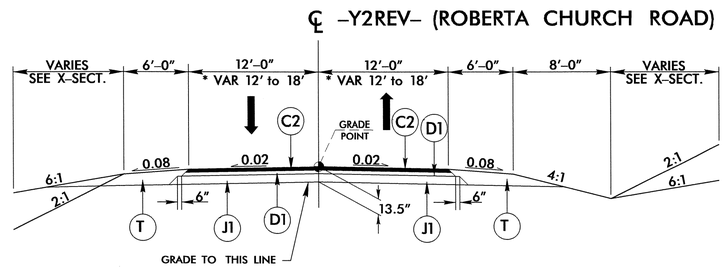
ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 18903 ENGINEER GREGORY E. BREW
1-22-13

PAVEMENT DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 13368 ENGINEER DONG-CHI CHEN
1/22/13



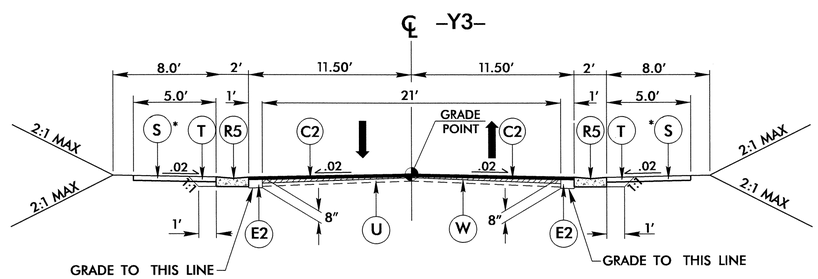
TYPICAL SECTION NO. 9

–Y2REV– STA. 12+50.00 TO 15+00.00



TYPICAL SECTION NO. 10

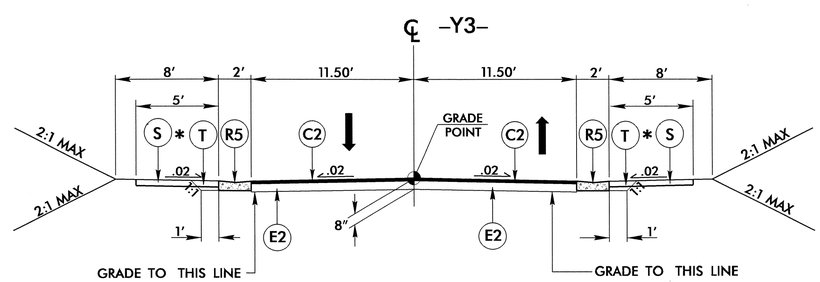
–Y2REV– STA. 15+00.00 TO 30+74.70
*–Y2REV– STA. 29+15.00 TO 30+74.70



TYPICAL SECTION NO. 11

–Y3– STA. 11+00.00 TO 12+00.00
–Y3– STA. 15+25.00 TO 16+00.00

* SEE PLANS FOR SIDEWALK LOCATION



TYPICAL SECTION NO. 12

–Y3– STA. 14+00.00 TO 15+25.00

* SEE PLANS FOR SIDEWALK LOCATION

PAVEMENT SCHEDULE	
C1	1.5" S9.5B
C2	3.0" S9.5B
C3	VAR S9.5B
C4	3.0" S9.5C
C5	VAR S9.5C
D1	2.5" I19.0B
D2	4.0" I19.0B
D3	VAR. I19.0B
D4	3.0" I19.0C
D5	4.0" I19.0C
D6	VAR. I19.0C
E1	4.0" B25.0B
E2	5.0" B25.0B
E3	5.5" B25.0B
E4	VAR. B25.0B
E5	7.5" B25.0C
E6	VAR. B25.0C
J1	8.0" ABC
J2	VAR. ABC
K	STABILIZATION
R1	2'-6" C & G
R2	5" MONOLITHIC CONC ISLAND
R3	STD. CONC. BARRIER (SINGLE FACE)
R4	SHOULDER BERM GUTTER
R5	VALLEY GUTTER
T	EARTH MATERIAL
U	EXISTING PAVEMENT
V	MILLING
W	WEDGING

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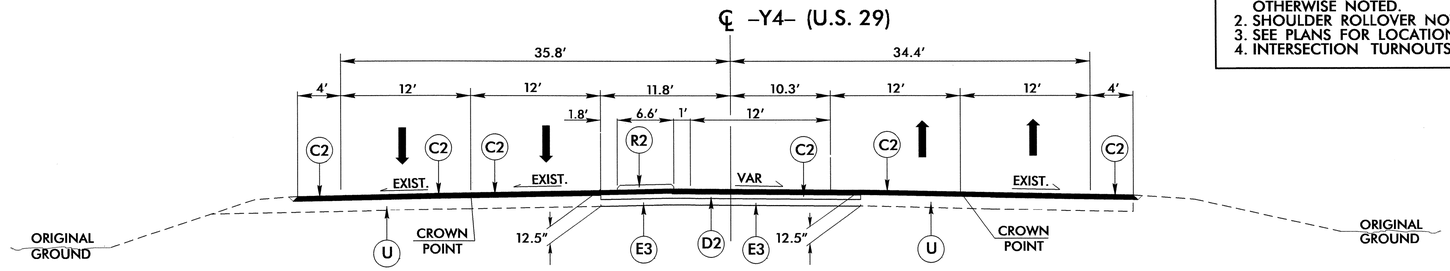
NOTES:
1. ALL PAVEMENT EDGE SLOPES ARE 1:1 UNLESS OTHERWISE NOTED.
2. SHOULDER ROLLOVER NOT TO EXCEED 0.06 (TYP).
3. SEE PLANS FOR LOCATION OF TURN LANES AND
4. INTERSECTION TURNOUTS.

PROJECT REFERENCE NO.	SHEET NO.
R-2246B	2-E

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 18903 ENGINEER GREGORY E. BREW
1-22-13

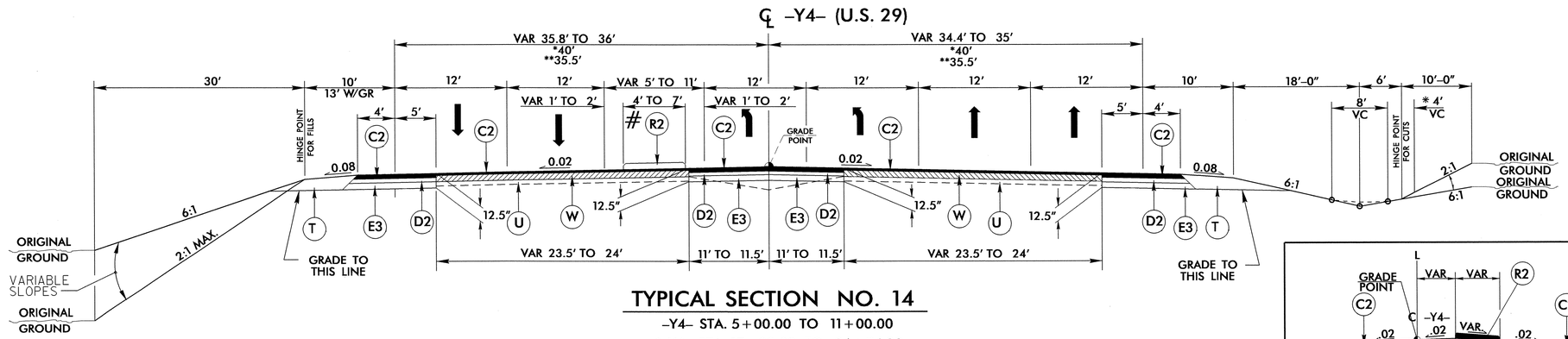
PAVEMENT DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 13368 ENGINEER JOHN-CHI CHEN
1/22/13

PAVEMENT SCHEDULE	
C1	1.5" S9.5B
C2	3.0" S9.5B
C3	VAR S9.5B
C4	3.0" S9.5C
C5	VAR S9.5C
D1	2.5" I19.0B
D2	4.0" I19.0B
D3	VAR. I19.0B
D4	3.0" I19.0C
D5	4.0" I19.0C
D6	VAR. I19.0C
E1	4.0" B25.0B
E2	5.0" B25.0B
E3	5.5" B25.0B
E4	VAR. B25.0B
E5	7.5" B25.0C
E6	VAR. B25.0C
J1	8.0" ABC
J2	VAR. ABC
K	STABILIZATION
R1	2'-6" C & G
R2	5" MONOLITHIC CONC ISLAND
R3	STD. CONC. BARRIER (SINGLE FACE)
R4	SHOULDER BERM GUTTER
R5	VALLEY GUTTER
T	EARTH MATERIAL
U	EXISTING PAVEMENT
V	MILLING
W	WEDGING



TYPICAL SECTION NO. 13

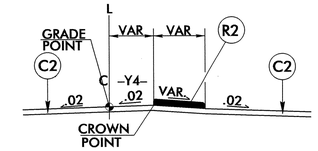
-Y4- STA. 0+00.00 TO 1+00.00, TRANSITION FROM EXIST. TO T.S. 13
-Y4- STA. 1+00.00 TO 5+00.00



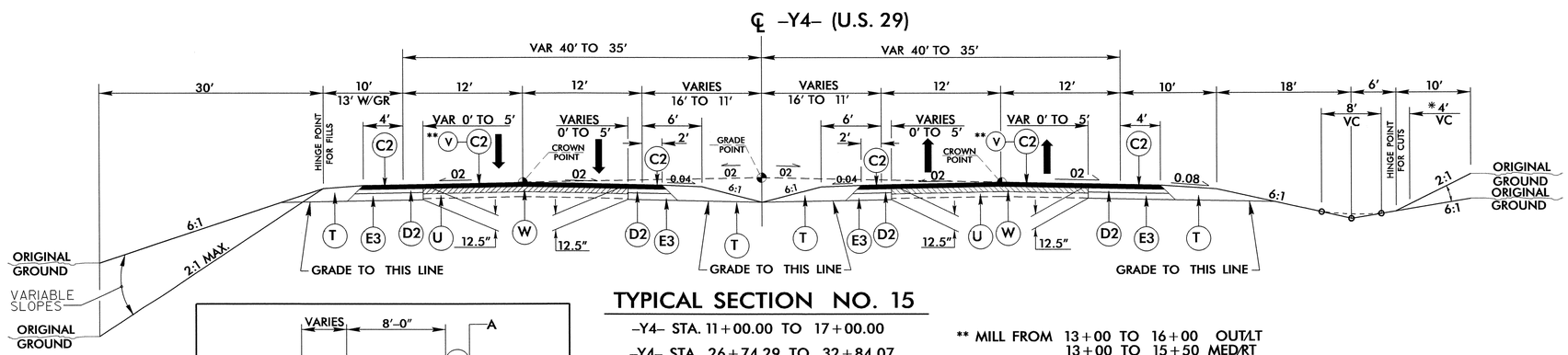
TYPICAL SECTION NO. 14

-Y4- STA. 5+00.00 TO 11+00.00
*-Y4- STA. 17+00.00 TO 26+74.29
**-Y4- STA. 32+84.07 TO 38+00.00

SEE PLANS FOR ISLAND LOCATION



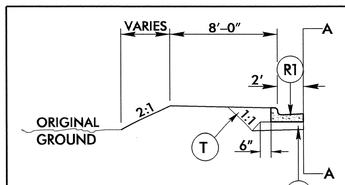
SUPERELEVATION TREATMENT ADJACENT TO PROPOSED CHANNELIZATION
TO BE USED IN CONJUNCTION WITH TYPICAL SECTION 14
(SEE PLANS FOR LOCATIONS)



TYPICAL SECTION NO. 15

-Y4- STA. 11+00.00 TO 17+00.00
-Y4- STA. 26+74.29 TO 32+84.07
-Y4- STA. 38+00.00 TO 40+00.00

** MILL FROM 13+00 TO 16+00 OUT/LT
13+00 TO 15+50 MED/RT
SEE -Y4- CROSS-SECTIONS



DETAIL 15A

TO BE USED IN CONJUNCTION WITH TYPICAL SECTION 15
-Y4- STA. 11+85.00 TO 16+33.36 LT.

6/2/99

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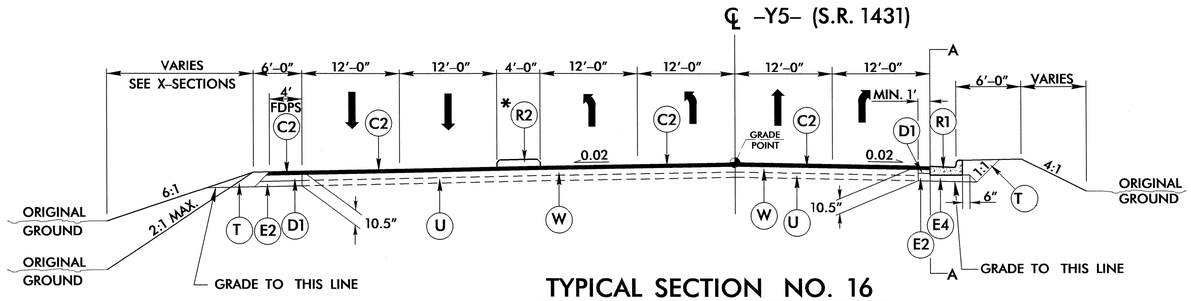
NOTES:
1. ALL PAVEMENT EDGE SLOPES ARE 1:1 UNLESS OTHERWISE NOTED.
2. SHOULDER ROLLOVER NOT TO EXCEED 0.06 (TYP).
3. SEE PLANS FOR LOCATION OF TURN LANES AND
4. INTERSECTION TURNOUTS.

PROJECT REFERENCE NO.	SHEET NO.
R-2246B	2-F

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 18903 ENGINEER GREGORY E. BREW
1-22-13

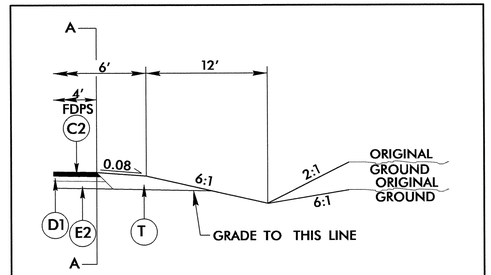
PAVEMENT DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 13368 ENGINEER DONG-CHI CHEN
1/22/13



TYPICAL SECTION NO. 16

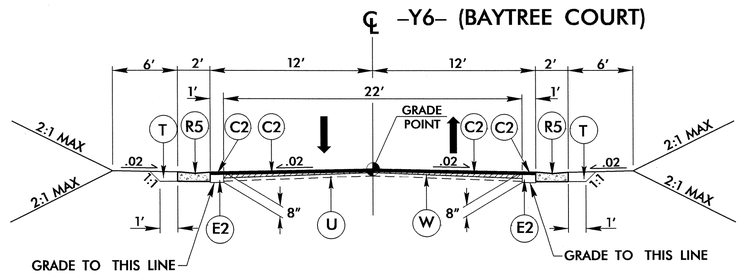
–Y5– STA. 15+00.00 TO 17+05.41
–Y5– STA. 20+11.44 TO 22+50.00
* SEE PLANS FOR ISLAND LOCATION

Y4 & Y5 (USE WITH T.S. 14 THRU 16)



INSERT '16'

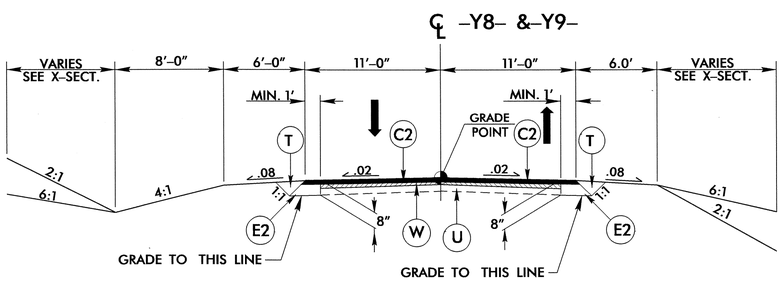
TO BE USED IN CONJUNCTION WITH TYPICAL SECTION 17
–Y5– STA. 14+00.00 TO 15+00.00 RT.



TYPICAL SECTION NO. 17

–Y6– STA. 10+46.76 TO 11+50.00

* SEE PLANS FOR SIDEWALK LOCATION



TYPICAL SECTION NO. 18

–Y8– STA. 12+00.00 TO 13+32.68
–Y9– STA. 10+12.02 TO 11+50.00

PAVEMENT SCHEDULE	
C1	1.5" S9.5B
C2	3.0" S9.5B
C3	VAR S9.5B
C4	3.0" S9.5C
C5	VAR S9.5C
D1	2.5" I19.0B
D2	4.0" I19.0B
D3	VAR. I19.0B
D4	3.0" I19.0C
D5	4.0" I19.0C
D6	VAR. I19.0C
E1	4.0" B25.0B
E2	5.0" B25.0B
E3	5.5" B25.0B
E4	VAR. B25.0B
E5	7.5" B25.0C
E6	VAR. B25.0C
J1	8.0" ABC
J2	VAR. ABC
K	STABILIZATION
R1	2'-6" C & G
R2	5" MONOLITHIC CONC ISLAND
R3	STD. CONC. BARRIER (SINGLE FACE)
R4	SHOULDER BERM GUTTER
R5	VALLEY GUTTER
T	EARTH MATERIAL
U	EXISTING PAVEMENT
V	MILLING
W	WEDGING

6/2/99

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NOTES:

1. ALL PAVEMENT EDGE SLOPES ARE 1:1 UNLESS OTHERWISE NOTED.
2. SHOULDER ROLLOVER NOT TO EXCEED 0.06 (TYP).
3. USE 4:1 MAX SLOPES ON INSIDE OF INTERCHANGE.
4. SEE PLANS FOR LOCATION OF ACCELERATION AND DECELERATION LANES.

PROJECT REFERENCE NO.	SHEET NO.
R-2246B	2-G

ROADWAY DESIGN ENGINEER

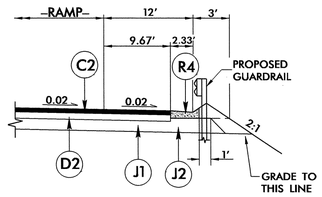
NORTH CAROLINA PROFESSIONAL SEAL 18903 ENGINEER GREGORY E. BREW

1-22-13

PAVEMENT DESIGN ENGineer

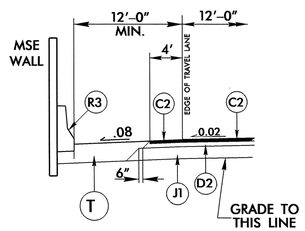
NORTH CAROLINA PROFESSIONAL SEAL 13368 ENGINEER JUNG-CHI CHEN

1/22/13



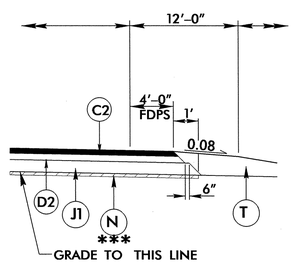
INSERT '19A'

GUARDRAIL WHERE SHOULDER BERM GUTTER IS REQUIRED (USE IN CONJUNCTION WITH T.S. NO. 19)
(SEE PLANS FOR LOCATIONS)



DETAIL '19B'

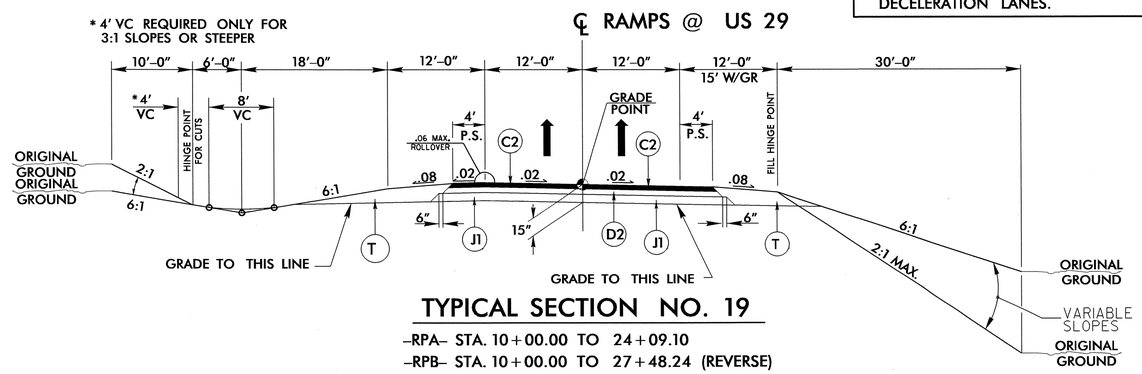
TO BE USED IN CONJUNCTION WITH TYPICAL SECTION 19
USE WITH RAMP 'A' & 'C'
(SEE PLANS FOR LOCATIONS)



DETAIL '19C'

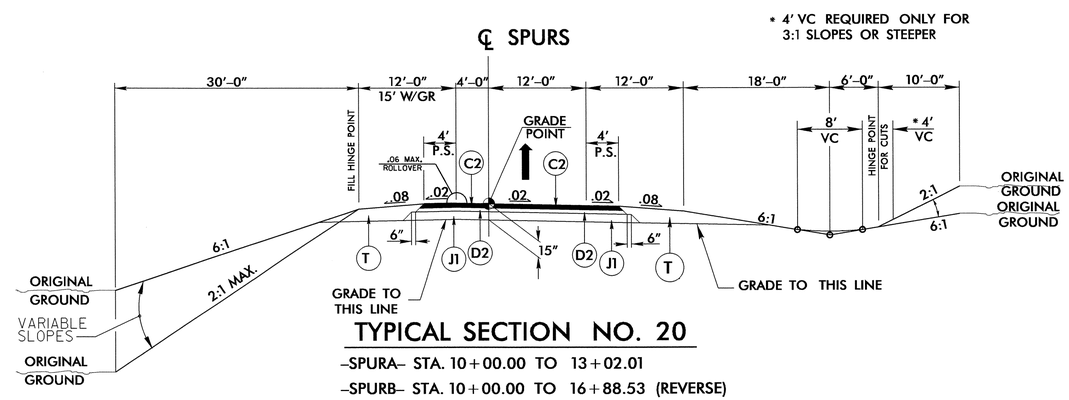
USE WITH TYPICAL SECTION 19
*** MAY USE AT THE FOLLOWING LOCATIONS AS DIRECTED BY THE ENGINEER:

-RPA- STA. 11+71.00 TO 19+50.00
-RPC- STA. 16+50.00 TO 19+50.00
-RPD- STA. 10+00.00 TO 21+50.00



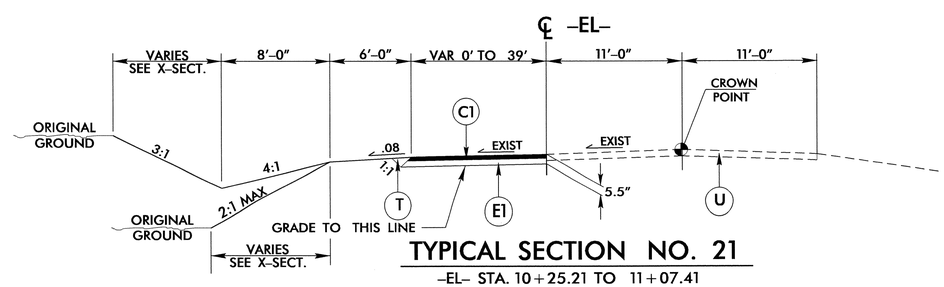
TYPICAL SECTION NO. 19

-RPA- STA. 10+00.00 TO 24+09.10
-RPB- STA. 10+00.00 TO 27+48.24 (REVERSE)
-RPC- STA. 10+00.00 TO 22+89.76
-RPD- STA. 10+00.00 TO 25+54.64 (REVERSE)



TYPICAL SECTION NO. 20

-SPURA- STA. 10+00.00 TO 13+02.01
-SPURB- STA. 10+00.00 TO 16+88.53 (REVERSE)
-SPURC- STA. 10+00.00 TO 13+80.74
-SPURD- STA. 10+00.00 TO 15+42.87 (REVERSE)



TYPICAL SECTION NO. 21

-EL- STA. 10+25.21 TO 11+07.41

PAVEMENT SCHEDULE	
C1	1.5" S9.5B
C2	3.0" S9.5B
C3	VAR S9.5B
C4	3.0" S9.5C
C5	VAR S9.5C
D1	2.5" I19.0B
D2	4.0" I19.0B
D3	VAR. I19.0B
D4	3.0" I19.0C
D5	4.0" I19.0C
D6	VAR. I19.0C
E1	4.0" B25.0B
E2	5.0" B25.0B
E3	5.5" B25.0B
E4	VAR. B25.0B
E5	7.5" B25.0C
E6	VAR. B25.0C
J1	8.0" ABC
J2	VAR. ABC
K	STABILIZATION
N	GEOTEXTILE FOR PAVEMENT STABILIZATION
P	PRIME COAT
R1	2'-6" C & G
R2	5" MONOLITHIC CONC ISLAND
R3	STD. CONC. BARRIER (SINGLE FACE)
R4	SHOULDER BERM GUTTER
R5	VALLEY GUTTER
T	EARTH MATERIAL
U	EXISTING PAVEMENT
V	MILLING
W	WEDGING

6/2/99

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NOTES: 1. ALL PAVEMENT EDGE SLOPES ARE 1:1 UNLESS OTHERWISE NOTED.
2. SHOULDER ROLLOVER NOT TO EXCEED 0.06 (TYP).
3. SEE PLANS FOR LOCATION OF TURN LANES AND
4. INTERSECTION TURNOUTS.

PROJECT REFERENCE NO.	SHEET NO.
R-2246B	2-H

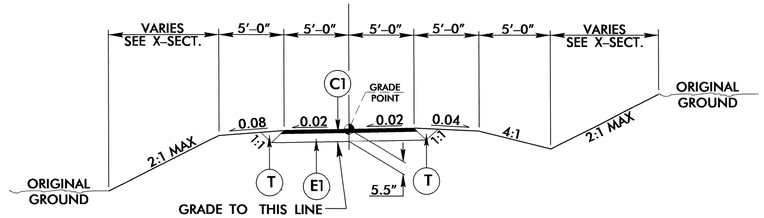
ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 18903 ENGINEER GREGORY E. GREW
2-21-13

PAVEMENT DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 13368 ENGINEER DOUGLAS CHI CHEN
2/21/13

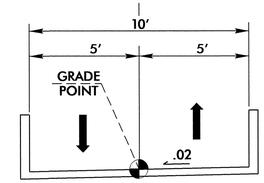
℄ –MUP– (MULTI–USE PATH)



TYPICAL SECTION NO. 22

–MUP– STA. 10+00.00 TO 35+93.39
–MUP– STA. 39+46.74 TO 74+74.87

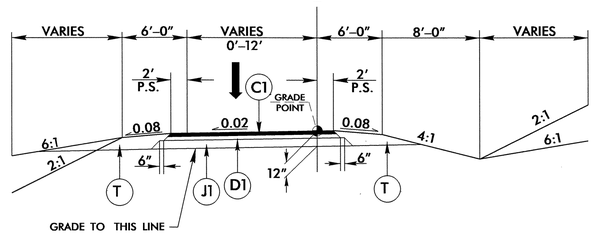
℄ –MUP– (MULTI–USE PATH)



BOARDWALK DETAIL

USE WITH TYPICAL SECTION 22
–MUP– STA. 35+93.39 TO 39+46.74
USE 10' MAX. SPAN LENGTH

℄ –LDET–

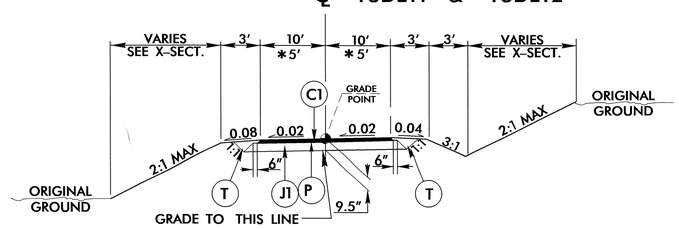


TYPICAL SECTION NO. 23

–LDET– STA. 10+00 TO 11+15.66, TRANSITION FROM EXSITING TO T.S. 23

–LDET– STA. 11+15.66 TO 12+74.99

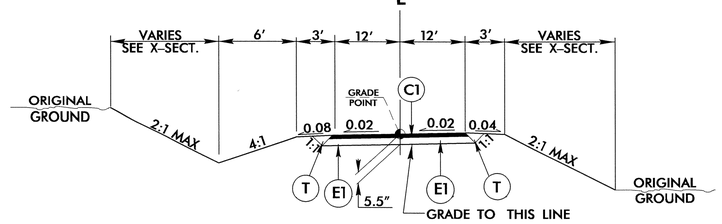
℄ –Y3DET1– & –Y3DET2–



TYPICAL SECTION NO. 24

–Y3DET1– STA. 9+54.08 TO 13+67.58
* –Y3DET2– STA. 9+983.08 TO 11+81.03

℄ –DRV4–



TYPICAL SECTION NO. 25

–DRV4– STA. 10+60.63 TO 11+97.73

PAVEMENT SCHEDULE	
C1	1.5" S9.5B
C2	3.0" S9.5B
C3	VAR S9.5B
C4	3.0" S9.5C
C5	VAR S9.5C
D1	2.5" I19.0B
D2	4.0" I19.0B
D3	VAR. I19.0B
D4	3.0" I19.0C
D5	4.0" I19.0C
D6	VAR. I19.0C
E1	4.0" B25.0B
E2	5.0" B25.0B
E3	5.5" B25.0B
E4	VAR. B25.0B
E5	7.5" B25.0C
E6	VAR. B25.0C
J1	8.0" ABC
J2	VAR. ABC
K	STABILIZATION
N	GEOTEXTILE FOR PAVEMENT STABILIZATION
P	PRIME COAT
R1	2'-6" C & G
R2	5" MONOLITHIC CONC ISLAND
R3	STD. CONC. BARRIER (SINGLE FACE)
R4	SHOULDER BERM GUTTER
R5	VALLEY GUTTER
T	EARTH MATERIAL
U	EXISTING PAVEMENT
V	MILLING
W	WEDGING

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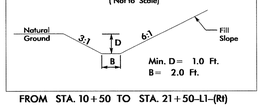
PROJECT REFERENCE NO.	SHEET NO.
R-2246B	2-1
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 18903 ENGINEER GREGORY E. GREW 2-21-13

NORTH CAROLINA PROFESSIONAL SEAL 14482 ENGINEER JOSEPH W. DUNNIGAN 2/21/13

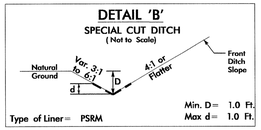
DRAINAGE DITCH DETAILS

DETAIL 'A'
SPECIAL LATERAL BASE DITCH
(Not to Scale)



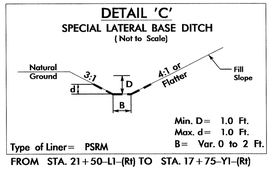
FROM STA. 10+50 TO STA. 21+50-L1-(Rt)

DETAIL 'B'
SPECIAL CUT DITCH
(Not to Scale)



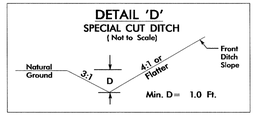
FROM STA. 14+17.65 TO STA. 14+50-L1-(Lt)
FROM STA. 12+50 TO STA. 12+97.48-Y8-(Lt)
FROM STA. 14+50 TO STA. 16+50-Y5-(Rt)
FROM STA. 37+00 TO STA. 39+00-Y4-(Lt)

DETAIL 'C'
SPECIAL LATERAL BASE DITCH
(Not to Scale)



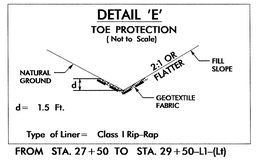
FROM STA. 21+50-L1-(Rt) TO STA. 17+75-Y1-(Rt)

DETAIL 'D'
SPECIAL CUT DITCH
(Not to Scale)



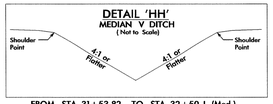
FROM STA. 12+18.55 TO STA. 15+00 -SPURB-(Lt)
FROM STA. 17+75 TO STA. 20+50 -Y1-(Lt)
FROM STA. 17+75 TO STA. 20+71.95 -Y1-(Rt)
FROM STA. 13+31.32 TO STA. 13+87.46 -Y1-(Lt)
FROM STA. 33+61.46 TO STA. 35+50 -L1-(Lt)
FROM STA. 23+00 TO STA. 24+00 -L-(Rt)
FROM STA. 50+00 TO STA. 54+31.74 -L1-(Rt)
FROM STA. 44+20 TO STA. 46+00 -L1-(Lt)
FROM STA. 40+00 TO STA. 43+90 -L1-(Lt)

DETAIL 'E'
TOE PROTECTION
(Not to Scale)



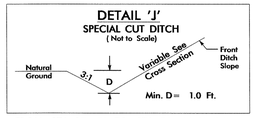
FROM STA. 27+50 TO STA. 29+50-L1-(Lt)

DETAIL 'HH'
MEDIAN 'V' DITCH
(Not to Scale)



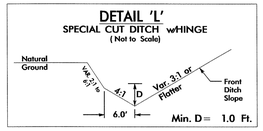
FROM STA. 31+53.82 TO STA. 32+50-L-(Med.)
FROM STA. 46+00 TO STA. 48+00-L1-(Med.)

DETAIL 'J'
SPECIAL CUT DITCH
(Not to Scale)



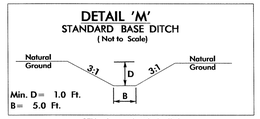
FROM STA. 37+50 TO STA. 50+00-L1-(Rt)

DETAIL 'L'
SPECIAL CUT DITCH wHINGE
(Not to Scale)



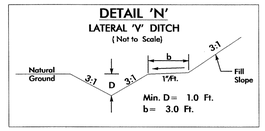
FROM STA. 40+50 TO STA. 41+30.96-L-(Rt)
FROM STA. 31+53.82 TO STA. 33+50-L-(Rt)
FROM STA. 29+50 TO STA. 31+53.82-L-(Rt)

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



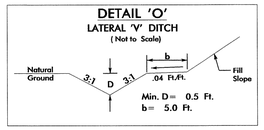
STA. 31+52.83-L-(Rt)
183 LF @ 0.5% Grade
FROM STA. 109+05.38 TO STA. 109+84.87-L-(Lt)
112 LF @ 0.4% grade

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



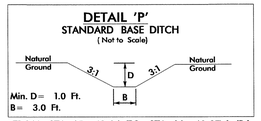
FROM STA. 24+00 TO STA. 26+50-L-(Rt)

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



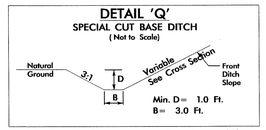
FROM STA. 51+00 TO STA. 51+86-L-(Lt)
FROM STA. 51+86 TO STA. 53+75-L-(Lt)

DETAIL 'P'
STANDARD BASE DITCH
(Not to Scale)



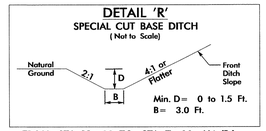
FROM STA. 65+42.96 TO STA. 66+40.07-L-(Rt)
172 LF @ .26% Grade

DETAIL 'Q'
SPECIAL CUT BASE DITCH
(Not to Scale)



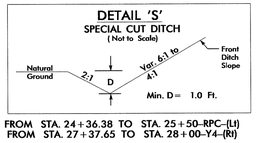
FROM STA. 66+40.07 TO STA. 68+50-L-(Rt)

DETAIL 'R'
SPECIAL CUT BASE DITCH
(Not to Scale)



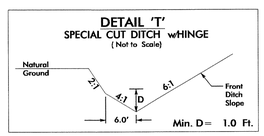
FROM STA. 13+00 TO STA. 7+00 -Y4-(Rt)
FROM STA. 25+03.94 TO STA. 27+37.65 -Y4-(Rt)
FROM STA. 14+00 TO STA. 20+13 -Y2Rev-(Rt)

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



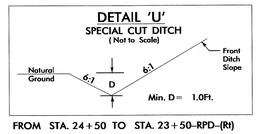
FROM STA. 24+36.38 TO STA. 25+50-RPC-(Lt)
FROM STA. 27+37.65 TO STA. 28+00-Y4-(Rt)

DETAIL 'T'
SPECIAL CUT DITCH wHINGE
(Not to Scale)



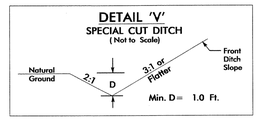
FROM STA. 23+50 TO STA. 24+50-RPB-(Rt)
FROM STA. 31+00 TO STA. 32+00-L-(Lt)

DETAIL 'U'
SPECIAL CUT DITCH
(Not to Scale)



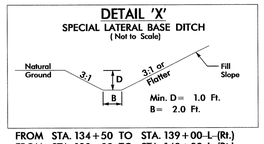
FROM STA. 24+50 TO STA. 23+50-RPD-(Rt)

DETAIL 'V'
SPECIAL CUT DITCH
(Not to Scale)



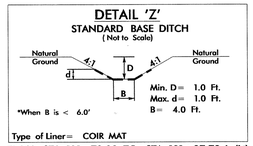
FROM STA. 13+00 TO STA. 18+00 -Y4-(Rt)
FROM STA. 5+50 TO STA. 6+95 -Y4-(Lt)
FROM STA. 11+50 TO STA. 6+95 -Y4-(Lt)
FROM STA. 19+16.94 TO STA. 17+21 -Y4-(Lt)
FROM STA. 13+87.13 TO STA. 13+52 -SPURA-(Rt)
FROM STA. 21+00 TO STA. 22+50 -Y2REV-(Rt)

DETAIL 'X'
SPECIAL LATERAL BASE DITCH
(Not to Scale)



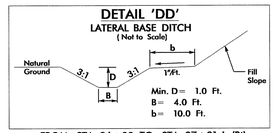
FROM STA. 134+50 TO STA. 139+00-L-(Rt.)
FROM STA. 139+00 TO STA. 140+00-L-(Rt.)

DETAIL 'Z'
STANDARD BASE DITCH
(Not to Scale)



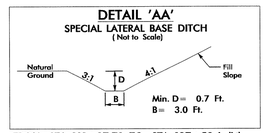
FROM STA. 121+73.33 TO STA. 121+87.78-L-(Lt)
23 LF @ 1.42% grade
FROM STA. 122+89.40 TO STA. 123+22.25-L-(Rt)
35 LF @ 4.14% grade

DETAIL 'DD'
LATERAL BASE DITCH
(Not to Scale)



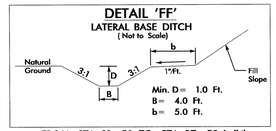
FROM STA. 96+00 TO STA. 97+21-L-(Rt)

DETAIL 'AA'
SPECIAL LATERAL BASE DITCH
(Not to Scale)



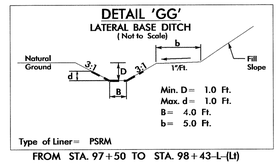
FROM STA. 121+87.78 TO STA. 127+50-L-(Lt)

DETAIL 'FF'
LATERAL BASE DITCH
(Not to Scale)



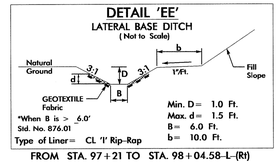
FROM STA. 91+50 TO STA. 97+50-L-(Lt)

DETAIL 'GG'
LATERAL BASE DITCH
(Not to Scale)



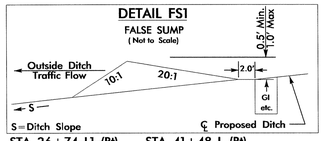
FROM STA. 97+50 TO STA. 98+43-L-(Lt)

DETAIL 'EE'
LATERAL BASE DITCH
(Not to Scale)



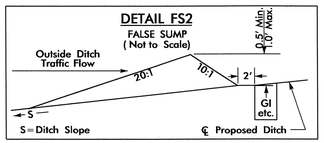
FROM STA. 97+21 TO STA. 98+04.58-L-(Rt)

DETAIL FS1
FALSE SUMP
(Not to Scale)



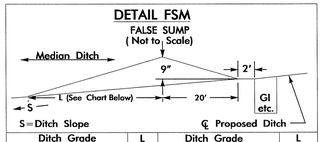
STA. 26+74-L1-(Rt)
STA. 27+74-L1-(Rt)
STA. 13+07-Y1-(Lt)
STA. 40+00-L1-(Lt)
STA. 47+74-L1-(Rt)
STA. 49+74-L1-(Rt)
STA. 41+48-L-(Rt)
STA. 140+76-L-(Lt)
STA. 146+74-L-(Rt)

DETAIL FS2
FALSE SUMP
(Not to Scale)



STA. 26+74-L1-(Lt)
STA. 37+26-L1-(Rt)
STA. 44+26-L1-(Rt)
STA. 24+26-L-(Rt)
STA. 42+75-L-(Rt)
STA. 100+05-L-(Rt)
STA. 104+26-L-(Rt)
STA. 107+26-L-(Rt)
STA. 110+26-L-(Rt)
STA. 140+76-L-(Rt)
STA. 6+67-Y4-(Rt)
STA. 13+69.49-SPURB-(Lt)
STA. 15+24-SPURB-(Lt)

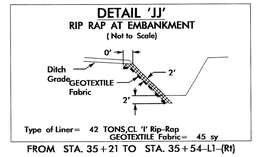
DETAIL FSM
FALSE SUMP
(Not to Scale)



Ditch Grade	L	Ditch Grade	L
0.0% To 2.0%	20'	Over 4.0% To 6.0%	40'
Over 2.0% To 4.0%	30'	Over 6.0%	50'

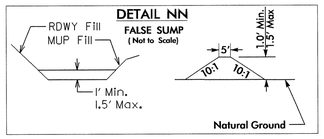
STA. 32+26-L-Med.
STA. 34+26-L-Med.
STA. 36+76-L-Med.
STA. 39+76-L-Med.
STA. 51+74-L-Med.
STA. 58+74-L-Med.
STA. 62+24-L-Med.
STA. 65+74-L-Med.
STA. 68+26-L-Med.
STA. 72+26-L-Med.
STA. 76+26-L-Med.
STA. 86+24-L-Med.
STA. 91+74-L-Med.
STA. 95+24-L-Med.
STA. 97+74-L-Med.
STA. 99+24-L-Med.
STA. 101+26-L-Med.
STA. 104+26-L-Med.
STA. 107+26-L-Med.
STA. 110+26-L-Med.
STA. 113+38-L-Med.
STA. 116+76-L-Med.
STA. 120+13-L-Med.
STA. 123+26-L-Med.
STA. 126+76-L-Med.
STA. 131+26-L-Med.
STA. 134+26-L-Med.
STA. 136+26-L-Med.
STA. 138+26-L-Med.
STA. 140+76-L-Med.

DETAIL 'JJ'
RIP RAP AT EMBANKMENT
(Not to Scale)



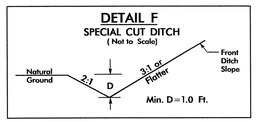
FROM STA. 35+21 TO STA. 35+54-L1-(Rt)

DETAIL NN
FALSE SUMP
(Not to Scale)



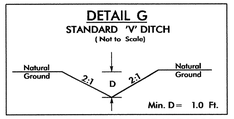
STA. 29+35-MUP-(Rt)
STA. 41+55-MUP-(Rt)
STA. 65+59-MUP-(Rt)

DETAIL F
SPECIAL CUT DITCH
(Not to Scale)



FROM STA. 20+55 TO STA. 23+00-Y5-(Rt)

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



FROM STA. 39+00 TO STA. 39+81.17-L1-(Rt) DDE= 6 CY

8/17/99

20-FEB-2013 15:45
R:\Roadway\R-2246B_Hyd_DET1.dgn
$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
R-2246B	2-J
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 18903 ENGINEER GREGORY E. BREWER 1-22-13

NORTH CAROLINA PROFESSIONAL SEAL 14482 ENGINEER JOSEPH W. DUNNEWOLD 1/22/13

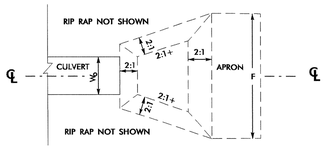
SPECIAL DRAINAGE DETAILS

DETAIL 'II'

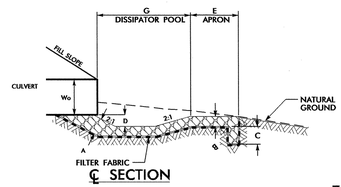
RIP-RAPPED ENERGY DISSIPATOR BASIN

DIM. (ft)	RIP RAP BASIN # 1		
A	2.5'		
B	1.7'		
C	2.0'		
D	1.5'		
E	10.0'		
F	33.0'		
G	20.0'		

ALL DIMENSIONS APPROXIMATE



PLAN



℄ SECTION

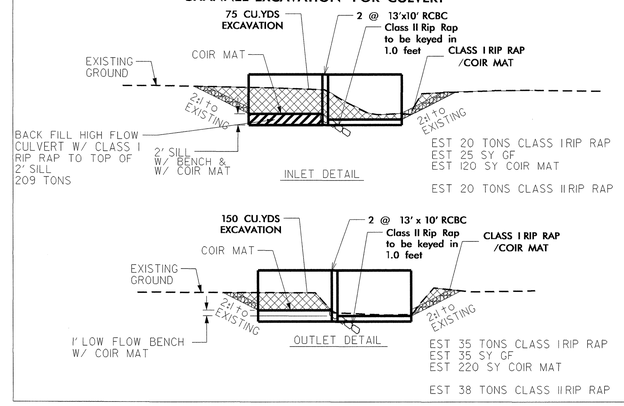
BASIN #	LOCATION (AT OUTLET)
1	Sta. 35+54-L1-(Rt) @

NOTE:
USE CLASS "I" RIP RAP FOR BASIN #1
APRON ELEVATION TO BE SET 0.5' ABOVE INVERT OF PIPE

7/08

DETAIL 'LL'

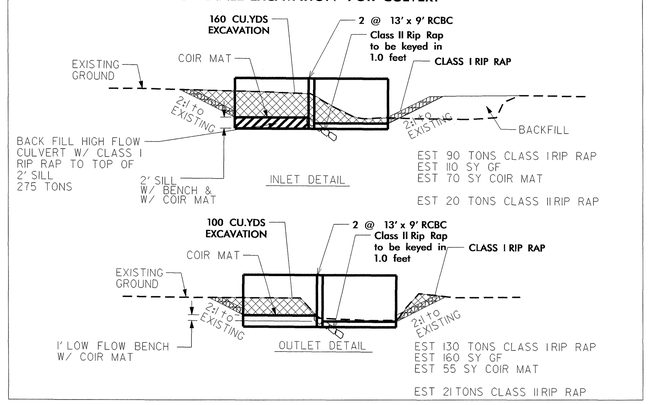
CHANNEL EXCAVATION FOR CULVERT



RCBC STA. 29+96-L1-

DETAIL 'MM'

CHANNEL EXCAVATION FOR CULVERT

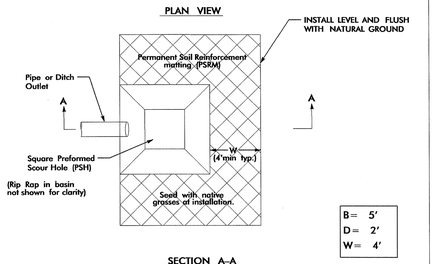


RCBC STA. 98+39-L-

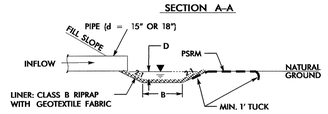
PREFORMED SCOUR HOLE

*NOT TO SCALE

PLAN VIEW



SECTION A-A



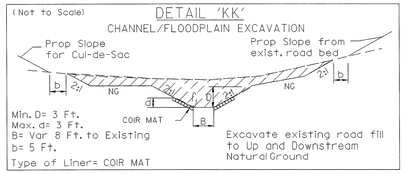
308

STA. 29+22-L1-(Rt) STA. 51+50-L-(Rt) STA. 62+00-L-(Rt) STA. 19+36-RPD-(Lt)
STA. 30+40-L1-(Rt) STA. 51+86-L-(Rt) STA. 17+05-RPC-(Rt)

DETAIL 'KK'

(Not to Scale)

CHANNEL/FLOODPLAIN EXCAVATION



FROM STA. 28+12 TO STA. 28+30 -EL-
EST DDE = 630 CY
EST COIR MAT = 120 SY

REVISIONS

8/17/99

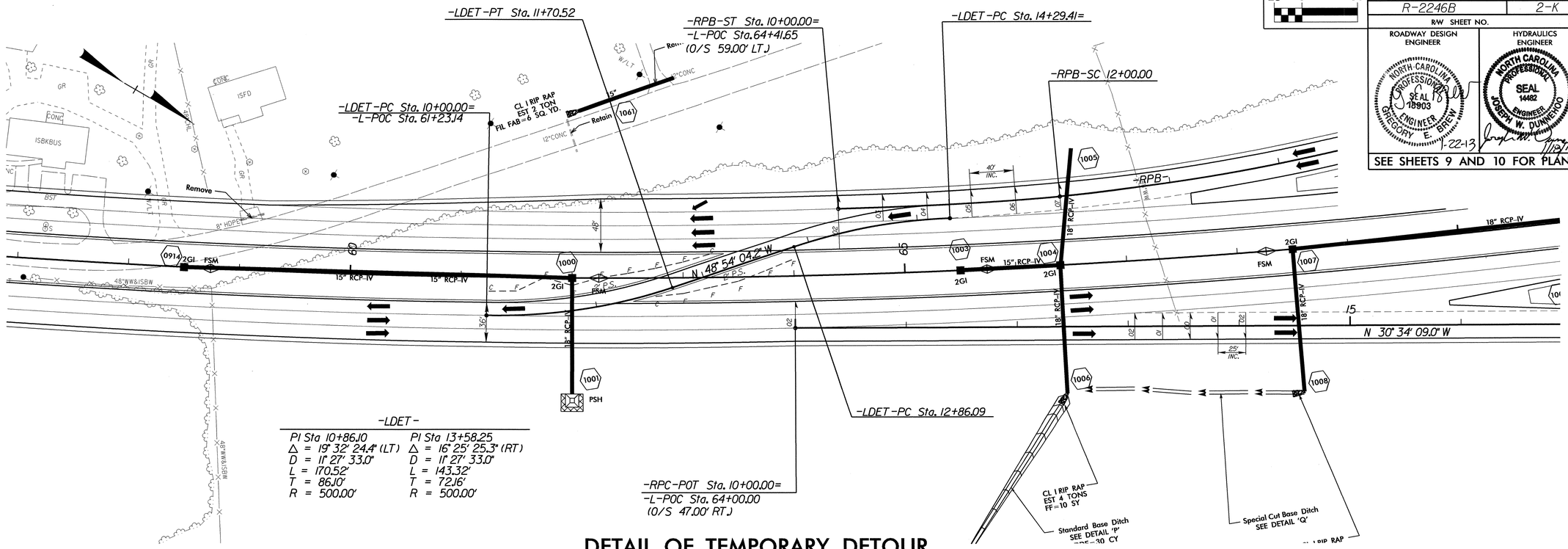
17-JAN-2013 11:39
R:\Drainage\R2246B_Hyd_DET2.dgn
$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
R-2246B	2-K
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 18903 ENGINEER GREGORY E. BREW 7-22-13

HYDRAULICS ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 14482 ENGINEER JOSEPH W. DUNNEVOO 7/22/13

SEE SHEETS 9 AND 10 FOR PLANS



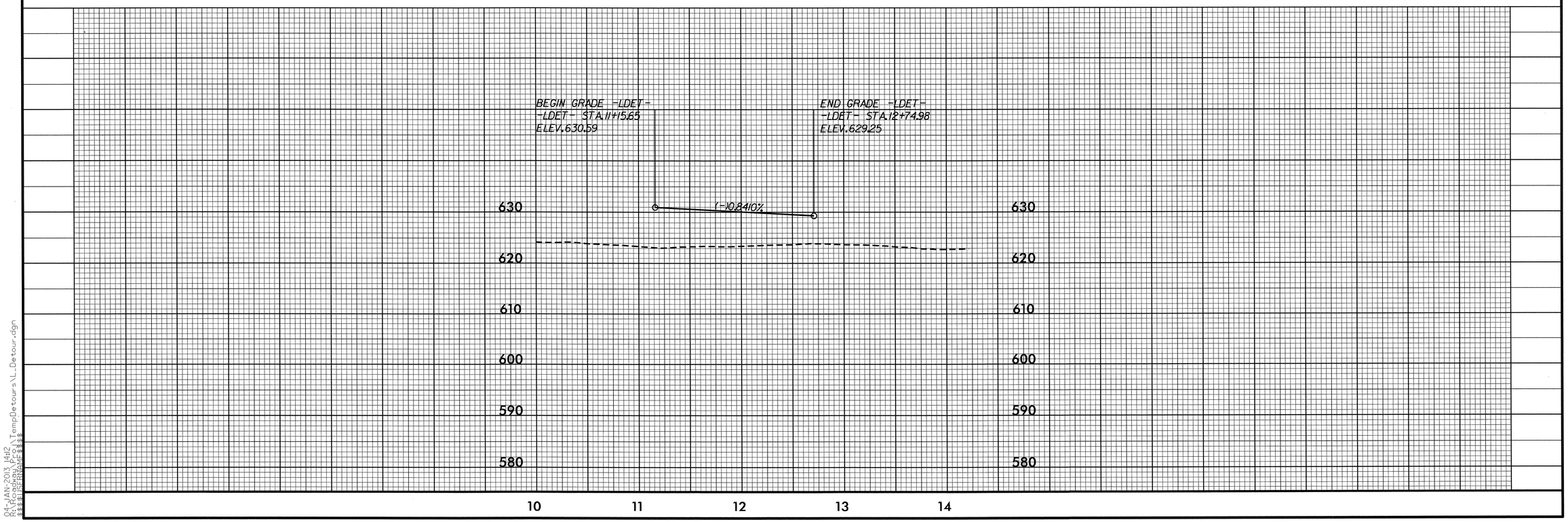
-LDET-

PI Sta 10+86.10	PI Sta 13+58.25
Δ = 19° 32' 24.4" (LT)	Δ = 16° 25' 25.3" (RT)
D = 11° 27' 33.0"	D = 11° 27' 33.0"
L = 170.52'	L = 143.32'
T = 86.10'	T = 72.16'
R = 500.00'	R = 500.00'

DETAIL OF TEMPORARY DETOUR

USE THIS SHEET FOR TEMPORARY TRAFFIC MAINTENANCE DURING CONSTRUCTION

DETOUR DESIGN SPEED= 35 MPH MAX.



8/17/99
04-JAN-2013 14:12
R:\Roadway\Proj\TempDetours\L_Detour.dgn
$$$$USERNAME$$$$

FOR DRAINAGE DITCH DETAILS, SEE SHEETS 2-I AND 2-J	PROJECT REFERENCE NO.	SHEET NO.
	R-2246B	2-L
	R/W SHEET NO.	
	ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 16903 ENGINEER GREGORY E. BREWER
1-22-13

-Y3- INTERSECTION DETAIL

GRAPHIC SCALES

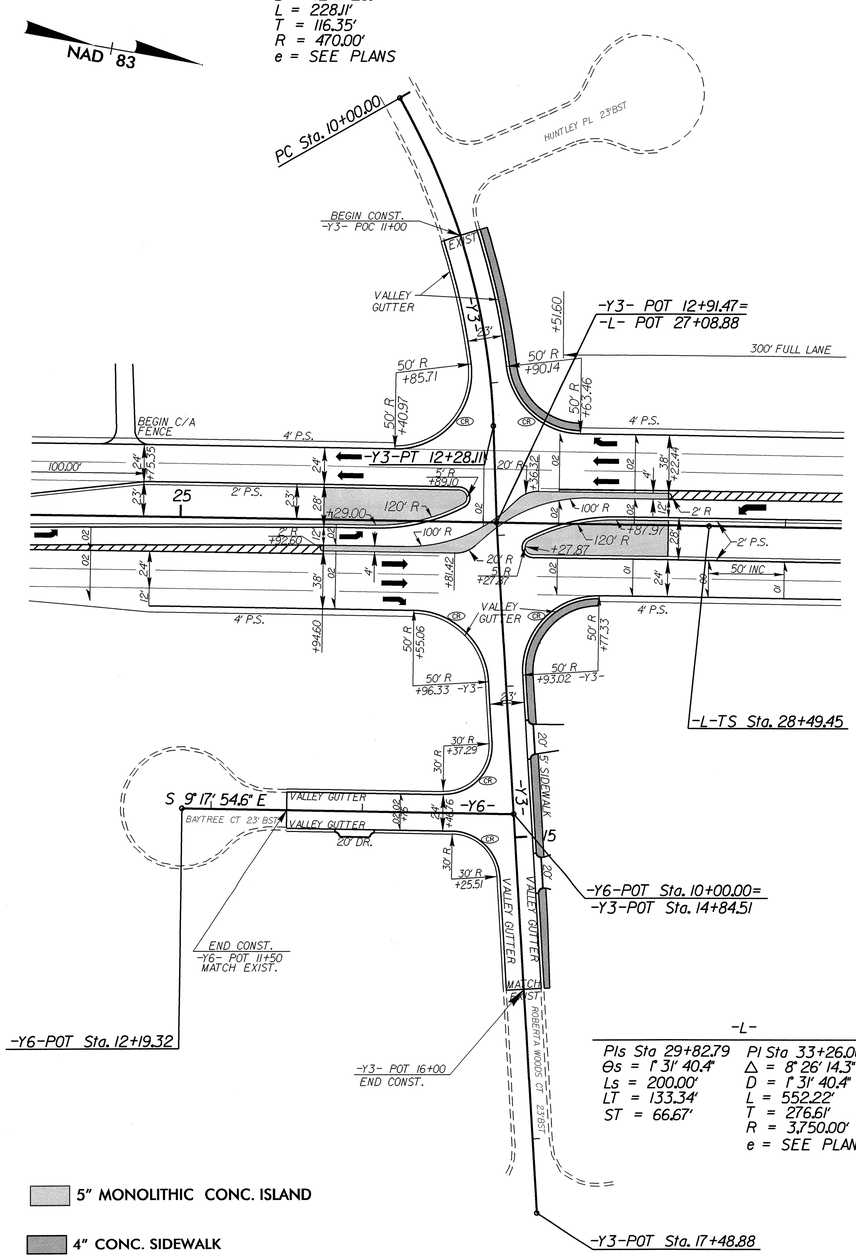
50 25 0 50 100

PLANS

FOR PLANS SEE SHEET 7

5" MONOLITHIC CONC. ISLAND

-Y3-
PI Sta 11+16.35
Δ = 27° 48' 28.3" (RT)
D = 12° 11' 26.1"
L = 228.11'
T = 116.35'
R = 470.00'
e = SEE PLANS



-L-
Pls Sta 29+82.79
Θs = 1° 31' 40.4"
Ls = 200.00'
LT = 133.34'
ST = 66.67'

PI Sta 33+26.06
Δ = 8° 26' 14.3" (LT)
D = 1° 31' 40.4"
L = 552.22'
T = 276.61'
R = 3,750.00'
e = SEE PLANS

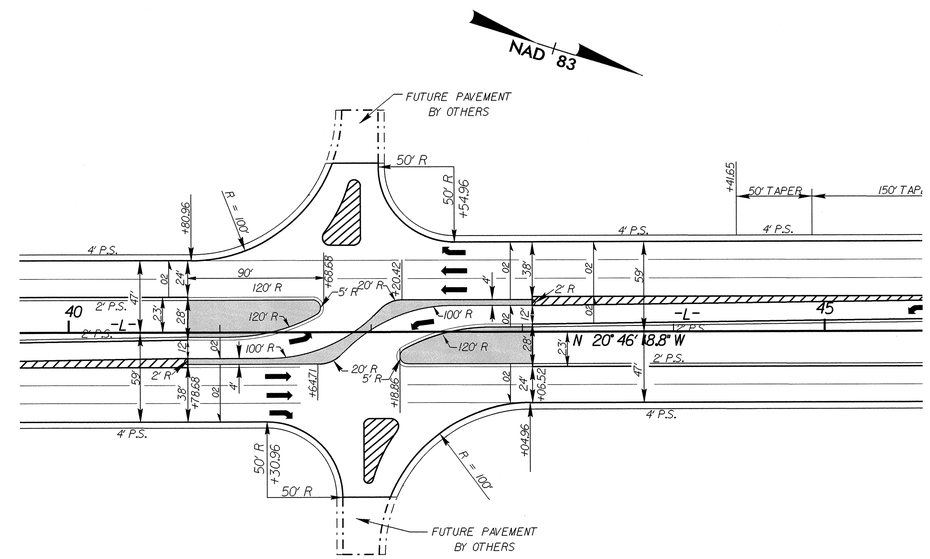
5" MONOLITHIC CONC. ISLAND

4" CONC. SIDEWALK

CHANNELIZATION DETAIL
-L- APPROX. STA 41+00 TO 43+00

FOR PLANS SEE SHEET 8

5" MONOLITHIC CONC. ISLAND



REVISIONS

8/17/99

03-JAN-2013 11:55
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CHANNELIZATION DETAIL

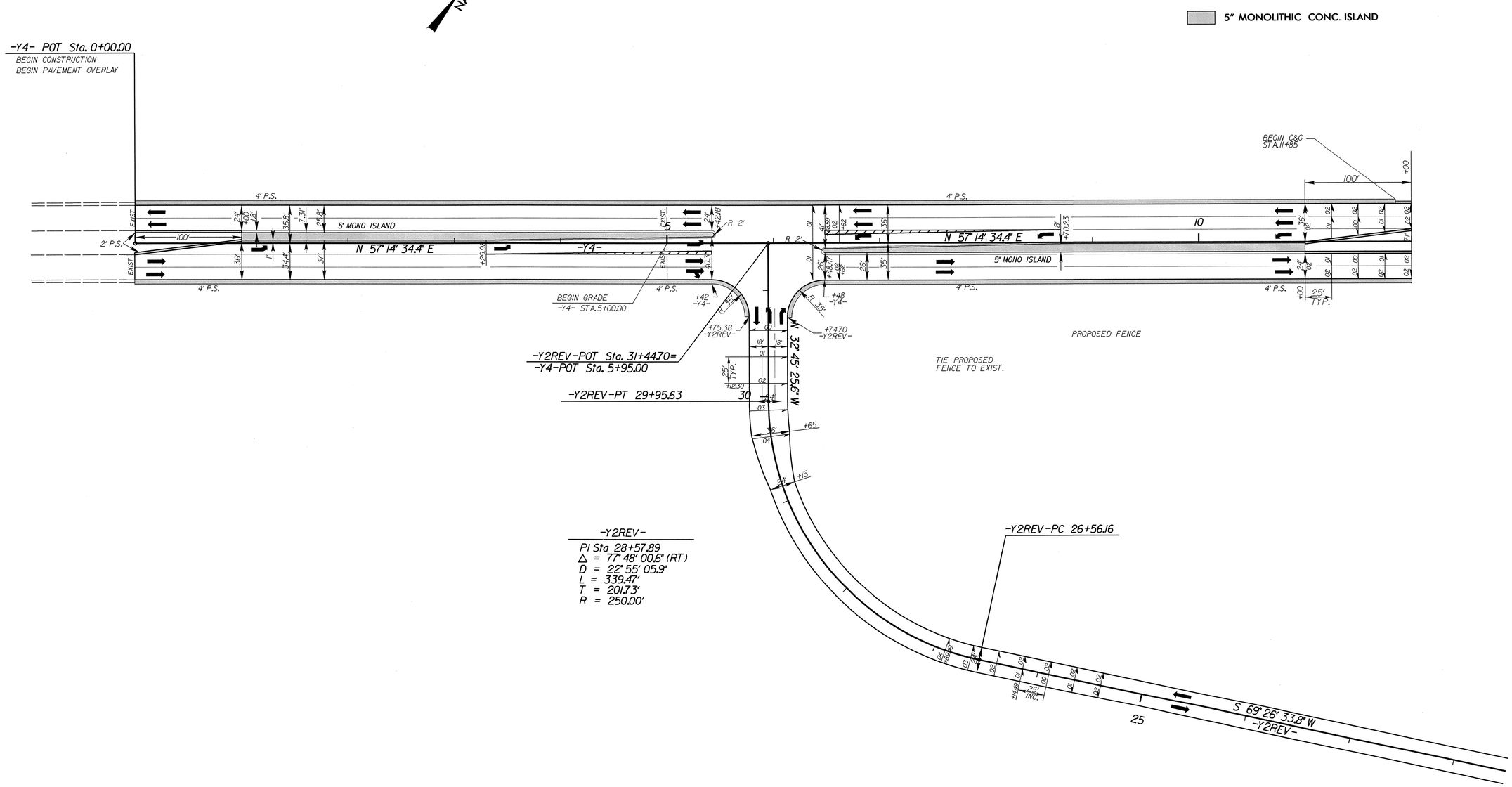
-Y4 (US 29)/-Y2REV-

PROJECT REFERENCE NO.	SHEET NO.
R-2246B	2-M
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 18903 ENGINEER GREGORY E. BREW
1-22-13

GRAPHIC SCALES
50 25 0 50 100
PLANS

FOR PLANS SEE SHEET 17



REVISIONS

8/17/99

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PROJECT REFERENCE NO.	SHEET NO.
R-2246B	2-N
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 18903 ENGINEER GREGORY E. DREW
1-22-13

GRAPHIC SCALES

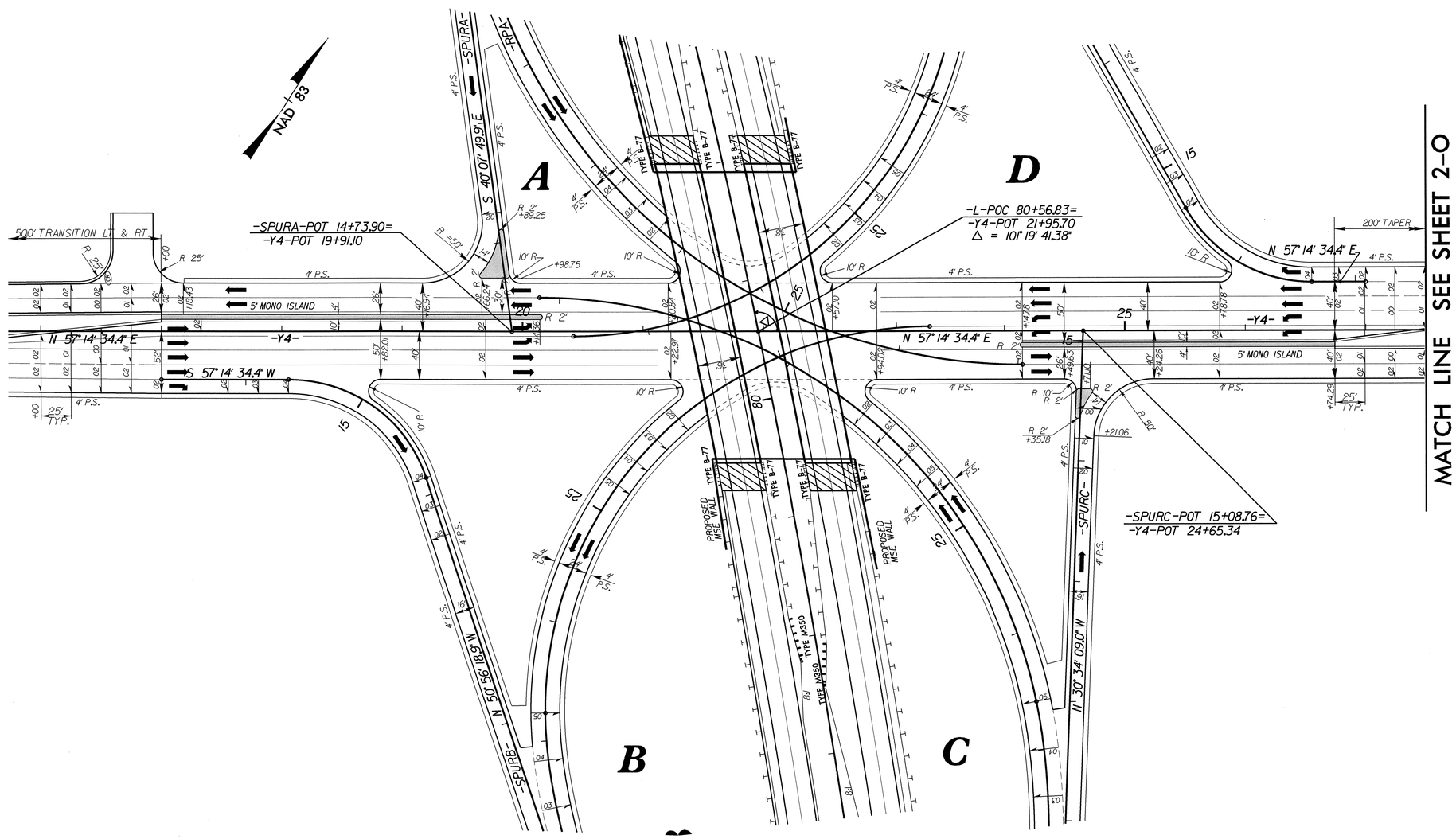
50 25 0 50 100

PLANS

5" MONOLITHIC CONC. ISLAND

FOR PLANS SEE SHEET 10

CHANNELIZATION DETAIL
-L-/-Y4-(US 29)



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PROJECT REFERENCE NO.	SHEET NO.
R-2246B	2-0
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 18993 ENGINEER GREGORY E. BREW

1-22-13

GRAPHIC SCALES

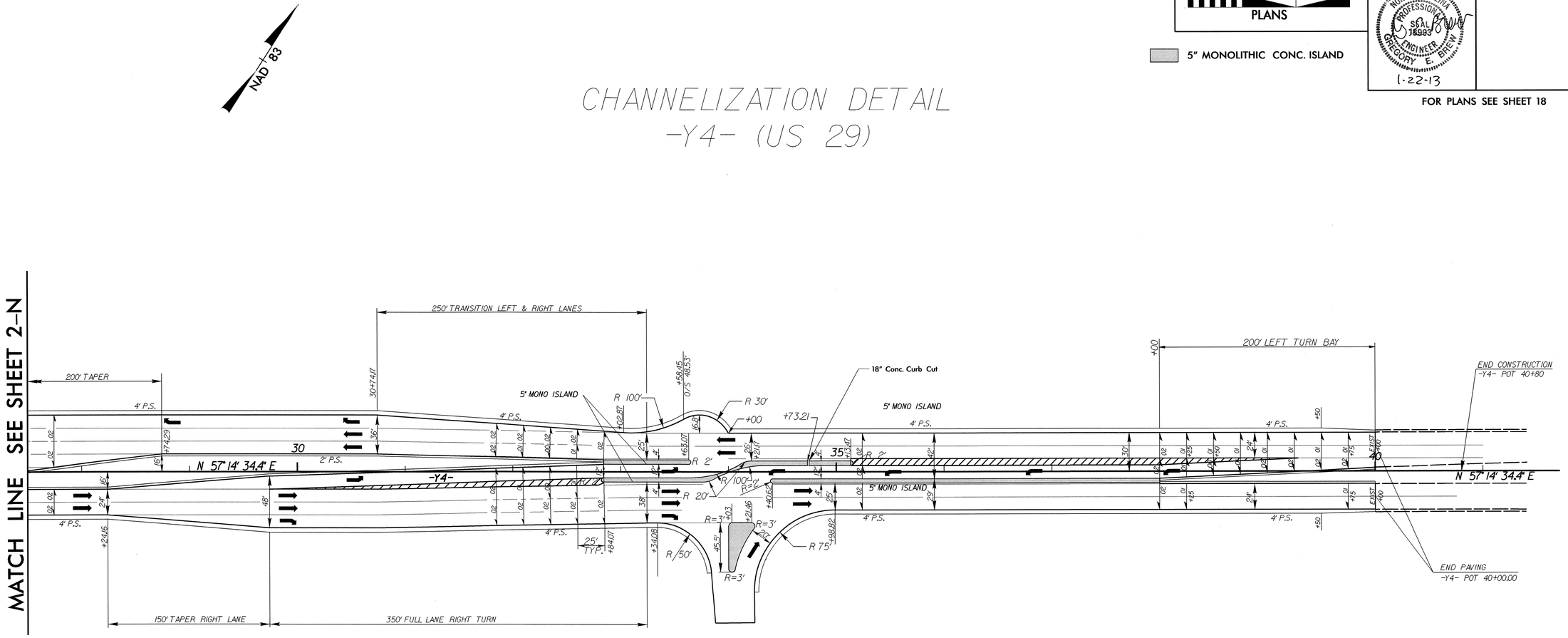
50 25 0 50 100

PLANS

5" MONOLITHIC CONC. ISLAND

FOR PLANS SEE SHEET 18

CHANNELIZATION DETAIL
-Y4- (US 29)



07-JAN-2013 13:39
R:\Roadway\Proj\R2246B_rdy_Y4b INTERSECTION.dgn
$$$$USERNAME$$$$

5/14/99

-L-/-Y5- INTERSECTION & CHANNELIZATION DETAIL

GRAPHIC SCALES

50 25 0 50 100

PLANS

PROJECT REFERENCE NO.	SHEET NO.
R-2246B	2-P
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 18903 ENGINEER GREGORY E. BREW

1-22-13

5" MONOLITHIC CONC. ISLAND

FOR PLANS SEE SHEET 15

-L-

PI Sta 145+00.05
Δ = 15° 52' 10.2" (RT)
D = 2° 10' 58.7"
L = 726.97'
T = 365.83'
R = 2,624.67'
e = SEE PLANS

Pls Sta 149+26.82
Θs = 2° 08' 54.9"
Ls = 196.85'
LT = 131.24'
ST = 65.63'

-Y5-

PI Sta 17+05.99
Δ = 10° 11' 23.2" (RT)
D = 4° 03' 48.7"
L = 250.76'
T = 125.71'
R = 1,410.00'
e = SEE PLANS

-L-

Pls Sta 153+62.09
Θs = 2° 08' 54.9"
Ls = 196.85'
LT = 131.24'
ST = 65.63'

PI Sta 157+01.70
Δ = 11° 55' 11.2" (LT)
D = 2° 10' 58.7"
L = 546.03'
T = 274.01'
R = 2,624.67'

-Y5- POT STA 14+00
BEGIN CONSTRUCTION

MATCH EXIST.

N 77° 11' 03.0" E

BEGIN C&G
-Y5- STA.15+00.00 RT.

-Y5-PC 15+80.28

-Y5-PT 18+31.04

-L-CS 148+61.19

END TIP PROJECT R-2246B
-L- STA. 150+58.04

-Y5- POT 18+62.40=
-L- POC 148+28.77

-L- 147+32.65
END SBG

REMOVE EXIST. GUARDRAIL

PROPOSED SBG

90' R

5' MONO ISLAND

N 7° 21' 48.5" W

376.53' FULL LANE

-L-ST 150+58.04

-L-POT 152+30.85

-Y5- POT STA.22+50.00
END PAVING

-Y5-PC 22+56.15

MATCH EXIST.

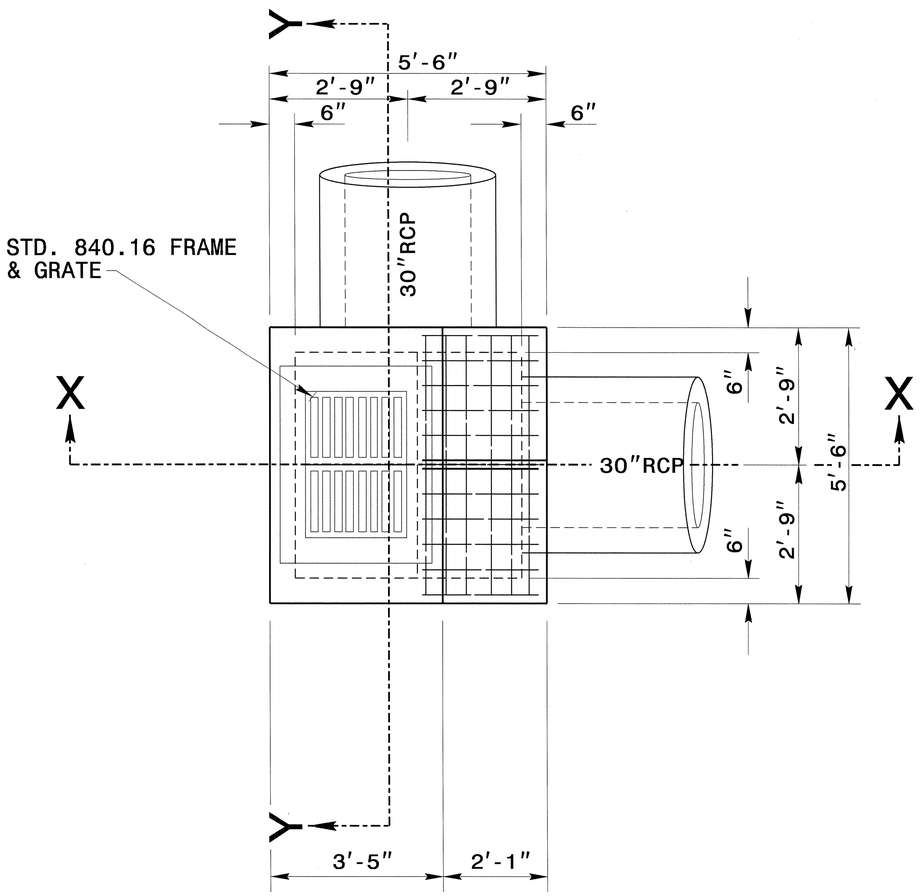
N 8° 22' 26.2" E

-Y5-

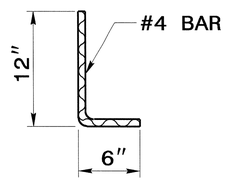
PI Sta 24+18.52
Δ = 4° 01' 13.0" (RT)
D = 1° 14' 18.8"
L = 324.59'
T = 162.36'
R = 4,625.98'
e = SEE PLANS

5/14/99
R:\Roadway\Proj\R2246B_rdy_Y5 INTERSECTION.dgn
17-JAN-2013 15:55
$$$$USERNAME$$$$

PROJ. REFERENCE NO.	SHEET NO.
R-2246B	2-Q



PLAN



DOWEL

GENERAL NOTES:

USE CLASS "B" CONCRETE THROUGHOUT.

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

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

USE FORMS FOR THE CONSTRUCTION OF THE BOTTOM SLAB.

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

CONSTRUCT WITH PIPE CROWNS MATCHING.

INSTALL 2" WEEPHOLES AS DIRECTED BY THE ENGINEER.

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

CHAMFER ALL EXPOSED CORNERS 1".

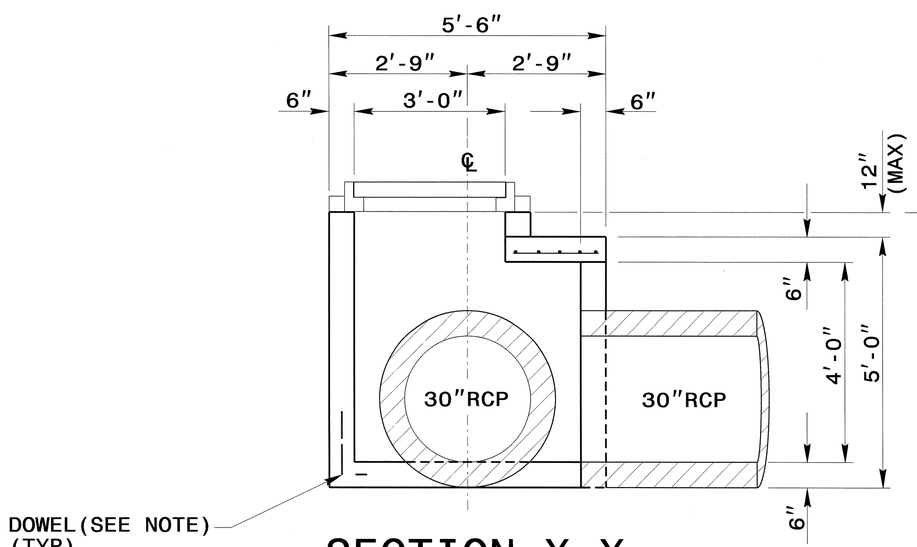
DRAWING NOT TO SCALE.

DIMENSIONS MAY BE FIELD ADJUSTED AS DIRECTED BY THE ENGINEER.

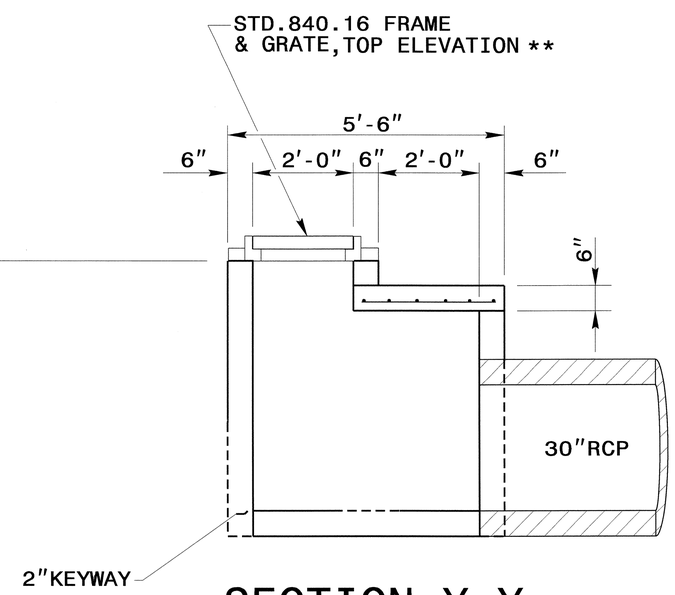
BILL OF MATERIAL

BAR	SIZE	NO.	LENGTH	WEIGHT
X	#6	6	1'-8"	16
Y	#6	5	2'-8"	21
TOTAL REINF. STEEL (lbs.)				37
CLASS "B" CONC. (cu. yds.)				2.9

** NO CONCRETE DEDUCTION MADE FOR GRATE OPENING.



SECTION X-X



SECTION Y-Y

NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER JOHN H. HOMEWOOD III
1/20/13

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

SPECIAL DI

ORIGINAL BY: rnbritt DATE: 05-15-09
MODIFIED BY: rnbritt DATE: 08-25-09
CHECKED BY: DATE: 10/9/12
FILE SPEC.: detail/nbritt/english/interstate/i5010dd30-18rcp.dgn

PROJECT REFERENCE NO.	SHEET NO.
R 2246B	2-R

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

ENGLISH DETAIL DRAWING FOR

CONCRETE MEDIAN DROP INLET TYPE 'A'
EXTRA DEPTH OVER 12' TO 21'
12" THRU 72" PIPE

SHEET 1 OF 2 — **840D17**

GENERAL NOTES:

USE CLASS "B" CONCRETE THROUGHOUT.

PROVIDE DROP INLETS WITH STEPS 12" ON CENTER. USE STEPS WHICH COMPLY WITH STD. DRAWING 840.66.

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

USE FORMS FOR THE CONSTRUCTION OF THE BOTTOM SLAB.

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

WHEN PAYMENT FOR THE DROP INLET IS MADE ON A PER EACH BASIS, THE CONCRETE APRON WILL BE CONSIDERED PART OF THE DROP INLET.

CONSTRUCT WITH PIPE CROWNS MATCHING.

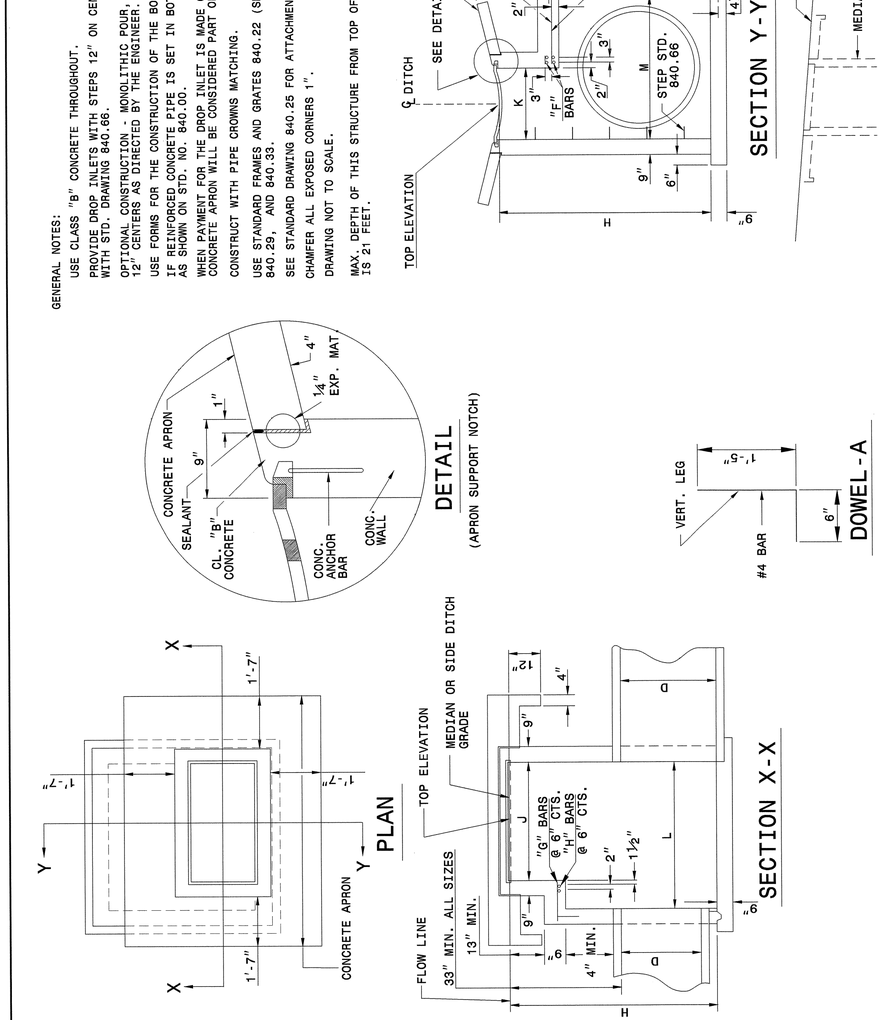
USE STANDARD FRAMES AND GRATES 840.22 (SHOWN), 840.24(SHOWN), 840.20, 840.29, AND 840.33.

SEE STANDARD DRAWING 840.25 FOR ATTACHMENT OF FRAMES AND GRATES NOT SHOWN.

CHAMFER ALL EXPOSED CORNERS 1".

DRAWING NOT TO SCALE.

MAX. DEPTH OF THIS STRUCTURE FROM TOP OF BOTTOM SLAB TO TOP ELEVATION IS 21 FEET.

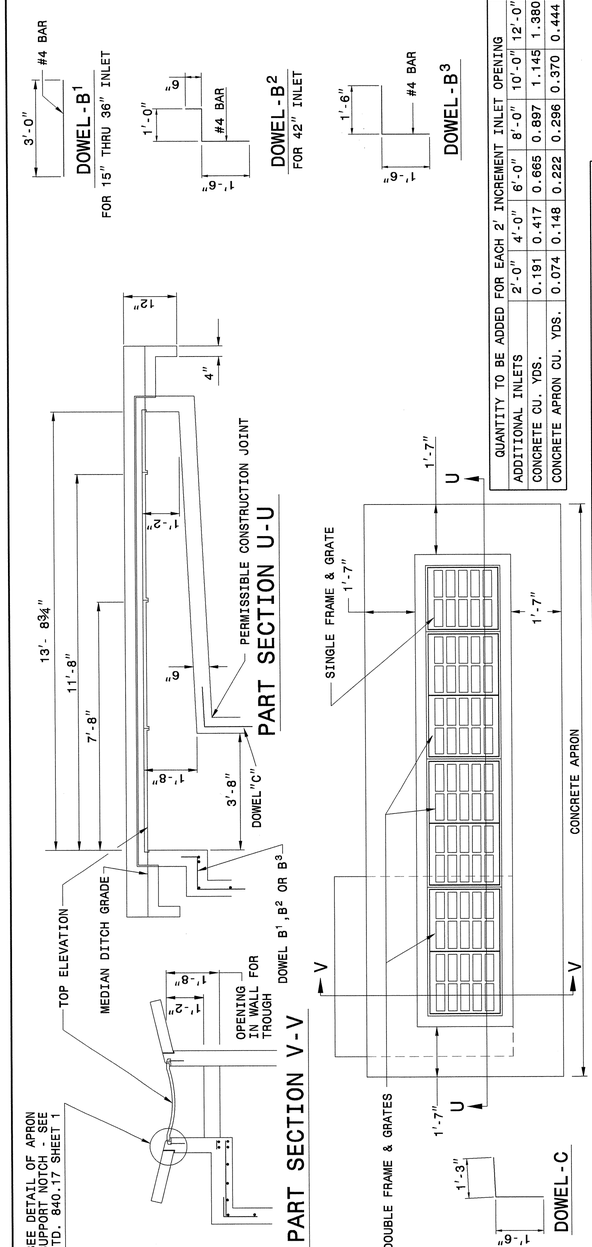


STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.

ENGLISH DETAIL DRAWING FOR

CONCRETE MEDIAN DROP INLET TYPE 'A'
EXTRA DEPTH OVER 12' TO 21'
12" THRU 72" PIPE

SHEET 2 OF 2 — **840D17**



QUANTITY TO BE ADDED FOR EACH 2' INCREMENT INLET OPENING				
ADDITIONAL INLETS	2'-0"	4'-0"	6'-0"	8'-0"	10'-0"	12'-0"
CONCRETE CU. YDS.	0.191	0.417	0.665	0.897	1.145	1.380
CONCRETE APRON CU. YDS.	0.074	0.148	0.222	0.296	0.370	0.444

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

DIMENSIONS OF BOX AND PIPE						REINFORCING STEEL - NO. 4 BARS								CU YDS CONC. IN BOX				DEDUCTIONS FOR ONE PIPE	
PIPE	SPAN	WIDTH	SPAN	WIDTH	HEIGHT	BARS E		BARS F		BARS G		BARS H		TOTAL LBS.	BOTTOM SLAB	H TOTAL	H PER FT HT	APRON	TOTAL	C.S.	R.C.
D	J	K	L	M	H	NO.	LENGTH	NO.	LENGTH	NO.	LENGTH	NO.	LENGTH								
12"	3'-8"	2'-0"	3'-8"	2'-0"	3'-9"	—	—	—	—	—	—	—	—	—	0.362	0.926	0.247	0.395	1.683	0.015	0.024
15"	3'-8"	2'-0"	3'-8"	2'-0"	4'-0"	—	—	—	—	—	—	—	—	—	0.362	0.988	0.247	0.395	1.745	0.023	0.036
18"				2'-0"	4'-3"	—	—	—	—	—	—	—	—	—	0.362	1.050	0.247		1.807	0.033	0.049
24"				2'-10"	4'-9"	8	1'-5"	6	4'-9"	—	—	—	—	27	0.444	1.362	0.278		2.201	0.059	0.085
30"			3'-8"	3'-5"	5'-3"	8	2'-0"	7	4'-9"	—	—	—	—	33	0.502	1.644	0.288		2.541	0.092	0.127
36"			4'-0"	4'-0"	5'-9"	8	2'-5"	8	4'-11"	4	0'-9"	2	4'-11"	47	0.560	1.931	0.321		2.920	0.132	0.178
42"			4'-10"	4'-10"	6'-3"	10	3'-1"	9	5'-7"		1'-5"	3	5'-7"	67	0.704	2.500	0.370		3.677	0.180	0.243
48"			5'-4"	5'-4"	6'-9"	11	3'-7"	10	6'-1"		1'-11"	4	6'-1"	87	0.823	3.013	0.407		4.315	0.235	0.317
54"			6'-0"	6'-0"	7'-3"	12	4'-1"	11	6'-7"		2'-5"	5	6'-7"	107	0.951	3.589	0.444		5.072	0.297	0.401
60"			6'-6"	6'-6"	7'-9"	13	4'-9"	12	7'-3"		3'-1"	6	7'-3"	135	1.311	4.539	0.494		6.170	0.367	0.495
66"			7'-2"	7'-2"	8'-3"	14	5'-4"	14	7'-10"		3'-7"	7	7'-10"	168	1.136	5.061	0.537		6.901	0.444	0.599
72"	3'-8"	2'-0"	7'-8"	7'-8"	8'-9"	15	5'-11"	15	8'-5"	4	4'-3"	8	8'-5"	199	1.500	5.860	0.580	0.395	7.868	0.528	0.713

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

ENGLISH DETAIL DRAWING FOR

CONCRETE MEDIAN DROP INLET TYPE 'A'
EXTRA DEPTH OVER 12' TO 21'
12" THRU 72" PIPE

SHEET 2 OF 2 — **840D17**

SEE STR # 609, 611, 1047, 1116

NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER
1/28/13

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

SEE PLATE FOR TITLE

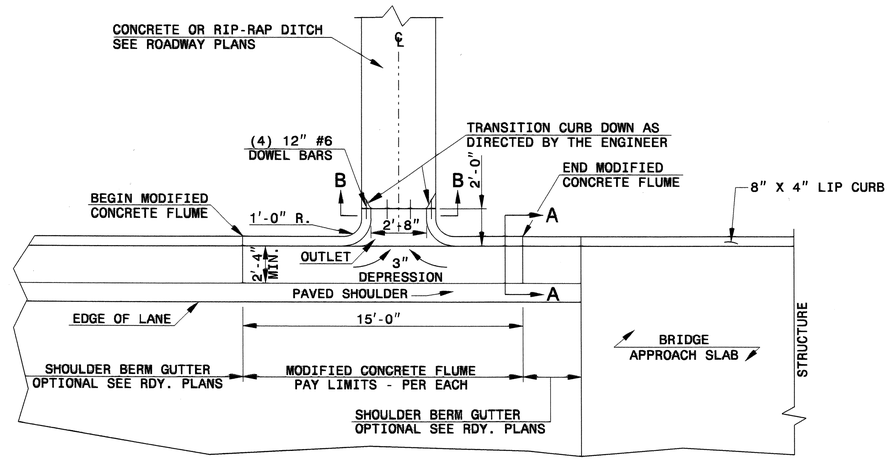
ORIGINAL BY: 2002 STD.840.17 DATE:
MODIFIED BY: K.A. KEMPF DATE: 07-06-09
CHECKED BY: DATE: 1/3/13
FILE SPEC.: /usr/details/stand/840d17.dgn

$$$$$$SYSTIME$$$$
$$$$$$DGNFILE$$$$
$$$$$$USERNAME$$$$

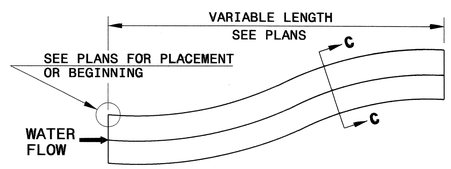
PROJECT REFERENCE NO.	SHEET NO.
R-2246B	2-S

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

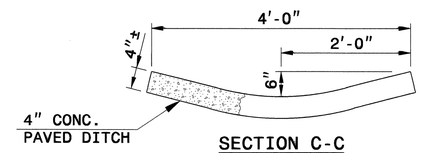
ENGLISH DETAIL DRAWING FOR
MODIFIED CONCRETE FLUME
WITH CONCRETE OR RIP-RAP DITCH



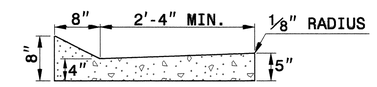
PLAN VIEW



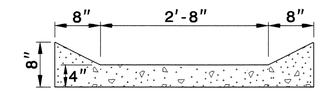
DOWNGRADE OR SAG



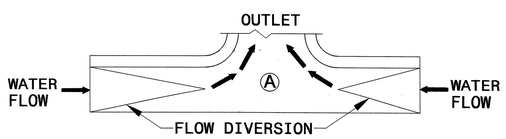
SECTION C-C



SECTION A-A



SECTION B-B



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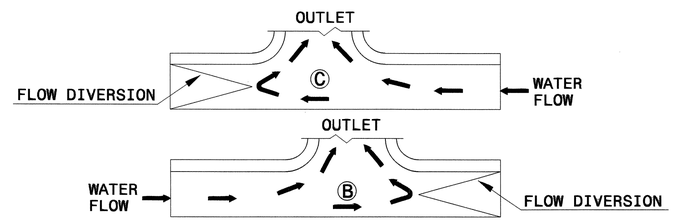
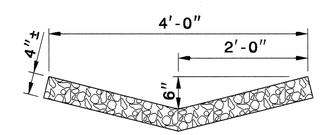


DOWN GRADE

FLOW DIVERSION EXAMPLES



RIP-RAP LINED DITCH

NOTES:

- CONSTRUCT MODIFIED CONCRETE FLUME AND SHOULDER BERM GUTTER IN ACCORDANCE WITH THIS DETAIL.
- CONSTRUCT CONCRETE DITCH IN ACCORDANCE WITH STD. DWG. NO. 850.01.
- CONSTRUCT RIP RAP LINED DITCH IN ACCORDANCE WITH THIS DETAIL, IF CALLED FOR IN PLANS.
- CONCRETE OR RIP RAP LINED DITCH SHALL BE THE TYPE AND LENGTH SPECIFIED BY THE ROADWAY PLANS. THE DITCH SHALL TERMINATE AS SHOWN ON THE PLANS. IF NO TERMINATION IS INDICATED PLACE RIP-RAP AT THE END OF THE DITCH AS INDICATED BY STD. DWG. 876.02 FOR AN 18" PIPE. TRANSITIONS FROM THE DITCH TO TERMINATION SHALL BE AS DIRECTED BY THE ENGINEER.
- MODIFICATIONS SHALL BE AS DICTATED BY SITE CONDITIONS AND DIRECTED BY THE ENGINEER.

SHEET 1 OF 1
MODFLMDTCH

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

ENGLISH DETAIL DRAWING FOR
MODIFIED CONCRETE FLUME
WITH CONCRETE OR RIP-RAP DITCH

SHEET 1 OF 1
MODFLMDTCH

SEE STR. NO. #1020A

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

SEE PLATE FOR TITLE

ORIGINAL BY:	E.E. Ward	DATE:	Apr. 2002
MODIFIED BY:	E.E. Ward	DATE:	July 2004
CHECKED BY:		DATE:	
FILE SPEC.:			

$$$$$SYSTIME$$$$$
$$$$$SELENNEE$$$$$

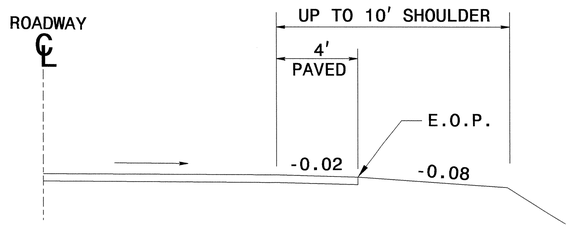
PROJECT REFERENCE NO.	SHEET NO.
R 2246B	2-T

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 I (SHOULDERS UP TO 10')

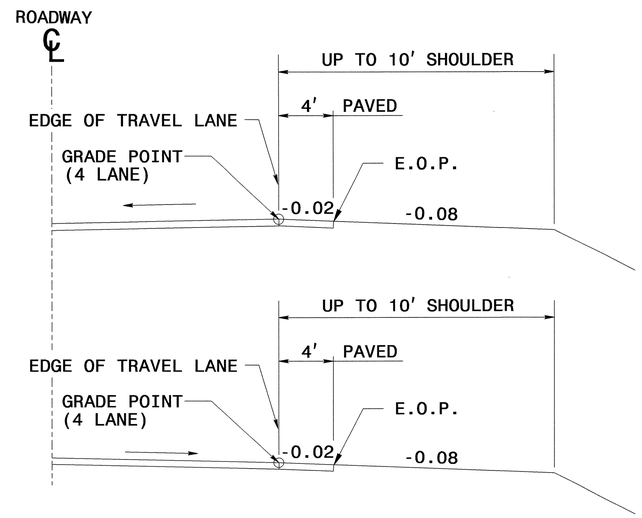
SHEET 2 OF 2
560D01

NORMAL OUTSIDE SHOULDER SLOPES

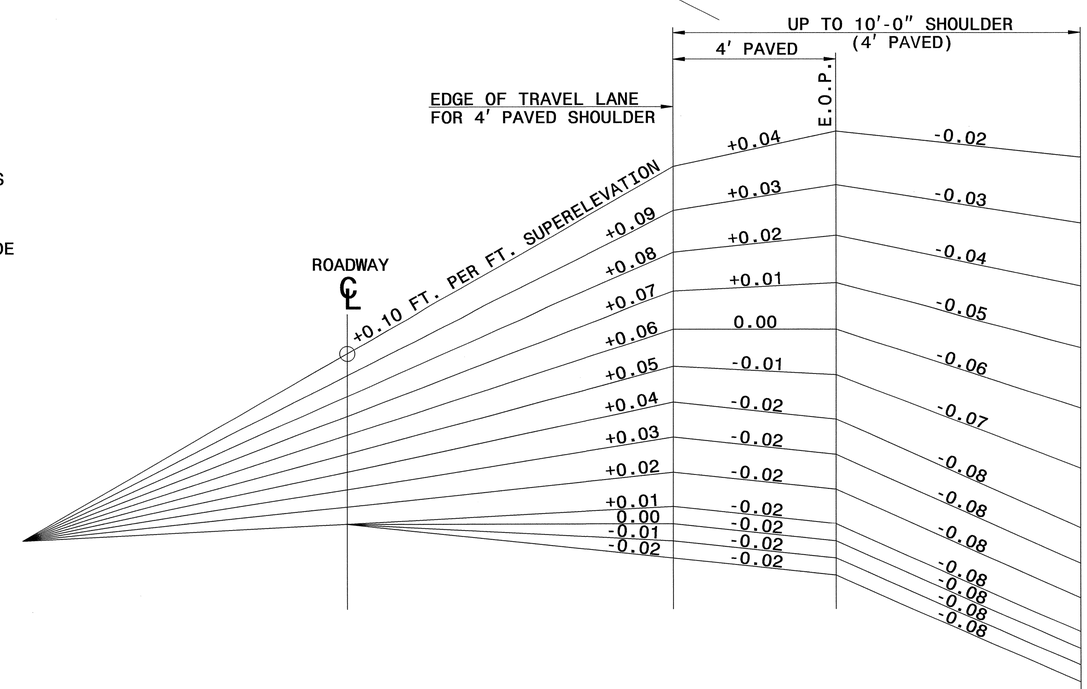


NOTE: ON LOW SIDE OF SUPERELEVATED PAVEMENT USE NORMAL SHOULDER SLOPE UNLESS NORMAL SHOULDER SLOPE IS FLATTER THAN SUPERELEVATION, THEN USE SUPER-ELEVATION RATE ON SHOULDER.

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 I (SHOULDERS UP TO 10')

SHEET 2 OF 2
560D01

NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER
1/28/13

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: 1/7/13
FILE SPEC: /engward/stds/stdstodetails/30001/0300d01.dgn

5/14/99

$$$$SYSTIME$$$$
$$$$USERNAME$$$$

GRAPHIC SCALE
50 25 0 50 100
PLANS

PROJECT REFERENCE NO.	SHEET NO.
R-2246B	2-U

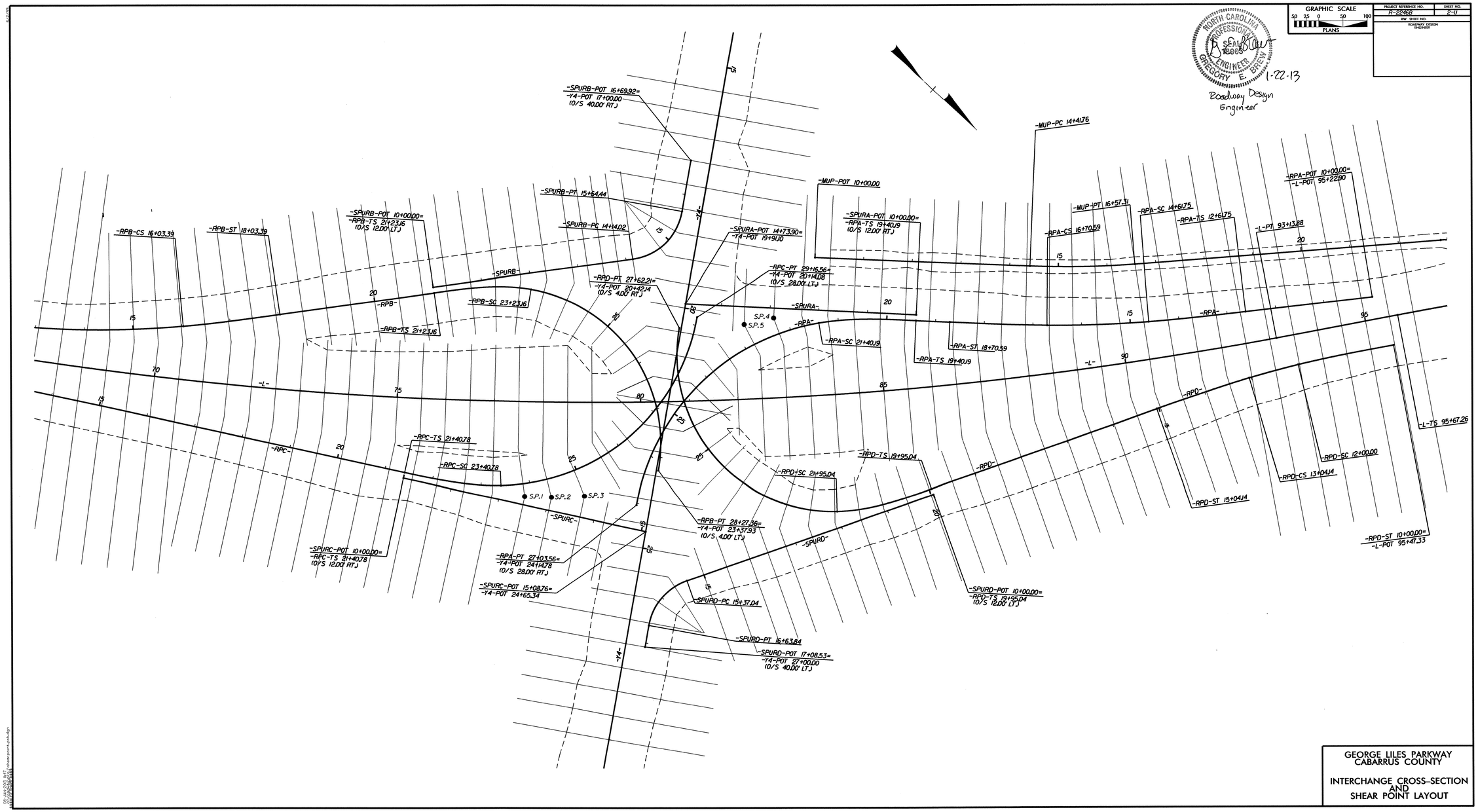
RW SHEET NO.

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 16888 ENGINEER GREGORY E. BREW

1-22-13

Roadway Design Engineer



GEORGE LILES PARKWAY
CABARRUS COUNTY

INTERCHANGE CROSS-SECTION
AND
SHEAR POINT LAYOUT

RD266203 1/8/2013 shearpoint_psh iyounis RD-Oce860-34

PROJECT REFERENCE NO.	SHEET NO.
R-2246B	2-V

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

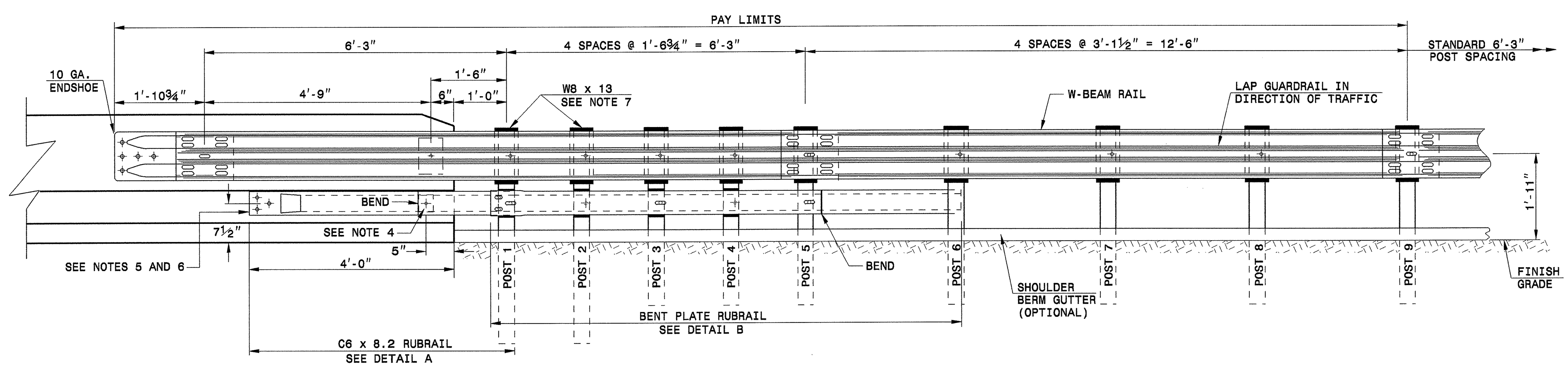
SEE TITLE BLOCK

ORIGINAL BY: J HOWERTON DATE: 06-22-12
MODIFIED BY: DATE:
CHECKED BY: DATE: 11/13/12
FILE SPEC.:

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

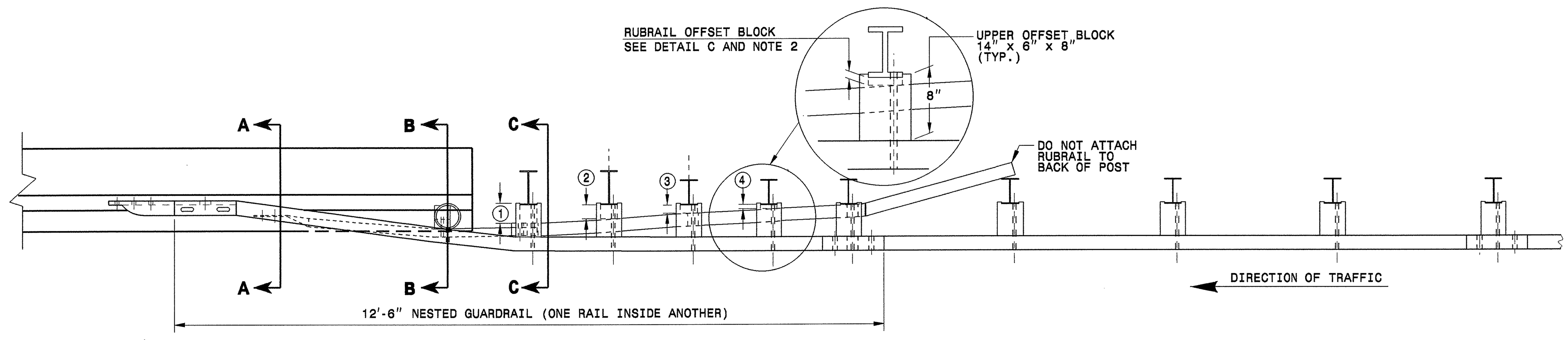
ENGLISH DETAIL DRAWING FOR
GUARDRAIL ANCHOR UNIT
GUARDRAIL ANCHOR UNIT TYPE B-77
FOR F-SHAPE BARRIER

SHEET 4 OF 7
862D03



ELEVATION

GENERAL NOTES:
1) POSTS 1 THROUGH 5 REQUIRE AN ADDITIONAL HOLE TO ATTACH LOWER BLOCKOUTS AND/OR RUBRAIL.
2) RUBRAIL BLOCKOUTS LOCATED ON POSTS 1 THROUGH 4 ARE OFFSET DRILLED AND SECURED WITH ⅝" BUTTONHEAD BOLTS (SEE CHART FOR BOLT LENGTHS). SECURE BLOCKS ONLY TO POSTS 2 AND 4. SECURE RUBRAIL AND BLOCKOUTS TO POSTS 1 AND 3. RUBRAIL IS SECURED TO POST 5 WITH A ⅝" x 4½" BUTTONHEAD BOLT. RUBRAIL IS FLARED TO BACK OF POST 6 AND NOT SECURED.
3) STEEL SPACER TUBE IS A SCHEDULE 40 GALVANIZED PIPE 6" INSIDE DIAMETER x 9" LONG. ATTACH TUBE TO GUARDRAIL ONLY WITH ⅝" x 1¼" LONG BUTTONHEAD BOLT AND RECTANGULAR PLATE WASHER.
4) SEE DETAIL D FOR SLOPED RUBRAIL BLOCKOUT. BLOCKOUT IS ATTACHED TO RAIL ELEMENT ONLY. USE ⅜" x 3" LAG BOLT WITH FLAT WASHER.
5) SHOP FABRICATE THE C6 x 8.2 RUBRAIL END TO BE CONSISTENT WITH THE SLOPE OF THE F SHAPE AND ATTACH FLUSH WITH THE SLOPED TOE OF THE BARRIER OR BRIDGE RAIL.
6) ANCHORAGE:
   (a) AT EXISTING BRIDGE RAIL AND NEW OR EXISTING BARRIERS, ANCHOR RUBRAIL USING THREE ⅝" x 6" CHEMICALLY ANCHORED BOLTS WITH WASHERS. MAXIMUM PROJECTION FOR BOLTS IS ½".
   (b) AT EXISTING BRIDGE RAIL AND NEW OR EXISTING BARRIERS, ANCHOR THE W-BEAM END SHOE USING A 4 BOLT HOLD DOWN PLATE (SEE STD. DWG. 862.04). A 4 BOLT INSERT ASSEMBLY IS ALLOWED ON PRECAST REINFORCED CONCRETE BARRIER (SEE STD. DWG. 857.01). INSTALL THE W-BEAM END SHOE BEHIND THE NESTED W-BEAM ELEMENTS.
   (c) AT NEW BRIDGE RAIL, ANCHOR THE W-BEAM END SHOE AND RUBRAIL AS DETAILED ON THE STRUCTURE PLANS.
7) POSTS 1 AND 2 ARE W8 x 13, 7'-6" LONG. ALL OTHER POSTS IN THE ANCHOR UNIT ARE W6 x 8.5.



PLAN

GUARDRAIL ANCHOR UNIT TYPE B-77

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

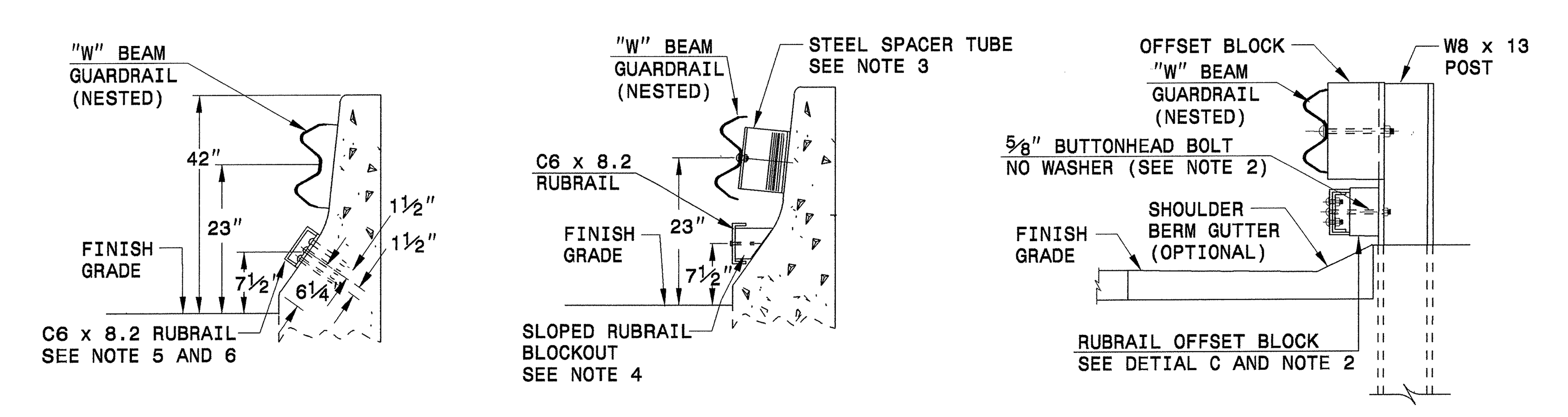
ENGLISH DETAIL DRAWING FOR
STRUCTURE ANCHOR UNIT
GUARDRAIL ANCHOR UNIT TYPE B-77
FOR F-SHAPE BARRIER

SHEET 4 OF 7
862D03

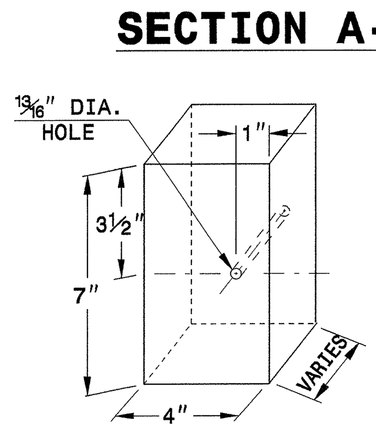
STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ENGLISH DETAIL DRAWING FOR
STRUCTURE ANCHOR UNIT
GUARDRAIL ANCHOR UNIT TYPE B-77
FOR F-SHAPE BARRIER

SHEET 5 OF 7
862D03



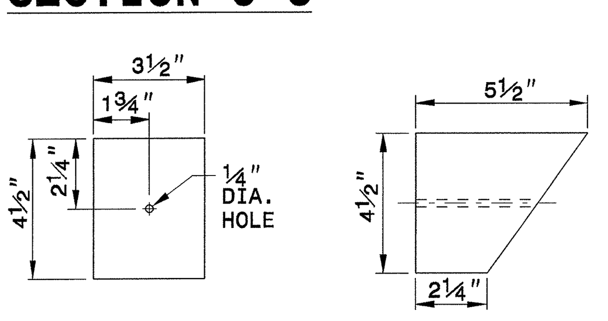
SECTION A-A | SECTION B-B | SECTION C-C



RUBRAIL BLOCKS 7" HIGH x 4" WIDE		
POST	THICKNESS	BOLT LENGTH
①	4¼"	9"
②	3¼"	5"*
③	2"	6"
④	1"	3"*

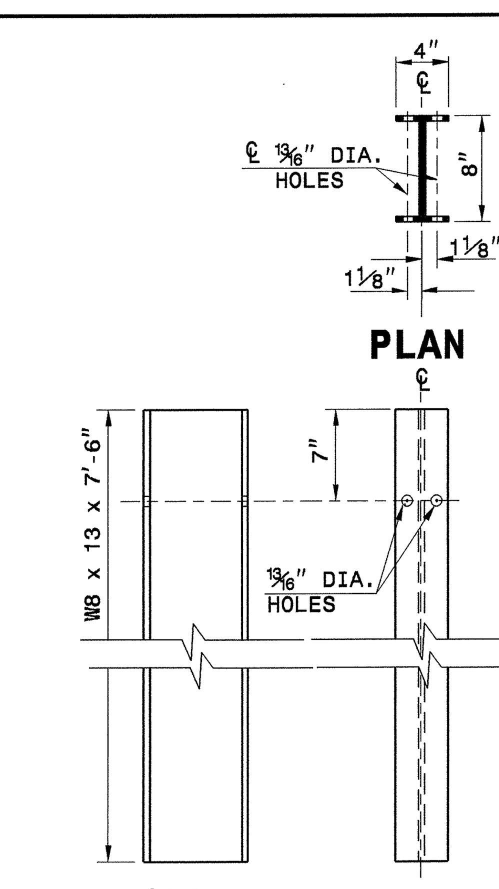
* BOLTS FOR POSTS 2 AND 4 ARE USED TO ATTACH BLOCK TO POST. RUBRAIL NOT ATTACHED TO BLOCK.

DETAIL C
RUBRAIL BLOCKOUT

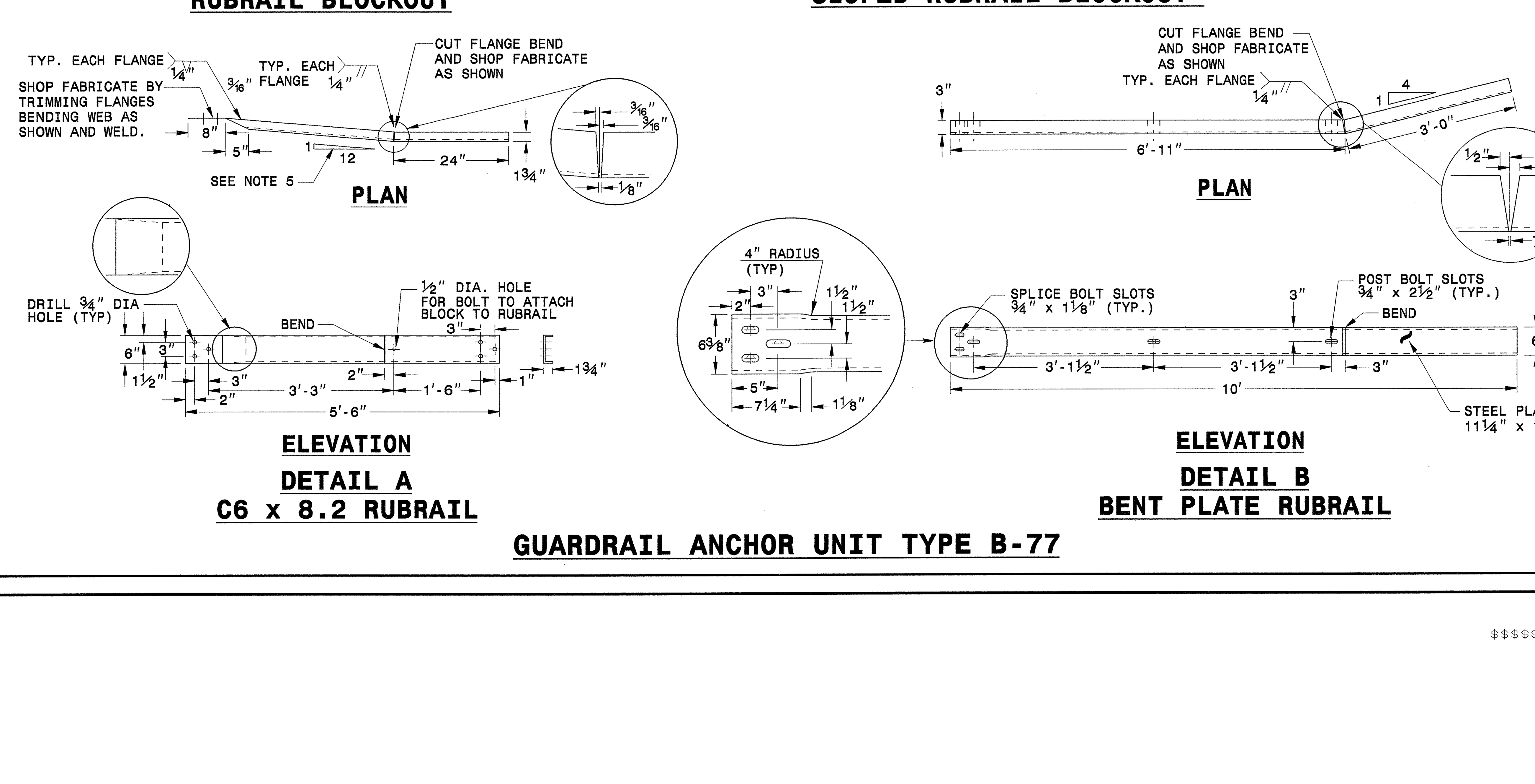


DETAIL D
SLOPED RUBRAIL BLOCKOUT

DETAIL E
LAG BOLT



DETAIL F STEEL POST
"W8 X 13 X 7'-6"



DETAIL A
C6 x 8.2 RUBRAIL

DETAIL B
BENT PLATE RUBRAIL

GUARDRAIL ANCHOR UNIT TYPE B-77

SHEET 5 OF 7
862D03

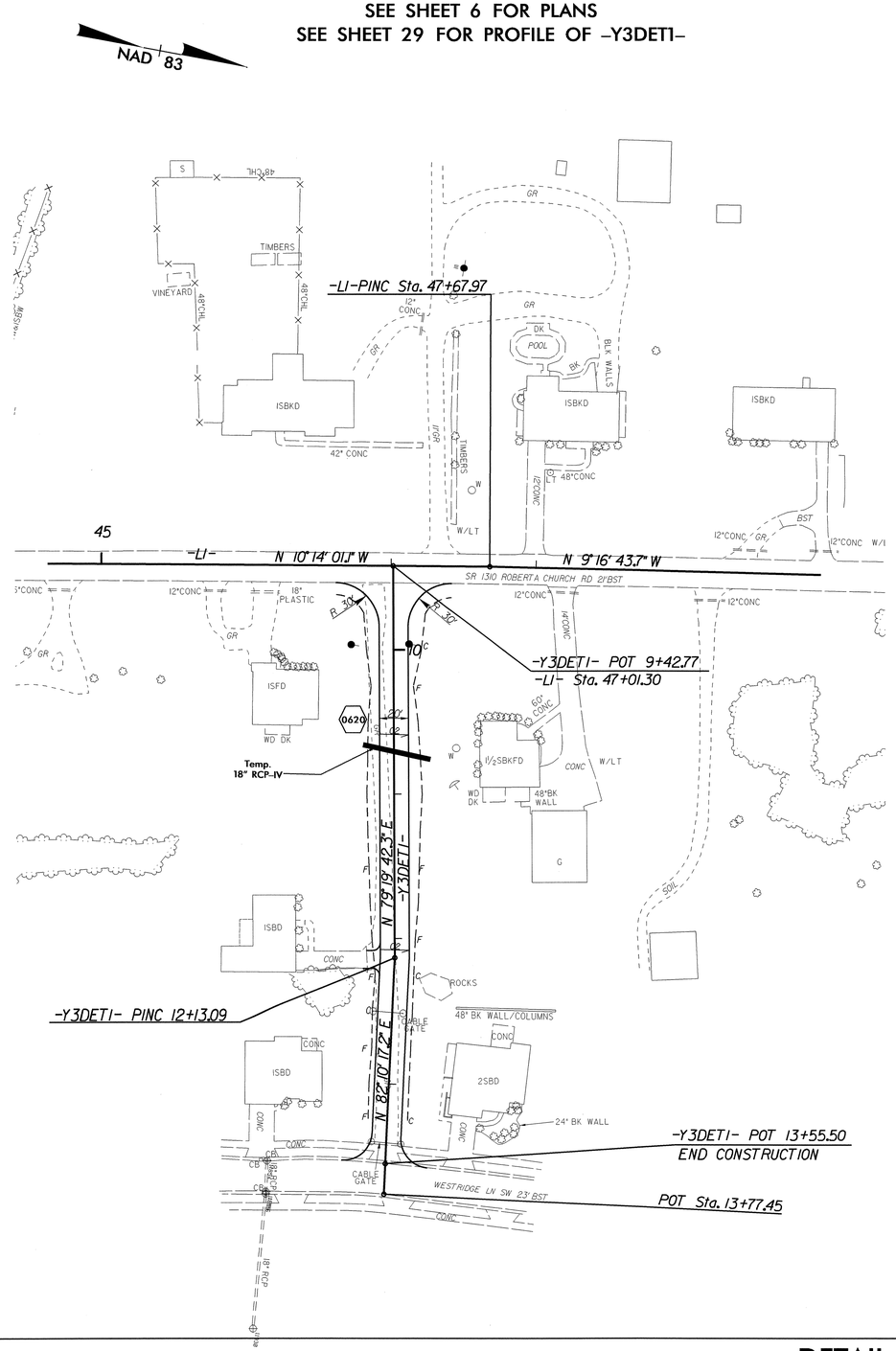
PROJECT REFERENCE NO.	SHEET NO.
R-2246B	2-W
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 18903 ENGINEER GREGORY E. BREW 1-22-13

NORTH CAROLINA PROFESSIONAL SEAL 14482 ENGINEER JOSEPH W. DUNNIGAN 1/23/13

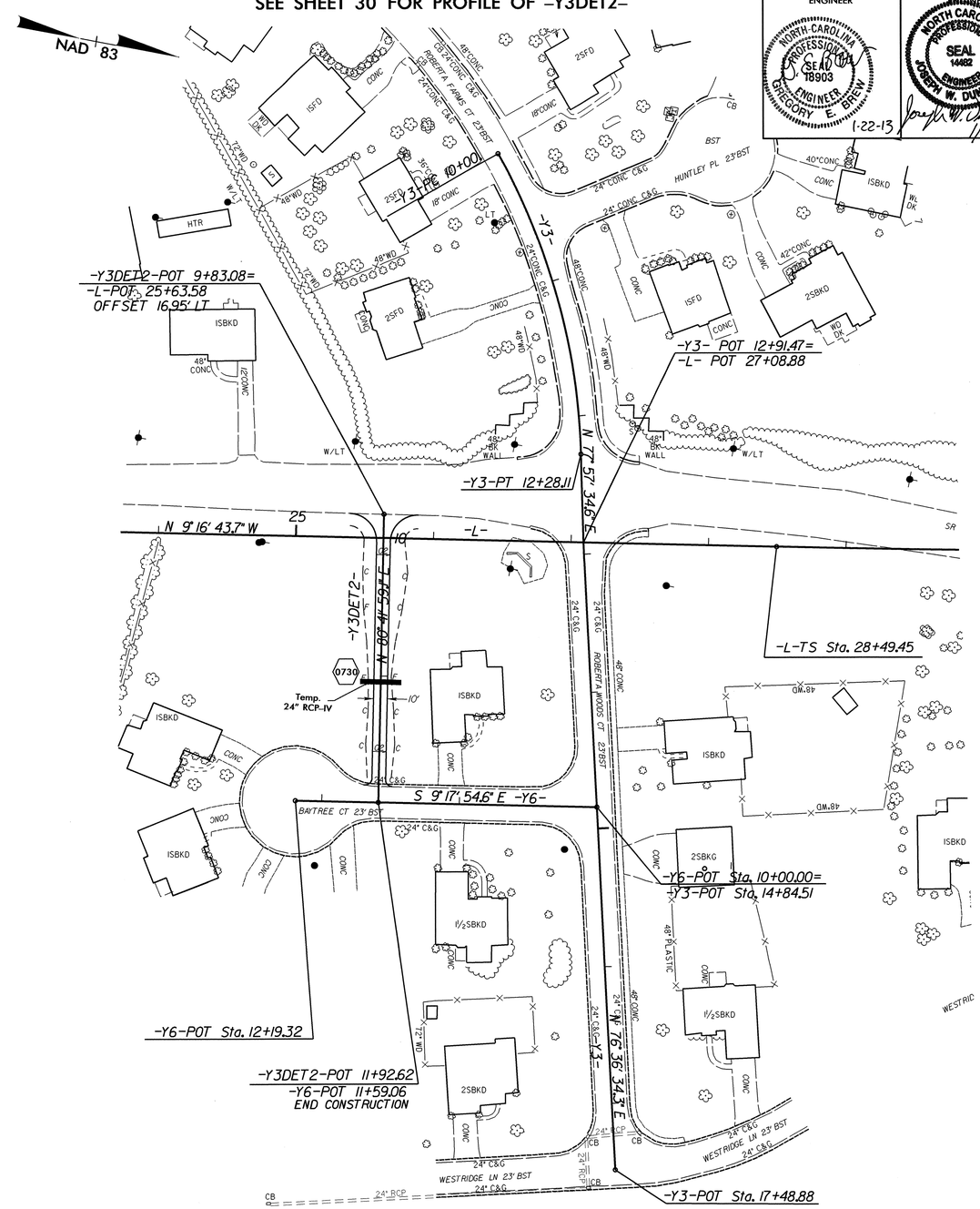
-Y3DET1-

SEE SHEET 6 FOR PLANS
SEE SHEET 29 FOR PROFILE OF -Y3DET1-



-Y3DET2-

SEE SHEET 7 FOR PLANS
SEE SHEET 30 FOR PROFILE OF -Y3DET2-



DETAIL OF TEMPORARY DETOURS

USE THIS SHEET FOR TEMPORARY TRAFFIC MAINTENANCE DURING CONSTRUCTION

5/14/99

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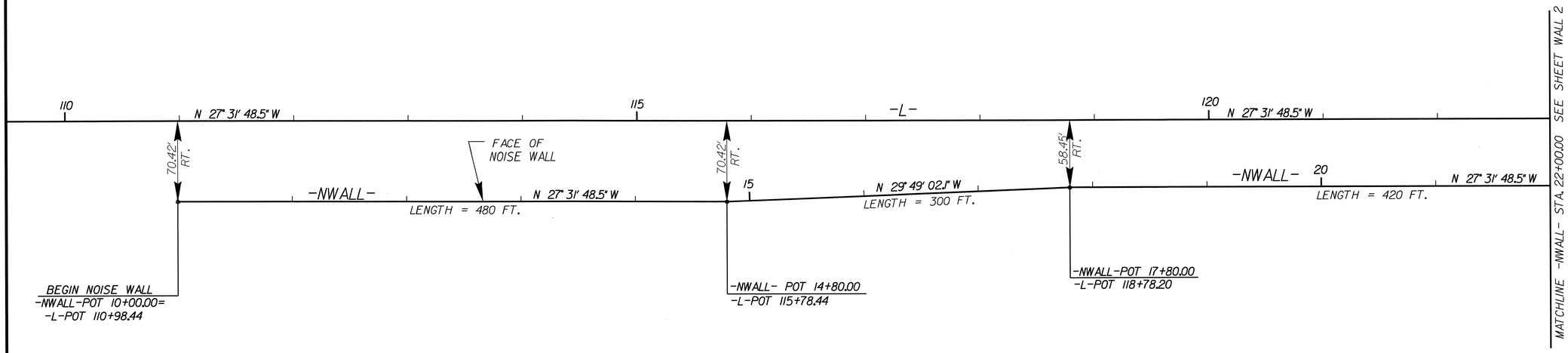
PROJECT REFERENCE NO.	SHEET NO.
R-2246B	2-X
SEE PLAN SHEETS 12 & 13	

PLAN AND PROFILE OF NOISE WALL

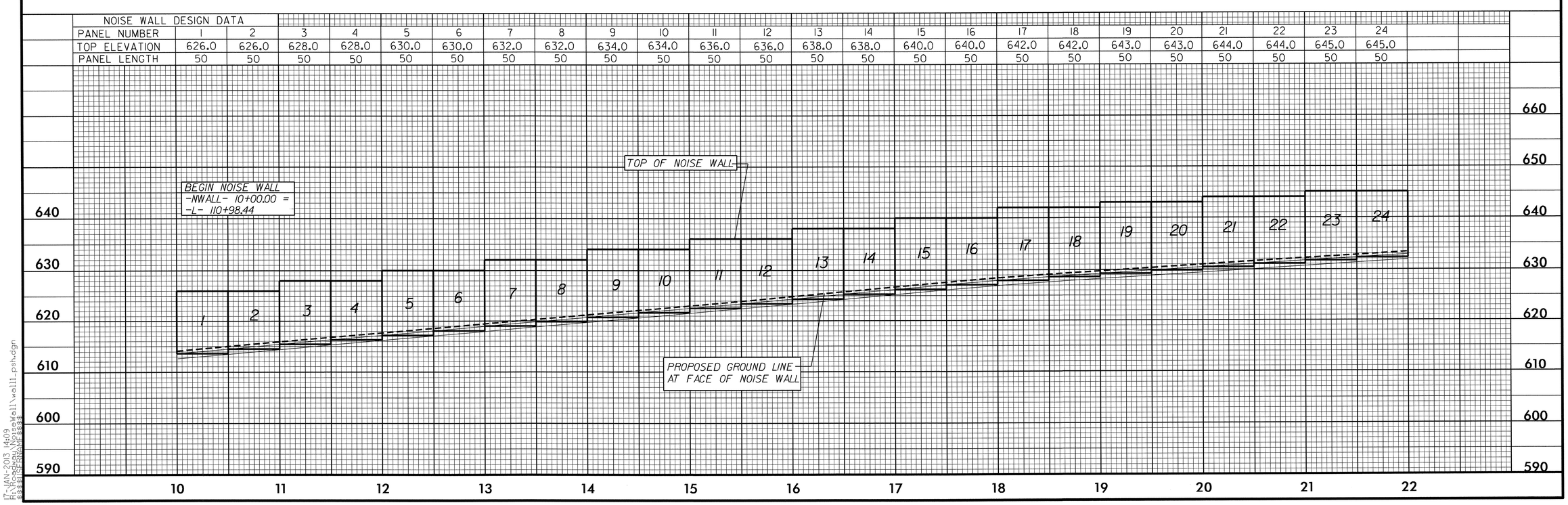
NORTH CAROLINA PROFESSIONAL SEAL 18903 ENGINEER GREGORY E. BREW

1-22-13



NOISE WALL DESIGN DATA

PANEL NUMBER	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
TOP ELEVATION	626.0	626.0	628.0	628.0	630.0	630.0	632.0	632.0	634.0	634.0	636.0	636.0	638.0	638.0	640.0	640.0	642.0	642.0	643.0	643.0	644.0	644.0	645.0	645.0
PANEL LENGTH	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50



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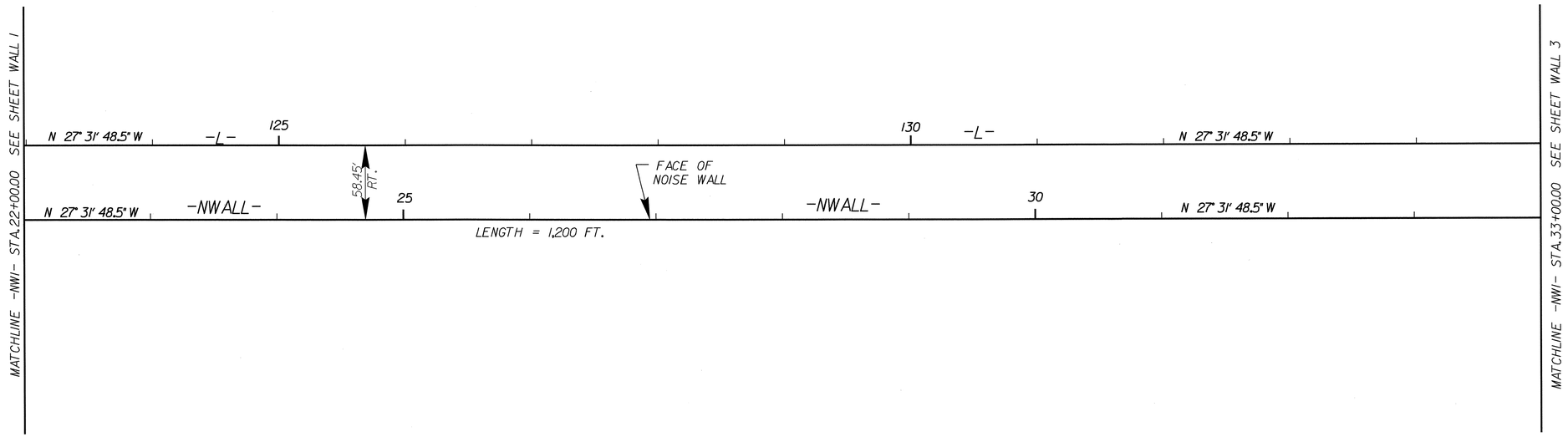
PROJECT REFERENCE NO.	SHEET NO.
R-2246B	2-Y

SEE PLAN SHEETS 13 & 14

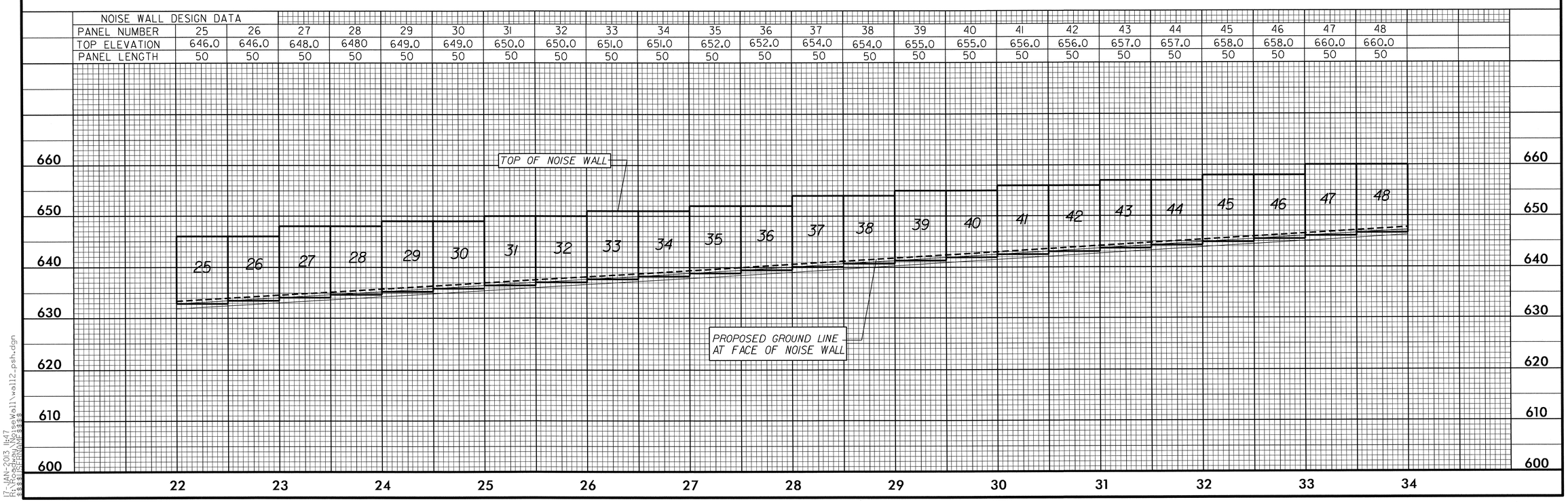
NORTH CAROLINA PROFESSIONAL SEAL 18903 ENGINEER GREGORY E. BREW

1-22-13

PLAN AND PROFILE OF NOISE WALL



NOISE WALL DESIGN DATA																								
PANEL NUMBER	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48
TOP ELEVATION	646.0	646.0	648.0	6480	649.0	649.0	650.0	650.0	651.0	651.0	652.0	652.0	654.0	654.0	655.0	655.0	656.0	656.0	657.0	657.0	658.0	658.0	660.0	660.0
PANEL LENGTH	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50



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8/17/99

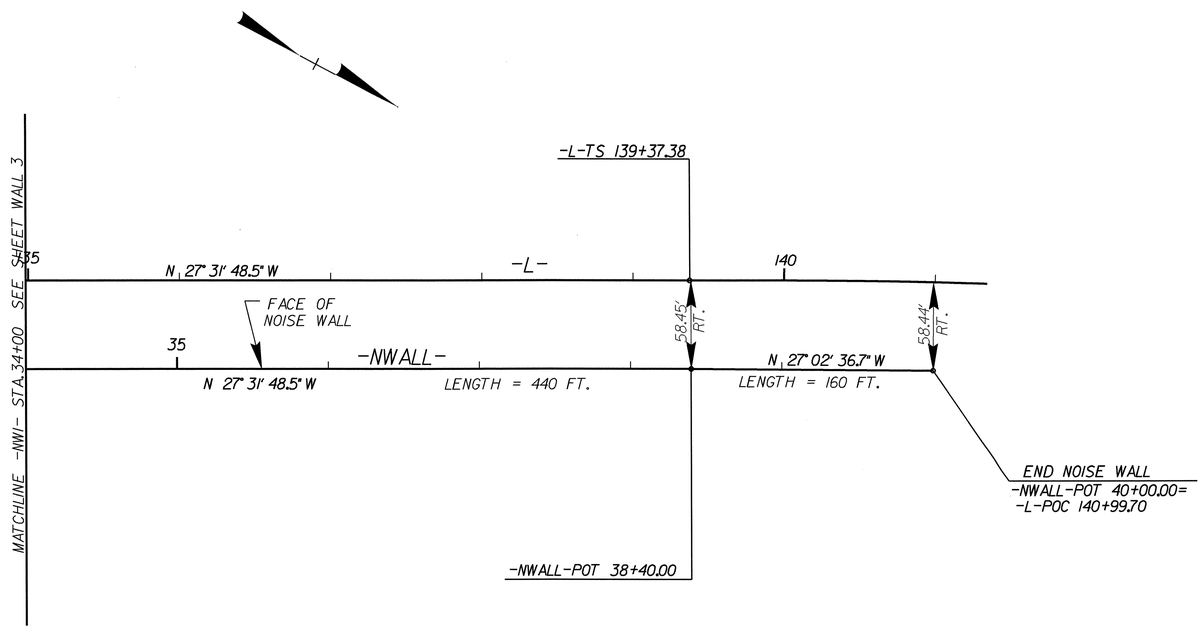
PROJECT REFERENCE NO.	SHEET NO.
R-2246B	2-Z

SEE PLAN SHEET 14

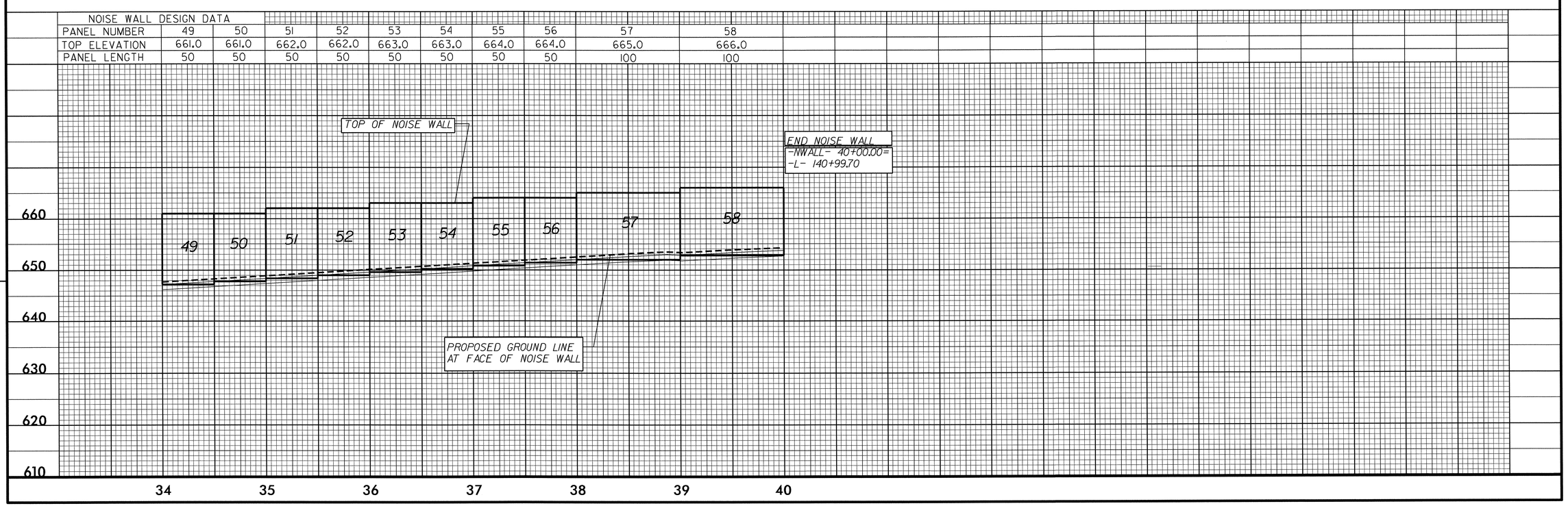
NORTH CAROLINA PROFESSIONAL SEAL 18903 ENGINEER GREGORY E. BREW

1-22-13

PLAN AND PROFILE OF NOISE WALL



NOISE WALL DESIGN DATA										
PANEL NUMBER	49	50	51	52	53	54	55	56	57	58
TOP ELEVATION	661.0	661.0	662.0	662.0	663.0	663.0	664.0	664.0	665.0	666.0
PANEL LENGTH	50	50	50	50	50	50	50	50	100	100



PROJECT REFERENCE NO.	SHEET NO.
R-2246B	3(1 of 2)

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
ROADWAY SUMMARY OF QUANTITIES FOR CONTRACT - C203093

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

ItemNumber	Sec #	Quantity	Unit	Description
0000100000-N	800	Lump Sum		MOBILIZATION
0000900000-N	SP	Lump Sum		GENERIC MISCELLANEOUS ITEM TIMBER PEDESTRIAN BOARDWALK AT STATION 37+70.06 -MUP-
0001000000-E	200	Lump Sum		CLEARING & GRUBBING .. ACRE(S)
0008000000-E	200	3	ACR	SUPPLEMENTARY CLEARING & GRUBBING
0022000000-E	225	164,000	CY	UNCLASSIFIED EXCAVATION
0036000000-E	225	20,400	CY	UNDERCUT EXCAVATION
0106000000-E	230	605,000	CY	BORROW EXCAVATION
0134000000-E	240	2,433	CY	DRAINAGE DITCH EXCAVATION
0156000000-E	250	15,700	SY	REMOVAL OF EXISTING ASPHALT PAVEMENT
0177000000-E	250	3,450	SY	BREAKING OF EXISTNG ASPHALT PAVEMENT
0192000000-N	260	31	HR	PROOF ROLLING
0195000000-E	265	34,900	CY	SELECT GRANULAR MATERIAL
0196000000-E	270	31,900	SY	GEOTEXTILE FOR SOIL STABILIZATION
0318000000-E	300	4,138	TON	FOUNDATION CONDITIONING MATERIAL, MINOR STRUCTURES
0320000000-E	300	25,423	SY	FOUNDATION CONDITIONING GEOTEXTILE
0335200000-E	305	904	LF	15" DRAINAGE PIPE
0335300000-E	305	608	LF	18" DRAINAGE PIPE
0335400000-E	305	68	LF	24" DRAINAGE PIPE
0335500000-E	305	856	LF	30" DRAINAGE PIPE
0335600000-E	305	880	LF	36" DRAINAGE PIPE
0335850000-E	305	8	EA	**" DRAINAGE PIPE ELBOWS (15")
0335850000-E	305	6	EA	**" DRAINAGE PIPE ELBOWS (18")
0343000000-E	310	324	LF	15" SIDE DRAIN PIPE
0344000000-E	310	64	LF	18" SIDE DRAIN PIPE
0345000000-E	310	184	LF	24" SIDE DRAIN PIPE
0366000000-E	310	292	LF	15" RC PIPE CULVERTS, CLASS III
0372000000-E	310	228	LF	18" RC PIPE CULVERTS, CLASS III
0378000000-E	310	92	LF	24" RC PIPE CULVERTS, CLASS III
0384000000-E	310	148	LF	30" RC PIPE CULVERTS, CLASS III
0448000000-E	310	212	LF	****" RC PIPE CULVERTS, CLASS IV (48")
0448000000-E	310	48	LF	****" RC PIPE CULVERTS, CLASS IV (54")
0448200000-E	310	7,012	LF	15" RC PIPE CULVERTS, CLASS IV
0448300000-E	310	4,532	LF	18" RC PIPE CULVERTS, CLASS IV
0448400000-E	310	3,400	LF	24" RC PIPE CULVERTS, CLASS IV
0448500000-E	310	1,132	LF	30" RC PIPE CULVERTS, CLASS IV
0448600000-E	310	516	LF	36" RC PIPE CULVERTS, CLASS IV
0448700000-E	310	44	LF	42" RC PIPE CULVERTS, CLASS IV
0995000000-E	340	2,678	LF	PIPE REMOVAL
1011000000-N	500	Lump Sum		FINE GRADING
1044000000-E	501	80,200	SY	LIME TREATED SOIL (SLURRY METHOD)
1066000000-E	501	810	TON	LIME FOR LIME TREATED SOIL
1099500000-E	505	5,000	CY	SHALLOW UNDERCUT
1099700000-E	505	9,500	TON	CLASS IV SUBGRADE STABILIZATION
1110000000-E	510	500	TON	STABILIZER AGGREGATE
1115000000-E	SP	36,500	SY	GEOTEXTILE FOR PAVEMENT STABILIZATION
1121000000-E	520	78,200	TON	AGGREGATE BASE COURSE
1176000000-E	542	53,470	SY	SOIL CEMENT BASE
1187000000-E	542	1,480	TON	PORTLAND CEMENT FOR SOIL CEMENT BASE
1209000000-E	543	20,060	GAL	ASPHALT CURING SEAL
1220000000-E	545	2,000	TON	INCIDENTAL STONE BASE
1275000000-E	600	670	GAL	PRIME COAT
1308000000-E	607	540	SY	MILLING ASPHALT PAVEMENT, ***" TO ******" (0" TO 3")
1489000000-E	610	11,100	TON	ASPHALT CONC BASE COURSE, TYPE B25.0B
1491000000-E	610	2,500	TON	ASPHALT CONC BASE COURSE, TYPE B25.0C
1498000000-E	610	14,800	TON	ASPHALT CONC INTERMEDIATE COURSE, TYPE I19.0B
1503000000-E	610	31,800	TON	ASPHALT CONC INTERMEDIATE COURSE, TYPE I19.0C
1519000000-E	610	14,550	TON	ASPHALT CONC SURFACE COURSE, TYPE S9.5B
1523000000-E	610	26,400	TON	ASPHALT CONC SURFACE COURSE, TYPE S9.5C
1575000000-E	620	5,270	TON	ASPHALT BINDER FOR PLANT MIX
1693000000-E	654	880	TON	ASPHALT PLANT MIX, PAVEMENT REPAIR
2022000000-E	815	336	CY	SUBDRAIN EXCAVATION
2033000000-E	815	168	CY	SUBDRAIN FINE AGGREGATE
2044000000-E	815	1,000	LF	6" PERFORATED SUBDRAIN PIPE
2070000000-N	815	2	EA	SUBDRAIN PIPE OUTLET
2077000000-E	815	12	LF	6" OUTLET PIPE
2099000000-E	816	8,050	LF	SHOULDER DRAIN
2110000000-E	816	8,050	LF	4" SHOULDER DRAIN PIPE
2121000000-E	816	487	LF	4" OUTLET PIPE FOR SHOULDER DRAINS
2132000000-N	816	9	EA	CONCRETE PAD FOR SHOULDER DRAIN PIPE OUTLET
2143000000-E	818	10	TON	BLOTTING SAND
2209000000-E	838	25	CY	ENDWALLS
2220000000-E	838	5.1	CY	REINFORCED ENDWALLS
2253000000-E	840	1	CY	PIPE COLLARS
2264000000-E	840	1	CY	PIPE PLUGS
2275000000-E	SP	15	CY	FLOWABLE FILL
2286000000-N	840	143	EA	MASONRY DRAINAGE STRUCTURES
2308000000-E	840	123	LF	MASONRY DRAINAGE STRUCTURES
2364000000-N	840	13	EA	FRAME WITH TWO GRATES, STD 840.16
2364200000-N	840	39	EA	FRAME WITH TWO GRATES, STD 840.20
2365000000-N	840	77	EA	FRAME WITH TWO GRATES, STD 840.22
2367000000-N	840	3	EA	FRAME WITH TWO GRATES, STD 840.29
2374000000-N	840	1	EA	FRAME WITH GRATE & HOOD, STD 840.03, TYPE ** (E)
2374000000-N	840	3	EA	FRAME WITH GRATE & HOOD, STD 840.03, TYPE ** (F)
2374000000-N	840	2	EA	FRAME WITH GRATE & HOOD, STD 840.03, TYPE ** (G)
2396000000-N	840	4	EA	FRAME WITH COVER, STD 840.54
2451000000-N	852	16	EA	CONCRETE TRANSITIONAL SECTION FOR DROP INLET
2549000000-E	846	1,670	LF	2'-6" CONCRETE CURB & GUTTER
2556000000-E	846	4,755	LF	SHOULDER BERM GUTTER
2570000000-N	SP	1	EA	MODIFIED CONCRETE FLUME
2580000000-E	846	1,030	LF	CONCRETE VALLEY GUTTER
2591000000-E	848	430	SY	4" CONCRETE SIDEWALK
2605000000-N	848	2	EA	CONCRETE CURB RAMP
2612000000-E	848	300	SY	6" CONCRETE DRIVEWAY
2619000000-E	850	40	SY	4" CONCRETE PAVED DITCH
2647000000-E	852	3,500	SY	5" MONOLITHIC CONCRETE ISLANDS (SURFACE MOUNTED)
2724000000-E	857	3,310	LF	PRECAST REINFORCED CONCRETE BARRIER, SINGLE FACED
2815000000-N	858	1	EA	ADJUSTMENT OF DROP INLETS
2830000000-N	858	1	EA	ADJUSTMENT OF MANHOLES
3030000000-E	862	7,925	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	8	EA	GUARDRAIL ANCHOR UNITS, TYPE CAT-1
3270000000-N	SP	11	EA	GUARDRAIL ANCHOR UNITS, TYPE 350
3285000000-N	SP	4	EA	GUARDRAIL ANCHOR UNITS, TYPE M-350
3317000000-N	862	9	EA	GUARDRAIL ANCHOR UNITS, TYPE B-77
3360000000-E	863	151	LF	REMOVE EXISTING GUARDRAIL
3380000000-E	862	900	LF	TEMPORARY STEEL BM GUARDRAIL
3389100000-N	SP	2	EA	TEMPORARY GUARDRAIL ANCHOR UNITS, TYPE 350
3435000000-N	SP	67	EA	GENERIC GUARDRAIL ITEM EXTRA LENGTH GUARDRAIL POSTS (8' STEEL)
3536000000-E	866	32,040	LF	CHAIN LINK FENCE, 48" FABRIC
3542000000-E	866	2,681	EA	METAL LINE POSTS FOR 48" CHAIN LINK FENCE
3548000000-E	866	160	EA	METAL TERMINAL POSTS FOR 48" CHAIN LINK FENCE
3557000000-E	866	1,000	LF	ADDITIONAL BARBED WIRE
3564000000-E	866	1	EA	SINGLE GATES, **" HIGH, **' WIDE, **' OPENING (48", 12', 12')
3565000000-E	866	1	EA	DOUBLE GATES, **" HIGH, **' WIDE, **' OPENING (48", 12', 24')
3575000000-E	SP	4,740	LF	GENERIC FENCING ITEM DARK GREEN VINYL COATED CHAIN LINK FENCE, 48" FABRIC
3628000000-E	876	1,201	TON	RIP RAP, CLASS I
3635000000-E	876	99	TON	RIP RAP, CLASS II
3649000000-E	876	9	TON	RIP RAP, CLASS B
3656000000-E	876	12,022	SY	GEOTEXTILE FOR DRAINAGE
3659000000-N	SP	7	EA	PREFORMED SCOUR HOLES WITH LEVEL SPREADER APRON
4048000000-E	902	7	CY	REINFORCED CONCRETE SIGN FOUNDATIONS
4054000000-E	902	2	CY	PLAIN CONCRETE SIGN FOUNDATIONS
4057000000-E	SP	120	CY	OVERHEAD FOOTING
4060000000-E	903	7,750	LB	SUPPORTS, BREAKAWAY STEEL BEAM
4072000000-E	903	2,119	LF	SUPPORTS, 3-LB STEEL U-CHANNEL
4082100000-N	SP	Lump Sum		SUPPORTS, OVERHEAD SIGN STRUCTURE AT STA ****** (17+30 -Y4-)
4082100000-N	SP	Lump Sum		SUPPORTS, OVERHEAD SIGN STRUCTURE AT STA ****** (20+50 -RPA-)
4082100000-N	SP	Lump Sum		SUPPORTS, OVERHEAD SIGN STRUCTURE AT STA ****** (22+50 -RPC-)
4082100000-N	SP	Lump Sum		SUPPORTS, OVERHEAD SIGN STRUCTURE AT STA ****** (26+80 -Y4-)
4082100000-N	SP	Lump Sum		SUPPORTS, OVERHEAD SIGN STRUCTURE AT STA ****** (67+05 -L-)
4082100000-N	SP	Lump Sum		SUPPORTS, OVERHEAD SIGN STRUCTURE AT STA ****** (93-50 -L-)
4096000000-N	904	7	EA	SIGN ERECTION, TYPE D
4102000000-N	904	122	EA	SIGN ERECTION, TYPE E
4110000000-N	904	8	EA	SIGN ERECTION, TYPE *** (GROUND MOUNTED) (A)
4110000000-N	904	4	EA	SIGN ERECTION, TYPE *** (GROUND MOUNTED) (B)
4116100000-N	904	1	EA	SIGN ERECTION, RELOCATE, TYPE *** (GROUND MOUNTED) (E)
4155000000-N	907	69	EA	DISPOSAL OF SIGN SYSTEM, U-CHANNEL
4400000000-E	1110	612	SF	WORK ZONE SIGNS (STATIONARY)
4405000000-E	1110	564	SF	WORK ZONE SIGNS (PORTABLE)

PROJECT REFERENCE NO.	SHEET NO.
R-2246B	3(2 of 2)

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SUMMARY OF QUANTITIES

ItemNumber	Sec #	Quantity	Unit	Description
4410000000-E	1110	336	SF	WORK ZONE SIGNS (BARRICADE MOUNTED)
4415000000-N	1115	2	EA	FLASHING ARROW BOARD
4420000000-N	1120	2	EA	PORTABLE CHANGEABLE MESSAGE SIGN
4430000000-N	1130	736	EA	DRUMS
4435000000-N	1135	100	EA	CONES
4445000000-E	1145	520	LF	BARRICADES (TYPE III)
4455000000-N	1150	720	DAY	FLAGGER
4480000000-N	1165	2	EA	TMA
4650000000-N	1251	1,740	EA	TEMPORARY RAISED PAVEMENT MARKERS
4685000000-E	1205	95,977	LF	THERMOPLASTIC PAVEMENT MARKING LINES (4", 90 MILS)
4686000000-E	1205	46,521	LF	THERMOPLASTIC PAVEMENT MARKING LINES (4", 120 MILS)
4695000000-E	1205	14,810	LF	THERMOPLASTIC PAVEMENT MARKING LINES (8", 90 MILS)
4697000000-E	1205	313	LF	THERMOPLASTIC PAVEMENT MARKING LINES (8", 120 MILS)
4700000000-E	1205	1,870	LF	THERMOPLASTIC PAVEMENT MARKING LINES (12", 90 MILS)
4710000000-E	1205	1,560	LF	THERMOPLASTIC PAVEMENT MARKING LINES (24", 120 MILS)
4721000000-E	1205	16	EA	THERMOPLASTIC PAVEMENT MARKING CHARACTER (120 MILS)
4725000000-E	1205	177	EA	THERMOPLASTIC PAVEMENT MARKING SYMBOL (90 MILS)
4770000000-E	1205	1,357	LF	COLD APPLIED PLASTIC PAVEMENT MARKING LINES, TYPE ** (4") (II)
4810000000-E	1205	276,276	LF	PAINT PAVEMENT MARKING LINES (4")
4820000000-E	1205	1,558	LF	PAINT PAVEMENT MARKING LINES (8")
4835000000-E	1205	1,478	LF	PAINT PAVEMENT MARKING LINES (24")
4845000000-N	1205	354	EA	PAINT PAVEMENT MARKING SYMBOL
4850000000-E	1205	19,621	LF	REMOVAL OF PAVEMENT MARKING LINES (4")
4870000000-E	1205	112	LF	REMOVAL OF PAVEMENT MARKING LINES (24")
4875000000-N	1205	20	EA	REMOVAL OF PAVEMENT MARKING SYMBOLS & CHARACTERS
4900000000-N	1251	1,324	EA	PERMANENT RAISED PAVEMENT MARKERS
5010000000-E	1401	2	EA	100' HIGH MOUNT STANDARD
5020000000-N	1401	1	EA	PORTABLE DRIVE UNIT
5025000000-E	SP	14	CY	HIGH MOUNT FOUNDATIONS
5030000000-N	1403	12	EA	HIGH MOUNT LUMINAIRES ******** (750W HPS)
5120000000-N	1407	1	EA	ELECTRIC SERVICE POLE **** ******** (30' CLASS 4)
5125000000-E	1407	100	LF	ELECTRIC SERVICE LATERAL ********** (3 #1/0 USE)
5145000000-N	1408	1	EA	LIGHT CONTROL EQUIPMENT, TYPE RW ********** (240/480 VOLT)
5155000000-E	1409	385	LF	ELECTRICAL DUCT, TYPE BD, SIZE ***** (2")
5155000000-E	1409	35	LF	ELECTRICAL DUCT, TYPE BD, SIZE ***** (3")
5155000000-E	1409	125	LF	ELECTRICAL DUCT, TYPE BD, SIZE ***** (4")
5170000000-E	1410	410	LF	** #8 W/G FEEDER CIRCUIT (2)
5175000000-E	1410	410	LF	** #6 W/G FEEDER CIRCUIT (2)
5205000000-E	1410	1,015	LF	** #8 W/G FEEDER CIRCUIT IN *****" CONDUIT (2, 1.5")
5210000000-E	1410	555	LF	** #6 W/G FEEDER CIRCUIT IN *****" CONDUIT (2, 1.5")
5240000000-N	1411	6	EA	ELECTRICAL JUNCTION BOXES ********** (PC18)
5252000000-N	1412	6	EA	UNDERPASS LUMINARIES ********* (TYPE PM, 70W HPS)
5253000000-N	1412	Lump Sum		UNDERPASS CIRCUITRY AT ******** (UPL-1)
5325200000-E	1510	1,479	LF	2" WATER LINE
5325600000-E	1510	53	LF	6" WATER LINE
5325800000-E	1510	830	LF	8" WATER LINE
5326600000-E	1510	360	LF	16" WATER LINE
5327400000-E	1510	15,946	LF	24" WATER LINE
5540000000-E	1515	3	EA	6" VALVE
5546000000-E	1515	1	EA	8" VALVE
5558600000-E	1515	1	EA	16" VALVE
5559400000-E	1515	8	EA	24" VALVE
5571000000-E	1515	2	EA	**" TAPPING VALVE (2")
5571800000-E	1515	1	EA	8" TAPPING VALVE
5589600000-E	1515	4	EA	6" AIR RELEASE VALVE
5606000000-E	1515	2	EA	2" BLOW OFF
5648000000-N	1515	8	EA	RELOCATE WATER METER
5649000000-N	1515	8	EA	RECONNECT WATER METER
5666000000-E	1515	15	EA	FIRE HYDRANT
5672000000-N	1515	4	EA	RELOCATE FIRE HYDRANT
5691500000-E	1520	258	LF	12" SANITARY GRAVITY SEWER
5691900000-E	1520	282	LF	24" SANITARY GRAVITY SEWER
5768000000-N	1520	3	EA	SANITARY SEWER CLEAN-OUT
5775000000-E	1525	3	EA	4' DIA UTILITY MANHOLE
5776000000-E	1525	2	EA	5' DIA UTILITY MANHOLE
5800000000-E	1530	244	LF	ABANDON 6" UTILITY PIPE
5801000000-E	1530	5,996	LF	ABANDON 8" UTILITY PIPE
5815000000-N	1530	16	EA	REMOVE WATER METER
5815500000-N	1530	6	EA	REMOVE FIRE HYDRANT
5816000000-N	1530	6	EA	ABANDON UTILITY MANHOLE
5836000000-E	1540	194	LF	24" ENCASEMENT PIPE
5836400000-E	1540	431	LF	36" ENCASEMENT PIPE
5872400000-E	1550	101	LF	TRENCHLESS INSTALLATION OF 36" IN SOIL
5872410000-E	1550	101	LF	TRENCHLESS INSTALLATION OF 36" NOT IN SOIL
5882000000-N	SP	1	EA	GENERIC UTILITY ITEM ABANDON WATER VAULT
6000000000-E	1605	41,600	LF	TEMPORARY SILT FENCE
6006000000-E	1610	12,900	TON	STONE FOR EROSION CONTROL, CLASS A
6009000000-E	1610	21,400	TON	STONE FOR EROSION CONTROL, CLASS B
6012000000-E	1610	11,500	TON	SEDIMENT CONTROL STONE
6015000000-E	1615	193.5	ACR	TEMPORARY MULCHING
6018000000-E	1620	3,800	LB	SEED FOR TEMPORARY SEEDING
6021000000-E	1620	15.5	TON	FERTILIZER FOR TEMPORARY SEEDING
6024000000-E	1622	12,500	LF	TEMPORARY SLOPE DRAINS
6029000000-E	SP	2,500	LF	SAFETY FENCE
6030000000-E	1630	55,160	CY	SILT EXCAVATION
6036000000-E	1631	300,000	SY	MATTING FOR EROSION CONTROL
6037000000-E	SP	3,010	SY	COIR FIBER MAT
6038000000-E	SP	7,800	SY	PERMANENT SOIL REINFORCEMENT MAT
6042000000-E	1632	4,525	LF	1/4" HARDWARE CLOTH
6069000000-E	1638	450	CY	STILLING BASINS
6071010000-E	SP	700	LF	WATTLE
6071012000-E	SP	8,050	LF	COIR FIBER WATTLE
6071020000-E	SP	7,165	LB	POLYACRYLAMIDE (PAM)
6071030000-E	1640	14,800	LF	COIR FIBER BAFFLE
6071050000-E	SP	14	EA	**" SKIMMER (1-1/2")
6071050000-E	SP	4	EA	**" SKIMMER (2")
6084000000-E	1660	147	ACR	SEEDING & MULCHING
6087000000-E	1660	75	ACR	MOWING
6090000000-E	1661	1,950	LB	SEED FOR REPAIR SEEDING
6093000000-E	1661	7.25	TON	FERTILIZER FOR REPAIR SEEDING
6096000000-E	1662	3,550	LB	SEED FOR SUPPLEMENTAL SEEDING
6108000000-E	1665	106.25	TON	FERTILIZER TOPDRESSING
6111000000-E	SP	535	LF	IMPERVIOUS DIKE
6114500000-N	1667	50	MHR	SPECIALIZED HAND MOWING
6117000000-N	SP	150	EA	RESPONSE FOR EROSION CONTROL
6120000000-E	SP	380	CY	CULVERT DIVERSION CHANNEL
6123000000-E	1670	5	ACR	REFORESTATION
6126000000-E	SP	0.11	ACR	STREAMBANK REFORESTATION
7060000000-E	1705	5,510	LF	SIGNAL CABLE
7120000000-E	1705	28	EA	VEHICLE SIGNAL HEAD (12", 3 SECTION)
7132000000-E	1705	5	EA	VEHICLE SIGNAL HEAD (12", 4 SECTION)
7144000000-E	1705	5	EA	VEHICLE SIGNAL HEAD (12", 5 SECTION)
7252000000-E	1710	6,000	LF	MESSENGER CABLE (1/4")
7264000000-E	1710	635	LF	MESSENGER CABLE (3/8")
7279000000-E	1715	9,500	LF	TRACER WIRE
7288000000-E	1715	70	LF	PAVED TRENCHING (**********) (1, 2")
7300000000-E	1715	3,070	LF	UNPAVED TRENCHING (**********) (1, 2")
7300000000-E	1715	7,500	LF	UNPAVED TRENCHING (**********) (2, 2")
7301000000-E	1715	2,000	LF	DIRECTIONAL DRILL (**********) (2, 2")
7324000000-N	1716	33	EA	JUNCTION BOX (STANDARD SIZE)
7348000000-N	1716	27	EA	JUNCTION BOX (OVER-SIZED, HEAVY DUTY)
7360000000-N	1720	4	EA	WOOD POLE
7372000000-N	1721	17	EA	GUY ASSEMBLY
7408000000-E	1722	1	EA	1" RISER WITH WEATHERHEAD
7420000000-E	1722	4	EA	2" RISER WITH WEATHERHEAD
7432000000-E	1722	5	EA	2" RISER WITH HEAT SHRINK TUBING
7444000000-E	1725	4,730	LF	INDUCTIVE LOOP SAWCUT
7456000000-E	1726	12,685	LF	LEAD-IN CABLE (**********) (14-2)
7516000000-E	1730	500	LF	COMMUNICATIONS CABLE (**FIBER) (12)
7516000000-E	1730	20,000	LF	COMMUNICATIONS CABLE (**FIBER) (24)
7540000000-N	1731	3	EA	SPLICE ENCLOSURE
7552000000-N	1731	2	EA	INTERCONNECT CENTER
7566000000-N	1733	15	EA	DELINEATOR MARKER
7576000000-N	SP	4	EA	METAL STRAIN SIGNAL POLE
7613000000-N	SP	4	EA	SOIL TEST
7614100000-E	SP	60	CY	DRILLED PIER FOUNDATION
7636000000-N	1745	4	EA	SIGN FOR SIGNALS
7642200000-N	1743	3	EA	TYPE II PEDESTAL WITH FOUNDATION
7684000000-N	1750	2	EA	SIGNAL CABINET FOUNDATION
7756000000-N	1751	3	EA	CONTROLLER WITH CABINET (TYPE 2070L, BASE MOUNTED)
7780000000-N	1751	22	EA	DETECTOR CARD (TYPE 2070L)
7901000000-N	1753	3	EA	CABINET BASE EXTENDER
7948000000-N	1757	2	EA	TRAFFIC SIGNAL REMOVAL
7980000000-N	SP	2	EA	GENERIC SIGNAL ITEM ETHERNET EDGE SWITCH
8140000000-E	416	485	CY	CHANNEL EXCAVATION

COMPUTED BY:	KDA	DATE:	12/14/2012
CHECKED BY:	IY	DATE:	12/20/2012

RD266404

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
R-2246B	3-A

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

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

DRAINAGE 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
-LI-																			
11+52.87	LT																		
11+45.96	RT																		
11+81.95	RT																		
11+82.05	RT	405																	
12+56.84	RT																		
12+58.97	RT	406																	
13+49.22	RT	407																	
13+57.53	RT																		
13+62.75	LT																		
13+85.45	RT	408																	
13+89.22	RT																		
16+17.87	RT																		
19+55.77	RT																		
19+61.12	RT																		
19+68.88	RT	414																	
26+50.00	LT	505		593.57															
		505	506		590.57	586.00													
26+50.00	RT	506		589.00															
		506	507		586.00	583.06				92'									
27+50.00	RT	507		586.06															
		507	508		583.06	566.13				160'									
30+40.00	RT	512		582.95															
		512	511		578.37	566.37			84'										
		513	512		578.76	578.37													
31+19.00	RT	513		581.51															
35+50.00	LT	514		578.20															
		514	605		575.20	574.60				200'									
36+47.74	RT	515		575.50															
		515	516		567.50	567.00							88'						
39+48.92	RT																		
39+97.00	RT																		
37+40.93	LT	605		582.60															
		605	606		573.60	573.15													
37+50.00	RT	606		578.90															
		606	515		572.65	569.75							104'						
40+50.00	RT	607		590.00															
	RT	607	619		584.25	580.45							48'						
40+50.00	LT	608		592.27															
		608	607		589.27	585.75													
43+94.50	RT																		
44+06.77	LT																		
44+50.00	RT	609		602.90															
		609	607		585.82	584.25							400'						
45+78.69	RT																		
46+13.09	RT																		
44+50.00	LT	610		602.87															
44+72.08	RT																		
SHEET TOTALS									84'	452'			640'						

STATION	FROM	TO	C.S. PIPE 12" (.064)	C.S. 15" (.064)	C.S. 18" (.064)	C.S. 24" (.064)	C.S. 30" (.079)	C.S. 36" (.079)	C.S. 42" (.109)	C.S. 48" (.109)	R.C. PIPE CLASS III 12"	III 15"	III 18"	III 24"	III 30"	III 36"	III 42"	III 48"	R.C. PIPE CLASS IV 12"	IV 15"	IV 18"	IV 24"	IV 30"	IV 36"	IV 42"	IV 48"	** " R.C. PIPE (CLASS V)	*** " RC PIPE CULVERTS, CONTRACTOR DESIGN	15" SIDE DRAIN PIPE	18" SIDE DRAIN PIPE	24" SIDE DRAIN PIPE
-LI-																															
11+52.87																															
11+45.96																															
11+81.95																															
11+82.05	405																														32'
12+56.84																															
12+58.97	406																														32'
13+49.22	407																														32'
13+57.53																															
13+62.75																															
13+85.45	408																														32'
13+89.22																															
16+17.87																															
19+55.77																															
19+61.12																															
19+68.88	414																														56'
26+50.00	505																														
	505	506																			140'										
26+50.00	506																														
	506	507																													
27+50.00	507																														
	507	508																													
30+40.00	512																														
	512	511																													
	513	512																		76'											
31+19.00	513																														
35+50.00	514																														
	514	605																													
36+47.74	515																														
	515	516																													
39+48.92																															
39+97.00																															
37+40.93	605																														
	605	606												148'																	
37+50.00	606																														
	606	515																													
40+50.00	607																														
	607	619																													
40+50.00	608																														
	608	607									148'																				
43+94.50																															
44+06.77																															
44+50.00	609																														
	609	607																													
45+78.69																															
46+13.09																															
44+50.00	610																														
44+72.08																															
SHEET TOTALS											148'			148'					76'	140'											184'

ENDWALLS: STD. 838.01, 838.11 OR STD. 838.80 (UNLESS NOTED OTHERWISE), CU. YARDS. QUANTITIES FOR DRAINAGE STRUCTURES: *TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL.'B'). FRAME, GRATES, AND HOOD STANDARD 840.03. CONCRETE TRANSITIONAL SECTION (EACH).

STATION	FROM	TO	ENDWALLS R.C.P.	ENDWALLS C.S.P.	PER EACH (0' THRU 5.0')	LIN. FT. A: 5.0' THRU 10.0'	LIN. FT. B: 10.0' AND ABOVE	C.B. STD. 840.01 OR STD. 840.02	TYPE OF GRATE E	F	G	DROP INLET	CATCH BASIN	OPEN THROAT CATCH BASIN STD. 840.04 OR 840.05	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND TWO GRATES STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR 840.26	G.D.I. TYPE "B" STD. 840.18 OR 840.27	G.D.I. TYPE "D" STD. 840.19 OR 840.28	G.D.I. FRAME WITH TWO GRATE STD. 840.20	G.D.I. FRAME WITH TWO GRATES STD. 840.22	J.B. STD. 840.31 OR 840.32	M.H. FRAME AND COVER STD. 840.54	T.B.J.B. STD. 840.34	ADJUST EXIST. DI	G.D.I. FRAME WITH TWO GRATES STD. 840.29	SPECIAL D.I. (DETAIL SHEET 2-Q)	SPECIAL 2-G.I. (DETAIL SHEET 2-R)	MODIFIED CONCRETE FLUME (SEE DETAIL 2-S)	DRAINAGE PIPE ELBOWS NO. & SIZE	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	CONC. COLLARS CL. 'B' C.Y. STD. 840.72	PIPE REMOVAL LIN. FT.	REMARKS
-LI-																																		
11+52.87																																	18'	REMOVE EXIST. 15" CMP
11+45.96																																	21'	REMOVE EXIST. 12" CMP
11+81.95																																	25'	REMOVE EXIST. 15" CMP
11+82.05	405																																	
12+56.84																																	17'	REMOVE EXIST. 18" RCP
12+58.97	406																																	
13+49.22	407																																	
13+57.53																																	17'	REMOVE EXIST. 15" RCP
13+62.75																																	53'	REMOVE EXIST. 18" RCP
13+85.45	408																																	
13+89.22																																	20'	REMOVE EXIST. 15" RCP
16+17.87																																	16'	REMOVE EXIST. 15" RCP
19+55.77																																	20'	REMOVE EXIST. 15" RCP
19+61.12																																	49'	REMOVE EXIST. 12" RCP
19+68.88	414																																	
26+50.00	505				1													1			1													
	505	506																																
26+50.00	506				1													1			1													
	506	507																																
27+50.00	507				1													1			1													
	507	508																												2 @ 18"				
30+40.00	512				1													1		1														
	512	511																												2 @ 15"				
	513	512																																
31+19.00	513				1													1		1														
35+50.00	514				1													1			1													
	514	605																																
36+47.74	515				1	3											1				1													
	515	516																																
39+48.92																																	128'	REMOVE EXIST. 24" RCP
39+97.00																																	108'	REMOVE 2 - 72" PIPES
37+40.93	605				1	4								1																				
	605	606																																
37+50.00	606				1	1.3											1				1													
	606	515																																
40+50.00	607				1	0.8											1				1													
	607	619																																
40+50.00	608				1													1			1													
	608	607																																
43+94.50																																	20'	REMOVE EXIST. 15" CONC
44+06.77																																	19'	REMOVE EXITS. 12" MTL
44+50.00	609				1	5	7.1														1							1						DEPTH GREATER THAN 12'
	609	607																																
45+78.69																																	18'	REMOVE EXIST. 12" CONC
46+13.09																																	20'	REMOVE EXIST. 18" PLASTIC
44+50.00	610				1													1			1													
44+72.08																																	19'	REMOVE EXIST. 15" CONC
																														2 @ 15"				
SHEET TOTALS					13	14.1	7.1							1			3	8		2	10							1		2 @ 18"			588'	

ABBREVIATIONS

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

COMPUTED BY:	KDA	DATE:	12/14/2012
CHECKED BY:	IY	DATE:	12/20/2012

PROJECT NO.	SHEET NO.
R-2246B	3-B

RD266404

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

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

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

STATION (SIZE / THICKNESS OR GAUGE)	LOCATION (LT, RT, OR CL)	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	DRAINAGE PIPE (RCP, CSP, CAAP, HDPE, or PVC) 12"	15"	18"	24"	30"	36"	42"	48"	DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE	C.S. PIPE 12" .064	15" .064	18" .064	24" .064	30" .079	36" .079	42" .109	48" .109
		610	609		599.87	598.65																					
47+50.00	RT	611		600.88																							
		611	609		588.36	586.32						304'															
49+50.00	RT	612		597.93																							
		612	611		589.55	588.36						200'															
49+50.00	RT	613		608.37																							
		613	708		605.62	604.43																					
47+98.56	LT	614																									
49+96.77	LT	615																									
40+00.00	RT	619		586.20																							
		619	606		580.45	572.65							240'														
47+04.09	RT	620																									
-DRV4- 11+67.19	CL	621																									
48+19.27	RT																										
49+21.46	RT																										
49+44.83	LT																										
49+96.46	LT																										
52+00.00	RT	708		607.18																							
		708	709		599.97	591.55																					
52+00.00	RT	709		596.30																							
		709	612		591.05	589.55						252'															
51+27.18	LT																										
51+43.59	RT																										
51+26.05	LT	704																									
		705	706		604.20	602.00			48'																		
52+74.65	LT	706		604.80																							
		706	707		602.00	600.91			76'																		
52+00.00	LT	707		605.02																							
		707	708		600.91	600.47																					
52+20.85	RT																										
52+52.55	LT																										
52+97.90	LT																										
53+50.42	RT																										
-L-																											
23+03.15	LT	712																									
23+05.89	LT																										
24+50.00	LT	711		608.35																							
		711	710		605.60	595.31																					
24+50.00	RT	710		598.06																							
		710	709		595.31	592.05			384'																		
24+62.25	LT	713																									
26+00.00	RT	714		611.09																							
		714	711		607.90	605.60																					
28+12.00	LT	716		610.48																							
		716	717		606.54	606.19																					
31+06.86	RT																										
31+47.18	LT																										
31+53.82	RT	719		605.07																							
		720	719		600.79	600.33																					
SHEET TOTALS									508'			756'	240'														

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 12"	15"	18"	24"	30"	36"	42"	48"	** " R.C. PIPE (CLASS V)	*** " RC PIPE CULVERTS, CONTRACTOR DESIGN	15" SIDE DRAIN PIPE	18" SIDE DRAIN PIPE	24" SIDE DRAIN PIPE	ENDWALLS STD. 838.01, 838.11 OR STD. 838.80 (UNLESS NOTED OTHERWISE) CU. YARDS R.C.P.	C.S.P.	QUANTITIES FOR DRAINAGE STRUCTURES PER EACH (0' THRU 5.0')	*TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL.'B') LIN. FT. A 5.0' THRU 10.0'	B 10.0' AND ABOVE
	610	609			140'																							
47+50.00	611																									1	5	2.5
	611	609																										
49+50.00	612																									1	3.4	
	612	611																										
49+50.00	613																									1		
	613	708										252'																
47+98.56	614																				32'							
49+96.77	615																				24'							
40+00.00	619																									1	0.8	
	619	606																										
47+04.09	620												48'															
-DRV4- 11+67.19	621												48'															
48+19.27																												
49+21.46																												
49+44.83																												
49+96.46																												
52+00.00	708																									1	2.2	
	708	709				92'																						
52+00.00	709																									1	0.3	
	709	612																										
51+27.18																												
51+43.59																												
51+26.05	704																				32'							
	705	706																										
52+74.65	706																									1		
	706	707																										
52+00.00	707																									1		
	707	708			88'																							
52+20.85																												
52+52.55																												
52+97.90																												
53+50.42																												
-L-																												
23+03.15	712																				28'							
23+05.89																												
24+50.00	711																									1		
	711	710		108'																								
24+50.00	710																									1		
	710	709																										
24+62.25	713																				28'							
26+00.00	714																									1		
	714	711										152'																
28+12.00	716																									1		
	716	717										68'																
31+06.86																												
31+47.18																												
31+53.82	719																									1	0.2	
	720	719												100'														
SHEET TOTALS				108'	228'	92'						472'	96'	100'							144'					13	11.9	2.5

STATION	STRUCTURE NO. FROM	STRUCTURE NO. TO	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STANDARD 840.03 TYPE OF GRATE E	F	G	CONCRETE TRANSITIONAL SECTION (EACH) DROP INLET	CATCH BASIN	OPEN THROAT CATCH BASIN STD. 840.04 OR 840.05	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND TWO GRATES STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR 840.26	G.D.I. TYPE "B" STD. 840.18 OR 840.27	G.D.I. TYPE "D" STD. 840.19 OR 840.28	G.D.I. FRAME WITH TWO GRATE STD. 840.20	G.D.I. FRAME WITH TWO GRATES STD. 840.22	J.B. STD. 840.31 OR 840.32	M.H. FRAME AND COVER STD. 840.54	T.B.J.B. STD. 840.34	ADJUST EXIST. DI	G.D.I. FRAME WITH TWO GRATES STD. 840.29	SPECIAL D.I. (DETAIL SHEET 2-Q)	SPECIAL 2-G.I. (DETAIL SHEET 2-R)	MODIFIED CONCRETE FLUME (SEE DETAIL 2-S)	DRAINAGE PIPE ELBOWS NO. & SIZE	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	CONC. COLLARS CL. 'B' C.Y. STD. 840.72	PIPE REMOVAL LIN. FT.	REMARKS
	610	609																											
47+50.00	611															1							1						DEPTH GREATER THAN 12'
	611	609																											
49+50.00	612											1				1													
	612	611																											
49+50.00	613												1			1													
	613	708																											
47+98.56	614																												
49+96.77	615																												
40+00.00	619											1				1													
	619	606																											
47+04.09	620																												TEMPORARY 18" DRIVEWAY PIPE
-DRV4- 11+67.19	621																												
48+19.27																												21'	REMOVE EXIST. 12" CONC
49+21.46																												21'	REMOVE EXIST. 12" CONC
49+44.83																												24'	REMOVE EXIST. 12" CONC
49+96.46																												20'	REMOVE EXIST. 12" CONC
52+00.00	708												1			1													
	708	709																											
52+00.00	709											1				1													
	709	612																											
51+27.18																												20'	REMOVE EXIST. 12" CONC
51+43.59																												20"	REMOVE EXIST. 15" CONC
51+26.05	704																												
	705	706																											
52+74.65	706												1			1													
	706	707																											
52+00.00	707												1			1													
	707	708																											
52+20.85																												29'	REMOVE EXIST. 15" CONC
52+52.55																												20'	REMOVE EXIST. 12" CONC
52+97.90																												20'	REMOVE EXIST. 12" CONC
53+50.42																												33'	REMOVE EXIST. 12" CONC
-L-																													
23+03.15	712																												
23+05.89																												20'	REMOVE EXIST. 12" CONC
24+50.00	711												1			1													
	711	710																											
24+50.00	710												1			1													
	710	709																											
24+62.25	713																												
26+00.00	714							1			1	1																	
	714	711																											
28+12.00	716							1			1	1																	
	716	717																											
31+06.86																												36'	REMOVE EXIST. 15" RCP
31+47.18																												20'	REMOVE EXIST. 15" RCP
31+53.82	719												1			1													
	720	719																											
SHEET TOTALS							2			2	2	3	7			11							1					304'	

ABBREVIATIONS

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

RD266404

COMPUTED BY:	KDA	DATE:	12/14/2012
CHECKED BY:	IY	DATE:	12/20/2012

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
R-2246B	3-C

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

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

STATION / SIZE / THICKNESS OR GAUGE	LOCATION (LT, RT, OR CL)	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	DRAINAGE PIPE (RCP, CSP, CAAP, HDPE, or PVC) 12"	15"	18"	24"	30"	36"	42"	48"	DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE	C.S. PIPE 12" .064	15" .064	18" .064	24" .064	30" .079	36" .079	42" .109	48" .109	R.C. PIPE CLASS III 12"	15"	18"	24"	30"	36"	42"	48"	R.C. PIPE CLASS IV 12"	15"	18"	24"	30"	36"	42"	48"
		719	721		599.83	599.35																																		80'			
32+30.36	RT																																										
32+50.00	RT	722		605.12																																							
		722	719		602.37	601.62	X																													96'						
34+06.42	LT																																										
-Y3DET2- 11+04.11	CL	730																																					32'				
34+50.00	LT	806		606.85																																							
		806	722		604.10	602.37																														200'						
35+73.19	LT	807																																								
36+16.64	LT																																										
36+20.77	LT	808																																								
37+00.00	LT	809		614.77																																							
		809	806		612.02	604.10																														252'						
37+78.22	LT	810							32'																																		
37+79.06	LT																																										
38+69.73	LT																																										
40+00.00	LT	813		624.91																																							
		813	809		622.16	612.02																														300'						
40+49.00	LT																																										
40+97.00	LT																																										
40+90.00	RT	814		629.48																																							
		814	813		626.16	622.16																														96'						
42+37.50	LT	815		634.00																																							
		815	814		630.70	626.16																														152'						
43+50.00	RT	816		635.47																																							
		816	815		632.72	630.70																														116'						
43+00.00	RT	818		631.60																																							
		818	817		625.12	624.27																															172'					
51+50.00	LT	905		639.01																																							
		905	906		636.26	634.19																														68'						
51+50.00	CL	906		636.94																																							
		906	907		634.19	633.45																														68'						
51+50.00	RT	907		640.45																																							
54+50.00	LT																																										
		907	908		633.45	618.96			48'																																		
51+86.00	CL	909	910		622.19	619.64																															224'					
53+75.00	LT	912		637.01																																							
		912	911		634.26	627.69			44'																																		
58+50.00	RT	914		630.80																																							
		914	1000		628.05	624.97																														352'						
59+09.47	LT																																										
62+00.00	CL	1000		627.72																																							
		1000	1001		624.72	622.21																															108'					
62+49.57	LT	1061							92'																																		
65+50.00	CL	1003		624.74																																							
		1003	1004		621.99	621.48																														88'						
66+40.07	CL	1004		624.56																																							
		1005	1004		621.60	620.86																															108'					
SHEET TOTALS										216'																												1788'	612'	32'	80'			

STATION	STRUCTURE NO. FROM	STRUCTURE NO. TO	** " R.C. PIPE (CLASS V)	***" RC PIPE CULVERTS, CONTRACTOR DESIGN	15" SIDE DRAIN PIPE	18" SIDE DRAIN PIPE	24" SIDE DRAIN PIPE	ENDWALLS STD. 838.01 838.11 OR STD. 838.80 (UNLESS NOTED OTHERWISE) CU. YARDS R.C.P.	C.S.P.	QUANTITIES FOR DRAINAGE STRUCTURES PER EACH (0' THRU 5.0')	*TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL.'B') LIN. FT. A 5.0' THRU 10.0'	B 10.0' AND ABOVE	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STANDARD 840.03 TYPE OF GRATE E	F	G	CONCRETE TRANSITIONAL SECTION (EACH) DROP INLET	CATCH BASIN	OPEN THROAT CATCH BASIN STD. 840.04 OR 840.05	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND TWO GRATES STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR 840.26	G.D.I. TYPE "B" STD. 840.18 OR 840.27	G.D.I. TYPE "D" STD. 840.19 OR 840.28	G.D.I. FRAME WITH TWO GRATE STD. 840.20	G.D.I. FRAME WITH TWO GRATES STD. 840.22	J.B. STD. 840.31 OR 840.32	M.H. FRAME AND COVER STD. 840.54	T.B.J.B. STD. 840.34	ADJUST EXIST. DI	G.D.I. FRAME WITH TWO GRATES STD. 840.29	SPECIAL D.I. (DETAIL SHEET 2-Q)	SPECIAL 2-G.I. (DETAIL SHEET 2-R)	MODIFIED CONCRETE FLUME (SEE DETAIL 2-S)	DRAINAGE PIPE ELBOWS NO. & SIZE	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	CONC. COLLARS CL. 'B' C.Y. STD. 840.72	PIPE REMOVAL LIN. FT.	REMARKS
	719	721																																					
32+30.36																																					34'	REMOVE EXIST. 12" CONC
32+50.00	722								1													1			1													
	722	719																																					
34+06.42																																					20'	REMOVE EXIST. 12" CONC
-Y3DET2- 11+04.11	730																																					TEMPORARY 24" DRIVEWAY PIPE
34+50.00	806								1													1			1													
	806	722																																					
35+73.19	807					32'																																20'	REMOVE EXIST. 15" CONC
36+16.64																																					20'	REMOVE EXIST. 15" CONC
36+20.77	808					32'																																18'	REMOVE EXIST. 15" CONC
37+00.00	809								1													1			1													
	809	806																																					
37+78.22	810																																					
37+79.06																																					15'	REMOVE EXIST. 12" CONC
38+69.73																																					24'	REMOVE EXIST. 12" CONC
40+00.00	813								1													1			1													
	813	809																																					
40+49.00																																					24'	REMOVE EXIST. 12" CONC
40+97.00																																					16'	REMOVE EXIST. 15" CONC
40+90.00	814								1							1			1	1																		
	814	813																																					
42+37.50	815								1							1			1	1																		
	815	814																																					
43+50.00	816								1													1			1													
	816	815																																					
43+00.00	818								1	1.5												1			1													
	818	817																																					
51+50.00	905								1													1		1														
	905	906																																					
51+50.00	906								1													1			1													
	906	907																																					
51+50.00	907								1	2												1		1														
54+50.00																																					20'	REMOVE EXIST. 12" CONC.
	907	908																																	2 @ 15"				
51+86.00	909	910																																			38'	REMOVE EXIST. 15" CONC.
53+75.00	912								1													1		1														
	912	911																																	2 @ 15"				
58+50.00	914								1													1			1													
	914	1000																																					
59+09.47																																					23'	REMOVE EXIST. 8" HDPE
62+00.00	1000								1													1			1													
	1000	1001																																					
62+49.57	1061																																				21'	REMOVE EXIST. 12" CONC.
65+50.00	1003								1													1			1													
	1003	1004																																					
66+40.07	1004								1													1			1													
	1005	1004																																					
SHEET TOTALS						64'				16	3.5						2			2	2		14		3	11									4 @ 15"			293'	

ABBREVIATIONS

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

COMPUTED BY: KDA DATE: 12/14/2012

CHECKED BY: IY DATE: 12/20/2012

RD266404

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
R-2246B	3-D

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

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

STATION	LOCATION (LT, RT, OR CL)	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL
		1004	1006		620.86	620.26	X
68+50.00	CL	1007		626.52			
		1007	1008		623.52	622.00	
72+50.00	CL	1011		637.70			
		1011	1007		634.70	623.52	
72+50.00	LT	1012		640.18			
		1012	1011		637.43	634.95	
73+00.00	LT	1013		641.76			
		1013	1012		639.00	637.43	
76+50.00	CL	1014		651.06			
		1014	1015		648.31	648.00	
76+50.00	LT	1015		652.20			
		1015	1016		648.00	631.23	
82+22.41	RT	1020A					
82+50.00	LT	1020		653.80			
		1020	1021		649.40	642.10	
85+50.00	LT	1021		645.60			
		1021	1023		642.10	635.10	
87+50.00	LT	1023		638.00			
		1023	1105		635.10	632.20	
88+19.00	LT	1105		635.20			
		1105	1106		630.20	626.40	
89+00.00	LT	1106		629.40			
86+00.00	CL	1022		642.00			
		1022	1109		638.80	616.70	
91+50.00	CL	1109		619.50			
91+50.00	RT	1110		622.40			
		1110	1109		619.60	616.70	
		1109	1112		616.50	602.70	
95+00.00	CL	1112		605.70			
		1112	1117		602.70	593.90	
97+50.00	CL	1117		598.20			
		1117	1124		588.20	587.00	
91+50.00	RT	1111		622.00			
93+00.00	RT	1127		615.20			
		1111	1127		618.10	611.70	
94+50.00	RT	1115		609.20			
		1127	1115		611.70	605.90	
96+00.00	RT	1116		604.00			
		1115	1116		605.90	600.80	
		1116	1128		592.00	591.80	
97+50.00	RT	1118		598.69			
		1116	1118		592.30	592.90	
98+35.00	RT	1119		596.00			
		1118	1119		592.90	593.20	
		1120	1125		588.50	587.00	
99+00	CL	1120		595.90			
		1121	1120		588.90	588.50	
100+29.25	CL	1121		595.30			
SHEET TOTALS							

(STATION / SIZE / THICKNESS OR GAUGE)

FROM	TO	DRAINAGE PIPE (RCP, CSP, CAAP, HDPE, or PVC) 12"	15"	18"	24"	30"	36"	42"	48"	DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE	C.S. PIPE 12" .064	15" .064	18" .064	24" .064	30" .079	36" .079	42" .109	48" .109	R.C. PIPE CLASS III 12"	15"	18"	24"	30"	36"	42"	48"	R.C. PIPE CLASS IV 12"	15"	18"	24"	30"	36"	42"	48"
1004	1006																															116'					
1007	1008																															128'					
1011	1007																															400'					
1012	1011																														56'						
1013	1012																														48'						
1014	1015																														56'						
1015	1016			48'																																	
1020	1021																														300'						
1021	1023																														200'						
1023	1105																														68'						
1105	1106																															84'					
1022	1109																														552'						
1110	1109																														60'						
1109	1112																															352'					
1112	1117																															252'					
1117	1124																																76'				
1111	1127																														152'						
1127	1115																														152'						
1115	1116																														152'						
1116	1128			40'																																	
1116	1118																														148'						
1118	1119																														80'						
1120	1125																																	48'			
1121	1120																																	128'			
SHEET TOTALS				88'																											2024'	1332'	76'	176'			

FROM	TO	** " R.C. PIPE (CLASS V)	***" RC PIPE CULVERTS, CONTRACTOR DESIGN	15" SIDE DRAIN PIPE	18" SIDE DRAIN PIPE	24" SIDE DRAIN PIPE	ENDWALLS STD. 838.01 838.11 OR STD. 838.80 (UNLESS NOTED OTHERWISE) CU. YARDS R.C.P.	C.S.P.	QUANTITIES FOR DRAINAGE STRUCTURES PER EACH (0' THRU 5.0')	*TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL.'B') LIN. FT. A 5.0' THRU 10.0'	B 10.0' AND ABOVE	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STANDARD 840.03 TYPE OF GRATE E	F	G	CONCRETE TRANSITIONAL SECTION (EACH) DROP INLET	CATCH BASIN	OPEN THROAT CATCH BASIN STD. 840.04 OR 840.05	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND TWO GRATES STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR 840.26	G.D.I. TYPE "B" STD. 840.18 OR 840.27	G.D.I. TYPE "D" STD. 840.19 OR 840.28	G.D.I. FRAME WITH TWO GRATE STD. 840.20	G.D.I. FRAME WITH TWO GRATES STD. 840.22	J.B. STD. 840.31 OR 840.32	M.H. FRAME AND COVER STD. 840.54	T.B.J.B. STD. 840.34	ADJUST EXIST. DI	G.D.I. FRAME WITH TWO GRATES STD. 840.29	SPECIAL D.I. (DETAIL SHEET 2-Q)	SPECIAL 2-G.I. (DETAIL SHEET 2-R)	MODIFIED CONCRETE FLUME (SEE DETAIL 2-S)	DRAINAGE PIPE ELBOWS NO. & SIZE	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	CONC. COLLARS CL. 'B' C.Y. STD. 840.72	PIPE REMOVAL LIN. FT.	REMARKS
1007									1													1			1													
1011									1													1			1													
1012									1													1		1														
1013									1													1		1														
1014									1													1			1													
1015									1													1		1														
1015	1016																																	2 @ 18"				
1020A																																	1					
1020									1													1		1														
1021									1													1		1														
1023									1													1		1														
1105									1													1		1														
1106									1													1			1													
1022									1													1			1													
1109									1													1			1													
1110									1													1			1													
1112									1													1			1													
1117									1	5											1				1													
1111									1													1		1														
1127									1													1		1														
1115									1													1		1														
1116									1	5	2													1								1						DEPTH GREATER THAN 12'
1118									1	0.8												1		1														
1119									1													1		1														
1120									1	2.4											1				1													
1121									1	1.4											1				1													
SHEET TOTALS									24	14.6	2										3	20		13	11							1	1	2 @ 18"				

ABBREVIATIONS

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

RD266404

COMPUTED BY:	KDA	DATE:	12/14/2012
CHECKED BY:	IY	DATE:	12/20/2012

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
R-2246B	3-E

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

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

STATION / SIZE / THICKNESS OR GAUGE	LOCATION (LT, RT, OR CL)	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	DRAINAGE PIPE (RCP, CSP, CAAP, HDPE, or PVC) 12"	15"	18"	24"	30"	36"	42"	48"	DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE	C.S. PIPE 12" .064	15" .064	18" .064	24" .064	30" .079	36" .079	42" .109	48" .109	R.C. PIPE CLASS III 12"	15"	18"	24"	30"	36"	42"	48"	R.C. PIPE CLASS IV 12"	15"	18"	24"	30"	36"	42"	48"	** " R.C. PIPE (CLASS V)	***" RC PIPE CULVERTS, CONTRACTOR DESIGN	15" SIDE DRAIN PIPE	18" SIDE DRAIN PIPE	24" SIDE DRAIN PIPE	ENDWALLS STD. 838.01 838.11 OR STD. 838.80 (UNLESS NOTED OTHERWISE) CU. YARDS R.C.P.	C.S.P.	QUANTITIES FOR DRAINAGE STRUCTURES PER EACH (0' THRU 5.0')	*TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL.'B') LIN. FT. A 5.0' THRU 10.0'	B 10.0' AND ABOVE
100+29.25	RT	1122		592.20																																																1		
		1122	1121		589.20	588.90																																88'																	
		1201	1121		590.50	588.90																																		116'															
101+50.00	CL	1201		595.80																																																1	0.3	
		1202	1201		594.30	590.50																																	296'																
104+50.00	CL	1202		600.50																																																1	1.2	
104+50.00	RT	1203		597.60																																																1		
		1203	1202		594.60	594.30																																84'																	
		1204	1202		601.60	594.30																																296'																	
107+50.00	RT	1204		606.10																																																1		
		1205	1204		601.90	601.60																																84'																	
107+50.00	RT	1205		604.90																																																1		
110+50.00	CL	1206		611.60																																																1	2.3	
		1206	1207		604.30	603.90																																			120'														
110+60.00	RT	1214		613.70																																																1		
		1214	1208		610.90	610.80																															12'																		
110+50.00	RT	1208		613.60																																																1	4.1	
110+50.00	RT	1209		607.20																																																1		
		1209	1208		604.60	604.50																																24'																	
		1208	1206		604.50	604.30																																	68'																
109+92.90	LT																																																						
113+62.00	CL	1210		617.10																																																1	1.1	
		1210	1206		611.00	604.30																																		312'															
113+62.00	RT	1211		618.90																																																1	2.4	
		1211	1210		611.50	611.00																																68'																	
113+59.31	RT	1212		614.60																																																1		
		1212	1211		611.60	611.50																																20'																	
113+58.43	RT	1213																																																					
		1213	1212		612.30	611.60																																8'																	
117+00.00	CL	1305		623.10																																																1	2.3	
		1305	1210		615.80	611.00																																	340'																
117+00.00	RT	1306		625.00																																																1	3.9	
		1306	1305		616.10	615.80																																64'																	
116+99.68	RT	1307		619.20																																																1		
		1307	1306		616.20	616.10																																28'																	
116+99.26	RT	1321		616.50																																																			
		1321	1307		616.50	616.20																																16'																	
120+37.00	CL	1308		628.30																																																1	2.6	
		1308	1305		620.70	615.80																																	340'																
		1309	1308		620.90	620.70																																56'																	
120+37.00	RT	1309		630.30																																																1	4.4	
120+37.21	RT	1310		624.50																																																1		
		1310	1309		621.00	620.90																																20'																	
122+45.61	RT	1319		628.89																																																1	1.8	
		1319	1320		622.14	620.90																																					164'												
122+51.75	RT	1317	1319		624.18	623.14																																			20'							3.4				
122+89.40	RT	1318	1319		623.28	622.14																																					48'					6				
123+50.00	CL	1312		632.00																																																1	1.6	
		1312	1313		625.41	623.70																															88'																		
SHEET TOTALS																																					100'	856'	1044'	428'	140'		212'						9.4		21	28	

STATION	STRUCTURE NO. FROM	STRUCTURE NO. TO	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STANDARD 840.03 TYPE OF GRATE E	F	G	CONCRETE TRANSITIONAL SECTION (EACH) DROP INLET	CATCH BASIN	OPEN THROAT CATCH BASIN STD. 840.04 OR 840.05	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND TWO GRATES STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR 840.26	G.D.I. TYPE "B" STD. 840.18 OR 840.27	G.D.I. TYPE "D" STD. 840.19 OR 840.28	G.D.I. FRAME WITH TWO GRATE STD. 840.20	G.D.I. FRAME WITH TWO GRATES STD. 840.22	J.B. STD. 840.31 OR 840.32	M.H. FRAME AND COVER STD. 840.54	T.B.J.B. STD. 840.34	ADJUST EXIST. DI	G.D.I. FRAME WITH TWO GRATES STD. 840.29	SPECIAL D.I. (DETAIL SHEET 2-Q)	SPECIAL 2-G.I. (DETAIL SHEET 2-R)	MODIFIED CONCRETE FLUME (SEE DETAIL 2-S)	DRAINAGE PIPE ELBOWS NO. & SIZE	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	CONC. COLLARS CL. 'B' C.Y. STD. 840.72	PIPE REMOVAL LIN. FT.	REMARKS
100+29.25	1122												1				1													
	1122	1121																												
	1201	1121																												
101+50.00	1201											1					1													
	1202	1201																												
104+50.00	1202											1					1													
104+50.00	1203												1				1													
	1203	1202																												
	1204	1202																												
107+50.00	1204												1				1													
	1205	1204																												
107+50.00	1205												1				1													
110+50.00	1206											1					1													
	1206	1207																												
110+60.00	1214												1			1														
	1214	1208																												
110+50.00	1208												1			1														
110+50.00	1209													1			1													
	1209	1208																												
	1208	1206																												
109+92.90																												29'	REMOVE EXIST. 15" HDPE
113+62.00	1210											1					1													
	1210	1206																												
113+62.00	1211												1			1														
	1211	1210																												
113+59.31	1212												1				1													
	1212	1211																												
113+58.43	1213																										0.4465		COLLAR AND EXTEND EXIST. 18" PIPE
	1213	1212																												
117+00.00	1305											1					1													
	1305	1210																												
117+00.00	1306												1			1														
	1306	1305																												
116+99.68	1307												1				1													
	1307	1306																												
116+99.26	1321																										0.4465		COLLAR AND EXTEND EXIST. 18" PIPE
	1321	1307																												
120+37.00	1308											1					1													
	1308	1305																												
	1309	1308																												
120+37.00	1309												1			1														
120+37.21	1310												1				1													
	1310	1309																												
122+45.61	1319											1				1														
	1319	1320																												
122+51.75	1317	1319																											HEADWALL
122+89.40	1318	1319																											HEADWALL
123+50.00	1312												1				1													
	1312	1313																												
SHEET TOTALS												7	13	1	6	15											0.893	29'	

ABBREVIATIONS

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

COMPUTED BY:	KDA	DATE:	12/14/2012
CHECKED BY:	IY	DATE:	12/20/2012

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
R-2246B	3-F

RD26404

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

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

STATION	LOCATION (LT, RT, OR CL)	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	DRAINAGE PIPE (RCP, CSP, CAAP, HDPE, or PVC) SIZE	DRAINAGE PIPE THICKNESS OR GAUGE	C.S. PIPE SIZE	C.S. PIPE THICKNESS OR GAUGE	R.C. PIPE CLASS III SIZE	R.C. PIPE CLASS IV SIZE	** R.C. PIPE (CLASS V)	**** RC PIPE CULVERTS, CONTRACTOR DESIGN	15" SIDE DRAIN PIPE	18" SIDE DRAIN PIPE	24" SIDE DRAIN PIPE	ENDWALLS STD. 838.01 838.11 OR STD. 838.80 (UNLESS NOTED OTHERWISE) CU. YARDS R.C.P.	ENDWALLS CU. YARDS C.S.P.	QUANTITIES FOR DRAINAGE STRUCTURES PER EACH (0' THRU 5.0')	LIN. FT. 5.0' THRU 10.0' A	LIN. FT. 10.0' AND ABOVE B	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STANDARD 840.03 TYPE OF GRATE E	F	G	CONCRETE TRANSITIONAL SECTION (EACH) DROP INLET	CATCH BASIN	OPEN THROAT CATCH BASIN STD. 840.04 OR 840.05	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND TWO GRATES STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR 840.26	G.D.I. TYPE "B" STD. 840.18 OR 840.27	G.D.I. TYPE "D" STD. 840.19 OR 840.28	G.D.I. FRAME WITH TWO GRATE STD. 840.20	G.D.I. FRAME WITH TWO GRATES STD. 840.22	J.B. STD. 840.31 OR 840.32	M.H. FRAME AND COVER STD. 840.54	T.B.J.B. STD. 840.34	ADJUST EXIST. DI	G.D.I. FRAME WITH TWO GRATES STD. 840.29	SPECIAL D.I. (DETAIL SHEET 2-Q)	SPECIAL 2-G.I. (DETAIL SHEET 2-R)	MODIFIED CONCRETE FLUME (SEE DETAIL 2-S)	DRAINAGE PIPE ELBOWS NO. & SIZE	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	CONC. COLLARS CL. "B" C.Y. STD. 840.72	PIPE REMOVAL LIN. FT.	REMARKS
123+50.00	RT	1311		634.07																	1								1		1																				
		1311	1312		631.32	629.25							56'																																						
127+00.00	CL	1315		636.16																	1								1			1																			
		1315	1316		632.17	631.60							76'																																						
127+00.00	RT	1314		638.23																	1								1		1																				
		1314	1315		635.48	633.41							56'																																						
131+50.00	CL	1405		641.52																	1								1			1																			
		1405	1315		638.77	633.41							452'																																						
131+50.00	RT	1406		643.59																	1								1		1																				
		1406	1405		640.84	638.77							56'																																						
134+50.00	CL	1407		645.00																	1											1				1															
		1407	1410		640.50	640.00																																													
134+50.00	RT	1408		647.07																	1	1.3							1			1																			
		1408	1407		640.78	640.50																																													
134+50.00	RT	1409	1408		640.93	640.78														3.4																															HEADWALL
136+50.00	CL	1412		646.76																	1	1.1							1			1																			
		1412	1413		640.66	640.11																																													
136+50.00	RT	1411		648.84																	1								1		1																				
		1411	1412		646.09	642.76							56'																																						
138+50.00	CL	1414		648.45																	1								1			1																			
		1414	1412		643.70	642.01																																													
141+00.23	CL	1415		652.62																	1								1			1																			
		1415	1414		648.05	644.20																																													
141+01.95	LT	1416		653.07																	1								1			1																			
		1416	1415		650.32	649.94							44'																																						
140+99.57	RT	1417		651.43																	1								1			1																			
		1417	1415		648.68	648.30.							84'																																						
147+00.00	RT	1506		649.74																	1								1			1																			
		1506	1507		646.90	644.69						36'																																							
147+36.12	RT	1507		649.60																																			1												ADJUST DI
145+50.00	LT	1503		656.10																	1								1			1																			
147+00.00	LT	1504		654.89																	1	3.1						1			1	1																			
		1503	1504		653.35	646.84							148'																																						
146+85.30	LT	1502		655.91																	1								1		1																				
		1502	1504		653.16	646.84							36'																																						
147+33.17	RT	1505		654.54																	1	3.1															1	1											8'	REMOVE EXIST. 2GI & 8' OF 15" RCP
		1504	1505		646.84	646.52							44'																																						
150+00.00	RT	1521		650.03																	1	1.1						1			1	1																			
151+00.00	RT	1522		647.97																	1							1			1	1																			
		1521	1522		643.90	644.80							96'																																						
152+27.40		1523		644.84																	1							1			1	1																			
		1522	1523		644.80	641.67							124'																																						
152+45.81		1524		644.70																	1																1	1													
		1523	1524		641.67	640.55							48'																																						
		1524	1525		640.55	632.50			68'																																							2 @ 15"				
Y6 10+81.17	LT	723		594.96																	1							1												1											
Y6 10+81.17	RT	724		594.98																	1							1												1											
		723	724		592.21	592.00							24'																																						
		724	725		592.00	590.35							68'																																						
SHEET TOTALS									68'			36'	1392'	324'	296'	172'				3.4		24	9.7					6		4	4	4	14		6	10		2	2	1	2				2 @ 15"			8'	

ABBREVIATIONS

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

COMPUTED BY: KDA DATE: 12/14/2012

CHECKED BY: IY DATE: 12/20/2012

RD266404

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
R-2246B	3-G

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

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

ABBREVIATIONS

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

STATION / SIZE / THICKNESS OR GAUGE	LOCATION (LT, RT, OR CL)	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	DRAINAGE PIPE (RCP, CSP, CAAP, HDPE, or PVC) 12"	15"	18"	24"	30"	36"	42"	48"	DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE	C.S. PIPE 12" .064	15" .064	18" .064	24" .064	30" .079	36" .079	42" .109	48" .109	R.C. PIPE CLASS III 12"	15"	18"	24"	30"	36"	42"	48"	R.C. PIPE CLASS IV 12"	15"	18"	24"	30"	36"	42"	48"	** " R.C. PIPE (CLASS V)	***" RC PIPE CULVERTS, CONTRACTOR DESIGN	15" SIDE DRAIN PIPE	18" SIDE DRAIN PIPE	24" SIDE DRAIN PIPE	ENDWALLS STD. 838.01 838.11 OR STD. 838.80 (UNLESS NOTED OTHERWISE) CU. YARDS R.C.P.	C.S.P.	QUANTITIES FOR DRAINAGE STRUCTURES PER EACH (0' THRU 5.0')	*TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL.'B') LIN. FT. A 5.0' THRU 10.0'	B 10.0' AND ABOVE	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STANDARD 840.03 TYPE OF GRATE E	F	G	CONCRETE TRANSITIONAL SECTION (EACH) DROP INLET	CATCH BASIN	OPEN THROAT CATCH BASIN STD. 840.04 OR 840.05	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND TWO GRATES STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR 840.26	G.D.I. TYPE "B" STD. 840.18 OR 840.27	G.D.I. TYPE "D" STD. 840.19 OR 840.28	G.D.I. FRAME WITH TWO GRATE STD. 840.20	G.D.I. FRAME WITH TWO GRATES STD. 840.22	J.B. STD. 840.31 OR 840.32	M.H. FRAME AND COVER STD. 840.54	T.B.J.B. STD. 840.34	ADJUST EXIST. DI	G.D.I. FRAME WITH TWO GRATES STD. 840.29	SPECIAL D.I. (DETAIL SHEET 2-Q)	SPECIAL 2-G.I. (DETAIL SHEET 2-R)	MODIFIED CONCRETE FLUME (SEE DETAIL 2-S)	DRAINAGE PIPE ELBOWS NO. & SIZE	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	CONC. COLLARS CL. 'B' C.Y. STD. 840.72	PIPE REMOVAL LIN. FT.	REMARKS
Y3 15+29.41	RT	726		593.24																																															1							1						1								1								
Y3 15+29.6	RT	725		594.48																																															1																	1	1											
		726	725		590.49	590.35																															12'																																										
		725	727		590.00	585.50																															192'																																										TIE TO EXIST. CB
-Y1-																																																																															
10+78.58	LT																																																																													25'	REMOVE EXIST. 15" RCP
10+79.64	LT	1608																																												32'																																					
11+89.89	LT																																																																													20'	REMOVE 8" CMP
11+90.44	LT	1607																																												28'																																					
13+30.96	RT																																																																													41'	REMOVE EXIST. 24" CMP
13+31.32	RT	1605	1606		587.44	586.58																																96'																																											
13+99.91	LT	420																																												24'																																					
14+03.29	LT																																																																													18'	REMOVE EXIST. 18" CMP
14+52.52	LT																																																																													21'	REMOVE EXIST. 18" CMP
17+46.50	RT																																																																													307'	REMOVE EXIST. PIPE SYSTEM
17+48.80	CL	416	415		603.20	600.53																																104'																																													
18+86.73	LT																																																																													28'	REMOVE EXIST. 12" RPC
18+91.99	LT	417																																												20'																																					
19+64.39	RT	418																																												52'																																					
21+34.65	LT	419																																												24'																																					
-Y2REV-																																																																																
20+13.00	CL	1055	1056		610.40	610.10																																	68'																																												
22+50.00	CL	1702	1703		608.90	608.64																																			68'								3.4																																HEADWALL
28+80.00	CL	1700	1701		606.02	605.65																																		72'																																										
-Y4-																																																																																
07+00.00	RT	1705		602.00																																													3.4																																HEADWALL
		1705	1707		602.00	601.00																																			136'																																								92'	REMOVE 2 EXIST. 18" PIPES AND EXIST. 2GI
12+00.00	CL	1708		610.55																																															1															1		1														
		1708	1038		608.20	607.97	X																														36'																																										
12+00.00	LT	1038		611.72																																															1			1		1																									
		1038	1709		607.97	607.86	X																																36'																																									39'	REMOVE EXIST. 15" PIPE & DI
14+00.00	CL	1036		612.53																																															1															1		1														
		1036	1035		610.45	610.25	X																														40'																																										
14+00.00	LT	1035		614.00																																															1			1		1																									
		1035	1038		610.25	607.97																																	200'																																												
16+30.00	LT	1034		618.42																																															1			1		1																									
		1034	1035		614.00	610.25																																	232'																																												
		1033	1034		614.95	614.00																																	96'																																										141'	REMOVE EXIST 18" RCP
17+32.52	LT																																																																												0.232			PLUG & FILL BOTH ENDS OF EXIST. 24" RPC
17+66.29	CL																																																																															REMOVE EXIST DI
17+99.54	RT																																																																												0.232			PLUG & FILL BOTH ENDS EXIST. 24" RPC
24+00.00	CL	1051	1050		623.30	622.40																																	176'																																												
27+37.65	RT	1053		630.74																																															1	0.5											1				1															
		1052	1053		625.54	625.22																																	64'																																										55'	REMOVE EXIST.15" RCP AND CONC HEADWALL
		1053	1054		625.22	624.70																																	104'																																										56'	REMOVE EXIST.15" RCP AND EXIST. DI
28+50.00	CL	1801		630.10																																															1													1			1															
		1801	1053		627.35	625.22																															112'																																										
37+92.50	RT	1804		637.70																																															1	3.7						1			1	1																				
		1802	1804		630.70	629.00																																	76'																																										47'	REMOVE EXIST. 18" RCP AND EXIST. 2GI
SHEET TOTALS																																					392'	104'	1148'	72'	204'					180'			6.8		10	4.2		3		3		2			1	1	1	2	2		4	1	1			1						0.464		890'	

COMPUTED BY:	KDA	DATE:	12/14/2012
CHECKED BY:	IY	DATE:	12/20/2012

RD266404

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
R-2246B	3-H

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

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

DRAINAGE 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
		1804	1805		629.00	628.70													
40+50.00	RT	1803		637.40															
		1803	1804		634.65	633.30													
DRV1 10+89.04	CL																		
DRV2 10+56.28	LT																		
DRV2 10+89.82	CL																		
-DRV1- 10+85	CL	413									68'								
-Y5-																			
15+41.04	CL	1516		644.96															
		1516	1517		641.79	640.18													
15+41.04	RT	1517		643.75															
		1517	1518		640.18	639.49													
15+93.00	RT	1519																	
19+84.00	RT	1508		652.09															
		1508	1513		648.92	648.10													
20+20.00	RT	1513		652.10															
		1513	1514		644.67	644.23													
20+20.00	LT	1514		649.98															
		1514	1515		640.78	640.25						100'							
20+55.00	RT	1511		651.77															
20+55.00	RT	1512		652.47															
		1512	1513		647.03	644.67													
		1511	1512		647.32	647.03													
		1510	1511		647.60	647.32													
22+00.00	RT	1509		654.06															
		1509	1511		650.81	647.32													
-Y8-																			
12+60.00	RT																		
12+90.00	LT																		
13+03.66	CL	410	409		567.80	565.99													
-Y9-																			
10+81.00	CL																		
10+79.00	CL	412	411		580.76	580.23													
-RPA-																			
10+74.58	RT	1114		609.60															
		1114	1126		606.80	605.00													
10+24.44	RT	1126		607.80															
		1126	1113		600.30	599.42			28'										
13+73.70	RT	1108		620.30															
		1108	1123		615.40	606.90				36'									
16+15.88	RT	1107		627.50															
		1107	1108		624.50	617.30													
		1106	1107		626.40	624.50													
22+62.95	LT	1030		620.26															
		1030	1031		617.51	617.17													
-RPB-																			
24+50.00	LT	1026		620.75															
		1025	1026		618.20	617.00	X												
-RPC-																			
SHEET TOTALS									28'	36'	68'	100'							

C.S. PIPE / R.C. PIPE CLASS III / R.C. PIPE CLASS IV

STATION	FROM	TO	C.S. 12" .064	C.S. 15" .064	C.S. 18" .064	C.S. 24" .064	C.S. 30" .079	C.S. 36" .079	C.S. 42" .109	C.S. 48" .109	R.C. III 12"	R.C. III 15"	R.C. III 18"	R.C. III 24"	R.C. III 30"	R.C. III 36"	R.C. III 42"	R.C. III 48"	R.C. IV 12"	R.C. IV 15"	R.C. IV 18"	R.C. IV 24"	R.C. IV 30"	R.C. IV 36"	R.C. IV 42"	R.C. IV 48"
	1804	1805																				72'				
40+50.00	1803																									
	1803	1804																		260'						
DRV1 10+89.04																										
DRV2 10+56.28																										
DRV2 10+89.82																										
-DRV1- 10+85	413																									
-Y5-																										
15+41.04	1516																									
	1516	1517																		52'						
15+41.04	1517																									
	1517	1518																		24'						
15+93.00	1519																					32'				
19+84.00	1508																									
	1508	1513																		36'						
20+20.00	1513																									
	1513	1514																					68'			
20+20.00	1514																									
	1514	1515																								
20+55.00	1511																									
20+55.00	1512																									
	1512	1513																					36'			
	1511	1512																					28'			
	1510	1511																					20'			
22+00.00	1509																									
	1509	1511																			148'					
-Y8-																										
12+60.00																										
12+90.00																										
13+03.66	410	409																			68'					
-Y9-																										
10+81.00																										
10+79.00	412	411																				52'				
-RPA-																										
10+74.58	1114																									
	1114	1126																		48'						
10+24.44	1126																									
	1126	1113																								
13+73.70	1108																									
	1108	1123																								
16+15.88	1107																									
	1107	1108																			240'					
	1106	1107																			52'					
22+62.95	1030																									
	1030	1031																		112'						
-RPB-																										
24+50.00	1026																									
	1025	1026																				112'				
-RPC-																										
SHEET TOTALS																				508'	508'	268'	152'			

STATION	FROM	TO	** " R.C. PIPE (CLASS V)	***" RC PIPE CULVERTS, CONTRACTOR DESIGN	15" SIDE DRAIN PIPE	18" SIDE DRAIN PIPE	24" SIDE DRAIN PIPE	ENDWALLS STD. 838.01 838.11 OR STD. 838.80 (UNLESS NOTED OTHERWISE) CU. YARDS R.C.P.	ENDWALLS CU. YARDS 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'	LIN. FT. B 10.0' AND ABOVE	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STANDARD 840.03 TYPE OF GRATE E	F	G	CONCRETE TRANSITIONAL SECTION (EACH) DROP INLET	CATCH BASIN
	1804	1805																
40+50.00	1803									1								
	1803	1804																
DRV1 10+89.04																		
DRV2 10+56.28																		
DRV2 10+89.82																		
-DRV1- 10+85	413																	
-Y5-																		
15+41.04	1516									1							1	
	1516	1517																
15+41.04	1517									1			1			1		
	1517	1518																
15+93.00	1519																	
19+84.00	1508									1							1	
	1508	1513																
20+20.00	1513									1	2.4						1	
	1513	1514																
20+20.00	1514									1	4.2							
	1514	1515																
20+55.00	1511									1			1	1				
20+55.00	1512									1	0.4						1	
	1512	1513																
	1511	1512																
	1510	1511																
22+00.00	1509									1			1			1		
	1509	1511																
-Y8-																		
12+60.00																		
12+90.00																		
13+03.66	410	409																
-Y9-																		
10+81.00																		
10+79.00	412	411																
-RPA-																		
10+74.58	1114									1								
	1114	1126																
10+24.44	1126									1	2.5							
	1126	1113																
13+73.70	1108									1								
	1108	1123																
16+15.88	1107									1								
	1107	1108																
	1106	1107																
22+62.95	1030									1								
	1030	1031																
-RPB-																		
24+50.00	1026									1								
	1025	1026																
-RPC-																		
SHEET TOTALS										15	9.5		3	1		2	4	

STATION	FROM	TO	OPEN THROAT CATCH BASIN STD. 840.04 OR 840.05	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND TWO GRATES STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR 840.26	G.D.I. TYPE "B" STD. 840.18 OR 840.27	G.D.I. TYPE "D" STD. 840.19 OR 840.28	G.D.I. FRAME WITH TWO GRATE STD. 840.20	G.D.I. FRAME WITH TWO GRATES STD. 840.22	J.B. STD. 840.31 OR 840.32	M.H. FRAME AND COVER STD. 840.54	T.B.J.B. STD. 840.34	ADJUST EXIST. DI	G.D.I. FRAME WITH TWO GRATES STD. 840.29	SPECIAL D.I. (DETAIL SHEET 2-Q)	SPECIAL 2-G.I. (DETAIL SHEET 2-R)	MODIFIED CONCRETE FLUME (SEE DETAIL 2-S)	DRAINAGE PIPE ELBOWS NO. & SIZE	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	CONC. COLLARS CL. 'B' C.Y. STD. 840.72	PIPE REMOVAL LIN. FT.	REMARKS
	1804	1805																				52"	REMOVE EXIST 18" RCP
40+50.00	1803						1			1													
	1803	1804																					
DRV1 10+89.04																						24'	REMOVE EXIST 15" RCP
DRV2 10+56.28																						24'	REMOVE EXIST 15" RCP
DRV2 10+89.82																						20'	REMOVE EXIST 15" RCP
-DRV1- 10+85	413																						
-Y5-																							
15+41.04	1516			1	1																		
	1516	1517																					
15+41.04	1517																						
	1517	1518																					
15+93.00	1519																						
19+84.00	1508			1	1																		
	1508	1513																					
20+20.00	1513				1											1							
	1513	1514																					
20+20.00	1514										1	1											
	1514	1515																					
20+55.00	1511																						
20+55.00	1512				1											1							
	1512	1513																					
	1511	1512																					
	1510	1511																					
22+00.00	1509																						
	1509	1511																					
-Y8-																							
12+60.00																						17'	REMOVE EXIST. 15" PIPE
12+90.00																						21'	REMOVE EXIST. 15" PIPE
13+03.66	410	409																					
-Y9-																							
10+81.00																						56'	REMOVE EXIST. 15" PIPE
10+79.00	412	411																					
-RPA-																							
10+74.58	1114						1		1														
	1114	1126																					
10+24.44	1126						1		1														
	1126	1113																					
13+73.70	1108						1		1														
	1108	1123																	2 @ 18"				
16+15.88	1107						1		1														
	1107	1108																					
	1106	1107																					
22+62.95	1030						1			1													
	1030	1031																					
-RPB-																							
24+50.00	1026						1		1														
	1025	1026																					
-RPC-																							
SHEET TOTALS				2	4		7		5	2	1	1				2			2 @ 18"			214'	

ABBREVIATIONS

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

COMPUTED BY:	KDA	DATE:	12/14/2012
CHECKED BY:	IY	DATE:	12/20/2012

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
R-2246B	3-I

RD266404

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

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

STATION	LOCATION (LT, RT, OR CL)	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL
17+04.59	LT	1009		633.00			
		1009	1010		628.00	626.34	
25+49.17	CL	1017	1018		632.80	623.30	
-RPD-							
19+36	LT	1047		629.30			
		1048	1047		616.70	616.17	
		1047	1049		616.17	616.00	
20+00	LT	1046		629.10			
		1046	1047		626.15	625.83	
24+00	CL	1041	1042		623.10	622.40	
-SPURA-							
13+90.24	LT	1031		620.83			
		1031	1032		617.17	616.51	
-SPURB-							
13+45.49	LT	1027		619.80			
		1026	1027		617.00	615.05	X
15+00.00	LT	1028		619.11			
16+13.33	LT						
		1027	1028		614.55	613.86	
		1028	1029		613.86	613.60	
-SPURD-							
13+59.77	RT	1043	1044		622.65	621.62	
12+10.52	RT	1044		629.25			
		1044	1045		621.62	621.15	
-MUP-							
23+48	CL	1131					
26+28.8	CL	1130					
29+53	CL	1220					
41+72	CL	1301					
54+77	CL	1401					
61+73	CL	1402					
62+73	CL	1403					
65+74	CL	1404					
74+34	CL	1501					
SHEET TOTALS							
PROJECT TOTALS							
SAY							

DRAINAGE PIPE (RCP, CSP, CAAP, HDPE, or PVC)

STATION	FROM	TO	12"	15"	18"	24"	30"	36"	42"	48"	DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE
	1047	1049			32'									
SHEET TOTALS					32'									
PROJECT TOTALS				904'	608'	68'	856'	880'						
SAY														

C.S. PIPE and R.C. PIPE CLASS III

STATION	C.S. 12" (.064)	C.S. 15" (.064)	C.S. 18" (.064)	C.S. 24" (.064)	C.S. 30" (.079)	C.S. 36" (.079)	C.S. 42" (.109)	C.S. 48" (.109)	R.C. III 12"	R.C. III 15"	R.C. III 18"	R.C. III 24"	R.C. III 30"	R.C. III 36"	R.C. III 42"	R.C. III 48"
SHEET TOTALS																
PROJECT TOTALS										292'	228'	92'	148'			
SAY																

R.C. PIPE CLASS IV

STATION	FROM	TO	12"	15"	18"	24"	30"	36"	42"	48"
	1009	1010		84'						
25+49.17	1017	1018			88'					
	1048	1047			112'					
	1046	1047		64'						
24+00	1041	1042			104'					
	1031	1032		112'						
	1026	1027				88'				
	1027	1028					128'			
	1028	1029					52'			
13+59.77	1043	1044				156'				
	1044	1045				72'				
23+48	1131					120'				
26+28.8	1130				36'					
29+53	1220				36'					
41+72	1301				40'					
54+77	1401				44'					
61+73	1402								44'	
62+73	1403						44'			
65+74	1404				36'					
74+34	1501				64'					
SHEET TOTALS				260'	560'	436'	224'		44'	
PROJECT TOTALS				7012'	4532'	3400'	1132'	516'	44'	212'
SAY										

STATION	FROM	TO	** " R.C. PIPE (CLASS V)	***" RC PIPE CULVERTS, CONTRACTOR DESIGN	15" SIDE DRAIN PIPE	18" SIDE DRAIN PIPE	24" SIDE DRAIN PIPE	ENDWALLS STD. 838.01 838.11 OR STD. 838.80 (UNLESS NOTED OTHERWISE) CU. YARDS R.C.P.	ENDWALLS CU. YARDS 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'	LIN. FT. B 10.0' AND ABOVE
17+04.59	1009									1		
19+36	1047									1	5	3.1
20+00	1046									1		
13+90.24	1031									1		
13+45.49	1027									1	0.3	
15+00.00	1028									1	0.3	
12+10.52	1044									1	2.6	
61+73	1402							4.5				
SHEET TOTALS								4.5		7	8.2	3.1
PROJECT TOTALS					324'	64'	184'	24.1		143	103.7	14.7
SAY								25			123	

STATION	FROM	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STANDARD 840.03 TYPE OF GRATE E	F	G	CONCRETE TRANSITIONAL SECTION (EACH) DROP INLET	CATCH BASIN	OPEN THROAT CATCH BASIN STD. 840.04 OR 840.05	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND TWO GRATES STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR 840.26	G.D.I. TYPE "B" STD. 840.18 OR 840.27	G.D.I. TYPE "D" STD. 840.19 OR 840.28	G.D.I. FRAME WITH TWO GRATE STD. 840.20	G.D.I. FRAME WITH TWO GRATES STD. 840.22	J.B. STD. 840.31 OR 840.32	M.H. FRAME AND COVER STD. 840.54	T.B.J.B. STD. 840.34	ADJUST EXIST. DI	G.D.I. FRAME WITH TWO GRATES STD. 840.29	SPECIAL D.I. (DETAIL SHEET 2-Q)	SPECIAL 2-G.I. (DETAIL SHEET 2-R)	MODIFIED CONCRETE FLUME (SEE DETAIL 2-S)
17+04.59	1009											1			1								
19+36	1047													1								1	
20+00	1046											1		1									
13+90.24	1031											1		1									
13+45.49	1027										1				1								
15+00.00	1028										1				1								
12+10.52	1044										1			1									
SHEET TOTALS											3	3		4	3							1	
PROJECT TOTALS		6	1	3	2	16		1	11	13	24	88	3	39	77	2	4	2	1	3	2	4	1
SAY																							

STATION	FROM	DRAINAGE PIPE ELBOWS NO. & SIZE	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	CONC. COLLARS CL. 'B' C.Y. STD. 840.72	PIPE REMOVAL LIN. FT.	REMARKS
19+36	1047					DEPTH GREATER THAN 12'
16+13.33					352'	REMOVE EXIST.15" RCP PIPE, SYSTEM
61+73	1402					HEADWALL
SHEET TOTALS					352'	
PROJECT TOTALS		8 @ 15"	0.464	0.893	2678'	
SAY		6 @ 18"	1	1	2678'	

ABBREVIATIONS

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

COMPUTED BY:	KDA	DATE:	12/14/2012
CHECKED BY:	ITY	DATE:	12/20/2012

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
R-2246B	3-J

RD265404

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

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

STATION	LOCATION (LT, RT, OR CL)	STRUCTURE NO.		TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	DRAINAGE PIPE (RCP, CSP, CAAP, HDPE, or PVC)							C.S. PIPE												CLASS IV R. C. PIPE							REINFORCED ENDWALLS		MASONRY DRAINAGE STRUCTURES CUBIC YARDS	C.B. STD. 840.01 OR 840.02	FRAMES, GRATES & HOOD STANDARD 840.03			CONCRETE TRANSITIONAL SECTION		M.H. FRAME AND COVER STD. 840.54	REINF. CONC. FLARED END SECTIONS NO. & SIZE	CORR. STEEL FLARED END SECTIONS NO. & SIZE	CORR. STEEL ELBOWS NO. & SIZE	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	CONC. COLLARS CL. 'B' C.Y. STD. 840.72	PIPE REMOVAL LIN. FT.	REMARKS
SIZE								54"	60"	66"	72"	78"	84"	90"	54"			60"		66"		72"			54"	60"	66"	72"	78"	84"	90"					TYPE OF GRATE												
THICKNESS OR GAUGE		FROM	TO												.109	.138	.168	SHOP ELON-GATED .138	.168	.138	.168	.138	.168	.139	.168								WITH R.C. - C.Y.	WITH C.S. - C.Y.			E	F	G	DROP INLET	CATCH BASIN								
-MUP-																																																
48+24.05		1302																							48'							5.1																
SHEET TOTALS																									48'							5.1																

ABBREVIATIONS

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

COMPUTED BY: KDA	DATE: 12/05/2012
CHECKED BY: JBT	DATE: 12/06/2012

PROJECT NO.	SHEET NO.
R-2246B	3-K

RD2

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
SUMMARY OF EARTHWORK

CUBIC YARDS

Station to Station		Uncl. Exc. C.Y.	Undercut C.Y.	Embank. +% C.Y.	Borrow C.Y.	Waste C.Y.
SUMMARY 1						
LEFT SIDE						
-L1- 10+50 LT.	22+00 LT.	288		14,197	13,909	
-Y8- 12+00	13+00	59		44		15
-Y1- 10+50	15+50	1,040		990		50
RIGHT SIDE						
-L1- 10+50 RT.	22+00 RT.	1,097		570		527
-Y9- 10+50	11+50	104		85		19
-Y1- 17+00	22+00	1,672		287		1,385
	SUBTOTAL	4,260		16,174	13,909	1,995
SUMMARY 2						
-L1- 22+00	38+50	30,705		30,744	39	
	SUBTOTAL	30,705		30,744	39	
SUMMARY 3						
LEFT SIDE						
-L1- 38+50 LT.	54+31.74 LT.	2,759		587		2,172
-Y- 10+00	12+00	12		340	328	
RIGHT SIDE						
-L1- 38+50 RT.	54+31.74 RT.	7,363		11,897	4,534	
-Y3DET1- 9+50.00	13+25.00	211		216	5	
-Y3DET2- 9+75.00	12+00.00	178		19		159
-DR4- 10+50.00	12+00.00	34		341	307	
	SUBTOTAL	10,557		13,399	5,173	2,331
SUMMARY 4						
LEFT SIDE						
-L- 23+00 LT.	42+00 LT.	9,824	2,348	4,842		7,330
-Y3- 11+00	12+00	24				24
RIGHT SIDE						
-L- 23+00 RT.	42+00 RT.	18,557	3,497	13,910		8,144
-Y3- 14+00	16+25	31		913	882	
-Y6- 10+25	11+50	35		7		28
	SUBTOTAL	28,471	5,845	19,673	882	15,526
SUMMARY 5						
-L- 42+00 LT.	61+50 LT.	113	1,919	33,424	33,311	1,919
-L- 42+00 RT.	61+50 RT.	5,917	2,459	60,227	54,310	2,459
	SUBTOTAL	6,030	4,378	93,650	87,620	4,378

CUBIC YARDS

Station to Station		Uncl. Exc. C.Y.	Undercut C.Y.	Embank. +% C.Y.	Borrow C.Y.	Waste C.Y.
SUMMARY 6						
-L- 61+50	79+50 (BB)	52		124,132	124,080	
-RPB- (64+50 -L-)	(73+00 -L-)	4,050		2,311		1,739
-RPB- 18+50	25+50	15,443				15,443
-SPURB- 13+19.55	14+14.02	788		13		775
-RPC- (67+50 -L-)	(79+00 -L-)	3,421		15,868	12,447	
-SPURC- 12+50.88	14+20.59	2,184				2,184
-Y2REV- 12+50	30+50	697		9,648	8,951	
-Y4- 0+00 RT.	40+00 RT.	11,230		1,978		9,252
-LDET- 61+50.00	64+00.00	45		126	81	
	SUBTOTAL	37,910		154,076	145,559	29,393
SUMMARY 7						
-L- 82+00 (EB)	111+50	7,043		214,024	206,981	
-RPA- (82+00 -L-)	(93+50.00 -L-)	348		33,023	32,675	
-SPURA- 12+92.07	13+75.13	72		270	198	
-RPD-(86+00 -L-)	(95+50 -L-)	106		51,281	51,175	
-RPD- 19+00	24+50	1,918		14,430	12,512	
SPURD- 13+60.71	15+00	931		1,132	201	
-Y4- 0+00 LT.	40+00 LT.	4,943		4,194		749
-MUP- (84+00 -L-)	(109+21.22-L- BB)	670		7,009	6,339	
	SUBTOTAL	16,031		325,363	310,081	749
SUMMARY 8						
-L- 111+50	133+50	14,602		43,319	28,717	
-MUP- (112+74.46 -L- EB)	(133+50 -L-)	16		10,645	10,629	
	SUBTOTAL	14,618		53,964	39,346	
SUMMARY 9						
-L- 133+50	155+50	24,158		20,567		3,591
-Y5- 14+00	17+50	127		349	222	
-Y5- 20+00	23+00	51		151	100	
-MUP- (133+50 -L-)	(147+50 -L-)	276		5,048	4,772	
	SUBTOTAL	24,612		26,116	5,095	3,591
	PROJECT SUB-TOTAL	173,194	10,223	733,158	607,704	57,963
ESTIMATED SHOULDER MATERIAL				32,758	32,758	
LOSS DUE TO CLEARING & GRUBBING		-9,738			9,738	
SELECT GRANULAR MATERIAL IN LIEU OF BORROW					-41,880	
WASTE IN LIEU OF BORROW					-44,326	-44,326
ADDITIONAL EST. UNDERCUT			10,000	12,000	12,000	10,000
EST. 5% TO REPLACE TOP SOIL ON BORROW PIT					28,800	
	GRAND TOTAL	163,456	20,223		604,794	23,637
	SAY	164,000	20,400		605,000	

PAVEMENT STRUCTURE VOLUME = 20,850 C.Y.

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

CLASS IV SUBGRADE STABILIZATION = 9,500 TONS
GEOTEXTILE FOR SOIL STABILIZATION = 30,600 SQ.YD.
ESTIMATED SHALLOW UNDERCUT = 5,000 C.Y.
GEOTEXTILE FOR PAVEMENT STABILIZATION = 36,500 SY
SELECT GRANULAR MATERIAL = 34,900 C.Y.
EST. DRAINAGE DITCH Excavation = 2,433 C.Y.

COMPUTED BY: JBT DATE: 9/8/2011
CHECKED BY: jy DATE: 8/14/2012

PROJECT REFERENCE NO.	SHEET NO.
R-2246B	3-L

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SUMMARY OF CHAIN LINK FENCE

LINE	STATION TO STATION	LOCATION	FABRIC FT.	LINE POST (EA)	TERMINAL POST (EA)	DOUBLE SWING GATE	SINGLE SWING GATE
-L1-	9+94.19 TO 13+75.04	LT	364.63	30	2		
-L1-	14+49.51 TO (-Y1-) 12+80.00	LT	949.23	79	4		
-L1-	13+00.00 (-Y1-) TO 29+69.87	LT	994.11	84	8		
-L1-	33+22.60 TO 33+40.00	LT	334.28	28	3		
-L1-	34+00.00 TO 39+32.15	LT	556.02	46	4		
-L1-	39+90.13 TO 43+90.70	LT	447.73	37	5		
-L1-	44+50.00 TO 46+60.00	LT	212.00	17	2		
-Y1-	18+68.31 TO (-L1-) 29+62.49	RT	710.31	60	6		
-L1-	30+19.39 TO 39+60.00	RT	869.90	73	6		
-L1-	40+23.00 TO 54+31.74 LB	RT	1,426.50	120	6		
-L-	23+00.00 LA TO 26+62.05	RT	362.05	30	1		
-L-	27+31.80 TO 35+50.00	LT	801.43	67	5		
-L-	37+86.08 TO 41+45.00	LT	359.00	30	3		
-L-	42+45.00 TO (-Y4-) 6+40.00	LT	4,922.60	413	18		
-SPURB-	15+57.00 TO 15+69.00	LT					1
-Y4-	17+10.00 TO (-L-) 106+00.00	LT	2,521.85	212	14		
-L-	107+22.80 TO 117+75.00	LT	1,078.01	90	5		
-L-	119+00.00 TO 140+16.28	LT	2,116.88	177	7		
-L-	140+81.89 TO 146+72.44	LT	612.44	51	5		
-L-	27+70.55 TO 41+45.00	RT	1,398.83	117	9		
-L-	42+45.00 TO (-Y4-) 33+00.00	RT	4,486.75	376	15		
-Y4-	33+00.00 TO (-L-) 97+99.49	RT	2,525.27	211	9		
-L-	109+73.00 TO 109+97.00	RT				1	
-L-	98+50.87 TO 110+98.44	RT	1,384.27	117	11		
-L-	122+34.85 TO 141+47.51	RT	1,909.78	160	7		
-L-	142+13.13 TP (-Y5-) 22+19.93	RT	695.00	58	5		
		TOTAL	32,038.87	2,681	160	1	1
ADDITIONAL BARBED WIRE = 1,000 L.F.		SAY	32,040.00	2,681	160	1	1

SUMMARY OF ASPHALT PAVEMENT REMOVAL /BREAKING

LINE	STATION TO STATION	LOCATION	PAVEMENT REMOVAL SQ. YD.	BREAKING OF PAVEMENT SQ. YD.
-L1-	14+00.00 TO 22+05.05	RT	1,762.10	
-L1-	37+01.64 TO 41+08.10	RT	1,112.43	
-L1-	46+25.00 TO 48+25.00	CL	453.24	
-L-	23+00.00 TO 47+75.00	LT/RT	6,679.61	
-L-	47+75.00 TO 55+00.00	LT		1,783.26
-L-	50+38.42 TO 51+35.15	LT	289.91	
-L-	55+00.00 TO 57+00.00	LT	522.75	
-L-	57+00.00 TO 61+74.17	CL		813.09
-L-	59+64.54 TO 61+94.03	LT	489.83	
-L-	73+28.12 TO 81+00.27	LT	2,092.79	
-Y3-	12+68.45 TO 15+00.00	CL		839.97
-Y4-	5+50.00 TO 11+02.71	RT	115.67	
-Y4-	5+50.00 TO 14+90.00	LT	240.47	
-Y4-	12+00 TO 17+00.00	MED	278.29	
-Y4-	26+74.29 TO 28+57.99	MED	49.50	
-Y4-	28+51.20 TO 31+77.42	MED	680.47	
-LDET-	10+04.54 TO 12+74.69	LT/RT	280.67	
-Y3DET1-	9+54.08 TO 11+12.00	LT/RT	393.48	
-Y3DET2-	9+83.08 TO 11+80.97	LT/RT	239.60	
		TOTAL	15,680.81	3,436.32
		SAY	15,700.00	3,450

SUMMARY OF DARK GREEN VINYL COATED CHAIN LINK FENCE

LINE	STATION TO STATION	LOCATION	FABRIC FT.	LINE POST (EA)	TERMINAL POST (EA)	
-MUP-	23+45.00 TO 25+82.00	RT	228.35	19	4	
-MUP-	39+46.74 TO 44+47.11	LT	500.64	42	3	
-MUP-	45+72.11 TO 63+25.23	LT	1,753.45	147	7	
-MUP-	39+46.74 TO 44+47.11	RT	500.24	42	3	
-MUP-	45+72.11 TO 63+25.23	RT	1,752.77	147	7	
		TOTAL	4,735.45	397	24	
		SAY	4,740.00	397	24	

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CSD265815, 1/17/2013, S:\Records\Pol_Rooms\Plotter_Room_A\Print_Jobs\011713\Kalindge\R2246B_guardrail_summary.xls

COMPUTED BY:	JBT	DATE:	9/6/2011
CHECKED BY:	IY	DATE:	10/29/2012

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

PROJECT REFERENCE NO.	SHEET NO.
R-2246B	3-M

RD238340

"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

GUARDRAIL SUMMARY

G = GATING IMPACT ATTENUATOR TYPE 350
NG = NON-GATING IMPACT ATTENUATOR TYPE 350

SURVEY LINE	BEG. STA.	END STA.	LOCATION	LENGTH			WARRANT POINT		"N" DIST. FROM E.O.L.	TOTAL SHOUL WIDTH	FLARE LENGTH		W								IMPACT ATTENUATOR TYPE 350		SINGLE FACED CONCRETE BARRIER	REMOVE EXISTING GUARDRAIL	REMOVE & STOCKPILE EXISTING GUARDRAIL	REMARKS
				STRAIGHT	SHOP CURVED	DOUBLE FACED	APPROACH END	TRAILING END			APPROACH END	TRAILING END	APPROACH END	TRAILING END	GRAU 350	M-350	TYPE B-77	CAT-1	TERM SECT	TEMP GRAU 350	G	NG				
-L1-	26+50.00	32+00.00	LT	550.00			30+75.00	27+75.00	10'	13'	50.00'		1'		1			1								
-L1-	27+25.00	31+75.00	RT	450.00			28+50.00	30+50.00	10'	13'	50.00'	50.00'	1'		2											
-EL-	27+92.00		CL	50.00															2							
-L-	48+25.00	54+50.00	RT	625.00			49+50.00	54+50.00	10'	13'	50.00'		1'		1			1								
-L-	51+05.00		LT	25.00															2							
-L-	49+00.00	54+25.00	LT	525.00			53+00.00	49+00.00	10'	13'	50.00'		1'		1			1								
-L-	61+95.00		LT	25.00															2							
-L-	65+46.00	67+21.00	RT	175.00			67+05.00		10'	13'	50.00'		1'		1			1								SIGN SUPPORT PROTECTION
-L-	71+97.18	79+34.68	RT	737.50			73+25.00	BRIDGE STA	10'	13'	100.00'		2'		1		1									USE 24 @ 8' POSTS, ALONG MSE WALL LOCATION
-L-	71+92.76	79+55.26	LT	762.50			71+92.76	BRIDGE STA	10'	13'		100.00'		2'			1	1								USE 10 @ 8' POSTS, ALONG MSE WALL LOCATION
-L-	77+54.24	79+41.74	MED RT	187.50			BRIDGE STA		6'	23'	168.75'		15.25'			1	1									
-L-	77+85.95	79+48.45	MED LT	162.50				BRIDGE STA	6'	23'		37.50'		4'		1	1									
-L-	81+86.14	89+23.64	RT	737.50			BRIDGE STA	89+23.64	10'	13'		100.00'		2'			1	1								USE 6 @ 8' POSTS, ALONG MSE WALL LOCATION
-L-	81+94.42	83+56.92	MED RT	162.5			BRIDGE STA		6'	23'		37.50'		4'		1	1									
-L-	82+02.33	83+89.83	MED LT	187.50				BRIDGE STA	6'	23'	168.75'		15.25'			1	1									
-L-	82+10.34	88+35.34	LT	625.00			88+00.00		10'	13'	100.00'		2'		1		1									USE 27 @ 8' POSTS, ALONG MSE WALL LOCATION
-L-	109+98.44	110+98.44	RT	100.00			110+98.44				50.00'		1'		1		1									
-L-	101+35.04	-RPA- 17+50.00	LT	1,362.50			100+00.00	-RPA- 17+40.13	12'	15'	50.00'		1'		1			1								
-RPD-	20+75.00	-L RT- 98+59.83	LT	1,387.50			20+00.00	-L- 98+50.00	12'	15'	50.00'		1'		1			1								
-L-	147+20.00		CL																					151		
	SUB TOTALS			**8,837.50**											**11**	**4**	**9**	**8**	**6**					**151**		TOTAL
	LESS DEDUCTIONS FOR ANCHORS																									
	11 GRAU 350 @ 50'			-550																						
	4 M-350 @ 37.5'			-150																						
	9 TYPE B-77 @ 18.75'			-168.75																						
	8 CAT-1 @ 6.25'			-50.00																						
	TOTALS			7,918.75																						
	SAY			**7,925.00**																						
	ADDITIONAL GUARDRAIL POST = 10 EA																									
	8' GUARDRAIL POSTS = 67 EACH																									

TEMPORARY GUARDRAIL SUMMARY

-L-	49+00.00	59+00.00	MED RT	1,000.00					6'	8'	50.00'		1'	1'						2						
	SUB TOTALS			1,000.00																**2**						
	LESS DEDUCTIONS FOR ANCHORS																									
	2 GRAU 350 @ 50'			-100																						
	TOTALS			**900.00**																						

CSD265813,1/7/2013,S:\Records\Plot_Rooms\Plotter_room_A\Print_Jobs\010713\KAldridge\2nd scan\R2246B_SHLD_DRAIN_sum.xls

COMPUTED BY: IY DATE: 8/21/2012
CHECKED BY: JBT DATE: 9/11/2012

PROJECT NO:	SHEET NO.
R-2248B	3-N

RD223184

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SHOULDER DRAIN SUMMARY

LINE	STATION	TO	STATION	LOCATION	SHLD DRAIN PIPE (FT)	SHLD DRAIN (FT)	OUTLET LOCATION STATION	OUTLET PIPIES (FT)	CONCRETE PAD (EA)	REMARKS
-L2-	52+45.00	TO	54+34.31	RT	189.31	189.31	52+45	24	1	
-L- LA	23+00.00	TO	26+55.00	RT	355.00	355.00	23+00	24	1	
-L-	28+50.00	TO	34+50.00	RT/MEDIAN	600.00	600.00	31+53	10		TIE TO 2GI, SAG
-L-	48+92.00	TO	71+00.00	RT/MEDIAN	2,208.00	2,208.00	51+50	18.5		TIE TO 2GI
							53+50	20	1	
							58+50	18.5		TIE TO 2GI
							62+00	18.5		TIE TO 2GI
							65+50	18.5		TIE TO 2GI
							66+40	18.5		TIE TO 2GI, SAG
							68+50	18.5		TIE TO 2GI
-L-	95+50.00	TO	107+50.00	RT/OUTSIDE	1,200.00	1,200.00	98+35	5		TIE TO 2GI
							100+28	24		TIE TO 2GI, SAG
							104+50	24		TIE TO 2GI
-L-	28+50.00	TO	34+50.00	LT/OUTSIDE	600.00	600.00	31+53	24	1	VERTICAL SAG
-L-	48+50.00	TO	68+55.00	LT/OUTSIDE	2,005.00	2,005.00	51+50	5		TIE TO 2GI
							53+75	5		TIE TO 2GI
							56+50	32	1	
							59+50	36	1	
							62+00	36	1	
							64+50	27.5	1	
							66+72	24	1	VERTICAL SAG
-L-	95+68.00	TO	104+50.00	LT/MEDIAN	882.00	882.00	99+00	18.5		TIE TO 2GI
-L-							100+29	18.5		TIE TO 2GI, SAG
-L-							101+50	18.5		TIE TO 2GI
				PROJECT TOTAL	8,039.31	8,039.31		487	9	
				SAY	8,050.00	8,050.00		487	9	

PROJ. REFERENCE NO.	SHEET NO.
R-2246B	3-O

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PARCEL INDEX SHEET

PARCEL No.	SHEET No.	PROPERTY OWNER NAME
1	4	NC DEPT OF TRANSPORTATION
2	4	DONALD & SHIRLEY CAIN
3	4	DANIEL & SUSAN GOLDEN
4	4	BRENDA WOOD & DANIEL MORRISON
5	4	NC DEPT OF TRANSPORTATION
6	4	TONI DREW
7	4	NC DEPT OF TRANSPORTATION
8	4	SANDERS, ANTHONY A. & LAUREN K. SANDERS
9	4	CYNTHIA DAWN & RODNEY WAGONER
10	4	BETTY JEAN WIGGIN SMITH, WIDOW
11	4	DENNIS T. & DIANNE G. COOK
12	4	NEWTON, ROGER DALE & PATRICIA MORRIS NEWTON
13	4	NC DEPT OF TRANSPORTATION
14	4	FULLER, LESTER S.
14A	4	FULLER, LESTER S.
14A	5	FULLER, LESTER S.
15	4	NC DEPT OF TRANSPORTATION
15	5	NC DEPT OF TRANSPORTATION
16	5	TOWER PLACE, LLC.
16	16	TOWER PLACE, LLC
17	5	CASCADES, LLC.
18	5	NC DEPT OF TRANSPORTATION
18	6	NC DEPT OF TRANSPORTATION
19	6	ATKINSON, DOLORES M
19	5	ATKINSON, DOLORES M.
20	6	MYRTLE, STRPHEN A.
21	6	KING ALLAN A.
22	6	LORI L. HALL
23	6	ALLEN A & CAROL A. KING
24	6	NC DEPT OF TRANSPORTATION
25	5	CONCORD POINTE LIMITED PARTNERSHIP
25	6	CONCORD POINTE LIMITED PARTNERSHIP
26	6	STEVEN D. RICKARD
27	6	KATHY R LINEBERRY & AMANDA L BATES
28	6	NC DEPT OF TRANSPOTATION
29	6	HSBC BANK USA, NAT. ASSCO. TRUSTEE FOR WELLS FARGO
30	6	ANGELA D KEE
31	6	JAMAX, LTD
32	6	JEREMY J BURRIS
33	6	SAYKHAM & PHOUMMY INTHANONH
34	6	RICARDO R. & CARLA M. VELEZ
35	6	PAUL R. & MARY PRIVETTE POPLIN
35	7	PAUL R. & MARY PRIVETTE POPIN
36	6	NC DEPT OF TRANSPORTATION
36	7	NC DEPT OF TRANSPORTATION
37	7	RANDALL L. CULLER
38	7	RILEY G. & JUANITA B. HONEYCUTT
39	7	NC DEPT OF TRANSPORTATION
40	7	ROBERT WAYNE BENFIELD
41	7	ALEJANDRINO RAMOS DAVILA
42	7	BILLY H. & ANNIE B. LEFLER
43	7	UNKNOWN
44	7	NC DEPT OF TRANSPORTATION
45	7	ROBERTA FARMS PROPERTY OWNERS ASSOCIATION, INC.
46	7	GEORGE F. & GLENDLYN M. MERINKERS
47	7	ROBERTA FARMS PROPERTY OWNERS ASSOCIATION. INC.
48	7	JOHN A. & JAN E. MICHETTI
49	7	NC DEPT OF TRANSPORTATION
49A	7	JAMI D. RODGERS
50	7	KEITH TALBERT & JOYCE M. SECCO

PARCEL No.	SHEET No.	PROPERTY OWNER NAME
51	7	WAYNE WHALEY, JR.
52	7	PHILLIP MORRIS INC.
52	8	PHILLIP MORRIS INC.
53	7	DUKE POWER COMPANY
54	7	NC DEPT OF TRANSPORTATION
54	8	NC DEPT OF TRANSPORTATION
56	8	LAURI A DANSEREAU
57	8	JUNE ALYSON WHITLEY
58	8	SAMUEL WAYNE PAGE
59	8	LINDA J. SIMPSON & DOROTHY F. HINSON
60	8	PHILLIP MORRIS USA, INC
60	9	PHILLIP MORRIS USA, INC
61	8	THOMAS JOHN & VIVIAN LEE MACK
62	8	PHILLIP MORRIS, INC.
63	9	BRENDA C. & CLYDE DELLINGER, JR.
63	8	BRENDA C. DELLI & CLYDE DELLINGER, JR.
64	9	HOWARD E. & RITA SHOE FURR
65	9	NC DEPT OF TRANSPORATATION
66	9	BILL & LINDA CORZINE
67	9	BILL J. CORZINE
68	9	J. DWIGHT MORRISON, III
68	10	J. DWIGHT MORRISON. III
69	10	PHILLIP MORRIS, INC.
69	17	PHILLIP MORRIS, INC.
70	9	PHILLIP MORRIS, INC.
70	18	PHILLIP MORRIS, INC.
70	10	PHILLIP MORRIS INC.
70	10	PHILLIP MORRIS USA, LLC
71	17	JACK ROUSH, LLC
71	10	JACK ROUSH, LLC
72	17	MUGHO,LLC
73	11	RALPH S. & RACHEL S. CHRISTY
73	10	RALPH S. & RACHEL S. CHRISTY
74	18	PHILLIP MORRIS USAM INC.
74	11	PHILLIP MORRIS USA, INC.
74	12	PHILLIP MORRIS USA, INC.
74	10	PHILLIP MORRIS USA, INC.
75	11	MUGHO, LLC
75	12	MUGHO, LLC
76	12	MARY HELEN GARRISON DALTON
76A	12	CABARRUS COUNTY
77	12	BHART O. & HANSA B. PATEL
78	13	CENTEX INTERNATIONAL, INC.
78	12	CENTEX INTERNATIONAL, INC.
79	13	JLP HOLDINGS, LLC
79	14	JLP HOLDINGS, LLC
79	12	JLP HOLDINGS, LLC
80	13	RICHARD J. & SENAIT F. HURLEY
81	13	STEPHEN H. & KRISTINE A. TOST
82	13	DORIS O'NEILL
83	13	GREG & CHRISTY SIMMONS
84	14	SHEFFEILD MANOR HOMEROWNERS ASSO. OF CONCORD, INC.
84	13	SHEFFEILD MANOR HOMEOWNERS ASSO. OF CONCORN, INC.
85	14	RICHARD L. & CAROLYN A. CONLEY
86	14	TIMOTHY D. & PATRICIA E. GARD
87	14	BILLY W. & KRISTINA J. STOOTS
88	14	MICHAEL E. & THERESA H. SMITH
89	14	DANIEL H. DEBORAH D. STUEBE
90	14	PETER W. & TSUNG-YU NING
91	14	PETER W. & TSUNG-YU NING

PROJ. REFERENCE NO.	SHEET NO.
R-2246B	3-P

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PARCEL INDEX SHEET

PARCEL No.	SHEET No.	PROPERTY OWNER NAME
92	15	JANE ELIZABETH MOSS
92	14	JANE ELIZABETH MOSS
93	16	MILLER, CHARLES RICHARD
94	16	PENCE, FREDIA H.
95	16	BRASWELL, JR FRANK
96	16	MANNING, VERNARD G.
98	16	WALL, RANDY L.
99	16	MELTON, KELLY H.
100	16	ESTATE OF J.B. REYNOLDS, ESTATE OF FAITH H SHUMAKER
101	16	BRASWELL., JR. FRANK H.
101	5	BLACKWELDER, MARGIE C.
102	4	BRASWELL, SHARON C.
103	4	BLACKWELDER, JOHN A.
104	5	BLACKWELDER, JOHN A. & TERESA
104	4	BLACKWELDER JOHN A. & TERESA
105	5	HELMS, JUDY C.
105	4	HELMS, JUDY C.
106	5	COCHRAN, JR., L.M.
106	4	COCHRAN, JR., L.M.
107	4	COLEMAN III, OSCAR GENE & VICTORIA
108	4	HELMS, MATTHEW LEE
109	7	NANCY A. LAINER & BRIAN T. BOWMAN
110	7	ALICE L. MALLORY
111	7	SUSAN M. & KENNETH R. BAKER
112	7	THOMAS F. & KATHERINE I. CLEARY
60	18	PHILLIP MORRIS INC
115	15	MHRA, LLC

PARCEL No.	SHEET No.	PROPERTY OWNER NAME

PROJECT REFERENCE NO.	SHEET NO.
R-2246B	4
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 19803 ENGINEER GREGORY E. BRIGGS — 1-22-13

HYDRAULICS ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 14482 ENGINEER JOSEPH W. DUNNEVICO — 1/18/13

★ TRAFFIC SIGNAL

NOTE: -L1- PROPOSED R/W HAS BEEN SET TO ACCOMADATE FUTURE FOUR LANE DIVIDED SECTION

NOTE: -Y1- PROPOSED R/W HAS BEEN SET TO ACCOMADATE FUTURE WIDENING

FOR DRAINAGE DITCH DETAILS, SEE SHEETS 2-I AND 2-J

FOR PROFILE OF -L1- SEE SHEET 19
FOR PROFILE OF -Y1- SEE SHEET 26
FOR PROFILE OF -Y8- SEE SHEET 30
FOR PROFILE OF -Y9- SEE SHEET 30

NAD 83

SEE SHEET 16
MATCH LINE -Y1- STA. 14+00.00

MATCH LINE -L1- STA. 24+00.00 SEE SHEET 5

-Y8-
PI Sta 12+00.79
Δ = 19° 49' 55.0" (LT)
D = 7° 32' 20.1"
L = 263.06'
T = 132.86'
R = 760.00'
e = EXIST.

BEGIN TIP PROJECT R-2246B
-L1- POT STA 11+00.00

-L1-
PI Sta 13+76.34
Δ = 15° 41' 05.4" (LT)
D = 5° 43' 46.5"
L = 273.75'
T = 137.74'
R = 1,000.00'
e = SEE PLANS

PI Sta 16+47.18
Δ = 15° 21' 24.4" (RT)
D = 5° 43' 46.5"
L = 268.03'
T = 134.82'
R = 1,000.00'
e = SEE PLANS

-Y1-
PI Sta 12+09.29
Δ = 9° 17' 14.2" (LT)
D = 3° 10' 59.2"
L = 291.77'
T = 146.20'
R = 1,800.00'
e = SEE PLANS

PI Sta 15+14.51
Δ = 3° 10' 29.0" (RT)
D = 1° 54' 35.5"
L = 166.23'
T = 83.14'
R = 3,000.00'
e = SEE PLANS

PI Sta 18+00.99
Δ = 1° 23' 01.7" (LT)
D = 1° 01' 39.8"
L = 134.65'
T = 67.33'
R = 5,575.00'
e = SEE PLANS

PI Sta 20+96.11
Δ = 7° 24' 24.5" (RT)
D = 6° 01' 52.1"
L = 122.81'
T = 61.49'
R = 950.00'
e = SEE PLANS

ROBERTA RD SR 1304 — 10,400 / 14,200
STOUGH RD SR 1309 — 11,600 / 21,800
GEORGE LILES PKWY — 23,600 / 33,200
ROBERTA RD SR 1304 — 12,800 / 17,200
-L1- 400 / 4,300; 6,800 / 7,600; 2,000 / 3,400; 7,600 / 11,500
-Y1-

ADT 2013
ADT 2035

REVISIONS

8/17/99

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NOTE: -L1- PROPOSED R/W HAS BEEN SET TO ACCOMADATE FUTURE FOUR LANE DIVIDED SECTION

FOR DRAINAGE DITCH AND SPECIAL DETAILS, SEE SHEET 2-I & 2-J

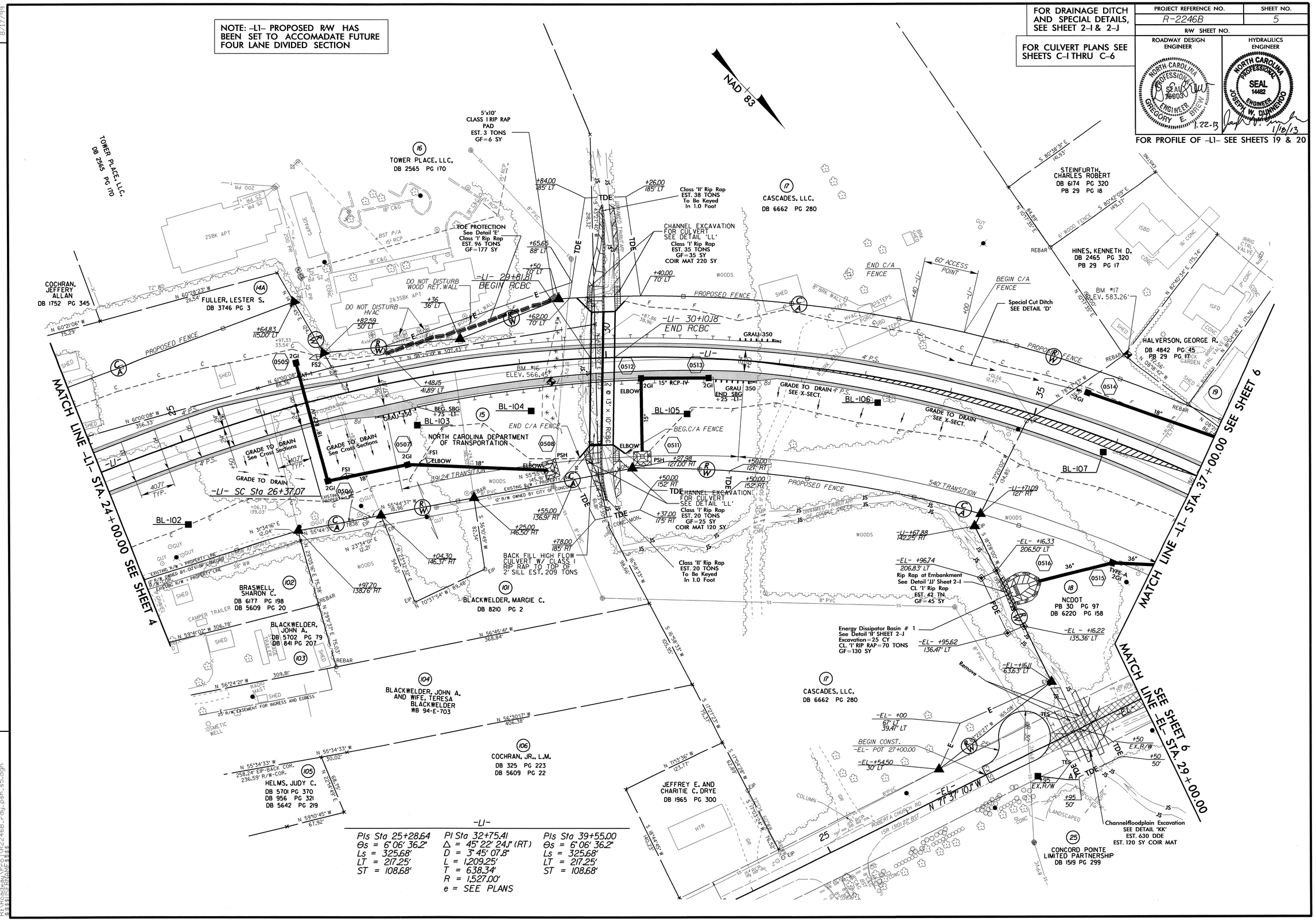
FOR CULVERT PLANS SEE SHEETS C-I THRU C-6

PROJECT REFERENCE NO.	SHEET NO.
R-2246B	5
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 19903 ENGINEER GREGORY E. BREW 1-22-13

NORTH CAROLINA PROFESSIONAL SEAL 14482 ENGINEER JOSEPH W. DUNNIGAN 1/18/13

FOR PROFILE OF -L1- SEE SHEETS 19 & 20



-L1-

PIs Sta 25+28.64	PI Sta 32+75.41	PIs Sta 39+55.00
Θs = 6° 06' 36.2"	Δ = 45° 22' 24.1" (RT)	Θs = 6° 06' 36.2"
Ls = 325.68'	D = 3° 45' 07.8"	Ls = 325.68'
LT = 217.25'	L = 1,209.25'	LT = 217.25'
ST = 108.68'	T = 638.34'	ST = 108.68'
	R = 1,527.00'	
	e = SEE PLANS	

REVISIONS

8/17/99

18-JAN-2013 10:17
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PROJECT REFERENCE NO.	SHEET NO.
R-2246B	6
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 018903 ENGINEER GREGORY E. BREW 1-22-13

HYDRAULICS ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 14482 ENGINEER JOSEPH W. DUNNIGAN 1/18/13

5" MONOLITHIC CONC. ISLAND

4" CONC. SIDEWALK

NOTE: SEE SHEET 2-W FOR DETOUR -Y3DET1- PROVIDING TEMPORARY ACCESS TO THE SUBDIVISION WHILE -Y3- IS BEING CONSTRUCTED.

ELIMINATE THE ACCESS AND REMOVE THE DRIVEWAY PAVEMENT UP TO THE CONTROL ACCESS FENCE AFTER THE CONSTRUCTION HAS BEEN COMPLETED.

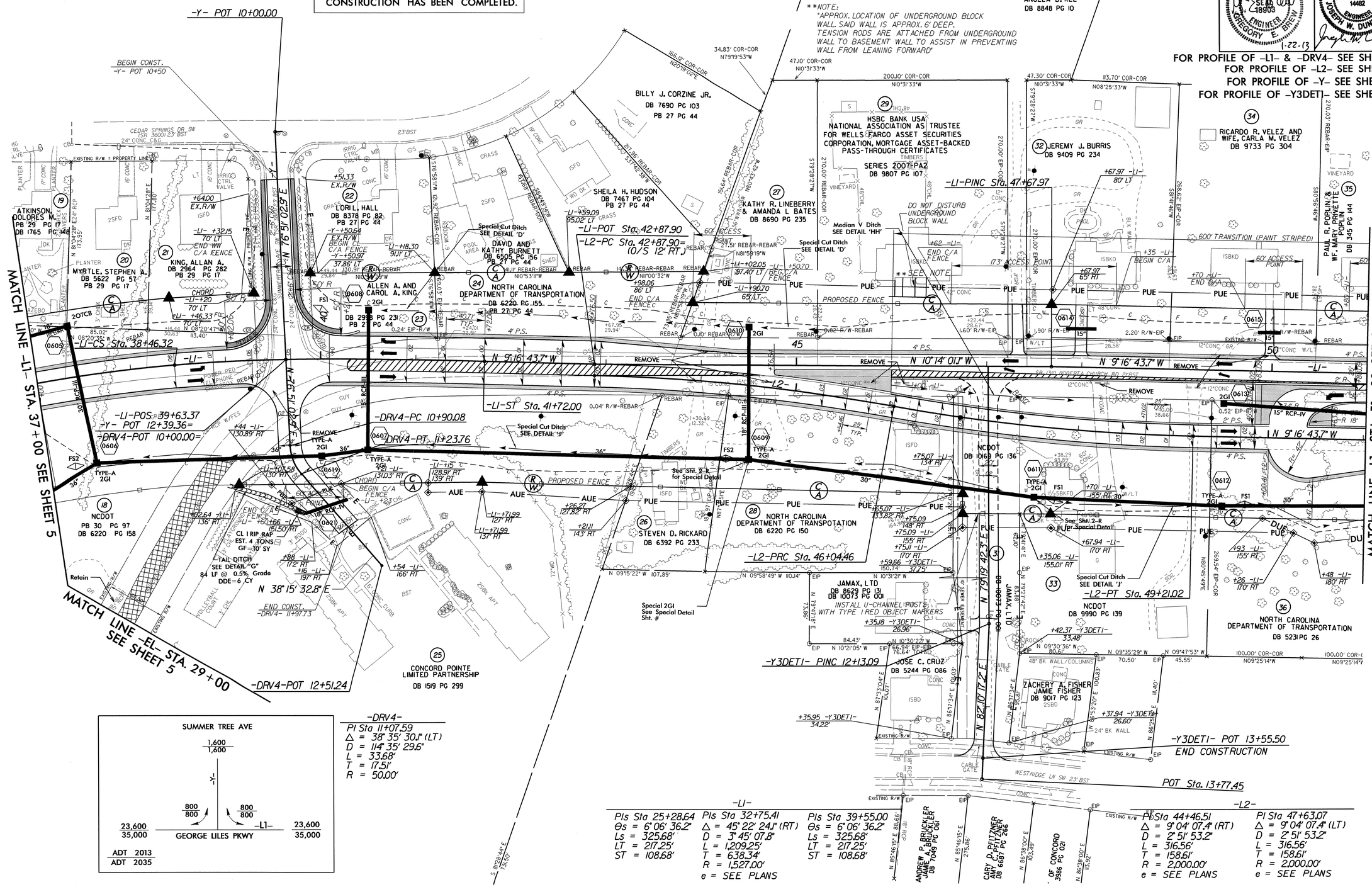
NOTE: -L1- PROPOSED R/W HAS BEEN SET TO ACCOMADTE FUTURE FOUR LANE DIVIDED SECTION

FOR DRAINAGE DITCH DETAILS, SEE SHEETS 2-I AND 2-J

NAD 83

**NOTE:
APPROX. LOCATION OF UNDERGROUND BLOCK WALL. SAID WALL IS APPROX. 6' DEEP. TENSION RODS ARE ATTACHED FROM UNDERGROUND WALL TO BASEMENT WALL TO ASSIST IN PREVENTING WALL FROM LEANING FORWARD

FOR PROFILE OF -L1- & -DRV4- SEE SHEET 20
FOR PROFILE OF -L2- SEE SHEET 21
FOR PROFILE OF -Y- SEE SHEET 27
FOR PROFILE OF -Y3DET1- SEE SHEET 29



REVISIONS

8/17/99

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PROJECT REFERENCE NO.	SHEET NO.
R-2246B	7
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 48903 ENGINEER GREGORY E. BREW 1-22-13

NORTH CAROLINA PROFESSIONAL SEAL 14482 ENGINEER JOSEPH W. DUNNERON 1/22/13

FOR DRAINAGE DITCH DETAILS, SEE SHEETS 2-I AND 2-J

FOR PROFILE OF -L1- SEE SHEET 20
FOR PROFILE OF -L2- SEE SHEET 21
FOR PROFILE OF -L- SEE SHEET 21
FOR PROFILE OF -Y3- SEE SHEET 27
FOR PROFILE OF -Y3DET2- SEE SHEET 30

NOTE: SEE SHEET 2-W FOR DETOUR -Y3DET2- PROVIDING TEMPORARY ACCESS TO THE SUBDIVISION WHILE -Y3- IS BEING CONSTRUCTED.

ELIMINATE THE ACCESS AFTER THE CONSTRUCTION HAS BEEN COMPLETED.

5" MONOLITHIC CONC. ISLAND

4" CONC. SIDEWALK

NAD 83

-Y3-
PI Sta 11+16.35
Δ = 27° 48' 28.3" (RT)
D = 12° 11' 26.1"
L = 228.11'
T = 116.35'
R = 470.00'
e = SEE PLANS

-L1-POT Sta. 54+31.74 LB. =
-L-POT 23+00.00 L.A.
(0/S 35.00' LT)

BM #3
ELEV. = 605.88'

ALLIDA LANE
DB 1642 PG 186
MB 25 PG 49

BY-11

KEITH TALBERT & WF. JOYCE M. SECCO
DB 1672 PG 239
MB 25 PG 49

TONY L. JOHNSON
DB 3408 PG 197
MB 32 PG 109

DANIEL J. AND SHANNON D. BAKER
DB 3492 PG 77
MB 32 PG 109

MICHAEL S. AND JAMIE L. SHUMAN
DB 7958 PG 263
MB 32 PG 109

PAUL R. POPLIN & WF. MARY PRIVETTE POPLIN
DB 345 PG 144

RILEY G. HONEYCUTT & WF. JUANITA B. HONEYCUTT
DB 301 PG 243

ROBERT WAYNE BENFIELD
DB 1366 PG 351

BILLY H. LEFLER & WF. ANNIE B. LEFLER
DB 368 PG 287

ALEJANDRINO RAMOS DAVILA
DB 8393 PG 37

SAMUEL III AND BONITA COCHRAN
DB 7276 PG 295
MB 25 PG 49

THOMAS F. AND KATHERINE I. CLEARY
DB 8127 PG 170
MB 25 PG 49

NANCYANN LAINER AND BRIAN T. BOWMAN
DB 7390 PG 152
MB 25 PG 49

JOHN A. MICHETTI & WF. JAN E. MICHETTI
DB 953 PG 112
MB 25 PG 49

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DB 2980 PG 4

ROBERTA FARMS PROPERTY OWNERS' ASSOCIATION, INC.
DB 982 PG 26
MB 25 PG 49

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DB 6220 PG 160

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DB 6220 PG 162

RANDALL L. CULLER & WF. ELIZABETH J. CULLER
DB 525 PG 533

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DB 2536 PG 112

CAROL R. SANSBERRY
DB 4908 PG 001

GEORGE F. AND GLENDLYN M. MERINKERGE
DB 5244 PG 546

SUSAN M. AND KENNETH R. BAKER
DB 4712 PG 1

JAMI D. RODGERS
DB 4730 PG 59

WAYNE WHALEY, JR.
DB 4730 PG 1

PHILLIP MORRIS INCORPORATED
DB 790 PG 388

MICHAEL R. BORKOWSKI AMBER C. BORKOWSKI
DB 7823 PG 327

DANA MARIE MAIER WILLIAM MAIER
DB 8614 PG 256

MICHAEL L. PAINTER KRISTI J. KILLOUGH
DB 8814 PG 159

LOUISE C. BARBEE
DB 7939 PG 259

JOHN D. WING MARINDA C. WING
DB 4538 PG 97

MARIA T. HOLMAN
DB 6916 PG 205

-Y3-PC 10+00.

-Y3- POT 12+91.47 =
-L- POT 27+08.88

-Y3-PT 12+28.11

-L2-

-L-TS Sta. 28+49.45

-L-SC Sta. 30+49.45

-L2-PT Sta. 54+34.31 LB. =
-L-POT 23+00.00 L.A.
(0/S 35.00' RT)

-Y6-POT Sta. 10+00.00=
-Y3-POT Sta. 14+84.51

-Y6-POT Sta. 12+19.32

-Y3-POT Sta. 17+48.88

MATCH LINE -L1- STA. 51+00.00 SEE SHEET 6

MATCH LINE -L- STA. 33+70.00 SEE SHEET 8

N 9° 16' 43.7" W

S 9° 17' 54.6" E

N 77° 57' 34.6" E

N 76° 36' 34.3" E

PROPOSED 10'X15' GRAVEL TURNAROUND AREAS

60' ACCESS POINT

GRADE TO DRAIN

PROPOSED FENCE

Special Cut Ditch SEE DETAIL 'D'

Special Cut Ditch SEE DETAIL 'T'

Special Cut Ditch w/Hinge SEE DETAIL 'L'

Median V Ditch SEE DETAIL 'HH'

Lateral 'V' Ditch SEE DETAIL 'N' EST. DDE = 289 CY

Standard Base Ditch SEE DETAIL 'M' DDE = 91 CY

CL I RIP RAP EST 11 TONS GF = 22 SY

CL B RIP RAP EST 1 TON GF = 5 SY

-L-
PIs Sta 29+82.79
Θs = 1° 31' 40.4"
Ls = 200.00'
LT = 133.34'
ST = 66.67'

PI Sta 33+26.06
Δ = 8° 26' 14.3" (LT)
D = 1° 31' 40.4"
L = 552.22'
T = 276.61'
R = 3,750.00'
e = SEE PLANS

ROBERTA FARMS CT

GEORGE LILES PKWY

-L-

-Y3-

1,800 / 3,100			
500 / 1,300	1300 / 1,800		
23,600 / 35,000			24,500 / 35,300
400 / 900	500 / 700		
900 / 1,600			

ADT 2013
ADT 2035

ROBERTA WOODS CT

CITY OF MONROE GENERAL PUBLIC UTILITY 20' EASEMENT

REVISIONS

8/17/99

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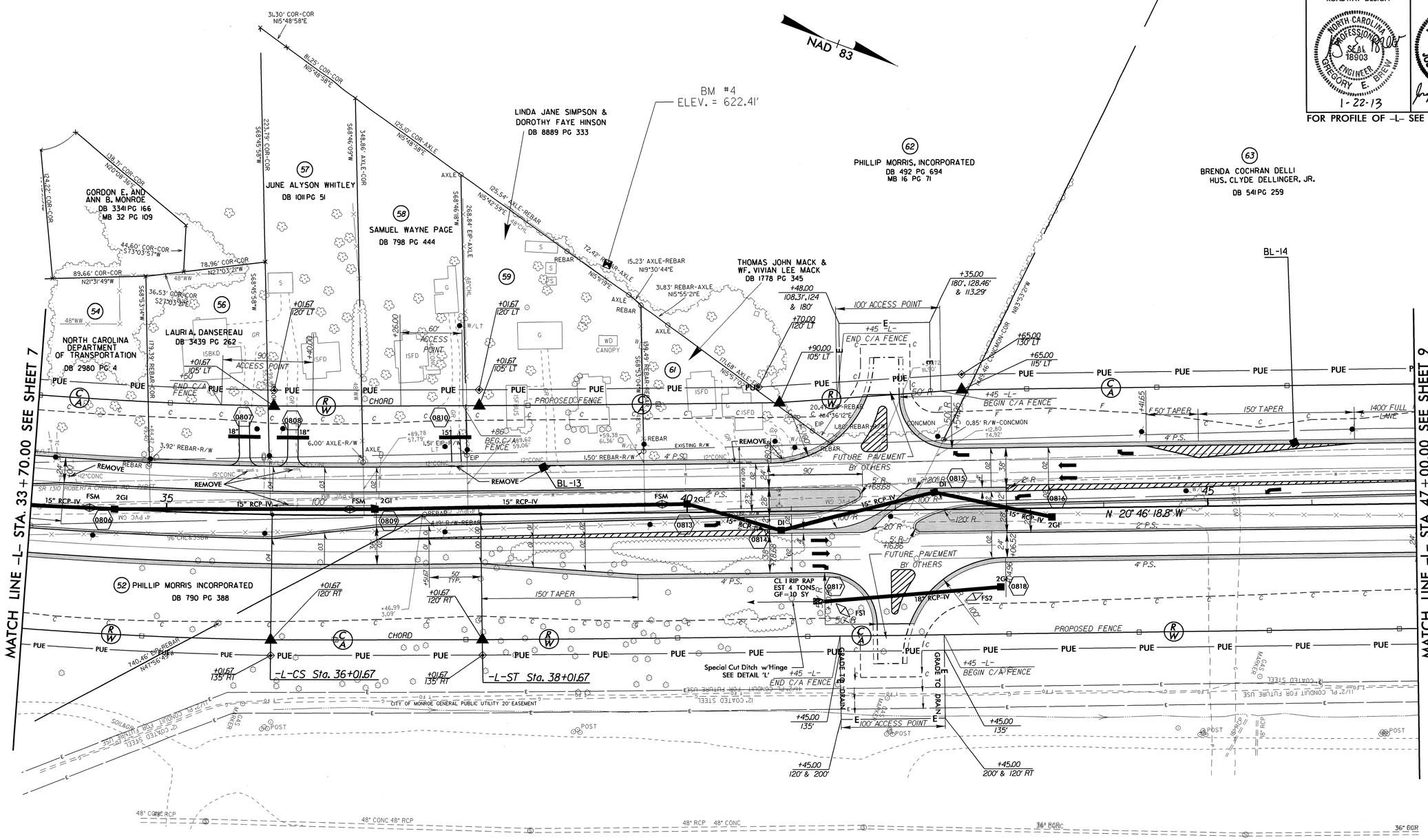
FOR DRAINAGE DITCH DETAILS, SEE SHEETS 2-I AND 2-J

PROJECT REFERENCE NO.	SHEET NO.
R-2246B	8
R/W SHEET NO.	

ROADWAY DESIGN — NORTH CAROLINA PROFESSIONAL SEAL 18903 ENGINEER GREGORY E. BRICW — 1-22-13

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 14482 ENGINEER JOSEPH W. DUNNEVOO — 1/22/13

FOR PROFILE OF -L- SEE SHEETS 21 & 22



-L-	
PI Sta 33+26.06	PIs Sta 36+68.34
Δ = 8° 26' 14.3" (LT)	Θs = 1° 31' 40.4"
D = 1° 31' 40.4"	Ls = 200.00'
L = 552.22'	LT = 133.34'
T = 276.61'	ST = 66.67'
R = 3,750.00'	
e = SEE PLANS	

REVISIONS

8/17/99

08-JAN-2013 08:35
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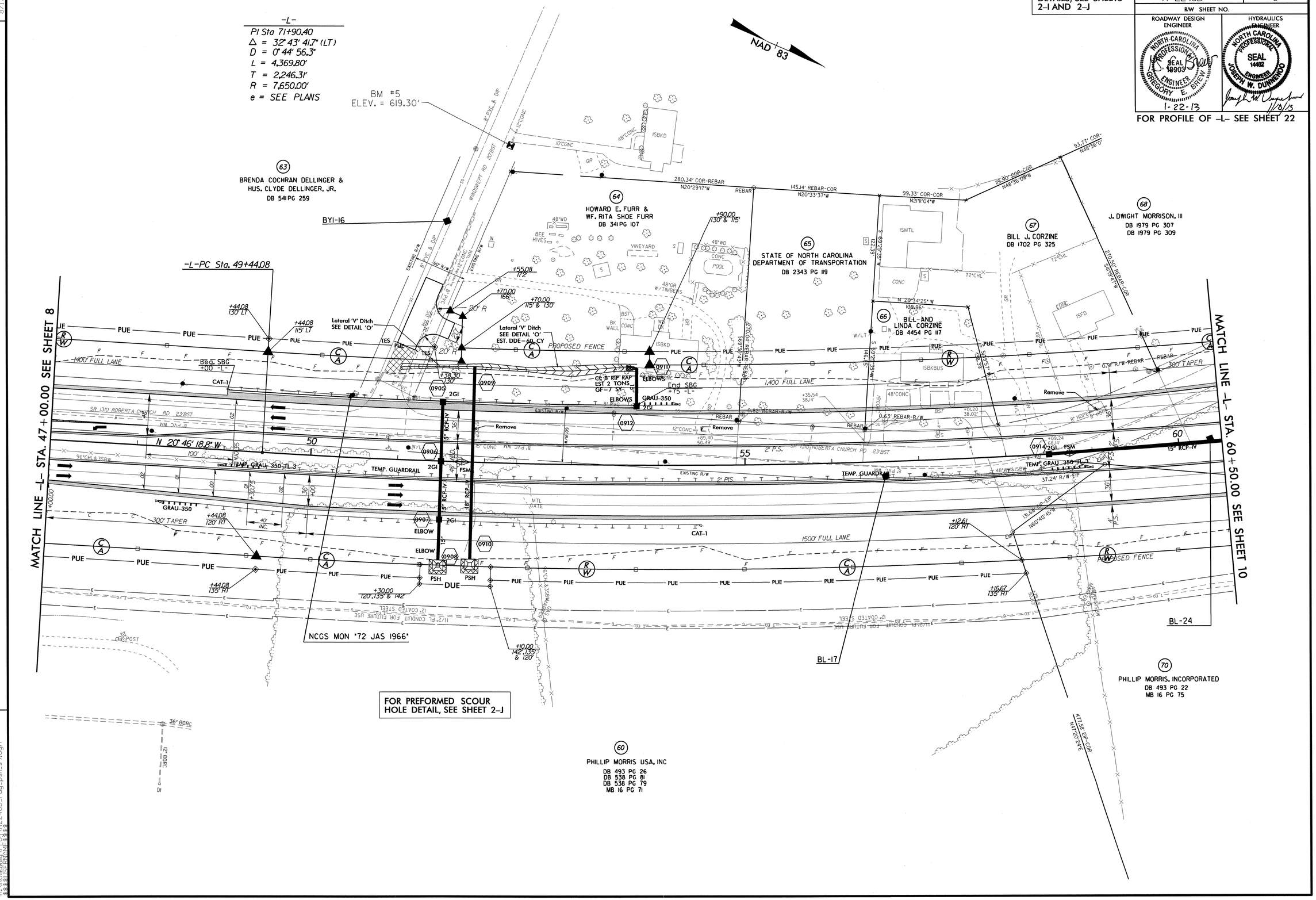
$$$$USERNAME$$$$

FOR DRAINAGE DITCH DETAILS, SEE SHEETS 2-I AND 2-J	PROJECT REFERENCE NO.	SHEET NO.
	R-2246B	9
	R/W SHEET NO.	

ROADWAY DESIGN ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 18903 ENGINEER GREGORY E. BREW — 1-22-13

HYDRAULICS ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 14482 ENGINEER JOSEPH W. DUNNEWOLD — 1/22/13

FOR PROFILE OF -L- SEE SHEET 22



REVISIONS

8/17/99

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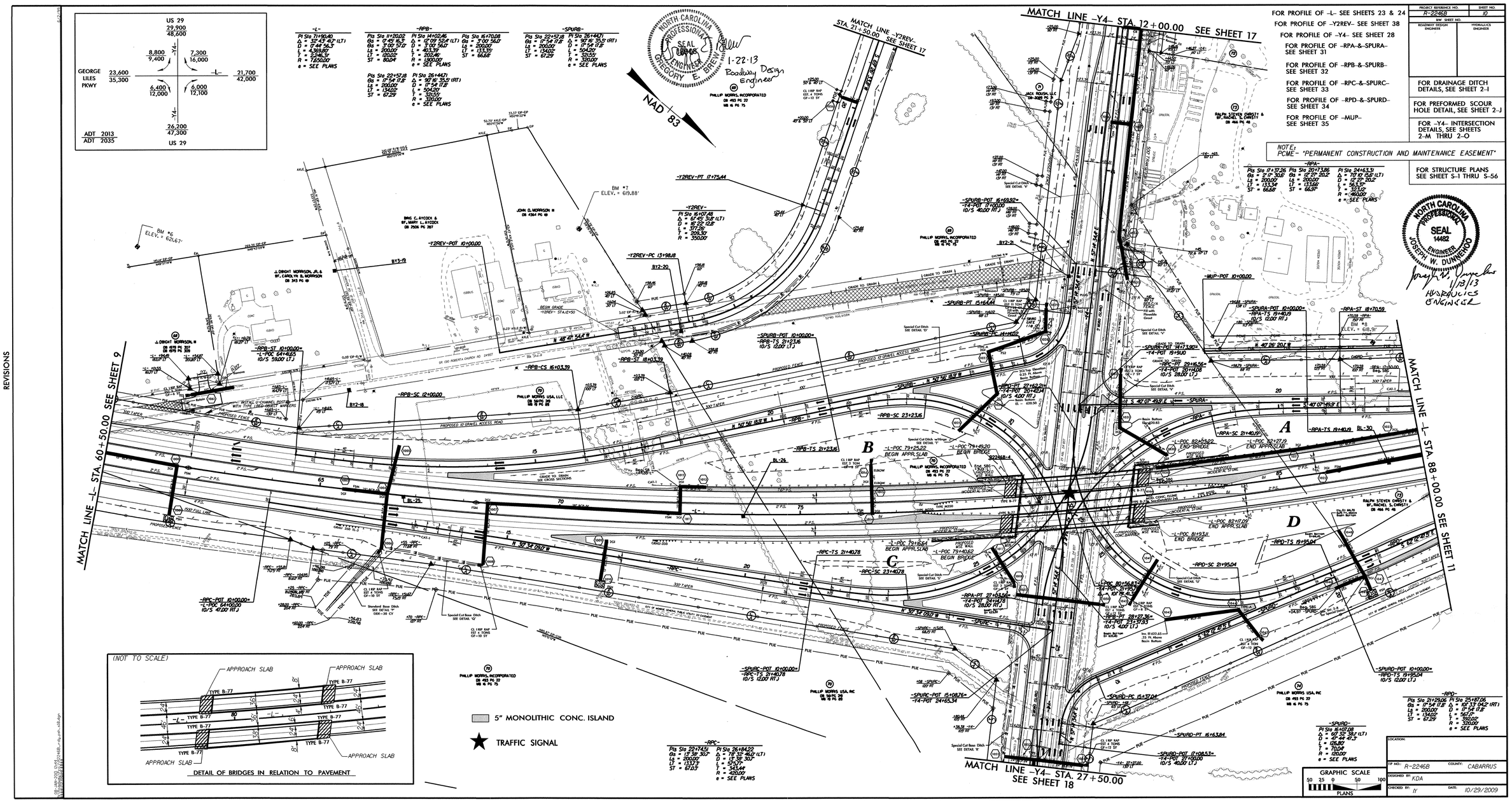

MATCH LINE -Y4- STA. 12+00.00 SEE SHEET 17
MATCH LINE -Y2REV- STA. 21+50.00 SEE SHEET 17
MATCH LINE -L- STA. 60+50.00 SEE SHEET 9
MATCH LINE -L- STA. 88+00.00 SEE SHEET 11
MATCH LINE -Y4- STA. 27+50.00 SEE SHEET 18
NAD 83
GEORGE LILES PKWY
US 29
ADT 2013
ADT 2035
FOR PROFILE OF -L- SEE SHEETS 23 & 24
FOR PROFILE OF -Y2REV- SEE SHEET 38
FOR PROFILE OF -Y4- SEE SHEET 28
FOR PROFILE OF -RPA-&-SPURA- SEE SHEET 31
FOR PROFILE OF -RPB-&-SPURB- SEE SHEET 32
FOR PROFILE OF -RPC-&-SPURC- SEE SHEET 33
FOR PROFILE OF -RPD-&-SPURD- SEE SHEET 34
FOR PROFILE OF -MUP- SEE SHEET 35
FOR DRAINAGE DITCH DETAILS, SEE SHEET 2-I
FOR PREFORMED SCOUR HOLE DETAIL, SEE SHEET 2-J
FOR -Y4- INTERSECTION DETAILS, SEE SHEETS 2-M THRU 2-O
FOR STRUCTURE PLANS SEE SHEET S-1 THRU S-56
NOTE: PCME- *PERMANENT CONSTRUCTION AND MAINTENANCE EASEMENT*
PROJECT REFERENCE NO. R-2246B
SHEET NO. 10
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 14482 ENGINEER JOSEPH W. DUNNHOFO
1/31/13 HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 030405 ENGINEER GREGORY E. BREWER
1-22-13 Roadway Design Engineer
(NOT TO SCALE)
APPROACH SLAB
TYPE B-77
DETAIL OF BRIDGES IN RELATION TO PAVEMENT
5" MONOLITHIC CONC. ISLAND
TRAFFIC SIGNAL
GRAPHIC SCALE
PLANS
LOCATION:
TIP NO.: R-2246B
COUNTY: CABARRUS
DESIGNED BY: KDA
CHECKED BY: TY
DATE: 10/29/2009
REVISIONS

NOTE:
PCME- "PERMANENT CONSTRUCTION AND MAINTENANCE EASEMENT"

FOR CULVERT PLANS SEE SHEET C-7 THRU C-12

FOR CHANNEL EXCAVATION FOR CULVERT DETAIL, SEE SHEET 2-J

FOR DRAINAGE DITCH DETAILS, SEE SHEET 2-I

PROJECT REFERENCE NO.	SHEET NO.
R-2246B	11
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 16903 ENGINEER GREGORY E. BREW — 1-22-13

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 14482 ENGINEER JOSEPH W. DUNNEWOLD — 1/15/13

FOR PROFILE OF -L- SEE SHEET 24
FOR PROFILE OF -RPA- SEE SHEET 31
FOR PROFILE OF -RPD- SEE SHEET 34
FOR PROFILE OF -MUP- SEE SHEET 35

-RPA-

PI Sta 15+66.23	PIs Sta 13+95.09
Δ = 4° 47' 10.4" (RT)	Θs = 2° 17' 30.6"
D = 2° 17' 30.6"	Ls = 200.00'
L = 208.84'	LT = 133.34'
T = 104.48'	ST = 66.68'
R = 2,500.00'	
e = SEE PLANS	

-MUP-

PI Sta 15+49.67	PI Sta 23+16.86	PI Sta 23+77.52
Δ = 6° 51' 40.0" (LT)	Δ = 33° 08' 27.0" (RT)	Δ = 36° 05' 14.8" (LT)
D = 3° 10' 59.2"	D = 57° 17' 44.8"	D = 57° 17' 44.8"
L = 215.55'	L = 57.84'	L = 62.98'
T = 107.90'	T = 29.76'	T = 32.58'
R = 1,800.00'	R = 100.00'	R = 100.00'
e = 02	e = 02	
PI Sta 25+60.24	PI Sta 26+11.00	PI Sta 29+34.95
Δ = 26° 21' 46.7" (LT)	Δ = 31° 27' 19.2" (RT)	Δ = 16° 11' 16.3" (RT)
D = 57° 17' 44.8"	D = 57° 17' 44.8"	D = 2° 44' 29.6"
L = 46.01'	L = 54.90'	L = 590.46'
T = 23.42'	T = 28.16'	T = 297.21'
R = 100.00'	R = 100.00'	R = 2,089.91'
e = 02	e = 02	e = 02

-L-

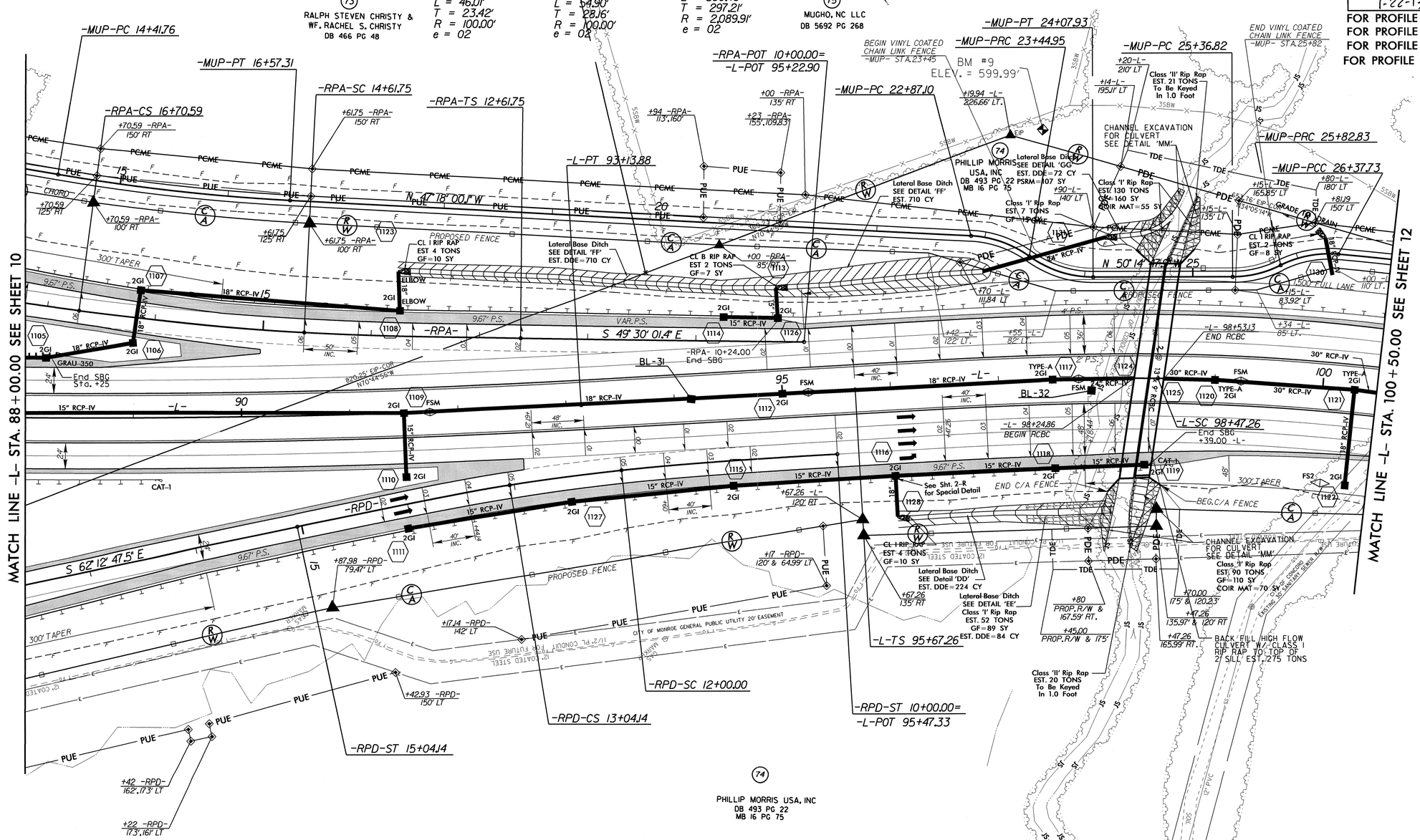
PI Sta 71+90.40	PIs Sta 97+53.97	PI Sta 101+63.11
Δ = 32° 43' 41.7" (LT)	Θs = 4° 00' 38.5"	Δ = 17° 56' 54.9" (RT)
D = 0° 44' 56.3"	Ls = 280.00'	D = 2° 51' 53.2"
L = 4,369.80'	LT = 186.71'	L = 626.52'
T = 2,246.31'	ST = 93.38'	T = 315.85'
R = 7,650.00'		R = 2,000.00'
		e = SEE PLANS

NAD 83

(73) RALPH STEVEN CHRISTY & WF. RACHEL S. CHRISTY DB 466 PG 48

(75) MUGHO, NC LLC DB 5692 PG 268

(74) PHILLIP MORRIS USA, INC DB 493 PG 22 MB 16 PG 75



-RPD-

PIs Sta 13+70.83	PI Sta 12+52.08	PIs Sta 11+33.35
Θs = 2° 51' 53.2"	Δ = 2° 59' 00.6" (LT)	Θs = 2° 51' 53.2"
Ls = 200.00'	D = 2° 51' 53.2"	Ls = 200.00'
LT = 133.35'	L = 104.14'	LT = 133.35'
ST = 66.68'	T = 52.08'	ST = 66.68'
	R = 2,000.00'	
	e = SEE PLANS	

REVISIONS

8/17/99

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FOR NOISE WALL ENVELOPE SEE SHEETS 2-X THRU 2-Z	FOR NOISE WALL PLANS SEE SHEETS W-1 THRU W-7	FOR DRAINAGE DITCH DETAILS SEE SHEETS 2-I AND 2-J

PROJECT REFERENCE NO.	SHEET NO.
R-2246B	12
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 18908 ENGINEER GREGORY E. BRUN — 2-21-13

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 14482 ENGINEER JOSEPH W. WU — 2/21/13

FOR PROFILE OF -L- SEE SHEETS 24 & 25
FOR PROFILE OF -MUP- SEE SHEETS 35 & 36

NOTE:
PCME- "PERMANENT CONSTRUCTION AND MAINTENANCE EASEMENT"

-L-

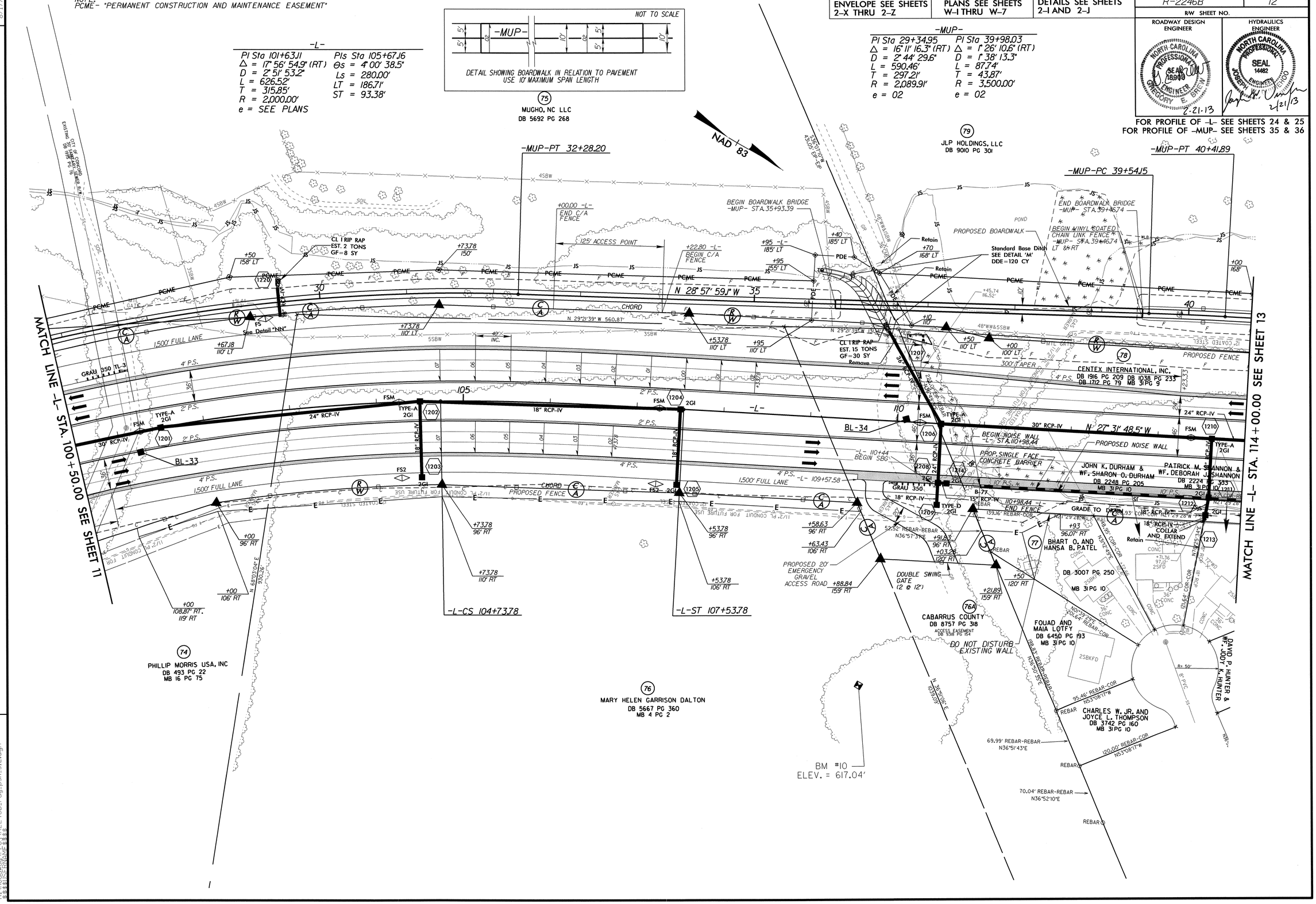
PI Sta 101+63.11	PIs Sta 105+67.16
Δ = 17° 56' 54.9" (RT)	Θs = 4° 00' 38.5"
D = 2° 51' 53.2"	Ls = 280.00'
L = 626.52'	LT = 186.71'
T = 315.85'	ST = 93.38'
R = 2,000.00'	
e = SEE PLANS	

-MUP-

PI Sta 29+34.95	PI Sta 39+98.03
Δ = 16° 11' 16.3" (RT)	Δ = 1° 26' 10.6" (RT)
D = 2° 44' 29.6"	D = 1° 38' 13.3"
L = 590.46'	L = 87.74'
T = 297.21'	T = 43.87'
R = 2,089.91'	R = 3,500.00'
e = 02	e = 02

NOT TO SCALE

DETAIL SHOWING BOARDWALK IN RELATION TO PAVEMENT
USE 10' MAXIMUM SPAN LENGTH



REVISIONS

8/17/99

20-FEB-2013 15:11
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NOTE:
PCME- "PERMANENT CONSTRUCTION AND MAINTENANCE EASEMENT"

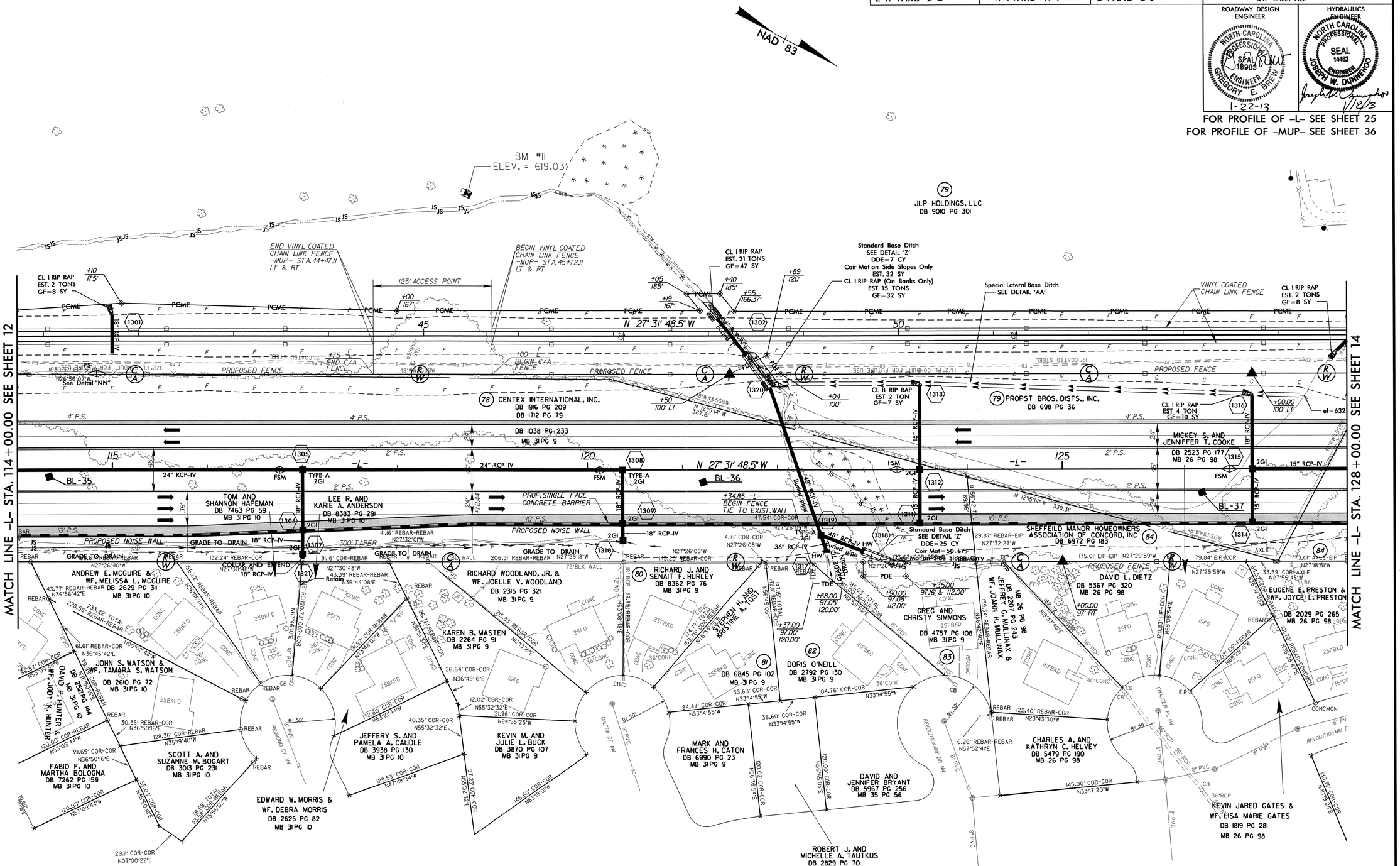
FOR NOISE WALL ENVELOPE SEE SHEETS 2-X THRU 2-Z	FOR NOISE WALL PLANS SEE SHEETS W-1 THRU W-7	FOR DRAINAGE DITCH DETAILS SEE SHEETS 2-I AND 2-J

PROJECT REFERENCE NO.	SHEET NO.
R-2246B	13
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 18903 ENGINEER GREGORY E. BREW
1-22-13

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 14482 ENGINEER JOSEPH W. DUNNIGAN
1/18/13

FOR PROFILE OF -L- SEE SHEET 25
FOR PROFILE OF -MUP- SEE SHEET 36



REVISIONS

8/17/99

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PROJECT REFERENCE NO.	SHEET NO.
R-2246B	14
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 38903 ENGINEER GREGORY E. BREW — 2-6-13

HYDRAULICS ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 14482 ENGINEER JOSEPH W. DUNKLEBERGER — 2/6/13

FOR DRAINAGE DITCH DETAILS SEE SHEETS 2-I AND 2-J

FOR NOISE WALL PLANS SEE SHEETS W-1 THRU W-7

FOR NOISE WALL ENVELOPE SEE SHEETS 2-X THRU 2-Z

FOR PROFILE OF -L- SEE SHEETS 25 & 26

FOR PROFILE OF -MUP- SEE SHEETS 36 & 37

NOTE:
PCME - "PERMANENT CONSTRUCTION AND MAINTENANCE EASEMENT"

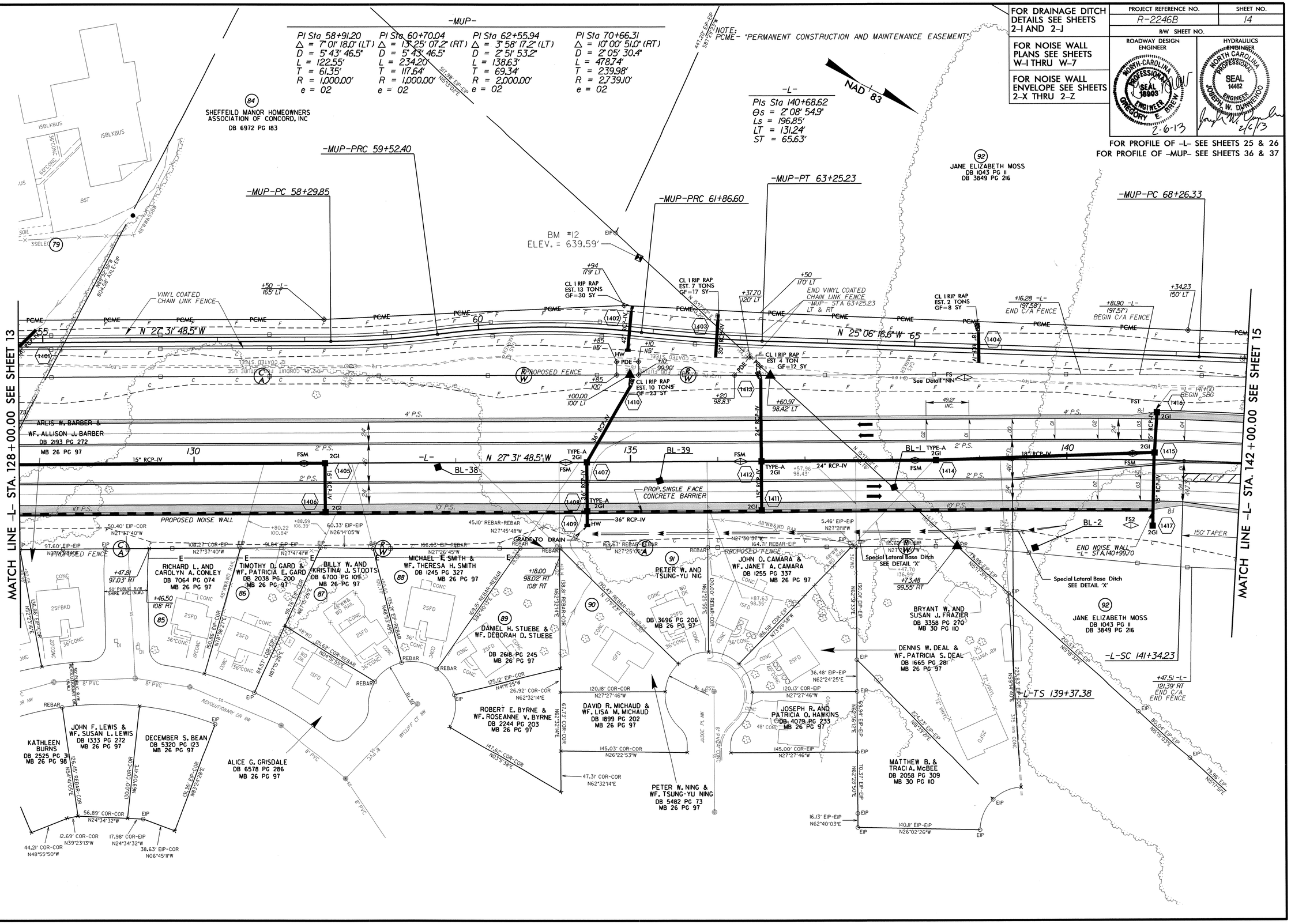
-MUP-

PI Sta 58+91.20	PI Sta 60+70.04	PI Sta 62+55.94	PI Sta 70+66.31
Δ = 7° 01' 18.0" (LT)	Δ = 13° 25' 07.2" (RT)	Δ = 3° 58' 17.2" (LT)	Δ = 10° 00' 51.0" (RT)
D = 5° 43' 46.5"	D = 5° 43' 46.5"	D = 2° 51' 53.2"	D = 2° 05' 30.4"
L = 122.55'	L = 234.20'	L = 138.63'	L = 478.74'
T = 61.35'	T = 117.64'	T = 69.34'	T = 239.98'
R = 1,000.00'	R = 1,000.00'	R = 2,000.00'	R = 2,739.10'
e = 02	e = 02	e = 02	e = 02

-L-

PIs Sta 140+68.62
Θs = 2° 08' 54.9"
Ls = 196.85'
LT = 131.24'
ST = 65.63'

NAD 83



REVISIONS

8/17/99

05-FEB-2013 15:05
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FOR DRAINAGE DITCH DETAILS, SEE SHEETS 2-I AND 2-J	PROJECT REFERENCE NO.	SHEET NO.
	R-2246B	15
FOR -Y5- INTERSECTION DETAIL, SEE SHEET 2-P	R/W SHEET NO.	
	ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 16903 ENGINEER GREGORY E. BREWER 1-22-13

NORTH CAROLINA PROFESSIONAL SEAL 14482 ENGINEER JOSEPH W. DUNNIGAN 1/22/13

FOR PROFILE OF -L- SEE SHEET 26
FOR PROFILE OF -Y5- SEE SHEET 29
FOR PROFILE OF -MUP- SEE SHEET 37

5" MONOLITHIC CONC. ISLAND

TRAFFIC SIGNAL

NAD 83

-L-

PIs Sta 140+68.62	PI Sta 145+00.05	PIs Sta 149+26.82
Θs = 2° 08' 54.9"	Δ = 15° 52' 10.2" (RT)	Θs = 2° 08' 54.9"
Ls = 196.85'	D = 2° 10' 58.7"	Ls = 196.85'
LT = 131.24'	L = 726.97'	LT = 131.24'
ST = 65.63'	T = 365.83'	ST = 65.63'
	R = 2,624.67'	
	e = SEE PLANS	

-MUP-

PI Sta 70+66.31	PI Sta 73+38.05
Δ = 10° 00' 51.0" (RT)	Δ = 18° 43' 30.4" (RT)
D = 2° 05' 30.4"	D = 28° 38' 52.4"
L = 478.74'	L = 65.36'
T = 239.98'	T = 32.98'
R = 2,739.10'	R = 200.00'
e = 02	e = 02

NOTE:
PCME- "PERMANENT CONSTRUCTION AND MAINTENANCE EASEMENT"

-Y5-

PI Sta 17+05.99
Δ = 10° 11' 23.2" (RT)
D = 4° 03' 48.7"
L = 250.76'
T = 125.71'
R = 1,410.00'
e = SEE PLANS

-L-

PIs Sta 153+62.09	PI Sta 157+01.70
Θs = 2° 08' 54.9"	Δ = 11° 55' 11.2" (LT)
Ls = 196.85'	D = 2° 10' 58.7"
LT = 131.24'	L = 546.03'
ST = 65.63'	T = 274.01'
	R = 2,624.67'

-Y5-

PI Sta 24+18.52
Δ = 4° 01' 13.0" (RT)
D = 1° 14' 18.8"
L = 324.59'
T = 162.36'
R = 4,625.98'
e = SEE PLANS

END TIP PROJECT R-2246B
-L- STA. 150+58.04

MATCH LINE -L- STA. 142+00.00 SEE SHEET 14

-Y5- POT STA 14+00
BEGIN CONSTRUCTION

BEGIN C&G
-Y5- STA.15+00.00 RT.

Special Cut Ditch
SEE DETAIL 'B'
PSRM 194 SQ. YDS.

CL B RIP RAP
EST. 2 TONS
GF=7 SY

CL 'I' RIP RAP
EST. 7 TONS
GF=15 SY

CL I RIP RAP
EST. 2 TONS
GF=8 SY

CL I RIP RAP
EST. 7 TONS
GF=17 SY

CL I RIP RAP
EST. 2 TONS
GF=6 SY

-Y5-PC 15+80.28

-MUP-PT 73+70.44

-MUP-PCC 73+05.07

-MUP-POT 74+72.38

-Y5-PT 18+31.94

-L-CS 148+61.19

-Y5- POT 18+62.40=
-L- POC 148+28.77

-L-SC 154+27.70

-L- POC STA 155+50.00
END CONSTRUCTION

-L-ST 150+58.04

-L-POT 152+30.85

+13.13 -L-
121.39' RT
BEGIN C/A
BEGIN FENCE

21+54.33 -Y5-
END FENCE.
END C/A

-Y5-PC 22+56.15

-Y5- POT STA.22+50.00
END PAVING

-Y5- POC STA.23+70.00
END CONSTRUCTION

+32.65 -L-
END SBG

146+72.44 -L-
END FENCE

+11.69
150' LT

+08.36 -L-
117.89' LT

REMOVE EXIST. GUARDRAIL

REMOVE EXIST. 2GI
REMOVE 8.0' EXIST. PIPE
15" CLASS III PIPE

TB JB w/MH

JB w/MH
See Sht. 2-Q for Special Detail

TB JB w/MH
ELBOW

ELBOW

DO NOT DISTURB POWER POLE

GRADE TO DRAIN

Special Cut Ditch
See Detail 'F'

15" RCP-IV

30" RCP-IV

18" RCP-IV

5' MONO ISLAND

SPECIAL DI

Retain

PROPOSED FENCE

PROPOSED SBG

376.53' FULL LANE

150' TAPER

ABANDONED

EXISTING R/W

MHRA, LLC
DB 6188 PG 302

JOHN D. MORRISON III
DB 2290 PG 107

COBLE FAMILY FARM LTD
DB 1777 PG 273

JOWAC, LLC
DB 3964 PG 19

JOWAC
DB 396

JANE ELIZABETH MOSS
DB 1043 PG 11
DB 3849 PG 216

COBLE FAMILY FARM LTD
DB 3029 PG 174

JMS POPLAR, LLC
DB 7987 PG 46

BL-27

BL-28

BL-81

BL-82

WEDDINGTON RD
SR 1431

9,800 / 20,600

1,200 / 7,900 -Y5-

1,500 / 5,100

GEORGE LILES PKWY

21,700 / 42,000 -L-

20,000 / 44,000

3,000 / 3,800 -Y5-

1,000 / 8,600

11,100 / 20,000

ADT 2013 / ADT 2035

WEDDINGTON RD
SR 1431

REVISIONS

8/17/99

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NOTE: -Y1- PROPOSED R/W HAS BEEN SET TO ACCOMMODATE FUTURE WIDENING

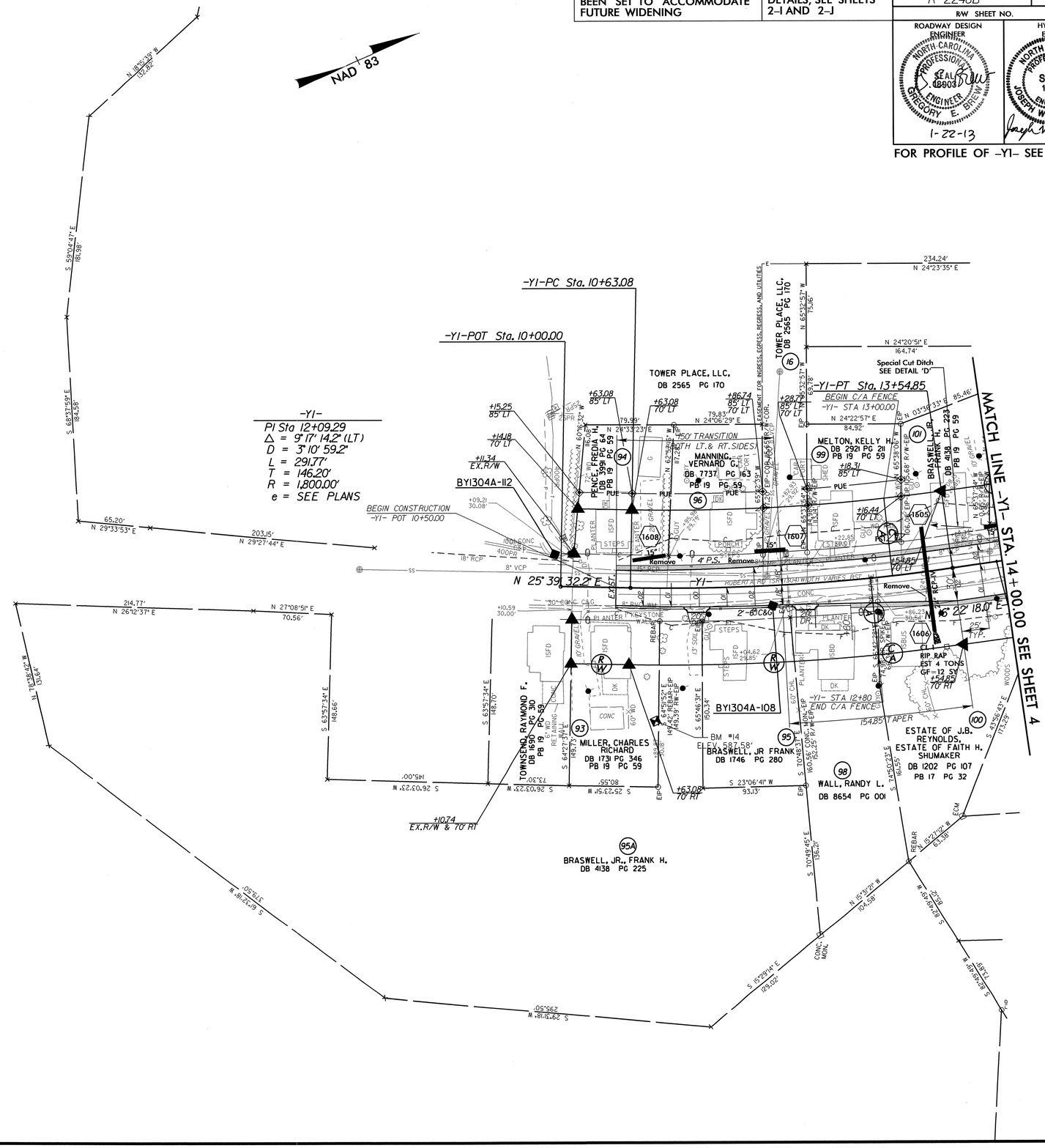
FOR DRAINAGE DITCH DETAILS, SEE SHEETS 2-I AND 2-J

PROJECT REFERENCE NO.	SHEET NO.
R-2246B	16
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 019903 ENGINEER GREGORY E. BREW
1-22-13

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 14482 ENGINEER JOSEPH W. DUNNIGAN
1/14/13

FOR PROFILE OF -Y1- SEE SHEET 26



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FOR DRAINAGE DITCH DETAILS, SEE SHEETS 2-I AND 2-J

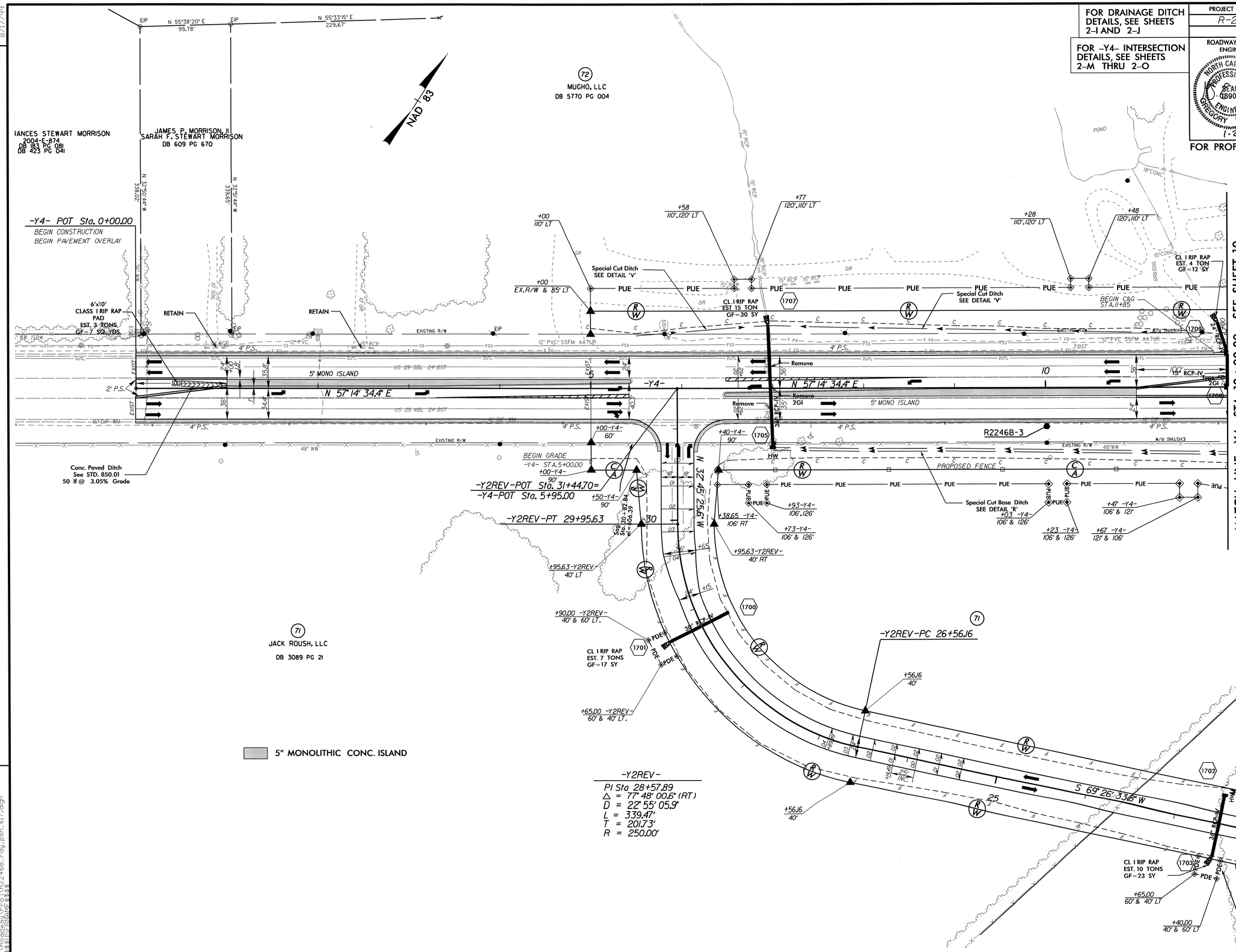
FOR -Y4- INTERSECTION DETAILS, SEE SHEETS 2-M THRU 2-O

PROJECT REFERENCE NO.	SHEET NO.
R-2246B	17
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 18903 ENGINEER GREGORY E. BREWER
1-22-13

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 14482 ENGINEER JOSEPH W. DUNNEGAN
11/9/13

FOR PROFILE OF -Y4- SEE SHEET 28



REVISIONS

8/17/99

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FOR DRAINAGE DITCH DETAILS, SEE SHEETS 2-I AND 2-J

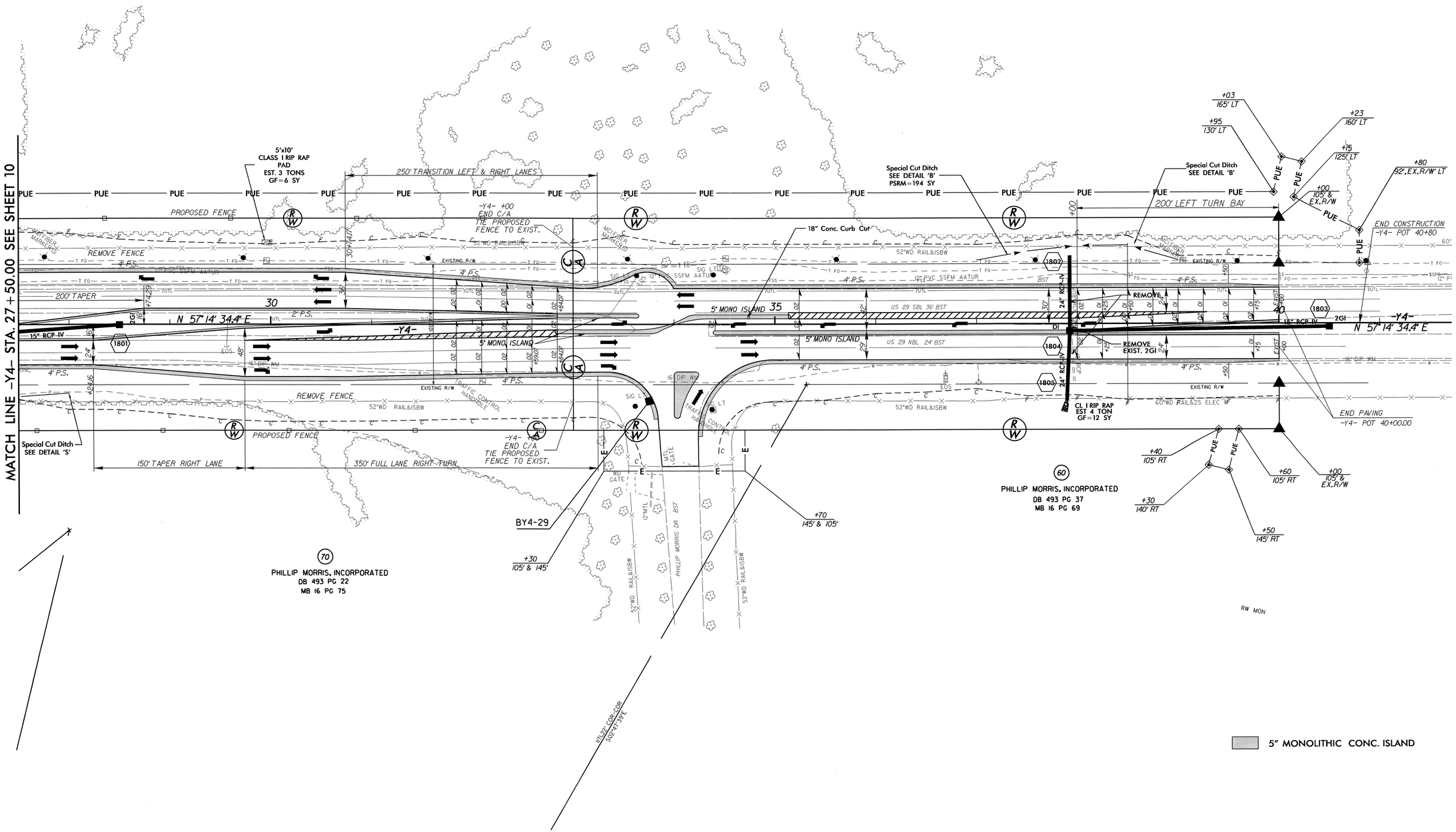
FOR -Y4- INTERSECTION DETAILS, SEE SHEETS 2-M THRU 2-O

PROJECT REFERENCE NO.	SHEET NO.
R-2246B	18
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 18903 ENGINEER GREGORY E. BREW
1-22-13

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 14482 ENGINEER JOSEPH W. DUNNEKOOD
1/18/13

FOR PROFILE OF -Y4- SEE SHEETS 28 & 29



REVISIONS

8/17/99

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PROJECT REFERENCE NO.	SHEET NO.
R-2246B	19

ROADWAY DESIGN ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 38903 ENGINEER GREGORY E. BREW — 1-22-13

HYDRAULICS ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 14482 ENGINEER JOSEPH W. DUNNEGAN — 1/22/13

DITCH LEGEND

LEFT DITCH

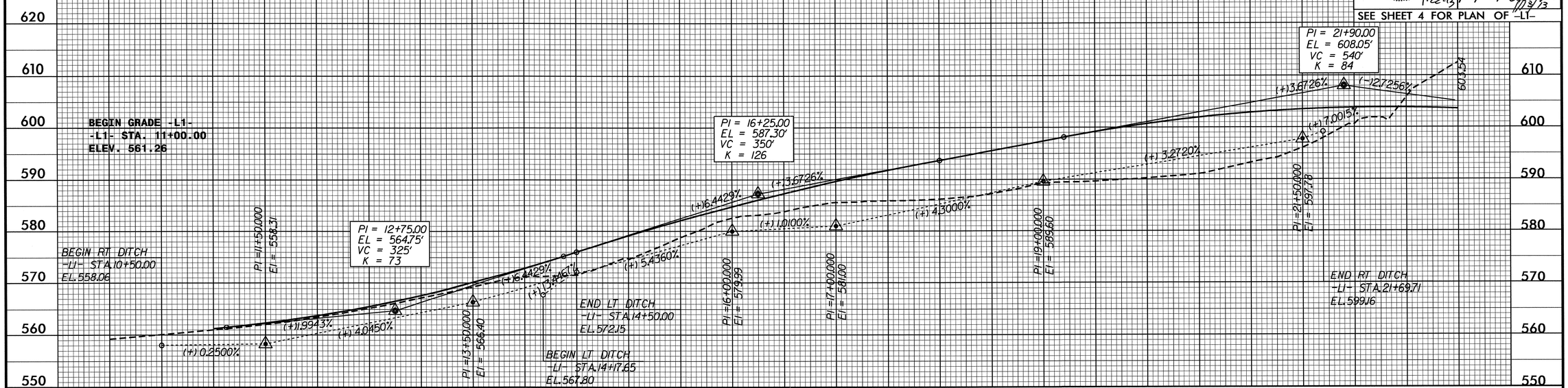
RIGHT DITCH

BM #13 ELEV.584.77'
-BLI- STA 5+00 S 63°02' 21.9" E DIST 152.17'
RR SPIKE IN BASE OF 18" OAK

-L1-

BM #16 ELEV.566.45'
-BLI- STA 16+81 34' LEFT
RR SPIKE IN BASE OF 12" BOX ELDER

SEE SHEET 4 FOR PLAN OF -L1-

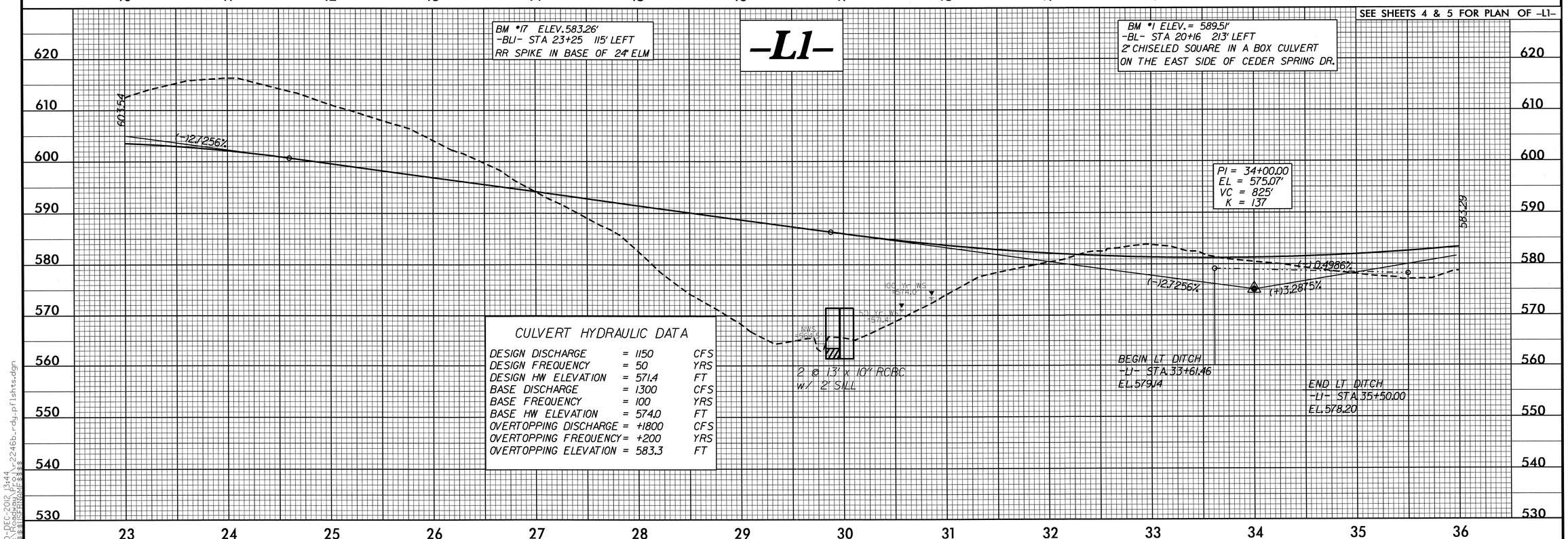


SEE SHEETS 4 & 5 FOR PLAN OF -L1-

BM #17 ELEV.583.26'
-BLI- STA 23+25 115' LEFT
RR SPIKE IN BASE OF 24" ELM

-L1-

BM #1 ELEV.= 589.51'
-BL- STA 20+16 213' LEFT
2" CHISELED SQUARE IN A BOX CULVERT
ON THE EAST SIDE OF CEDER SPRING DR.



CULVERT HYDRAULIC DATA

DESIGN DISCHARGE	= 1150	CFS
DESIGN FREQUENCY	= 50	YRS
DESIGN HW ELEVATION	= 571.4	FT
BASE DISCHARGE	= 1300	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 574.0	FT
OVERTOPPING DISCHARGE	= +1800	CFS
OVERTOPPING FREQUENCY	= +200	YRS
OVERTOPPING ELEVATION	= 583.3	FT

5/28/99

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PROJECT REFERENCE NO.	SHEET NO.
R-2246B	20

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 16903 ENGINEER GREGORY E. BREW — 1-22-13

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 14482 ENGINEER JOSEPH W. DUNNIGAN — 1/18/13

SEE SHEETS 5 & 6 FOR PLAN OF -L1-

DITCH LEGEND

LEFT DITCH

RIGHT DITCH

MEDIAN DITCH

BM #2 ELEV.= 599.49'
-BL- STA 30+29 297' LEFT
RR SPIKE IN BASE OF 12" QUADRUPLE ELM

-L1-

BEGIN MED DITCH
-L1- STA.46+00.00 MED
EL.610.57

END LT DITCH
-L1- STA.46+00.00 LT
EL.607.97

PI = 47+10.00
EL = 615.03'
VC = 365'
K = 84

END MED DITCH
-L1- STA.48+00.00 MED
EL.610.13

BEGIN LT DITCH
-L1- STA.44+20.00 LT
EL.603.87

PI = 42+00.00
EL = 601.37'
VC = 160'
K = 263

BEGIN LT DITCH
-L1- STA.40+00.00
EL.592.53

583.29

611.90

(+)3.2875%

(+)3.7000%

(+)2.6784%

(+)2.7411%

(+)3.2875%

(-)0.5200%

(+)1.6000%

(-)3.3333%

(+)3.4000%

(+)2.6000%

(+)2.6784%

(-)11.6455%

(-)0.2200%

(-)3.9500%

(-)3.9500%

(-)0.6500%

BEGIN RT DITCH
-L1- STA.37+50.00
EL.578.90

END RT DITCH
-L1- STA.39+00.00
EL.584.45

BEGIN RT DITCH
PI =40+00.000
El = 586.20

PI =40+50.000 LT
El = 592.27

PI =41+00.000 RT
El = 593.80

END LT DITCH
-L1- STA.43+90.00 LT
EL.601.61

PI =44+50.000 LT
El = 602.87

PI =46+00.000
El = 606.80

PI =48+00.000
El = 598.30

36 37 38 39 40 41 42 43 44 45 46 47 48 49

620 610 600 590 580 570 560

SEE SHEETS 6 & 7 FOR PLAN OF -L1-

-L1-

PI = 50+40.00
EL = 609.60'
VC = 160'
K = 138

PI = 53+50.00
EL = 608.09'
VC = 160'
K = 185

END GRADE -L1-
-L1- STA. 54+31.74
ELEV. 608.40

611.90

(-)1.5455%

(-)0.4871%

(-)0.4871%

(+)0.3793%

(-)0.6500%

(+)0.4617%

PI =52+00.000
El = 596.30

END RT DITCH
-L1- STA.54+31.74 RT
STA.23+00 -L- (RT)
EL.597.37

-DRV4-

END GRADE -DRV4-
-DRV4- STA 10+23.96
ELEV. 592.39

PI = 11+25.00
EL = 588.32'
VC = 80'
K = 26

END GRADE -DRV4-
-DRV4- STA 11+97.73
ELEV. 587.66

(-)4.0281%

(-)0.9028%

49 50 51 52 53 54 11 12

620 610 600 590 580 570 560 550 540

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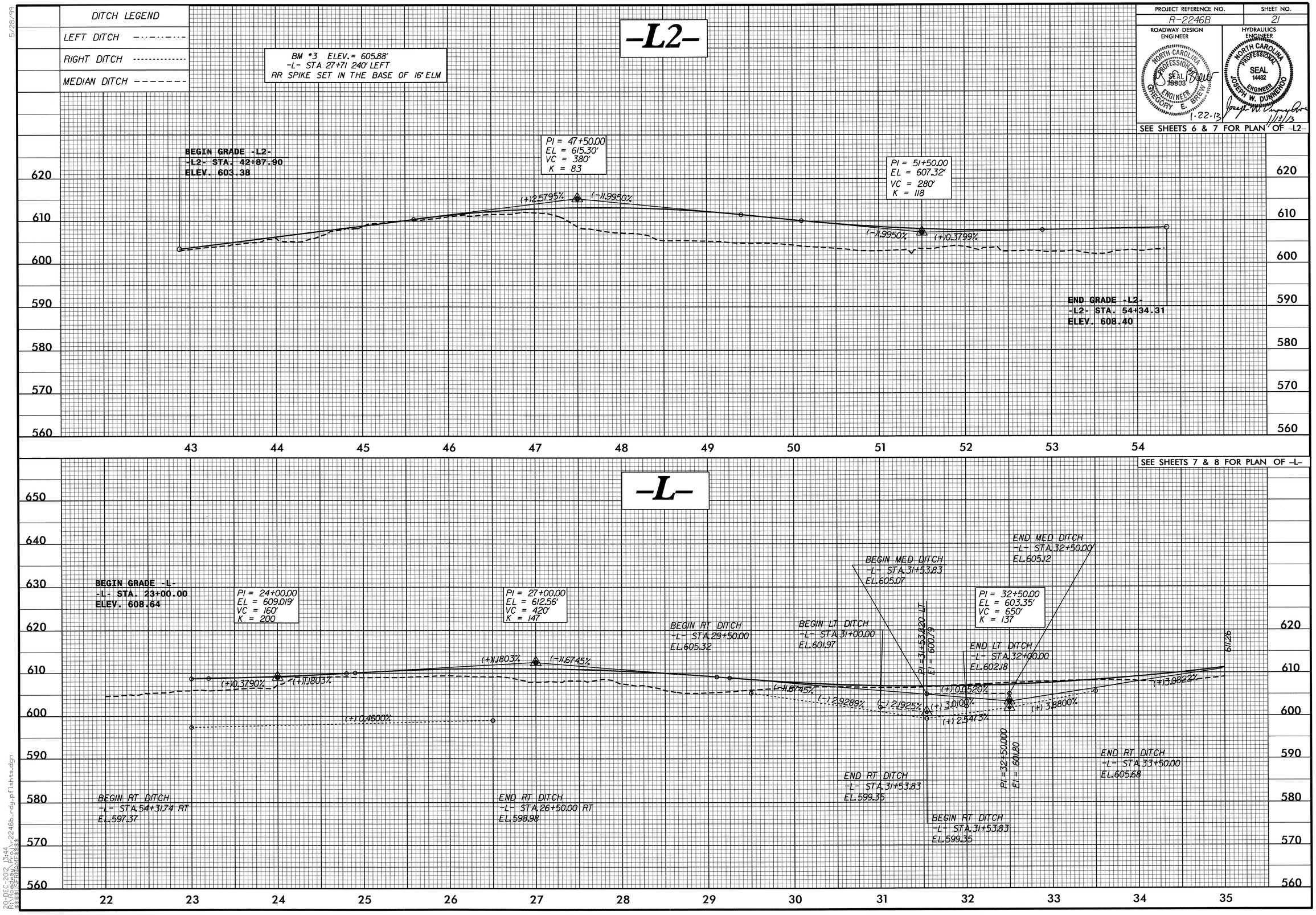
PROJECT REFERENCE NO.	SHEET NO.
R-2246B	21

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER



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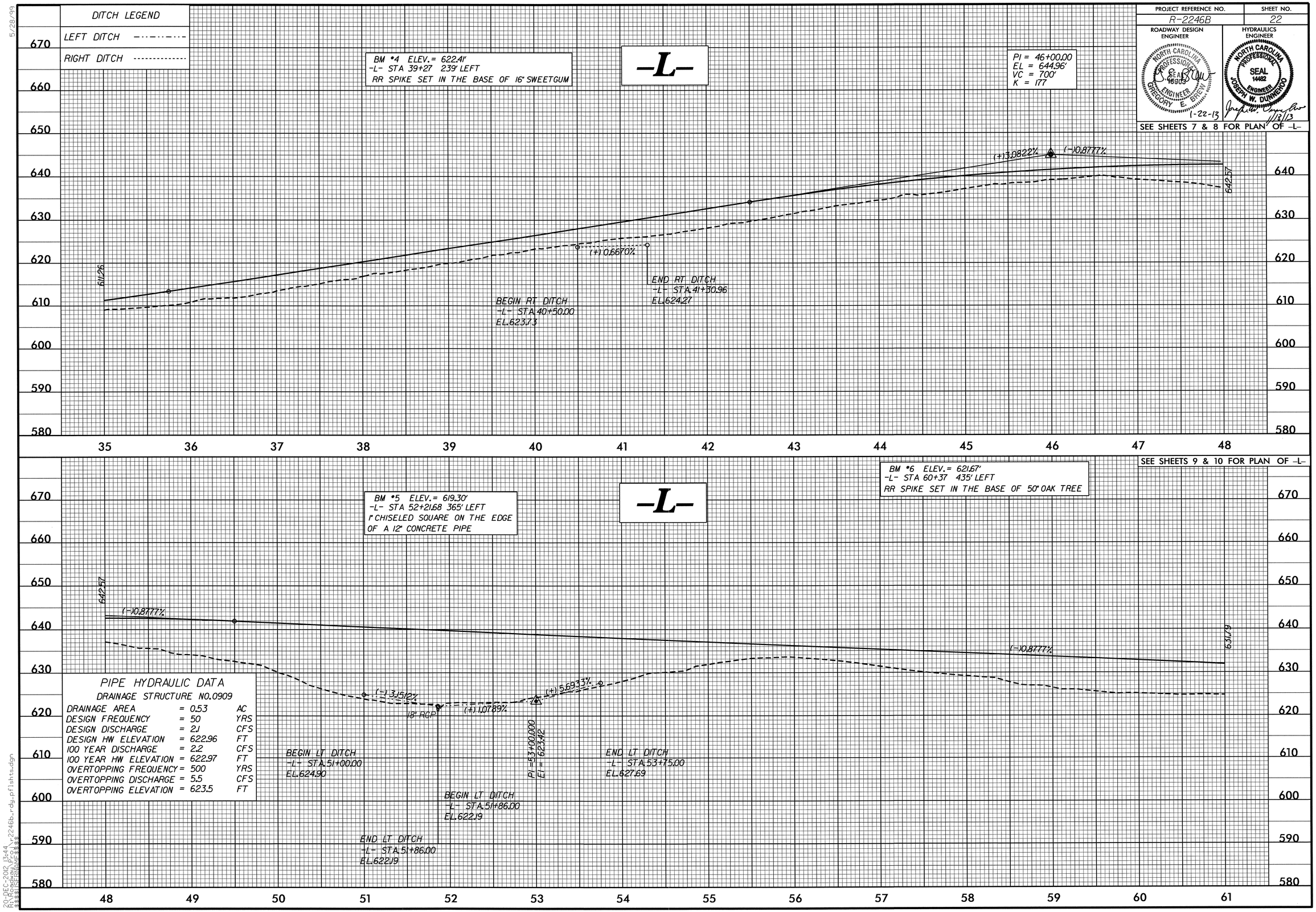
PROJECT REFERENCE NO.	SHEET NO.
R-2246B	22

ROADWAY DESIGN ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 18909 ENGINEER GREGORY E. BREW — 1-22-13

HYDRAULICS ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 14482 ENGINEER JOSEPH W. DUNNEROD — 1/23/13

SEE SHEETS 7 & 8 FOR PLAN OF -L-



SEE SHEETS 9 & 10 FOR PLAN OF -L-

PIPE HYDRAULIC DATA

DRAINAGE STRUCTURE NO.0909

DRAINAGE AREA	=	0.53	AC
DESIGN FREQUENCY	=	50	YRS
DESIGN DISCHARGE	=	2.1	CFS
DESIGN HW ELEVATION	=	622.96	FT
100 YEAR DISCHARGE	=	2.2	CFS
100 YEAR HW ELEVATION	=	622.97	FT
OVERTOPPING FREQUENCY	=	500	YRS
OVERTOPPING DISCHARGE	=	5.5	CFS
OVERTOPPING ELEVATION	=	623.5	FT

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PROJECT REFERENCE NO.	SHEET NO.
R-2246B	23

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 18903 ENGINEER GREGORY E. BRIEM

1-22-13

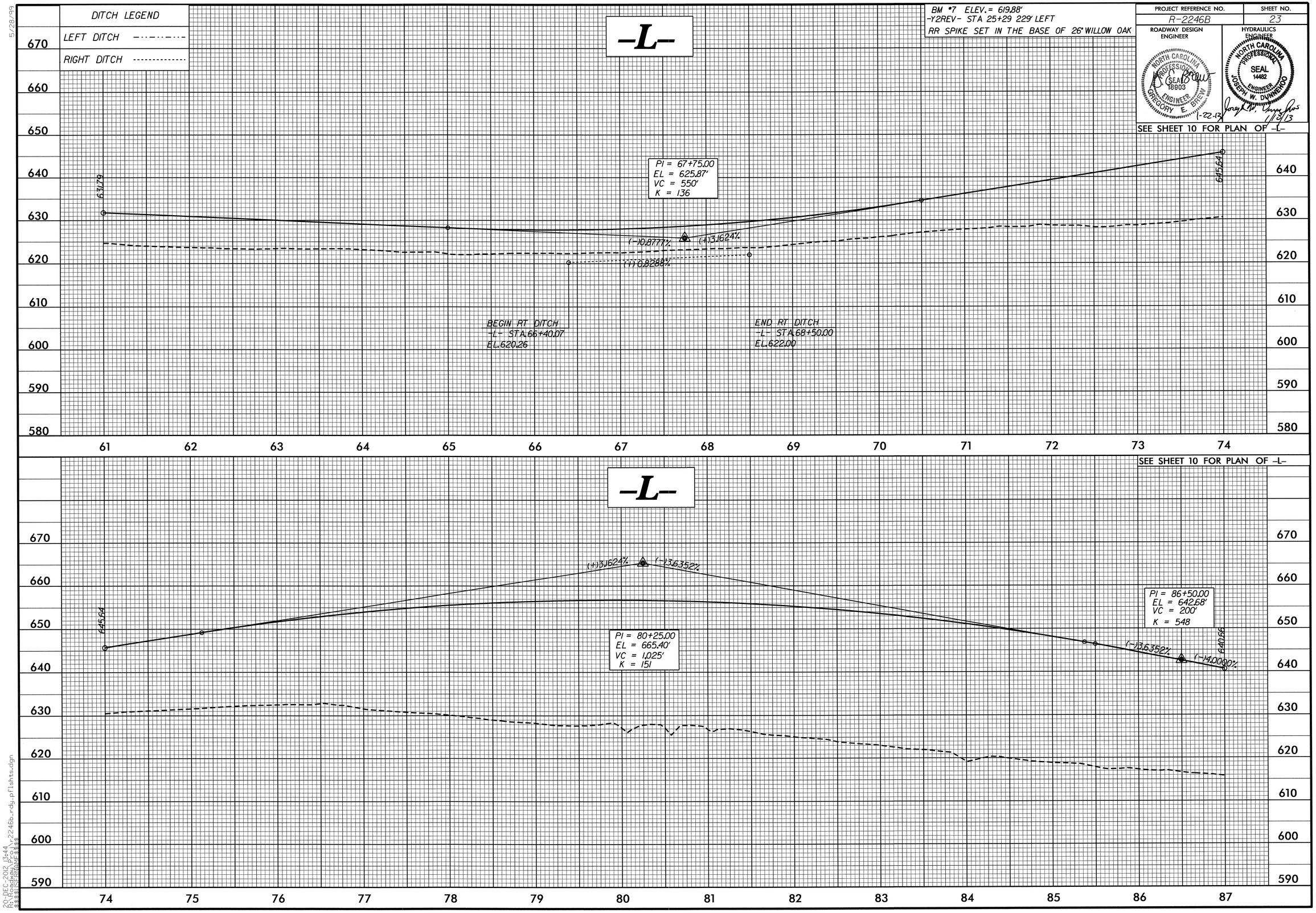
HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 14482 ENGINEER JOSEPH W. DUNNERDOO

1/23/13

BM #7 ELEV.= 619.88'
-Y2REV- STA 25+29 229' LEFT
RR SPIKE SET IN THE BASE OF 26" WILLOW OAK

SEE SHEET 10 FOR PLAN OF -L-



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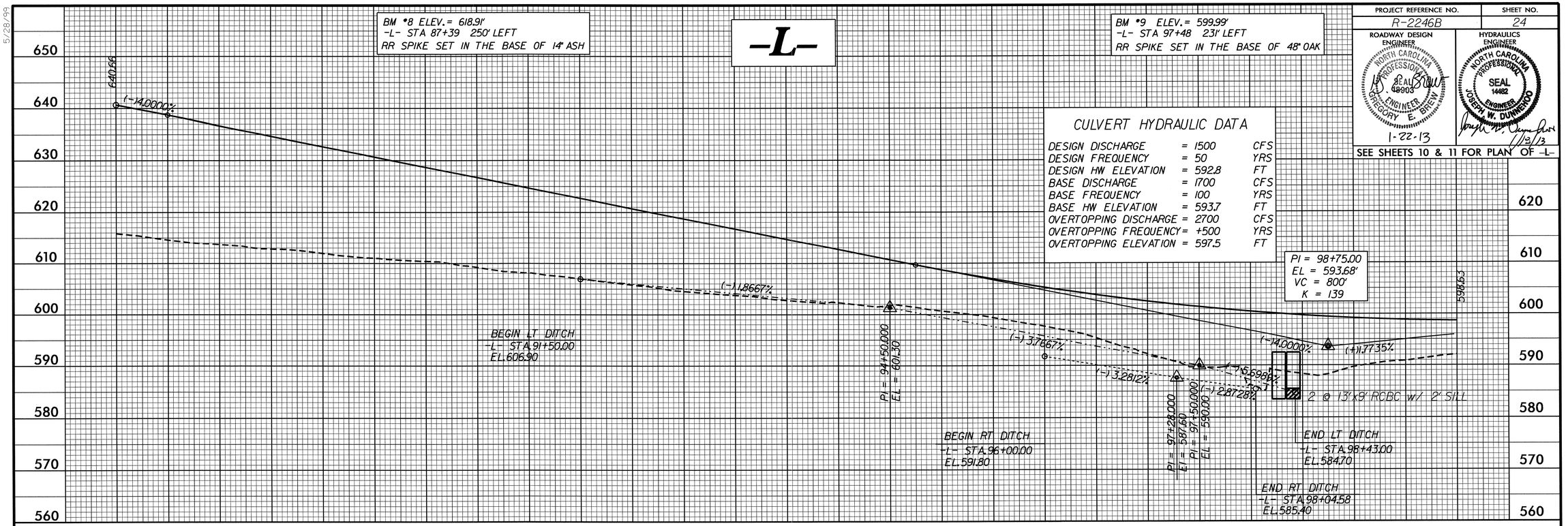
PROJECT REFERENCE NO.	SHEET NO.
R-2246B	24

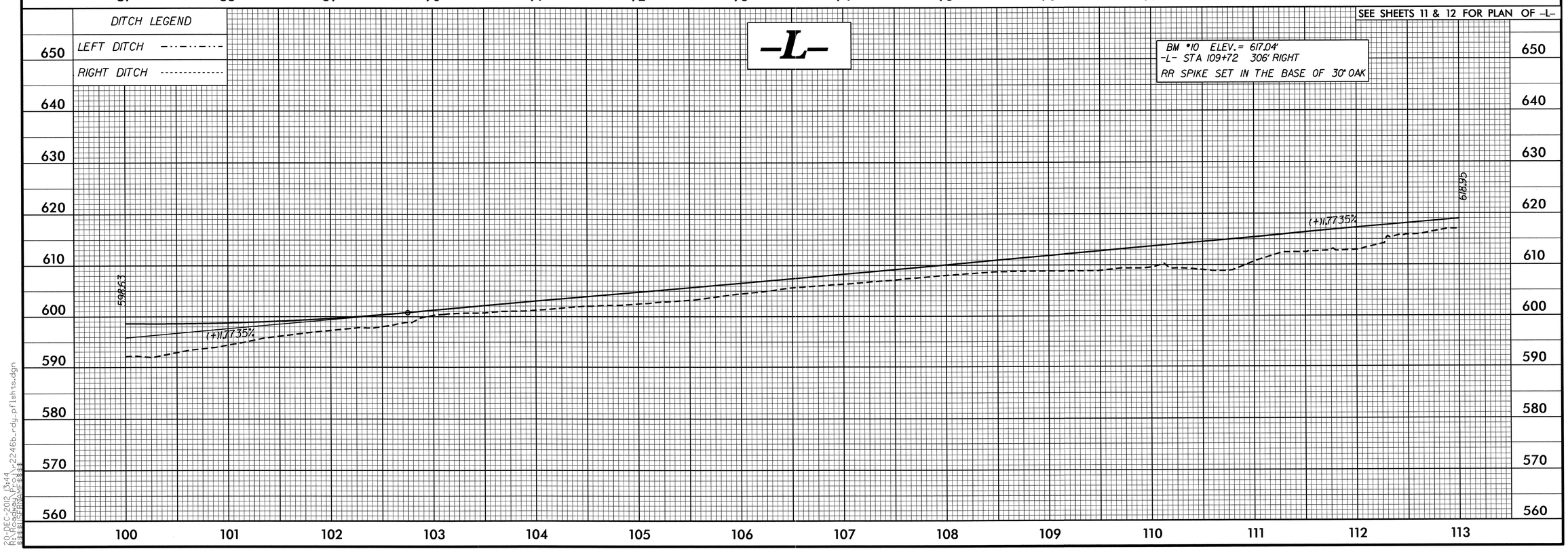
ROADWAY DESIGN ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 019903 ENGINEER GREGORY E. BREW — 1-22-13

HYDRAULICS ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 14482 ENGINEER JOSEPH W. DUNNIGAN — 1/8/13

SEE SHEETS 10 & 11 FOR PLAN OF -L-



SEE SHEETS 11 & 12 FOR PLAN OF -L-



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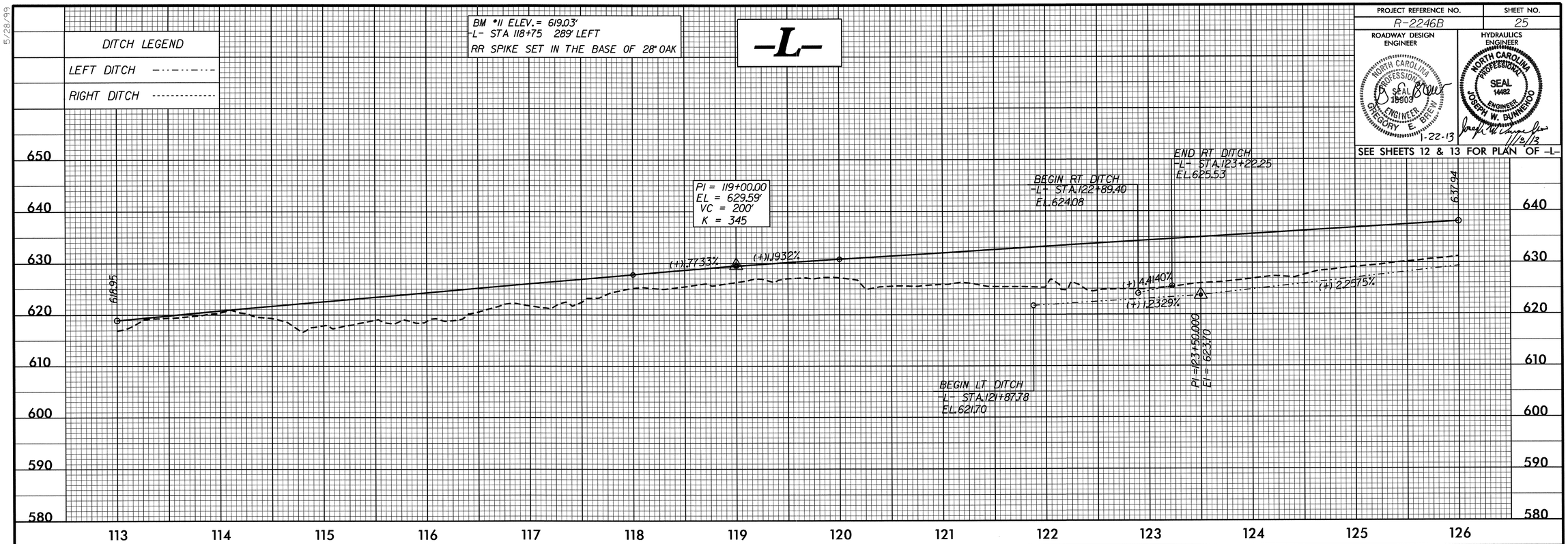
PROJECT REFERENCE NO.	SHEET NO.
R-2246B	25

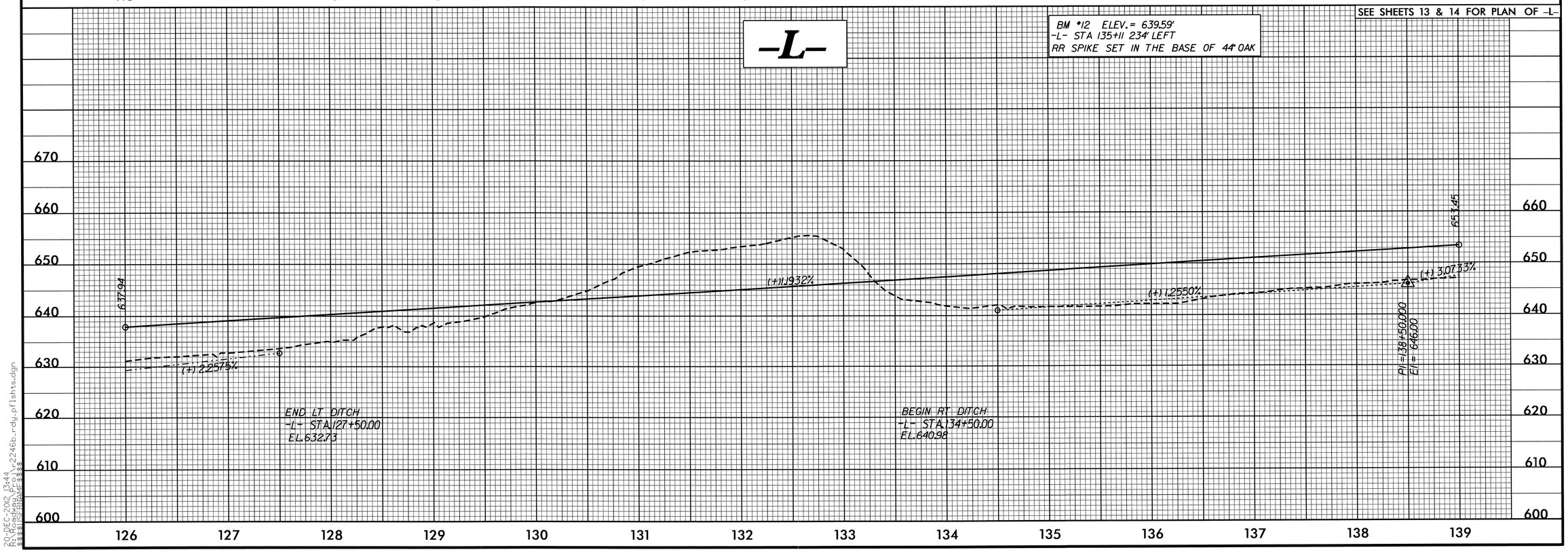
ROADWAY DESIGN ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 18903 ENGINEER GREGORY E. BRESN — 1-22-13

HYDRAULICS ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 14482 ENGINEER JOSEPH W. BUNNEROO — 1/12/13

SEE SHEETS 12 & 13 FOR PLAN OF -L-



SEE SHEETS 13 & 14 FOR PLAN OF -L-



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PROJECT REFERENCE NO.	SHEET NO.
R-2246B	26

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 18903 ENGINEER GREGORY E. BREW

1-22-13

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 14482 ENGINEER JOSEPH W. DUNNEHOO

1/9/13

SEE SHEETS 14 & 15 FOR PLAN OF -L-

-L-

DITCH LEGEND

LEFT DITCH

RIGHT DITCH

PI = 143+90.00
EL = 659.30'
VC = 400'
K = 155

653.45

(+)3.0733%

(+)1.1932%

(-)1.3953%

END RT DITCH
-L- STA.140+00.00
EL.650.61

END GRADE -L-
-L- STA. 150+50.00
ELEV. 650.090

670 660 650 640 630 620 610 600

139 140 141 142 143 144 145 146 147 148 149 150 151 152

SEE SHEETS 4 & 16 FOR PLAN OF -Y1-

-Y1-

BM #14 ELEV.587.58'
-BY1- STA 6+23 126' RIGHT
RR SPIKE IN BASE OF 36" TRIPLE WILD CHERRY

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO.1605

DRAINAGE AREA	= 0.84	AC
DESIGN FREQUENCY	= 25	YRS
DESIGN DISCHARGE	= 3.9	CFS
DESIGN HW ELEVATION	= 588.44	FT
100 YEAR DISCHARGE	= 4.40	CFS
100 YEAR HW ELEVATION	= 588.44	FT
OVERTOPPING FREQUENCY	= 500 +	YRS
OVERTOPPING DISCHARGE	= 28.0	CFS
OVERTOPPING ELEVATION	= 591.26	FT

BM #15 ELEV.610.33'
-BY1- STA 17+49 31' RIGHT
RR SPIKE IN BASE OF 24" OAK

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO.0416

DRAINAGE AREA	= 1.17	AC
DESIGN FREQUENCY	= 25	YRS
DESIGN DISCHARGE	= 3.20	CFS
DESIGN HW ELEVATION	= 604.15	FT
100 YEAR DISCHARGE	= 3.60	CFS
100 YEAR HW ELEVATION	= 604.22	FT
OVERTOPPING FREQUENCY	= 500 +	YRS
OVERTOPPING DISCHARGE	= 15.0	CFS
OVERTOPPING ELEVATION	= 606.43	FT

PI = 11+50.00
EL = 590.70'
VC = 125'
K = 30

PI = 12+50.00
EL = 591.53'
VC = 75'
K = 225

PI = 14+25.00
EL = 592.40'
VC = 270'
K = 49

PI = 17+25.00
EL = 606.91'
VC = 100'
K = 40

PI = 18+85.00
EL = 610.05'
VC = 120'
K = 71

PI = 20+50.00
EL = 616.07'
VC = 130'
K = 24

585.74

(+)4.9600%

(+)0.8300%

(+)0.4971%

24" RCP

(+)5.4328%

(+)0.497%

(+)5.9125%

(+)4.7702%

18" RCP

(+)5.4880%

(+)1.9625%

(+)3.6545%

(+)3.2969%

(+)3.6485%

(-)1.8067%

BEGIN LT DITCH
-Y1- STA.17+75.00
EL.603.20

END LT DITCH
-Y1- STA.20+50.00
EL.613.25

END GRADE-Y1RT-
-Y1- STA. 22+00.00
ELEV. 613.360

END GRADE -Y1LT-
-Y1- STA. 16+14.09
ELEV. 603.69

BEGIN RT DITCH
-Y1- STA.17+50.04
EL.599.16

PI=17+75.000
EL= 600.55

BEGIN GRADE -Y1RT-
-Y1- STA. 16+50.16
ELEV. 603.58

END RT DITCH
-Y1- STA.20+71.95
EL.610.32

BEGIN GRADE -Y1LT-
-Y1- STA. 10+50.00
ELEV. 585.74

BEGIN LT DITCH
-Y1- STA.13+31.32
EL.587.44

END LT DITCH
-Y1- STA.13+87.46
EL.590.49

620 610 600 590 580 570 560

10 11 12 13 14 15 16 17 18 19 20 21 22

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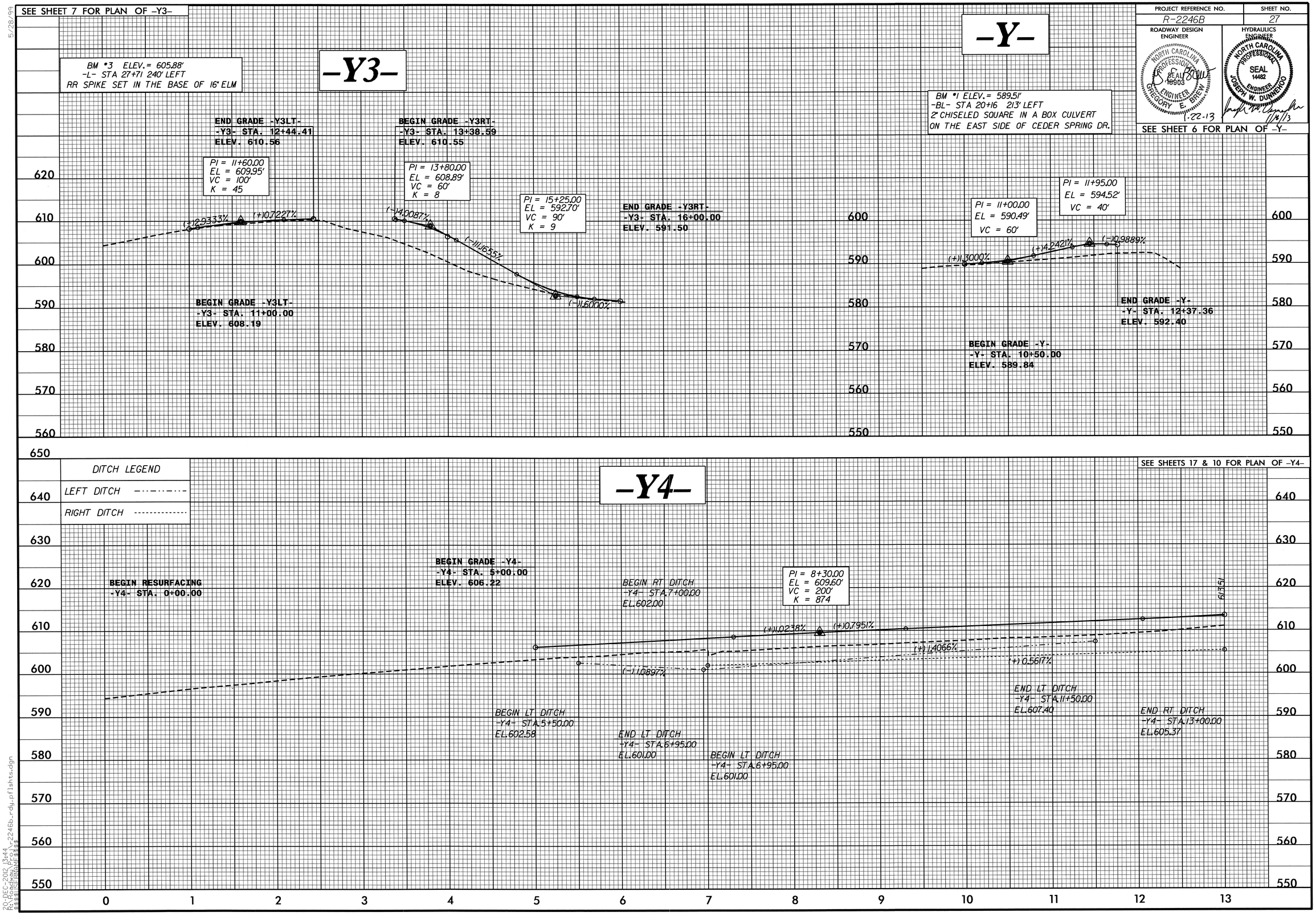
PROJECT REFERENCE NO.	SHEET NO.
R-2246B	27

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER



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PROJECT REFERENCE NO.	SHEET NO.
R-2246B	28

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 18903 ENGINEER GREGORY E. BREW

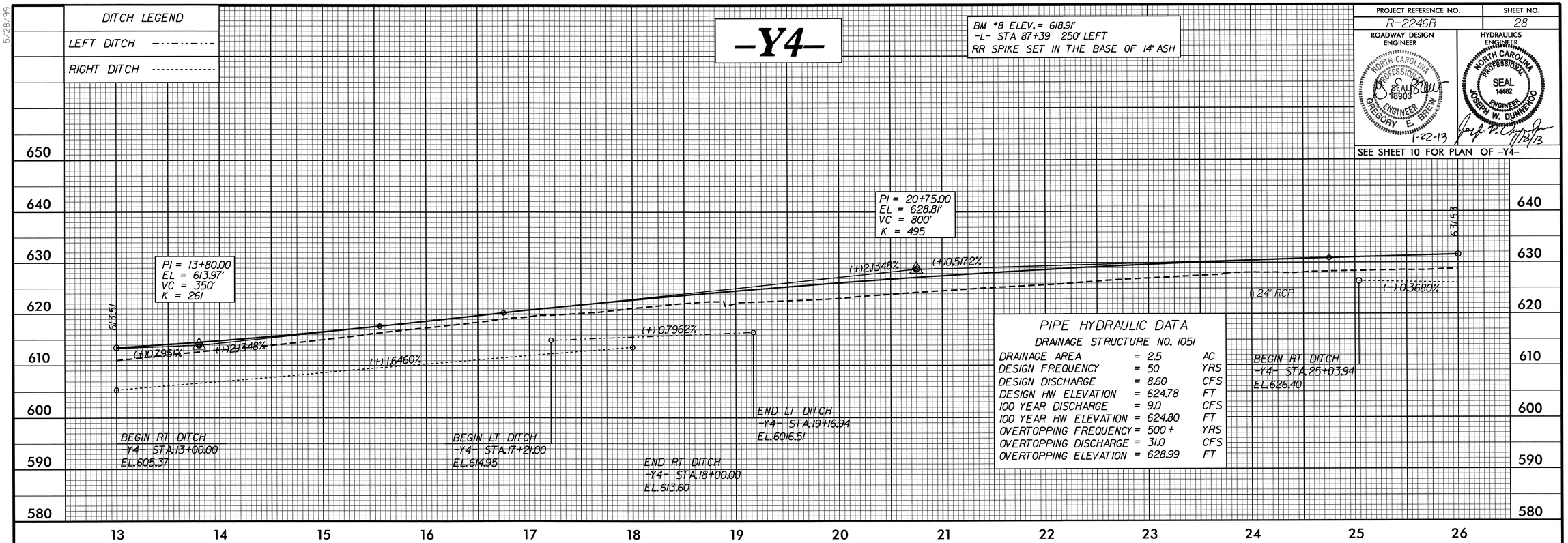
1-22-13

HYDRAULICS ENGINEER

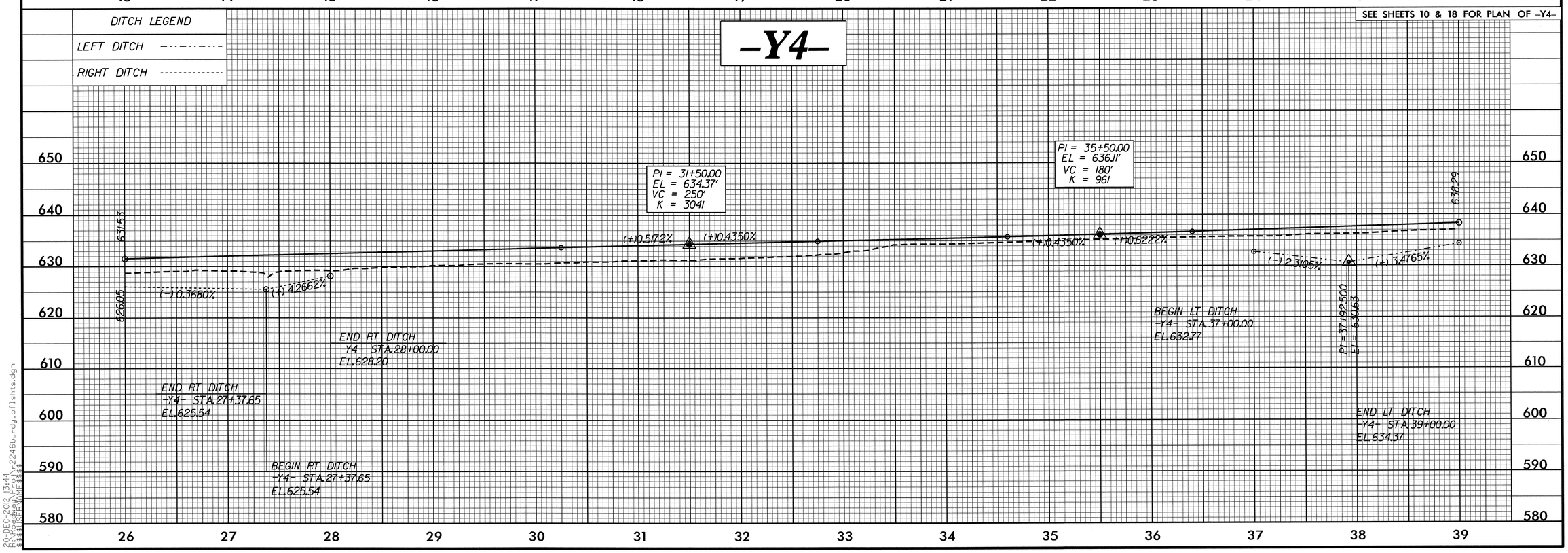
NORTH CAROLINA PROFESSIONAL SEAL 14482 ENGINEER JOSEPH W. DUNNIGAN

1/22/13

SEE SHEET 10 FOR PLAN OF -Y4-



SEE SHEETS 10 & 18 FOR PLAN OF -Y4-



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PROJECT REFERENCE NO.	SHEET NO.
R-2246B	29

ROADWAY DESIGN ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 18803 ENGINEER GREGORY E. BREW 1-22-13

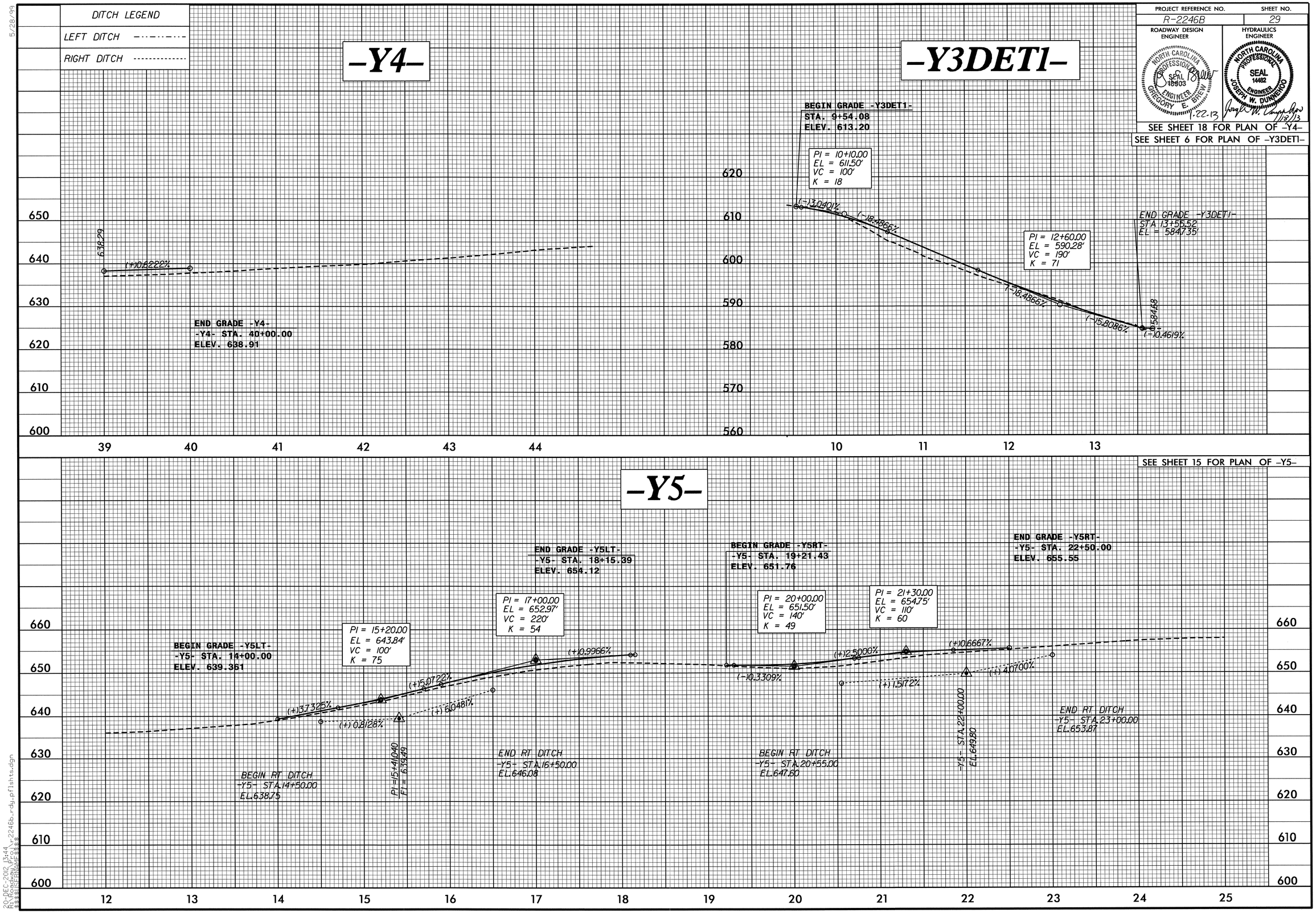
HYDRAULICS ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 14482 ENGINEER JOSEPH W. DUNNEFICO 1/18/13

SEE SHEET 18 FOR PLAN OF -Y4-
SEE SHEET 6 FOR PLAN OF -Y3DET1-
SEE SHEET 15 FOR PLAN OF -Y5-

DITCH LEGEND

LEFT DITCH -·-·-·-·-

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



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PROJECT REFERENCE NO.	SHEET NO.
R-2246B	30

ROADWAY DESIGN ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 18903 ENGINEER GREGORY E. BREW 1-22-13

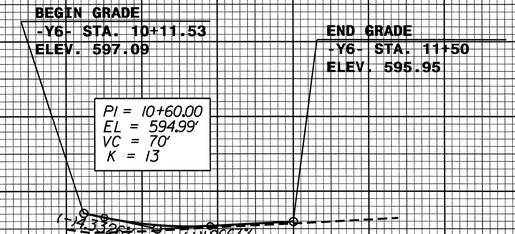
HYDRAULICS ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 14482 ENGINEER JOSEPH W. DUNNEHOO 1/22/13

DITCH LEGEND

LEFT DITCH -·-·-·-·-

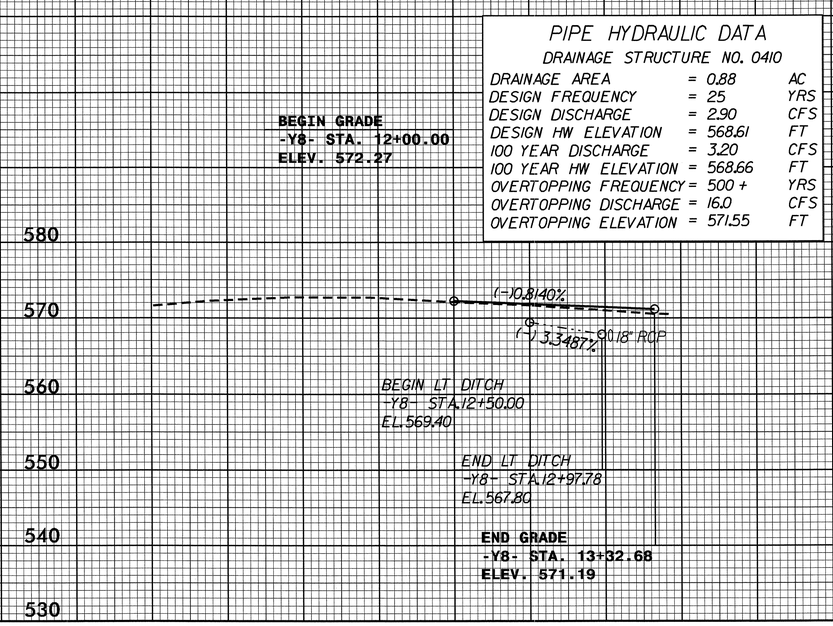
SEE SHEET 7 FOR PLAN OF -Y6-

-Y6-



SEE SHEET 4 FOR PLAN OF -Y8-

-Y8-

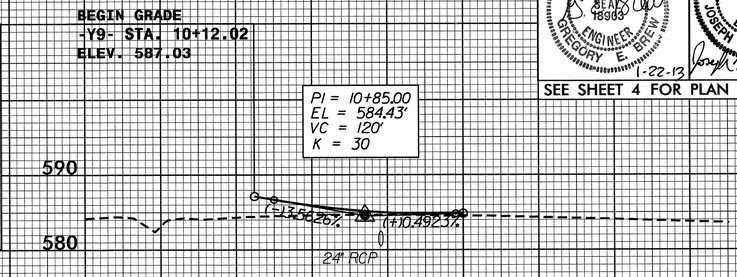


PIPE HYDRAULIC DATA

DRAINAGE STRUCTURE NO. 0410

DRAINAGE AREA	=	0.88	AC
DESIGN FREQUENCY	=	25	YRS
DESIGN DISCHARGE	=	2.90	CFS
DESIGN HW ELEVATION	=	568.61	FT
100 YEAR DISCHARGE	=	3.20	CFS
100 YEAR HW ELEVATION	=	568.66	FT
OVERTOPPING FREQUENCY	=	500 +	YRS
OVERTOPPING DISCHARGE	=	16.0	CFS
OVERTOPPING ELEVATION	=	571.55	FT

-Y9-



PIPE HYDRAULIC DATA

DRAINAGE STRUCTURE NO. 0412

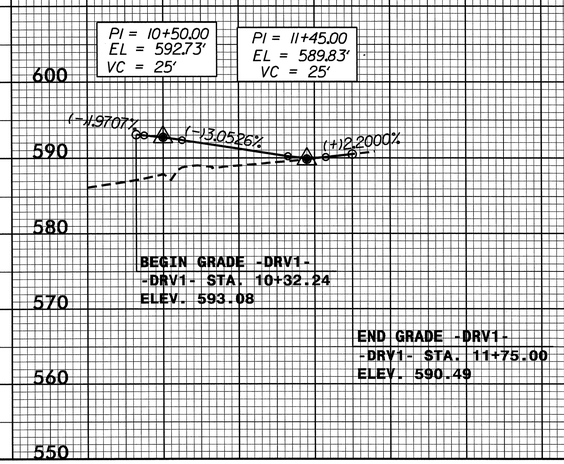
DRAINAGE AREA	=	4.10	AC
DESIGN FREQUENCY	=	25	YRS
DESIGN DISCHARGE	=	11.0	CFS
DESIGN HW ELEVATION	=	582.46	FT
100 YEAR DISCHARGE	=	13.0	CFS
100 YEAR HW ELEVATION	=	582.66	FT
OVERTOPPING FREQUENCY	=	500 +	YRS
OVERTOPPING DISCHARGE	=	28.0	CFS
OVERTOPPING ELEVATION	=	584.56	FT

END GRADE
-Y9- STA. 11+50.00
ELEV. 584.75

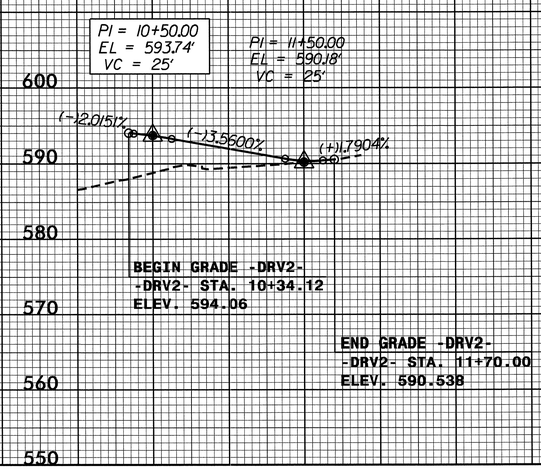
SEE SHEET 4 FOR PLAN OF -Y9-

SEE SHEET 4 FOR PLAN OF -DRV1- & -DRV2-

-DRV1-

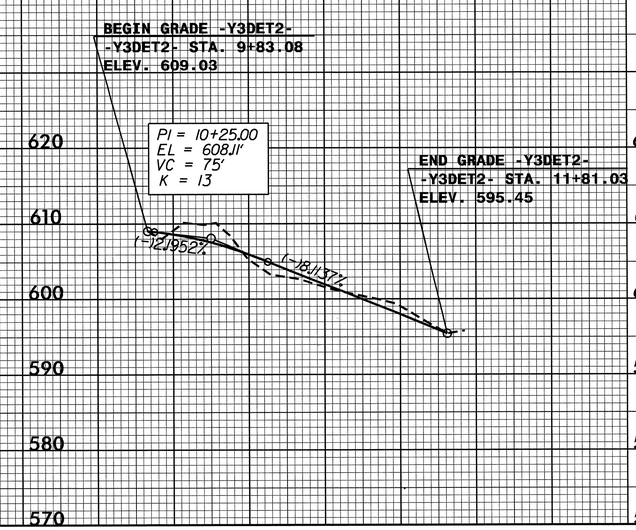


-DRV2-



SEE SHEET 7 FOR PLAN OF -Y3DET2-

-Y3DET2-



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PROJECT REFERENCE NO.	SHEET NO.
R-2246B	31

ROADWAY DESIGN ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 18903 ENGINEER GREGORY E. BREW — 1-22-13

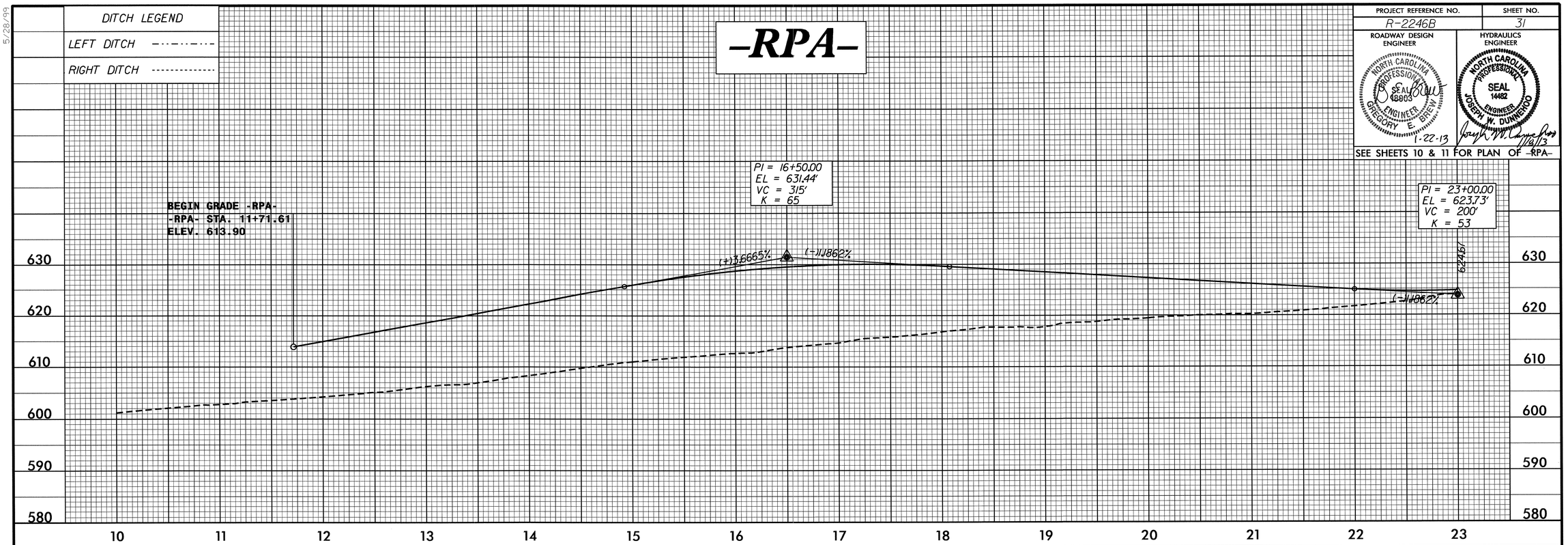
HYDRAULICS ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 14482 ENGINEER JOSEPH W. DUNNEKOO — 1/8/13

SEE SHEETS 10 & 11 FOR PLAN OF -RPA-

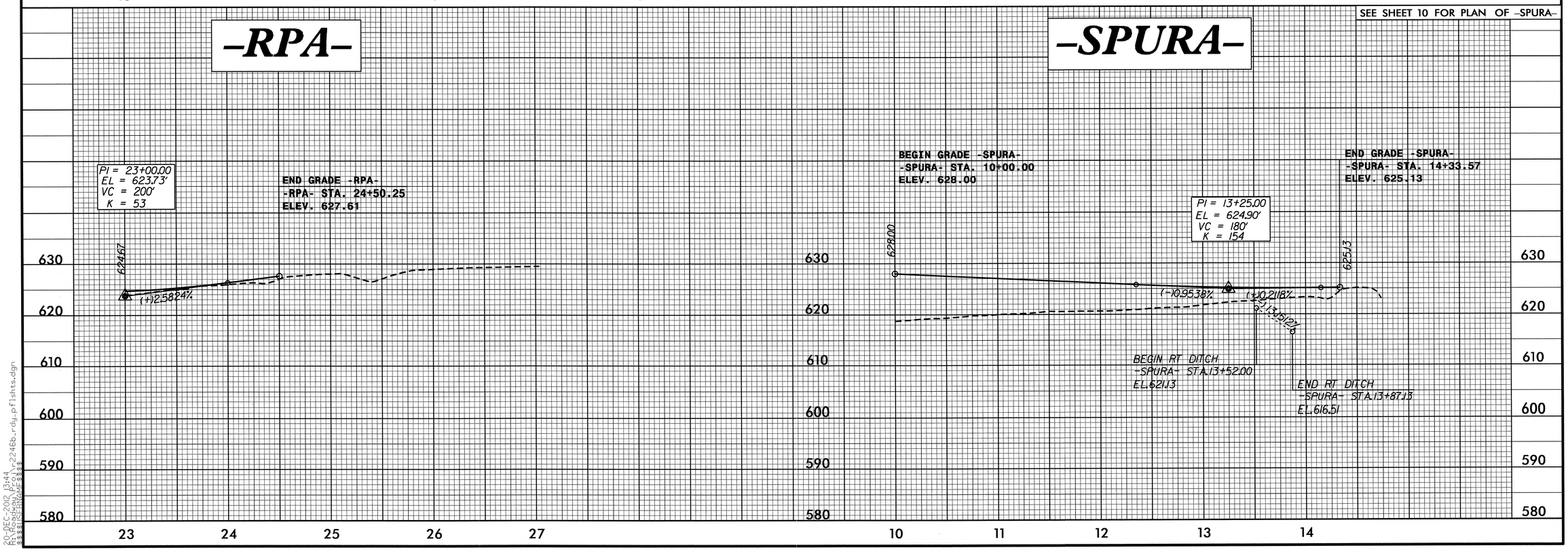
DITCH LEGEND

LEFT DITCH

RIGHT DITCH



SEE SHEET 10 FOR PLAN OF -SPURA-



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PROJECT REFERENCE NO.	SHEET NO.
R-2246B	32

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 16903 ENGINEER GREGORY E. BREW

1-22-13

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 14482 ENGINEER JOSEPH W. DUNNEHOO

1/23/13

SEE SHEET 10 FOR PLAN OF -RPB-

DITCH LEGEND

LEFT DITCH

RIGHT DITCH

-RPB-

BEGIN GRADE -RPB-
-RPB- STA. 10+00.00
ELEV. 628.076

PI = 12+00.00
EL = 625.71'
VC = 250'
K = 118

PI = 14+95.00
EL = 628.484'
VC = 180'
K = 119

(-)1.1830% (+)0.9403% (+)0.9403% (-)0.5667% (-)0.5667% 625.92

630 620 610 600 590 580

10 11 12 13 14 15 16 17 18 19 20 21 22 23

SEE SHEET 10 FOR PLAN OF -SPURB-

-RPB-

PI = 24+75.00
EL = 622.93'
VC = 200'
K = 64

623.92

(-)0.5667% (+)2.5745%

(-)1.6372% (+)2.2354%

END GRADE -RPB-
-RPB- STA. 26+57.56
ELEV. 627.63

PI = 24+11.80
EL = 618.20

END RT DITCH
-RPB- STA.24+50.00
EL.619.07

BEGIN RT DITCH
-RPB- STA.23+50.00
EL.619.20

630 620 610 600 590 580

23 24 25 26 27 28

-SPURB-

END GRADE -SPURB-
-SPURB- STA. 15+64.44
ELEV. 622.08

PI = 12+00.00
EL = 624.255'
VC = 120'
K = 235

PI = 14+00.00
EL = 624.608'
VC = 180'
K = 105

(-)0.3345% (+)0.1765% (+)0.1765% (-)1.5373% (-)0.4441%

BEGIN GRADE -SPURB-
-SPURB- STA. 10+00.00
ELEV. 624.924

BEGIN RT DITCH
-SPURB- STA.12+18.55
EL.620.36

END RT DITCH
-SPURB- STA.15+00.00
EL.619.11

630 620 610 600 590 580

10 11 12 13 14 15 16

5/28/99

20-DEC-2012 13:43
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PROJECT REFERENCE NO.	SHEET NO.
R-2246B	33

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 19903 ENGINEER GREGORY E. GREWE

1-22-13

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 14482 ENGINEER JOSEPH W. DUNNEVOO

1/22/13

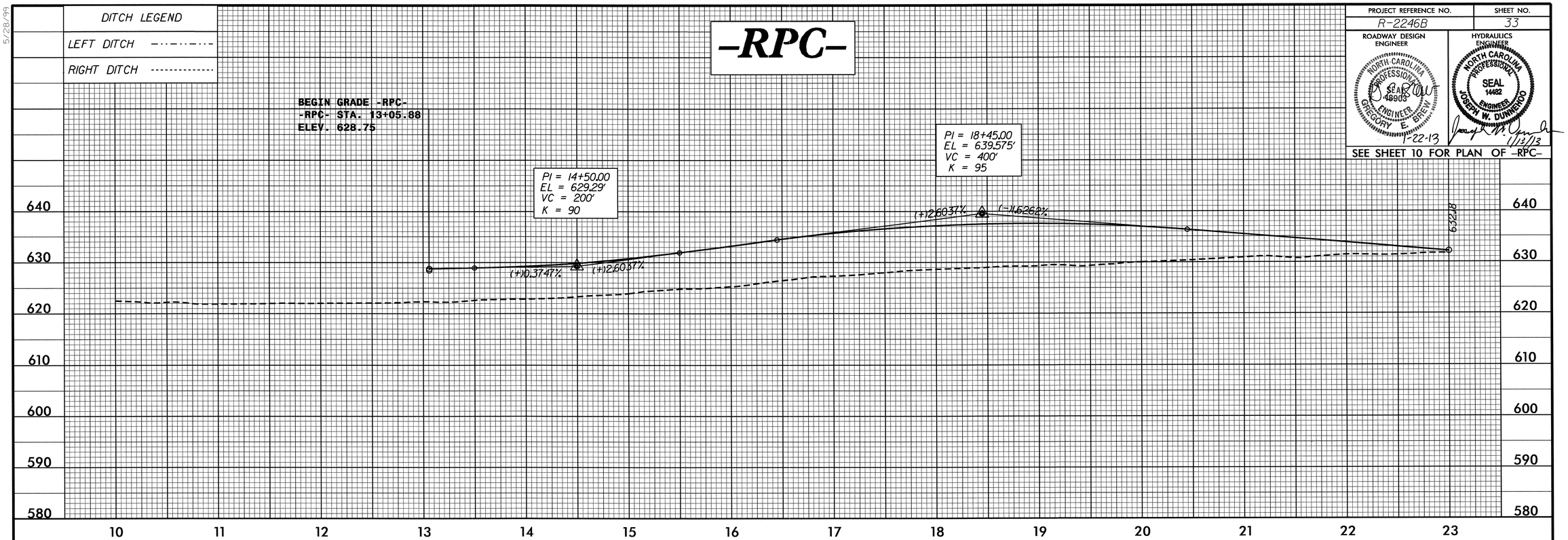
SEE SHEET 10 FOR PLAN OF -RPC-

DITCH LEGEND

LEFT DITCH

RIGHT DITCH

-RPC-



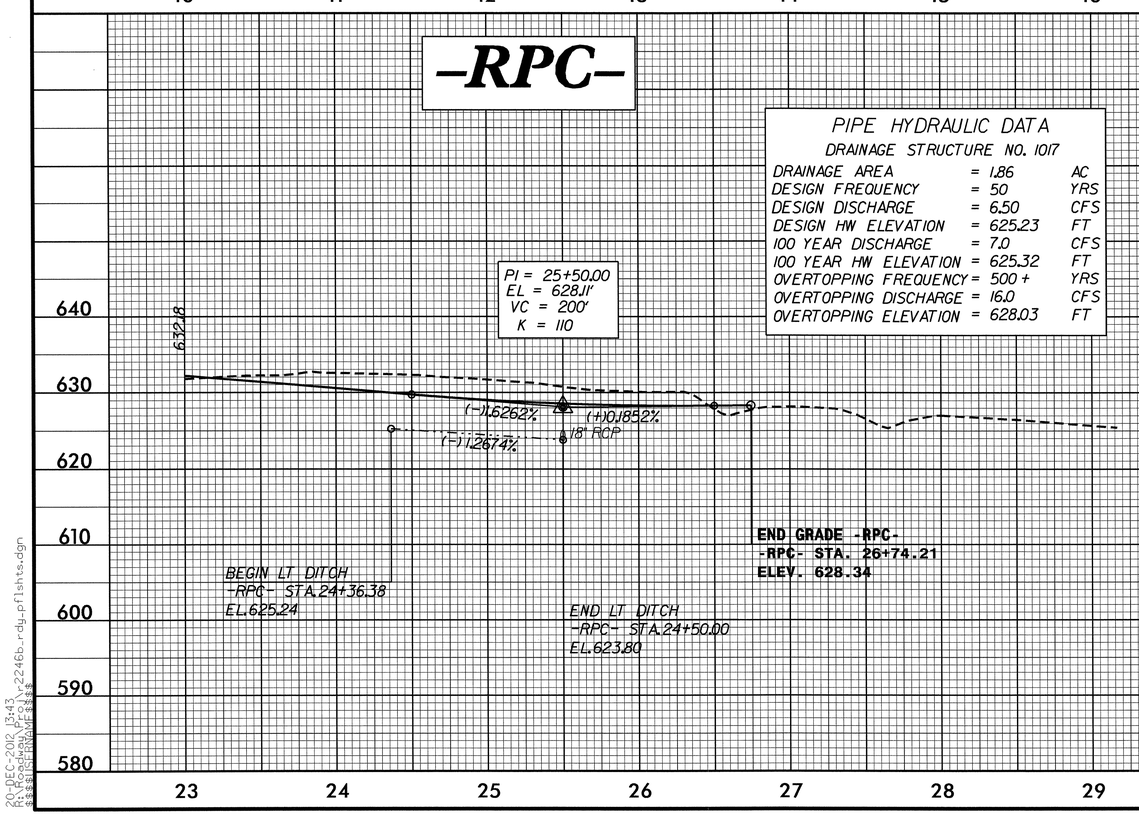
SEE SHEET 10 FOR PLAN OF -SPURC-

-RPC-

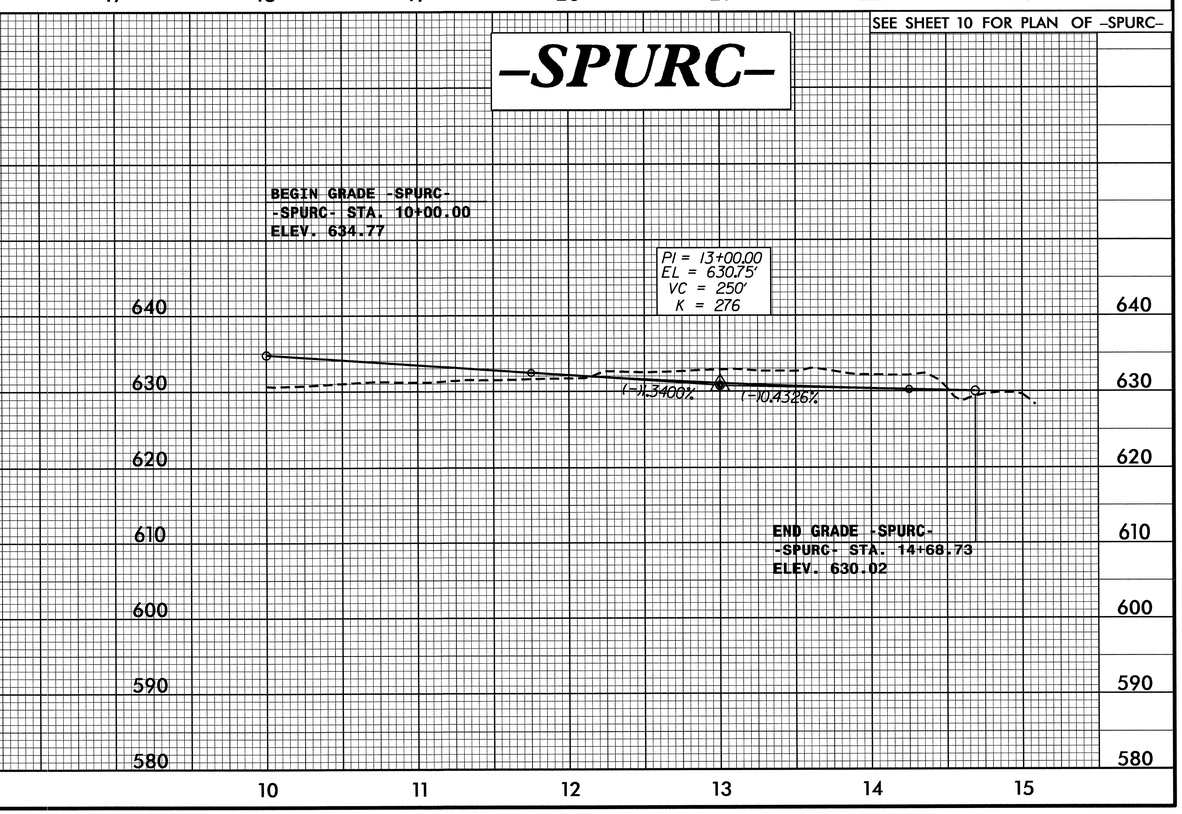
PIPE HYDRAULIC DATA

DRAINAGE STRUCTURE NO. 1017

DRAINAGE AREA	= 1.86	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 6.50	CFS
DESIGN HW ELEVATION	= 625.23	FT
100 YEAR DISCHARGE	= 7.0	CFS
100 YEAR HW ELEVATION	= 625.32	FT
OVERTOPPING FREQUENCY	= 500 +	YRS
OVERTOPPING DISCHARGE	= 16.0	CFS
OVERTOPPING ELEVATION	= 628.03	FT



-SPURC-



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PROJECT REFERENCE NO.	SHEET NO.
R-2246B	34

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 18903 ENGINEER GREGORY E. BREWER

1-22-13

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 14482 ENGINEER JOSEPH W. DUNNIGAN

7/8/13

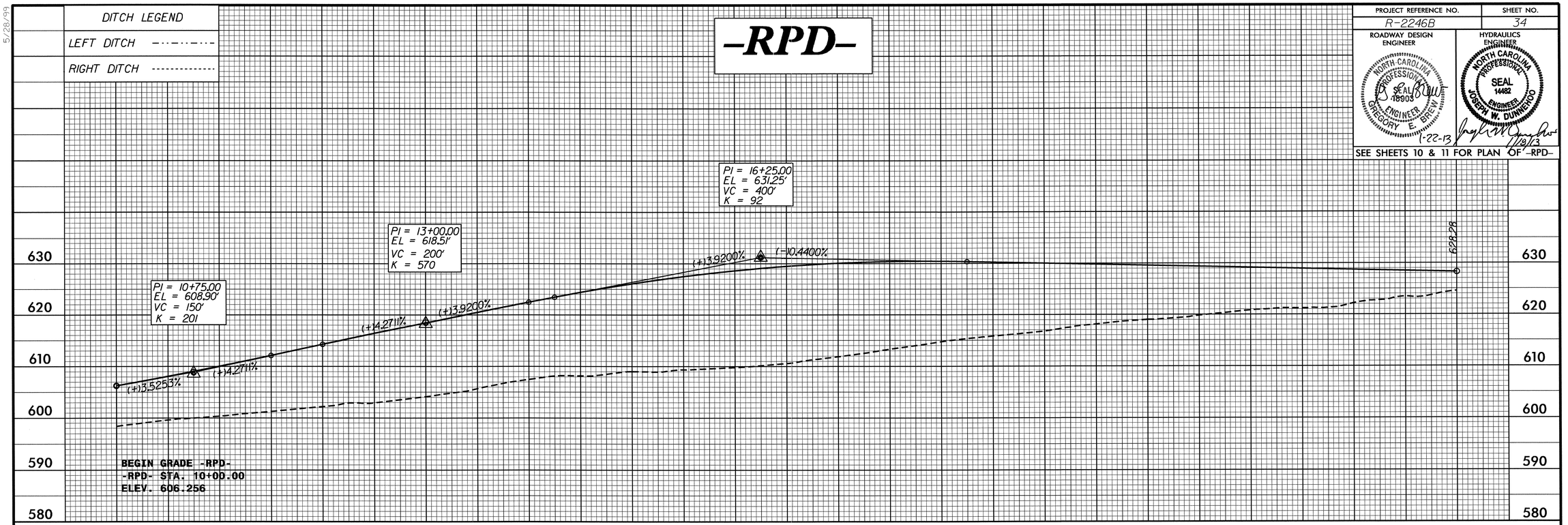
SEE SHEETS 10 & 11 FOR PLAN OF -RPD-

DITCH LEGEND

LEFT DITCH

RIGHT DITCH

-RPD-



SEE SHEET 10 FOR PLAN OF -SPURD-

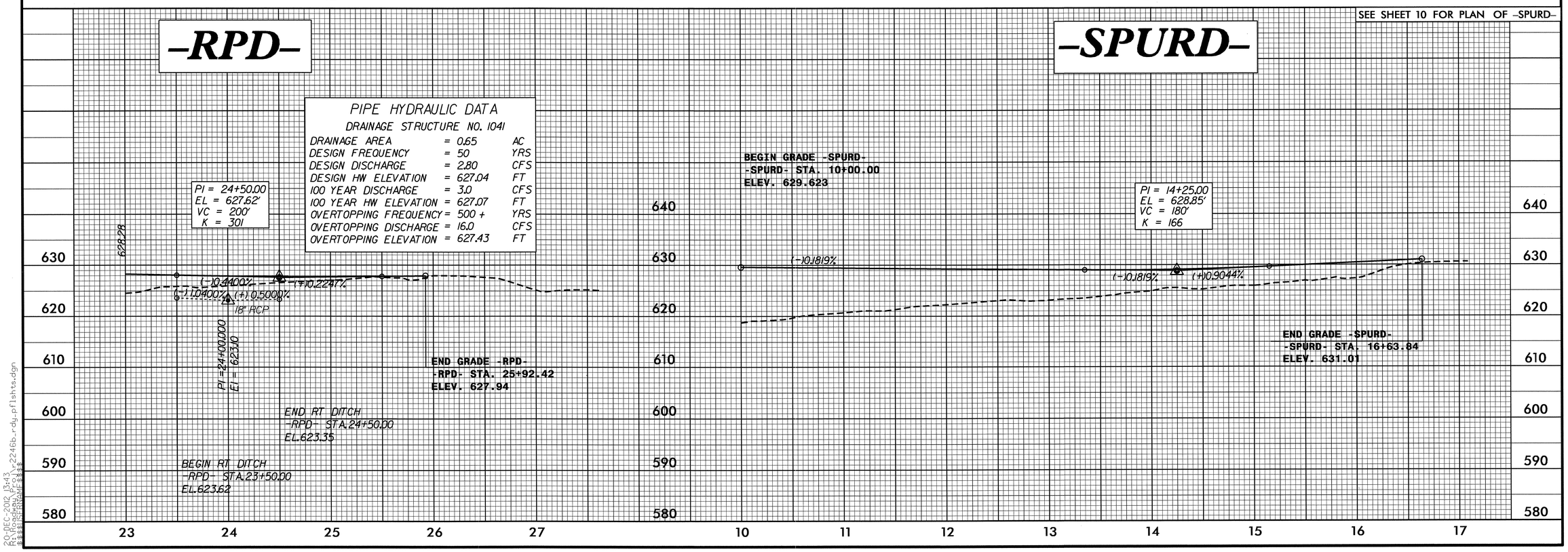
-RPD-

PIPE HYDRAULIC DATA

DRAINAGE STRUCTURE NO. 1041

DRAINAGE AREA	= 0.65	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 2.80	CFS
DESIGN HW ELEVATION	= 627.04	FT
100 YEAR DISCHARGE	= 3.0	CFS
100 YEAR HW ELEVATION	= 627.07	FT
OVERTOPPING FREQUENCY	= 500 +	YRS
OVERTOPPING DISCHARGE	= 16.0	CFS
OVERTOPPING ELEVATION	= 627.43	FT

-SPURD-



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PROJECT REFERENCE NO.	SHEET NO.
R-2246B	35

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 18903 ENGINEER GREGORY E. BRIEW

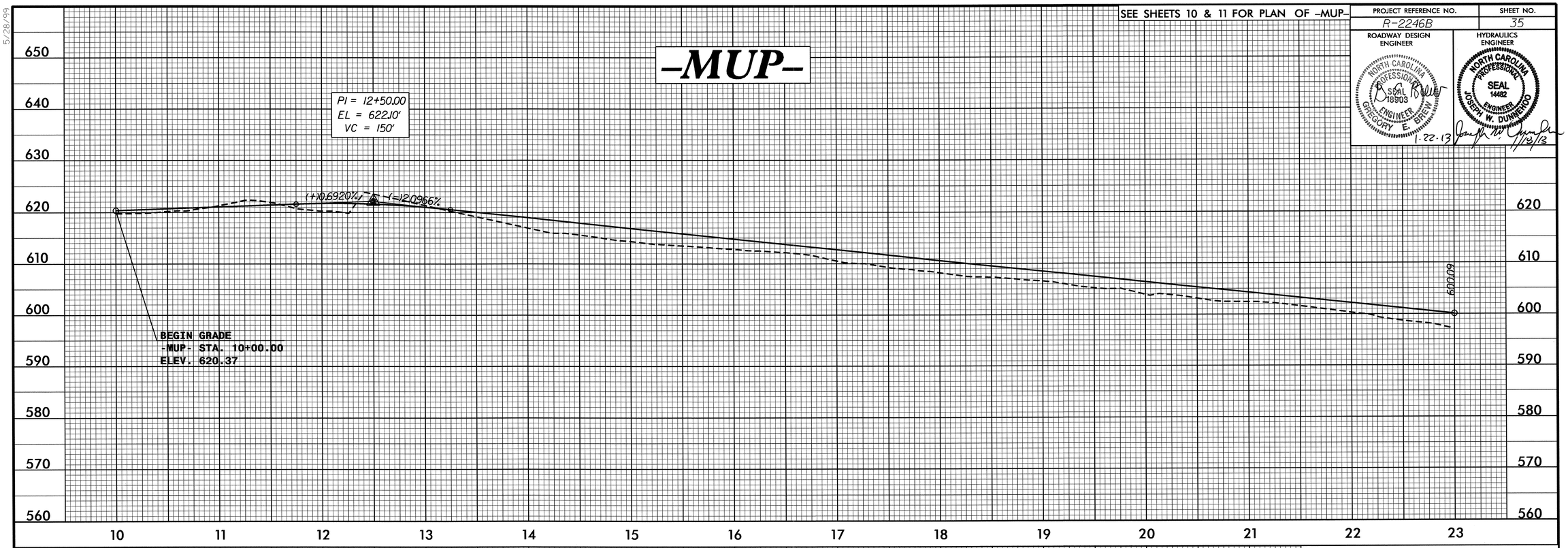
1-22-13

HYDRAULICS ENGINEER

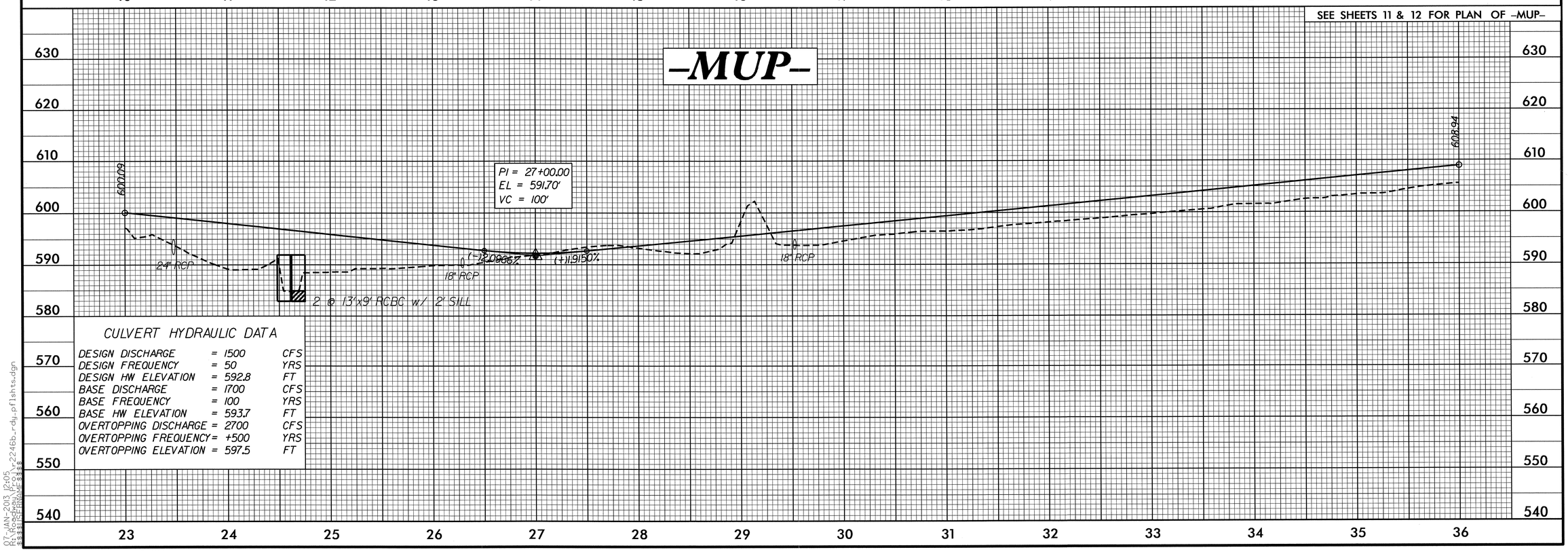
NORTH CAROLINA PROFESSIONAL SEAL 14482 ENGINEER JOSEPH W. DUNNEHOO

1/22/13

SEE SHEETS 10 & 11 FOR PLAN OF -MUP-



SEE SHEETS 11 & 12 FOR PLAN OF -MUP-



CULVERT HYDRAULIC DATA

DESIGN DISCHARGE	=	1500	CFS
DESIGN FREQUENCY	=	50	YRS
DESIGN HW ELEVATION	=	592.8	FT
BASE DISCHARGE	=	1700	CFS
BASE FREQUENCY	=	100	YRS
BASE HW ELEVATION	=	593.7	FT
OVERTOPPING DISCHARGE	=	2700	CFS
OVERTOPPING FREQUENCY	=	+500	YRS
OVERTOPPING ELEVATION	=	597.5	FT

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PROJECT REFERENCE NO.	SHEET NO.
R-2246B	36

ROADWAY DESIGN ENGINEER

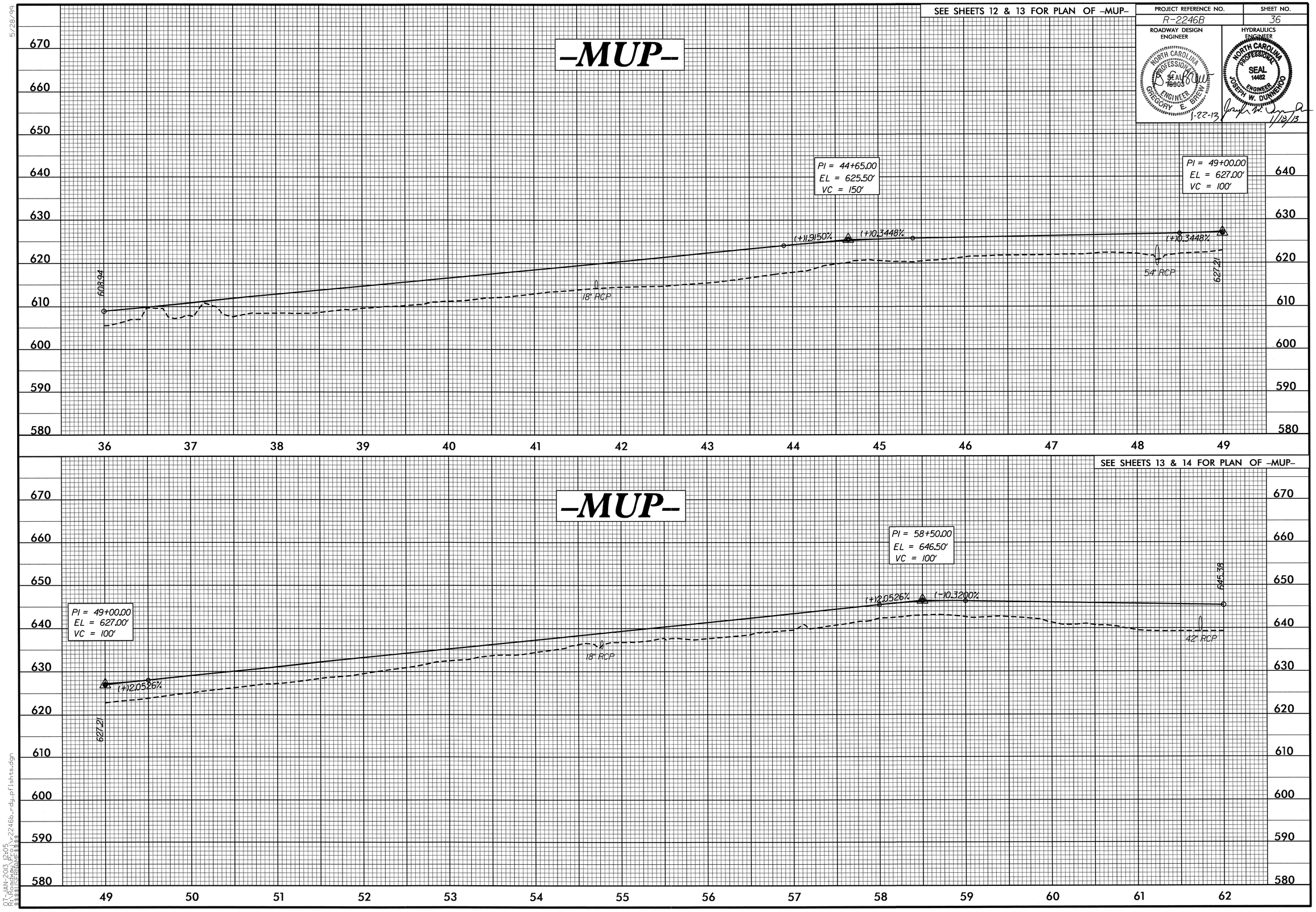
NORTH CAROLINA PROFESSIONAL SEAL 19903 ENGINEER GREGORY E. BREW

1-22-13

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 14482 ENGINEER JOSEPH W. DUNNEHOO

1/22/13



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SEE SHEETS 14 & 15 FOR PLAN OF -MUP-

PROJECT REFERENCE NO.	SHEET NO.
R-2246B	37

ROADWAY DESIGN ENGINEER

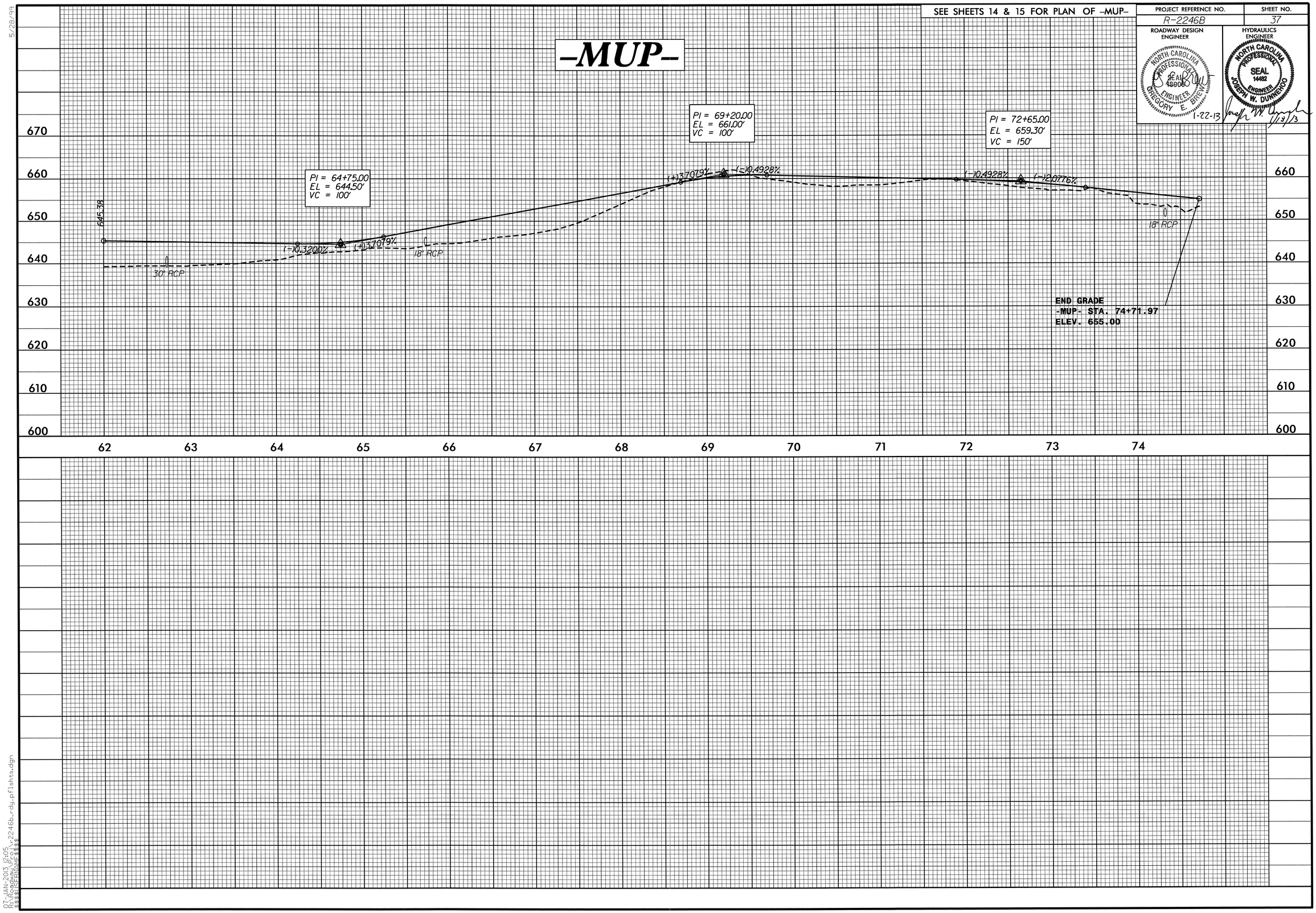
NORTH CAROLINA PROFESSIONAL SEAL 48906 ENGINEER GREGORY E. BRENN

1-22-13

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 14482 ENGINEER JOSEPH W. DUNNERON

1/23/13



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PROJECT REFERENCE NO.	SHEET NO.
R-2246B	38

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 18903 ENGINEER GREGORY E. BREWER — 1-22-13

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 14482 ENGINEER JOSEPH W. DUNNEKOCK — 1/8/13

SEE SHEETS 10 & 17 FOR PLAN OF -Y2REV-

-Y2REV-

DITCH LEGEND

LEFT DITCH

RIGHT DITCH

BM #7 ELEV.= 619.88'
-Y2REV- STA 25+29 229' LEFT
RR SPIKE SET IN THE BASE OF 26" WILLOW OAK

BEGIN GRADE -Y2REV-
-Y2REV- STA. 12+50.00
ELEV. 627.94

PI = 15+50.00
EL = 627.04'
VC = 300'
K = 77

PI = 18+50.00
EL = 614.45'
VC = 300'
K = 66

PI = 22+50.00
EL = 615.75'
VC = 100'
K = 111

(-)0.3000%
(-)1.4850%
(-)4.1967%
(-)3.9100%
(-)3.0900%
(-)1.8856%
(+)0.3250%
(-)0.5797%
(-)0.3000%

BEGIN RT DITCH
-Y2REV- STA.14+00.00
EL.625.62

PI =16+00.000
El = 622.65

PI =18+00.000
El = 614.83

PI =19+00.000
El = 611.74

END RT DITCH
-Y2REV- STA.20+13.00
EL.610.40

BEGIN RT DITCH
-Y2REV- STA.21+00.00
EL.609.39

END RT DITCH
-Y2REV- STA.22+50.00
EL.608.94

615.46

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO.

DRAINAGE AREA	= 8.69	AC
DESIGN FREQUENCY	= 25	YRS
DESIGN DISCHARGE	= 23.0	CFS
DESIGN HW ELEVATION	= 607.54	FT
100 YEAR DISCHARGE	= 26.0	CFS
100 YEAR HW ELEVATION	= 607.66	FT
OVERTOPPING FREQUENCY	= 500	YRS
OVERTOPPING DISCHARGE	= 80.0	CFS
OVERTOPPING ELEVATION	= 611.81	FT

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO. 1705

DRAINAGE AREA	= 3.9	AC
DESIGN FREQUENCY	= 25	YRS
DESIGN DISCHARGE	= 14.0	CFS
DESIGN HW ELEVATION	= 612.24	FT
100 YEAR DISCHARGE	= 17.0	CFS
100 YEAR HW ELEVATION	= 612.43	FT
OVERTOPPING FREQUENCY	= 100	YRS
OVERTOPPING DISCHARGE	= 21.0	CFS
OVERTOPPING ELEVATION	= 612.65	FT

630 620 610 600 590 580 570

10 11 12 13 14 15 16 17 18 19 20 21 22 23

SEE SHEETS 17 FOR PLAN OF -Y2REV-

-Y2REV-

DITCH LEGEND

LEFT DITCH

RIGHT DITCH

615.46

PI = 29+40.00
EL = 611.75'
VC = 100'
K = 41

(-)0.5797%
(-)3.0282%

END GRADE -Y2REV-
-Y2REV- STA. 31+10.07
ELEV. 606.60

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO.

DRAINAGE AREA	= 2.2	AC
DESIGN FREQUENCY	= 25	YRS
DESIGN DISCHARGE	= 7.0	CFS
DESIGN HW ELEVATION	= 616.95	FT
100 YEAR DISCHARGE	= 8.0	CFS
100 YEAR HW ELEVATION	= 617.19	FT
OVERTOPPING FREQUENCY	= 25	YRS
OVERTOPPING DISCHARGE	= 6.0	CFS
OVERTOPPING ELEVATION	= 616.73	FT

630 620 610 600 590 580 570

23 24 25 26 27 28 29 30 31

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