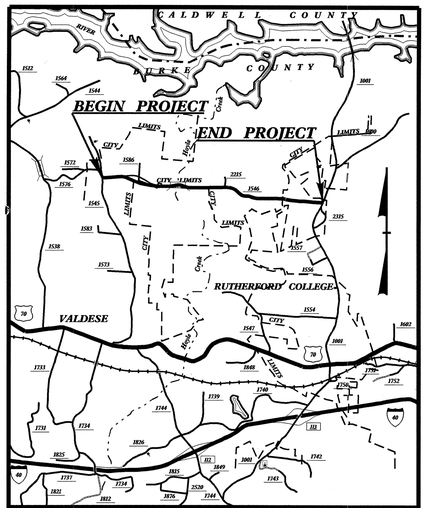
9/09/99

TIP PROJECT: R-2824

CONTRACT: C201242

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



VICINITY MAP

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

BURKE COUNTY

LOCATION: SR 1546 (LOVELADY ROAD) FROM SR 1545 (LAUREL ST.) TO SR 1001 (MALCOLM BLVD.)

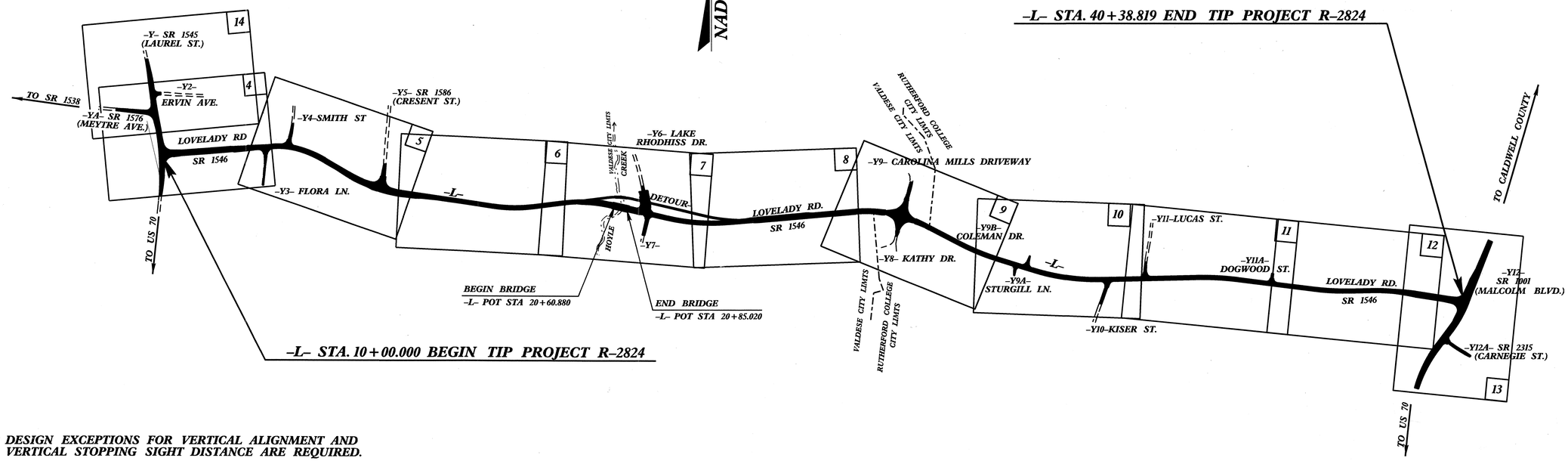
TYPE OF WORK: GRADING, DRAINAGE, PAVING, STRUCTURE, AND SIGNALS

METRIC

ALL DIMENSIONS IN THESE PLANS ARE IN METERS AND OR MILLIMETERS UNLESS OTHERWISE SHOWN

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-2824	1	

STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION
34510.1.1	STP-1546(8)	P.E.
34510.3.1	STP-1546(8)	R/W & UTIL.
34510.2.2	STP-1546(16)	CONST.



** DESIGN EXCEPTIONS FOR VERTICAL ALIGNMENT AND VERTICAL STOPPING SIGHT DISTANCE ARE REQUIRED.

GRAPHIC SCALES

5m 0 10m — PLANS

5m 0 10m — PROFILE (HORIZONTAL)

1m 0 2m — PROFILE (VERTICAL)

DESIGN DATA

ADT 2008 = 4,000 VPD
ADT 2035 = 6,800 VPD
DHV = 14 %
D = 60 %
* T = 10 %
** V = 70 km/h
*(TTST 3 % + DUAL 7 %)
FUNC. CLASS = URBAN COLLECTOR
REGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT R-2824 = 3.015 km
LENGTH STRUCTURE TIP PROJECT R-2824 = 0.024 km
TOTAL LENGTH TIP PROJECT R-2824 = 3.039 km

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

2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: DECEMBER 23, 2003

LETTING DATE: JUNE 15, 2010

GLENN W. MUMFORD, P.E. — PROJECT ENGINEER

JEFFREY L. TEAGUE, P.E. — PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 19721 ENGINEER WILLIAM H ELAM
SIGNATURE: 3-31-10 P.E.

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 033298 ENGINEER JEFFREY L. TEAGUE
SIGNATURE: Jeffrey L. Teague 3-31-10 P.E.

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

STATE HIGHWAY DESIGN ENGINEER P.E.

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PROJECT REFERENCE NO.	SHEET NO.
R-2824	1-A

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 033298 ENGINEER JEFFREY L. TRAGUE

5/5/10

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 THROUGH 1-D	SURVEY CONTROL SHEETS
2 THROUGH 2-E	FINAL PAVEMENT SCHEDULE, TYPICAL SECTIONS, AND WEDGING DETAILS
2-F THROUGH 2-G	DETAIL OF ON-SITE DETOUR
2-H	DITCH DETAILS
2-I	DETAIL OF ROUNDABOUT
2-J THROUGH 2-K	METHOD OF PIPE INSTALLATION
2-L	DETAIL OF 450 MM CURB & GUTTER
2-M THROUGH 2-N	WHEELCHAIR RAMPS / PROPOSED CURB & GUTTER
3 (2 SHEETS)	SUMMARY OF QUANTITIES
3-A THROUGH 3-D	SUMMARY OF DRAINAGE QUANTITIES
3-E	GUARDRAIL SUMMARY, SUMMARY OF SHOULDER BERM GUTTER, AND ASPHALT PAVEMENT REMOVAL AND BREAKING SUMMARY
3-F	SUMMARY OF EARTHWORK
3-G	PARCEL INDEX SHEET
4 THROUGH 14	PLAN SHEETS
15 THROUGH 28	PROFILE SHEETS
TCP-1 THROUGH TCP-17	TRAFFIC CONTROL PLANS
SD-1 THROUGH SD-2	SIGN DESIGN
PMP-1 THROUGH PMP-7	PAVEMENT MARKING PLANS
E-1 THROUGH E-3	ELECTRICAL PLAN
EC-1 THROUGH EC-27	EROSION CONTROL PLANS
RF-1	REFORESTATION DETAIL SHEET
SIGN-1 THROUGH SIGN-12	SIGNING PLANS
SIG-1 THROUGH SIG-13	SIGNAL PLANS
UC-1 THROUGH UC-13	UTILITY CONSTRUCTION PLANS
UO-1 THROUGH UO-12	UTILITIES BY OTHERS PLANS
X	CROSS-SECTION INDEX
X-1A THROUGH X-1C	CROSS-SECTION SUMMARY SHEETS
X-1 THROUGH X-100	CROSS-SECTIONS
S-1 THROUGH S-20	STRUCTURE PLANS

GENERAL NOTES:

2006 SPECIFICATIONS
EFFECTIVE: 07-18-06
REVISED: 09-12-08

GRADE LINE:

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

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

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

SHOULDER CONSTRUCTION:
ASPHALT, EARTH, AND CONCRETE SHOULDER CONSTRUCTION ON THE HIGH SIDE OF SUPERELEVATED CURVES SHALL BE IN ACCORDANCE WITH STD. NO. 560.01.

SIDE ROADS:
THE CONTRACTOR WILL BE REQUIRED TO DO ALL NECESSARY WORK TO PROVIDE SUITABLE CONNECTIONS WITH ALL ROADS, STREETS, AND DRIVES ENTERING THIS PROJECT. THIS WORK WILL BE PAID FOR AT THE CONTRACT UNIT PRICE FOR THE PARTICULAR ITEMS INVOLVED.

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

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

DRIVEWAYS:
DRIVEWAYS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. 848.02 USING 900 MM RADII OR RADII AS SHOWN ON THE PLANS. LOCATIONS OF DRIVES WILL BE AS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER.

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

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

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

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 EMBARQ, DUKE ENERGY, CHARTER

COMMUNICATIONS, PIEDMONT GAS, TOWN OF VALDESE AND RUTHERFORD COLLEGE -

SEWER, TOWN OF VALDESE - WATER, RUTHERFORD COLLEGE WATER COPORATION -

WATER

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.

WHEELCHAIR RAMPS:
WHEELCHAIR RAMPS ARE SHOWN ON THE PLANS AT APPROXIMATE LOCATIONS. THE CONSTRUCTION OF ALL WHEELCHAIR RAMPS SHALL BE IN ACCORDANCE WITH STD. NO. 848.05

2006 ROADWAY METRIC STANDARD DRAWINGS

EFF. 08-01-08
REV. 07-16-06

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

STD.NO.	TITLE
DIVISION 2 - EARTHWORK	
200.02	Method of Clearing - Method II
225.02	Guide for Grading Subgrade - Secondary and Local
225.04	Method of Obtaining Superelevation - Two Lane Pavement
240.01	Guide for Berm Ditch Construction
DIVISION 3 - PIPE CULVERTS	
310.10	Driveway Pipe Construction
DIVISION 4 - MAJOR STRUCTURES	
422.10	Reinforced Bridge Approach Fills
DIVISION 5 - SUBGRADE, BASES AND SHOULDERS	
560.01	Method of Shoulder Construction - High Side of Superelevated Curve - Method I
DIVISION 6 - ASPHALT BASES AND PAVEMENTS	
654.01	Pavement Repairs
DIVISION 8 - INCIDENTALS	
815.03	Pipe Underdrain and Blind Drain
838.01	Concrete Endwall for Single and Double Pipe Culverts - 375mm thru 1200mm Pipe 90 Skew
838.02	Concrete Endwall and Sluice Gate - 375mm thru 900mm Pipe 90 Skew
838.11	Brick Endwall for Single and Double Pipe Culverts - 375mm thru 1200mm Pipe 90 Skew
840.00	Concrete Base Pad for Drainage Structures
840.01	Brick Catch Basin - 300mm thru 1350mm Pipe
840.02	Concrete Catch Basin - 300mm thru 1350mm Pipe
840.03	Frame, Grates and Hood - for Use on Standard Catch Basin
840.14	Concrete Drop Inlet - 300mm thru 750mm Pipe
840.15	Brick Drop Inlet - 300mm thru 750mm Pipe
840.16	Drop Inlet Frame and Grates - for use with Std. Dwg 840.14 and 840.15
840.18	Concrete Grated Drop Inlet Type 'B' - 300mm thru 900mm Pipe
840.24	Frames and Narrow Slot Sag Grates
840.25	Anchorage for Frames - Brick or Concrete
840.27	Brick Grated Drop Inlet Type 'B' - 300mm thru 900mm Pipe
840.29	Frames and Narrow Slot Flat Grates
840.31	Concrete Junction Box - 300mm thru 1650mm Pipe
840.32	Brick Junction Box - 300mm thru 1650mm Pipe
840.35	Traffic Bearing Grated Drop Inlet - for Cast Iron Double Frame and Grates
840.45	Precast Drainage Structure
840.46	Traffic Bearing Precast Drainage Structure
840.54	Manhole Frame and Cover
840.66	Drainage Structure Steps
840.71	Concrete and Brick Pipe Plug
840.72	Pipe Collar
846.01	Concrete Curb, Gutter and Curb & Gutter
846.02	Drop Inlet Installation in Expressway Gutter
846.04	Drop Inlet Installation in Shoulder Berm Gutter
848.01	Concrete Sidewalk
848.02	Driveway Turnout - Radius Type
848.04	Street Turnout
852.01	Concrete Islands
862.01	Guardrail Placement
862.02	Guardrail Installation
862.03	Structure Anchor Units
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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Note: Not to Scale

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

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PROJ. REFERENCE NO.	SHEET NO.
R-2824	1 – B

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

BUILDINGS AND OTHER CULTURE:

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

HYDROLOGY:

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

RAILROADS:

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

RIGHT OF WAY:

- Baseline Control Point
- Existing Right of Way Marker
- Existing Right of Way Line
- Proposed Right of Way Line — RW
- Proposed Right of Way Line with Iron Pin and Cap Marker — RW
- Proposed Right of Way Line with Concrete or Granite Marker — RW
- Existing Control of Access — CA
- Proposed Control of Access — CA
- Existing Easement Line — E
- Proposed Temporary Construction Easement — E
- Proposed Temporary Drainage Easement — TDE
- Proposed Permanent Drainage Easement — PDE
- Proposed Permanent Utility Easement — PUE
- Proposed Temporary Utility Easement — TUE
- 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
- Detour Slope Stakes Cut — C
- Detour Slope Stakes Fill — F
- Proposed Wheel Chair Ramp — WCR
- Proposed Wheel Chair Ramp Curb Cut — WCC
- Curb Cut for Future Wheel Chair Ramp — CCFR
- Existing Metal Guardrail
- Proposed Guardrail
- Existing Cable Guiderail
- Proposed Cable Guiderail
- Equality Symbol
- Pavement Removal

VEGETATION:

- Single Tree
- Single Shrub
- Hedge

VEGETATION: CONTINUE

- 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 — HH
- H-Frame Pole
- Recorded U/G Power Line — P
- Designated U/G Power Line (S.U.E.*) — P

TELEPHONE:

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

WATER:

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

TV:

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

GAS:

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

SANITARY SEWER:

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

MISCELLANEOUS:

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

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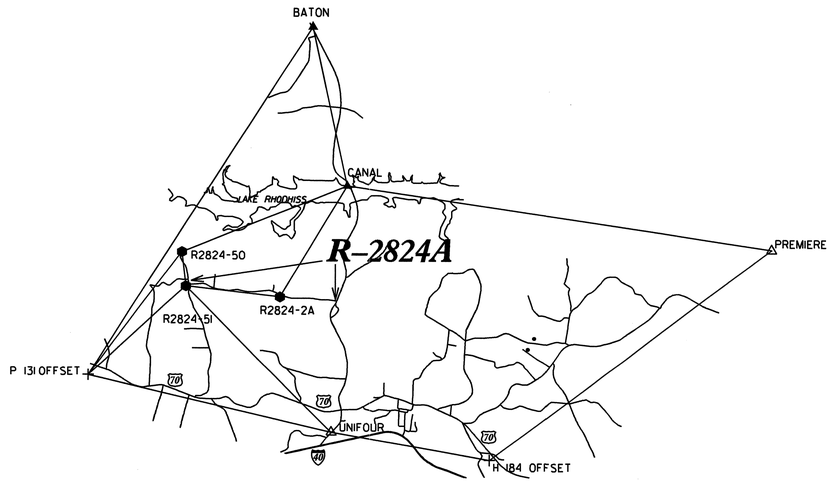
PROJ. REFERENCE NO.	SHEET NO.
R-2824	1 - C

SURVEY CONTROL SHEET



GPS CONTROL NETWORK
NOT TO SCALE

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "R2824-2A"
WITH NAD 83 STATE PLANE GRID COORDINATES OF
NORTHING: 225922.452(m) EASTING: 380740.039(m)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.999906992
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "R2824-2A" TO -L- STATION 10+00.00 IS
N 83°18'24.5" W 2659.836
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NGVD 29

NOTES:

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

THE FILES TO BE FOUND ARE AS FOLLOWS:

R2824A_LS_CONTROL_031008.TXT

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

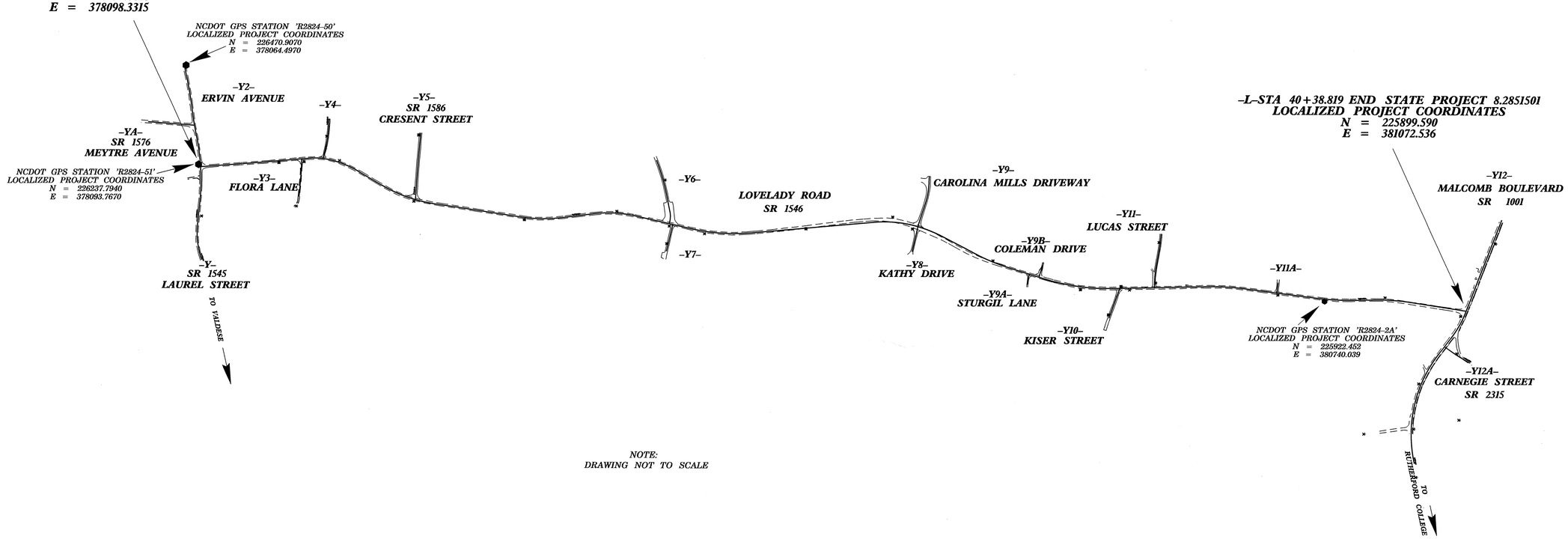
▲ INDICATES NCGS GEODETIC CONTROL MONUMENTS USED FOR HORIZONTAL PROJECT CONTROL BY THE NCDOT LOCATION AND SURVEYS UNIT.

⬢ INDICATES GEODETIC CONTROL MONUMENTS SET FOR HORIZONTAL PROJECT CONTROL BY THE NCDOT LOCATION AND SURVEYS UNIT.

PROJECT CONTROL ESTABLISHED UTILIZING GLOBAL POSITIONING SYSTEM.

NETWORK ESTABLISHED FROM EXISTING NCGS AND NCDOT MONUMENTATION.

NAD 83



NOTE:
DRAWING NOT TO SCALE

SURVEY CONTROL SHEET

PROJ. REFERENCE NO.	SHEET NO.
R-2824	1 - D
LOCATION & SURVEYS	

CONTROL DATA

BL POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
51	R2824-51	226237.7940	378093.7670	357.976	OUTSIDE PROJECT LIMITS	
1	BL-1	226242.5310	378282.5040	357.976	11+84.338	4.207 RT
14	BL-14	226244.8630	378341.5720	357.485	12+43.367	7.375 RT
2	BL-2	226247.9210	378424.6600	355.524	13+26.944	4.438 LT
3	BL-3	226154.2970	378599.2040	348.343	15+24.132	4.404 RT
4	BL-4	226111.9210	378859.0650	334.433	17+86.864	4.707 RT
5	BL-5	226132.4960	379076.2220	320.890	20+04.061	4.669 LT
18	BL-18	226098.2270	379199.3340	317.216	21+31.147	5.294 RT
6	BL-6	226080.9170	379282.1610	320.425	22+15.420	5.207 RT
7	BL-7	226092.3350	379520.8810	338.786	24+54.013	1.417 RT
8	BL-8	226119.8440	379724.4890	347.455	26+57.561	12.234 LT
20	BL-20	226092.1550	379771.0460	347.355	27+07.447	8.287 RT
9	BL-9	226017.5850	379960.3180	360.992	29+12.802	2.887 LT
10	BL-10	225949.3680	380166.1490	366.684	31+29.252	6.444 RT
11	BL-11	225948.5380	380281.4950	368.060	32+43.864	4.247 RT
23	BL-23	225965.2650	380342.8410	369.956	33+05.563	11.126 LT
100	R2824-1A	225960.5370	380414.5058	369.534	33+77.107	4.822 LT
25	BL-25	225937.3280	380630.1090	372.064	35+94.023	4.303 RT
200		225922.4520	380740.0392	0.000	37+04.835	5.176 RT
34	BL-34	225931.5880	380881.9990	378.091	38+46.174	5.790 LT

BY

POINT	DESC.	NORTH	EAST	ELEVATION	Y STATION	OFFSET
50	R2824-50	226470.9070	378064.4970	355.394	10+02.087	4.278 LT
12	BY-12	226327.0900	378088.9010	357.491	11+47.886	4.393 LT
451	R2824-51	226237.7940	378093.7670	357.976	12+37.184	4.197 RT
13	BY-13	226117.5300	378100.7970	362.851	13+57.269	7.427 LT

BY1

POINT	DESC.	NORTH	EAST	ELEVATION	Y3 STATION	OFFSET
414	BL-14	226244.8630	378341.5720	357.485	10+06.716	5.970 LT
15	BY3-15	226141.8470	378323.0490	363.156	OUTSIDE PROJECT LIMITS	

BY3

POINT	DESC.	NORTH	EAST	ELEVATION	Y5 STATION	OFFSET
17	BY5-17	226308.8260	378610.3000	347.713	10+05.999	4.271 RT
403	BL-3	226154.2970	378599.2040	348.343	OUTSIDE PROJECT LIMITS	

BY4

POINT	DESC.	NORTH	EAST	ELEVATION	Y4 STATION	OFFSET
16	BY4-16	226305.3900	378395.0620	355.480	10+40.719	2.012 RT
402	BL-2	226247.9210	378424.6600	355.524	10+90.085	38.518 LT

BY6

POINT	DESC.	NORTH	EAST	ELEVATION	Y6 STATION	OFFSET
19	BY6-19	226205.5910	379189.0230	317.094	10+50.028	4.346 LT
418	BL-18	226098.2270	379199.3340	317.216	OUTSIDE PROJECT LIMITS	

BY7

POINT	DESC.	NORTH	EAST	ELEVATION	Y7 STATION	OFFSET
468	BL-18	226098.2270	379199.3340	317.216	10+05.337	6.869 RT
33	BY7-33	226056.9350	379193.3720	317.833	10+46.915	3.420 RT

BY10

POINT	DESC.	NORTH	EAST	ELEVATION	Y10 STATION	OFFSET
411	BL-11	225948.5380	380281.4950	368.060	OUTSIDE PROJECT LIMITS	
21	BY10-21	225956.6950	380261.6910	367.505	OUTSIDE PROJECT LIMITS	
22	BY10-22	225889.1430	380232.3970	360.756	10+68.207	3.364 RT

BY11

POINT	DESC.	NORTH	EAST	ELEVATION	Y11 STATION	OFFSET
24	BY11-24	226060.6500	380350.8560	364.510	10+21.070	2.709 RT
423	BL-23	225965.2650	380342.8410	369.956	11+17.129	2.671 LT

BM DATA

****
BM1 ELEVATION = 357.551
N 226269 E 378135
L STATION 10+39 34 LEFT
CHISELED SQUARE IN CONC WALK
****

****
BM2 ELEVATION = 316.138
N 226141 E 379178
L STATION 21+01 32 LEFT
NAIL IN BASE OF 300MM MAPLE
****

****
BM3 ELEVATION = 372.732
N 225926 E 380642
L STATION 36+07 14 RIGHT
NAIL IN BASE OF 400MM OAK
****

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "R2824-2A"
WITH NAD 83 STATE PLANE GRID COORDINATES OF NORTHING: 225922.452(m) EASTING: 380740.039(m)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.999906992
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "R2824-2A" TO -L- STATION 10+00.00 IS N 83°18'24.5" W 2659.836
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NGVD 29

NOTES:

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

THE FILES TO BE FOUND ARE AS FOLLOWS:

R2824A LS CONTROL_031008.TXT

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

PROJECT REFERENCE NO.	SHEET NO.
R-2824	2
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

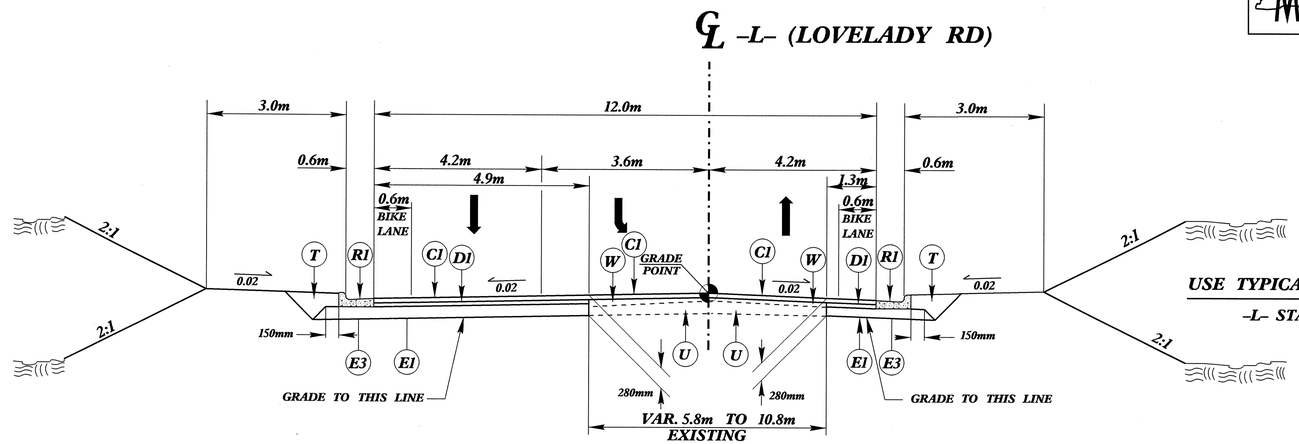
NORTH CAROLINA PROFESSIONAL SEAL 033298 ENGINEER JEFFREY L. TEAGUE 5/4/10

NORTH CAROLINA PROFESSIONAL SEAL 22896 ENGINEER CLARK S. MORRISON 5/4/10

FINAL PAVEMENT SCHEDULE

A	200 mm CONCRETE TRUCK APRON. NO DOWELS, RADIAL CONTROL JOINTS 4.5 m APART, BROOM FINISH.
C1	PROP. APPROX. 80 mm ASPHALT CONC. SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 96 kg PER SQ. METER IN EACH OF TWO LAYERS.
C2	PROP. APPROX. 50 mm ASPHALT CONC. SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 120 kg PER SQ. METER.
C3	PROP. VAR. DEPTH ASPHALT CONC. SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 2.40 kg PER SQ. METER PER 1 mm DEPTH TO BE PLACED IN LAYERS NOT LESS THAN 40 mm IN DEPTH OR GREATER THAN 50 mm IN DEPTH.
D1	PROP. APPROX. 100 mm ASPHALT CONC. INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 245 kg PER SQ. METER.
D2	PROP. APPROX. 80 mm ASPHALT CONC. INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 196 kg PER SQ. METER.
D3	PROP. VAR. DEPTH ASPHALT CONC. INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 2.45 kg PER SQ. METER PER 1 mm DEPTH TO BE PLACED IN LAYERS NOT LESS THAN 65 mm OR GREATER THAN 110 mm IN DEPTH.
E1	PROP. APPROX. 100 mm ASPHALT CONC. BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 245 kg PER SQ. METER.
E2	PROP. APPROX. 140 mm ASPHALT CONC. BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 343 kg PER SQ. METER.
E3	PROP. VAR. DEPTH ASPHALT CONC. BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 2.45 kg PER SQ. METER PER 1 mm DEPTH TO BE PLACED IN LAYERS NOT LESS THAN 75 mm IN DEPTH OR GREATER THAN 140 mm IN DEPTH.
J1	PROP. 200 mm AGGREGATE BASE COURSE.
J2	PROP. 150 mm AGGREGATE BASE COURSE.
J3	PROP. 100 mm AGGREGATE BASE COURSE.
P	PRIME COAT AT THE RATE OF 1.58 L PER SQ. METER.
R1	750 mm CONCRETE CURB AND GUTTER.
R2	EXPRESSWAY GUTTER.
R3	450 mm CONCRETE CURB AND GUTTER (SEE DETAIL SHEET 2-L).
R4	200 mm X 450 mm CONCRETE CURB.
S1	100 mm CONCRETE SIDEWALK.
S2	150 mm CONCRETE DRIVEWAY.
T	EARTH MATERIAL.
U	EXISTING PAVEMENT.
W	VARIABLE DEPTH ASPHALT PAVEMENT. (SEE STANDARD WEDGING DETAILS NO. 1 AND NO. 2)

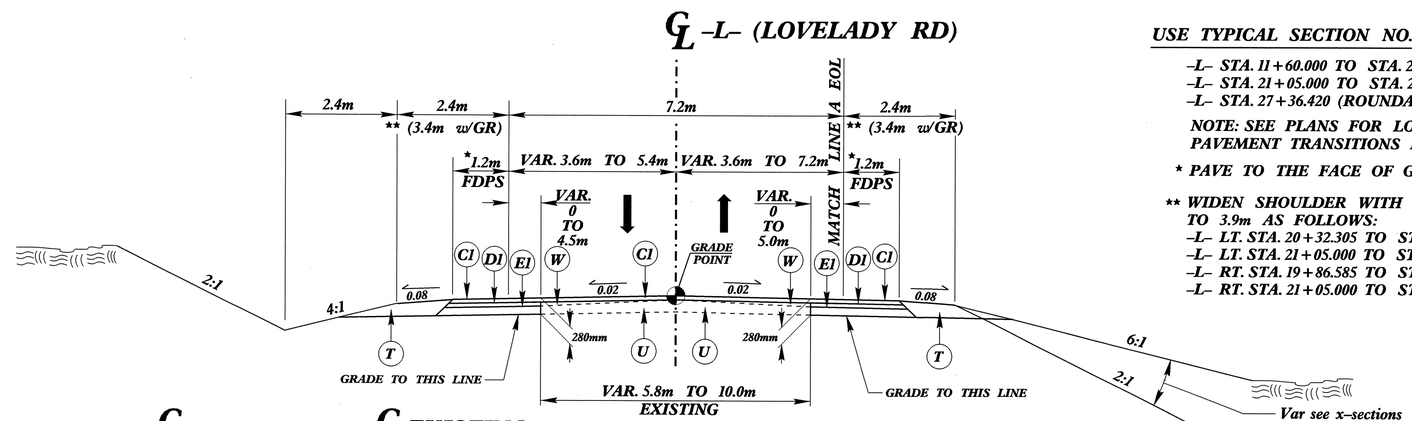
NOTE: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.



TYPICAL SECTION NO. 1

USE TYPICAL SECTION NO. 1 AS FOLLOWS:

-L- STA. 10+05.400 TO STA. 11+60.000



TYPICAL SECTION NO. 2

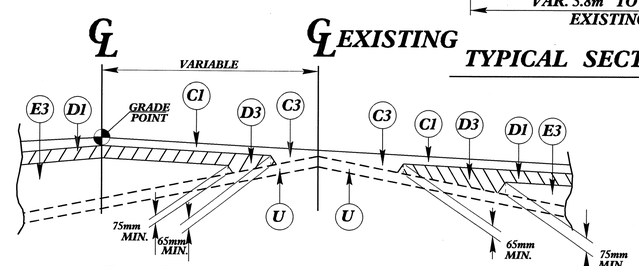
USE TYPICAL SECTION NO. 2 AS FOLLOWS:

-L- STA. 11+60.000 TO STA. 20+40.000
-L- STA. 21+05.000 TO STA. 27+00.415 (ROUNDABOUT)
-L- STA. 27+36.420 (ROUNDABOUT) TO STA. 40+27.465

NOTE: SEE PLANS FOR LOCATIONS OF PAVEMENT TRANSITIONS FOR TURN LANES.

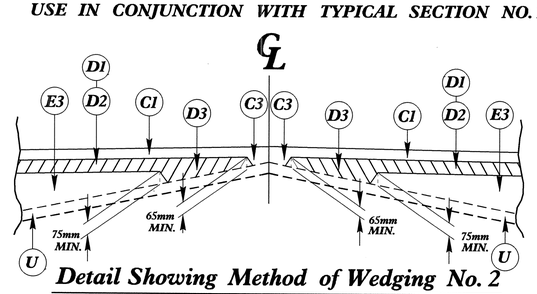
* PAVE TO THE FACE OF GUARDRAIL

** WIDEN SHOULDER WITH GUARDRAIL TO 3.9m AS FOLLOWS:
-L- LT. STA. 20+32.305 TO STA. 20+40.000
-L- LT. STA. 21+05.000 TO STA. 21+09.000
-L- RT. STA. 19+86.585 TO STA. 20+40.000
-L- RT. STA. 21+05.000 TO STA. 21+25.025



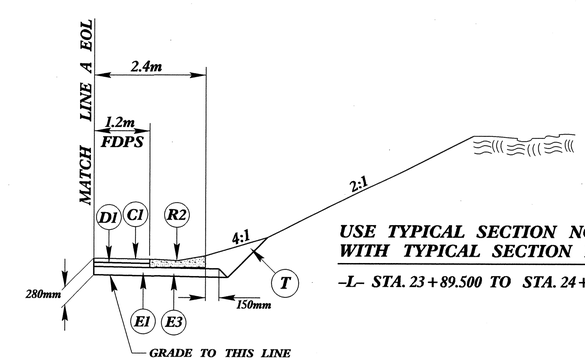
Detail Showing Method of Wedging No. 1

USE IN CONJUNCTION WITH TYPICAL SECTION NO. 2.



Detail Showing Method of Wedging No. 2

USE IN CONJUNCTION WITH TYPICAL SECTION NO.'S 1,2,6,7,8,9,10,13 AND 15.



TYPICAL SECTION NO. 2A

USE TYPICAL SECTION NO. 2A IN CONJUNCTION WITH TYPICAL SECTION NO. 2 AS FOLLOWS:

-L- STA. 23+89.500 TO STA. 24+60.000

6/16/99

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PROJECT REFERENCE NO.	SHEET NO.
R-2824	2-A

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 033298 ENGINEER JEFFREY L. FEEGLE

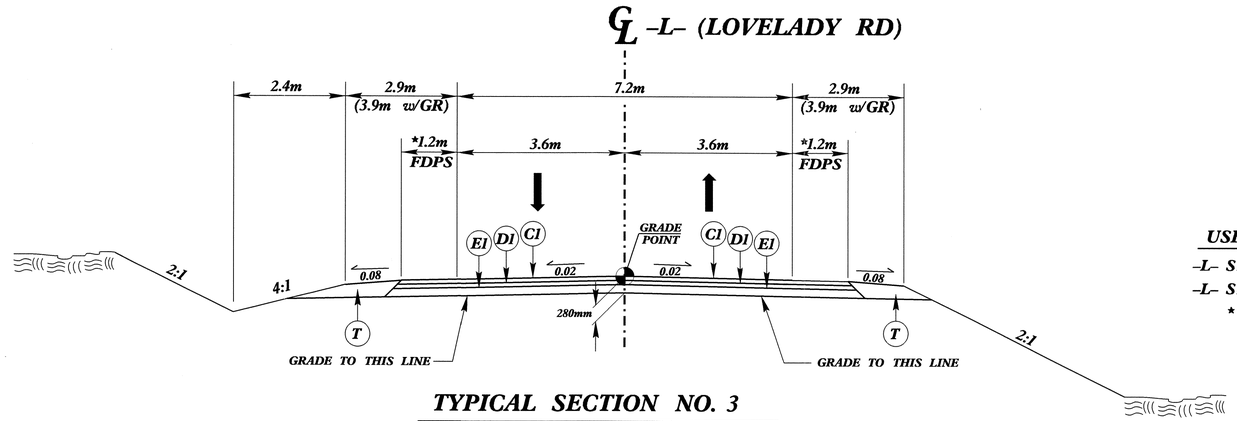
3/31/10

PAVEMENT DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 22896 ENGINEER CLARK S. MORRISON

3/31/10

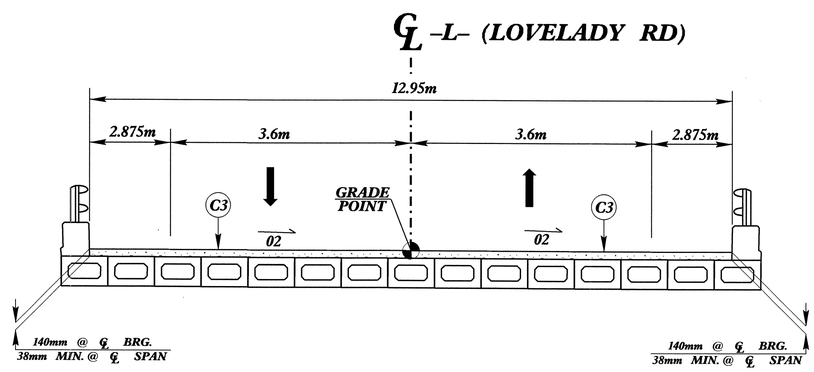
METRIC



TYPICAL SECTION NO. 3

USE TYPICAL SECTION NO. 3 AS FOLLOWS:

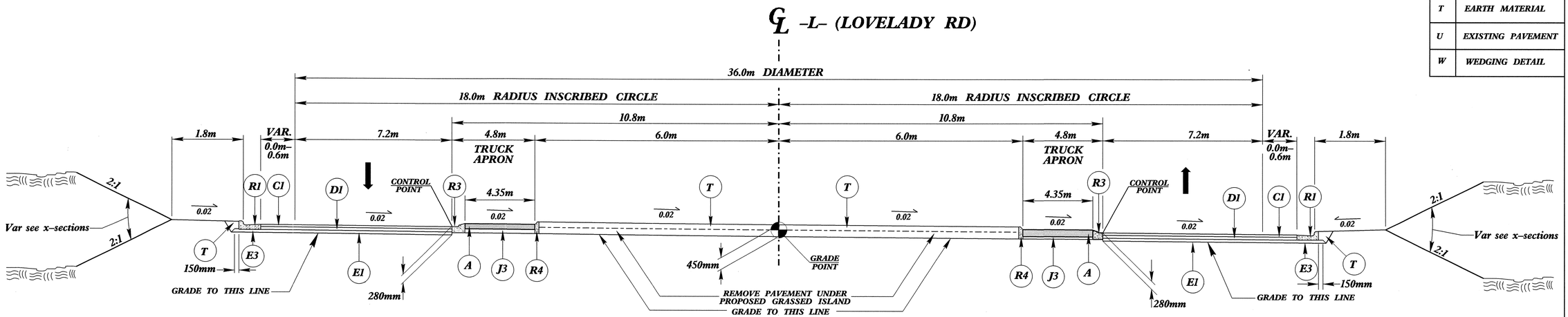
-L- STA. 20+40.000 TO STA. 20+60.880 (BEGIN BRIDGE)
-L- STA. 20+85.020 (END BRIDGE) TO STA. 21+05.000
* PAVE TO THE FACE OF GUARDRAIL



TYPICAL SECTION NO. 4

USE TYPICAL SECTION NO. 4 AS FOLLOWS:

-L- STA. 20+60.880 (BEGIN BRIDGE)
TO STA. 20+85.020 (END BRIDGE)
BOX BEAM BRIDGE
(SEE STRUCTURE PLANS)



TYPICAL SECTION NO. 5

THROUGH THE CENTER OF THE ROUNDABOUT

USE TYPICAL SECTION NO. 5 AS FOLLOWS:

-L- STA. 27+00.415 TO STA. 27+36.420

A	200mm CONCRETE TRUCK APRON
C1	80mm S9.5B
C2	50mm S9.5B
C3	VAR. S9.5B
D1	100mm I19.0B
D2	80mm I19.0B
D3	VAR. I19.0B
E1	100mm B25.0B
E2	140mm B25.0B
E3	VAR. B25.0B
J1	200mm ABC
J2	150mm ABC
J3	100mm ABC
P	PRIME COAT
R1	750mm C&G
R2	EXPRESSWAY GUTTER
R3	450mm C&G (SEE DETAIL 2-L)
R4	200mm X 450mm CONC. CURB
S1	100mm SIDEWALK
S2	150mm DRIVEWAY
T	EARTH MATERIAL
U	EXISTING PAVEMENT
W	WEDGING DETAIL

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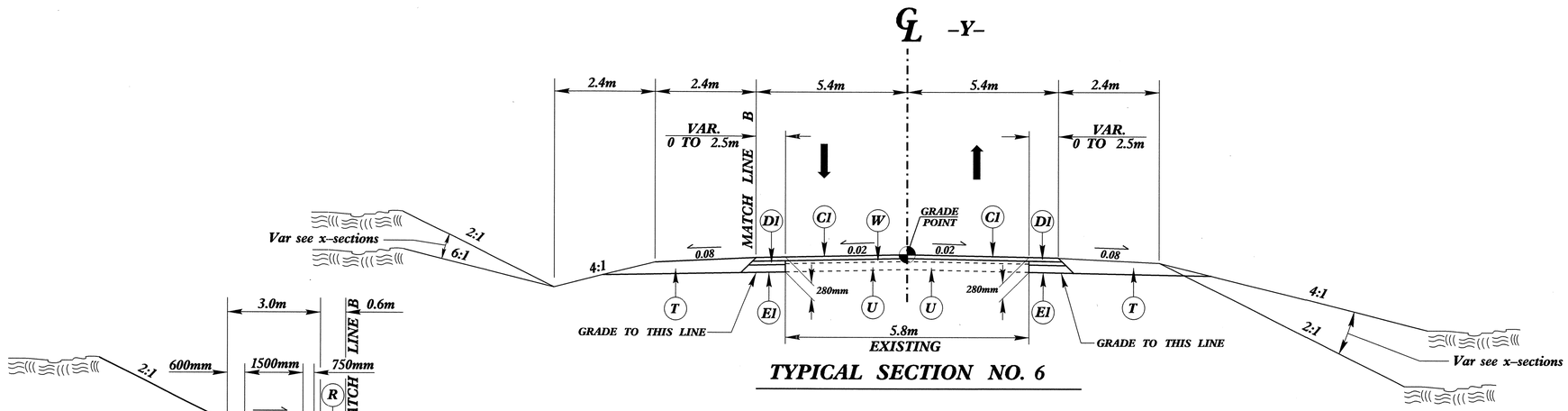
PROJECT REFERENCE NO.	SHEET NO.
R-2824	2-B

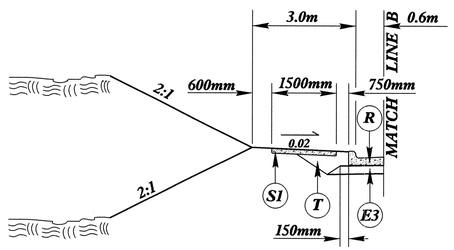
ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 033298 ENGINEER JEFFREY L. BEAGLE
5/31/10

PAVEMENT DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 22896 ENGINEER CLARK S. MORRISON
5/31/10

METRIC



TYPICAL SECTION NO. 6

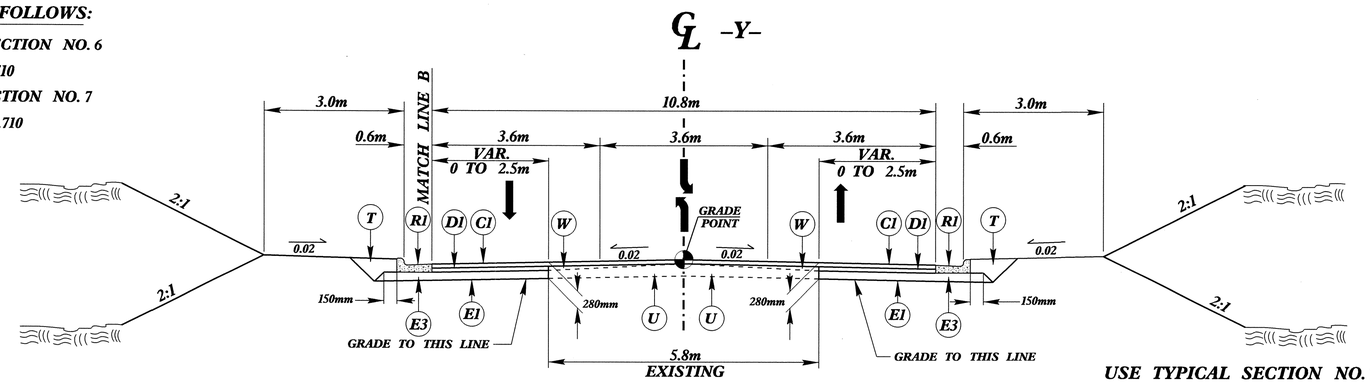


USE TYPICAL SECTION NO. 6A AS FOLLOWS:

USE IN CONJUNCTION WITH TYPICAL SECTION NO. 6
-Y- STA. 12+86.710 TO -Y- STA. 13+36.710
USE IN CONJUNCTION WITH TYPICAL SECTION NO. 7
-L- STA. 10+25.732 TO -Y- STA. 12+86.710

USE TYPICAL SECTION NO. 6 AS FOLLOWS:

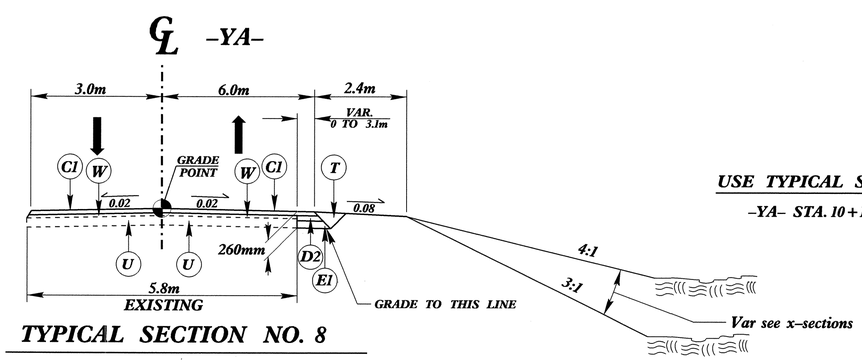
-Y- STA. 10+20.000 TO STA. 10+70.000
-Y- STA. 12+86.710 TO STA. 13+36.710



TYPICAL SECTION NO. 7

USE TYPICAL SECTION NO. 7 AS FOLLOWS:

-Y- STA. 10+70.000 TO STA. 12+86.710



TYPICAL SECTION NO. 8

USE TYPICAL SECTION NO. 8 AS FOLLOWS:

-YA- STA. 10+19.000 TO STA. 11+03.260

A	200mm CONCRETE TRUCK APRON
C1	80mm S9.5B
C2	50mm S9.5B
C3	VAR. S9.5B
D1	100mm I19.0B
D2	80mm I19.0B
D3	VAR. I19.0B
E1	100mm B25.0B
E2	140mm B25.0B
E3	VAR. B25.0B
J1	200mm ABC
J2	150mm ABC
J3	100mm ABC
P	PRIME COAT
R1	750mm C&G
R2	EXPRESSWAY GUTTER
R3	450mm C&G (SEE DETAIL 2-L)
R4	200mm X 450mm CONC. CURB
S1	100mm SIDEWALK
S2	150mm DRIVEWAY
T	EARTH MATERIAL
U	EXISTING PAVEMENT
W	WEDGING DETAIL

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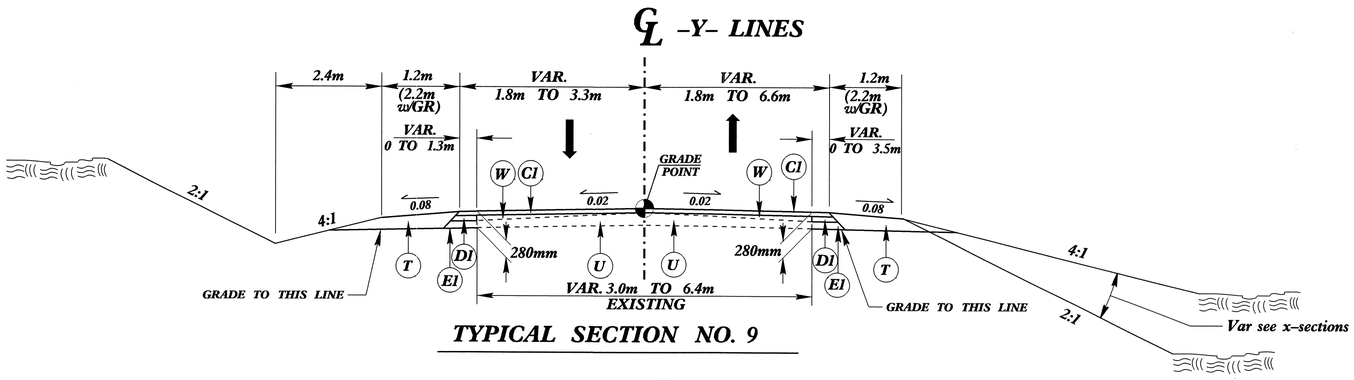
PROJECT REFERENCE NO.	SHEET NO.
R-2824	2-C

METRIC

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 033298 ENGINEER JEFFREY L. TEAGUE
3/31/10

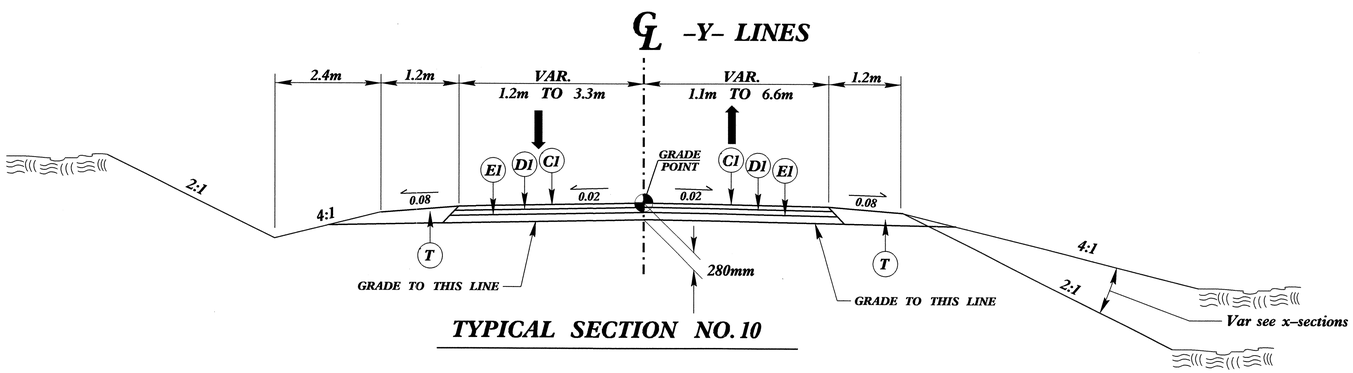
PAVEMENT DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 22896 ENGINEER CLARK S. MORRISON
3/31/10



TYPICAL SECTION NO. 9

USE TYPICAL SECTION NO. 9 AS FOLLOWS:

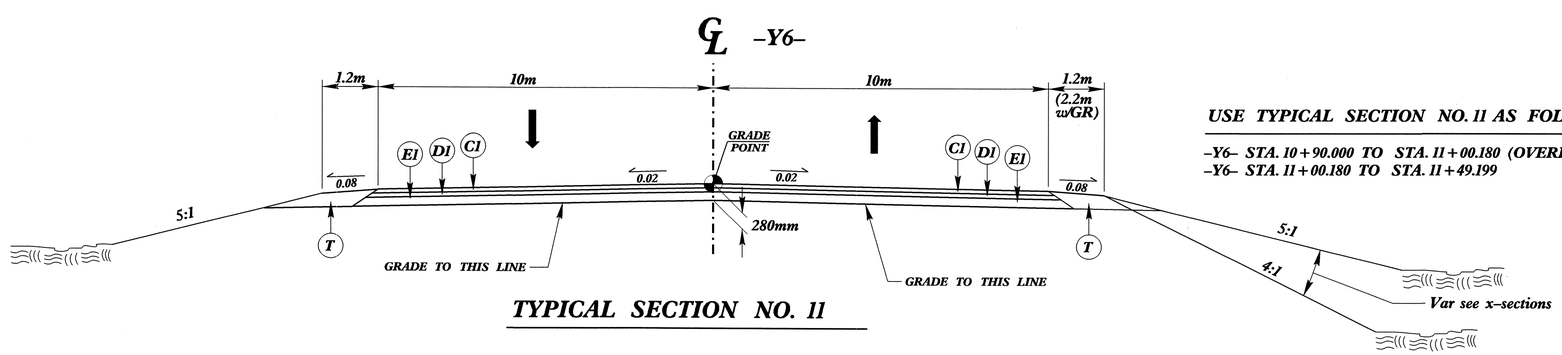
-Y2- STA. 10+05.400 TO STA. 10+20.000
-Y4- STA. 10+40.000 TO STA. 10+90.780
-Y5- STA. 11+00.000 TO STA. 11+40.000
-Y7- STA. 10+03.600 TO STA. 10+50.000
-Y8- STA. 10+18.000 (ROUNDABOUT) TO STA. 10+47.400
-Y9- STA. 10+40.000 TO STA. 11+03.165 (ROUNDABOUT)
-Y10- STA. 10+03.840 TO STA. 10+60.000
-Y10- STA. 10+60.000 TO STA. 10+75.081 (OVERLAY WITH 80mm S9.5B)
-Y11- STA. 10+90.000 TO STA. 10+96.780 (OVERLAY WITH 80mm S9.5B)
-Y11- STA. 10+96.780 TO STA. 11+24.780
-Y11A- STA. 10+00.000 STA. TO 10+20.813



TYPICAL SECTION NO. 10

USE TYPICAL SECTION NO. 10 AS FOLLOWS:

-Y3- STA. 10+03.630 TO STA. 10+87.630
-Y5- STA. 11+40.000 TO STA. 11+52.250
-Y9A- STA. 10+00.000 TO STA. 10+21.429
-Y9B- STA. 10+00.000 TO STA. 10+25.748



TYPICAL SECTION NO. 11

USE TYPICAL SECTION NO. 11 AS FOLLOWS:

-Y6- STA. 10+90.000 TO STA. 11+00.180 (OVERLAY THE EXISTING PAVEMENT WITH 80mm S9.5B)
-Y6- STA. 11+00.180 TO STA. 11+49.199

A	200mm CONCRETE TRUCK APRON
C1	80mm S9.5B
C2	50mm S9.5B
C3	VAR. S9.5B
D1	100mm I19.0B
D2	80mm I19.0B
D3	VAR. I19.0B
E1	100mm B25.0B
E2	140mm B25.0B
E3	VAR. B25.0B
J1	200mm ABC
J2	150mm ABC
J3	100mm ABC
P	PRIME COAT
R1	750mm C&G
R2	EXPRESSWAY GUTTER
R3	450mm C&G (SEE DETAIL 2-L)
R4	200mm X 450mm CONC. CURB
S1	100mm SIDEWALK
S2	150mm DRIVEWAY
T	EARTH MATERIAL
U	EXISTING PAVEMENT
W	WEDGING DETAIL

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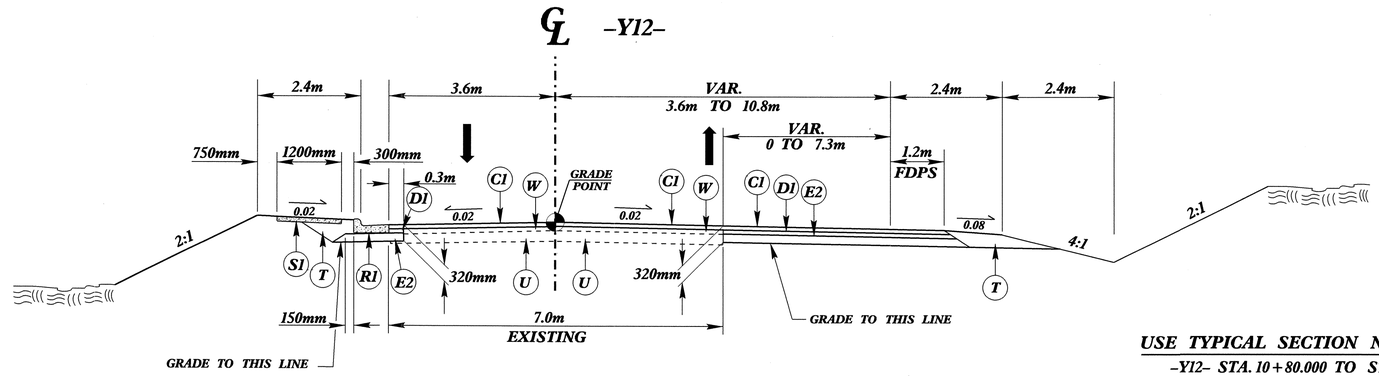
PROJECT REFERENCE NO.	SHEET NO.
R-2824	2-D

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 033298 ENGINEER JEFFREY L. TEAGUE
3/31/10

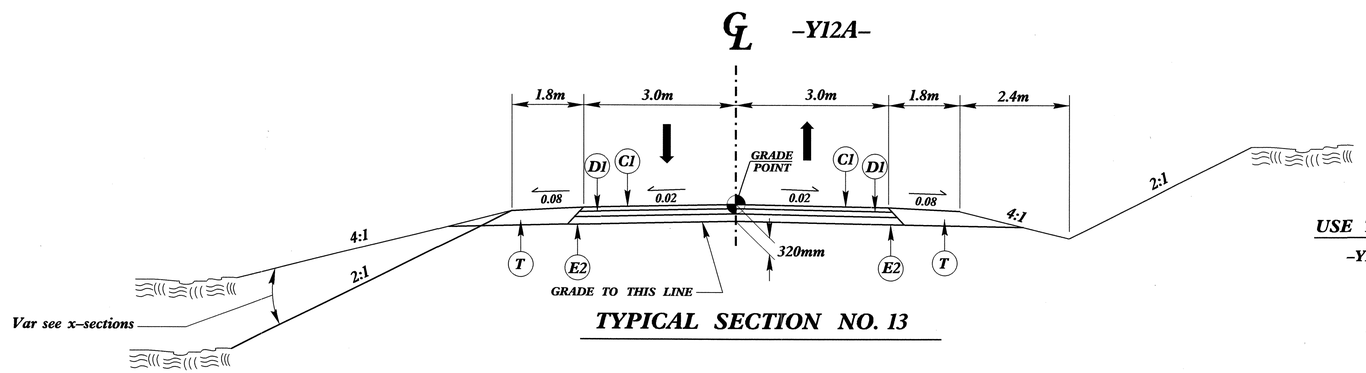
PAVEMENT DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 22896 ENGINEER CLARK S. MORRISON
3/31/10



TYPICAL SECTION NO. 12

USE TYPICAL SECTION NO. 12 AS FOLLOWS:

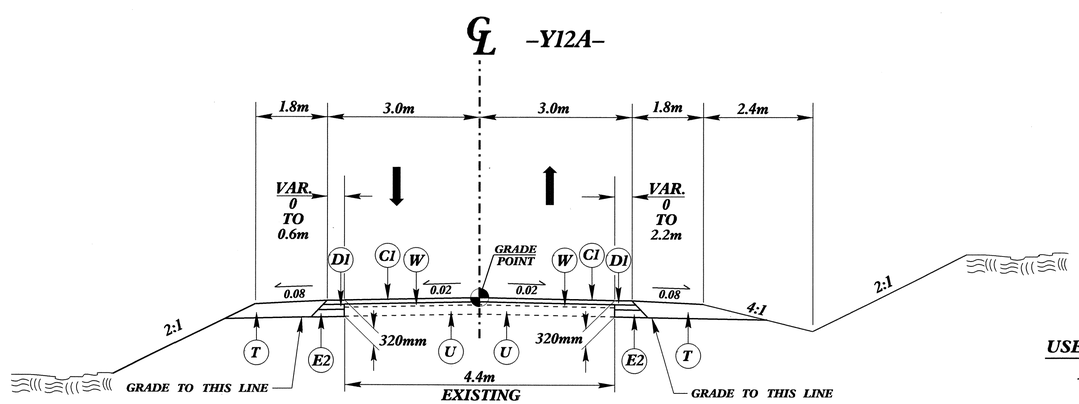
-Y12- STA. 10+80.000 TO STA. 14+60.000



TYPICAL SECTION NO. 13

USE TYPICAL SECTION NO. 13 AS FOLLOWS:

-Y12A- STA. 10+03.600 TO STA. 10+50.000



TYPICAL SECTION NO. 14

USE TYPICAL SECTION NO. 14 AS FOLLOWS:

-Y12A- STA. 10+50.00 TO STA. 10+71.961

A	200mm CONCRETE TRUCK APRON
C1	80mm S9.5B
C2	50mm S9.5B
C3	VAR. S9.5B
D1	100mm I19.0B
D2	80mm I19.0B
D3	VAR. I19.0B
E1	100mm B25.0B
E2	140mm B25.0B
E3	VAR. B25.0B
J1	200mm ABC
J2	150mm ABC
J3	100mm ABC
P	PRIME COAT
R1	750mm C&G
R2	EXPRESSWAY GUTTER
R3	450mm C&G (SEE DETAIL 2-L)
R4	200mm X 450mm CONC. CURB
S1	100mm SIDEWALK
S2	150mm DRIVEWAY
T	EARTH MATERIAL
U	EXISTING PAVEMENT
W	WEDGING DETAIL

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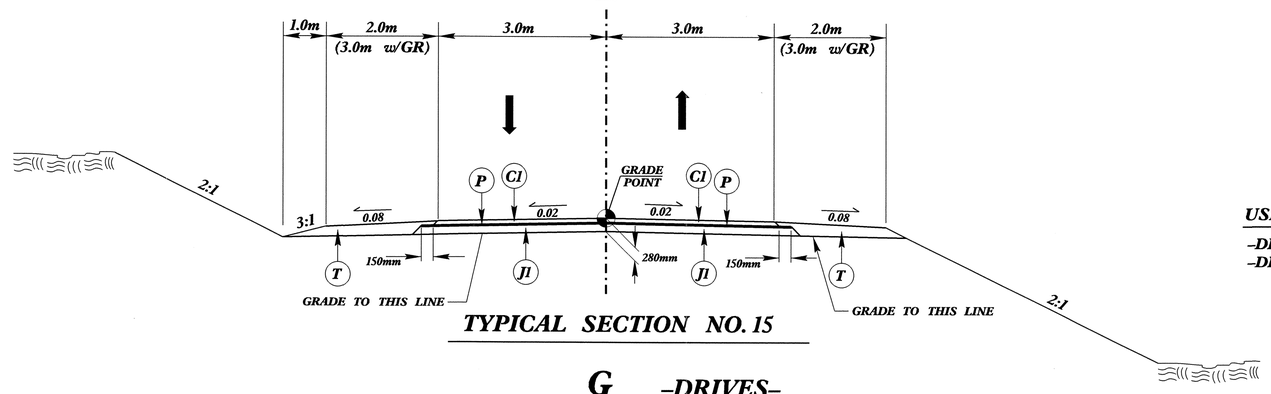
PROJECT REFERENCE NO.	SHEET NO.
R-2824	2-E

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 033298 ENGINEER JEFFREY L. LEAGUE
3/31/10

PAVEMENT DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 22896 ENGINEER CLARK S. MORRISON
3/31/10

–DETOUR–

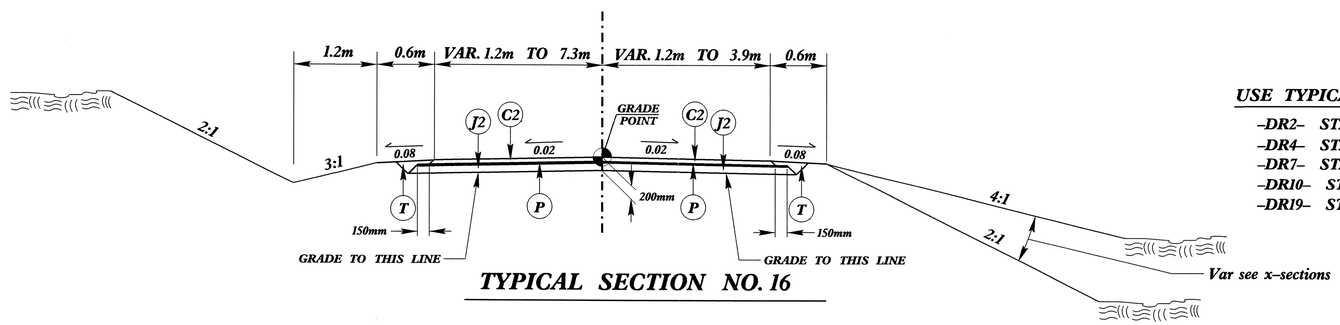


TYPICAL SECTION NO. 15

USE TYPICAL SECTION NO. 15 AS FOLLOWS:

–DETOUR– STA. 10+43.190 TO STA. 11+12.740 (BEGIN BRIDGE)
–DETOUR– STA. 11+39.140 (END BRIDGE) TO STA. 14+01.620

–DRIVES–

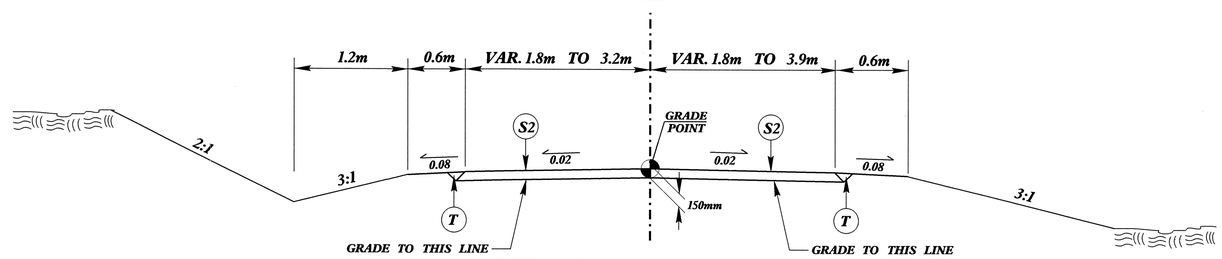


TYPICAL SECTION NO. 16

USE TYPICAL SECTION NO. 16 AS FOLLOWS:

–DR2– STA. 10+00.000 TO STA. 10+35.196
–DR4– STA. 10+12.000 TO STA. 10+18.500
–DR7– STA. 10+00.000 TO STA. 10+36.323
–DR10– STA. 10+03.600 TO STA. 10+25.570
–DR19– STA. 10+00.000 TO STA. 10+22.330

–DRIVES–

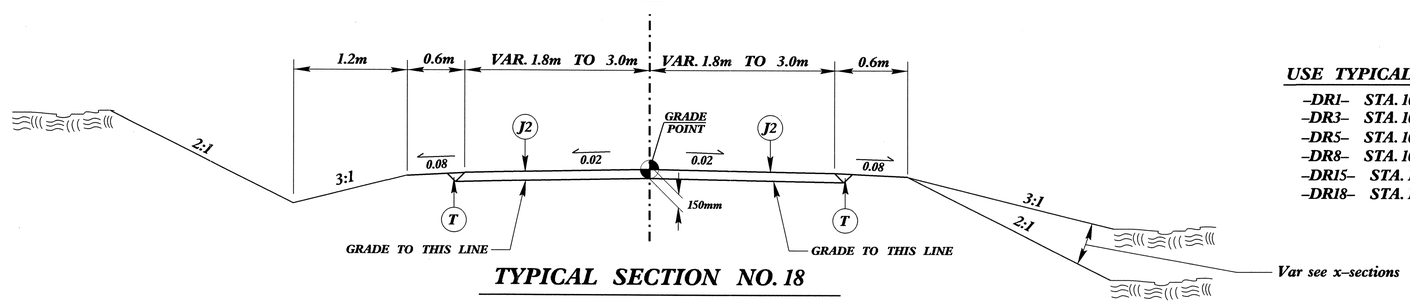


TYPICAL SECTION NO. 17

USE TYPICAL SECTION NO. 17 AS FOLLOWS:

–DR14– STA. 10+03.600 TO STA. 10+38.000
–DR16– STA. 10+00.000 TO STA. 10+17.222
–DR17– STA. 10+00.000 TO STA. 10+20.367
–DR20– STA. 10+00.000 TO STA. 10+16.129

–DRIVES–



TYPICAL SECTION NO. 18

USE TYPICAL SECTION NO. 18 AS FOLLOWS:

–DR1– STA. 10+00.000 TO STA. 10+42.939
–DR3– STA. 10+00.000 TO STA. 10+41.780
–DR5– STA. 10+03.600 TO STA. 10+17.457
–DR8– STA. 10+03.601 TO STA. 10+30.200
–DR15– STA. 10+00.000 TO STA. 10+33.686
–DR18– STA. 10+00.000 TO STA. 10+20.210

A	200mm CONCRETE TRUCK APRON
C1	80mm S9.5B
C2	50mm S9.5B
C3	VAR. S9.5B
D1	100mm I19.0B
D2	80mm I19.0B
D3	VAR. I19.0B
E1	100mm B25.0B
E2	140mm B25.0B
E3	VAR. B25.0B
J1	200mm ABC
J2	150mm ABC
J3	100mm ABC
P	PRIME COAT
R1	750mm C&G
R2	EXPRESSWAY GUTTER
R3	450mm C&G (SEE DETAIL 2-L)
R4	200mm X 450mm CONC. CURB
S1	100mm SIDEWALK
S2	150mm DRIVEWAY
T	EARTH MATERIAL
U	EXISTING PAVEMENT
W	WEDGING DETAIL

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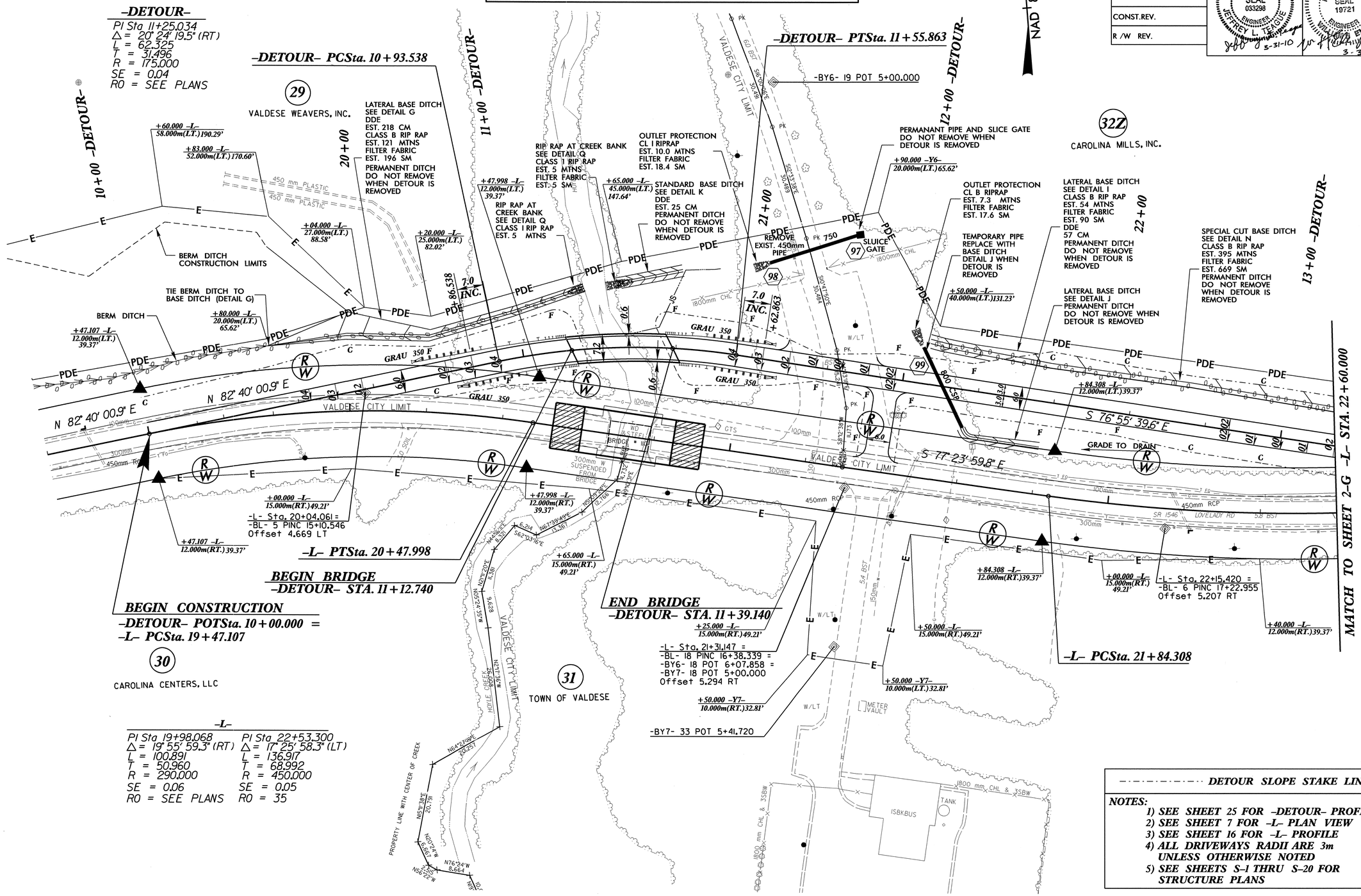
PROJECT REFERENCE NO.	SHEET NO.
R-2824	2-F
R /W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 033298 ENGINEER JEFFREY L. TEAGUE 5-31-10	NORTH CAROLINA PROFESSIONAL SEAL 19721 ENGINEER WALTER E. BAIN 3-31-10
CONST.REV.	
R /W REV.	

METRIC 5 0 10

ON-SITE DETOUR



-L-

PI Sta 19+98.068	PI Sta 22+53.300
Δ = 19° 55' 59.3" (RT)	Δ = 17° 25' 58.3" (LT)
L = 100.891	L = 136.917
T = 50.960	T = 68.992
R = 290.000	R = 450.000
SE = 0.06	SE = 0.05
RO = SEE PLANS	RO = 35

DETOUR SLOPE STAKE LINE

NOTES:

1) SEE SHEET 25 FOR -DETOUR- PROFILE
2) SEE SHEET 7 FOR -L- PLAN VIEW
3) SEE SHEET 16 FOR -L- PROFILE
4) ALL DRIVEWAYS RADII ARE 3m UNLESS OTHERWISE NOTED
5) SEE SHEETS S-1 THRU S-20 FOR STRUCTURE PLANS

8/17/99

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ON-SITE DETOUR

PROJECT REFERENCE NO.	SHEET NO.
R-2824	2-G
R /W SHEET NO.	

ROADWAY DESIGN ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 033298 ENGINEER JEFFREY J. SEAGUE 3-31-10

HYDRAULICS ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 19721 ENGINEER WILLIAM R. ELLIS 3-31-10

CONST.REV.

R /W REV.

5 0 10

-DETOUR-
PI Sta 13+87.173
△ = 19° 21' 05.4" (LT)
L = 135.099
T = 68.199
R = 400.000
SE = 0.04
RO = SEE PLANS

-L-
PI Sta 22+53.300
△ = 17° 25' 58.3" (LT)
L = 136.917
T = 68.992
R = 450.000
SE = 0.05
RO = 35

23+00 | 14+00 -DETOUR- | 24+00 | NAD 83 | 25+00 | 26+00

-DETOUR- PCSta. 13+18.974

SPECIAL CUT BASE DITCH
SEE DETAIL N
CLASS B RIP RAP
EST. 395 MTNS
FILTER FABRIC
EST. 669 SM
PERMANENT DITCH
DO NOT REMOVE
WHEN DETOUR IS
REMOVED

END CONSTRUCTION
-DETOUR- PTSta. 14+54.073 =
-L- POTSta. 24+00.023
OFFSET = 0.928m RT

32Z CAROLINA MILLS, INC.

MATCH TO SHEET 2-F -L- STA. 22+60.000

+21.307 7.0 INC.

+80.000 -L- 31.000m(L.T.) 101.71'

+20.000 -L- 25.000m(L.T.) 82.02'

+21.225 -L- 12.000m(L.T.) 39.37'

+80.000 -L- 19.000m(L.T.) 62.34'

+00.000 -L- 19.000m(L.T.) 62.34'

+20.000 -L- 12.000m(L.T.) 39.37'

+16.000 -L- 12.000m(L.T.) 39.37' 27.000m(L.T.) 88.58'

+24.000 -L- 12.000m(L.T.) 39.37' 27.000m(L.T.) 88.58'

+80.000 -L- 17.500m(L.T.) 57.41'

PDE C E F R/W 100mm 300mm 450mm RCP COLLAR 450 100 04 03 02 01 00 +73.553 7.0 INC. EIP N 85° 10' 01.8" E

+35.000 -L- 21.000m(RT.) 68.90'

+85.000 -L- 21.000m(RT.) 68.90'

+40.000 -L- 15.000m(RT.) 49.21'

+21.225 -L- 12.000m(RT.) 39.37'

-L- Sta. 24+54.013 =
-BL- 7 PINC 19+61.948
Offset 1.417 RT

+94.000 -L- 12.000m(RT.) 39.37' 20.000m(RT.) 68.62' 29.000m(RT.) 95.18'

N70°45'19"E 151.79'

-L- PTSta. 23+21.225

TOWN OF VALDESE 31

33 CAROLINA CENTERS, LLC

DETOUR SLOPE STAKE LINE

NOTES:
1) SEE SHEET 25 FOR -DETOUR- PROFILE
2) SEE SHEET 8 FOR -L- PLAN VIEW
3) SEE SHEET 17 FOR -L- PROFILE
4) ALL DRIVEWAY RADII ARE 3m UNLESS OTHERWISE NOTED
5) SEE SHEETS S-1 THRU S-20 FOR STRUCTURE PLANS

8/17/99

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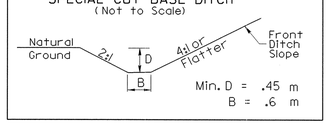
PROJECT REFERENCE NO.	SHEET NO.
R-2824	2-H
R /W SHEET NO.	
HYDRAULICS ENGINEER	
CONST.REV.	
R /W REV.	

METRIC

NORTH CAROLINA PROFESSIONAL SEAL 19721 ENGINEER

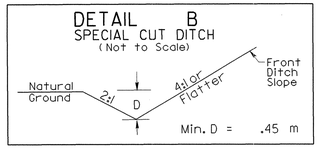
3-31-10

DETAIL A
SPECIAL CUT BASE DITCH
(Not to Scale)



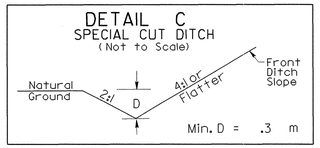
STA 12+60 TO STA 14+20 RT -L-

DETAIL B
SPECIAL CUT DITCH
(Not to Scale)



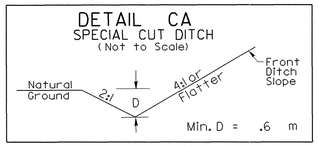
STA 11+73 TO STA 12+20 RT -L-
STA 15+60 TO 15+80 LT -L-
STA 20+20 TO 20+40 RT -L-
STA 22+00 TO 22+20 LT -L-
STA 29+20 TO 29+80 RT -L-
STA 10+20 TO 10+40 LT -Y10-
STA 32+80 TO 33+20 RT -L-
STA 34+00 TO 34+80 LT -L-
STA 11+40 TO 12+05 RT -Y12-
STA 12+80 TO 13+40 RT -Y12-
STA 39+60 TO 40+00 RT -L-
STA 10+20 TO 10+60 RT -Y12A-
STA 36+00 TO 37+00 LT -L-
STA 37+80 TO 38+40 LT -L-

DETAIL C
SPECIAL CUT DITCH
(Not to Scale)



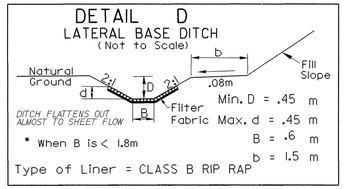
STA 10+50 TO STA 10+65 RT -L-

DETAIL CA
SPECIAL CUT DITCH
(Not to Scale)



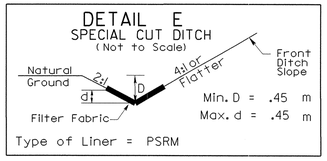
STA 10+40 TO STA 10+60 RT -Y-

DETAIL D
LATERAL BASE DITCH
(Not to Scale)



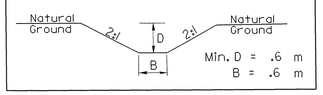
STA 10+25 TO STA 10+37 LT -DRI-

DETAIL E
SPECIAL CUT DITCH
(Not to Scale)



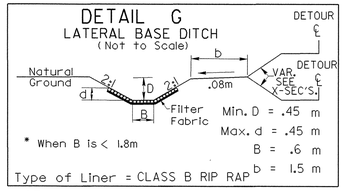
STA 10+05 TO 10+80 RT -Y3-
STA 10+05 TO 10+80 LT -Y3-
(NO CHANGE IN PROFILES)

DETAIL F
STANDARD BASE DITCH
(Not to Scale)



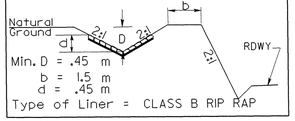
STA 12+55 RT -Y-
STA 16+90 RT -L-
STA 18+15 RT -L-
STA 20+80 TO STA 20+95 LT -L-

DETAIL G
LATERAL BASE DITCH
(Not to Scale)



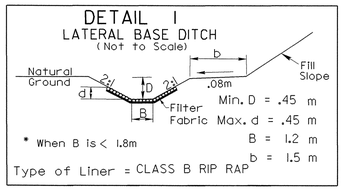
STA 10+40 TO STA 11+15 LT -DETOUR-

DETAIL H
BERM 'V' DITCH w/LINER
(Not to Scale)



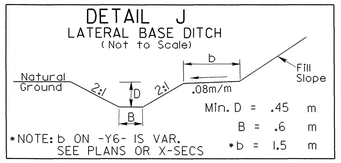
STA 17+60 TO STA 19+80 LT -L-

DETAIL I
LATERAL BASE DITCH
(Not to Scale)



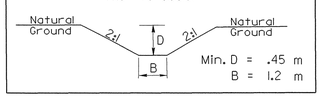
STA 11+98 TO STA 12+26 LT -DETOUR-

DETAIL J
LATERAL BASE DITCH
(Not to Scale)



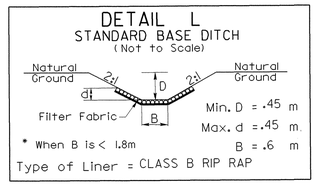
STA 11+25 LT -Y6- TO STA 21+80 LT -L-
STA 39+89 TO STA 40+25 LT -L-

DETAIL K
STANDARD BASE DITCH
(Not to Scale)



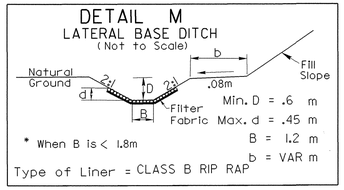
STA 11+28 TO STA 11+40 LT -DETOUR-

DETAIL L
STANDARD BASE DITCH
(Not to Scale)



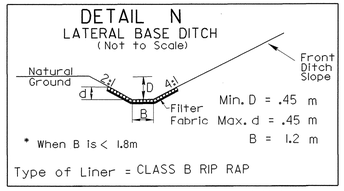
STA 26+00 RT -L-

DETAIL M
LATERAL BASE DITCH
(Not to Scale)



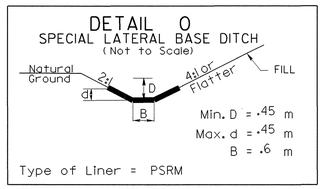
STA 26+56 TO STA 27+00 RT -L-

DETAIL N
LATERAL BASE DITCH
(Not to Scale)



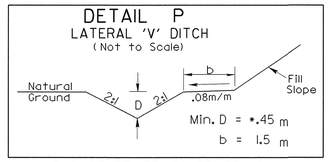
STA 12+26 TO STA 14+54 LT -DETOUR-

DETAIL O
SPECIAL LATERAL BASE DITCH
(Not to Scale)



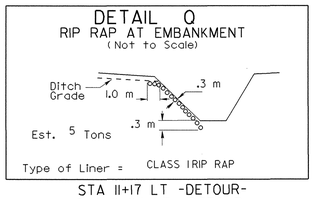
STA 27+40 TO 28+00 LT -L-

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



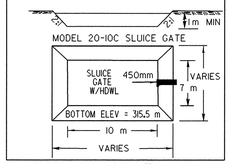
STA 33+80 TO 34+80 RT -L-
DITCH DEPTH = 0 @ STA 34+40 RT -L-

DETAIL Q
RIP RAP AT EMBANKMENT
(Not to Scale)



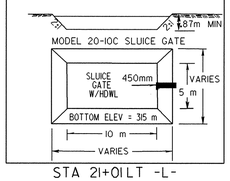
STA 11+17 LT -DETOUR-
STA 11+24 LT -DETOUR-
STA 20+80 LT -L-

DETAIL R1
DETAIL OF TOXIC SPILL RETENTION BASIN
TOTAL CAPACITY REQUIRED : 63 cu. m.
TOTAL CAPACITY PROVIDED : 70 cu. m.



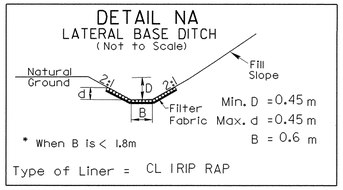
STA 20+48 LT -L-

DETAIL R2
DETAIL OF TOXIC SPILL RETENTION BASIN
TOTAL CAPACITY REQUIRED : 45 cu. m.
TOTAL CAPACITY PROVIDED : 43.5 cu. m.



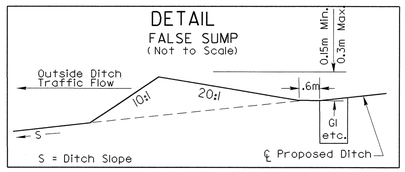
STA 21+01LT -L-

DETAIL NA
LATERAL BASE DITCH
(Not to Scale)

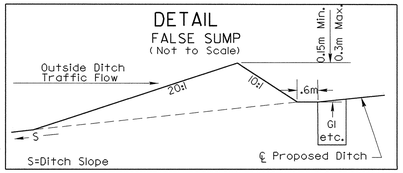


STA 27+40 -L- RT

DETAIL
FALSE SUMP
(Not to Scale)



DETAIL
FALSE SUMP
(Not to Scale)



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DETAIL OF ROUNDABOUT

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
R-2824	2-I

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 033296 ENGINEER JEFFREY L. TEAGUE

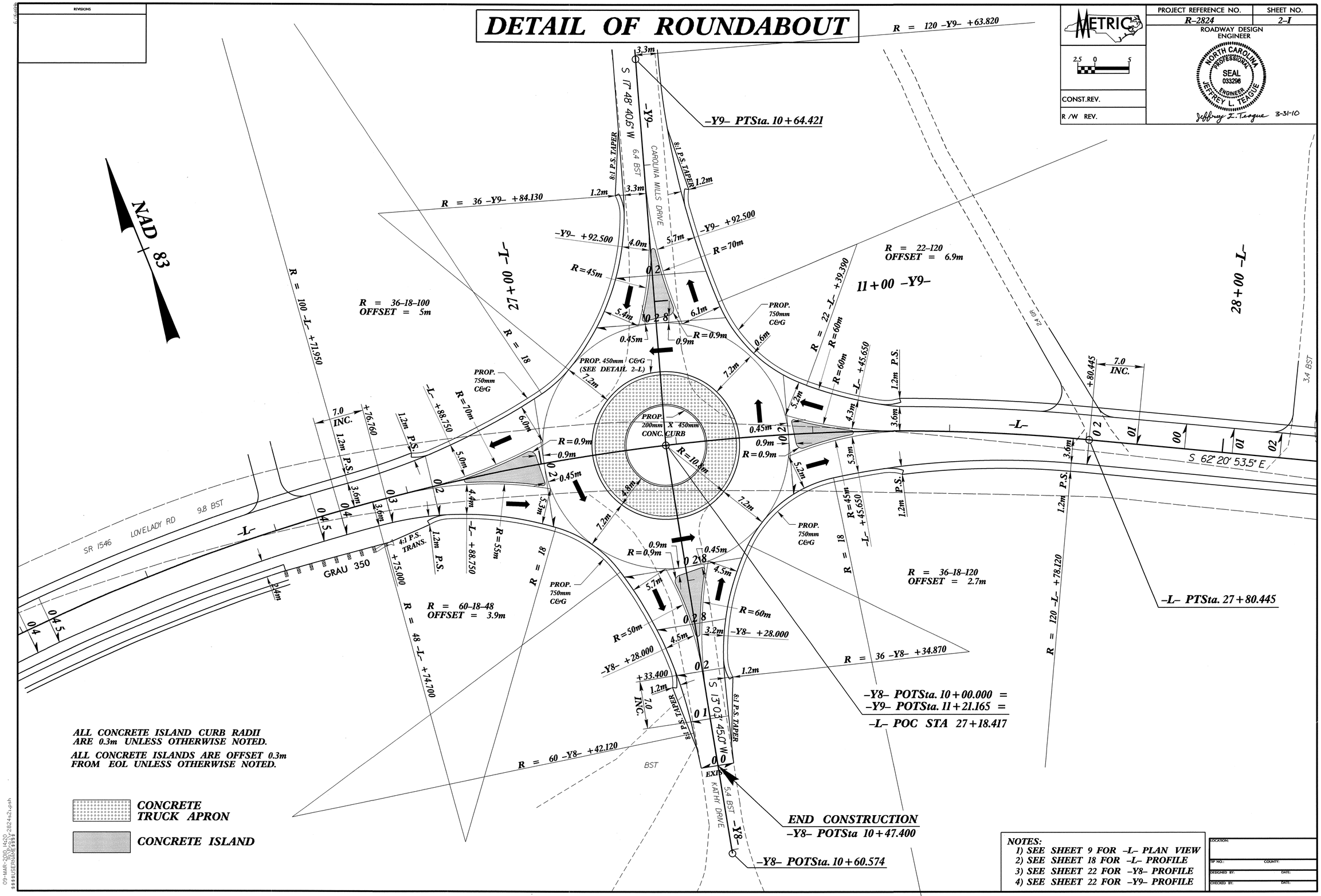
Jeffrey L. Teague 3-31-10

METRIC

2.5 0 5

CONST.REV.

R /W REV.



ALL CONCRETE ISLAND CURB RADII ARE 0.3m UNLESS OTHERWISE NOTED.

ALL CONCRETE ISLANDS ARE OFFSET 0.3m FROM EOL UNLESS OTHERWISE NOTED.

CONCRETE TRUCK APRON

CONCRETE ISLAND

NOTES:
1) SEE SHEET 9 FOR -L- PLAN VIEW
2) SEE SHEET 18 FOR -L- PROFILE
3) SEE SHEET 22 FOR -Y8- PROFILE
4) SEE SHEET 22 FOR -Y9- PROFILE

LOCATION:	
TIP NO.:	COUNTY:
DESIGNED BY:	DATE:
CHECKED BY:	DATE:

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30-JUL-2009 08:48
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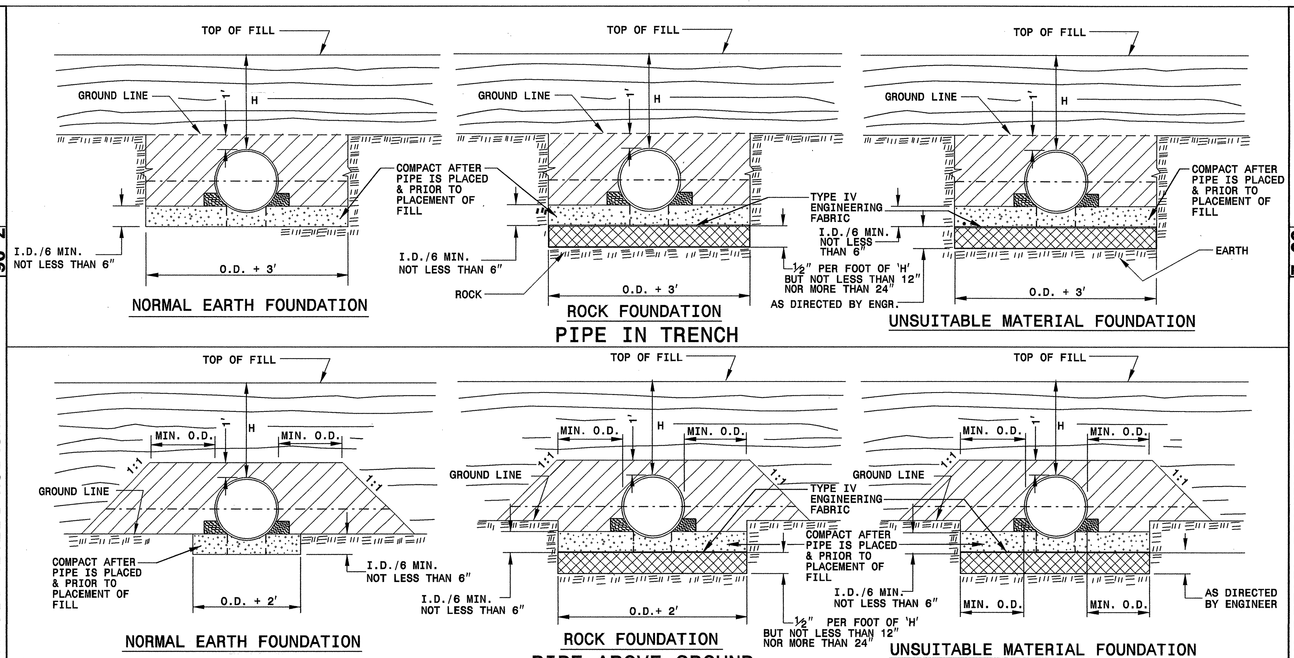
jhowerton AT PS23750I

5/14/99

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

7-06

ENGLISH DETAIL DRAWING FOR
METHOD OF PIPE INSTALLATION
FLEXIBLE PIPE



GENERAL NOTES:

I.D. = THE MAXIMUM HORIZONTAL INSIDE DIAMETER DIMENSION.

O.D. = THE MAXIMUM HORIZONTAL OUTSIDE DIAMETER DIMENSION.

H = THE FILL HEIGHT MEASURED VERTICALLY AT ANY POINT ALONG THE PIPE FROM THE TOP OF THE PIPE TO THE TOP OF THE EMBANKMENT AT THAT POINT.

TAKE CARE TO FULLY COMPACT HAUNCH ZONE OF PIPE BACKFILL.

LOOSELY PLACED SELECT MATERIAL CLASS III OR CLASS II, TYPE 1 FOR PIPE BEDDING. LEAVE SECTION DIRECTLY BENEATH PIPE UNCOMPACTED AS PIPE SEATING AND BACKFILL WILL ACCOMPLISH COMPACTION.

DO NOT OPERATE HEAVY EQUIPMENT OVER ANY PIPE CULVERT UNTIL THE PIPE CULVERT HAS BEEN PROPERLY BACKFILLED AND COVERED WITH AT LEAST 3 FEET OF APPROVED MATERIAL.

SPRINGLINE OF PIPE

SELECT BACKFILL MATERIAL CLASS III OR CLASS II, TYPE 1 ABOVE AND BELOW SPRINGLINE.

APPROVED SUITABLE LOCAL MATERIAL.

UNDISTURBED EARTH MATERIAL

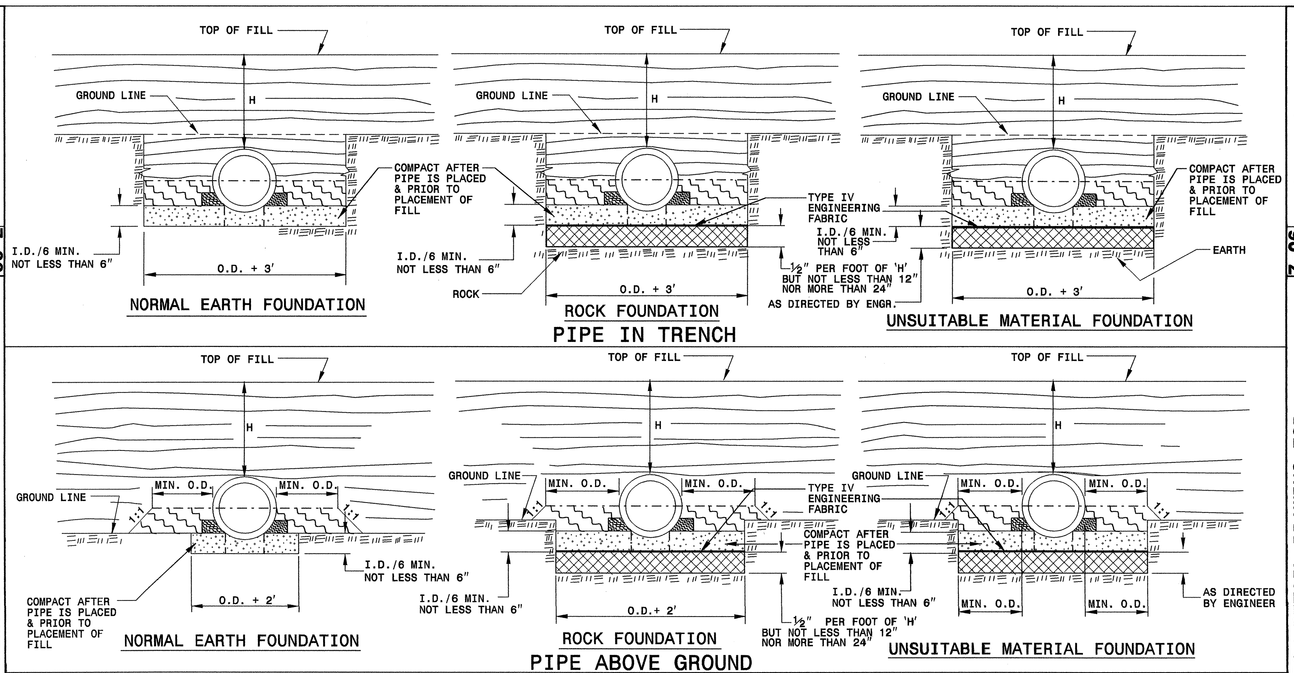
SELECT MATERIAL CLASS V OR VI FOR FOUNDATION CONDITIONING. ENCAPSULATE WITH ENGINEERING FABRIC AS DIRECTED BY THE ENGINEER.

SHEET 1 OF 3
300D01

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

7-06

ENGLISH DETAIL DRAWING FOR
METHOD OF PIPE INSTALLATION
RIGID PIPE



GENERAL NOTES:

I.D. = THE MAXIMUM HORIZONTAL INSIDE DIAMETER DIMENSION.

O.D. = THE MAXIMUM HORIZONTAL OUTSIDE DIAMETER DIMENSION.

H = THE FILL HEIGHT MEASURED VERTICALLY AT ANY POINT ALONG THE PIPE FROM THE TOP OF THE PIPE TO THE TOP OF THE EMBANKMENT AT THAT POINT.

TAKE CARE TO FULLY COMPACT HAUNCH ZONE OF PIPE BACKFILL.

LOOSELY PLACED SELECT MATERIAL CLASS III OR CLASS II, TYPE 1 FOR PIPE BEDDING. LEAVE SECTION DIRECTLY BENEATH PIPE UNCOMPACTED AS PIPE SEATING AND BACKFILL WILL ACCOMPLISH COMPACTION.

DO NOT OPERATE HEAVY EQUIPMENT OVER ANY PIPE CULVERT UNTIL THE PIPE CULVERT HAS BEEN PROPERLY BACKFILLED AND COVERED WITH AT LEAST 3 FEET OF APPROVED MATERIAL.

SPRINGLINE OF PIPE

SELECT BACKFILL MATERIAL CLASS III OR CLASS II, BELOW SPRINGLINE.

APPROVED SUITABLE LOCAL MATERIAL ABOVE SPRINGLINE.

UNDISTURBED EARTH MATERIAL

SELECT MATERIAL CLASS V OR VI FOR FOUNDATION CONDITIONING. ENCAPSULATE WITH ENGINEERING FABRIC AS DIRECTED BY THE ENGINEER.

SHEET 2 OF 3
300D01

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

SEE PLATE FOR TITLE

ORIGINAL BY: Kfenpf DATE: 5-15-99
MODIFIED BY: DATE:
CHECKED BY: DATE: 7/8/09
FILE SPEC/ericward/stds/stdstodetails/30001/0300d01.dgn

NORTH CAROLINA PROFESSIONAL SEAL 02256 ENGINEERING
JOSEPH E. HOWERTON
9/9/10

PROJECT REFERENCE NO. R-2614
SHEET NO. 2-J

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

7-06

ENGLISH DETAIL DRAWING FOR
METHOD OF PIPE INSTALLATION

FILL HEIGHT TABLES

SHEET 3 OF 3
300D01

FLEXIBLE PIPE

Round Corrugated Steel Pipe
2 2/3 x ½ corrugation **

Diameter (inches)	Minimum cover (inches)	Maximum Height of Cover (feet) (Ga) 16	14	12	10	8
12	12	204	256			
15	12	162	204			
18	12	135	169	239		
21	12	115	145	204		
24	12	100	126	178		
30	12	79	100	142		
36	12	65	83	117	152	
42	12	55	70	100	130	160
48	12	48	61	87	113	139
54	12		54	77	100	123
60	12			69	90	111
66	12				81	100
72	12				74	91
78	12					81
84	12					69

Round Corrugated Aluminum Pipe
2 2/3 x ½ corrugation **

Diameter (inches)	Minimum cover (inches)	Maximum Height of Cover (feet) (Ga) 16	14	12	10	8
12	12	123	155	218	281	344
15	12	98	123	174	224	275
18	12	81	102	144	187	228
21	12	69	87	123	160	195
24	12	60	76	108	139	171
27	12		67	95	123	151
30	12		60	85	111	136
36	12		50	71	92	113
42	12			60	78	96
48	12			52	68	84
54	12			46	50	74
60	12				50	62
66	12					51
72	12					41

** FOR DIFFERENT CORRUGATIONS AND ARCH PIPES REFER TO ROADWAY DESIGN MANUAL OR MANUFACTURERS SPECIFICATION.

REFER TO THE FOLLOWING FOR PIPE SPECIFICATIONS

CSP - AASHTO M36
CAAP - AASHTO M196
HDPE - AASHTO M294
PVC - ASTM F949 or AASHTO M304

NOTES: FILL HEIGHTS SHOWN WERE CALCULATED USING AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS

1′ MINIMUM COVER FOR ALL SIDE DRAIN PIPE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS

HDPE - * (Minimum fill) 2′ for pipe diameters ≥ 12″ and ≤ 60″
* (Maximum fill) 20′ for pipe diameters ≤ 24″
17′ for pipe diameters ≥ 30″ and ≤ 60″

PVC - * (Minimum fill) 2′ for pipe diameters ≥ 12″ and ≤ 36″
* (Maximum fill) 30′ for pipe diameters ≥ 12″ and ≤ 36″

* FILL HEIGHT IS MEASURED FROM THE TOP OF THE PIPE TO THE BOTTOM OF THE PAVEMENT STRUCTURE

RIGID PIPE

RCP - * (Minimum fill) 1′ for Class IV & CLASS V
2′ for Class III & Class II

* (Maximum fill) 10′ - Class II pipe
20′ - Class III pipe
30′ - Class IV pipe
40′ - Class V pipe

(For fills > 40′ & < 80′ use LRFD Direct Design Method)

* FILL HEIGHT IS MEASURED FROM THE TOP OF THE PIPE TO THE BOTTOM OF THE PAVEMENT STRUCTURE

REFER TO THE FOLLOWING FOR PIPE SPECIFICATIONS

RCP - AASHTO M170

NOTES: FILL HEIGHTS SHOWN WERE CALCULATED USING AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS

1′ MINIMUM COVER FOR ALL SIDE DRAIN PIPE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS

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

7-06

ENGLISH DETAIL DRAWING FOR
METHOD OF PIPE INSTALLATION

FILL HEIGHT TABLES

SHEET 3 OF 3
300D01

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

SEE PLATE FOR TITLE

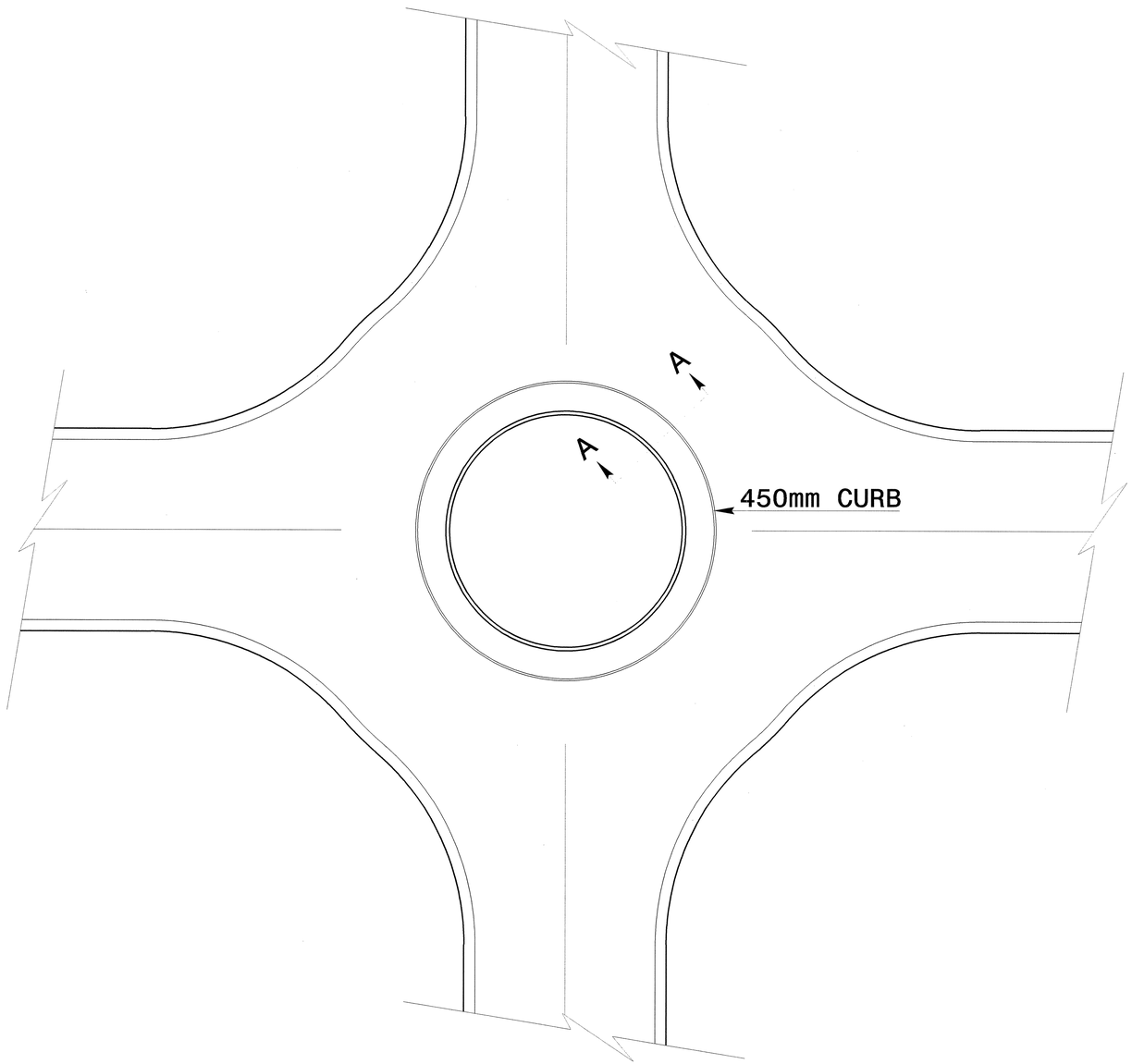
ORIGINAL BY: KKempf DATE: 5-15-09
MODIFIED BY: DATE:
CHECKED BY: DATE: 7/9/09
FILE SPEC/ericward/stds/stds to details/30001/0300d01.dgn

NORTH CAROLINA PROFESSIONAL SEAL 022986 ENGINEER JOHN S. HENNESSY
4/8/10

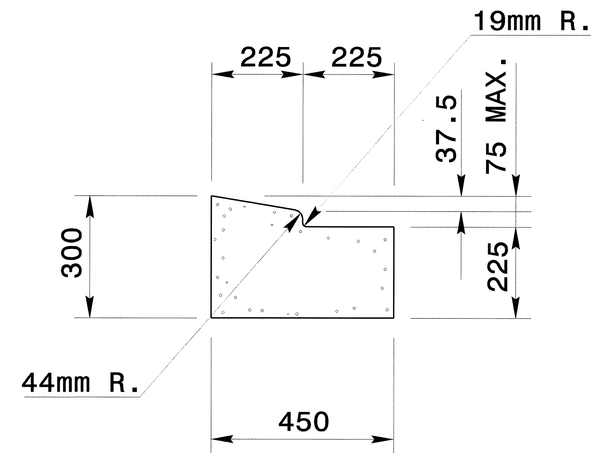
PROJECT REFERENCE NO. R-2824
SHEET NO. 2-K

PROJECT REFERENCE NO.	SHEET NO.
R-2824	2-L

METRIC



ROUNDABOUT



SECTION A-A

GENERAL NOTES:

ALL CONCRETE CURB SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE PLANS AND THIS DETAIL AND THE NORTH CAROLINA DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES, SECTION 846 OR OTHER APPLICABLE PROVISIONS.

NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER JOEL S. HOWERTON
9/8/10

PROJECT SERVICES UNIT
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450mm CURB & GUTTER

ORIGINAL BY: rnbritt DATE: 05-22-03
MODIFIED BY: DATE:
CHECKED BY: DATE: 2/10/09
FILE SPEC.: nbritt/metric/r2210Aroundaboutcurb.dgn

5/14/99

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PROJECT REFERENCE NO.	SHEET NO.
R-2824	2-M

METRIC

STATE OF
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DIVISION OF HIGHWAYS
RALEIGH, N.C.

METRIC DETAIL DRAWING FOR

WHEELCHAIR RAMP

PROPOSED CURB AND GUTTER

SHEET 1 OF 3 **848D05**

NOTES:
1. DETECTABLE WARNING DOMES SHALL COVER 600mm LENGTH AND FULL WIDTH OF THE RAMP FLOOR AS SHOWN ON THE DETAILS.
2. OBTAIN 70% CONTRAST VISIBILITY WITH ADJOINING SURFACE, EITHER LIGHT-ON-DARK, OR DARK-ON-LIGHT SEQUENCE COVERING THE ENTIRE RAMP.

W	A	W-A-230mm	X	B
1.5m	0	1.8m	1.8m	1.5m*
1.8m	0	2.1m	2.1m	1.8m**
2.1m	0	2.4m	2.2m	2.0m**
2.4m	0	2.7m	2.2m	2.0m**
1.5m	0.6m	2.4m	2.4m	1.5m
1.5m	0.7m	2.5m	2.5m	1.5m
1.5m	0.9m	2.7m	2.6m	1.3m
1.5m	1.1m	2.8m	2.6m	1.3m
1.5m	1.2m	3.0m	2.6m	1.2m
1.5m	1.4m	3.1m	2.7m	1.0m
1.5m	1.5m	3.3m	2.7m	0.9m

B = X-(A+230mm)
B = DISTANCE FROM FRONT EDGE OF SIDEWALK TO BACK POINT OF 12:1 (8.33%) SLOPE.
* BACK OF SIDEWALK DROP REQUIRED FOR ALL SIDEWALK SLOPES.
** BACK OF SIDEWALK DROP REQUIRED FOR SIDEWALK SLOPES 0.04.

DETECTABLE WARNING DOMES

Note:
This drawing is dimensioned in millimeters unless otherwise depicted within the drawing.

STATE OF
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RALEIGH, N.C.

METRIC DETAIL DRAWING FOR

WHEELCHAIR RAMP

PROPOSED CURB AND GUTTER

SHEET 2 OF 3 **848D05**

DETAIL SHOWING TYPICAL LOCATION OF WHEELCHAIR RAMPS, PEDESTRIAN CROSSWALKS AND STOP LINES

ROADWAY PLAN SYMBOL (WCR) FOR PROPOSED WHEELCHAIR RAMP

ALLOWABLE LOCATIONS
DUAL RAMP RADII.....ANY

PROPOSED WHEELCHAIR RAMP
PROPOSED OR FUTURE SIDEWALK

Note:
This drawing is dimensioned in millimeters unless otherwise depicted within the drawing.

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METRIC DETAIL DRAWING FOR

WHEELCHAIR RAMP

PROPOSED CURB AND GUTTER

SHEET 1 OF 3 **848D05**

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

METRIC DETAIL DRAWING FOR

WHEELCHAIR RAMP

PROPOSED CURB AND GUTTER

SHEET 2 OF 3 **848D05**

NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER
5/6/10

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ORIGINAL BY: STD.NO.848.05 DATE: 4-22-10
MODIFIED BY: DATE:
CHECKED BY: DATE: 4/23/10
FILE SPEC.: SpecialDetails/EricWard/STDS/848.05.dgn

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

METRIC DETAIL DRAWING FOR

WHEELCHAIR RAMP

PROPOSED CURB AND GUTTER

SHEET 3 OF 3

848D05

NOTES:

1. CONSTRUCT THE WALKING SURFACE WITH SLIP RESISTANTANCE AND A 70% CONTRASTING COLOR TO THE SIDEWALK.
2. CROSSWALK WIDTHS AND CONFIGURATION VARY BUT MUST CONFORM TO TRAFFIC DESIGN STANDARDS.
3. NORTH CAROLINA GENERAL STATUTE 136-44.14 REQUIRES THAT ALL STREET CURBS BEING CONSTRUCTED OR RECONSTRUCTED FOR MAINTENANCE PROCEDURES, TRAFFIC OPERATIONS, REPAIRS, CORRECTION OF UTILTIES OR ALTERED FOR ANY REASON AFTER SEPTEMBER 1, 1973 SHALL PROVIDE WHEELCHAIR RAMPS FOR THE PHYSICALLY DISABLED AT ALL INTERSECTIONS WHERE BOTH CURB AND GUTTER AND SIDEWALKS ARE PROVIDED AND AT OTHER POINTS OF PEDESTRIAN FLOW.

   IN ADDITION, SECTION 228 OF THE 1973 FEDERAL AID HIGHWAY SAFETY ACT REQUIRES PROVISION OF CURB RAMPS ON ANY CURB CONSTRUCTION AFTER JULY 1,1976 WHETHER A SIDEWALK IS PROPOSED INITIALLY OR IS PLANNED FOR A FUTURE DATE.

   THE AMERICANS WITH DISABILITIES ACT (ADA) OF 1990 EXTENDS TO INDIVIDUALS WITH DISABILITIES. COMPREHENSIVE CIVIL RIGHTS PROTECTIONS SIMILIAR TO THOSE PROVIDED TO PERSONS ON THE BASIS OF RACE, SEX, NATIONAL ORIGIN AND RELIGION UNDER THE CIVIL RIGHTS ACT OF 1964. THESE CURB RAMPS HAVE BEEN DESIGNED TO COMPLY WITH THE CURRENT ADA STANDARDS.

   1-10
4. PROVIDE WHEELCHAIR RAMPS AT LOCATIONS AS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER. LOCATE WHEELCHAIR RAMPS AS DIRECTED BY THE ENGINEER WHERE EXISTING LIGHT POLES, FIRE HYDRANTS, DROP INLETS, ETC. AFFECT PLACEMENT. WHERE TWO RAMPS ARE INSTALLED, PLACE NOT LESS THAN 600mm OF FULL HEIGHT CURB BETWEEN THE RAMPS. PLACE DUAL RAMPS AS NEAR PERPENDICULAR TO THE TRAVEL LANE BEING CROSSED AS POSSIBLE.
5. DO NOT EXCEED 0.08 (12:1) SLOPE ON THE WHEELCHAIR RAMP IN RELATIONSHIP TO THE GRADE OF THE STREET.
6. CONSTRUCT WHEELCHAIR RAMPS 1.0m OR GREATER FOR DUAL RAMPS.
7. USE CLASS "B" CONCRETE WITH A SIDEWALK FINISH IN ORDER TO OBTAIN A ROUGH NON-SKID TYPE SURFACE.
8. PLACE A 13mm EXPANSION JOINT WHERE THE CONCRETE WHEELCHAIR RAMP JOINS THE CURB AND AS SHOWN ON STD. DWG. 848.01.
9. PLACE THE INSIDE PEDESTRIAN CROSSWALK LINES NO CLOSER IN THE INTERSECTION BY BISECTING THE INTERSECTION RADII, WITH ALLOWANCE OF A 1.0m CLEAR ZONE IN THE VEHICULAR TRAVELWAY WHEN ONE RAMP IS INSTALLED. (SEE NOTE 17)
10. COORDINATE THE CURB CUT AND THE PEDESTRIAN CROSSWALK LINES SO THE FLOOR OF THE WHEELCHAIR RAMP WILL FALL WITHIN THE PEDESTRIAN CROSSWALK LINES. PLACE DIAGONAL RAMPS WITH FLARED SIDES SO 600mm OF FULL HEIGHT CURB FALLS WITHIN THE CROSSWALK MARKINGS ON EACH SIDE OF THE FLARES.
11. CONSTRUCT THE PEDESTRIAN CROSSWALK A MINIMUM OF 1.8m. A CROSSWALK WIDTH OF 3.0m OR GREATER IS DESIRABLE.
12. USE STOP LINES, NORMALLY PERPENDICULAR TO THE LANE LINES, WHERE IT IS IMPORTANT TO INDICATE THE POINT BEHIND WHICH VEHICLES ARE REQUIRED TO STOP IN COMPLIANCE WITH A TRAFFIC SIGNAL, STOP SIGN OR OTHER LEGAL REQUIREMENT. AN UNUSUAL APPROACH SKEW MAY REQUIRE THE PLACEMENT OF THE STOP LINE PARALLEL TO THE INTERSECTING ROADWAY.
13. TERMINATE PARKING A MINIMUM OF 6.0m BACK OF PEDESTRIAN CROSSWALK.
14. PLACE ALL PAVEMENT MARKINGS IN ACCORDANCE WITH THE LATEST EDITION OF THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) PUBLISHED BY THE FEDERAL HIGHWAY ADMINISTRATION AND THE NORTH CAROLINA SUPPLEMENT TO THE MUTCD.

Note:
This drawing is dimensioned in millimeters unless otherwise depicted within the drawing.

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

METRIC DETAIL DRAWING FOR

WHEELCHAIR RAMP

PROPOSED CURB AND GUTTER

SHEET 3 OF 3

848D05

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

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 022986

5/6/10

SEE PLATE FOR TITLE

ORIGINAL BY: STD. NO. 848.05 DATE: 4-22-10
MODIFIED BY: DATE:
CHECKED BY: DATE: 4/23/10
FILE SPEC: /Special Details/Eric Ward/STDS/848.05.dgn

PROJECT REFERENCE NO. R-2824
SHEET NO. 2-N

METRIC

PROJECT REFERENCE NO.	SHEET NO.
R-2824	3(1 of 2)

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SUMMARY OF QUANTITIES

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
ROADWAY SUMMARY OF QUANTITIES FOR CONTRACT - C201242

ItemNumber	Sec #	Quantity	Unit	Description
0000100000-N	800	Lump Sum		MOBILIZATION
0000400000-N	801	Lump Sum		CONSTRUCTION SURVEYING
0022000000-M	225	22,000	M3	UNCLASSIFIED EXCAVATION
0029000000-N	SP	Lump Sum		REINFORCED BRIDGE APPROACH FILL, STATION ********** (20+72.950-L-)
0036000000-M	225	130	M3	UNDERCUT EXCAVATION
0038000000-M	SP	500	M3	SHALLOW UNDERCUT
0050000000-M	226	0.4	HA	SUPPLEMENTARY CLEARING & GRUBBING
0063000000-N	SP	Lump Sum		GRADING
0080000000-M	SP	1,000	MTN	CLASS IV SUBGRADE STABILIZATION
0134000000-M	240	750	M3	DRAINAGE DITCH EXCAVATION
0141000000-M	240	225	M	BERM DITCH CONSTRUCTION
0196000000-M	270	1,000	M2	FABRIC FOR SOIL STABILIZATION
0234000000-M	SP	1,000	M3	GENERIC GRADING ITEM SELECT GRANULAR MATERIAL
0320000000-M	SP	2,160	M2	FOUNDATION CONDITIONING FABRIC
0330000000-M	SP	740	MTN	GENERIC DRAINAGE ITEM FOUNDATION CONDITIONING MATERIAL, MINOR STRS
0335100000-M	SP	13.2	M	300MM DRAINAGE PIPE
0335200000-M	SP	406.8	M	375MM DRAINAGE PIPE
0335300000-M	SP	216	M	450MM DRAINAGE PIPE
0335400000-M	SP	49.2	M	600MM DRAINAGE PIPE
0335500000-M	SP	25.2	M	750MM DRAINAGE PIPE
0335850000-M	SP	2	EA	****MM DRAINAGE PIPE ELBOWS (300MM)
0335850000-M	SP	6	EA	****MM DRAINAGE PIPE ELBOWS (375MM)
0335850000-M	SP	2	EA	****MM DRAINAGE PIPE ELBOWS (450MM)
0354000000-M	SP	24	M	****MM RC PIPE CULVERTS, CLASS ***** (300MM, IV)
0448200000-M	SP	422.4	M	375MM RC PIPE CULVERTS, CLASS IV
0448300000-M	SP	193.2	M	450MM RC PIPE CULVERTS, CLASS IV
0448400000-M	SP	81.6	M	600MM RC PIPE CULVERTS, CLASS IV
0448500000-M	SP	36	M	750MM RC PIPE CULVERTS, CLASS IV
0540000000-M	SP	24	M	****MM ALUMINIZED CORRUGATED STEEL PIPE CULVERTS, ****MM THICK (300MM, 1.63MM)
0540000000-M	SP	12	M	****MM ALUMINIZED CORRUGATED STEEL PIPE CULVERTS, ****MM THICK (400MM, 1.63MM)
0540000000-M	SP	10.8	M	****MM ALUMINIZED CORRUGATED STEEL PIPE CULVERTS, ****MM THICK (600MM, 1.63MM)
0540000000-M	SP	24	M	****MM ALUMINIZED CORRUGATED STEEL PIPE CULVERTS, ****MM THICK (800MM, 2.01MM)
0986000000-M	SP	202.8	M	GENERIC PIPE ITEM 375 MM SIDE DRAIN PIPE
0986000000-M	SP	56.4	M	GENERIC PIPE ITEM 450 MM SIDE DRAIN PIPE
0992000000-M	SP	4	EA	GENERIC PIPE ITEM 300MM ALUM CS PIPE ELBOW, 1.63MM THICK
0992000000-M	SP	2	EA	GENERIC PIPE ITEM 600MM ALUM CS PIPE ELBOW, 1.63MM THICK
0995000000-M	340	388.2	M	PIPE REMOVAL
1110000000-M	510	500	MTN	STABILIZER AGGREGATE
1121000000-M	520	2,000	MTN	AGGREGATE BASE COURSE
1220000000-M	545	300	MTN	INCIDENTAL STONE BASE
1275000000-M	600	2,700	L	PRIME COAT
1330000000-M	607	200	M2	INCIDENTAL MILLING
1489000000-M	610	10,600	MTN	ASPHALT CONC BASE COURSE, TYPE B25.0B
1498000000-M	610	10,500	MTN	ASPHALT CONC INTERMEDIATE COURSE, TYPE I19.0B
1519000000-M	610	10,000	MTN	ASPHALT CONC SURFACE COURSE, TYPE S9.5B
1560000000-M	620	1,550	MTN	ASPHALT BINDER FOR PLANT MIX, GRADE PG 64-22
1693000000-M	654	220	MTN	ASPHALT PLANT MIX, PAVEMENT REPAIR
2022000000-M	815	414	M3	SUBDRAIN EXCAVATION
2033000000-M	815	207	M3	SUBDRAIN FINE AGGREGATE
2044000000-M	815	500	M	150MM PERFORATED SUBDRAIN PIPE
2055000000-M	815	51	EA	150MM SUBDRAIN PIPE WYES, TEES, & ELBOWS
2066000000-N	815	4	EA	CONCRETE PAD FOR SUBDRAIN PIPE OUTLET
2077000000-M	815	8	M	150MM OUTLET PIPE (SUBDRAINS)
2209000000-M	838	6	M3	ENDWALLS
2253000000-M	840	1	M3	PIPE COLLARS
2264000000-M	840	0.5	M3	PIPE PLUGS
2286000000-N	840	60	EA	MASONRY DRAINAGE STRUCTURES
2308000000-M	840	4	M	MASONRY DRAINAGE STRUCTURES
2364000000-N	840	11	EA	FRAME WITH TWO GRATES, STD 840.16
2366000000-N	840	13	EA	FRAME WITH TWO GRATES, STD 840.24
2367000000-N	840	9	EA	FRAME WITH TWO GRATES, STD 840.29
2374000000-N	840	4	EA	FRAME WITH GRATE & HOOD, STD 840.03, TYPE ** (E)
2374000000-N	840	11	EA	FRAME WITH GRATE & HOOD, STD 840.03, TYPE ** (F)
2374000000-N	840	11	EA	FRAME WITH GRATE & HOOD, STD 840.03, TYPE ** (G)
2396000000-N	840	2	EA	FRAME WITH COVER, STD 840.54
2462000000-M	SP	2	EA	***MM SLUICE GATE (625MM)
2462000000-M	SP	1	EA	***MM SLUICE GATE (970MM)
2535000000-M	846	38	M	*** X ***MM CONCRETE CURB (200MM X 450MM)
2535000000-M	846	134	M	*** X ***MM CONCRETE CURB (225MM X 450MM)
2542000000-M	846	66	M	450MM CONCRETE CURB & GUTTER
2549000000-M	846	1,280	M	750MM CONCRETE CURB & GUTTER
2556000000-M	846	245	M	SHOULDER BERM GUTTER
2577000000-M	846	72	M	CONCRETE EXPRESSWAY GUTTER
2591000000-M	848	600	M2	100MM CONCRETE SIDEWALK
2605000000-N	848	3	EA	CONCRETE WHEELCHAIR RAMPS
2612000000-M	848	1,440	M2	150MM CONCRETE DRIVEWAY
2655000000-M	852	100	M2	125MM MONOLITHIC CONCRETE ISLANDS (KEYED IN)
2738000000-M	SP	235	M2	GENERIC PAVING ITEM 200MM CONCRETE TRUCK APRON
2845000000-N	858	6	EA	ADJUSTMENT OF METER BOXES OR VALVE BOXES
2893000000-N	SP	1	EA	CONVERT EXISTING CATCH BASIN TO JUNCTION BOX WITH MANHOLE COVER
3030000000-M	862	346.71	M	STEEL BM GUARDRAIL
3045000000-M	862	19.05	M	STEEL BM GUARDRAIL, SHOP CURVED
3150000000-N	862	10	EA	ADDITIONAL GUARDRAIL POSTS
3195000000-N	862	1	EA	GUARDRAIL ANCHOR UNITS, TYPE AT-1
3215000000-N	862	4	EA	GUARDRAIL ANCHOR UNITS, TYPE III
3270000000-N	SP	9	EA	GUARDRAIL ANCHOR UNITS, TYPE 350
3360000000-M	863	76	M	REMOVE EXISTING GUARDRAIL
3380000000-M	862	41.91	M	TEMPORARY STEEL BM GUARDRAIL
3387000000-N	862	4	EA	GUARDRAIL ANCHOR UNITS, TYPE ********** TEMPORARY (III)

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STATE OF NORTH CAROLINA
SUMMARY OF QUANTITIES

PROJECT REFERENCE No.	SHEET No.
R-2824	3(2 of 2)

ItemNumber	Sec #	Quantity	Unit	Description
3389100000-N	SP	4	EA	GUARDRAIL ANCHOR UNITS, TYPE 350 TEMPORARY
3628000000-M	876	55	MTN	RIP RAP, CLASS I
3649000000-M	876	1,060	MTN	RIP RAP, CLASS B
3656000000-M	876	4,200	M2	FILTER FABRIC FOR DRAINAGE
4072000000-M	903	302	M	SUPPORTS, 4.5-KG STEEL U-CHANNEL
4102000000-N	904	69	EA	SIGN ERECTION, TYPE E
4116100000-N	904	6	EA	SIGN ERECTION, RELOCATE, TYPE **** (GROUND MOUNTED) (E)
4155000000-N	907	41	EA	DISPOSAL OF SIGN SYSTEM, U-CHANNEL
4158000000-N	907	2	EA	DISPOSAL OF SIGN SYSTEM, WOOD
4238000000-N	907	1	EA	DISPOSAL OF SIGN, D, E OR F
4400000000-M	1110	59	M2	WORK ZONE SIGNS (STATIONARY)
4405000000-M	1110	10	M2	WORK ZONE SIGNS (PORTABLE)
4410000000-M	1110	27	M2	WORK ZONE SIGNS (BARRICADE MOUNTED)
4430000000-N	1130	430	EA	DRUMS
4435000000-N	1135	50	EA	CONES
4445000000-M	1145	40	M	BARRICADES (TYPE III)
4455000000-N	1150	1,000	MD	FLAGGER
4650000000-N	1251	325	EA	TEMPORARY RAISED PAVEMENT MARKERS
4685000000-M	1205	7,350	M	THERMOPLASTIC PAVEMENT MARKING LINES (100MM, 2.3MM)
4686000000-M	1205	9,425	M	THERMOPLASTIC PAVEMENT MARKING LINES (100MM, 3.1MM)
4695000000-M	1205	458	M	THERMOPLASTIC PAVEMENT MARKING LINES (200MM, 2.3MM)
4710000000-M	1205	75	M	THERMOPLASTIC PAVEMENT MARKING LINES (600MM, 3.1MM)
4725000000-M	1205	47	EA	THERMOPLASTIC PAVEMENT MARKING SYMBOL (2.3MM)
4810000000-M	1205	67,700	M	PAINT PAVEMENT MARKING LINES (100MM)
4820000000-M	1205	920	M	PAINT PAVEMENT MARKING LINES (200MM)
4825000000-M	1205	40	M	PAINT PAVEMENT MARKING LINES (300MM)
4835000000-M	1205	170	M	PAINT PAVEMENT MARKING LINES (600MM)
4845000000-N	1205	102	EA	PAINT PAVEMENT MARKING SYMBOL
4850000000-M	1205	2,000	M	REMOVAL OF PAVEMENT MARKING LINES (100MM)
4905000000-N	1253	125	EA	SNOWPLOWABLE PAVEMENT MARKERS
5050000000-N	1404	8	EA	LIGHT STANDARD, TYPE MTLT ********** (13.7M SA, 4.6M)
5070000000-N	1405	8	EA	STANDARD FOUNDATION ********* (R1)
5080000000-N	1406	8	EA	LIGHT STANDARD LUMINAIRES, TYPE ********** (RDW 250W HPS, MC3)
5120000000-N	1407	1	EA	ELECTRIC SERVICE POLE **** ******** (9.1M CLASS 4)
5125000000-M	1407	15	M	ELECTRIC SERVICE LATERAL ********** (3 #1/0 USE)
5160000000-M	1409	33	M	ELECTRICAL DUCT, TYPE JA, SIZE **** (TS3)
5205000000-M	1410	308	M	***#8 W/G FEEDER CIRCUIT IN SIZE *** CONDUIT (2, TS1.5)
5240000000-N	1411	3	EA	ELECTRICAL JUNCTION BOXES ********** (PC18)
5260000000-N	SP	Lump Sum		GENERIC LIGHTING ITEM POWER SUPPLY TO ROADWAY LIGHTS
5325200000-M	1510	55	M	50MM WATER LINE
5325600000-M	1510	1,298	M	150MM WATER LINE
5325800000-M	1510	236	M	200MM WATER LINE
5326200000-M	1510	548	M	300MM WATER LINE
5327000000-M	1510	22	M	500MM WATER LINE
5536000000-M	1515	6	EA	50MM VALVE
5540000000-M	1515	5	EA	150MM VALVE
5546000000-M	1515	1	EA	200MM VALVE
5558000000-M	1515	4	EA	300MM VALVE
5559000000-M	1515	1	EA	500MM VALVE
5648000000-N	1515	47	EA	RELOCATE WATER METER
5672000000-N	1515	8	EA	RELOCATE FIRE HYDRANT
5709000000-M	1520	13	M	***MM FORCE MAIN SEWER (75MM)
5768000000-N	1520	2	EA	SANITARY SEWER CLEAN-OUT
5775000000-M	1525	1	EA	1200MM DIA UTILITY MANHOLE
5804000000-M	1530	497	M	ABANDON 300MM UTILITY PIPE
5811000000-M	1530	24	M	ABANDON 450MM UTILITY PIPE
5828000000-N	1530	1	EA	REMOVE UTILITY MANHOLE
5882000000-N	SP	3	EA	GENERIC UTILITY ITEM BREAKDOWN AND REBUILD MANHOLE
5882000000-N	SP	1	EA	GENERIC UTILITY ITEM WATER METER VAULT
6000000000-M	1605	6,500	M	TEMPORARY SILT FENCE
6006000000-M	1610	1,900	MTN	STONE FOR EROSION CONTROL, CLASS A
6009000000-M	1610	3,000	MTN	STONE FOR EROSION CONTROL, CLASS B
6012000000-M	1610	1,400	MTN	SEDIMENT CONTROL STONE
6015000000-M	1615	30	HA	TEMPORARY MULCHING
6018000000-M	1620	625	KG	SEED FOR TEMPORARY SEEDING
6021000000-M	1620	4.75	MTN	FERTILIZER FOR TEMPORARY SEEDING
6024000000-M	1622	225	M	TEMPORARY SLOPE DRAINS
6027000000-N	1622	4	EA	INLET PROTECTION AT TEMPORARY SLOPE DRAINS
6029000000-M	SP	850	M	SAFETY FENCE
6030000000-M	1630	7,700	M3	SILT EXCAVATION
6036000000-M	1631	45,000	M2	MATTING FOR EROSION CONTROL
6037000000-M	SP	150	M2	COIR FIBER MAT
6038000000-M	SP	2,000	M2	PERMANENT SOIL REINFORCEMENT MAT
6042000000-M	1632	550	M	6.4MM HARDWARE CLOTH
6071030000-M	SP	1,050	M	COIR FIBER BAFFLES
6071050000-E	SP	14	EA	**" SKIMMER (38MM)
6084000000-M	1660	15	HA	SEEDING & MULCHING
6087000000-M	1660	17	HA	MOWING
6090000000-M	1661	375	KG	SEED FOR REPAIR SEEDING
6093000000-M	1661	1.25	MTN	FERTILIZER FOR REPAIR SEEDING
6096000000-M	1662	400	KG	SEED FOR SUPPLEMENTAL SEEDING
6108000000-M	1665	23	MTN	FERTILIZER TOPDRESSING
6111000000-M	SP	20	M	IMPERVIOUS DIKE
6114500000-N	SP	15	MHR	SPECIALIZED HAND MOWING
6117000000-N	SP	36	EA	RESPONSE FOR EROSION CONTROL
6123000000-M	1670	0.5	HA	REFORESTATION
7060000000-M	1705	200	M	SIGNAL CABLE
7120000000-M	1705	3	EA	VEHICLE SIGNAL HEAD (300MM, 3 SECTION)
7144000000-M	1705	3	EA	VEHICLE SIGNAL HEAD (300MM, 5 SECTION)
7300000000-M	1715	215	M	UNPAVED TRENCHING (**********) (2, 2")
7301000000-M	1715	70	M	DIRECTIONAL DRILL (**********) (2, 2")
7324000000-N	1716	11	EA	JUNCTION BOX (STANDARD SIZE)
7444000000-M	1725	175	M	INDUCTIVE LOOP SAWCUT
7456000000-M	1726	375	M	LEAD-IN CABLE (**********) (14-2)
7588000000-N	SP	1	EA	METAL POLE WITH SINGLE MAST ARM
7590000000-N	SP	1	EA	METAL POLE WITH DUAL MAST ARM
7613000000-N	SP	2	EA	SOIL TEST
7614100000-M	SP	12	M3	DRILLED PIER FOUNDATION
7631000000-N	SP	2	EA	MAST ARM WITH METAL POLE DESIGN
7684000000-N	1750	1	EA	SIGNAL CABINET FOUNDATION
7756000000-N	1751	1	EA	CONTROLLER WITH CABINET (TYPE 2070L, BASE MOUNTED)
7780000000-N	1751	5	EA	DETECTOR CARD (TYPE 2070L)
7901000000-N	1753	1	EA	CABINET BASE EXTENDER

COMPUTED BY: BCF DATE: 03/05
CHECKED BY: DVN DATE: 02/09

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PROJECT REFERENCE NO. R-2824 | SHEET NO. 3-A

METRIC

LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 1200 mm & 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) 300	375	450	600	750	900	1050	1200	DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE
-Y- 13+15.000	LT.	1		360.16															
		1	2		359.48	359.39													
-Y- 13+17.000	LT.	2		360.31															
		2	4		359.31	357.50													
-Y- 12+62.000	LT.	4		358.49															
-Y- 12+55.000	LT.	3A																	
-Y- 12+61.000	LT.	3		358.21															
		3	4		357.52	357.50			8.4							X			
-Y- 12+54.000	RT.	5		357.90															
		4	5		357.50	356.91													
-Y- 12+52.000	℄	5A																	
-Y- 12+54.000		5	6		356.30														
-L- 10+44.000	LT.	7		357.16															
		7	8		356.47	356.23													
-L- 10+63.000	LT.	8		356.92															
		8	9		356.23	355.98													
	LT.	9		356.90															
-L- 10+65.000	RT.	10		357.38															
-L- 10+65.000	RT.	11		356.97															
		9	11		355.98	356.06													
		10	11		356.77	356.13		4.8								X			
		9	12		355.98	355.69													
-L- 10+92.000	LT.	12		356.60															
-L- 10+78.000		12A																	
		12	13		355.40	352.70													
		14	16		357.80	356.08													
-L- 11+70.000	LT.	14A																	
-L- 11+50.000	RT.	15		358.21															
		15	16		357.53	356.15													
-L- 11+50.000	RT.	16		357.07															
		16	18		356.08	355.80													
-L- 11+18.000	RT.	17		357.43															
-L- 11+18.000	RT.	18		356.75															
		17	18		356.75	355.83													
		18	20		355.75	355.67	X												
-L- 10+90.000	RT.	19		357.36															
-L- 11+00.000	RT.	20		356.66															
		19	20		356.75	355.82													
-L- 11+00.000	LT.	21		356.59															
		20	21		355.52	355.45													
		21	12		355.45	355.40													
-Y3- 10+53.000	RT.	22																	
SHEET TOTAL								4.8	8.4	0	0	0	0	0	0				

STATION	C.S. PIPE 300 (1.63)	C.S. PIPE 400 (1.63)	C.S. PIPE 450 (1.63)	C.S. PIPE 600 (1.63)	C.S. PIPE 800 (2.01)	R.C. PIPE CLASS IV 300	375	450	600	750	900	C.S. PIPE (TEMPORARY) 800 (2.01)		375mm SIDE DRAIN PIPE	450mm SIDE DRAIN PIPE	600mm SIDE DRAIN PIPE	ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) * STD. 838.02 CU. METERS R.C.P.	C.S.P.	QUANTITIES: STRUCTURES PER EACH (0 THRU 1.50)	FOR DRAINAGE * TOTAL M FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL. 'B') *METERS A 1.50 THRU 3.00	B 3.00 AND ABOVE	C.B. STD. 840.01 OR 840.02	FRAME, GRATES, AND HOOD STD. 840.03 TYPE OF GRATE E	F	G	
-Y- 13+15.000																			1							
							8.4																			
-Y- 13+17.000																			1			1		1		
								56.4																		
-Y- 12+62.000																			1			1		1		
-Y- 12+55.000																										
-Y- 12+61.000																			1							
-Y- 12+54.000																			1	0.1		1	1			
								15.6																		
-Y- 12+52.000																										
-Y- 12+54.000								7.2																		
-L- 10+44.000																			1							
							19.2																			
-L- 10+63.000																			1							
							8.4																			
																			1			1			1	
-L- 10+65.000																			1							
-L- 10+65.000																			1			1		1		
							13.2																			
							27.6																			
-L- 10+92.000																			1			1			1	
-L- 10+78.000																										
				10.8																						
								22.8																		
-L- 11+70.000																										
-L- 11+50.000																			1							
		6																								
-L- 11+50.000																			1			1			1	
								33.6																		
-L- 11+18.000																			1							
-L- 11+18.000																			1			1			1	
		6																								
								18																		
-L- 10+90.000																			1							
-L- 11+00.000																			1			1	1			
	10.8																									
-L- 11+00.000																			1			1	1			
									12																	
									8.4																	
-Y3- 10+53.000														10.8												
SHEET TOTAL	10.8	12	0	10.8	0	0	76.8	153.6	20.4	0	0	0	0	10.8	0	0	0	0	18	0.1	0	10	3	3	4	0

STATION	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME & GRATE STD. 840.16	G.D.I. TYPE "B" STD. 840.18 OR 840.27	G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.24	G.D.I. (N.S.) FRAME W/TWO GRATES STD. 840.29	J.B. STD. 840.31 OR 840.32	M.H. FRAME & COVER STD. 840.54	T.B.D.I. STD. 840.35	CONCRETE BRIDGE APPROACH DROP INLET STD. 840.13	CONV. EXIST. C.B. TO J.B W/MH COVER.	625mm SLUICE GATE	970mm SLUICE GATE	CORR. STEEL ELBOW NO. & SIZE	DRAINAGE PIPE ELBOW NO. & SIZE	CONC. COLLARS, CL. "B" m STD.840.72	CONC. & BRICK PIPE PLUG m³ STD.840.71	PIPE REMOVAL (meters)	REMARKS
-Y- 13+15.000	1	1																
-Y- 13+17.000																		
																	63.5	REMOVE 450mm PIPE
-Y- 12+62.000																		
-Y- 12+55.000																	14.8	REMOVE EXIST. PIPE
-Y- 12+61.000	1	1																
-Y- 12+54.000																		
-Y- 12+52.000																0.10		450mm (PLUG BOTH ENDS)
-Y- 12+54.000																		
-L- 10+44.000	1	1																
-L- 10+63.000	1	1																
-L- 10+65.000	1	1																
-L- 10+65.000																		
														2-300				
-L- 10+92.000																		
-L- 10+78.000																	11.2	REMOVE 450mm PIPE
													2-600					
-L- 11+70.000																	6	REMOVE 300mm PIPE
-L- 11+50.000	1	1																
-L- 11+50.000																		
-L- 11+18.000	1	1																
-L- 11+18.000																		
-L- 10+90.000	1	1																
-L- 11+00.000																		
													2-300					
-L- 11+00.000																		
-Y3- 10+53.000																		
SHEET TOTAL	8	8	0	0	0	0	0	0	0	0	0	0	2-300 2-600	2-300		0.10	95.5	

ABBREVIATIONS

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

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COMPUTED BY: BCF DATE: 03/05
CHECKED BY: DVN DATE: 02/09

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

METRIC

PROJECT REFERENCE NO. R-2824 | SHEET NO. 3-B

LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 1200 mm & 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) 300	375	450	600	750	900	1050	1200	DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE	C.S. PIPE 300 (1.63)	400 (1.63)	450 (1.63)	600 (1.63)	800 (2.01)	R.C. PIPE CLASS IV 300	375	450	600	750	900	C.S. PIPE (TEMPORARY) 800 (2.01)		375mm SIDE DRAIN PIPE	450mm SIDE DRAIN PIPE	600mm SIDE DRAIN PIPE	ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) * STD. 838.02 CU. METERS R.C.P.	C.S.P.	QUANTITIES: STRUCTURES PER EACH (0 THRU 1.50)	FOR DRAINAGE *TOTAL M FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL. 'B') *METERS A 1.50 THRU 3.00	B 3.00 AND ABOVE	C.B. STD. 840.01 OR 840.02	FRAME, GRATES, AND HOOD STD. 840.03 TYPE OF GRATE E	F	G		D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME & GRATE STD. 840.16	G.D.I. TYPE "B" STD. 840.18 OR 840.27	G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.24	G.D.I. (N.S.) FRAME W/TWO GRATES STD. 840.29	J.B. STD. 840.31 OR 840.32	M.H. FRAME & COVER STD. 840.54	T.B.D.I. STD. 840.35	CONCRETE BRIDGE APPROACH DROP INLET STD. 840.13	CONV. EXIST. C.B. TO J.B W/MH COVER.	625mm SLUICE GATE	970mm SLUICE GATE	CORR. STEEL ELBOW NO. & SIZE	DRAINAGE PIPE ELBOW NO. & SIZE	CONC. COLLARS, CL. "B" m STD.840.72	CONC. & BRICK PIPE PLUG m^3 STD.840.71	PIPE REMOVAL (meters)	REMARKS
-L- 12+90.000	RT.	23																																8.4																													
-L- 13+13.000	RT.	24																																18.0																												15.1	REMOVE 375mm PIPE
-L- 16+20.000	LT.	25		344.89																																		1	.07												1	1											
		25	26		343.32	342.14				4.8							X	X																																													
-L- 16+20.000	LT.	26		343.05																																		1										1	1														
		26	27		342.14	339.11				66							X	X																																													
-L- 16+86.000	LT.	27		340.02																																		1										1	1														
		27	28		338.95	338.85					19.2						X	X																																												10.6	REMOVE 450mm PIPE
-L- 18+13.000	LT.	29		331.93																																		1										1	1														
		29	29A		331.09	331.00			16.8								X	X																																												11.0	REMOVE 450mm PIPE
-L- 19+35.000	LT.	30		325.95																																		1										1	1														
-L- 19+33.000	℄	30A																																																												10.7	REMOVE 450mm PIPE
		30	31		325.11	320.25			67.2								X	X																																													
-L- 20+00.000	LT.	31		321.09																																		1										1	1														
		31	34		320.25	318.39			51.6								X	X																																														
		32	33		317.88	317.84	X			12																																																					
-L- 20+50.000	RT.	33		318.86																																		1												1			1										
		33	34		317.84	317.81	X																				12																																				
-L- 20+50.000	LT.	34		319.23																																		1												1			1										
		34	35		317.81	317.35				7.2						X																																										2-450				
-L- 20+48.000	LT.	35A								4.8																										*0.8																				1							SLUICE GATE
-L- 20+90.000	RT.	36A		317.94																																		1												1			1										
		36A	36		317.10	316.92			16.8								X	X																																														
-L- 21+07.000	RT.	36		317.84																																		1												1			1										
		36	37		316.92	316.26																					19.2																																				
-L- 21+01.000	LT.	37A			316.92	316.26				2.4																										*0.8																				1							SLUICE GATE
-L- 22+00.000	LT.	38		318.90																																		1										1	1														
		38	39		318.06	317.40			20.4																																																								
-Y7- 10+11.000	℄	40			316.90	316.30					30																																																			11.1	REMOVE 450mm PIPE
-L- 22+00.000	RT.	41																															12																																REMOVE 450mm PIPE
-L- 22+19.000	℄	41A																																																											0.10		450mm (PLUG BOTH ENDS)
-L- 23+49.000	℄	41B																																																											0.10		450mm (PLUG BOTH ENDS)
-L- 24+80.000	RT.	44		340.18																																		1										1	1														
		44	44A		339.30	336.34			50.4								X	X																																														
-L- 24+29.372	RT.	44A		337.18																																		1										1		1													
		44A	42		336.34	332.36			39.6								X	X																																														
-L- 23+90.825	RT.	42		333.20																																		1										1		1													
		42	43		332.36	332.16																				12																																					
-L- 23+90.825	LT.	43		333.14																																		1										1		1													
		43	43A		332.16	330.50			9.6							X																																										2-375				
-L- 25+20.000	LT.	45		342.09																																		1										1	1														
		45	45A		341.25	337.54			14.4							X																																										2-375				
-L- 26+20.000	RT.	46		345.22																																		1										1		1													
		46	47		344.38	344.13			20.4								X	X																																														
-L- 26+00.000	RT.	47		344.97																																		1										1		1													
		47	48		344.13	341.65			12							X																																										2-375				
-L- 26+60.000	LT.	49																																7.2																														REMOVE 450mm PIPE.
SHEET TOTAL								0	319.2	97.2	49.2	0	0	0	0					0	0	0	0	0	0	12	31.2	0	0	0	0	0	12	33.6	0	1.6	0	18	.07	0	0	0	0	0	0	0	0	13	8	9	1	1	4	0	0	2	0	0	2-450 6-375	0	0.20	58.5	

ABBREVIATIONS

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

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COMPUTED BY:	BCF	DATE:	03/05
CHECKED BY:	DVN	DATE:	02/09

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PROJECT REFERENCE NO.	SHEET NO.
R-2824	*3-C*

METRIC

LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 1200 mm & UNDER)

STATION / SIZE	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) 300	375	450	600	750	900	1050	1200	DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE	C.S. PIPE 300	400	450	600	800	R.C. PIPE CLASS IV 300	375	450	600	750	900	C.S. PIPE (TEMPORARY) 800		375mm SIDE DRAIN PIPE	450mm SIDE DRAIN PIPE	600mm SIDE DRAIN PIPE	ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) * STD. 838.02 CU. METERS R.C.P.	C.S.P.	QUANTITIES: STRUCTURES PER EACH (0 THRU 1.50)	*METERS A 1.50 THRU 3.00	B 3.00 AND ABOVE	C.B. STD. 840.01 OR 840.02	FRAME, GRATES, AND HOOD STD. 840.03 TYPE OF GRATE E	F	G		D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME & GRATE STD. 840.16	G.D.I. TYPE "B" STD. 840.18 OR 840.27	G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.24	G.D.I. (N.S.) FRAME W/TWO GRATES STD. 840.29	J.B. STD. 840.31 OR 840.32	M.H. FRAME & COVER STD. 840.54	T.B.D.I. STD. 840.35	CONCRETE BRIDGE APPROACH DROP INLET STD. 840.13	CONV. EXIST. C.B. TO J.B W/MH COVER.	625mm SLUICE GATE	970mm SLUICE GATE	CORR. STEEL ELBOW NO. & SIZE	DRAINAGE PIPE ELBOW NO. & SIZE	CONC. COLLARS, CL. "B" m STD.840.72	CONC. & BRICK PIPE PLUG m³ STD.840.71	PIPE REMOVAL (meters)	REMARKS
THICKNESS OR GAUGE																				1.63	1.63	1.63	1.63	2.01							2.01																																
-L- 26+84.683	RT.	49A		347.51																																		1			1			1																			
		49A	49B		346.59	343.20														13.2																																						2-300					
-Y9- 11+02.081	RT.	49C		348.80																																		1			1		1																				
		49C	49D		347.96	347.86																			6																																						
-L- 28+20.000	LT.	50		354.33																																		1										1	1														
		50	51		353.43	350.00			40.8																																																						
-L- 27+82.432	LT.	51		350.90													X	X																				1										1	1														
		51	52		350.00	346.98				43.2							X	X																																													
-L- 27+40.000	LT.	52		348.05																																		1										1	1														
		52	53		346.98	346.44																						22.8																																			
-L- 27+40.127	RT.	53		349.05																																		1	1.11		1			1																			
		53	55		346.44	348.45																						15.6																																			
-Y8- 10+17.695	LT.	55		348.45																																		1	.95		1			1																			
		55	54		346.00	346.43																							9.6																																		
-Y8- 10+18.200	LT.	54																																		1.8																													END WALL 750mm PIPE
-Y8- 10+20.133	RT.	55A		347.94																																		1	1.5	.14	1		1																				
		55	55A		346.00	344.80																							18																																		
		55A	55B		344.80	344.30																							8.4																																		
-L- 26+72.329	RT.	55C																																																												63.9	REMOVE 600mm PIPE
-L- 27+31.452	℄	55D																																																											20.0	REMOVE 600mm PIPE
-L- 27+78.582	LT.	55E																																																												10.2	REMOVE 450mm PIPE
-L- 28+40.000	LT.	56																															14.4																													7.5	REMOVE 375mm PIPE
-L- 28+61.000	℄	56A																																																												11.1	REMOVE 450mm PIPE
-L- 29+03.000	LT.	57																															8.4																													7.7	REMOVE 375mm PIPE
-Y9A- 10+18.000	℄	58			364.18	363.77																												15.6																														
-L- 30+44.000	RT.	59																															8.4																														
-L- 31+09.000	RT.	60																															7.2																														
-Y10- 10+65.000	LT.	61								13.2																																																				9.9	REMOVE 450mm PIPE
-L- 32+56.000	RT.	62																															8.4																													15.8	REMOVE 375mm PIPE
-L- 32+70.000	LT.	63																															14.4																														
-Y11- 10+98.000	℄	64			369.19	368.90			13.2																																																						
-L- 33+00.000	RT.	65																															14.4																														
-L- 33+72.000	LT.	66																															14.4																														
-L- 33+97.000	RT.	67																															7.2																														
-L- 34+15.000	RT.	67A																																																												6.7	REMOVE 375mm PIPE
-L- 34+25.000	LT.	68																															9.6																													8	REMOVE 300mm PIPE
-L- 34+95.000	LT.	69																															8.4																														
-L- 35+15.000	RT.	70																															6																														
-L- 35+21.000	LT.	71																															8.4																														
-L- 35+96.000	℄	72			372.09	370.00																						22.8																																		12.4	REMOVE 450mm PIPE
-L- 37+12.000	LT.	73																															10.8																														
-L- 37+80.000	LT.	74		377.60																																		1										1	1														
		74	74A		376.76	376.42			25.2																																																					10.4	REMOVE 2GI and 375mm PIPE
-L- 38+25.000	RT.	75A																															6																														
-L- 38+56.000	LT.	75																															8.4																													6.6	REMOVE 300mm PIPE
-L- 38+63.000	RT.	76																															13.2																													14.9	REMOVE 375mm PIPE
-L- 39+60.000	RT.	77																																7.2																												7	REMOVE 450mm PIPE
SHEET TOTAL								0	79.2	56.4	0	0	0	0	0					13.2	0	0	0	0	6	0	0	61.2	36	0	0	0	168	22.8	0	1.8	0	9	3.56	0.14	5	0	2	3	0	0	0	4	4	0	0	0	0	0	0	0	0	2-300	0	0	0	212.1	

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

ABBREVIATIONS

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

6/20/00

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6/20/00

COMPUTED BY: BCF DATE: 03/05
CHECKED BY: DVN DATE: 02/09

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

METRIC

PROJECT REFERENCE NO.	SHEET NO.
R-2824	*3-D*

LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 1200 mm & 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) 300	375	450	600	750	900	1050	1200	DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE	C.S. PIPE 300 (1.63)	400 (1.63)	450 (1.63)	600 (1.63)	800 (2.01)	R.C. PIPE CLASS IV 300	375	450	600	750	900	C.S. PIPE (TEMPORARY) 800 (2.01)		375mm SIDE DRAIN PIPE	450mm SIDE DRAIN PIPE	600mm SIDE DRAIN PIPE	ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) * STD. 838.02 CU. METERS R.C.P.	C.S.P.	QUANTITIES: STRUCTURES PER EACH (0 THRU 1.50)	FOR DRAINAGE * TOTAL M. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL. 'B') *METERS A 1.50 THRU 3.00	B 3.00 AND ABOVE	C.B. STD. 840.01 OR 840.02	FRAME, GRATES, AND HOOD STD. 840.03 TYPE OF GRATE E	F	G		D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME & GRATE STD. 840.16	G.D.I. TYPE "B" STD. 840.18 OR 840.27	G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.24	G.D.I. (N.S.) FRAME W/TWO GRATES STD. 840.29	J.B. STD. 840.31 OR 840.32	M.H. FRAME & COVER STD. 840.54	T.B.D.I. STD. 840.35	CONCRETE BRIDGE APPROACH DROP INLET STD. 840.13	CONV. EXIST. C.B. TO J.B W/MH COVER.	625mm SLUICE GATE	970mm SLUICE GATE	CORR. STEEL ELBOW NO. & SIZE	DRAINAGE PIPE ELBOW NO. & SIZE	CONC. COLLARS, CL. "B" m STD.840.72	CONC. & BRICK PIPE PLUG m³ STD.840.71	PIPE REMOVAL (meters)	REMARKS
-L- 39+90.000	℄	78			372.80	370.10				33.6							X	X																																												13.7	REMOVE 450mm PIPE
-Y12- 12+31.000	LT.	79		375.00																																		1								1	1																
		79	80		374.39	374.31																			12																																						
-Y12- 12+19.000	LT.	80		374.92																																		1								1	1																
		80	81		374.23	374.00																				4.8																																					
-Y12- 12+20.000	LT.	81		374.91																																		1			1		1																				
		81	82		374.00	373.72																				34.8																																					
-Y12- 11+86.000	LT.	82		374.64																																		1			1		1																				
		82	83		373.72	373.64	X																			28.8																																					
-Y12- 11+57.000	LT.	83		374.58																																		1			1	1																					
		83	84		373.64	373.57	X																			22.8																																					
-Y12- 11+34.000	LT.	84		374.63																																		1			1			1																			REMOVE CB
		84	86		373.57	373.44	X																			50.4																																		49.2	REMOVE 450mm PIPE
-Y12- 10+84.000	RT.	85		374.01																																		1										1	1														
		85	86		373.32	373.29	X																			10.8																																					
-Y12- 10+84.000	LT.	86		374.66																																		1			1		1																				REMOVE CB
		86	86A		373.29	373.08																				4.8																																					
-Y12- 12+97.000	RT.	87			373.82																						8.4																																	0.33			EXTEND 450mm PIPE
-Y12- 13+41.000	LT.	88		376.10																																		1			1		1																				
		88	89		375.19	373.69																				44.4																																					
-Y12- 12+97.000	LT.	89		374.98																																																1			1								CONVERT TO JB W/MH
-Y12- 13+97.000	RT.	90A																															12																														
-Y12A- 10+36.000	℄	90			373.70	373.60				20.4																																																					
-Y12- 14+64.000	LT.	91		378.52																																		1			1		1																				
		91	91A		377.68	374.95		8.4																																																							
-Y- 11+80.000	RT.	92		358.33																																		1			1			1																			
		92	94		357.42	356.67																				62.4																																					
-Y- 11+19.000	RT.	94		357.94																																		1			1			1																			
		94	95		356.67	356.53	X																			48																																					
-Y- 11+17.000	LT.	93		357.62																																		1			1		1																				
		93	94		356.71	356.67	X																			10.8																																					
-Y- 10+71.000	RT.	95		357.90																																		1			1			1																			
		95	96		356.53	356.39																				10.8																																					
-Y- 11+19.000	RT.	94A		357.72																																		1								1	1																
		94	94A		356.67	357.03																			6																																						
									DETOUR DRAINAGE																																																								
-DET- 11+83.000	LT.	97																																		*1.8																						1						SLUICE GATE
-DET- 11+80.000	LT.	97	98		315.70	315.50						25.2																																																			REMOVE EXIST. 450mm PIPE
-DET- 12+10.000	℄	99			316.62	316.60																									24																																REMOVE W/DETOUR
-DET- 14+00.000	LT.	100			327.61	326.99				8.4																																																		0.33		8.4	COLLAR (REMOVE W/DETOUR)
SHEET TOTAL								8.4	0	62.4	0	25.2	0	0						0	0	0	0	0	18	333.6	8.4	0	0	0	24	0	12	0	0	1.8	0	15	0	0	11	1	6	4	0	3	3	1	1	0	0	1	0	0	1	0	1			0.66	0	22.1	
TOTAL								13.2	406.8	216	49.2	25.2	0	0	0					24	12	0	10.8	0	24	422.4	193.2	81.6	36	0	24	0	202.8	56.4	0	5.2	0	60	3.73	.14	26	4	11	11		11	11	18	13	9	1	2	4	0	1	2	1	4-300 2-600	2-300 6-375 2-450	0.66		388.2	
																																								X1.3																					0.30		
																																							3.91																								
SAY																																				6			4																					1	0.50		

ABBREVIATIONS

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

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COMPUTED BY: BCF DATE: 3/05
CHECKED BY: JLT DATE: 3/09

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

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

METRIC

PROJECT REFERENCE NO.	SHEET NO.
R-2824	3-E

GUARDRAIL SUMMARY

SURVEY LINE	BEG. STA.	END STA.	LOCATION	LENGTH: PERMANENT STRAIGHT	LENGTH: PERMANENT SHOP CURVED	LENGTH: TEMPORARY STRAIGHT	WARRANT POINT: APPROACH END	WARRANT POINT: TRAILING END	"N" DIST. FROM E.O.L.	TOTAL SHOUL. WIDTH	FLARE LENGTH: APPROACH END	FLARE LENGTH: TRAILING END	W: APPROACH END	W: TRAILING END	PERMANENT ANCHORS: GRAU 350	PERMANENT ANCHORS: TYPE III	PERMANENT ANCHORS: AT-1	PERMANENT ANCHORS: CAT-1	PERMANENT ANCHORS:	TEMPORARY ANCHORS: GRAU 350	TEMPORARY ANCHORS: TYPE III	TEMPORARY ANCHORS:	TEMPORARY ANCHORS:	IMPACT ATTENUATOR TYPE 350: EA	IMPACT ATTENUATOR TYPE 350: G	IMPACT ATTENUATOR TYPE 350: NG	SINGLE FACED CONCRETE BARRIERS	REMOVE EXISTING GUARDRAIL	REMOVE AND STOCKPILE EXISTING GUARDRAIL	REMARKS
-L-	15+01.900	16+04.770	RT.	102.870			15+30.000	15+90.000	2.4	3.4	15.240	15.240	0.300	0.300	2															
-L-	19+86.585	20+60.880	RT.	74.295				BRIDGE	2.9	3.9	15.240		0.300		1	1														
-L-	20+32.305	20+60.880	LT.	28.575			BRIDGE		2.9	3.9		15.240		0.300	1	1														
-L-	20+58.172	20+96.279	LT.																									38.105		REMOVE EXISTING GUARDRAIL
-L-	20+50.405	20+88.032	RT.																									37.636		REMOVE EXISTING GUARDRAIL
-L-	20+85.020	21+25.025	RT.	40.005			BRIDGE		2.9	3.9		15.240		0.300	1	1														
-L-	20+85.020	-Y6- 11+26.000	LT.	22.860	20.955			BRIDGE	2.9	3.9	1.905		1.220			1	1													
-L-	23+73.190	25+02.730	LT.	129.540			24+00.000	24+60.000	2.4	3.4	15.240	15.240	0.300	0.300	2															
-L-	25+75.940	26+75.000	RT.	99.060			26+30.000	26+75.000	2.4	3.4	15.240	15.240	0.300	0.300	2															
-DET-	10+71.297	11+11.302	LT.			40.005		11+00.000	0.6	3.0		34.290		0.686						1	1									
-DET-	10+81.863	11+14.248	RT.			32.385		BRIDGE	0.6	3.0	26.670		0.533							1	1									
-DET-	11+41.389	11+66.154	RT.			24.765	BRIDGE		0.6	3.0		19.050		0.381						1	1									
-DET-	11+37.005	11+65.580	LT.			28.575		BRIDGE	0.6	3.0	22.860		0.457							1	1									
		SUBTOTAL		497.205	20.955	125.730									9	4	1			4	4							75.741		
		LESS ANCHOR UNITS		- 160.020	- 1.905	- 83.820																								
		TOTAL		337.185	19.050	41.910									9	4	1			4	4							75.741		
		SAY		346.710	19.050	41.910																						76.000		
											10 ADDITIONAL GUARDRAIL POSTS																			

DEDUCTION FOR PERMANENT ANCHOR UNITS
GRAU-350 =15.240 X 9 = 137.160
TYPE III =5.715 X 4 = 22.860
AT-1 =1.905 X 1 = 1.905
TOTAL 160.020

DEDUCTION FOR TEMPORARY ANCHOR UNITS
GRAU-350 =15.240 X 4 = 60.960
TYPE III =5.715 X 4 = 22.860
TOTAL 83.820

SUMMARY OF SHOULDER BERM GUTTER

STATION TO STATION	LOCATION	LINEAR METER
-L- 20+05.000 TO 20+53.565	RT	48.565
-L- 20+47.663 TO 20+53.565	LT	5.902
-L- 20+92.335 TO 20+98.000	LT	5.665
-L- 20+92.335 TO 21+08.438	RT	16.103
-L- 23+89.500 TO 24+87.000	LT	97.500
-L- 25+91.180 TO 26+59.486	RT	68.306
TOTAL:		242.041
SAY:		245

★SUMMARY OF REMOVAL OF EXISTING ASPHALT PAVEMENT

LINE	STATION TO STATION	LOCATION	SQUARE METERS
-L-	20+53.565 TO 20+68.000	EXISTING ROADBED	79.000
-L-	20+79.000 TO 20+92.335	EXISTING ROADBED	73.000
-L-	24+80.000 TO 26+88.000	EXISTING ROADBED	717.000
-L-	27+12.000 TO 27+24.000	EXISTING ROADBED	113.000
-L-	27+40.000 TO 29+12.000	EXISTING ROADBED	514.000
-DETOUR-	10+32.000 TO 11+13.000	DETOUR PAVEMENT	366.000
-DETOUR-	11+39.000 TO 14+15.000	DETOUR PAVEMENT	1528.000
-Y12A-	10+08.000 TO 10+45.000	EXISTING ROADBED	196.000
TOTAL:			3,586.000
SAY:			3,600

★SUMMARY OF BREAKING OF EXISTING ASPHALT PAVEMENT

LINE	STATION TO STATION	LOCATION	SQUARE METERS
-L-	20+40.000 TO 20+53.565	EXISTING ROADBED	80.000
-L-	20+92.335 TO 21+05.000	EXISTING ROADBED	75.000
TOTAL:			155.000
SAY:			200

★ APPROXIMATE QUANTITIES ONLY. SHOULDER BORROW, FINE GRADING, CLEARING AND GRUBBING, BREAKING OF EXISTING PAVEMENT, AND REMOVAL OF EXISTING PAVEMENT WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE FOR "GRADING".

NOTE: UNCLASSIFIED EXCAVATION WILL BE PAID FOR AS A SEPARATE PAY ITEM.

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COMPUTED BY: BCF DATE: 3-9-2005
CHECKED BY: JLT DATE: 3-16-09

PROJECT REFERENCE NO.	SHEET NO.
R-2824	3-F

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

★ SUMMARY OF EARTHWORK

IN CUBIC METERS

LOCATION	UNCL. EXCAVATION	UNDERCUT	EMBT+%	BORROW	WASTE
PHASE 1 -DETOUR- 10+00.000 TO 11+12.740 (BEGIN BRIDGE)	488	0	486	0	2
-DETOUR- 11+39.140 (END BRIDGE) TO 14+54.073	2,213	0	969	0	1,244
SUBTOTAL:	2,701	0	1,455	0	1,246
-Y- (LT.) STA 10+20.000 TO 13+36.710	61	0	845	784	0
-Y2- STA 10+05.400 TO 10+20.000	4	0	22	18	0
SUBTOTAL:	65	0	867	802	0
-Y- (RT.) STA 10+20.000 TO 13+36.710	232	0	660	428	0
-YA- STA 10+19.000 TO 11+03.260	11	0	109	98	0
-DR16- STA 10+00.000 TO 10+17.222	0	0	8	8	0
-DR17- STA 10+00.000 TO 10+20.367	6	0	9	3	0
-DR18- STA 10+00.000 TO 10+20.210	0	0	84	84	0
SUBTOTAL:	249	0	870	621	0
-L- (LT.) STA 10+05.400 TO 20+60.880 (BEGIN BRIDGE)	3,081	0	2,479	0	602
-DR1- STA 10+00.000 TO 10+42.939	18	0	365	347	0
-DR2- STA 10+00.000 TO 10+35.196	6	0	144	138	0
-DR3- STA 10+00.000 TO 10+41.780	0	0	70	70	0
-Y4- STA 10+40.000 TO 10+90.780	41	0	83	42	0
-Y5- STA 11+00.000 TO 11+52.250	971	0	2	0	969
SUBTOTAL:	4,117	0	3,143	597	1,571
-L- (RT.) STA 10+05.400 TO 20+60.880 (BEGIN BRIDGE)	2,080	0	2,467	387	0
-Y3- STA 10+03.630 TO 10+87.630	1,210	0	0	0	1,210
SUBTOTAL:	3,290	0	2,467	387	1,210
-L- (LT.) STA 20+85.020 (END BRIDGE) TO 23+00.000	117	0	447	330	0
-Y6- STA 11+20.000 TO 11+49.199	4	0	281	277	0
SUBTOTAL:	121	0	728	607	0
-L- (RT.) STA 20+85.020 (END BRIDGE) TO 27+40.000	4,020	0	2,460	0	1,560
-Y7- STA 10+03.600 TO 10+50.000	5	0	66	61	0
-Y8- STA 10+05.400 TO 10+47.400	59	0	260	201	0
SUBTOTAL:	4,084	0	2,786	262	1,560
-L- (LT.) STA 26+80.000 TO 33+60.000	3,053	0	1,042	0	1,952
-Y9- STA 10+40.000 TO 11+03.165	1,268	0	146	0	945
-DR19- STA 10+00.000 TO 10+22.330	229	0	0	0	256
-DR20- STA 10+00.000 TO 10+16.129	127	0	0	0	127
-Y9B- STA 10+00.000 TO 10+25.748	30	0	0	0	30
-DR4- STA 10+12.000 TO 10+18.500	6	0	0	0	6
-DR7- STA 10+00.000 TO 10+36.323	28	0	8	0	20
-Y11- STA 10+96.780 TO 11+24.780	181	0	1	0	180
SUBTOTAL:	4,226	0	710	0	3,516

LOCATION	UNCL. EXCAVATION	UNDERCUT	EMBT+%	BORROW	WASTE
-L- (LT.) STA 33+60.000 TO 40+27.465	2,585	0	3,002	417	0
-Y11A- STA 10+00.000 TO 10+20.813	5	0	30	25	0
-DR15- STA 10+00.000 TO 10+33.686	0	0	336	336	0
SUBTOTAL:	2,590	0	3,368	778	0
-L- (RT.) STA 29+40.000 TO 33+60.000	352	0	572	220	0
-Y9A- STA 10+00.000 TO 10+21.429	13	0	1	0	12
-DR5- STA 10+03.600 TO 10+17.457	0	0	15	15	0
-Y10- STA 10+03.840 TO 10+60.000	43	0	60	17	0
-DR8- STA 10+03.601 TO 10+30.200	14	0	0	0	14
SUBTOTAL:	422	0	648	252	26
-L- (RT.) STA 33+60.000 TO 40+27.465	969	0	1,973	1,004	0
-DR10- STA 10+03.600 TO 10+25.570	0	0	5	5	0
-DR14- STA 10+03.600 TO 10+38.000	4	0	108	104	0
SUBTOTAL:	973	0	2,086	1,113	0
-Y12- (LT.) STA 10+80.000 TO 14+60.000	49	0	298	249	0
-Y12A- STA 10+03.600 TO 10+71.961	256	0	154	0	102
SUBTOTAL:	305	0	452	249	102
-Y12- (RT.) STA 10+80.000 TO 14+60.000	1,013	0	347	0	666
SUBTOTAL:	1,013	0	347	0	666
PHASE 1 SUBTOTALS:	24,156	0	19,927	5,668	9,897
WASTE IN LIEU OF BORROW				-5,668	-5,668
PHASE 1 TOTALS:	24,156	0	19,927	0	4,229
PHASE 2 -L- (LT.) STA 23+00.000 TO 26+80.000	622	0	236	0	386
-L- (RT.) STA 27+40.000 TO 29+40.000	393	0	46	0	347
-Y6- STA 11+00.180 TO 11+20.000	4	0	24	20	0
SUBTOTAL:	1,019	0	306	20	733
DETOUR REMOVAL -DETOUR- STA 10+74.467 TO 11+12.740 (BEGIN BRIDGE)	411	0	0	0	411
-DETOUR- STA 11+39.140 (END BRIDGE) TO 12+95.018	801	0	79	0	722
SUBTOTAL:	1,212	0	79	0	1,133
PHASE 2 SUBTOTALS:	2,231	0	385	20	1,866
WASTE IN LIEU OF BORROW				-20	-20
PHASE 2 TOTALS:	2,231	0	385	0	1,846
PHASE 1-2 TOTALS:	26,387	0	20,312	0	6,075
LOSS DUE TO CLEARING AND GRUBBING	-4,625				-4,625
PROJECT TOTALS:	21,762	0	20,312	0	1,450
GRAND TOTALS:	21,762				1,450
SAY:	22,000				1,500

EST. DRAINAGE DITCH EXCAVATION = 750 CM
SHOULDER BORROW = 3,600 CM
EST. UNDERCUT = 130 CM
EST. SHALLOW UNDERCUT = 500 CM

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.

★ APPROXIMATE QUANTITIES ONLY. SHOULDER BORROW, FINE GRADING, CLEARING AND GRUBBING, BREAKING OF EXISTING PAVEMENT AND REMOVAL OF EXISTING PAVEMENT WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE FOR GRADING.

NOTE: UNCLASSIFIED EXCAVATION WILL BE PAID FOR AS A SEPARATE PAY ITEM.

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PROJ. REFERENCE NO.	SHEET NO.
R-2824	3-G

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PARCEL INDEX SHEET

PARCEL No.	SHEET No.	PROPERTY OWNER NAME
1	4, 14	RODGER STEVEN JENKINS AND WIFE, HELEN ELISE S. JENKINS
2	4	BILLY G. SHUFORD AND WIFE, REBECCA S. SHUFORD
3	4	XIONG CHENG AND SHAO VANG
4	4	JOHN R. HOGAN AND WIFE, JOAN P. HOGAN
5	4	THEOPHILUS AND VIRGINIA RUSSELL
6	4	HAROLD D. HARTMAN AND WIFE, JEAN B. HARTMAN
7	4	VERTIE P. BURNS (DIVORCED)
8	4	LAWERENCE "BEN" DARIUS ROBERTSON AND WIFE,
		MARCELLA L. ROBERTSON
9	4	DEAL'S BODY SHOP
10	4	JACK B. ISSACS, etal
11	4	CAROLE CURTIS LYNN
12	4	CAROLE CURTIS LYNN
13	4, 14	CAROLE CURTIS LYNN
14	4	HERBERT M. SPEAS, JR. AND WIFE,
		RUTH MARCHALLE SPEAS
15	4	GARY ALAN GRIFFIN AND WIFE, LU GRIFFIN
16	4	ERVIN S. DEAL
17	4	ANGIE M. RICHARDSON AND DOROTHY LOUISE PROPST.
18	4	CLAUDIA VAN LYNN SEAGLE
19	4, 5	HOYTE COOPER AND WIFE, ELIZABETH COOPER
20	4, 5	EDITH B. LYNN (WIDOW), LIFE ESTATE
21	4, 5	STEVEN BRYAN SHUFFLER
22	4	MARY L. SMILEY
23	5	LISA B. COX AND HUSBAND, BILL J. COX
23A	5	LYNN M. WRIGHT AND JEREMY WRIGHT
24	5	DELORES DEAL
25Z	5	WILLIAM EARL FRANKLIN
26	5	CORNERSTONE BAPTIST CHURCH
27	5	WILLIAM REED ROBINSON AND WIFE,
		JANIE MELICIA J. ROBINSON
28	5	CAROLINA CENTERS, LLC
29	5, 6, 7	VALDESE WEAVERS, INC.
30	5, 6, 7	CAROLINA CENTERS, LLC
31	7, 8	THE TOWN OF VALDESE
32Z	7, 8, 9	SHUFORD DEVELOPMENT, INC.
33	8, 9	CAROLINA CENTERS, LLC
33Z	8	CAROLINA CENTERS, LLC
34Z	9	LISA A. WILLIS AND JASON R. WILLIS
35	9	PIEDMONT NATURAL GAS COMPANY
36Z	9	EDGAR ALTON ROBINSON
37Z	9, 10	JOHN DALLAS BRINKLEY AND WIFE, ELEANOR T. BRINKLEY
38Z	9, 10	RICHARD GENE ROBINSON AND WIFE, BETTY W. ROBINSON
39Z	10	MARVIN LOWDER AND BETTY J. LOWDER
40	10	JEFFREY ALTON ROBINSON AND MICHELLE ROBINSON
41	10	STEVEN R. ICARD AND WIFE, KRISTEN S. ICARD
42	10	AILEEN H. DEAL, LIFE ESTATE
43	10	STEVEN J. COX AND WIFE, ANNA A. COX
44	10	DELANO K. DEAL AND WIFE, TERESA P. DEAL
44A	10	JEFFREY KENT DEAL
45	10	RICHARD G. BRAVARD AND WIFE, MARY R. BRAVARD
46	10	HAROLD YATES BERRY AND VIVIAN K. BERRY
47	10	JAMES ODELL HUFFMAN
49	10, 11	JAMES ODELL HUFFMAN
50	10	GREGORY S. STAFFORD
51	10, 11	HARRISON MULL AND WIFE, BONNIE MULL
52	11	DOROTHY IRENE JACUMIN
53	11	JESSE M. WHISNANT AND WIFE, VERNICE H. WHISNANT
54	11	JODY L. MAIN AND WIFE, ADRIANA MAIN

PARCEL No.	SHEET No.	PROPERTY OWNER NAME
55	11	JERRY D. PLEMMONS AND WIFE, KIMBERLY K. PLEMMONS
56	11	HENRY HERBERT JACUMIN AND WIFE, PEGGY
		GARMON JACUMIN
57	11	JIMMY G. SPINKS, JR.
58	11	BETTY H. WARLICK
59	11	JOSHUA DUCKWORTH
60	11, 12	DOROTHY IRENE JACUMIN
61	11, 12	JAMES B. ANNAS AND WIFE WILLIE W. ANNAS
62	11, 12	JEFFREY FORREST JACUMIN AND WIFE DEBORAH
		GREEN JACUMIN
64	12	JOSEPH F. DIBBLE, II
65	12	G. ALAN GRIFFIN AND WIFE, LU GRIFFIN
66	12	TONY LEE FRANKLIN
67	12	WALTER D. LINK
68	12	LILLIAN S. MAUNEY
69	12	MIRIAM L. BROWN
70	12, 13	RAY E. ANNAS
71	12, 13	ALLEN EUGENE FRIZSELL AND WIFE SARA FRIZSELL
72	12, 13	NETTIE WOODS
73	13	F. RICHARD RIBET, LIFE ESTATE
74	13	ARDELL M. LEONARD
75	13	E. MILTON PONS
76	13	BRENT M. BAKER AND WIFE, KELLY C. BAKER
77	13	BILL J. COFFEY
78	13	RICHARD L. WAGONER
79	13	RICHARD L. WAGONER
80	13	CHARLES MATTHEW JENSEN
81	13	YATES R. JENSEN, JR.
83	13	TRUSTEES OF FIRST BAPTIST CHURCH OF RUTHERFORD
		COLLEGE
84	14	FRANCES M. PASCAL
85	14	SYLVIA PASCAL
86	14	JOHN K. GREENE AND WIFE, LOUISE L. GREENE
87Z	9	BURKE COUNTY PUBLIC SCHOOLS
88	11	GARY KEITH LAIL

PROJECT REFERENCE NO.	SHEET NO.
R-2824	4
R /W SHEET NO.	

METRIC

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CONST.REV.

R /W REV.

ROADWAY DESIGN ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 033298 ENGINEER JEFFREY L. TEAGUE 5/5/10

HYDRAULICS ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 19721 ENGINEER WILLIAM H. ELLIS 5/6/10

–DR1–
PI Sta 10+15.947
Δ = 14° 25' 23.8" (LT)
L = 7.552
T = 3.796
R = 30.000
PCSta. 10+12.151
PT Sta. 10+19.703
(A) S 6° 14' 58.3" E
(B) S 20° 40' 22.1" E

PI Sta 10+34.450
Δ = 16° 30' 23.0" (RT)
L = 8.643
T = 4.352
R = 30.000
PCSta. 10+30.099
PT Sta. 10+38.741
(C) S 4° 09' 59.1" E
(D) S 5° 11' 37.5" E

–DR2–
PI Sta 10+05.382
Δ = 39° 28' 38.8" (RT)
L = 10.335
T = 5.382
R = 15.000
PCSta. 10+00.000
PT Sta. 10+10.335
(E) S 47° 21' 24.5" E
(F) S 3° 19' 22.2" E

–DR3–
PI Sta 10+17.484
Δ = 44° 02' 01.1" (RT)
L = 15.371
T = 8.087
R = 20.000
PCSta. 10+09.397
PT Sta. 10+24.768
(G) N 34° 24' 21.5" E
(H) N 79° 39' 06.3" E

ADT 2008/2035
–Y– 300/1400
100/400
2900/5500 –YA–
2900/5100
–Y– 3200/6100

–DR16–
PCSta. 10+01.059
PI Sta 10+05.226
Δ = 45° 14' 44.8" (RT)
L = 7.897
T = 4.167
R = 10.000
PT Sta. 10+08.956
(I) S 67° 10' 51.3" E
(J) N 82° 48' 32.3" E

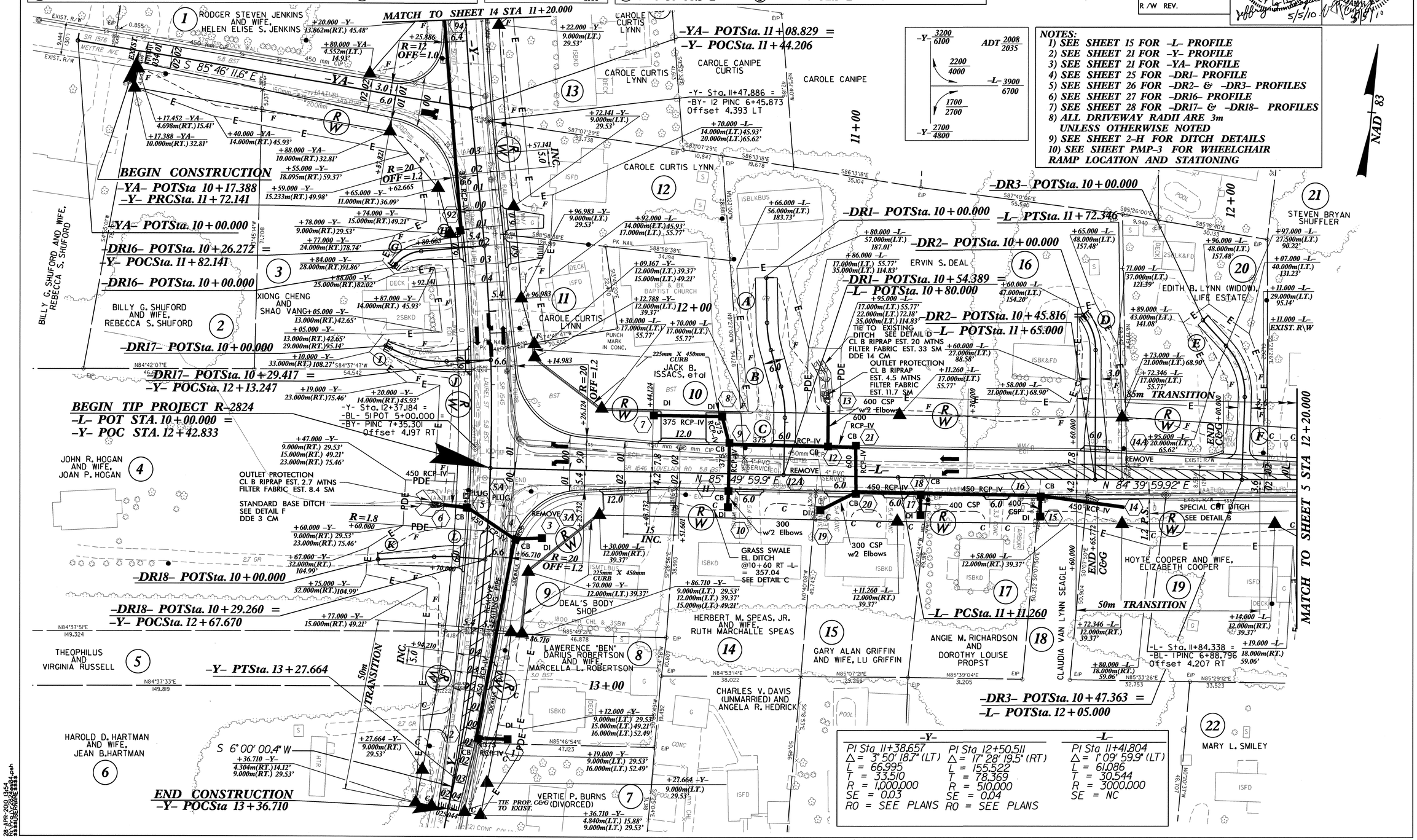
–DR17–
PCSta. 10+01.633
PI Sta 10+09.674
Δ = 30° 00' 36.4" (LT)
L = 15.713
T = 8.041
R = 30.000
PT Sta. 10+17.346
(K) N 81° 47' 28.2" E
(L) N 89° 15' 37.2" E

–DR18–
PCSta. 10+15.283
PI Sta 10+18.546
Δ = 7° 28' 09.0" (RT)
L = 6.518
T = 3.264
R = 50.000
PT Sta. 10+21.801

DESIGN EXCEPTIONS FOR VERTICAL ALIGNMENT AND VERTICAL STOPPING SIGHT DISTANCE ARE REQUIRED.

ADT 2008/2035
–Y– 3200/6100
2200/4000
–L– 3900/6700
1700/2700
–Y– 2700/4800

NOTES:
1) SEE SHEET 15 FOR –L– PROFILE
2) SEE SHEET 21 FOR –Y– PROFILE
3) SEE SHEET 21 FOR –YA– PROFILE
4) SEE SHEET 25 FOR –DR1– PROFILE
5) SEE SHEET 26 FOR –DR2– & –DR3– PROFILES
6) SEE SHEET 27 FOR –DR16– PROFILE
7) SEE SHEET 28 FOR –DR17– & –DR18– PROFILES
8) ALL DRIVEWAY RADII ARE 3m UNLESS OTHERWISE NOTED
9) SEE SHEET 2–H FOR DITCH DETAILS
10) SEE SHEET PMP–3 FOR WHEELCHAIR RAMP LOCATION AND STATIONING



–Y–	
PI Sta 11+38.657	PI Sta 12+50.511
Δ = 3° 50' 18.7" (LT)	Δ = 17° 28' 19.5" (RT)
L = 66.995	L = 155.522
T = 33.510	T = 78.369
R = 1,000.000	R = 510.000
SE = 0.03	SE = 0.04
RO = SEE PLANS	RO = SEE PLANS

–L–
PI Sta 11+41.804
Δ = 1° 09' 59.9" (LT)
L = 61.086
T = 30.544
R = 3000.000
SE = NC

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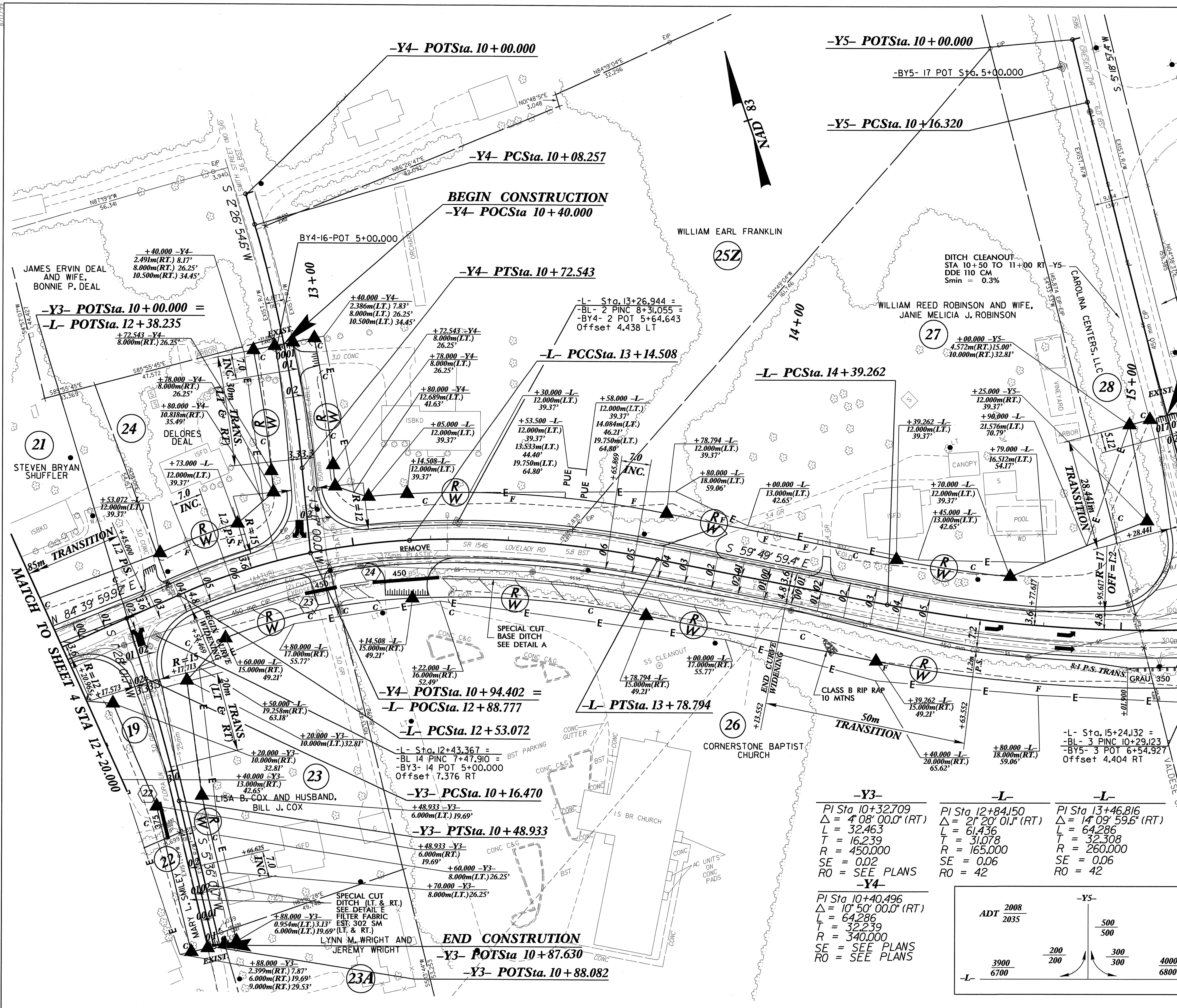

PROJECT REFERENCE NO.	SHEET NO.
R-2824	5
R/W SHEET NO.	

METRIC

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 033298 JEFFREY L. TEAGUE 5/5/10

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 19721 WILLIAM H. ELAM 5/5/10

CONST. REV.

R/W REV.

-Y5-
PI Sta 10+66.356
Δ = 1° 26' 00.1" (LT)
L = 100.067
T = 50.036
R = 4,000.000
SE = SEE PLANS
RO = SEE PLANS
INC = 7

-L-
PI Sta 15+06.239
Δ = 21° 39' 59.4" (LT)
L = 132.353
T = 66.977
R = 350.000
SE = 0.05
RO = 35

-Y3-
PI Sta 10+32.709
Δ = 4° 08' 00.0" (RT)
L = 32.463
T = 16.239
R = 450.000
SE = 0.02
RO = SEE PLANS

-Y4-
PI Sta 10+40.496
Δ = 10° 50' 00.0" (RT)
L = 64.286
T = 32.239
R = 340.000
SE = SEE PLANS
RO = SEE PLANS

-L-
PI Sta 12+84.150
Δ = 21° 20' 01.1" (RT)
L = 61.436
T = 31.078
R = 165.000
SE = 0.06
RO = 42

-L-
PI Sta 13+46.816
Δ = 14° 09' 59.6" (RT)
L = 64.286
T = 32.308
R = 260.000
SE = 0.06
RO = 42

ADT 2008/2035 — -Y5-: 500/500; 200/200; 300/300; -L-: 3900/6700, 4000/6800

NOTES:
1) SEE SHEET 15 FOR -L- PROFILE
2) SEE SHEET 21 FOR -Y3- PROFILE
3) SEE SHEET 22 FOR -Y4- PROFILE
3) SEE SHEET 22 FOR -Y5- PROFILE
4) ALL DRIVEWAY RADII ARE 3m UNLESS OTHERWISE NOTED
5) SEE SHEET 2-H FOR DITCH DETAILS

8/17/99

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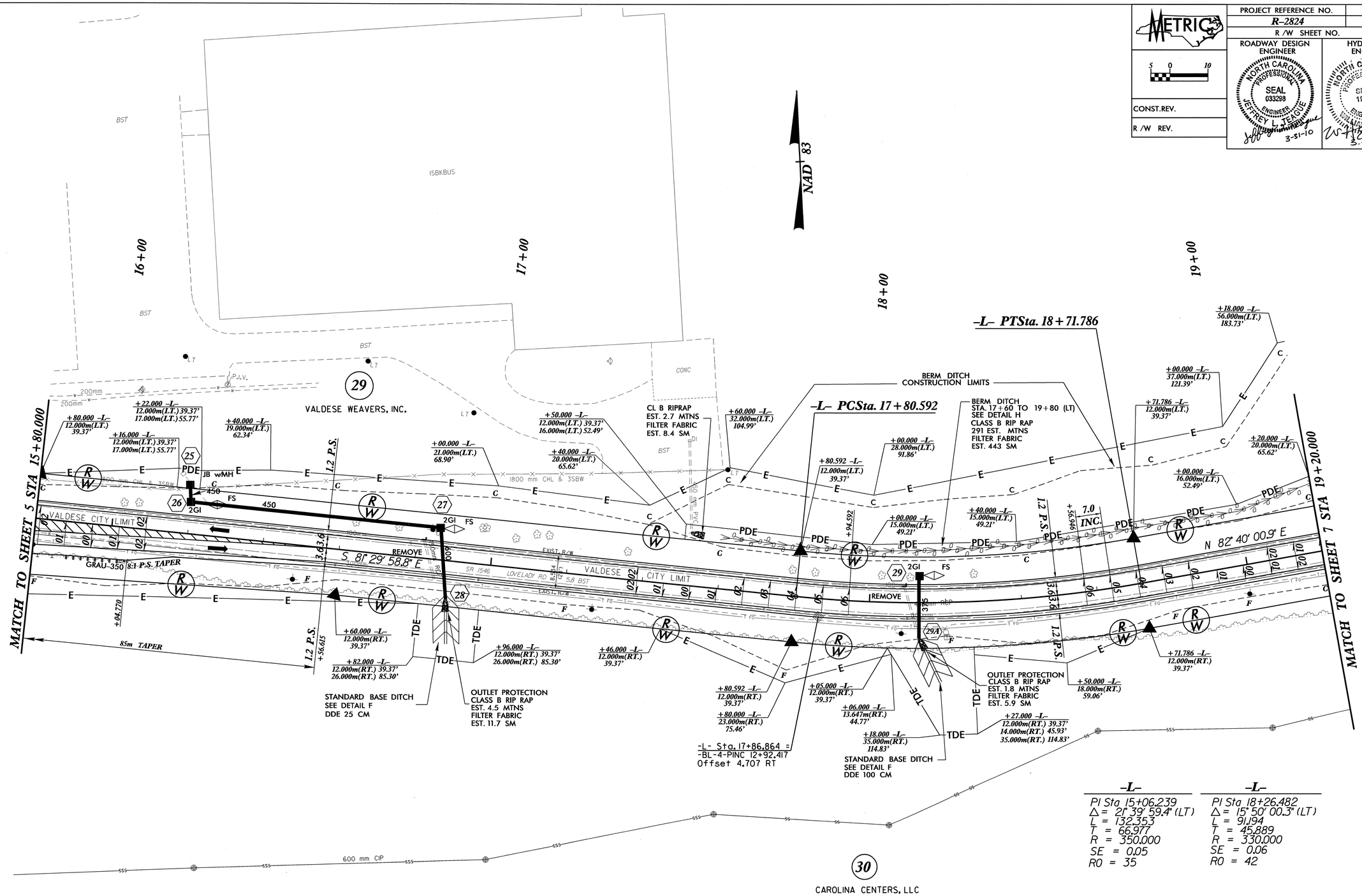
METRIC	PROJECT REFERENCE NO.	SHEET NO.
5 0 10	R-2824	6
	R /W SHEET NO.	
CONST.REV.	ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
R /W REV.	NORTH CAROLINA PROFESSIONAL SEAL 033298 ENGINEER JEFFREY L. TEAGUE 3-31-10	NORTH CAROLINA PROFESSIONAL SEAL 19721 ENGINEER WILLIAM R. ELLIS 3-31-10



-L-	-L-
PI Sta 15+06.239	PI Sta 18+26.482
Δ = 21° 39' 59.4" (LT)	Δ = 15° 50' 00.3" (LT)
L = 132.353	L = 91.194
T = 66.977	T = 45.889
R = 350.000	R = 330.000
SE = 0.05	SE = 0.06
RO = 35	RO = 42

NOTE:
1) SEE SHEET 16 FOR -L- PROFILE
2) ALL DRIVEWAY RADII ARE 3m UNLESS OTHERWISE NOTED
3) SEE SHEET 2-H FOR DITCH DETAILS

8/17/99

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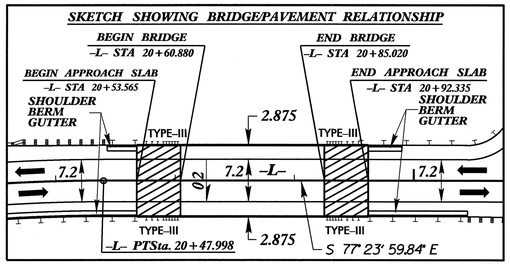
PROJECT REFERENCE NO.	SHEET NO.
R-2824	7
R /W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 033298 ENGINEER JEFFREY L. TEAGUE 5/5/10	NORTH CAROLINA PROFESSIONAL SEAL 19721 ENGINEER WILLIAM R. EVAN 5/5/10
CONST.REV.	
R /W REV.	

METRIC 5 0 10

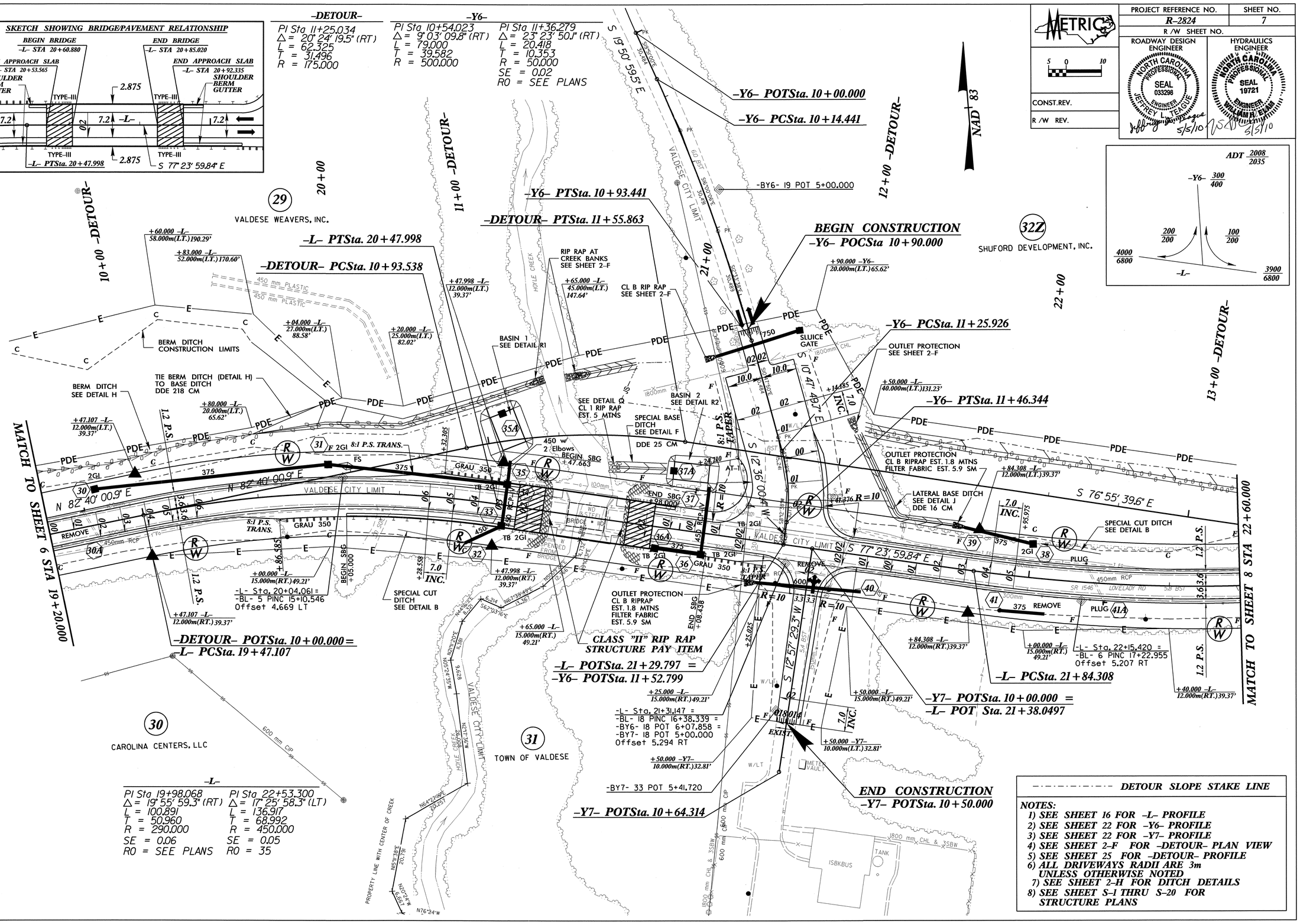
SKETCH SHOWING BRIDGE/PAVEMENT RELATIONSHIP



-DETOUR-
PI Sta 11+25.034
Δ = 20° 24' 19.5" (RT)
L = 62.325
T = 31.496
R = 175.000

-Y6-
PI Sta 10+54.023
Δ = 9° 03' 09.8" (RT)
L = 79.000
T = 39.582
R = 500.000

PI Sta 11+36.279
Δ = 23° 23' 50.1" (RT)
L = 20.418
T = 10.353
R = 50.000
SE = 0.02
RO = SEE PLANS



-L-

PI Sta 19+98.068	PI Sta 22+53.300
Δ = 19° 55' 59.3" (RT)	Δ = 17° 25' 58.3" (LT)
L = 100.891	L = 136.917
T = 50.960	T = 68.992
R = 290.000	R = 450.000
SE = 0.06	SE = 0.05
RO = SEE PLANS	RO = 35

CLASS "II" RIP RAP STRUCTURE PAY ITEM

---·-·---·-·--- DETOUR SLOPE STAKE LINE

NOTES:
1) SEE SHEET 16 FOR -L- PROFILE
2) SEE SHEET 22 FOR -Y6- PROFILE
3) SEE SHEET 22 FOR -Y7- PROFILE
4) SEE SHEET 2-F FOR -DETOUR- PLAN VIEW
5) SEE SHEET 25 FOR -DETOUR- PROFILE
6) ALL DRIVEWAYS RADII ARE 3m UNLESS OTHERWISE NOTED
7) SEE SHEET 2-H FOR DITCH DETAILS
8) SEE SHEET S-1 THRU S-20 FOR STRUCTURE PLANS

8/17/99

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PROJECT REFERENCE NO.	SHEET NO.
R-2824	8
R /W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

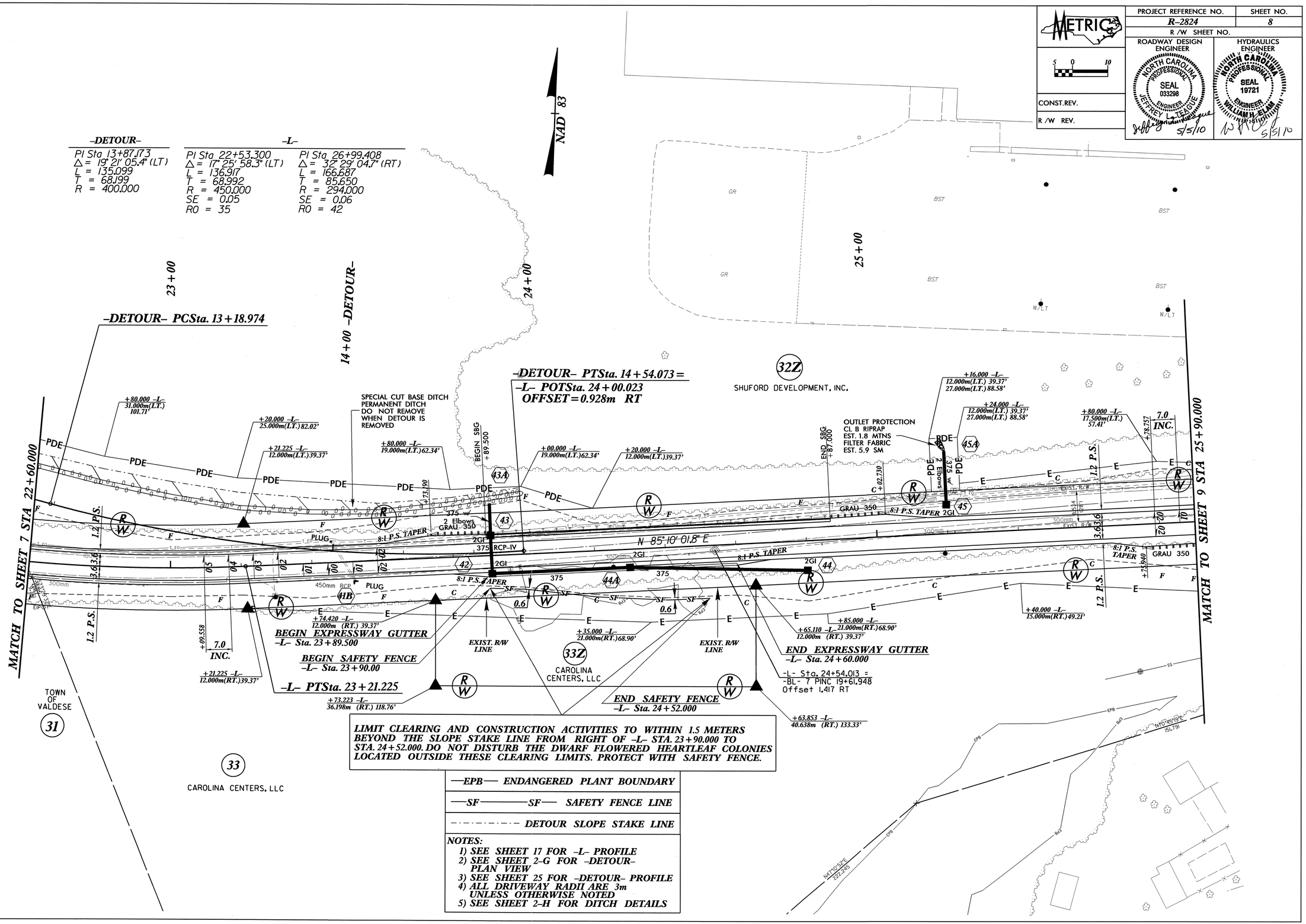
METRIC 5 0 10

CONST.REV.

R /W REV.

NORTH CAROLINA PROFESSIONAL SEAL 033298 ENGINEER JEFFREY LEE TEAGUE 5/5/10

NORTH CAROLINA PROFESSIONAL SEAL 19721 ENGINEER WILLIAM H. ELAM 5/5/10



LIMIT CLEARING AND CONSTRUCTION ACTIVITIES TO WITHIN 1.5 METERS BEYOND THE SLOPE STAKE LINE FROM RIGHT OF -L- STA. 23+90.000 TO STA. 24+52.000. DO NOT DISTURB THE DWARF FLOWERED HEARTLEAF COLONIES LOCATED OUTSIDE THESE CLEARING LIMITS. PROTECT WITH SAFETY FENCE.

—EPB— ENDANGERED PLANT BOUNDARY

—SF——SF— SAFETY FENCE LINE

-·-·-·- DETOUR SLOPE STAKE LINE

NOTES:

1) SEE SHEET 17 FOR -L- PROFILE
2) SEE SHEET 2-G FOR -DETOUR- PLAN VIEW
3) SEE SHEET 25 FOR -DETOUR- PROFILE
4) ALL DRIVEWAY RADII ARE 3m UNLESS OTHERWISE NOTED
5) SEE SHEET 2-H FOR DITCH DETAILS

9/17/98

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PROJECT REFERENCE NO.	SHEET NO.
R-2824	9
R /W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

METRIC 5 0 10

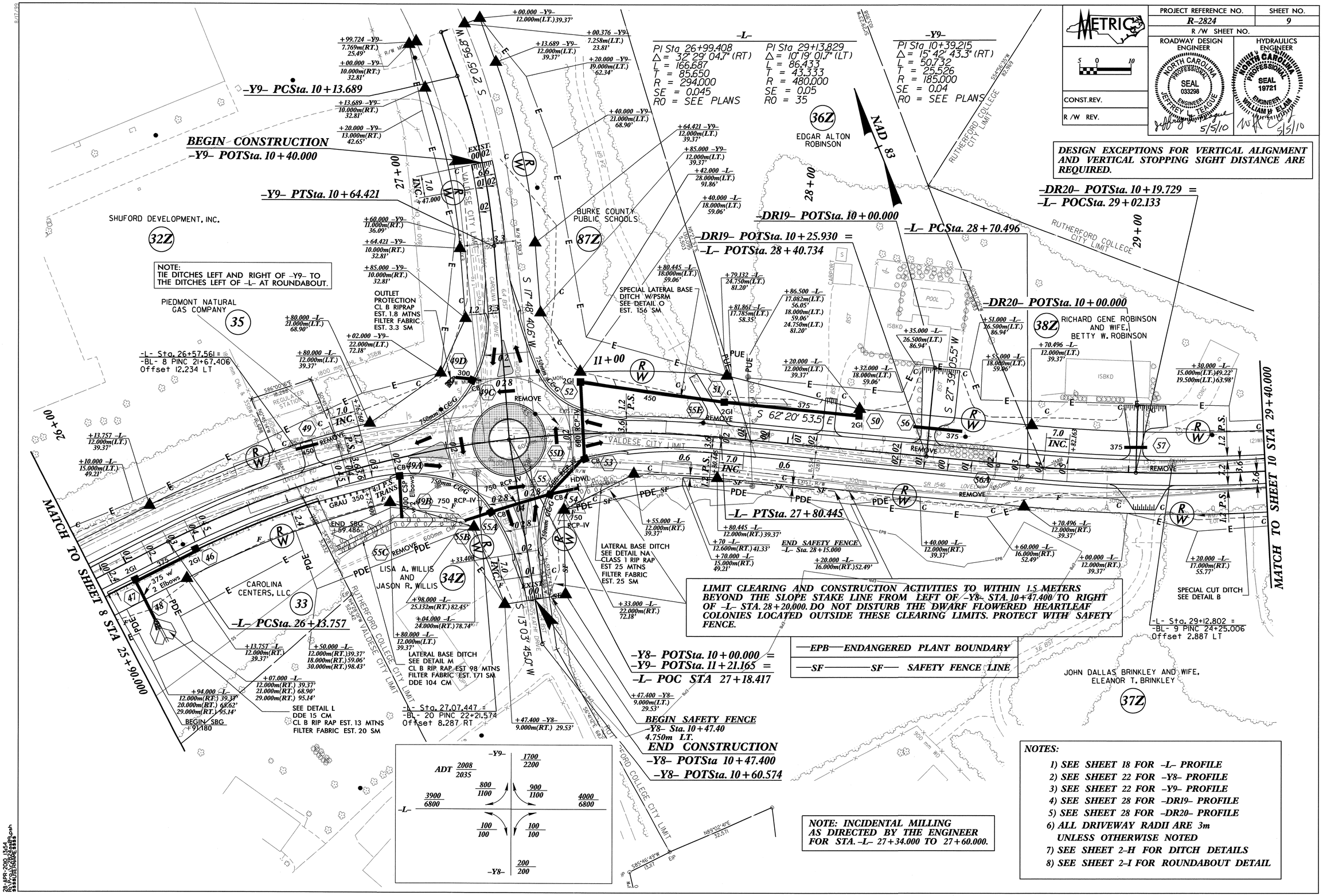
CONST.REV.

R /W REV.

NORTH CAROLINA PROFESSIONAL SEAL 033298 ENGINEER JEFFREY T. TEAGUE 5/5/10

NORTH CAROLINA PROFESSIONAL SEAL 19721 ENGINEER WILLIAM H. ELAM 5/5/10

DESIGN EXCEPTIONS FOR VERTICAL ALIGNMENT AND VERTICAL STOPPING SIGHT DISTANCE ARE REQUIRED.



LIMIT CLEARING AND CONSTRUCTION ACTIVITIES TO WITHIN 1.5 METERS BEYOND THE SLOPE STAKE LINE FROM LEFT OF -Y8- STA. 10+47.400 TO RIGHT OF -L- STA. 28+20.000. DO NOT DISTURB THE DWARF FLOWERED HEARTLEAF COLONIES LOCATED OUTSIDE THESE CLEARING LIMITS. PROTECT WITH SAFETY FENCE.

—EPB— ENDANGERED PLANT BOUNDARY

—SF——SF— SAFETY FENCE LINE

NOTE: INCIDENTAL MILLING AS DIRECTED BY THE ENGINEER FOR STA. -L- 27+34.000 TO 27+60.000.

NOTES:

1) SEE SHEET 18 FOR -L- PROFILE
2) SEE SHEET 22 FOR -Y8- PROFILE
3) SEE SHEET 22 FOR -Y9- PROFILE
4) SEE SHEET 28 FOR -DR19- PROFILE
5) SEE SHEET 28 FOR -DR20- PROFILE
6) ALL DRIVEWAY RADII ARE 3m UNLESS OTHERWISE NOTED
7) SEE SHEET 2-H FOR DITCH DETAILS
8) SEE SHEET 2-I FOR ROUNDABOUT DETAIL

28-APR-2010 13:54
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–L–

PI Sta 29+13.829	PI Sta 31+23.879
△ = 10° 19' 01.7" (LT)	△ = 18° 35' 44.3" (LT)
L = 86.433	L = 159.032
T = 43.333	T = 80.221
R = 480.000	R = 490.000
SE = 0.05	SE = 0.05
RO = 35	RO = 35

–Y9A–

PI Sta 10+14.943
△ = 9° 59' 01.6" (RT)
L = 8.712
T = 4.367
R = 50.000

–DR7–

PI Sta 10+10.544	PI Sta 10+29.829
△ = 5° 12' 25.0" (RT)	△ = 8° 57' 04.5" (LT)
L = 4.544	L = 7.811
T = 2.274	T = 3.914
R = 50.000	R = 50.000
PCSta. 10+08.271	PCSta. 10+25.916
PT Sta. 10+12.815	PT Sta. 10+33.727

(A) S 4° 43' 35.3" W
(B) S 9° 56' 00.3" W
(C) S 0° 58' 55.7" W

NOTES:

1) SEE SHEET 19 FOR –L– PROFILE
2) SEE SHEET 23 FOR –Y10– PROFILE
3) SEE SHEET 23 FOR –Y9A– PROFILE
4) SEE SHEET 23 FOR –Y9B– PROFILE
5) SEE SHEET 26 FOR –DR4– PROFILE
6) SEE SHEET 26 FOR –DR5– PROFILE
7) SEE SHEET 26 FOR –DR7– PROFILE
8) ALL DRIVEWAY RADII ARE 3m UNLESS OTHERWISE NOTED
9) SEE SHEET 2–H FOR DITCH DETAILS

METRIC

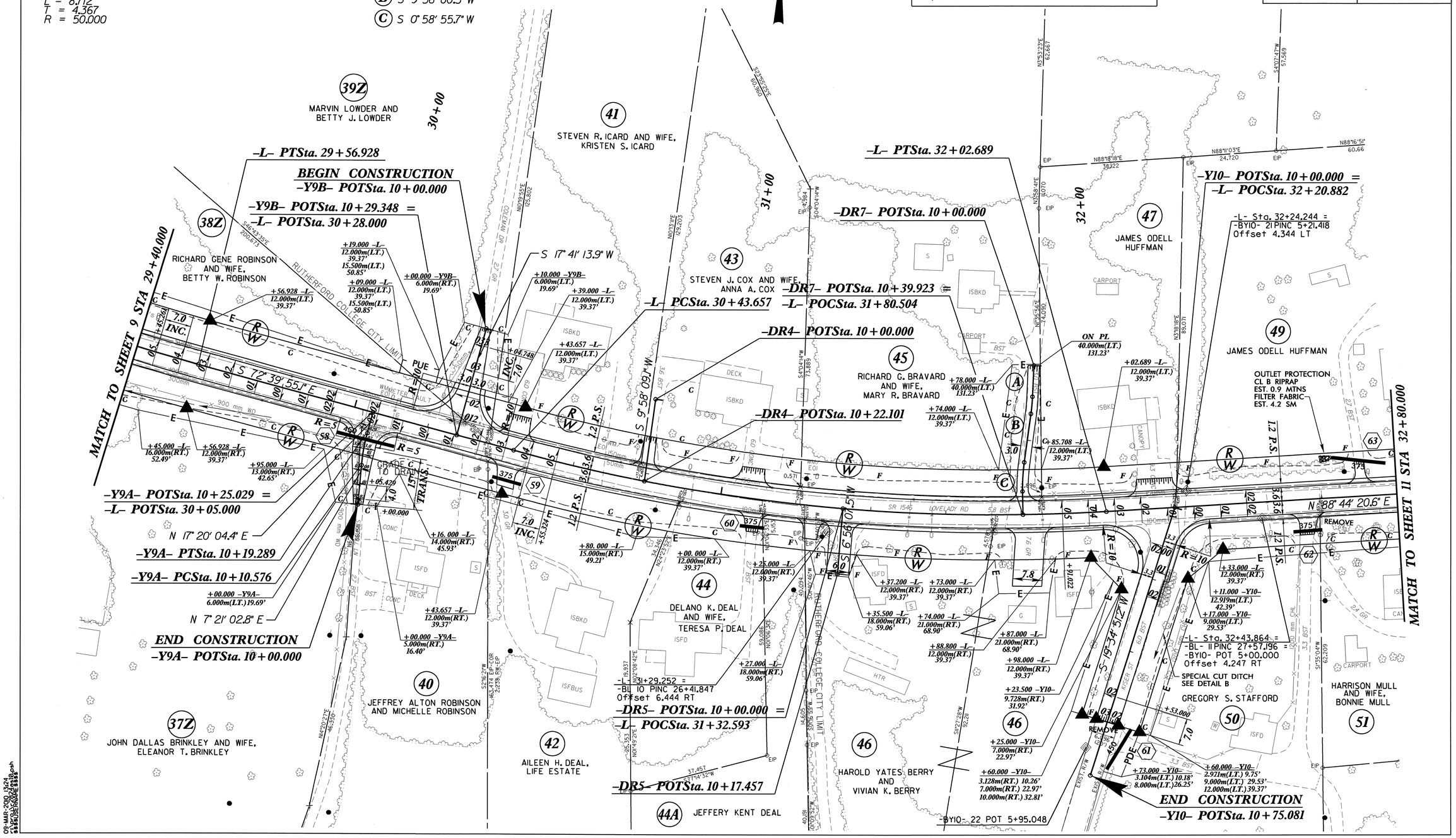
CONST.REV.

R /W REV.

PROJECT REFERENCE NO.	SHEET NO.
R–2824	10
R /W SHEET NO.	

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 033298 ENGINEER JEFFREY L. LEAGUE — 3-31-10

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 19721 ENGINEER WILLIAM H. ELAM — 3-31-10



PROJECT REFERENCE NO.	SHEET NO.
R-2824	11
R/W SHEET NO.	

METRIC 5 0 10

CONST. REV.

R/W REV.

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 033296 ENGINEER JEFFREY L. TEAGUE
3-31-10

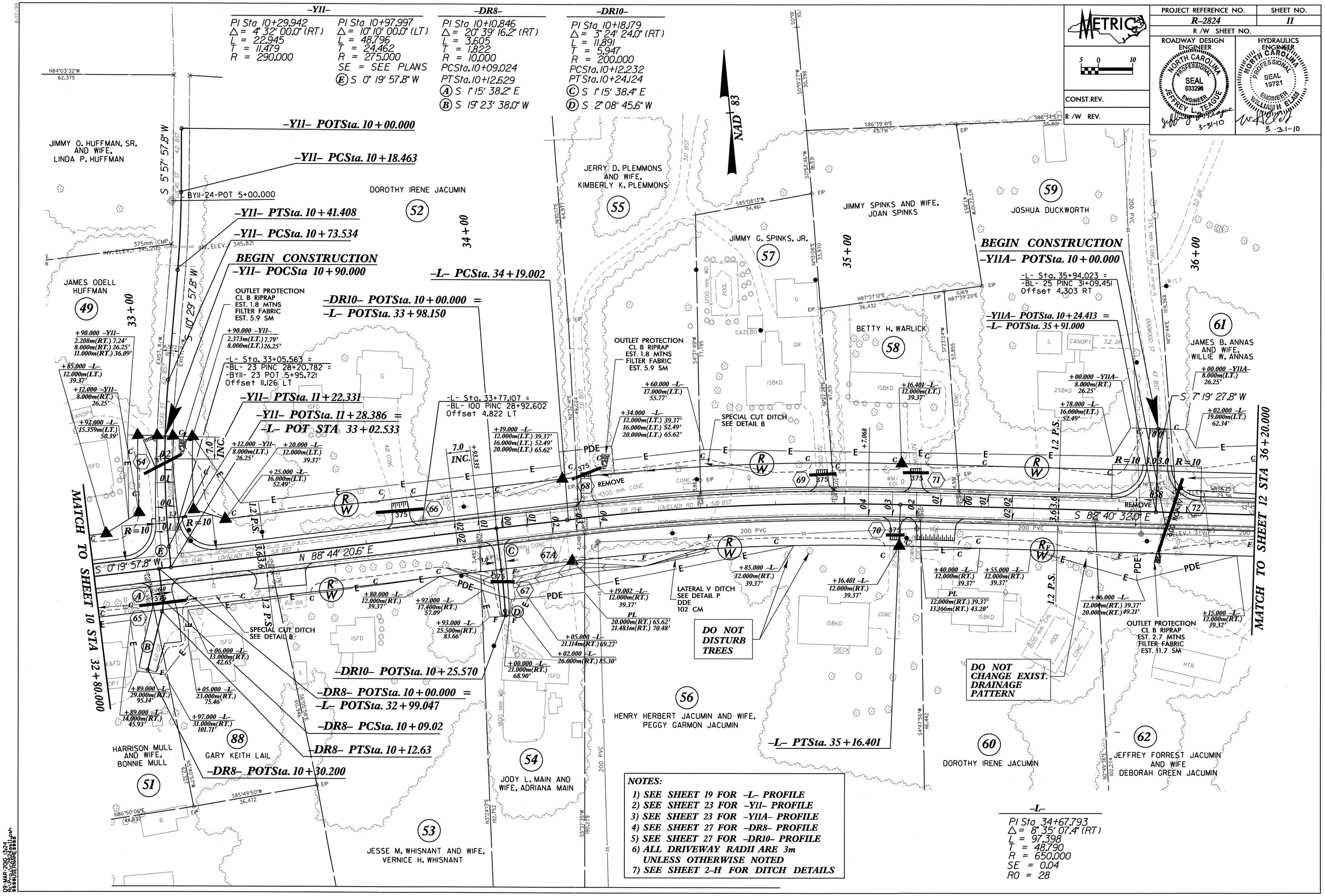
HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 19721 ENGINEER WILLIAM H. ELAM
3-31-10

-Y11-
PI Sta 10+29.942
Δ = 4° 32' 00.0" (RT)
L = 22.945
T = 11.479
R = 290.000

PI Sta 10+97.997
Δ = 10° 10' 00.0" (LT)
L = 48.796
T = 24.462
R = 275.000
SE = SEE PLANS
(E) S 0° 19' 57.8" W

-DR8-
PI Sta 10+10.846
Δ = 20° 39' 16.2" (RT)
L = 3.605
T = 1.822
R = 10.000
PCSta.10+09.024
PTSta.10+12.629
(A) S 1° 15' 38.2" E
(B) S 19° 23' 38.0" W

-DR10-
PI Sta 10+18.179
Δ = 3° 24' 24.0" (RT)
L = 11.891
T = 5.947
R = 200.000
PCSta.10+12.232
PTSta.10+24.124
(C) S 1° 15' 38.4" E
(D) S 2° 08' 45.6" W



NOTES:

1) SEE SHEET 19 FOR -L- PROFILE
2) SEE SHEET 23 FOR -Y11- PROFILE
3) SEE SHEET 23 FOR -Y11A- PROFILE
4) SEE SHEET 27 FOR -DR8- PROFILE
5) SEE SHEET 27 FOR -DR10- PROFILE
6) ALL DRIVEWAY RADII ARE 3m UNLESS OTHERWISE NOTED
7) SEE SHEET 2-H FOR DITCH DETAILS

-L-
PI Sta 34+67.793
Δ = 8° 35' 07.4" (RT)
L = 97.398
T = 48.790
R = 650.000
SE = 0.04
RO = 28

03-MAR-2010 13:24
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PROJECT REFERENCE NO.	SHEET NO.
R-2824	12
R /W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 033298 ENGINEER JEFFREY L. LEAGUE 3-31-10	NORTH CAROLINA PROFESSIONAL SEAL 19721 ENGINEER WILLIAM E. ELAM 3-31-10
CONST.REV.	
R /W REV.	

METRIC

S 0 10

8/17/99

-L-

PI Sta 37+30.349
Δ = 8° 28' 00.4" (LT)
L = 73.886
T = 37.011
R = 500.000
SE = 0.05
RO = 35

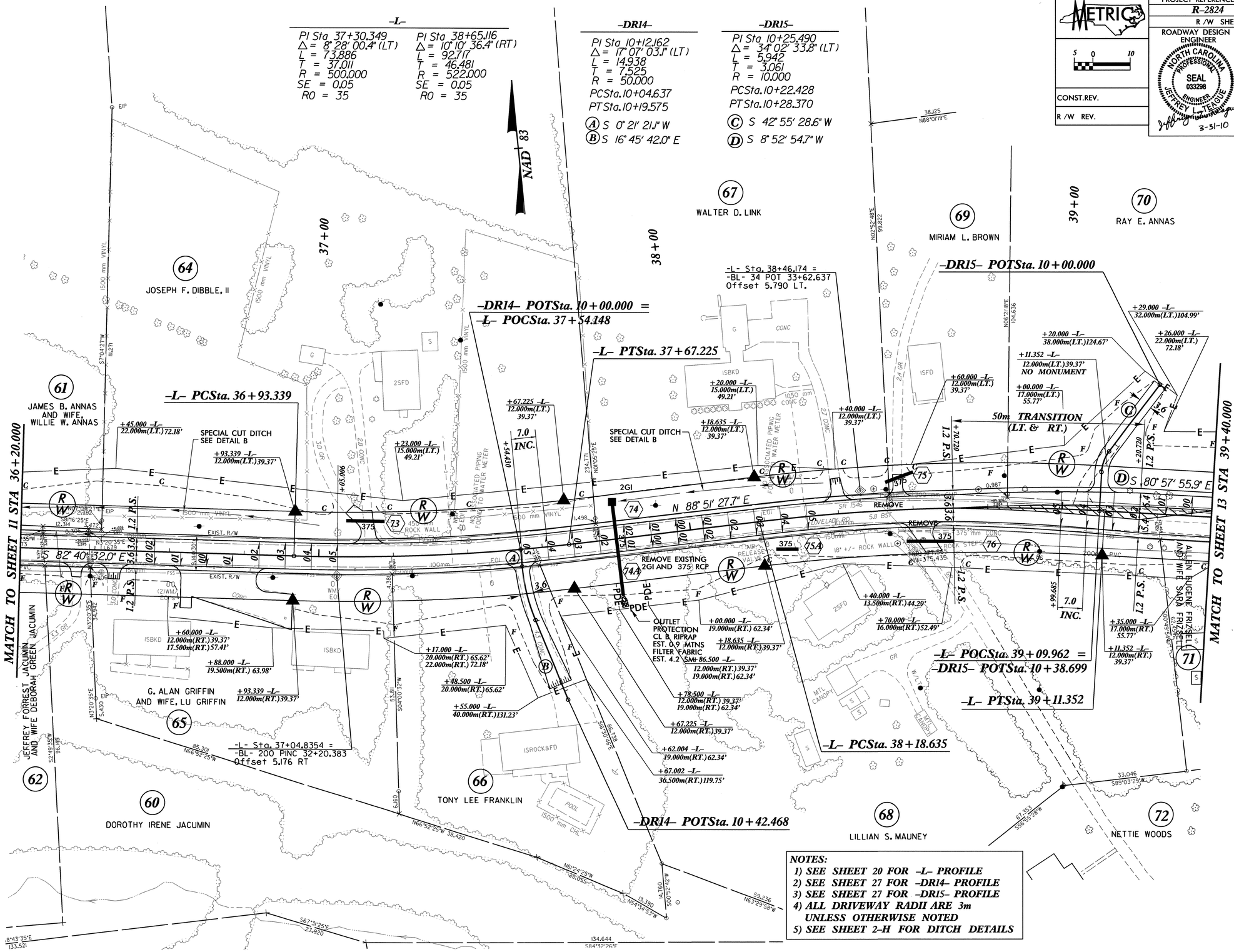
PI Sta 38+65.116
Δ = 10° 10' 36.4" (RT)
L = 92.717
T = 46.481
R = 522.000
SE = 0.05
RO = 35

-DR14-

PI Sta 10+12.162
Δ = 17° 07' 03.1" (LT)
L = 14.938
T = 7.525
R = 50.000
PCSta. 10+04.637
PTSta. 10+19.575
(A) S 0° 21' 21.1" W
(B) S 16° 45' 42.0" E

-DR15-

PI Sta 10+25.490
Δ = 34° 02' 33.8" (LT)
L = 5.942
T = 3.061
R = 10.000
PCSta. 10+22.428
PTSta. 10+28.370
(C) S 42° 55' 28.6" W
(D) S 8° 52' 54.7" W



NOTES:

1) SEE SHEET 20 FOR -L- PROFILE
2) SEE SHEET 27 FOR -DR14- PROFILE
3) SEE SHEET 27 FOR -DR15- PROFILE
4) ALL DRIVEWAY RADII ARE 3m UNLESS OTHERWISE NOTED
5) SEE SHEET 2-H FOR DITCH DETAILS

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PROJECT REFERENCE NO.	SHEET NO.
R-2824	13
R /W SHEET NO.	

METRIC

5 0 10

CONST.REV.

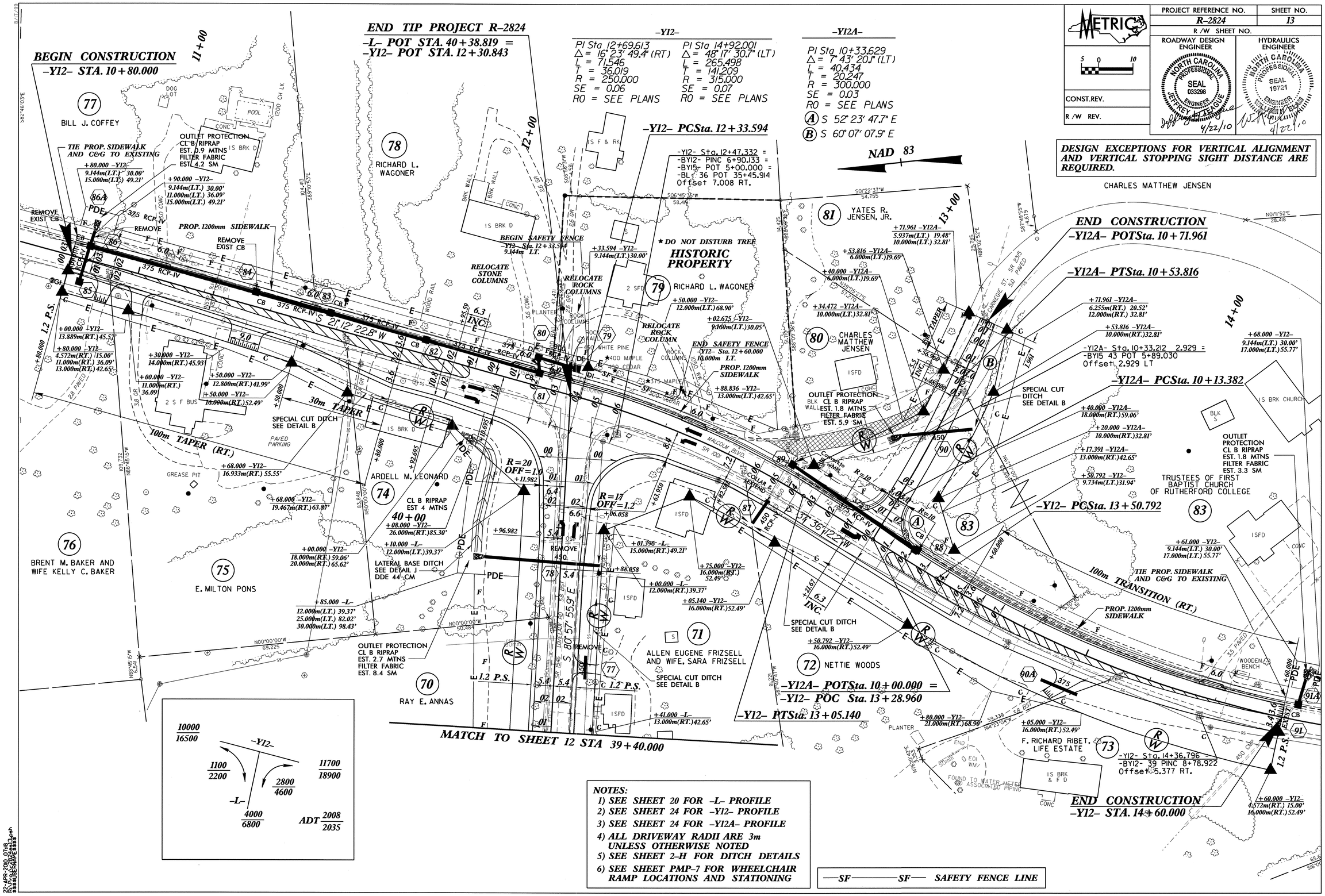
R /W REV.

ROADWAY DESIGN ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 033298 ENGINEER JEFFREY L. LEAGUE — 4/22/10

HYDRAULICS ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 19721 ENGINEER — 4/22/10

DESIGN EXCEPTIONS FOR VERTICAL ALIGNMENT AND VERTICAL STOPPING SIGHT DISTANCE ARE REQUIRED.

CHARLES MATTHEW JENSEN



PROJECT REFERENCE NO.	SHEET NO.
R-2824	14
R /W SHEET NO.	

ROADWAY DESIGN ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 033298 ENGINEER JEFFREY L. TERGUE 3-31-10

HYDRAULICS ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 19721 ENGINEER WILLIAM H. ELAM 3-31-10

CONST.REV.

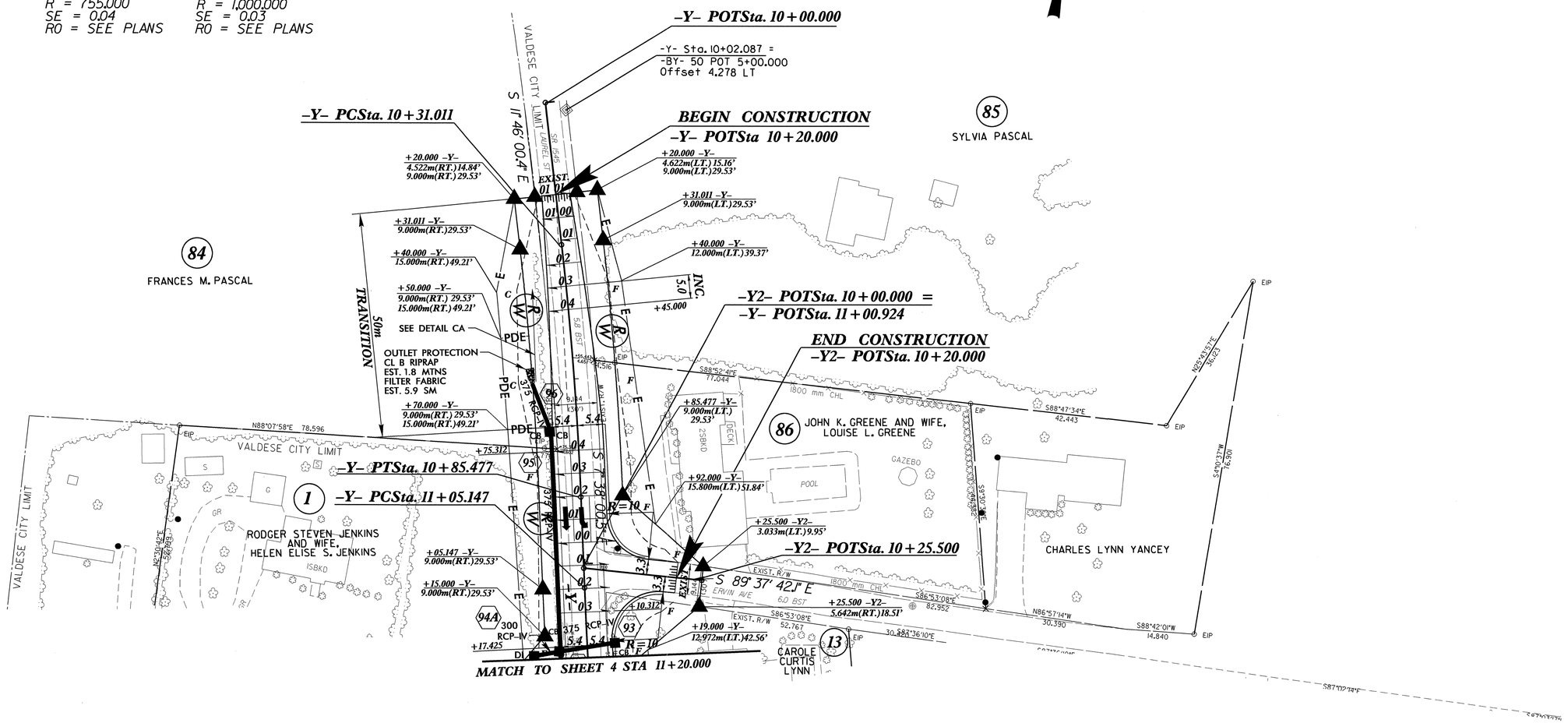
R /W REV.

5 0 10

NAD 83

-Y-

PI Sta 10+58.256	PI Sta 11+38.657
Δ = 4° 07' 59.9" (RT)	Δ = 3° 50' 18.7" (LT)
L = 54.466	L = 66.995
T = 27.245	T = 33.510
R = 755.000	R = 1,000.000
SE = 0.04	SE = 0.03
RO = SEE PLANS	RO = SEE PLANS



NOTES:

1) SEE SHEET 21 FOR -Y- PROFILE
2) ALL DRIVEWAY RADII ARE 3m UNLESS OTHERWISE NOTED
3) SEE SHEET 2-H FOR DITCH DETAILS

8/17/99

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DITCH LEGEND	
LEFT DITCH	— · — · — · —
RIGHT DITCH	- - - - - - - - - - - -

METRIC

5 0 10

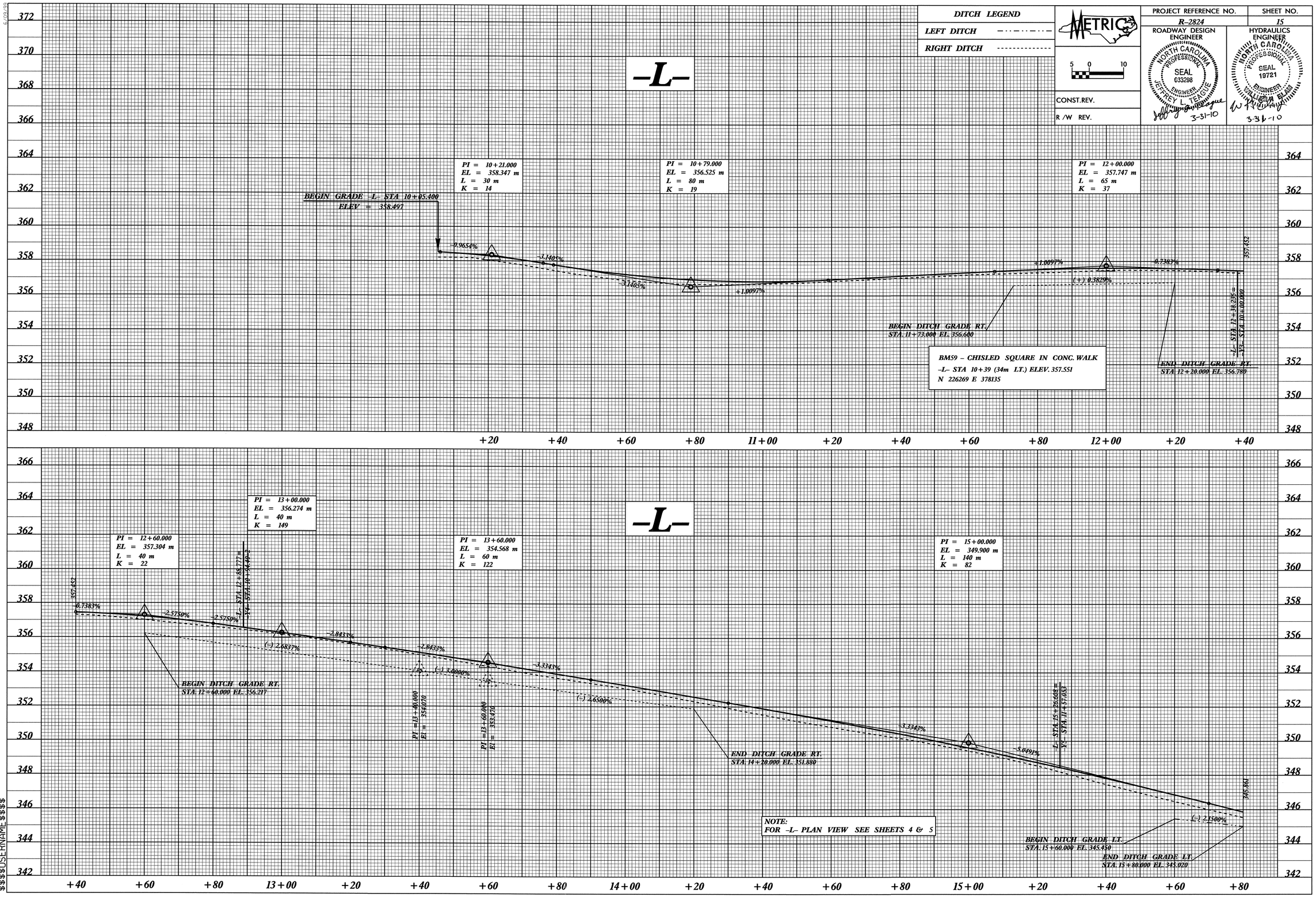
CONST.REV.

R /W REV.

PROJECT REFERENCE NO.	SHEET NO.
R-2824	15

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 033298 ENGINEER JEFFREY L. TEAGUE
3-31-10

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 19721 ENGINEER WILLIAM BLAIR
3-31-10



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

METRIC

5 0 10

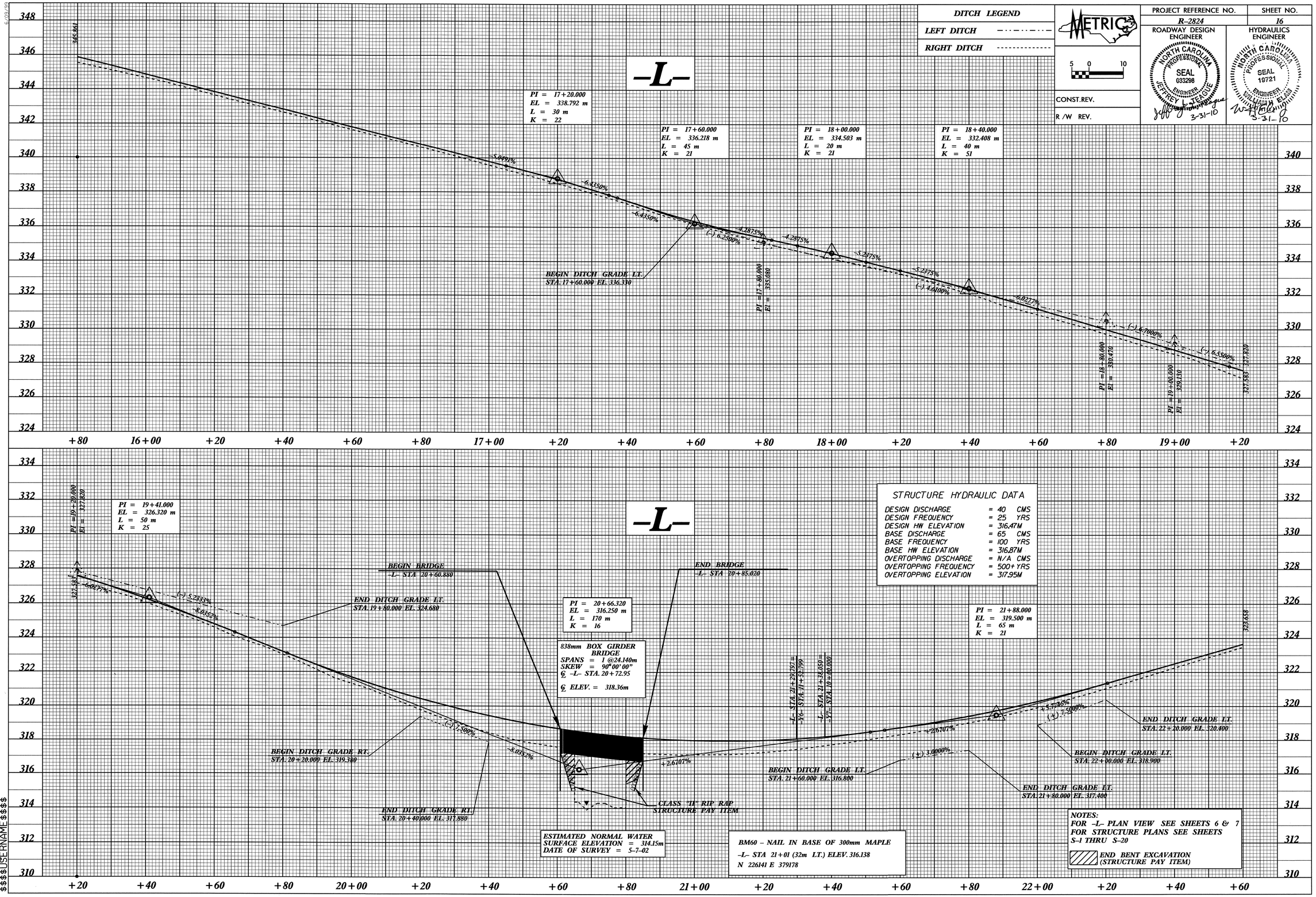
CONST.REV.

R /W REV.

PROJECT REFERENCE NO.	SHEET NO.
R-2824	16

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 033298 ENGINEER JEFFREY L. TEAGUE
3-31-10

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 19721 ENGINEER
3-31-10



STRUCTURE HYDRAULIC DATA

DESIGN DISCHARGE	= 40	CMS
DESIGN FREQUENCY	= 25	YRS
DESIGN HW ELEVATION	= 316.47M	
BASE DISCHARGE	= 65	CMS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 316.87M	
OVERTOPPING DISCHARGE	= N/A	CMS
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING ELEVATION	= 317.95M	

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

METRIC

5 0 10

CONST.REV.

R /W REV.

PROJECT REFERENCE NO.	SHEET NO.
R-2824	17

ROADWAY DESIGN ENGINEER

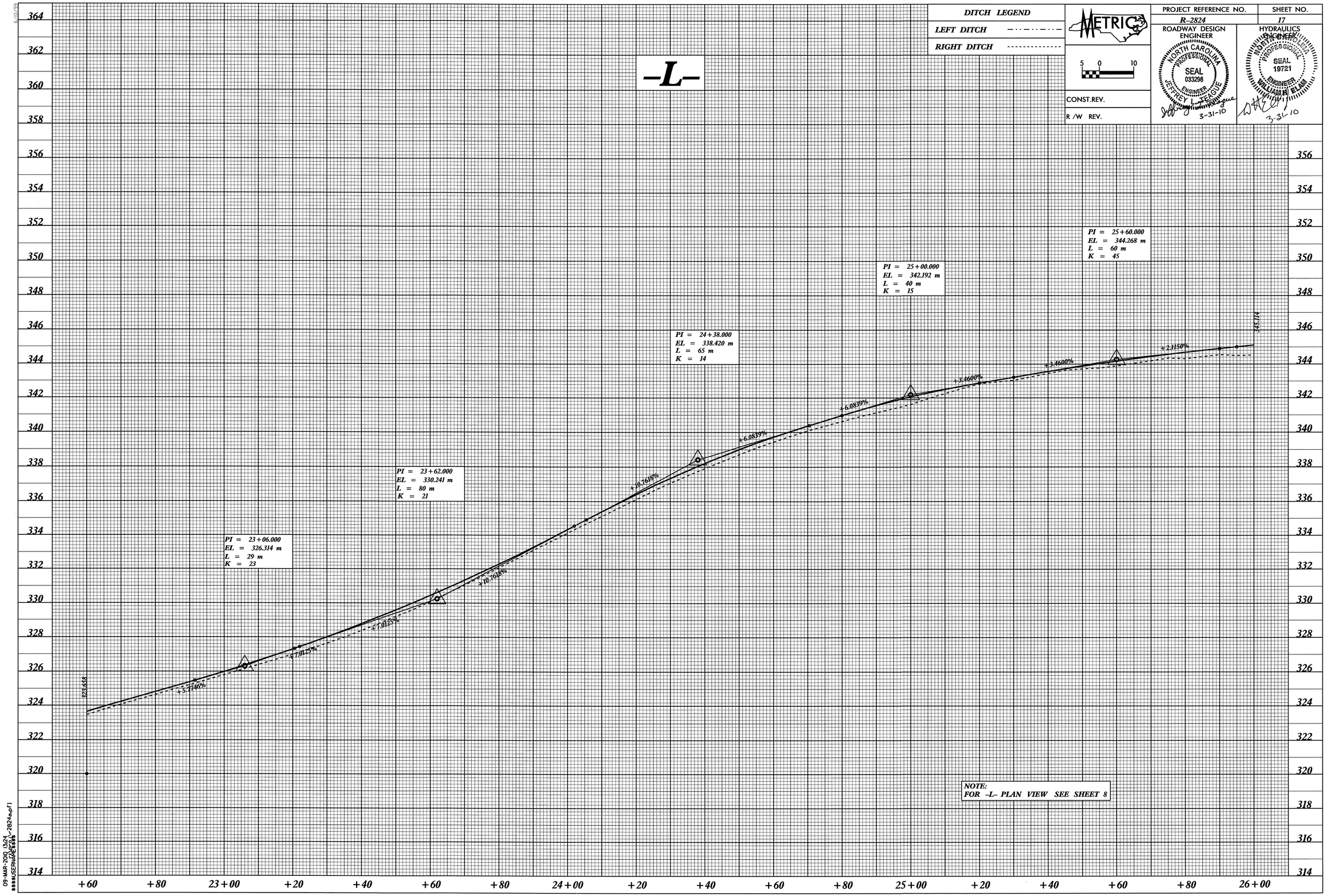
NORTH CAROLINA PROFESSIONAL SEAL 033298 ENGINEER JEFFREY L. STEARGULE

3-31-10

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 19721 ENGINEER WILLIAM H. ELAM

3-31-10



NOTE:
FOR -L- PLAN VIEW SEE SHEET 8

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DITCH LEGEND	
LEFT DITCH	—·—·—·—
RIGHT DITCH	- - - - - - - -

METRIC

5 0 10

CONST.REV.

R /W REV.

PROJECT REFERENCE NO.	SHEET NO.
R-2824	18

ROADWAY DESIGN ENGINEER

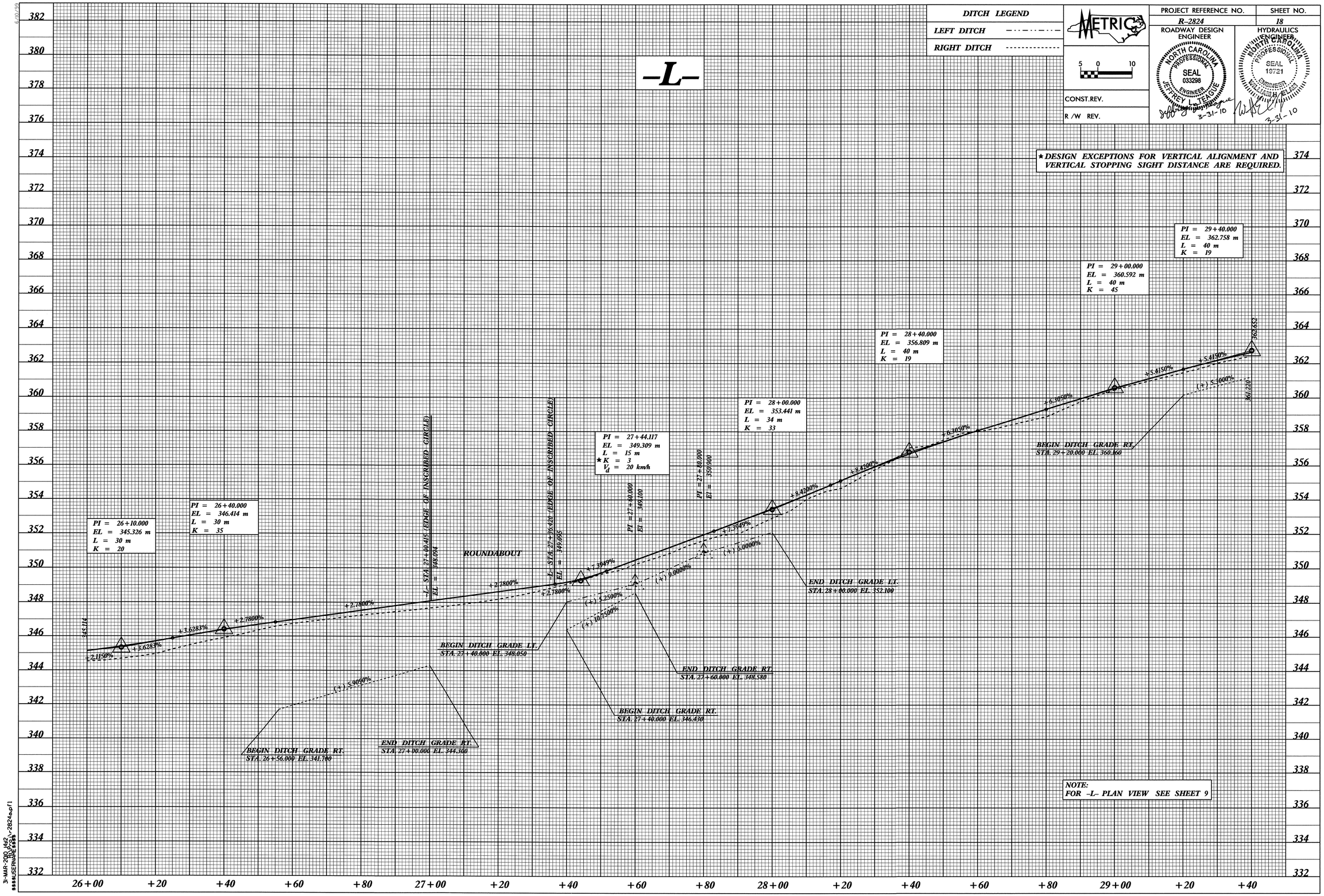
NORTH CAROLINA PROFESSIONAL SEAL 033298 ENGINEER JEFFREY L. TEAGUE

3-31-10

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 19721 ENGINEER WILLIAM M. ELLIS

3-31-10



NOTE:
FOR -L- PLAN VIEW SEE SHEET 9

6/10/93

31-MAR-2010 14:2
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6/09/99

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

METRIC

5 0 10

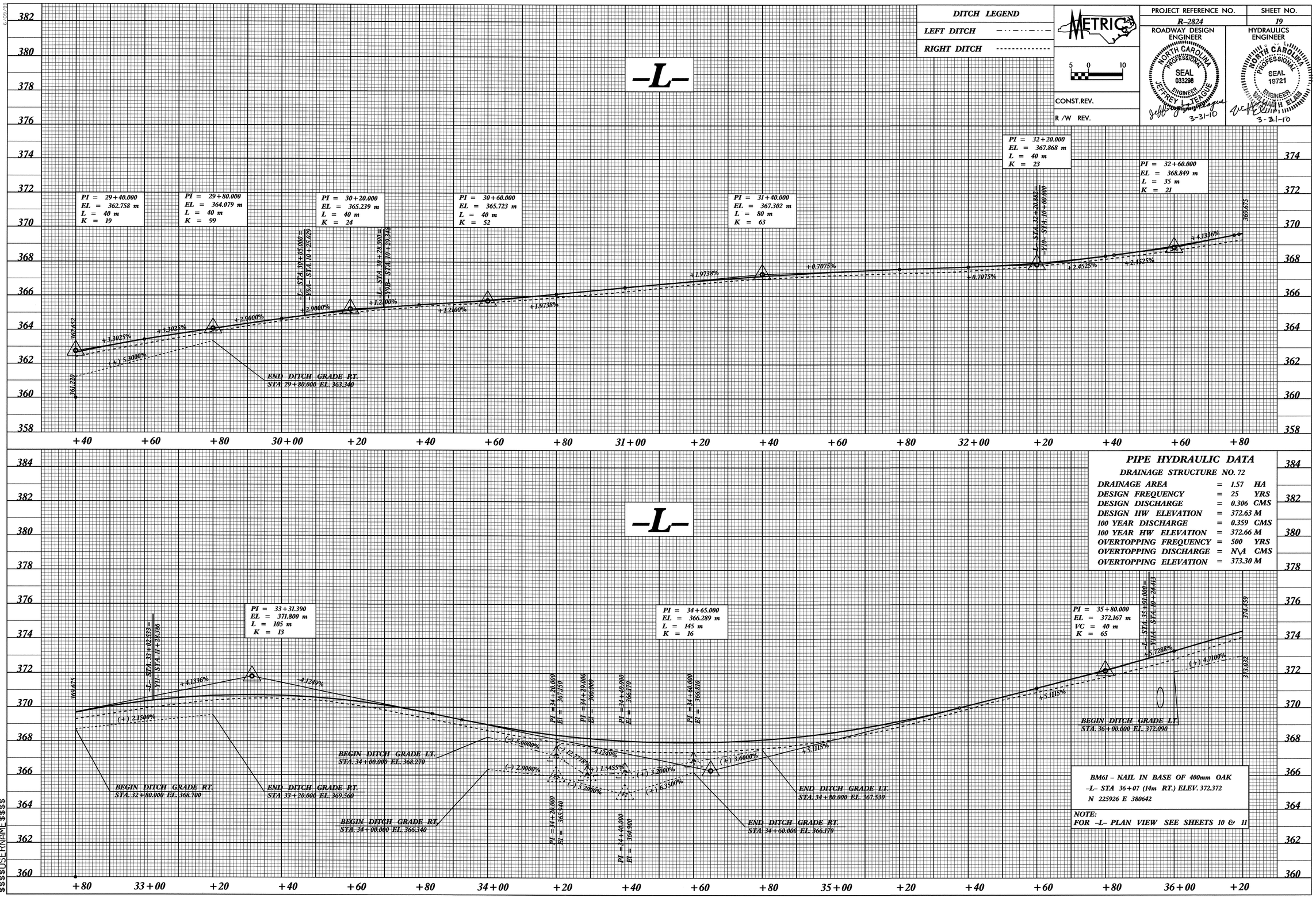
CONST.REV.

R /W REV.

PROJECT REFERENCE NO.	SHEET NO.
R-2824	19

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 033298 ENGINEER JEFFREY L. TEAGUE
3-31-10

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 19721 ENGINEER
3-31-10



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6/09/99

DITCH LEGEND	
LEFT DITCH	—·—·—·—
RIGHT DITCH	----------

METRIC

5 0 10

CONST.REV.

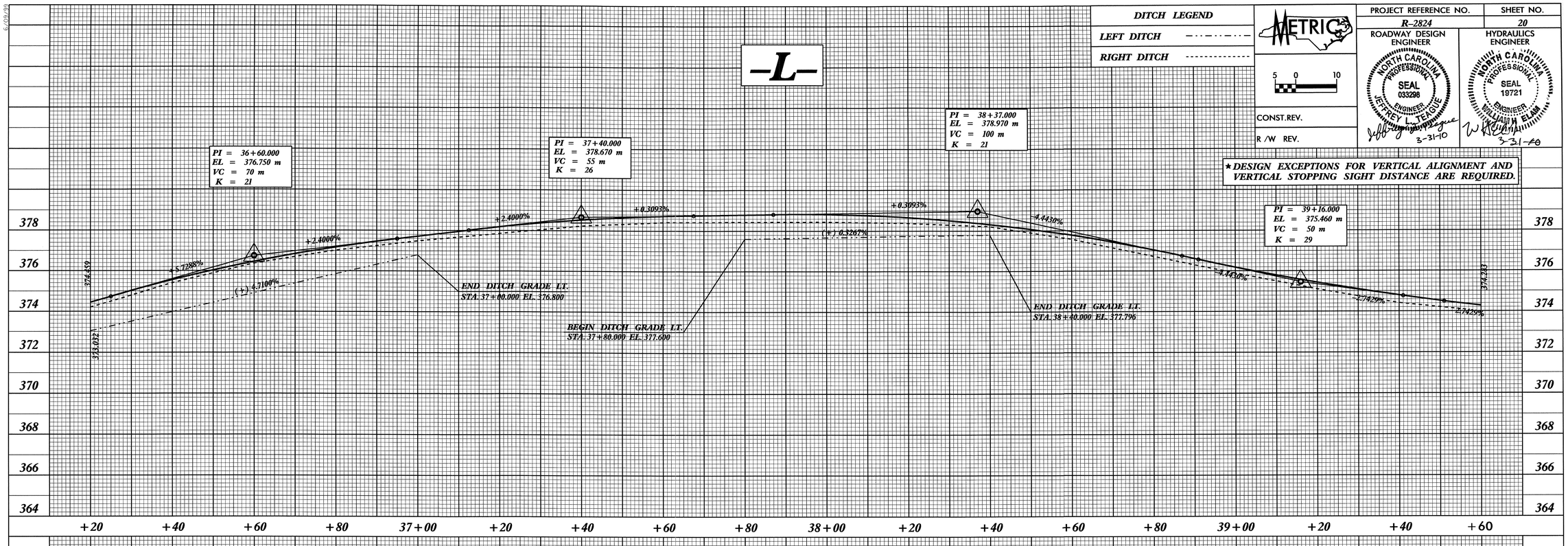
R /W REV.

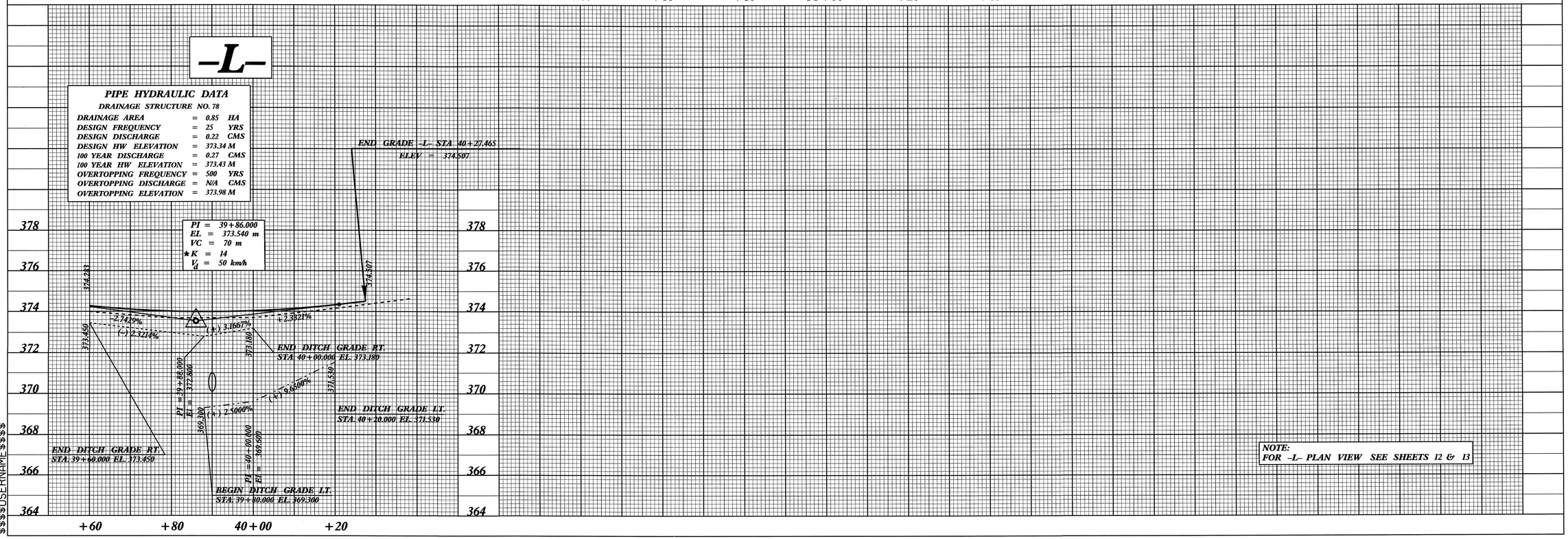
PROJECT REFERENCE NO.	SHEET NO.
R-2824	20

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 033298 ENGINEER JEFFREY L. TEAGUE
3-31-10

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 19721 ENGINEER WILLIAM H. ELAM
3-31-10

★DESIGN EXCEPTIONS FOR VERTICAL ALIGNMENT AND VERTICAL STOPPING SIGHT DISTANCE ARE REQUIRED.





NOTE:
FOR -L- PLAN VIEW SEE SHEETS 12 & 13

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DITCH LEGEND	
LEFT DITCH	—·—·—·—
RIGHT DITCH	----------

METRIC

5 0 10

CONST.REV.

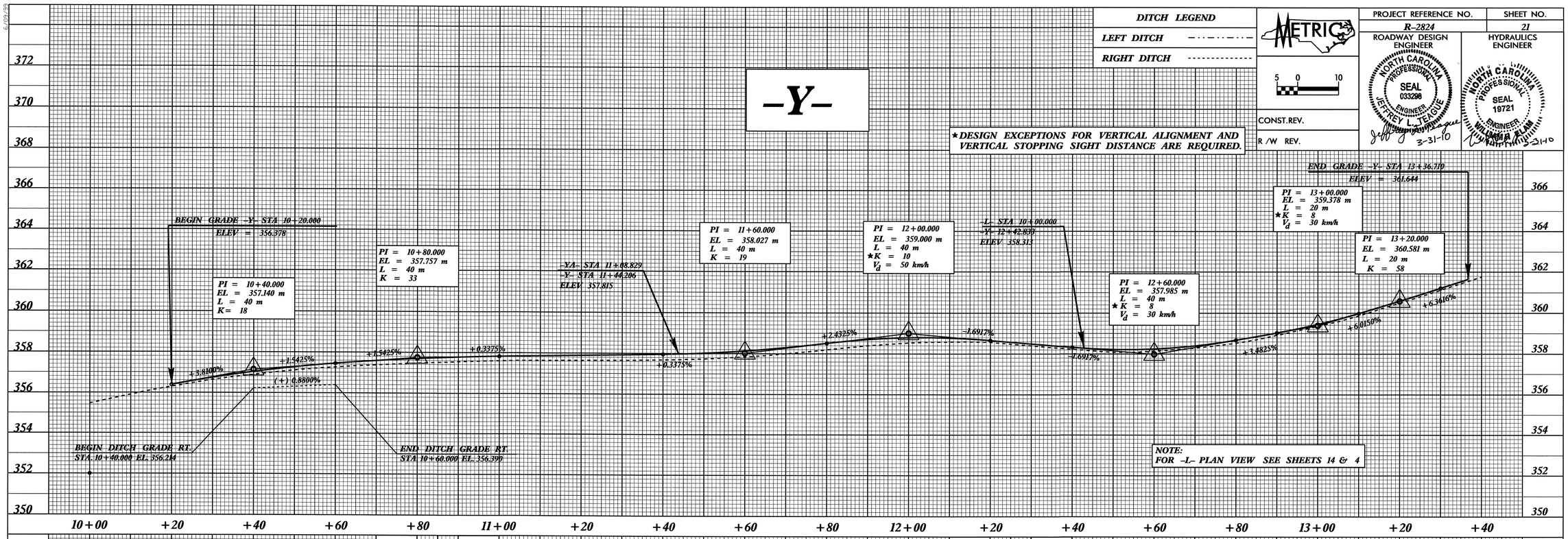
R /W REV.

PROJECT REFERENCE NO.	SHEET NO.
R-2824	21

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 033296 ENGINEER JEFFREY L. TEAGUE
3-31-10

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 19721 ENGINEER
3-31-10

★DESIGN EXCEPTIONS FOR VERTICAL ALIGNMENT AND VERTICAL STOPPING SIGHT DISTANCE ARE REQUIRED.



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PROJECT REFERENCE NO.	SHEET NO.
R-2824	22

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 033298 ENGINEER JEFFREY L. TEAGUE
3-31-10

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 19721 ENGINEER WILLIAM H. ELAM
3-31-10

METRIC
5 0 10

CONST.REV.
R /W REV.

DITCH LEGEND
LEFT DITCH
RIGHT DITCH

-Y4-

PI = 10+61.230
EL = 355.842 m
L = 22 m
K = 6

PI = 10+81.720
EL = 356.867 m
L = 18 m
K = 3

BEGIN GRADE -Y4- STA 10+40.000
ELEV = 355.600

END GRADE -Y4- STA 10+90.780
ELEV = 356.776

+1.1399% +5.0005% -1.0000%

NOTE:
FOR -L- PLAN VIEW SEE SHEET 5

-Y5-

PI = 11+10.000
EL = 348.145 m
L = 15 m
K = 33

PI = 11+29.460
EL = 348.359 m
L = 20 m
K = 10

PI = 11+46.000
EL = 348.210 m
L = 10 m
K = 11

END GRADE -Y5- STA 11+52.250
ELEV = 348.210

BEGIN GRADE -Y5- STA 11+00.000
ELEV = 348.080

+0.6500% +1.0990% -0.9000% +0.0000%

NOTE:
FOR -L- PLAN VIEW SEE SHEET 5

-Y6-

END GRADE -Y6- STA 11+49.199
ELEV = 318.019

BEGIN GRADE -Y6- STA 11+00.180
ELEV = 317.528

BEGIN OVERLAY
-Y6- STA 10+90.000

PI = 11+20.833
EL = 317.452 m
L = 40 m
K = 17

-0.3695% +2.0000%

END DITCH GRADE
-Y6- STA 11+40.000
ELEV = 316.620

BEGIN DITCH GRADE
-Y6- STA 11+25.000
ELEV = 316.000

NOTE:
FOR -L- PLAN VIEW SEE SHEET 7

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO. 97 TO 98

DRAINAGE AREA	=	10	HA
DESIGN FREQUENCY	=	10	YRS
DESIGN DISCHARGE	=	0.79	CMS
DESIGN HW ELEVATION	=	316.60	M
100 YEAR DISCHARGE	=	1.7	CMS
100 YEAR HW ELEVATION	=	317.63	M
OVERTOPPING FREQUENCY	=	25	YRS+
OVERTOPPING DISCHARGE	=	2.26	CMS
OVERTOPPING ELEVATION	=	317.40	M

-Y7-

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO. 40

DRAINAGE AREA	=	1.4	HA
DESIGN FREQUENCY	=	25	YRS
DESIGN DISCHARGE	=	0.34	CMS
DESIGN HW ELEVATION	=	317.47	M
100 YEAR DISCHARGE	=	0.37	CMS
100 YEAR HW ELEVATION	=	317.52	M
OVERTOPPING FREQUENCY	=	200	YRS
OVERTOPPING DISCHARGE	=	0.57	CMS
OVERTOPPING ELEVATION	=	317.80	M

END GRADE -Y7- STA 10+50.000
ELEV = 318.100

BEGIN GRADE -Y7- STA 10+03.600
ELEV = 318.149

PI = 10+29.258
EL = 317.636 m
L = 40 m
K = 9

-2.0000% +2.2377%

NOTE:
FOR -L- PLAN VIEW SEE SHEET 7

-Y8-

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO. 55 TO 55A

DRAINAGE AREA	=	4.3	HA
DESIGN FREQUENCY	=	25	YRS
DESIGN DISCHARGE	=	0.73	CMS
DESIGN HW ELEVATION	=	347.76	M
100 YEAR DISCHARGE	=	0.88	CMS
100 YEAR HW ELEVATION	=	347.91	M
OVERTOPPING FREQUENCY	=	100	YRS+
OVERTOPPING DISCHARGE	=	1.05	CMS
OVERTOPPING ELEVATION	=	348.19	M

PI = 10+34.000
EL = 347.938 m
L = 22 m
K = 3

BEGIN GRADE -Y8- STA 10+18.000
ELEV = 348.258

-2.0000% +6.5821%

END GRADE -Y8- STA 10+47.400
ELEV = 348.820

NOTE:
FOR -L- PLAN VIEW SEE SHEET 9

-Y9-

PI = 10+50.000
EL = 350.695 m
L = 20 m
K = 10

PI = 10+86.000
EL = 349.188 m
L = 32 m
K = 11

BEGIN GRADE -Y9- STA 10+40.000
ELEV = 350.911

END GRADE -Y9- STA 11+03.165
ELEV = 348.973

-2.1636% -4.1862% -1.2503%

NOTE:
FOR -L- PLAN VIEW SEE SHEET 9

6/09/99
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DITCH LEGEND	
LEFT DITCH	—·—·—·—
RIGHT DITCH	----------

METRIC

5 0 10

CONST.REV.

R /W REV.

PROJECT REFERENCE NO.	SHEET NO.
R-2824	23

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 033298 ENGINEER JEFFREY L. TEAGUE
3-31-10

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 19721 ENGINEER WILLIAM H. ELAM
3-31-10

-Y9A-

BEGIN GRADE -Y9A- STA 10+00.000
ELEV = 364.729

-0.0107%

END GRADE -Y9A- STA 10+21.429
ELEV = 364.727

NOTE:
FOR -L- PLAN VIEW
SEE SHEET 10

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO. 58

DRAINAGE AREA	=	0.17	HA
DESIGN FREQUENCY	=	25	YRS
DESIGN DISCHARGE	=	.05	CMS
DESIGN HW ELEVATION	=	364.38	M
100 YEAR DISCHARGE	=	.06	CMS
100 YEAR HW ELEVATION	=	364.41	M
OVERTOPPING FREQUENCY	=	500	YRS
OVERTOPPING DISCHARGE	=	N\A	CMS
OVERTOPPING ELEVATION	=	364.60	M

-Y9B-

BEGIN GRADE -Y9B- STA 10+00.000
ELEV = 362.515

END GRADE -Y9B- STA 10+25.748
ELEV = 365.234

-11.8172%

+7.0009%

PI = 10+20.748
EL = 364.884 m
L = 10 m
K = 2

NOTE:
FOR -L- PLAN VIEW SEE SHEET 10

-Y10-

BEGIN GRADE -Y10- STA 10+03.840
ELEV = 367.980

PI = 10+14.000
EL = 367.574 m
L = 20 m
K = 2

PI = 10+46.760
EL = 363.236 m
L = 26 m
K = 8

-3.9961%

END GRADE -Y10- STA 10+60.000
ELEV = 361.938

-13.2140%

(-) 17.0600%

BEGIN DITCH GRADE LT.
STA.10+20.000 EL. 365.780

-9.8016%

END DITCH GRADE LT.
STA 10+40.000 EL. 363.394

NOTE:
FOR -L- PLAN VIEW SEE SHEET 10

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO. 64

DRAINAGE AREA	=	0.04	HA
DESIGN FREQUENCY	=	25	YRS
DESIGN DISCHARGE	=	0.02	CMS
DESIGN HW ELEVATION	=	369.30	M
100 YEAR DISCHARGE	=	0.02	CMS
100 YEAR HW ELEVATION	=	369.30	M
OVERTOPPING FREQUENCY	=	500	YRS
OVERTOPPING DISCHARGE	=	0.08	CMS
OVERTOPPING ELEVATION	=	369.60	M

-Y11-

PI = 11+06.190
EL = 370.130 m
L = 17 m
K = 4

END GRADE -Y11- STA 11+24.780
ELEV = 370.320

BEGIN GRADE -Y11- STA 10+96.780
ELEV = 369.630

BEGIN OVERLAY
-Y11- STA 10+90.000

-5.8135%

+1.0221%

NOTE:
FOR -L- PLAN VIEW SEE SHEET 11

-Y11A-

BEGIN GRADE -Y11A- STA 10+00.000
ELEV = 373.124

END GRADE -Y11A- STA 10+20.813
ELEV = 372.736

-3.5014%

+2.0000%

PI = 10+16.075
EL = 372.561 m
L = 10 m
K = 2

NOTE:
FOR -L- PLAN VIEW SEE SHEET 11

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

METRIC

5 0 10

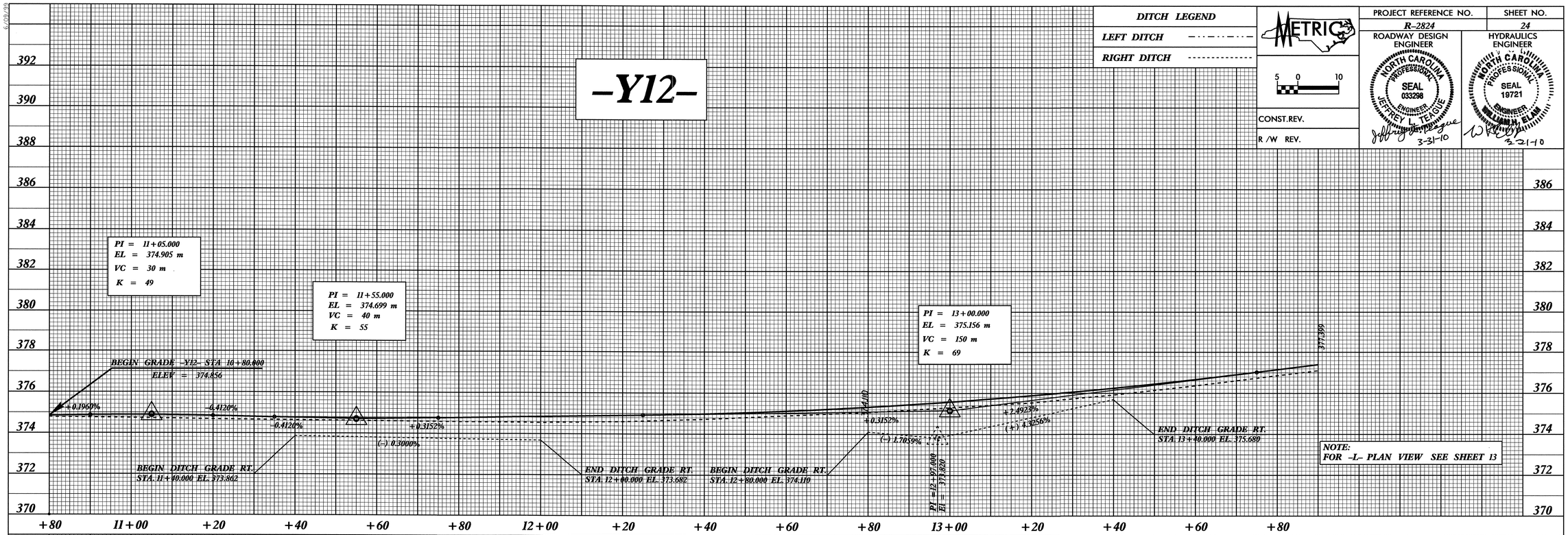
CONST.REV.

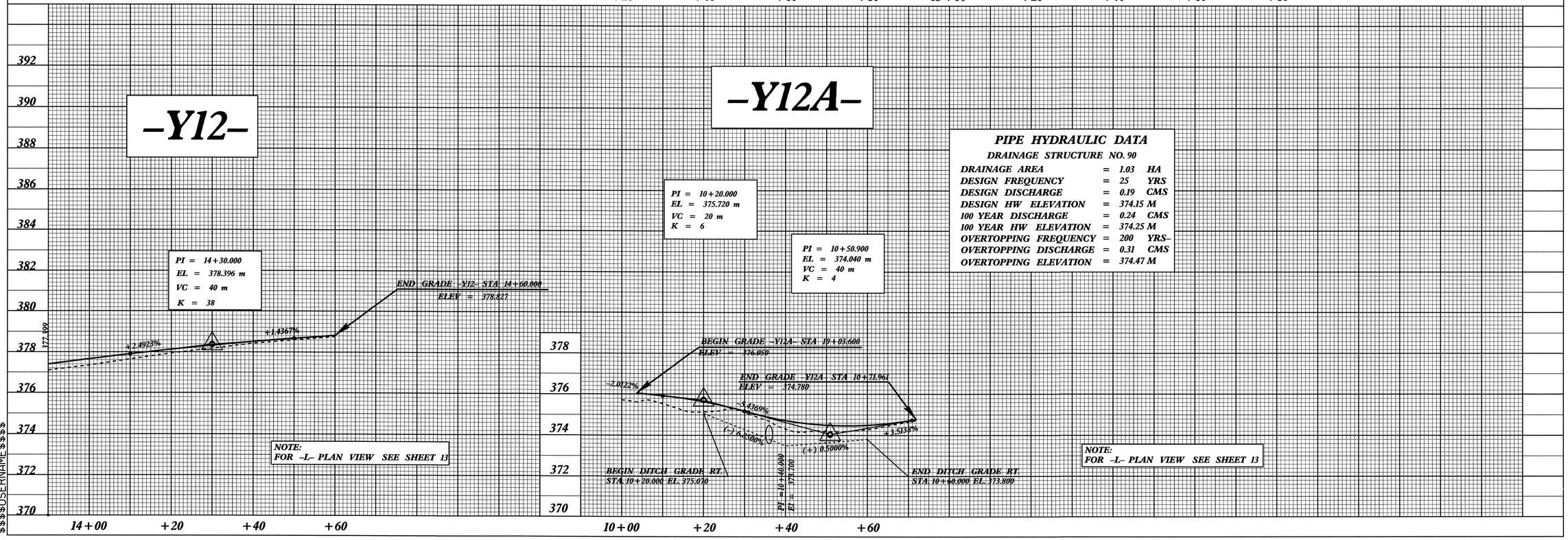
R /W REV.

PROJECT REFERENCE NO.	SHEET NO.
R-2824	24

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 033298 ENGINEER JEFFREY L. TEAGUE
3-31-10

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 19721 ENGINEER WILLIAM M. ELAM
3-31-10





PIPE HYDRAULIC DATA

DRAINAGE STRUCTURE NO. 90

DRAINAGE AREA	=	1.03	HA
DESIGN FREQUENCY	=	25	YRS
DESIGN DISCHARGE	=	0.19	CMS
DESIGN HW ELEVATION	=	374.15	M
100 YEAR DISCHARGE	=	0.24	CMS
100 YEAR HW ELEVATION	=	374.25	M
OVERTOPPING FREQUENCY	=	200	YRS–
OVERTOPPING DISCHARGE	=	0.31	CMS
OVERTOPPING ELEVATION	=	374.47	M

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

METRIC

5 0 10

CONST.REV.

R /W REV.

PROJECT REFERENCE NO.	SHEET NO.
R-2824	25

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 033298 ENGINEER JEFFREY L. TEAGUE
Jeffrey L. Teague 3-31-10

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 19721 ENGINEER WILLIAM H. ELAM
W.H. Elam 3-31-10

-DETOUR-

BEGIN GRADE -DETOUR- STA 10+43.790
ELEV = 322.350

BEGIN DITCH GRADE LT.
STA. 10+40.000 EL. 324.665

PI = 10+53.487
El = 323.630

(-) 7.6784%

(-) 24.6092%

-8.6180%

BEGIN DETOUR BRIDGE
-L- STA 11+12.740

PI = 11+36.630
EL = 314.297 m
L = 184 m
K = 14

END DETOUR BRIDGE
-L- STA 11+39.140

(-) 9.8012%

PI = 10+74.447
El = 316.850

(-) 4.8934%

PI = 10+96.199
El = 316.320

END DITCH GRADE LT.
STA. 11+15.000 EL. 315.400

BEGIN DITCH GRADE LT.
STA. 11+98.000 EL. 315.880

(+) 2.3500%

(+) 8.2500%

PI = 12+18.000
El = 316.550

PI = 12+38.000
El = 318.000

+4.8604%

(+) 4.4737%

(+) 5.2586%

PI = 12+76.000
El = 319.700

PI = 12+34.000
El = 322.750

(+) 6.2500%

324.430

323.125

NOTE:
FOR -L- PLAN VIEW SEE SHEETS 2-F & 2-G

-DETOUR-

END GRADE -DETOUR- STA 14+01.620
ELEV = 329.030

PI = 13+49.620
EL = 324.650 m
L = 90 m
K = 25

(-) 7.2625%

+8.9241%

(+) 4.2844%

PI = 14+34.000
El = 326.810

END DITCH GRADE LT.
STA. 14+54.073 EL. 330.670

324.430

+4.8604%

(+) 6.2500%

323.125

PI = 13+54.000
El = 325.000

NOTE:
FOR -L- PLAN VIEW SEE SHEET 2-G

-DR1-

PI = 10+16.172
EL = 354.789 m
L = 10 m
K = 3

PI = 10+41.439
EL = 356.811 m

END GRADE -DR1- STA 10+42.939
ELEV = 356.871

+8.0000%

+8.0025%

+4.6809%

(+) 10.4167%

END DITCH GRADE LT.
STA. 10+37.000 EL. 352.700

BEGIN DITCH GRADE LT.
STA. 10+25.000 EL. 351.450

BEGIN GRADE -DR1- STA 10+00.000
ELEV = 354.032

NOTE:
FOR -DR1- PLAN VIEW SEE SHEET 4

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DITCH LEGEND	
LEFT DITCH	—·—·—·—
RIGHT DITCH	----------

METRIC

5 0 10

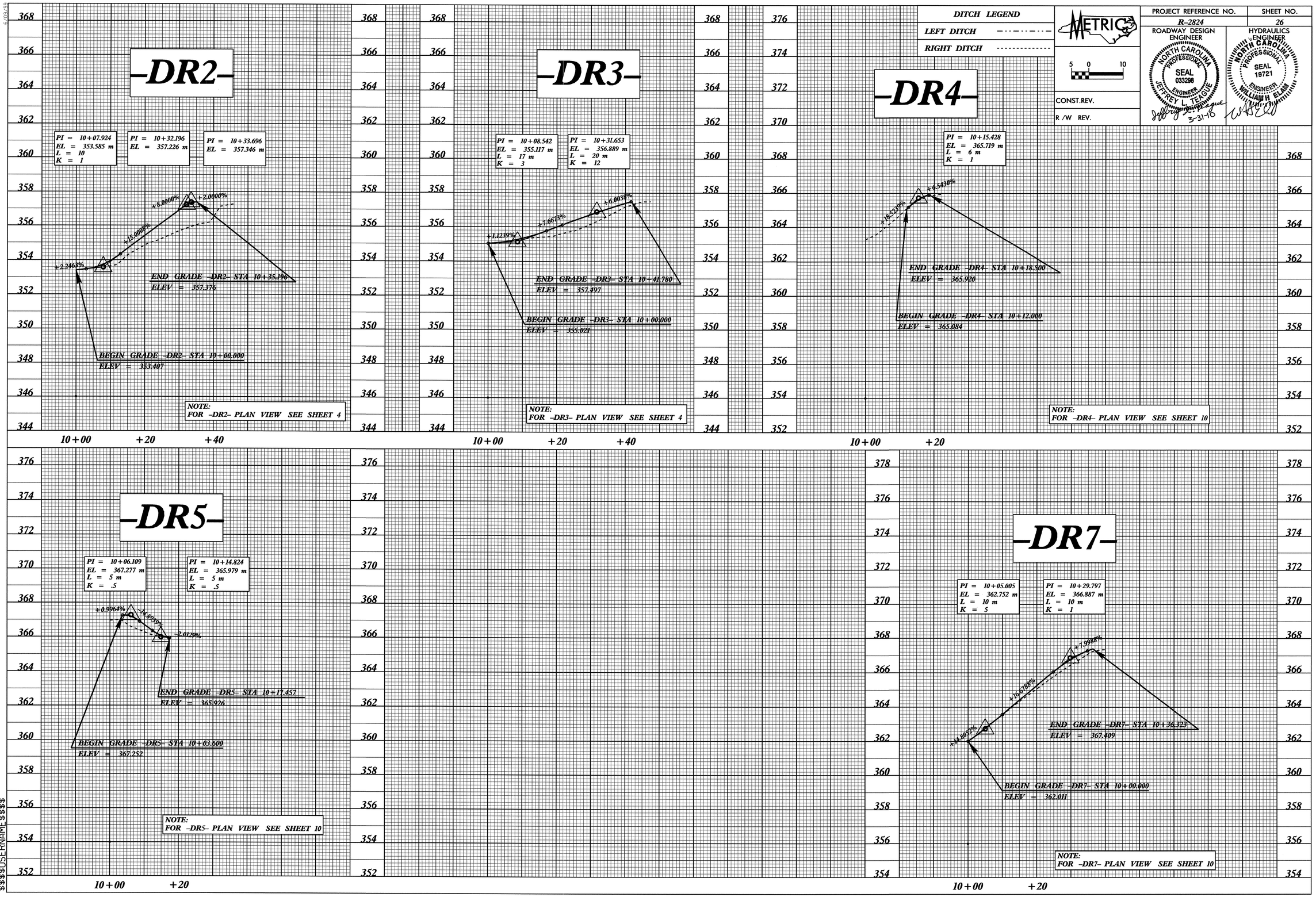
CONST.REV.

R /W REV.

PROJECT REFERENCE NO.	SHEET NO.
R-2824	26

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 033298 ENGINEER JEFFREY L. TEAGUE
Jeffrey L. Teague 3-31-16

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



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DITCH LEGEND	
LEFT DITCH	— · — · — · —
RIGHT DITCH	- - - - - - - - - - - -

METRIC

5 0 10

CONST.REV.

R /W REV.

PROJECT REFERENCE NO.	SHEET NO.
R-2824	27

ROADWAY DESIGN ENGINEER

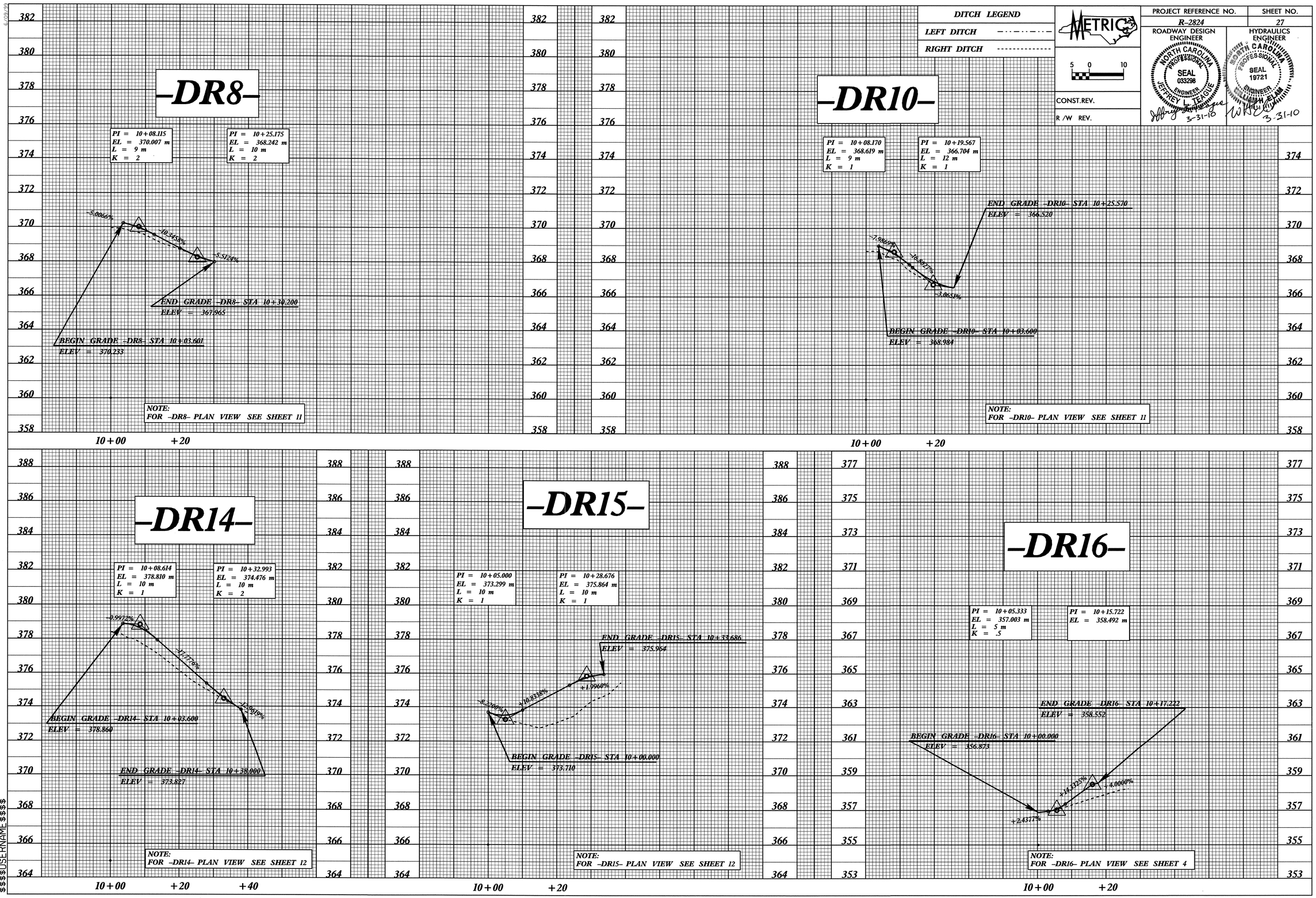
NORTH CAROLINA PROFESSIONAL SEAL 033298 ENGINEER JEFFREY L. TEAGUE

3-31-10

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 19721 ENGINEER BENJAMIN W. ELAM

3-31-10



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DITCH LEGEND	
LEFT DITCH	—·—·—·—
RIGHT DITCH	- - - - - - - -

METRIC

5 0 10

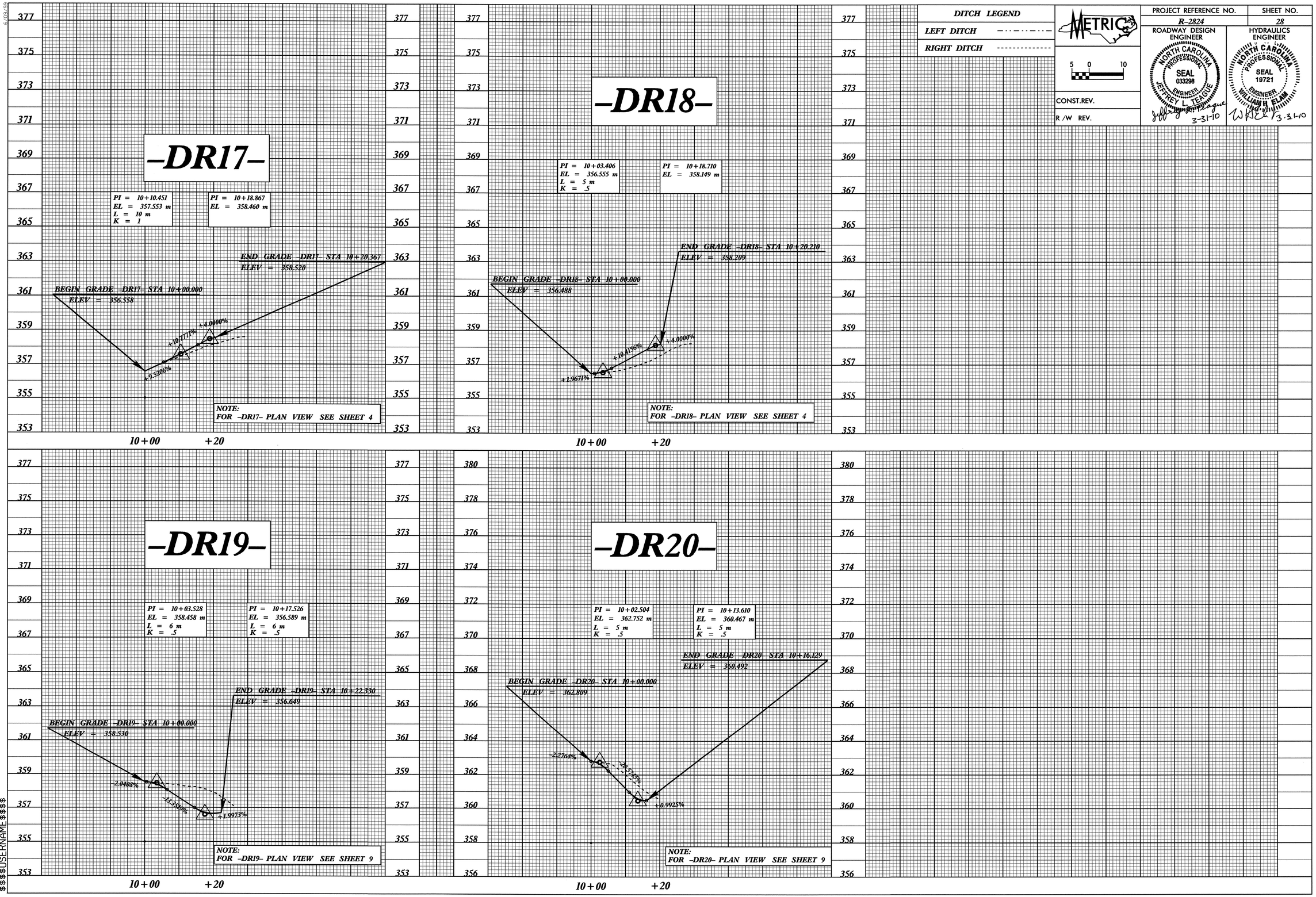
CONST.REV.

R /W REV.

PROJECT REFERENCE NO.	SHEET NO.
R-2824	28

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 033298 ENGINEER JEFFREY L. TEAGUE
Jeffrey L. Teague 3-31-10

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 19721 ENGINEER WILLIAM H. ELAM
W H Elam 3-31-10



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