TIP PROJECT: R-2719AA

CONTRACT: C202961

See Sheet 1-A For Index of Sheets
See Sheet 1-B For Standard Symbology Sheet

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

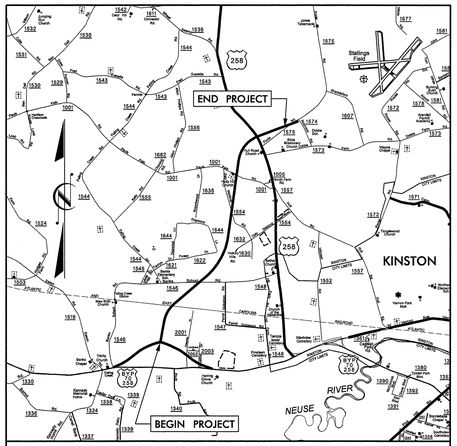
LENOIR COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-2719AA	1	

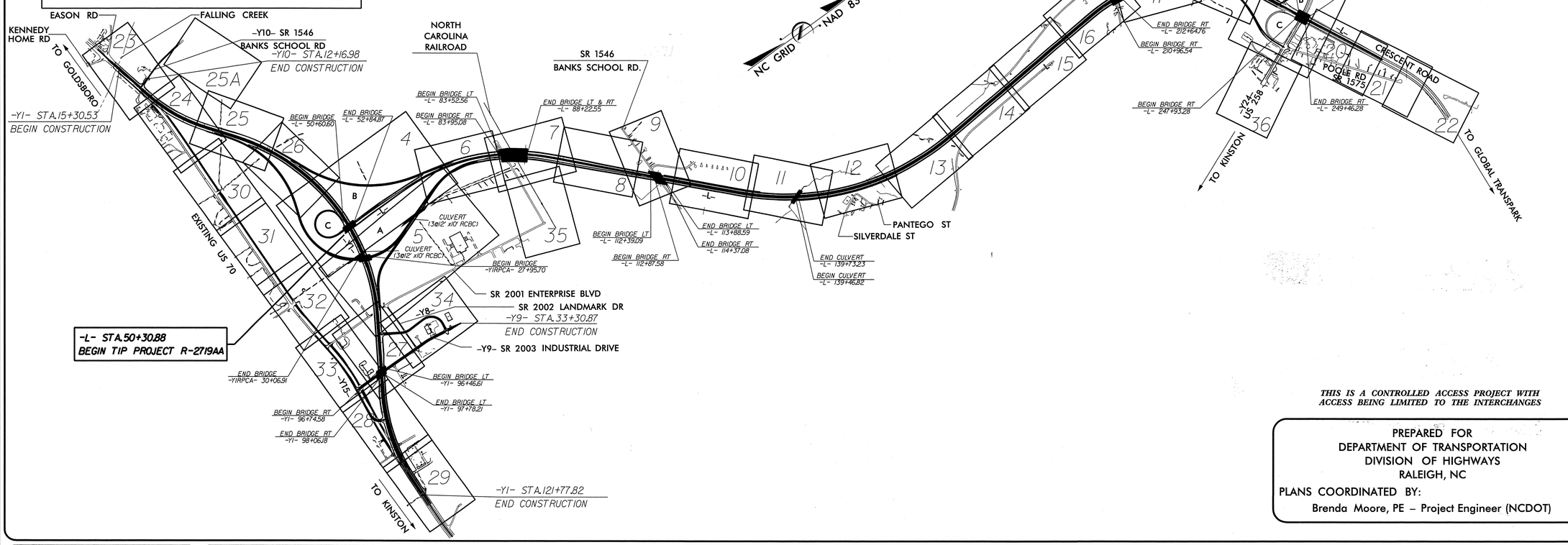
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
34501.1.1	STP-0224(3)	PE
34501.2.4	STP-0224(8)	ROW, Util.
34501.3.5	STP-0224(17)	Const.

LOCATION: KINSTON – CRESCENT ROAD FROM US 70 TO US 258

TYPE OF WORK: GRADING, DRAINAGE, PAVING, SIGNALS, NOISE WALL, AND SIGNING



VICINITY MAP



THIS IS A CONTROLLED ACCESS PROJECT WITH ACCESS BEING LIMITED TO THE INTERCHANGES

PREPARED FOR
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, NC

PLANS COORDINATED BY:
Brenda Moore, PE – Project Engineer (NCDOT)

GRAPHIC SCALES

50 25 0 50 100
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

5 2.5 0 5 10
PROFILE (VERTICAL)

DESIGN DATA

ADT 2008 =	27,490
ADT 2030 =	49,000
DHV =	10 %
D =	55 %
T =	14 % *
V =	70 MPH
* TTST 10%	DUAL 4%
FUNCTIONAL CLASSIFICATION	FREEWAY
REGIONAL	

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT R-2719AA = 3.470 MI

LENGTH STRUCTURE TIP PROJECT R-2719AA = 0.191 MI

TOTAL LENGTH OF TIP PROJECT R-2719AA = 3.661 MI

NOTE: SOUTHBOUND LANES (-L- LT) WERE USED FOR PROJECT LENGTH CALCULATIONS

Prepared for the Division of Highways in the Office of:
URS CORPORATION – NORTH CAROLINA
1600 Perimeter Park Dr., Morrisville, North Carolina 27560
Telephone (919) 461-1100 Fax (919) 461-1415

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: AUGUST 31, 2005

LETTING DATE: June 19, 2012

ED EDENS, PE
PROJECT ENGINEER

JEFFREY A. KOONTZ, P.E.
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 021162 ENGINEER W. HERBERT TURNER, JR.
SIGNATURE: W. Herbert Turner Jr. P.E. 4-18-12

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 18470 ENGINEER EDWARD GLENN EDENS, JR.
SIGNATURE: Edward G. Edens Jr. P.E. 4/20/12

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA
STATE HIGHWAY DESIGN ENGINEER P.E.

PROJECT REFERENCE NO.	SHEET NO.
R-2719AA	1-A

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 18470 ENGINEER HOWARD GLENN EDWARDS III
3/28/12

EFF. 01-17-12

SHEET NUMBER	SHEET
1	TITLESHEET
1-A	INDEX OF SHEETS, GENERAL NOTES, AND LIST OF STANDARD DRAWINGS
1-B	CONVENTIONAL SYMBOLS
1-C THRU 1-E	SURVEY CONTROL SHEETS
1-F	CENTERLINE COORDINATE LIST
2 THRU 2-F	PAVEMENT SCHEDULE, TYPICAL SECTIONS & WEDGING DETAILS
2-G	DETAIL TO CONVERT DI OR CB TO JUNCTION BOX
2-H THRU 2-I	INTERSECTION DETAILS
2-J	PAVEMENT WIDENING DETAILS
2-K THRU 2-N	NOISE WALL DETAIL SHEET
3	SUMMARY OF QUANTITIES
3A	SUMMARY OF GUARDRAIL QUANTITIES
3B1 THRU 3B3	SUMMARY OF DRAINAGE QUANTITIES
3C	SUMMARY OF EARTHWORK QUANTITIES
3D	PROPOSED SUMMARY OF WOVEN WIRE FENCE SUMMARY OF ASPHALT PAVEMENT REMOVAL SUMMARY OF CABLE GUIDERAIL SUMMARY OF SHOULDER BERM GUTTER SUMMARY OF PRECAST SINGLE FACED BARRIER SUMMARY OF EXPRESSWAY GUTTER
4 THRU 36	PLAN SHEETS
37 THRU 71	PROFILE SHEETS
TMP-1 THRU TMP-23	TRAFFIC CONTROL PLANS
PMP-1 THRU PMP-18	PAVEMENT MARKING PLANS
EC-1 THRU EC-34	EROSION CONTROL PLANS
SIGN-1 THRU SIGN-17	SIGNING PLANS
SIG-1 THRU SIG-6	SIGNAL PLANS
SW-1 THRU SW-3	SOUND BARRIER WALL DETAILS
X-1 THRU X-27	CROSS-SECTIONS

GENERAL NOTES:

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

GRADING:

THE GRADE LINES SHOWN DENOTE THE FINISHED ELEVATION OF THE PROPOSED OR FUTURE SURFACING AT GRADE POINTS SHOWN ON THE TYPICAL SECTIONS. GRADE LINES MAY BE ADJUSTED AT THEIR BEGINNING AND ENDING AND AT STRUCTURES AS DIRECTED BY THE ENGINEER IN ORDER TO SECURE A PROPER TIE-IN.

SURFACING:

THE ROUGH GRADING AND STRUCTURES ON THIS PROJECT HAVE BEEN DONE OR ARE NOW BEING DONE UNDER A PREVIOUS CONTRACT. THE GRADE LINES SHOWN DENOTE THE FINISHED ELEVATION OF THE PROPOSED SURFACING AT GRADE POINTS SHOWN ON THE TYPICAL SECTIONS. GRADE LINES MAY BE ADJUSTED AT THEIR BEGINNING AND ENDING AND AT STRUCTURES AS DIRECTED BY THE ENGINEER IN ORDER TO SECURE A PROPER TIE-IN.

CLEARING:

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

SUPERELEVATION:

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

SHOULDER CONSTRUCTION:

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

UTILITIES:

UTILITY OWNERS ON THIS PROJECT ARE NORTH LENIOR WATER CORPORATION, NEUSE REGIONAL WATER AND SEWER AUTHORITY, CITY OF KINSTON, EMBARQ, LENIOR COUNTY, PROGRESS ENERGY, SUDDEN LINK CABLE TV AND PIEDMOND NATURAL GAS.

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

2012 ROADWAY ENGLISH STANDARD DRAWINGS

The following Roadway Standards as appear in "Roadway Standard Drawings" Highway Design Branch - N. C. Department of Transportation - Raleigh, N. C., Dated 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	
200.03	Method of Clearing - Method III
225.01	Guide for Grading Subgrade - Interstate and Freeway
225.02	Guide for Grading Subgrade - Secondary and Local
225.03	Deceleration and Acceleration Lanes
225.04	Method of Obtaining Superelevation - Two Lane Pavement
225.05	Method of Obtaining Superelevation - Divided Highways
225.06	Method of Grading Sight Distance at Intersections
225.09	Guide for Shoulder and Ditch Transition at Grade Separations
DIVISION 3 - PIPE CULVERTS	
310.10	Driveway Pipe Construction
DIVISION 5 - SUBGRADE, BASES AND SHOULDERS	
560.01	Method of Shoulder Construction - High Side of Superelevated Curve - Method I
560.02	Method of Shoulder Construction - High Side of Superelevated Curve - Method II
DIVISION 6 - ASPHALT BASES AND PAVEMENTS	
610.01	Guide for Paving Shoulders Under Bridges - Method I
610.02	Guide for Paving Shoulders Under Bridges - Method II
610.03	Guide for Paving Shoulders Under Bridges - Method III
654.01	Pavement Repairs
665.01	Asphalt Shoulders - Milled Rumble Strips
DIVISION 8 - INCIDENTALS	
816.04	Markers for Drainage Structure and Concrete Pad
838.01	Concrete Endwall for Single and Double Pipe Culverts - 15" thru 48" Pipe 90 Skew
838.11	Brick Endwall for Single and Double Pipe Culverts - 15" thru 48" Pipe 90 Skew
840.18	Concrete Grated Drop Inlet Type 'B' - 12" thru 36" Pipe
840.19	Concrete Grated Drop Inlet Type 'D' - 12" thru 36" Pipe
840.22	Frames and Wide Slot Sag Grates
840.27	Brick Grated Drop Inlet Type 'B' - 12" thru 36" Pipe
840.28	Brick Grated Drop Inlet Type 'D' - 12" thru 36" Pipe
840.54	Manhole Frame and Cover
840.66	Drainage Structure Steps
840.72	Pipe Collar
846.01	Concrete Curb, Gutter and Curb & Gutter
852.01	Concrete Islands
857.01	Precast Reinforced Concrete Barrier - 41" Single Faced
862.01	Guardrail Placement
862.02	Guardrail Installation
862.03	Structure Anchor Units
862.04	Anchoring End of Guardrail - B-77 and B-83 Anchor Units
865.01	Cable Guiderail
866.02	Woven Wire Fence - with Wood Post
876.01	Rip Rap in Channels
876.02	Guide for Rip Rap at Pipe Outlets
876.04	Drainage Ditches with Class 'B' Rip Rap

PROJECT REFERENCE NO.	SHEET NO.
R-2719AA	1B

Note: Not to Scale

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

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

BOUNDARIES AND PROPERTY:

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

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
- Existing Mitigation Area Boundary — MA

ROADS AND RELATED FEATURES:

- Existing Edge of Pavement
- Existing Curb
- Proposed Slope Stakes Cut — C
- Proposed 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
- 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:

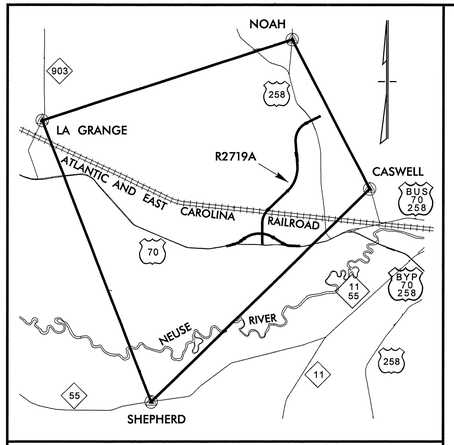
- Sanitary Sewer Manhole
- Sanitary Sewer Cleanout
- U/G Sanitary Sewer Line — SS
- Above Ground Sanitary Sewer — A/G Sanitary Sewer
- Recorded SS Forced Main Line — FSS
- Designated SS Forced Main Line (S.U.E.*) — FSS

MISCELLANEOUS:

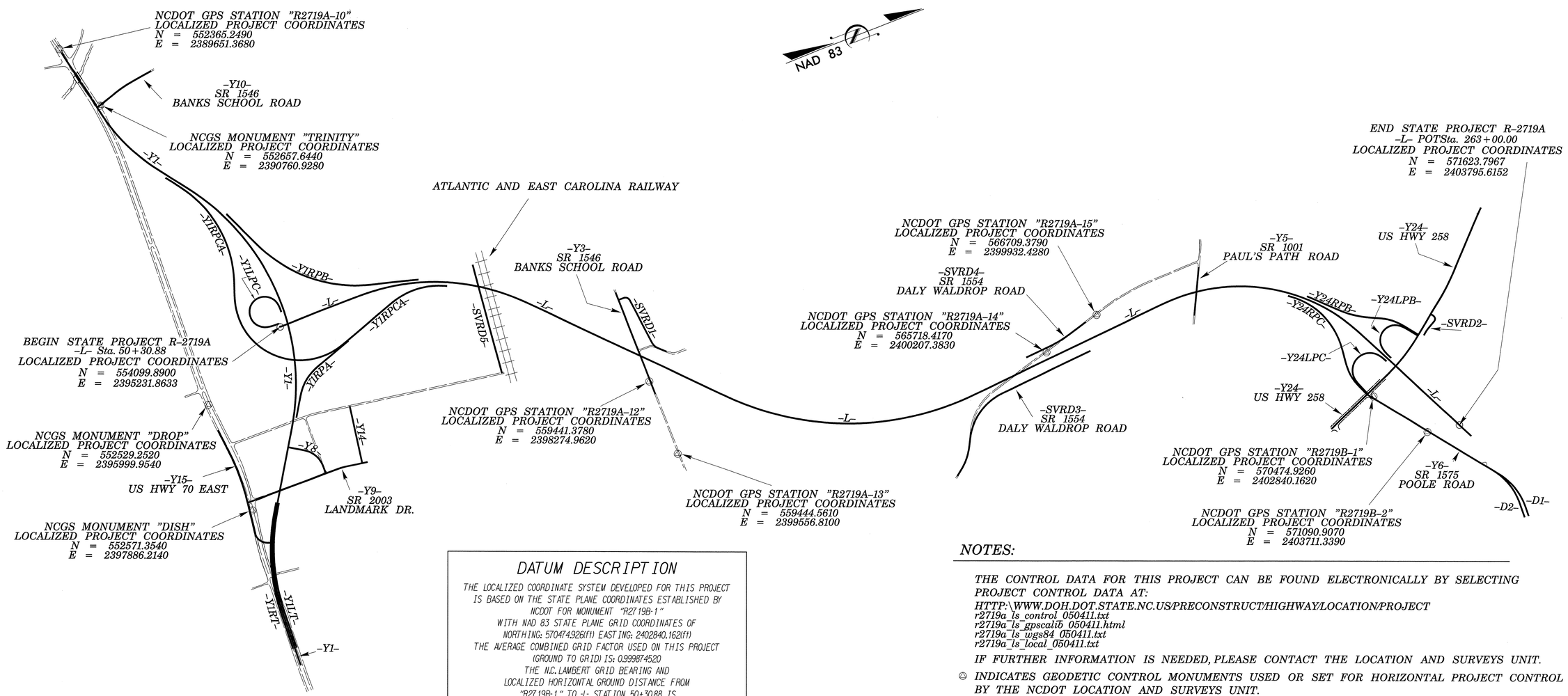
- Utility Pole
- Utility Pole with Base
- Utility Located Object
- Utility Traffic Signal Box — S
- Utility Unknown U/G Line — ZUTL
- U/G Tank; Water, Gas, Oil
- A/G Tank; Water, Gas, Oil
- U/G Test Hole (S.U.E.*)
- Abandoned According to Utility Records — AATUR
- End of Information — E.O.I.

PROJECT REFERENCE NO.	SHEET NO.
R-2719AA	1-C
Location and Surveys	

SURVEY CONTROL SHEET R-2719AA



GPS CONTROL NETWORK MAP



DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "R2719B-1"
WITH NAD 83 STATE PLANE GRID COORDINATES OF NORTHING: 570474.926(ft) EASTING: 2402840.162(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.999874520
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "R2719B-1" TO -L- STATION 50+30.88 IS
S 24°55'15.2" W 18056.246 (ft)
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
r2719a_ls_control_050411.txt
r2719a_ls_gpscalib_050411.html
r2719a_ls_wgs84_050411.txt
r2719a_ls_local_050411.txt

IF FURTHER INFORMATION IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

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

PROJECT CONTROL ESTABLISHED USING GLOBAL POSITIONING SYSTEM.

SEE GPS CALIBRATION SHEET FOR HORIZONTAL AND VERTICAL COORDINATE VALUES.

NOTE: DRAWING NOT TO SCALE

PROJECT REFERENCE NO.	SHEET NO.
R-2719AA	1-D
Location and Surveys	

SURVEY CONTROL SHEET R-2719AA

GPS CALIBRATION REPORT

PROJECT : 34501.1.1.1

TIP NUMBER	R-2719A		
USER NAME	BREIGNER	DATE & TIME	10:36:08 AM 5/1/03
COORDINATE SYSTEM	US STATE PLANE 1983(AT GROUND)	ZONE	NORTH CAROLINA 3200
HORIZONTAL DATUM	NAD 1983 (CONUS)		
VERTICAL DATUM	NGVD29	GEOID MODEL	GEOID99 (CONUS)
COORDINATE UNITS	US SURVEY FEET		
DISTANCE UNITS	US SURVEY FEET		
HEIGHT UNITS	US SURVEY FEET		

LOCAL SITE INFORMATION

LOCALIZED AROUND	R2719B-1
LATITUDE	35°18'35.84314"N
LONGITUDE	77°38'58.70182"W
SITE SCALE FACTOR	1.00001254958

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

DATUM TRANSFORMATION PARAMETERS

DATUM TRANSFORMATION COMPUTATION NOT REQUESTED

UPDATED DEFAULT PROJECTION (TRANSVERSE MERCATOR) DEFINITION

UPDATED DEFAULT PROJECTION NOT REQUESTED

HORIZONTAL ADJUSTMENT PARAMETERS

NORTHING COORDINATE OF ROTATION CENTER	560182.137SFT
EASTING COORDINATE OF ROTATION CENTER	2397074.194SFT
ROTATION ABOUT THE CENTER POINT	0°00'01"
TRANSLATION NORTH	0.143SFT
TRANSLATION EAST	-0.186SFT
SCALE FACTOR	1.00000000

VERTICAL ADJUSTMENT PARAMETERS

NORTHING COORDINATE OF ORIGIN POINT	574509.380SFT
EASTING COORDINATE OF ORIGIN POINT	2400053.914SFT
VERTICAL SEPARATION AT ORIGIN	0.051SFT
SLOPE NORTH	-7.481PPM
SLOPE EAST	-0.754PPM

GEOID MODEL DEFINITION

GEOID99 (CONUS)

RESIDUAL DIFFERENCES BETWEEN GPS (WGS84) AND LOCAL COORDINATES

SUMMARY

	MAXIMUM ERROR	ROOT MEAN SQUARE ERROR	POINT
HORIZONTAL	0.092SFT	0.014	R2719AW-4 - WGS8
VERTICAL	0.064SFT	0.009	TRANSIT - WGS84
THREE-DIMENSIONAL	0.099SFT	0.017	R2719AW-4 - WGS8

POINT RESIDUALS

WGS84 COORDINATES		CALCULATED POINT FOR DISPLAY ONLY		LOCAL COORDINATES	
POINT	R2719AW-1 - WGS8	NORTHING	574509.380SFT	POINT	R2719AW-1 - LOCA
LATITUDE	35°19'16.11332"N	EASTING	2400053.914SFT	NORTHING	574509.413SFT
LONGITUDE	77°39'31.65736"W	ELEVATION	95.532SFT	EASTING	2400053.925SFT
HEIGHT	-22.060SFT	HORZ ERROR	0.035SFT	ELEVATION	95.506SFT
		VERT ERROR	0.026SFT	UTILIZED	HORZ AND VERT
		3D ERROR	0.043SFT	QUALITY	SURVEY QUALITY
POINT	R2719B-2 - WGS84	NORTHING	571090.836SFT	POINT	R2719B-2 - LOCAL
LATITUDE	35°18'41.81550"N	EASTING	2403711.304SFT	NORTHING	571090.907SFT
LONGITUDE	77°38'48.08875"W	ELEVATION	104.638SFT	EASTING	2403711.339SFT
HEIGHT	-13.117SFT	HORZ ERROR	0.079SFT	ELEVATION	104.689SFT
		VERT ERROR	0.051SFT	UTILIZED	HORZ AND VERT
		3D ERROR	0.095SFT	QUALITY	SURVEY QUALITY
POINT	R2719B-1 - WGS84	NORTHING	570474.884SFT	POINT	R2719B-1 - LOCAL
LATITUDE	35°18'35.84146"N	EASTING	2402840.125SFT	NORTHING	570474.926SFT
LONGITUDE	77°38'58.70043"W	ELEVATION	107.786SFT	EASTING	2402840.162SFT
HEIGHT	-9.967SFT	HORZ ERROR	0.056SFT	ELEVATION	107.819SFT
		VERT ERROR	0.033SFT	UTILIZED	HORZ AND VERT
		3D ERROR	0.065SFT	QUALITY	SURVEY QUALITY
POINT	R2719AW-6 - WGS8	NORTHING	566929.352SFT	POINT	R2719AW-6 - LOCA
LATITUDE	35°18'00.57688"N	EASTING	2404336.999SFT	NORTHING	566929.383SFT
LONGITUDE	77°38'41.22518"W	ELEVATION	119.592SFT	EASTING	2404337.010SFT
HEIGHT	1.716SFT	HORZ ERROR	0.032SFT	ELEVATION	119.584SFT
		VERT ERROR	0.008SFT	UTILIZED	HORZ AND VERT
		3D ERROR	0.033SFT	QUALITY	SURVEY QUALITY
POINT	R2719A-15 - WGS8	NORTHING	566709.362SFT	POINT	R2719A-15 - LOCA
LATITUDE	35°17'58.99263"N	EASTING	2399932.432SFT	NORTHING	566709.378SFT
LONGITUDE	77°39'34.39384"W	ELEVATION	113.625SFT	EASTING	2399932.427SFT
HEIGHT	-4.170SFT	HORZ ERROR	0.017SFT	ELEVATION	113.609SFT
		VERT ERROR	0.016SFT	UTILIZED	HORZ AND VERT
		3D ERROR	0.023SFT	QUALITY	SURVEY QUALITY
POINT	R2719A-14 - WGS8	NORTHING	565718.402SFT	POINT	R2719A-14 - LOCA
LATITUDE	35°17'49.15596"N	EASTING	2400207.388SFT	NORTHING	565718.416SFT
LONGITUDE	77°39'31.23853"W	ELEVATION	113.328SFT	EASTING	2400207.383SFT
HEIGHT	-4.498SFT	HORZ ERROR	0.015SFT	ELEVATION	113.314SFT
		VERT ERROR	0.014SFT	UTILIZED	HORZ AND VERT
		3D ERROR	0.021SFT	QUALITY	SURVEY QUALITY
POINT	CASWELL - WGS84	NORTHING	560845.749SFT	POINT	CASWELL - LOCAL
LATITUDE	35°16'59.48725"N	EASTING	2411147.083SFT	NORTHING	560845.748SFT
LONGITUDE	77°37'20.09309"W	ELEVATION	108.744SFT	EASTING	2411147.093SFT
HEIGHT	-9.429SFT	HORZ ERROR	0.011SFT	ELEVATION	108.783SFT
		VERT ERROR	0.039SFT	UTILIZED	HORZ AND VERT
		3D ERROR	0.040SFT	QUALITY	SURVEY QUALITY
POINT	R2719A-12 - WGS8	NORTHING	559441.387SFT	POINT	R2719A-12 - LOCA
LATITUDE	35°16'47.33777"N	EASTING	2398274.961SFT	NORTHING	559441.379SFT
LONGITUDE	77°39'55.56650"W	ELEVATION	64.514SFT	EASTING	2398274.962SFT
HEIGHT	-53.438SFT	HORZ ERROR	0.008SFT	ELEVATION	64.498SFT
		VERT ERROR	0.016SFT	UTILIZED	HORZ AND VERT
		3D ERROR	0.018SFT	QUALITY	SURVEY QUALITY
POINT	R2719A-13 - WGS8	NORTHING	559444.576SFT	POINT	R2719A-13 - LOCA
LATITUDE	35°16'47.19864"N	EASTING	2399556.806SFT	NORTHING	559444.561SFT
LONGITUDE	77°39'40.10679"W	ELEVATION	81.327SFT	EASTING	2399556.810SFT
HEIGHT	-36.650SFT	HORZ ERROR	0.015SFT	ELEVATION	81.316SFT
		VERT ERROR	0.011SFT	UTILIZED	HORZ AND VERT
		3D ERROR	0.019SFT	QUALITY	SURVEY QUALITY
POINT	R2719AW-5 - WGS8	NORTHING	557577.109SFT	POINT	R2719AW-5 - LOCA
LATITUDE	35°16'28.68495"N	EASTING	2399898.564SFT	NORTHING	557577.074SFT
LONGITUDE	77°39'36.28909"W	ELEVATION	53.942SFT	EASTING	2399898.559SFT
HEIGHT	-64.091SFT	HORZ ERROR	0.036SFT	ELEVATION	53.934SFT
		VERT ERROR	0.008SFT	UTILIZED	HORZ AND VERT
		3D ERROR	0.037SFT	QUALITY	SURVEY QUALITY
POINT	R2719AW-7 - WGS8	NORTHING	563046.180SFT	POINT	R2719AW-7 - LOCA
LATITUDE	35°17'23.87379"N	EASTING	2391547.274SFT	NORTHING	563046.161SFT
LONGITUDE	77°41'16.12888"W	ELEVATION	80.763SFT	EASTING	2391547.242SFT
HEIGHT	-36.965SFT	HORZ ERROR	0.037SFT	ELEVATION	80.732SFT
		VERT ERROR	0.031SFT	UTILIZED	HORZ AND VERT
		3D ERROR	0.049SFT	QUALITY	SURVEY QUALITY
POINT	R2719AW-8 - WGS8	NORTHING	557590.108SFT	POINT	R2719AW-8 - LOCA
LATITUDE	35°16'29.99480"N	EASTING	2390947.184SFT	NORTHING	557590.090SFT
LONGITUDE	77°41'24.23521"W	ELEVATION	52.825SFT	EASTING	2390947.158SFT
HEIGHT	-65.033SFT	HORZ ERROR	0.032SFT	ELEVATION	52.822SFT
		VERT ERROR	0.003SFT	UTILIZED	HORZ AND VERT
		3D ERROR	0.032SFT	QUALITY	SURVEY QUALITY
POINT	TRANSIT - WGS84	NORTHING	552109.515SFT	POINT	TRANSIT - LOCAL
LATITUDE	35°15'36.68715"N	EASTING	2384045.734SFT	NORTHING	552109.561SFT
LONGITUDE	77°42'48.31955"W	ELEVATION	59.628SFT	EASTING	2384045.706SFT
HEIGHT	-58.215SFT	HORZ ERROR	0.053SFT	ELEVATION	59.692SFT
		VERT ERROR	0.064SFT	UTILIZED	HORZ AND VERT
		3D ERROR	0.083SFT	QUALITY	SURVEY QUALITY
POINT	R2719A-10 - WGS8	NORTHING	552365.237SFT	POINT	R2719A-10 - LOCA
LATITUDE	35°15'38.49251"N	EASTING	2389651.377SFT	NORTHING	552365.249SFT
LONGITUDE	77°41'40.69032"W	ELEVATION	51.723SFT	EASTING	2389651.368SFT
HEIGHT	-66.237SFT	HORZ ERROR	0.015SFT	ELEVATION	51.710SFT
		VERT ERROR	0.013SFT	UTILIZED	HORZ AND VERT
		3D ERROR	0.019SFT	QUALITY	SURVEY QUALITY
POINT	TRINITY - WGS84	NORTHING	552657.593SFT	POINT	TRINITY - LOCAL
LATITUDE	35°15'41.23928"N	EASTING	2390760.944SFT	NORTHING	552657.643SFT
LONGITUDE	77°41'27.26543"W	ELEVATION	54.611SFT	EASTING	2390760.927SFT
HEIGHT	-63.363SFT	HORZ ERROR	0.053SFT	ELEVATION	54.590SFT
		VERT ERROR	0.021SFT	UTILIZED	HORZ AND VERT
		3D ERROR	0.057SFT	QUALITY	SURVEY QUALITY
POINT	DROP - WGS84	NORTHING	552529.299SFT	POINT	DROP - LOCAL
LATITUDE	35°15'39.28283"N	EASTING	2395999.954SFT	NORTHING	552529.252SFT
LONGITUDE	77°40'24.11721"W	ELEVATION	47.585SFT	EASTING	2395999.954SFT
HEIGHT	-70.495SFT	HORZ ERROR	0.047SFT	ELEVATION	47.550SFT
		VERT ERROR	0.035SFT	UTILIZED	HORZ AND VERT
		3D ERROR	0.059SFT	QUALITY	SURVEY QUALITY
POINT	DISH - WGS84	NORTHING	552571.435SFT	POINT	DISH - LOCAL
LATITUDE	35°15'39.44968"N	EASTING	2397886.214SFT	NORTHING	552571.353SFT
LONGITUDE	77°40'01.36715"W	ELEVATION	48.701SFT	EASTING	2397886.213SFT
HEIGHT	-69.416SFT	HORZ ERROR	0.081SFT	ELEVATION	48.678SFT
		VERT ERROR	0.023SFT	UTILIZED	HORZ AND VERT
		3D ERROR	0.084SFT	QUALITY	SURVEY QUALITY
POINT	R2719AW-4 - WGS8	NORTHING	547670.638SFT	POINT	R2719AW-4 - LOCA
LATITUDE	35°14'52.46907"N	EASTING	2386533.888SFT	NORTHING	547670.549SFT
LONGITUDE	77°42'19.01710"W	ELEVATION	47.155SFT	EASTING	2386533.906SFT
HEIGHT	-70.843SFT	HORZ ERROR	0.092SFT	ELEVATION	47.192SFT
		VERT ERROR	0.037SFT	UTILIZED	HORZ AND VERT
		3D ERROR	0.099SFT	QUALITY	SURVEY QUALITY

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "R2719B-1"
WITH NAD 83 STATE PLANE GRID COORDINATES OF
NORTHING: 570474.926(ft) EASTING: 2402840.162(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.999874520
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "R2719B-1" TO -L- STATION 50+30.88 IS
S 24°55'15.2" W 18056.246 (ft)
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
r2719a_ls_control_050411.txt
r2719a_ls_gpscalib_050411.html
r2719a_ls_wgs84_050411.txt
r2719a_ls_local_050411.txt

IF FURTHER INFORMATION IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

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

PROJECT CONTROL ESTABLISHED USING GLOBAL POSITIONING SYSTEM.

SEE GPS CALIBRATION SHEET FOR HORIZONTAL AND VERTICAL COORDINATE VALUES.

NOTE: DRAWING NOT TO SCALE

PROJECT REFERENCE NO.	SHEET NO.
R-2719AA	1-E
Location and Surveys	

SURVEY CONTROL SHEET R-2719AA

BL

POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
1	BL-1	552647.3930	2395235.8000	50.22	35·78.38	0.10 RT
2	BL-2	553298.0240	2395233.2420	50.72	42·29.01	0.74 LT
3	BL-3	554231.9560	2395231.2780	50.12	51·62.95	0.24 LT
4	BL-4	554943.5170	2395229.8120	51.36	58·74.51	0.18 RT
5	BL-5	556027.7890	2395243.3140	51.54	69·56.46	29.23 LT
6	BL-6	556678.5510	2395382.0910	51.64	76·14.33	55.71 LT
7	BL-7	557557.4790	2395860.3050	51.48	86·04.32	42.41 LT
8	BL-8	558127.5310	2396438.7180	53.20	94·12.18	4.43 RT
9	BL-9	558776.7920	2397115.7870	57.85	103·50.23	0.41 RT
10	BL-10	559426.9960	2397799.0970	68.42	112·93.46	0.01 LT
11	BL-11	559846.1950	2398246.9530	72.10	119·06.88	4.76 RT
12	BL-12	560217.1400	2398629.3430	71.55	124·39.60	0.60 LT
13	BL-13	560673.5900	2399112.4390	70.73	131·04.01	6.44 RT
14	BL-14	561000.8970	2399384.6250	76.84	135·29.64	5.88 LT
15	BL-15	561363.9310	2399644.7710	71.70	139·77.15	9.89 LT
16	BL-16	561665.3930	2399825.9840	78.46	143·29.77	11.75 LT
17	BL-17	561870.2180	2399930.3530	92.44	145·60.30	14.94 LT
18	BL-18	562267.1200	2400132.0940	92.04	150·05.22	10.11 RT
19	BL-19	562612.0690	2400239.1020	77.84	153·65.94	0.16 LT
20	BL-20	563128.7810	2400370.6620	90.00	158·98.96	7.40 RT
21	BL-21	563722.0560	2400435.1250	105.45	164·95.47	2.61 RT
22	BL-22	564102.0130	2400361.7480	112.21	168·77.47	75.86 LT
23	BL-23	564595.2890	2400406.3090	115.69	173·69.75	0.08 RT
24	BL-24	565178.6060	2400361.2230	113.83	179·54.81	0.08 LT
25	BL-25	567041.6770	2400219.9450	117.38	198·23.23	2.13 RT
26	BL-26	567661.0970	2400169.6400	112.76	204·44.68	0.47 LT
27	BL-27	568420.0850	2400169.1810	115.76	212·04.24	8.20 LT
28	BL-28	569068.1010	2400334.5160	112.62	218·72.72	7.15 LT
29	BL-29	569777.9470	2400720.4090	106.73	226·80.74	11.13 LT
30	BL-30	570211.9830	2401128.2940	103.77	232·75.69	5.36 LT
31	BL-31	570562.5660	2401630.1880	102.92	238·88.42	0.35 LT
32	BL-32	570968.3390	2402453.0110	102.90	248·05.94	1.76 RT

BY

POINT	DESC.	NORTH	EAST	ELEVATION	Y1 STATION	OFFSET
210	R2719A-10 GPS	552365.2490	2389651.3680	51.71	OUTSIDE PROJECT LIMITS	
227	NCGS 'TRINITY'	552657.6440	2390760.9280	54.59	20·77.90	58.02 LT
33	BY-33	552676.5110	2391861.1840	50.43	30·87.71	286.64 RT
34	BY-34	552639.8320	2392962.9280	50.02	39·13.72	939.27 RT
35	BY-35	552601.4360	2394068.1230	49.62	52·46.06	1523.98 RT
300	BL-1	552647.3930	2395235.8000	50.22	72·30.92	1570.31 RT
226	NCGS 'DROP'	552529.2520	2395999.9540	47.55	84·83.57	1420.21 RT
36	BY-36	552619.1560	2396773.0700	50.68	91·63.67	936.11 RT
225	NCGS 'DISH'	552571.3540	2397886.2140	48.68	101·24.20	384.54 RT
37	BY-37	552468.1540	2398896.0740	50.01	110·33.00	73.10 RT
38	BY-38	552408.5770	2400109.0170	46.88	122·37.42	8.80 LT
39	BY-39	552388.4550	2401017.2450	44.36	OUTSIDE PROJECT LIMITS	

BY

POINT	DESC.	NORTH	EAST	ELEVATION	Y15 STATION	OFFSET
36	BY-36	552619.1560	2396773.0700	50.68	13·31.82	64.41 LT
225	NCGS 'DISH'	552571.3540	2397886.2140	48.68	24·36.26	45.62 LT
37	BY-37	552468.1540	2398896.0740	50.01	31·31.42	441.33 RT

BY

POINT	DESC.	NORTH	EAST	ELEVATION	Y1RT STATION	OFFSET
225	NCGS 'DISH'	552571.3540	2397886.2140	48.68	101·25.67	361.28 RT
37	BY-37	552468.1540	2398896.0740	50.01	110·40.52	45.55 RT
38	BY-38	552408.5770	2400109.0170	46.88	122·51.53	39.80 LT
39	BY-39	552388.4550	2401017.2450	44.36	OUTSIDE PROJECT LIMITS	

BY

POINT	DESC.	NORTH	EAST	ELEVATION	Y1LT STATION	OFFSET
225	NCGS 'DISH'	552571.3540	2397886.2140	48.68	101·22.51	407.86 RT
37	BY-37	552468.1540	2398896.0740	50.01	110·25.24	100.72 RT
38	BY-38	552408.5770	2400109.0170	46.88	122·23.32	22.20 RT
39	BY-39	552388.4550	2401017.2450	44.36	OUTSIDE PROJECT LIMITS	

BY1

POINT	DESC.	NORTH	EAST	ELEVATION	Y1 STATION	OFFSET
308	BY-33	552676.5110	2391861.1840	50.43	30·87.71	286.64 RT
62	BY1-62	552955.0010	2391778.9580	49.09	31·49.02	3.48 RT
63	BY1-63	553328.0410	2392316.4160	49.31	38·03.32	1.50 RT
52	BY1-52	553866.4150	2393148.7420	50.68	47·96.38	0.49 LT
64	BY1-64	554208.1380	2394248.2140	49.67	59·52.43	2.45 RT
309	BL-3	554231.9560	2395231.2780	50.12	69·39.05	1.64 RT
53	BY1-53	554151.2520	2395702.6320	52.26	74·17.81	2.20 RT
54	BY1-54	553733.0350	2396749.4230	50.58	85·49.99	3.16 RT
307	BY16-57	553303.4100	2397435.4120	58.80	93·59.54	4.15 RT
55	BY1-55	553120.8080	2397729.1600	51.55	97·05.41	2.15 RT
61	BY1-61	552679.2740	2398440.3710	50.72	105·39.85	29.94 RT
310	BY-37	552468.1540	2398896.0740	50.01	110·33.00	73.10 RT

BY2

POINT	DESC.	NORTH	EAST	ELEVATION	SVRD5 STATION	OFFSET
41	BY2-41	557611.4450	2395452.6760	51.77	28·46.50	186.33 RT
301	BL-7	557557.4790	2395860.3050	51.48	24·35.44	176.28 RT
40	BY2-40	557523.9200	2396266.5750	52.90	20·27.91	186.37 RT
2464	BY2-2464	557464.9172	2396475.4436	57.01	18·13.93	150.05 RT
1383	BY2-1383	557408.9679	2396997.6241	57.17	12·88.76	150.28 RT
3266	BY2-3266	557355.3250	2397495.9960	57.31	OUTSIDE PROJECT LIMITS	

BY3

POINT	DESC.	NORTH	EAST	ELEVATION	Y3 STATION	OFFSET
42	BY3-42	559418.8120	2396710.1780	88.26	10·01.35	37.63 RT
302	BL-10	559426.9960	2397799.0970	68.42	20·90.28	30.71 RT
212	R2719A-12 GPS	559441.3780	2398274.9620	64.50	25·66.16	16.88 RT
213	R2719A-13 GPS	559444.5610	2399556.8100	81.32	OUTSIDE PROJECT LIMITS	

BY4

POINT	DESC.	NORTH	EAST	ELEVATION	SVRD3 STATION	OFFSET
43	BY4-43	567437.8950	2399743.0930	109.38	OUTSIDE PROJECT LIMITS	
215	R2719A-15 GPS	566709.3790	2399932.4280	113.60	OUTSIDE PROJECT LIMITS	
214	R2719A-14 GPS	565718.4170	2400207.3830	113.31	35·69.32	292.01 LT
303	BL-24	565178.6060	2400361.2230	113.83	30·19.29	180.08 LT
44	BY4-44	564313.6630	2400616.6670	111.55	21·70.25	108.74 LT
45	BY4-45	563753.6030	2401479.0560	90.34	11·74.54	14.01 RT

BY4

POINT	DESC.	NORTH	EAST	ELEVATION	SVRD4 STATION	OFFSET
43	BY4-43	567437.8950	2399743.0930	109.38	OUTSIDE PROJECT LIMITS	
215	R2719A-15 GPS	566709.3790	2399932.4280	113.60	OUTSIDE PROJECT LIMITS	
214	R2719A-14 GPS	565718.4170	2400207.3830	113.31	18·06.97	67.99 LT
303	BL-24	565178.6060	2400361.2230	113.83	OUTSIDE PROJECT LIMITS	
44	BY4-44	564313.6630	2400616.6670	111.55	OUTSIDE PROJECT LIMITS	
45	BY4-45	563753.6030	2401479.0560	90.34	OUTSIDE PROJECT LIMITS	

BY5

POINT	DESC.	NORTH	EAST	ELEVATION	Y5 STATION	OFFSET
46	BY5-46	568611.4510	2399676.9150	114.09	OUTSIDE PROJECT LIMITS	
304	BL-27	568420.0850	2400169.1810	115.76	13·84.31	32.09 LT
47	BY5-47	568119.9010	2400637.1110	119.76	OUTSIDE PROJECT LIMITS	

BY6

POINT	DESC.	NORTH	EAST	ELEVATION	Y6 STATION	OFFSET
66	BY6-66	571459.0130	2404191.6890	102.37	27·78.47	14.38 RT
222	R2719B-2 GPS	571090.9070	2403711.3390	104.68	21·73.29	13.86 RT
306	R2719B-1 GPS	570474.9260	2402840.1620	108.03	11·07.17	28.03 LT

BY24

POINT	DESC.	NORTH	EAST	ELEVATION	Y24 STATION	OFFSET
48	BY24-48	573189.9960	2400612.3800	98.45	10·62.98	25.28 RT
49	BY24-49	572198.0770	2401680.9170	102.18	25·17.33	31.17 LT
50	BY24-50	571597.4280	2402165.9620	103.11	32·87.87	43.68 LT
305	BL-32	570968.3390	2402453.0110	102.90	39·76.39	62.17 RT
221	R2719B-1 GPS	570474.9260	2402840.1620	108.03	45·85.76	96.58 LT

BY25

POINT	DESC.	NORTH	EAST	ELEVATION	Y10 STATION	OFFSET
1001	BY25-1001	553703.0525	2390541.1302	51.58	OUTSIDE PROJECT LIMITS	
1000	BY25-1000	553038.8553	2390670.1903	52.38	14·49.59	32.77 RT
999	BY25-999	552657.6440	2390760.9280	54.59	10·57.90	4.08 RT

****
79 ELEVATION = 53.26
N 553519 E 2395699
L STATION 44·49 466 RIGHT
BM-A
****

****
88 ELEVATION = 53.43
N 557471 E 2396132
L STATION 87·00 227 RIGHT
BM-B
****

****
87 ELEVATION = 62.32
N 558988 E 2397672
L STATION 108·99 230 RIGHT
BM-C
****

****
80 ELEVATION = 78.12
N 560332 E 2398479
L STATION 124·10 187 LEFT
BM-D
****

****
81 ELEVATION = 72.57
N 561147 E 2399716
L STATION 138·41 171 RIGHT
BM-E
****

****
82 ELEVATION = 85.04
N 562327 E 2400003
L STATION 150·16 132 LEFT
BM-F
****

****
83 ELEVATION = 113.23
N 564163 E 2400498
L STATION 169·34 63 RIGHT
BM-G
****

****
84 ELEVATION = 120.73
N 567250 E 2400469
L STATION 200·11 267 RIGHT
BM-H
****

****
86 ELEVATION = 106.62
N 569921 E 2400471
L STATION 226·49 297 LEFT
BM-I
****

****
85 ELEVATION = 103.99
N 571253 E 2402442
L STATION 249·21 260 LEFT
BM-J
****

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "R2719B-1"
WITH NAD 83 STATE PLANE GRID COORDINATES OF NORTHING: 570474.926(ft) EASTING: 2402840.162(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.999874520
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "R2719B-1" TO -L- STATION 50+30.88 IS S 24°55'15.2" W 18056.246 (ft)
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NGVD 29

NOTES:

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r2719a_ls_gpscalib_050411.html
r2719a_ls_wgs84_050411.txt
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△ INDICATES GEODETIC CONTROL MONUMENTS USED OR SET FOR HORIZONTAL PROJECT CONTROL BY THE NCDOT LOCATION AND SURVEYS UNIT.

PROJECT CONTROL ESTABLISHED USING GLOBAL POSITIONING SYSTEM.

SEE GPS CALIBRATION SHEET FOR HORIZONTAL AND VERTICAL COORDINATE VALUES.

NOTE: DRAWING NOT TO SCALE

REVISIONS

CENTERLINE COORDINATE LIST SHEET

Prepared by
URS
URS Corporation – North Carolina
1600 Perimeter Park Drive
Morrisville, North Carolina 27560
TELEPHONE (919) 461-1100 FAX (919) 461-1415

PROJECT REFERENCE NO.	SHEET NO.
R-2719AA	1F
R/W SHEET NO.	

Disclaimer: This coordinate list is provided for the convenience of interested contractors and is intended for use during the project bidding process only. Coordinates are localized to this particular project and any conversion to state grid coordinates or other formats will be the responsibility of the recipient. While every effort has been made to provide up-to-date, accurateinformation, NCDOT makes no express guarantee as to the validity or potential for revision of this information prior to project letting.

Point #	Chain	Station	Northing(Y)	Easting(X)
1	L	51+00.00	554169.0098	2395231.6805
2	L	52+00.00	554269.0095	2395231.4160
3	L	53+00.00	554369.0091	2395231.1515
4	L	54+00.00	554469.0088	2395230.8871
5	L	55+00.00	554569.0084	2395230.6226
6	L	56+00.00	554669.0081	2395230.3581
7	L	57+00.00	554769.0077	2395230.0937
8	L	58+00.00	554869.0074	2395229.8292
9	L	59+00.00	554969.0070	2395229.5647
10	L	60+00.00	555069.0067	2395229.3003
11	L	61+00.00	555169.0063	2395229.0358
12	L	62+00.00	555269.0060	2395228.7713
13	L	63+00.00	555369.0057	2395228.5758
14	L	64+00.00	555469.0043	2395229.0130
15	L	65+00.00	555568.9858	2395230.8624
16	L	66+00.00	555668.9012	2395234.9034
17	L	67+00.00	555768.6654	2395241.7171
18	L	68+00.00	555868.1943	2395251.3780
19	L	69+00.00	555967.4065	2395263.8783
20	L	70+00.00	556066.2211	2395279.2077
21	L	71+00.00	556164.5574	2395297.3538
22	L	72+00.00	556262.3353	2395318.3016
23	L	73+00.00	556359.4748	2395342.0342
24	L	74+00.00	556455.8967	2395368.5322
25	L	75+00.00	556551.5222	2395397.7739
26	L	76+00.00	556646.2734	2395429.7354
27	L	77+00.00	556740.0728	2395464.3907
28	L	78+00.00	556832.8439	2395501.7115
29	L	79+00.00	556924.5110	2395541.6672
30	L	80+00.00	557014.9992	2395584.2254
31	L	81+00.00	557104.2348	2395629.3512
32	L	82+00.00	557192.1447	2395677.0079
33	L	83+00.00	557278.6574	2395727.1565
34	L	84+00.00	557363.7021	2395779.7560
35	L	85+00.00	557447.2095	2395834.7636
36	L	86+00.00	557529.1114	2395892.1344
37	L	87+00.00	557609.3409	2395951.8215
38	L	88+00.00	557687.8325	2396013.7762
39	L	89+00.00	557764.5222	2396077.9479
40	L	90+00.00	557839.3474	2396144.2842
41	L	91+00.00	557912.2506	2396212.7273
42	L	92+00.00	557983.3845	2396283.0092
43	L	93+00.00	558053.2369	2396354.5667
44	L	94+00.00	558122.3507	2396426.8386
45	L	95+00.00	558191.2559	2396499.3097
46	L	96+00.00	558260.1581	2396571.7837
47	L	97+00.00	558329.0604	2396644.2577
48	L	98+00.00	558397.9626	2396716.7317
49	L	99+00.00	558466.8648	2396789.2057
50	L	100+00.00	558535.7671	2396861.6798
51	L	101+00.00	558604.6693	2396934.1538
52	L	102+00.00	558673.5716	2397006.6278
53	L	103+00.00	558742.4738	2397079.1018
54	L	104+00.00	558811.3760	2397151.5758
55	L	105+00.00	558880.2783	2397224.0498
56	L	106+00.00	558949.1805	2397296.5238
57	L	107+00.00	559018.0828	2397368.9978
58	L	108+00.00	559086.9850	2397441.4718
59	L	109+00.00	559155.8872	2397513.9458
60	L	110+00.00	559224.7895	2397586.4198
61	L	111+00.00	559293.6917	2397658.8938
62	L	112+00.00	559362.5940	2397731.3678
63	L	113+00.00	559431.4962	2397803.8418
64	L	114+00.00	559500.3984	2397876.3158
65	L	115+00.00	559569.3007	2397948.7898
66	L	116+00.00	559638.2029	2398021.2638
67	L	117+00.00	559707.1052	2398093.7378
68	L	118+00.00	559776.0074	2398166.2118
69	L	119+00.00	559844.9096	2398238.6858
70	L	120+00.00	559913.8119	2398311.1598
71	L	121+00.00	559982.7141	2398383.6338
72	L	122+00.00	560051.6164	2398456.1079
73	L	123+00.00	560120.5186	2398528.5819
74	L	124+00.00	560189.4208	2398601.0559
75	L	125+00.00	560258.3231	2398673.5299
76	L	126+00.00	560327.2253	2398746.0039
77	L	127+00.00	560396.1276	2398818.4779
78	L	128+00.00	560465.0316	2398890.9501
79	L	129+00.00	560534.1362	2398963.2310
80	L	130+00.00	560604.0046	2399034.7728
81	L	131+00.00	560675.1788	2399105.0142
82	L	132+00.00	560747.8146	2399173.7431
83	L	133+00.00	560821.8811	2399240.9278
84	L	134+00.00	560897.3455	2399306.5384
85	L	135+00.00	560974.1744	2399370.5459
86	L	136+00.00	561052.3337	2399432.9218
87	L	137+00.00	561131.7887	2399493.6386
88	L	138+00.00	561212.5043	2399552.6693
89	L	139+00.00	561294.4447	2399609.9878
90	L	140+00.00	561377.5735	2399665.5686
91	L	141+00.00	561461.8539	2399719.3872
92	L	142+00.00	561547.2486	2399771.4196
93	L	143+00.00	561633.7197	2399821.6429
94	L	144+00.00	561721.2289	2399870.0347
95	L	145+00.00	561809.7375	2399916.5737
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99	L	149+00.00	562172.9738	2400083.8006
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104	L	154+00.00	562644.6783	2400248.9190
105	L	155+00.00	562740.9581	2400275.9344
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108	L	158+00.00	563032.9098	2400344.7405
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110	L	160+00.00	563229.7061	2400380.3118
111	L	161+00.00	563328.6222	2400394.9826
112	L	162+00.00	563427.8253	2400407.5678
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114	L	164+00.00	563626.9161	2400426.4603
115	L	165+00.00	563726.7157	2400432.7592
116	L	166+00.00	563826.6257	2400436.9558
117	L	167+00.00	563926.6020	2400439.0483
118	L	168+00.00	564026.6002	2400439.0357
119	L	169+00.00	564126.5759	2400436.9180
120	L	170+00.00	564226.4849	2400432.6963
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126	L	176+00.00	564824.8472	2400388.5460
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131	L	181+00.00	565323.3709	2400350.1510
132	L	182+00.00	565423.0756	2400342.4720
133	L	183+00.00	565522.7803	2400334.7930
134	L	184+00.00	565622.4851	2400327.1140
135	L	185+00.00	565722.1898	2400319.4350
136	L	186+00.00	565821.8945	2400311.7560
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139	L	189+00.00	566121.0087	2400288.7190
140	L	190+00.00	566220.7134	2400281.0399
141	L	191+00.00	566320.4182	2400273.3609
142	L	192+00.00	566420.1229	2400265.6819
143	L	193+00.00	566519.8276	2400258.0029
144	L	194+00.00	566619.5324	2400250.3239
145	L	195+00.00	566719.2371	2400242.6449
146	L	196+00.00	566818.9418	2400234.9659
147	L	197+00.00	566918.6465	2400227.2869
148	L	198+00.00	567018.3513	2400219.6079
149	L	199+00.00	567118.0560	2400211.9289
150	L	200+00.00	567217.7607	2400204.2499
151	L	201+00.00	567317.4655	2400196.5709
152	L	202+00.00	567417.1702	2400188.8919
153	L	203+00.00	567516.8749	2400181.2129
154	L	204+00.00	567616.5796	2400173.5339
155	L	205+00.00	567716.2906	2400165.9367
156	L	206+00.00	567816.0573	2400159.1207
157	L	207+00.00	567915.9274	2400154.0685
158	L	208+00.00	568015.8964	2400151.7625
159	L	209+00.00	568115.8856	2400152.8464
160	L	210+00.00	568215.7779	2400157.3769
161	L	211+00.00	568315.4547	2400165.3486
162	L	212+00.00	568414.7974	2400176.7520
163	L	213+00.00	568513.6879	2400191.5736
164	L	214+00.00	568612.0086	2400209.7957
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177	L	227+00.00	569786.6622	2400740.9051
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202	L	252+00.00	571142.3801	2402806.5550
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204	L	254+00.00	571229.9103	2402986.3839
205	L	255+00.00	571273.6754	2403076.2984
206	L	256+00.00	571317.4405	2403166.2129
207	L	257+00.00	571361.2056	2403256.1274
208	L	258+00.00	571404.9707	2403346.0419
209	L	259+00.00	571448.7358	2403435.9564
210	L	260+00.00	571492.5009	2403525.8709
211	L	261+00.00	571536.2661	2403615.7854
212	L	262+00.00	571580.0312	2403705.6999
213	L	263+00.00	571623.7963	2403795.6143
214	L	264+00.00	571667.5614	2403885.5288
215	L	265+00.00	571711.3265	2403975.4433
216	L	265+68.01	571741.0908	2404036.5935
217	L	265+68.01	571741.0908	2404036.5935

Prepared by
URS
URS Corporation – North Carolina
1600 Perimeter Park Drive
Morrisville, North Carolina 27560
TELEPHONE (919) 461-1100 FAX (919) 461-1415

English

NOT TO SCALE

PROJECT REFERENCE NO.	SHEET NO.
R-2719AA	2
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 18470 ENGINEER EDWARD GLENN EDENS, III
3/28/12

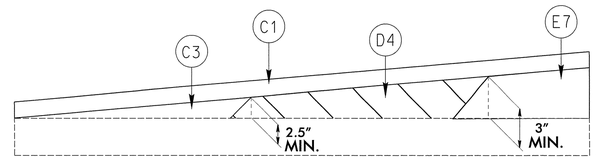
PAVEMENT DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 22898 ENGINEER CLARK S. MORRISON
3/30/12

PAVEMENT SCHEDULE

CODE	DESCRIPTION
C	PROP. APPROX. 1.5" ASPH. CONC. SURFACE COURSE, TYPE S9.5C AT AN AVERAGE RATE OF 168 LBS/SY.
C1	PROP. APPROX. 3" ASPH. CONC. SURFACE COURSE, TYPE S9.5B AT AN AVERAGE RATE OF 168 LBS/SY IN EACH OF TWO LAYERS
C2	PROP. APPROX. 3" ASPH. CONC. SURFACE COURSE, TYPE S9.5C AT AN AVERAGE RATE OF 168 LBS/SY IN EACH OF TWO LAYERS
C3	PROP. VARIABLE DEPTH ASPH. CONC. SURFACE COURSE, TYPE S9.5B AT AN AVERAGE RATE OF 112 LBS/SY PER 1" DEPTH TO BE PLACED IN LAYERS NOT LESS THAN 1.5" OR GREATER THAN 2" IN DEPTH.
C4	PROP. VARIABLE DEPTH ASPH. CONC. SURFACE COURSE, TYPE S9.5C AT AN AVERAGE RATE OF 112 LBS/SY PER 1" DEPTH TO BE PLACED IN LAYERS NOT LESS THAN 1.5" OR GREATER THAN 2" IN DEPTH.
C5	PROP. APPROX. 2" ASPH. CONC. SURFACE COURSE, TYPE S9.5B AT AN AVERAGE RATE OF 224 LBS/SY.
D1	PROP. APPROX. 3" ASPH. CONC. INTERMEDIATE COURSE, TYPE I19.0B AT AN AVERAGE RATE OF 342 LBS/SY
D2	PROP. APPROX. 3" ASPH. CONC. INTERMEDIATE COURSE, TYPE I19.0C AT AN AVERAGE RATE OF 342 LBS/SY
D3	PROP. APPROX. 4" ASPH. CONC. INTERMEDIATE COURSE, TYPE I19.0C AT AN AVERAGE RATE OF 456 LBS/SY
D4	PROP. VARIABLE DEPTH ASPH. CONC. INTERMEDIATE COURSE, TYPE I19.0B AT AN AVERAGE RATE OF 114 LBS/SY PER 1" DEPTH TO BE PLACED IN LAYERS NOT LESS THAN 2.5" OR GREATER THAN 4" IN DEPTH.
D5	PROP. VARIABLE DEPTH ASPH. CONC. INTERMEDIATE COURSE, TYPE I19.0C AT AN AVERAGE RATE OF 114 LBS/SY PER 1" DEPTH TO BE PLACED IN LAYERS NOT LESS THAN 2.5" OR GREATER THAN 4" IN DEPTH.
E1	PROP. APPROX. 4" ASPH. CONC. BASE COURSE, TYPE B25.0B AT AN AVERAGE RATE OF 456 LBS/SY
E2	PROP. APPROX. 5.5" ASPH. CONC. BASE COURSE, TYPE B25.0B AT AN AVERAGE RATE OF 627 LBS/SY
E3	PROP. APPROX. 3" ASPH. CONC. BASE COURSE, TYPE B25.0C AT AN AVERAGE RATE OF 342 LBS/SY
E4	PROP. APPROX. 5" ASPH. CONC. BASE COURSE, TYPE B25.0C AT AN AVERAGE RATE OF 570 LBS/SY
E5	PROP. VARIABLE DEPTH ASPH. CONC. BASE COURSE, TYPE B25.0C AT AN AVERAGE RATE OF 114 LBS/SY PER 1" DEPTH TO BE PLACED IN LAYERS NOT LESS THAN 3" OR GREATER THAN 5.5" IN DEPTH.
E6	PROP. APPROX. 8" ASPH. CONC. BASE COURSE, TYPE B25.0C AT AN AVERAGE RATE OF 456 LBS/SY TO BE PLACED IN EACH OF 2 LAYERS
E7	PROP. VARIABLE DEPTH ASPH. CONC. BASE COURSE, TYPE B25.0B AT AN AVERAGE RATE OF 114 LBS/SY PER 1" DEPTH TO BE PLACED IN LAYERS NOT LESS THAN 3" OR GREATER THAN 5.5" IN DEPTH.
J	PROP. APPROX. 6" AGGREGATE BASE COURSE
J1	PROP. APPROX. 8" AGGREGATE BASE COURSE
J2	PROP. APPROX. 10" AGGREGATE BASE COURSE
P	PRIME COAT
R1	2'-6" CONCRETE CURB AND GUTTER
R2	PROP. MONOLITHIC CONC. ISLAND
R3	EXPRESSWAY GUTTER
R4	SHOULDER BERM GUTTER
T	EARTH MATERIAL
U	EXISTING PAVEMENT
V	RUMBLE STRIPS
W	VARIABLE DEPTH WEDGING (SEE DETAILS - THIS SHEET)

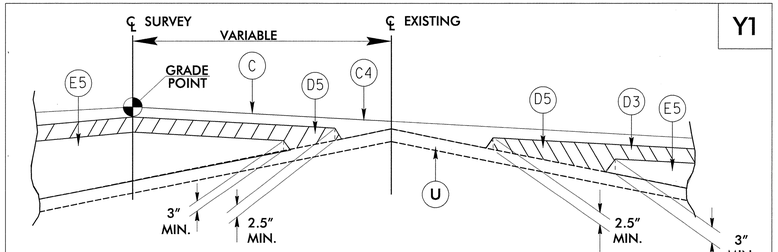
NOTE: ALL PAVEMENT EDGE SLOPES ARE ±1 UNLESS SHOWN OTHERWISE

ALL WEDGING EXCEPT Y1 AND Y24



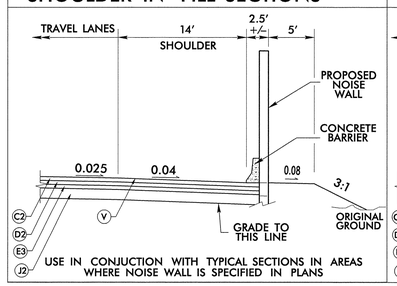
Wedging Detail For Resurfacing

Y1



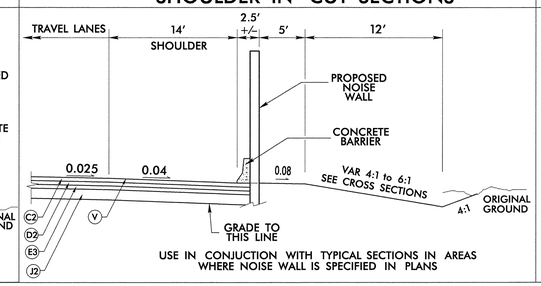
Detail Showing Method Of Wedging

DETAIL OF NOISE WALL ON SHOULDER IN FILL SECTIONS



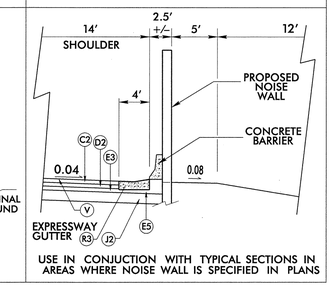
USE IN CONJUCTION WITH TYPICAL SECTIONS IN AREAS WHERE NOISE WALL IS SPECIFIED IN PLANS

DETAIL OF NOISE WALL ON SHOULDER IN CUT SECTIONS



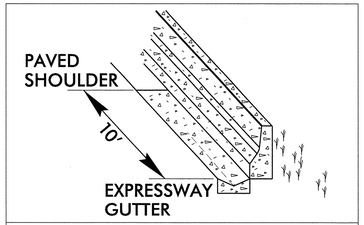
USE IN CONJUCTION WITH TYPICAL SECTIONS IN AREAS WHERE NOISE WALL IS SPECIFIED IN PLANS

DETAIL OF NOISE WALL ON SHOULDER WITH EXPRESSWAY GUTTER



USE IN CONJUCTION WITH TYPICAL SECTIONS IN AREAS WHERE NOISE WALL IS SPECIFIED IN PLANS

NOISE WALL LOCATIONS: -L- LT STA. 114+40 – 132+80
-L- RT STA. 139+00 – 159+00



DETAIL OF 10' TRANSITION FROM PAVED SHOULDER TO EXPRESSWAY GUTTER
-L- STA. 139+30 TO 139+40 RT

NOTES: TYPICAL SECTIONS SHOWN ARE FOR TANGENT SECTIONS ONLY. SEE PLANS AND STANDARD DRAWINGS FOR SUPERELEVATION DETAILS AND LANE ADDITIONS/WIDENING AT INTERSECTIONS. MAXIMUM ROLLOVER IS 6%.

ALL PAVEMENT EDGES SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.

FOR PAVEMENT SCHEDULE WITH APPLICATION RATES, SEE SHEET 2.

FDPS – FULL DEPTH PAVED SHOULDERS.

* ADD 3.0 FT WITH GUARDRAIL.

** ADD 5.0 FT WITH GUARDRAIL

*** WHEN THESE DISTANCES INDICATE SLOPES OUTSIDE THE LIMITS OF 6:1 TO 3:1, THE DISTANCE BECOMES VARIABLE AND THE MAXIMUM SLOPE MAINTAINED. SEE CROSS SECTIONS.

MILLED RUMBLE STRIPS (V) SHALL BE PLACED ON –L– & Y1 ACCORDING TO NCDOT STANDARDS

Prepared by
URS
URS Corporation – North Carolina
1600 Perimeter Park Drive
Morrisville, North Carolina 27560
TELEPHONE (919) 461-1100 FAX (919) 461-1415

English

NOT TO SCALE

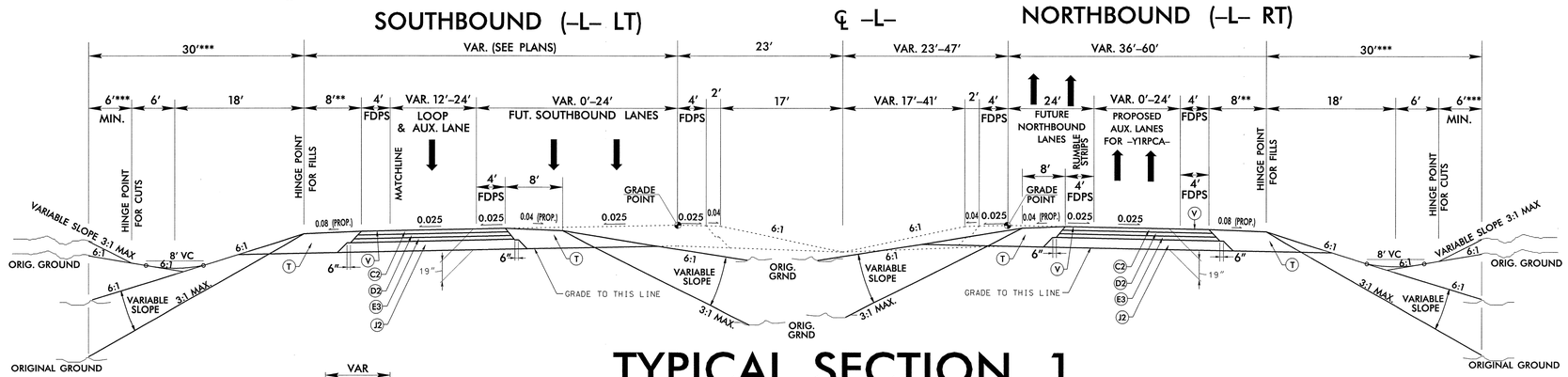
PROJECT REFERENCE NO.	SHEET NO.
R-2719AA	2A
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 18470 ENGINEER EDWARD GLENN EDENS, JR. 3/28/12

PAVEMENT DESIGN ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 22896 ENGINEER CLARK S. MORRISON 3/30/12

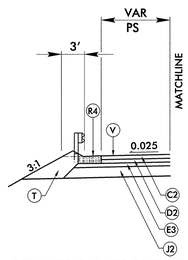
USE TYPICAL SECTION NO. 1 FOR:

–L– STA. 50+30.88 TO 50+60.60 (BEG BRG) LT
–L– STA. 52+84.87 (END BRG) TO 65+85.07 LT
–L– STA. 79+11.31 TO 83+95.08 (BEGIN BRG) RT
–L– STA. 88+22.55 (END BRG) TO 111+80.00 RT



TYPICAL SECTION 1

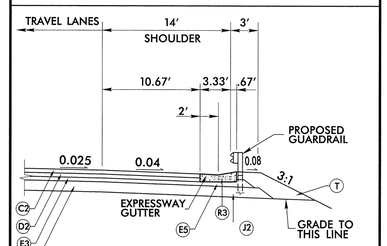
FUTURE CONSTRUCTION



DETAIL SHOWING USE OF GUARDRAIL WITH SHOULDER BERM GUTTER

USE IN CONJUNCTION WITH TYPICAL SECTION NO. 1
SEE PLANS FOR LOCATION

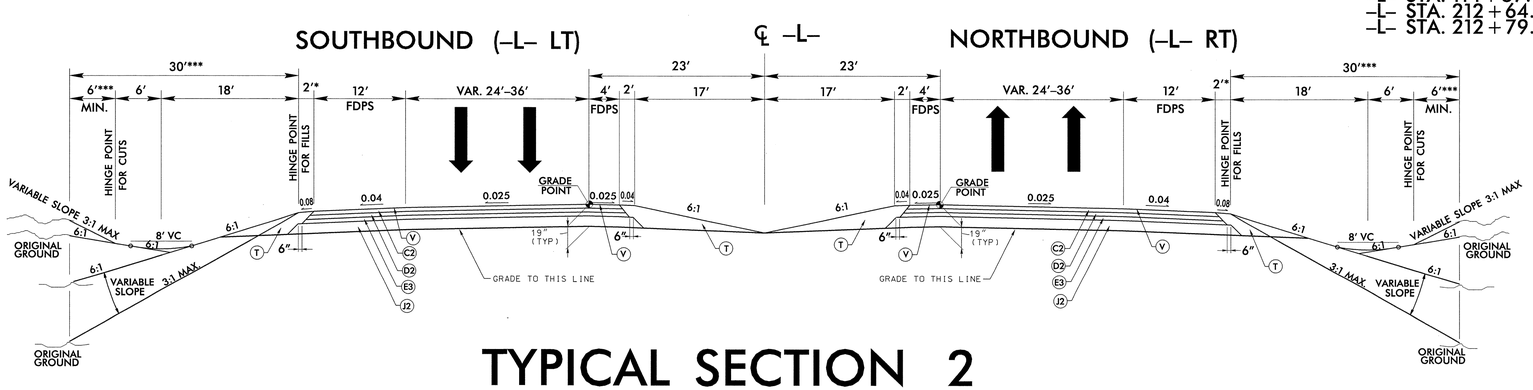
DETAIL OF EXPRESSWAY GUTTER INSTALLATION WITH GUARDRAIL



USE IN CONJUCTION WITH TYPICAL SECTION NO. 2 IN AREAS WHERE EXPRESSWAY GUTTER IS SPECIFIED IN PLANS

USE TYPICAL SECTION NO. 2 FOR:

–L– STA. 65+85.07 TO 83+52.56 (BEGIN BRG) LT
–L– STA. 88+22.55 (END BRG) TO 112+39.09 (BEGIN BRG) LT
–L– STA. 111+80.00 TO 112+87.58 (BEGIN BRG) RT
–L– STA. 113+88.59 (END BRG) LT TO 211+13.92 (BEGIN BRG) LT
–L– STA. 114+37.08 (END BRG) RT TO 210+96.54 (BEGIN BRG) RT
–L– STA. 212+64.76 (END BRG) RT TO 243+60.21 RT
–L– STA. 212+79.47 (END BRG) LT TO 243+60.21 LT



TYPICAL SECTION 2

PAVEMENT SCHEDULE	
CODE	DESCRIPTION
C	1.5" S9.5C
C1	3" S9.5B
C2	3" S9.5C
C3	VAR. S9.5B
C4	VAR. S9.5C
C5	2" S9.5B
D1	3" I19.0B
D2	3" I19.0C
D3	4" I19.0C
D4	VAR. I19.0B
D5	VAR. I19.0C
E1	4.0" B25.0B
E2	5.5" B25.0B
E3	3" B25.0C
E4	5" B25.0C
E5	VAR. B25.0C
E6	8" B25.0C
E7	VAR. B25.0B
J	6" ABC
J1	8" ABC
J2	10" ABC
P	PRIME COAT
R1	CONC C & G (2'-6")
R2	MONO. CONC ISLAND
R3	EXPRESSWAY GUTTER
R4	SHOULDER BERM GUTTER
T	EARTH MATERIAL
U	EXIST PAVEMENT
V	RUMBLE STRIPS
W	WEDGING (SEE SHEET 2)

NOTES: TYPICAL SECTIONS SHOWN ARE FOR TANGENT SECTIONS ONLY. SEE PLANS AND STANDARD DRAWINGS FOR SUPERELEVATION DETAILS AND LANE ADDITIONS/WIDENING AT INTERSECTIONS. MAXIMUM ROLLOVER IS 6%.

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

FOR PAVEMENT SCHEDULE WITH APPLICATION RATES, SEE SHEET 2.

FDPS – FULL DEPTH PAVED SHOULDERS.

* ADD 3.0 FT WITH GUARDRAIL.

** WHEN THESE DISTANCES INDICATE SLOPES OUTSIDE THE LIMITS OF 6:1 TO 3:1, THE DISTANCE BECOMES VARIABLE AND THE MAXIMUM SLOPE MAINTAINED. SEE CROSS SECTIONS

MILLED RUMBLE STRIPS SHALL BE PLACED ON –L– & Y1 ACCORDING TO NCDOT STANDARDS

Prepared by
URS
URS Corporation – North Carolina
1600 Perimeter Park Drive
Morrisville, North Carolina 27560
TELEPHONE (919) 461-1100 FAX (919) 461-1415

English

NOT TO SCALE

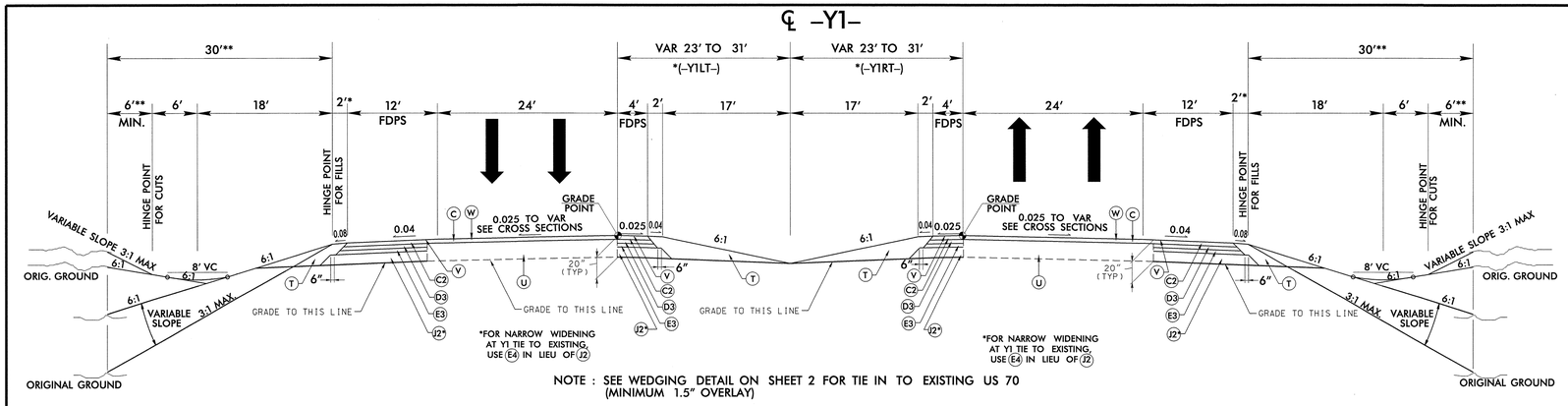
PROJECT REFERENCE NO.	SHEET NO.
R-2719AA	2B
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 18470 ENGINEER EDWARD GLENN EDENS, JR. 3/30/12

PAVEMENT DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 22896 ENGINEER CLARK S. MORRISON 3/30/12



NOTE : SEE WEDGING DETAIL ON SHEET 2 FOR TIE IN TO EXISTING US 70 (MINIMUM 1.5" OVERLAY)

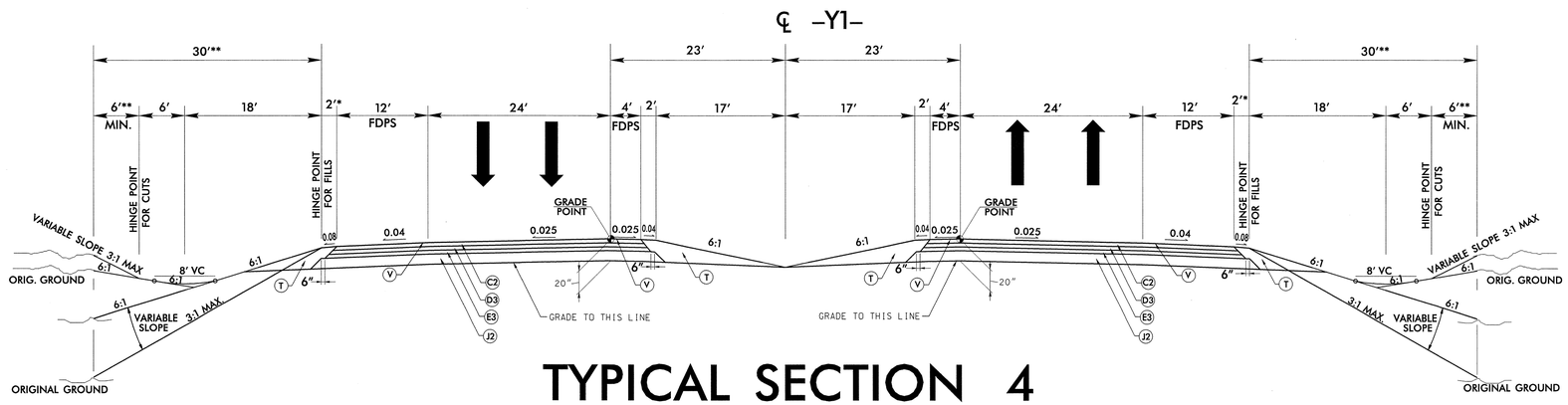
TYPICAL SECTION 3

TRANSITION FROM EXISTING TO T.S. NO. 3
–Y1– APPROX. STA. 15+30 (END BRG) TO 16+50

USE TYPICAL SECTION NO. 3 FOR:

–Y1– STA. 15+30.53 TO 22+50.00
–Y1– STA. 22+50.00 TO 24+00.00 LT
–Y1– STA. 114+00.00 TO 119+00.00 RT
–Y1– STA. 114+00.00 TO 120+50 LT

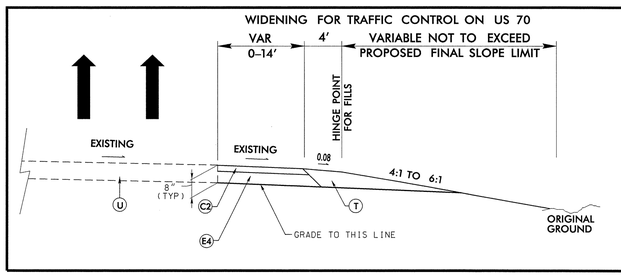
TRANSITION FROM T.S. NO. 3 TO EXISTING
–Y1– STA. 119+00.00 TO 121+63.73 LT
–Y1– STA. 120+50.00 TO 121+63.73 RT



TYPICAL SECTION 4

USE TYPICAL SECTION NO. 4 FOR:

–Y1– STA. 22+50.00 TO 30+00.00 (Paving and Grading)
–Y1– STA. 30+00.00 TO 70+00.00* (Paving Only)
* SEE TYPICAL SECTION #5 FOR –Y1– STA. 70+00.00 TO 77+15.00
–Y1– STA. 77+15.00 TO 96+46.61 LT (BEGIN BRIDGE) (Paving Only)
–Y1– STA. 30+00.00 TO 96+74.58 RT (BEGIN BRIDGE) (Paving Only)
–Y1– STA. 97+78.21 LT (END BRIDGE) TO 105+25.00 LT (Paving Only)
–Y1– STA. 98+06.18 RT (END BRIDGE) TO 105+25.00 RT (Paving Only)
–Y1– STA. 105+25.00 TO 114+00.00 (Paving and Grading)



PARTIAL TYPICAL SECTION 4A

USE TYPICAL SECTION NO. 4A FOR EXISTING EASTBOUND US 70:

–Y1– STA. 15+65.83 TO 24+00.00
–Y1– STA. 114+05.00 TO 122+05.00

PAVEMENT SCHEDULE	
CODE	DESCRIPTION
C	1.5" S9.5C
C1	3" S9.5B
C2	3" S9.5C
C3	VAR. S9.5B
C4	VAR. S9.5C
C5	2" S9.5B
D1	3" I19.0B
D2	3" I19.0C
D3	4" I19.0C
D4	VAR. I19.0B
D5	VAR. I19.0C
E1	4.0" B25.0B
E2	5.5" B25.0B
E3	3" B25.0C
E4	5" B25.0C
E5	VAR. B25.0C
E6	8" B25.0C
E7	VAR. B25.0B
J	6" ABC
J1	8" ABC
J2	10" ABC
P	PRIME COAT
R1	CONC C & G (2'-6")
R2	MONO. CONC ISLAND
R3	EXPRESSWAY GUTTER
R4	SHOULDER BERM GUTTER
T	EARTH MATERIAL
U	EXIST PAVEMENT
V	RUMBLE STRIPS
W	WEDGING (SEE SHEET 2)

Prepared by
URS
URS Corporation – North Carolina
1600 Perimeter Park Drive
Morrisville, North Carolina 27560
TELEPHONE (919) 461-1100 FAX (919) 461-1415

English

NOT TO SCALE

PROJECT REFERENCE NO.	SHEET NO.
R-2719AA	2C
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 18470 ENGINEER EDWARD GLENN EDRINGTON III
3/28/12

PAVEMENT DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 22898 ENGINEER CLARK S. MORRISON
3/30/12

NOTES: TYPICAL SECTIONS SHOWN ARE FOR TANGENT SECTIONS ONLY. SEE PLANS AND STANDARD DRAWINGS FOR SUPERELEVATION DETAILS AND LANE ADDITIONS/WIDENING AT INTERSECTIONS. MAXIMUM ROLLOVER IS 6%.

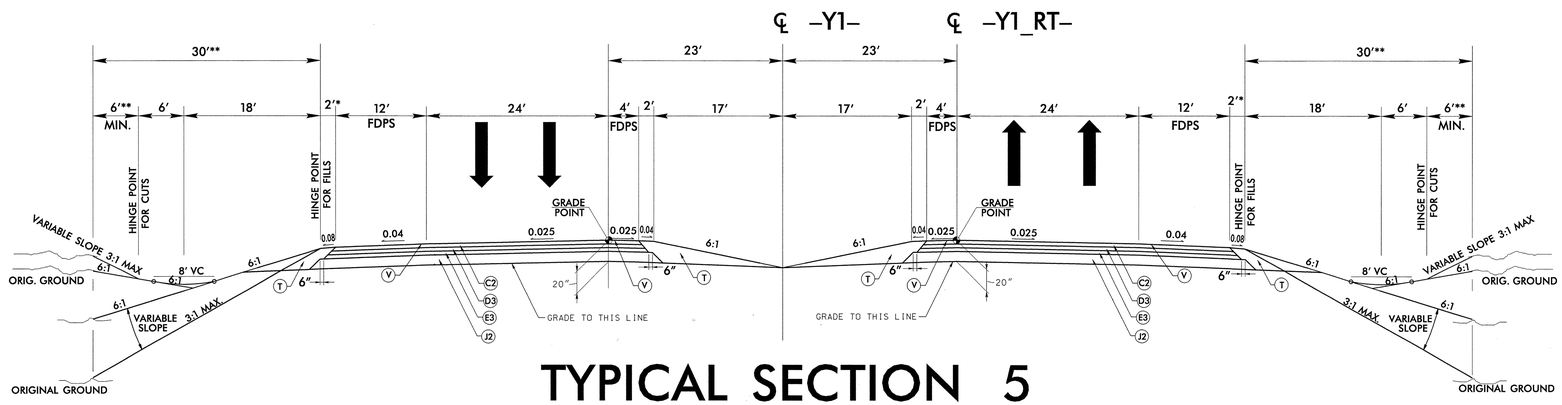
ALL PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.

FOR PAVEMENT SCHEDULE WITH APPLICATION RATES, SEE SHEET 2.

FDPS – FULL DEPTH PAVED SHOULDERS.

* ADD 3.0 FT WITH GUARDRAIL.

** WHEN THESE DISTANCES INDICATE SLOPES OUTSIDE THE LIMITS OF 6:1 TO 3:1, THE DISTANCE BECOMES VARIABLE AND THE MAXIMUM SLOPE MAINTAINED. SEE CROSS SECTIONS.

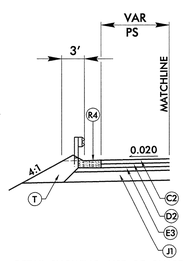


TYPICAL SECTION 5

USE TYPICAL SECTION NO. 5 FOR:

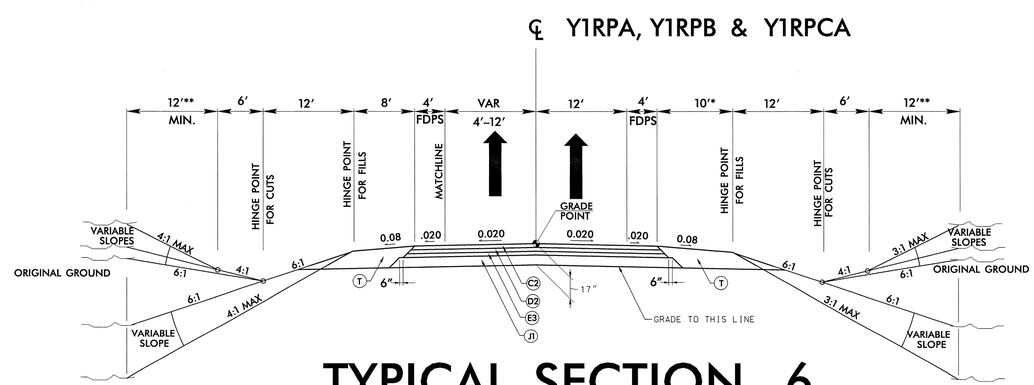
–Y1– STA. 70+00.00 TO 77+15.00 (LEFT) (Paving)

–Y1_RT– STA. 70+00.00 TO 77+10.69 (Paving and Grading)



DETAIL SHOWING USE OF GUARDRAIL WITH SHOULDER BERM GUTTER

USE IN CONJUNCTION WITH TYPICAL SECTION NO. 6
SEE PLANS FOR LOCATION



TYPICAL SECTION 6

USE TYPICAL SECTION NO. 6 FOR:

–Y1RPA– STA. 0+00.00 TO 16+04.29

–Y1RPB– STA. 0+00.00 TO 35+55.41

–Y1RPCA– STA. 0+00.00 TO 27+88.18 (BEG BRG)

–Y1RPCA– STA. 30+12.60 (END BRG) TO 68+73.91

PAVEMENT SCHEDULE	
CODE	DESCRIPTION
C	1.5" S9.5C
C1	3" S9.5B
C2	3" S9.5C
C3	VAR. S9.5B
C4	VAR. S9.5C
C5	2" S9.5B
D1	3" I19.0B
D2	3" I19.0C
D3	4" I19.0C
D4	VAR. I19.0B
D5	VAR. I19.0C
E1	4.0" B25.0B
E2	5.5" B25.0B
E3	3" B25.0C
E4	5" B25.0C
E5	VAR. B25.0C
E6	8" B25.0C
E7	VAR. B25.0B
J	6" ABC
J1	8" ABC
J2	10" ABC
P	PRIME COAT
R1	CONC C & G (2'-6")
R2	MONO. CONC ISLAND
R3	EXPRESSWAY GUTTER
R4	SHOULDER BERM GUTTER
T	EARTH MATERIAL
U	EXIST PAVEMENT
V	RUMBLE STRIPS
W	WEDGING (SEE SHEET 2)

NOTES: TYPICAL SECTIONS SHOWN ARE FOR TANGENT SECTIONS ONLY. SEE PLANS AND STANDARD DRAWINGS FOR SUPERELEVATION DETAILS AND LANE ADDITIONS/WIDENING AT INTERSECTIONS. MAXIMUM ROLLOVER IS 6%.

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

FOR PAVEMENT SCHEDULE WITH APPLICATION RATES, SEE SHEET 2.

FDPS – FULL DEPTH PAVED SHOULDERS.

* ADD 3.0 FT WITH GUARDRAIL.

** WHEN THESE DISTANCES INDICATE SLOPES OUTSIDE THE LIMITS OF 6:1 TO 3:1, THE DISTANCE BECOMES VARIABLE AND THE MAXIMUM SLOPE MAINTAINED. SEE CROSS SECTIONS.

Prepared by
URS
URS Corporation – North Carolina
1600 Perimeter Park Drive
Morrisville, North Carolina 27560
TELEPHONE (919) 461-1100 FAX (919) 461-1415

English

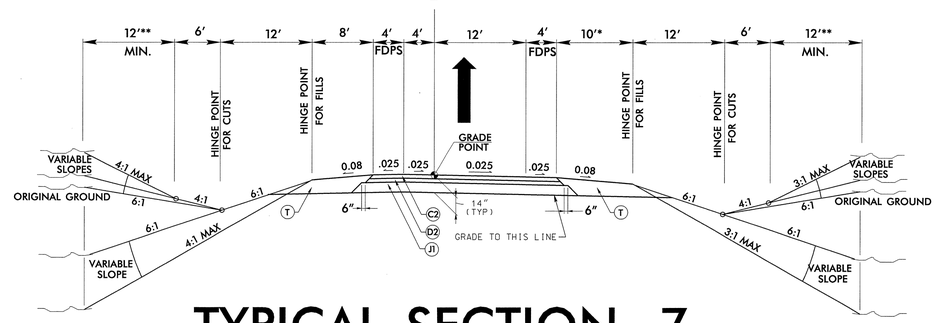
NOT TO SCALE

PROJECT REFERENCE NO.	SHEET NO.
R-2719AA	2D
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 18470 ENGINEER EDWARD GLENN EDENS, JR. 3/29/12

PAVEMENT DESIGN ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 22896 ENGINEER CLARK S. MORRISON 3/30/12

℄ Y24RPB & Y24RPC

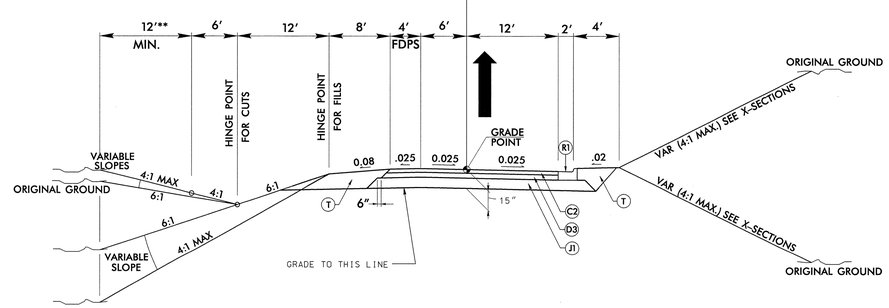


TYPICAL SECTION 7

USE TYPICAL SECTION NO. 7 FOR:

–Y24RPB– STA. 0+00.00 TO 15+65.23 (REVERSE)
–Y24RPC– STA. 0+00.00 TO 17+66.91

℄ Y1LPC



TYPICAL SECTION 8

USE TYPICAL SECTION NO. 8 FOR:

–Y1LPC– STA. 0+00.00 TO 14+34.42

PAVEMENT SCHEDULE	
CODE	DESCRIPTION
C	1.5" S9.5C
C1	3" S9.5B
C2	3" S9.5C
C3	VAR. S9.5B
C4	VAR. S9.5C
C5	2" S9.5B
D1	3" I19.0B
D2	3" I19.0C
D3	4" I19.0C
D4	VAR. I19.0B
D5	VAR. I19.0C
E1	4.0" B25.0B
E2	5.5" B25.0B
E3	3" B25.0C
E4	5" B25.0C
E5	VAR. B25.0C
E6	8" B25.0C
E7	VAR. B25.0B
J	6" ABC
J1	8" ABC
J2	10" ABC
P	PRIME COAT
R1	CONC C & G (2'-6")
R2	MONO. CONC ISLAND
R3	EXPRESSWAY GUTTER
R4	SHOULDER BERM GUTTER
T	EARTH MATERIAL
U	EXIST PAVEMENT
V	RUMBLE STRIPS
W	WEDGING (SEE SHEET 2)

NOTES: TYPICAL SECTIONS SHOWN ARE FOR TANGENT SECTIONS ONLY. SEE PLANS AND STANDARD DRAWINGS FOR SUPERELEVATION DETAILS AND LANE ADDITIONS/WIDENING AT INTERSECTIONS. MAXIMUM ROLLOVER IS 6%.

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

FOR PAVEMENT SCHEDULE WITH APPLICATION RATES, SEE SHEET 2.

FDPS – FULL DEPTH PAVED SHOULDERS.

* ADD 3.0 FT WITH GUARDRAIL.

** WHEN THESE DISTANCES INDICATE SLOPES OUTSIDE THE LIMITS OF 6:1 TO 3:1 THE DISTANCE BECOMES VARIABLE AND THE MAXIMUM SLOPE MAINTAINED. SEE CROSS SECTIONS.

Prepared by
URS
URS Corporation – North Carolina
1600 Perimeter Park Drive
Morrisville, North Carolina 27560
TELEPHONE (919) 461-1100 FAX (919) 461-1415

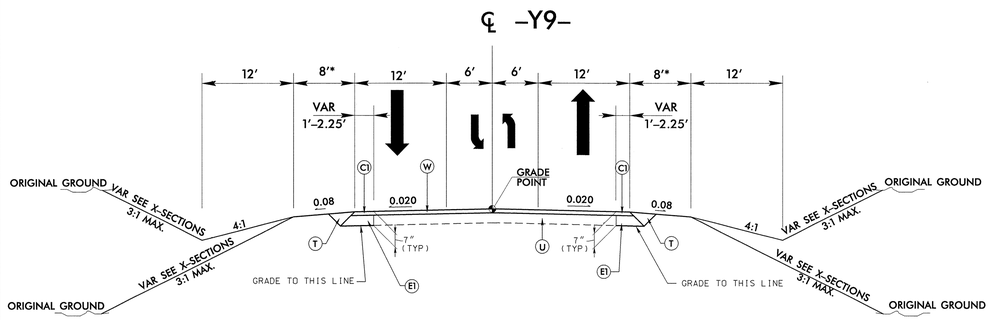
English

NOT TO SCALE

PROJECT REFERENCE NO.	SHEET NO.
R-2719AA	2E
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 18470 ENGINEER EDWARD GLENN EDENS, III 3/28/12

PAVEMENT DESIGN ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 22896 ENGINEER CLARK S. MORRISON 3/30/12

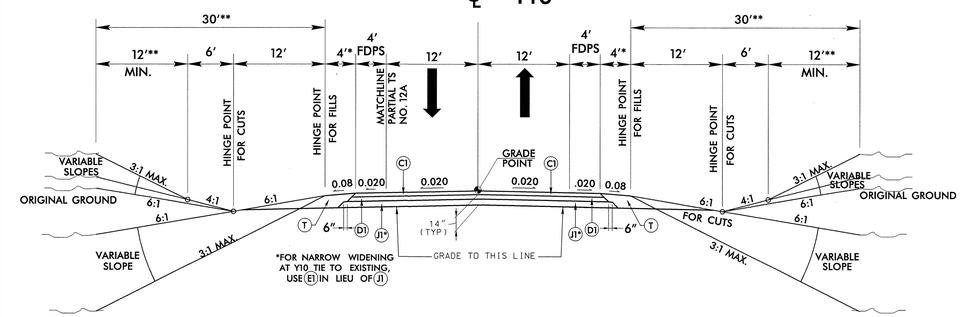


TYPICAL SECTION 9

USE TYPICAL SECTION NO. 9 FOR:

–Y9– STA. 10+12.09 TO 31+30.87

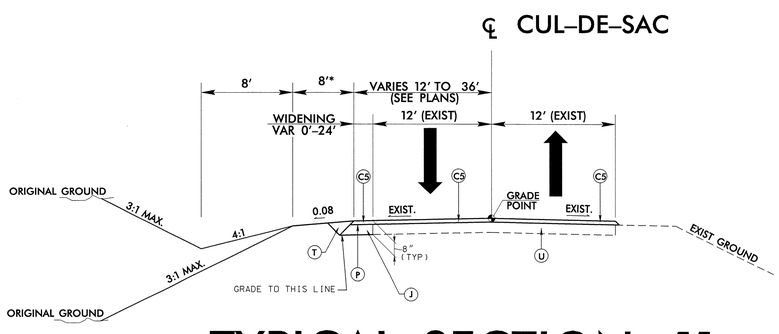
TRANSITION FROM T.S. NO. 9 TO EXISTING
–Y9– STA. 31+30.87 TO 33+30.87



TYPICAL SECTION 10

USE TYPICAL SECTION NO. 10 FOR:

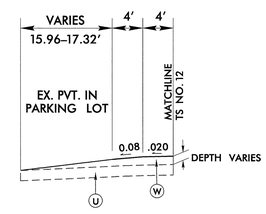
–Y10– STA. 10+47.37 TO STA. 11+90.00
TRANSITION FROM T.S. NO. 9 TO EXISTING
–Y10– STA. 11+90 TO 12+16.98
NOTE: –Y10– UNDERCUTS EXISTING PAVEMENT



TYPICAL SECTION 11

USE TYPICAL SECTION NO. 11 FOR:

–Y1– STA. 26+79.06 (OFFSET 172.49′ RT)



PARTIAL TYPICAL SECTION 12

USE PARTIAL TYPICAL SECTION NO. 12 IN CONJUNCTION WITH TYP. SECTION NO. 11 FOR:

–Y10– STA. 11+37.12 TO STA. 12+16.98 LT SIDE

PAVEMENT SCHEDULE

CODE	DESCRIPTION
C	1.5″ S9.5C
C1	3″ S9.5B
C2	3″ S9.5C
C3	VAR. S9.5B
C4	VAR. S9.5C
C5	2″ S9.5B
D1	3″ I19.0B
D2	3″ I19.0C
D3	4″ I19.0C
D4	VAR. I19.0B
D5	VAR. I19.0C
E1	4.0″ B25.0B
E2	5.5″ B25.0B
E3	3″ B25.0C
E4	5″ B25.0C
E5	VAR. B25.0C
E6	8″ B25.0C
E7	VAR. B25.0B
J	6″ ABC
J1	8″ ABC
J2	10″ ABC
P	PRIME COAT
R1	CONC C & G (2′–6″)
R2	MONO. CONC ISLAND
R3	EXPRESSWAY GUTTER
R4	SHOULDER BERM GUTTER
T	EARTH MATERIAL
U	EXIST PAVEMENT
V	RUMBLE STRIPS
W	WEDGING (SEE SHEET 2)

NOTES: TYPICAL SECTIONS SHOWN ARE FOR TANGENT SECTIONS ONLY. SEE PLANS AND STANDARD DRAWINGS FOR SUPERELEVATION DETAILS AND LANE ADDITIONS/WIDENING AT INTERSECTIONS. MAXIMUM ROLLOVER IS 6%.

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

FOR PAVEMENT SCHEDULE WITH APPLICATION RATES, SEE SHEET 2.

FDPS – FULL DEPTH PAVED SHOULDERS.

* ADD 3.0 FT WITH GUARDRAIL.

** WHEN THESE DISTANCES INDICATE SLOPES OUTSIDE THE LIMITS OF 6:1 TO 3:1 THE DISTANCE BECOMES VARIABLE AND THE MAXIMUM SLOPE MAINTAINED. SEE CROSS SECTIONS.

Prepared by
URS
URS Corporation – North Carolina
1600 Perimeter Park Drive
Morrisville, North Carolina 27560
TELEPHONE (919) 461-1100 FAX (919) 461-1415

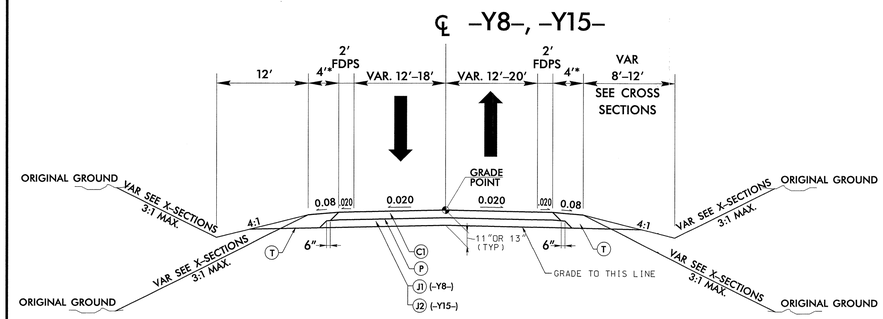
English

NOT TO SCALE

PROJECT REFERENCE NO.	SHEET NO.
R-2719AA	2F
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 18470 ENGINEER EDWARD GLENN EDENS, JR.
3/30/12

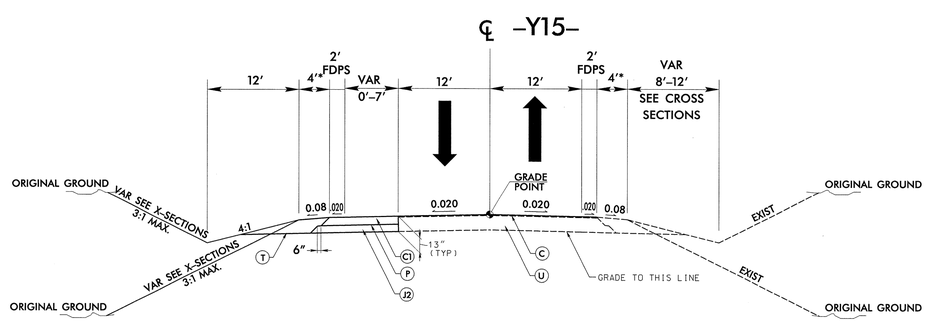
PAVEMENT DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 22896 ENGINEER CLARK S. MORRISON
3/30/12



TYPICAL SECTION 13

USE TYPICAL SECTION NO. 13 FOR:

–Y8– STA. 10+47.00 TO 24+72.98 (Paving Only)
–Y8– STA. 14+27.78 TO 24+72.98 (Paving and Grading)
–Y15– STA. 28+00.00 TO 31+26.03 (New Location)



TYPICAL SECTION 14

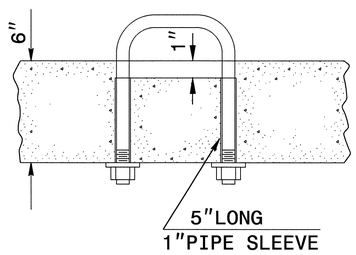
USE TYPICAL SECTION NO. 14 FOR:

–Y15– STA. 18+00.00 TO 26+57.51 (Overlay)
–Y15– STA. 26+57.51 TO 28+00.00 (Widening)

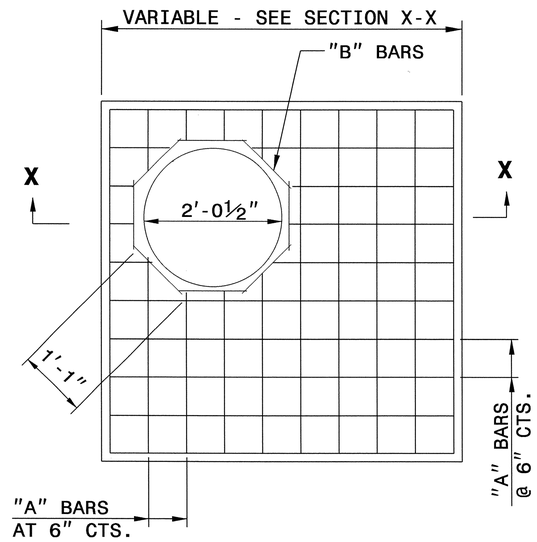
TRANSITION FROM EXISTING TO T.S. NO. 14
–Y15– STA. 26+00.00 TO 26+57.51

PAVEMENT SCHEDULE	
CODE	DESCRIPTION
C	1.5″ S9.5C
C1	3″ S9.5B
C2	3″ S9.5C
C3	VAR. S9.5B
C4	VAR. S9.5C
C5	2″ S9.5B
D1	3″ I19.0B
D2	3″ I19.0C
D3	4″ I19.0C
D4	VAR. I19.0B
D5	VAR. I19.0C
E1	4.0″ B25.0B
E2	5.5″ B25.0B
E3	3″ B25.0C
E4	5″ B25.0C
E5	VAR. B25.0C
E6	8″ B25.0C
E7	VAR. B25.0B
J	6″ ABC
J1	8″ ABC
J2	10″ ABC
P	PRIME COAT
R1	CONC C & G (2′-6″)
R2	MONO. CONC ISLAND
R3	EXPRESSWAY GUTTER
R4	SHOULDER BERM GUTTER
T	EARTH MATERIAL
U	EXIST PAVEMENT
V	RUMBLE STRIPS
W	WEDGING (SEE SHEET 2)

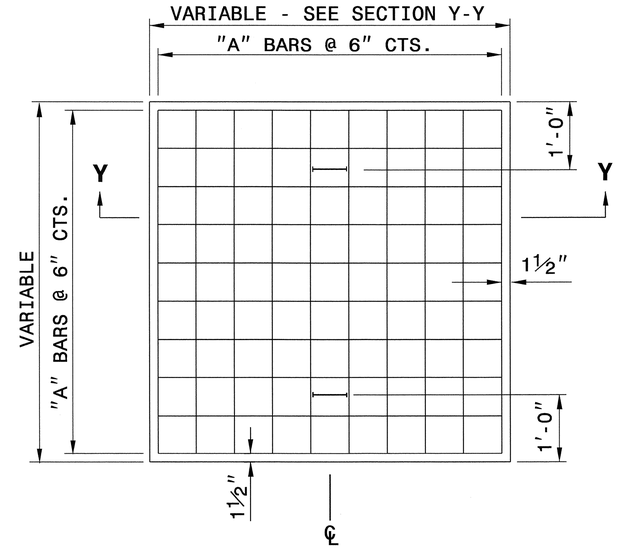
PROJECT REFERENCE NO.	SHEET NO.
R-2719AA	2G



PARTIAL SECTION



PLAN



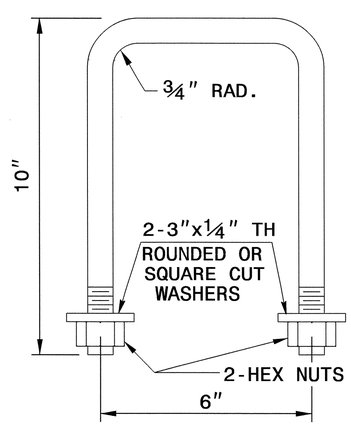
PLAN

GENERAL NOTES:

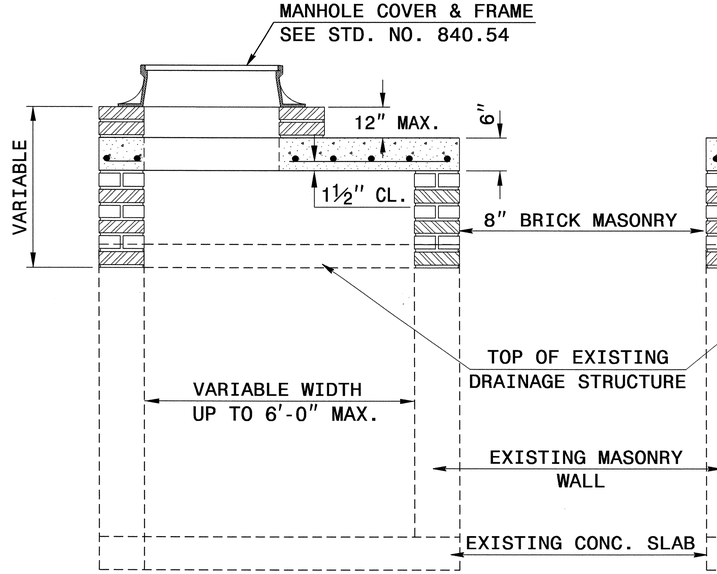
CONSTRUCT IN ACCORDANCE WITH SECTION 859 OF THE STANDARD SPECIFICATIONS.

THE DIMENSIONS FOR THE EXISTING BOXES ARE APPROXIMATE AND MAY VARY SLIGHTLY.

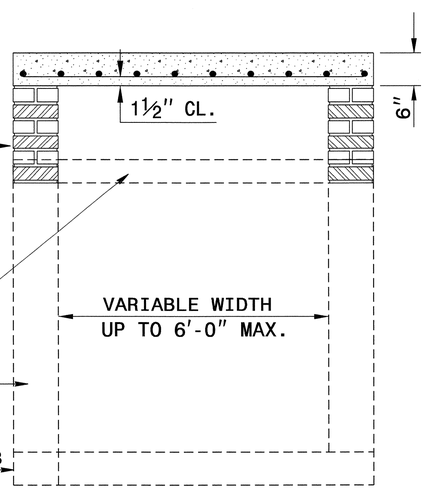
DETAIL INTENDED FOR NON-TRAFFIC BEARING DRAINAGE STRUCTURES.



DETAIL OF HANDLE



SECTION X-X



SECTION Y-Y

BILL OF MATERIALS

REINFORCING STEEL

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

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

* NOTE:
QUANTITIES BASED ON 3'-6" X 3'-6" DRAINAGE STRUCTURE. ADJUST QUANTITIES FOR LARGER STRUCTURES AND MANHOLE CONSTRUCTION.

NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER JOELS HOWERTON
4/16/12

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

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

ORIGINAL BY: T.S.S. DATE: NOV.1997
MODIFIED BY: T.S.S. DATE: FEB.2000
CHECKED BY: DATE:
FILE SPEC.: ds174:/usr/details/stand/boxtojbe.dgn

22-MAR-2012 13:57
S:\Contracts\Contracts\Special Details\ericward\usr\details\stand\boxtojbe.dgn
$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
R-2719AA	2-H
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 18470 ENGINEER EDWARD GLENN EDENS, JR. 2/23/12

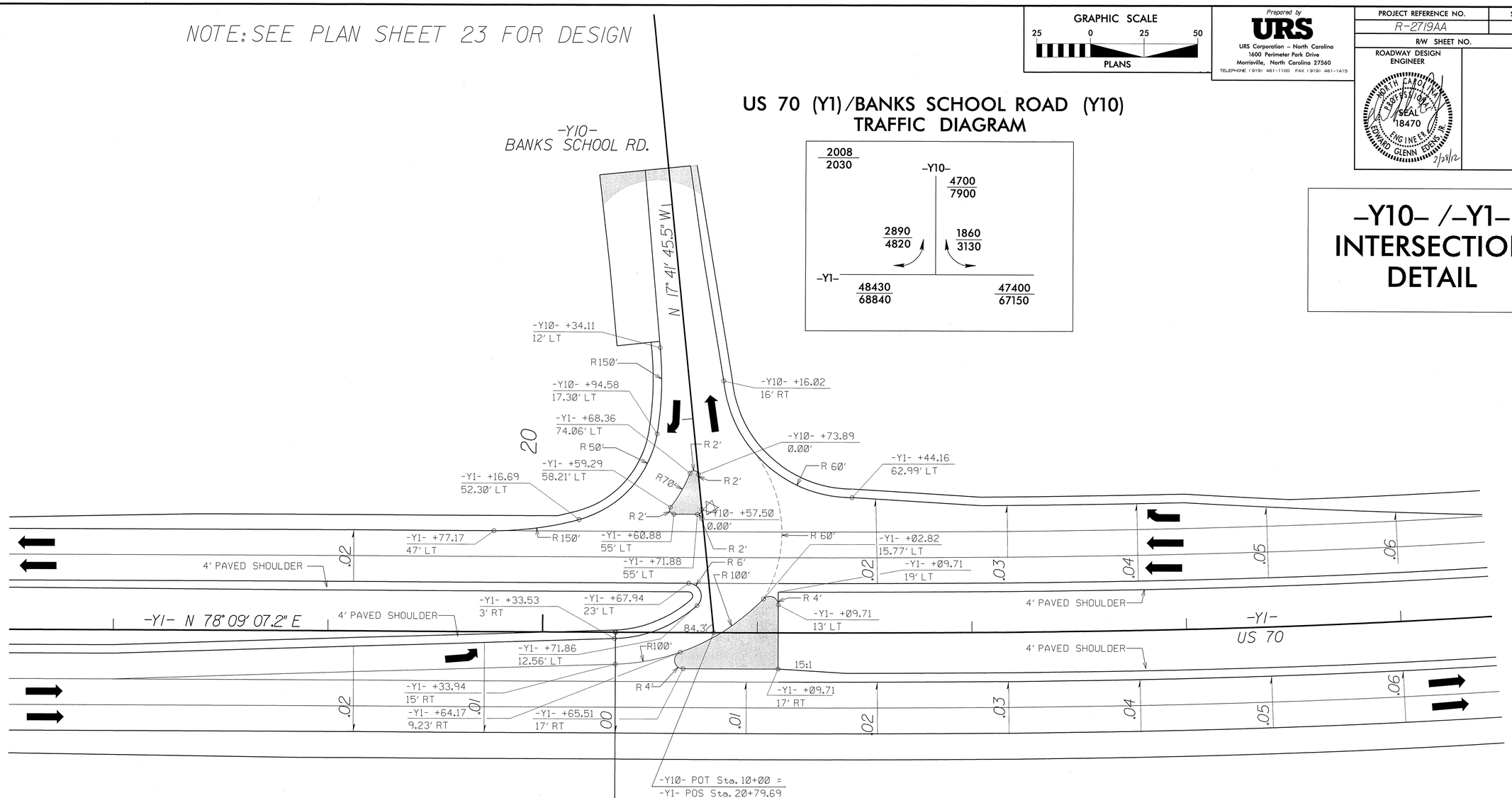
GRAPHIC SCALE
25 0 25 50
PLANS

Prepared by
URS
URS Corporation - North Carolina
1600 Perimeter Park Drive
Morrisville, North Carolina 27560
TELEPHONE (919) 461-1100 FAX (919) 461-1415

-Y10- /-Y1- INTERSECTION DETAIL

NOTE: SEE PLAN SHEET 23 FOR DESIGN

US 70 (Y1)/BANKS SCHOOL ROAD (Y10) TRAFFIC DIAGRAM



-Y1- CURVE DATA

Pls Sta 23+18.69
Θs = 4° 16' 10.9"
Ls = 427.00'
LT = 284.75'
ST = 142.41'

-Y1- TS Sta. 20+33.94

LEGEND

MONOLITHIC CONCRETE ISLAND (NCDOT STD. 852.01)

NOTE: SEE PLAN SHEET 28 FOR DESIGN

GRAPHIC SCALE
25 0 25 50
PLANS

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URS Corporation – North Carolina
1600 Perimeter Park Drive
Morrisville, North Carolina 27560
TELEPHONE (919) 461-1100 FAX (919) 461-1415

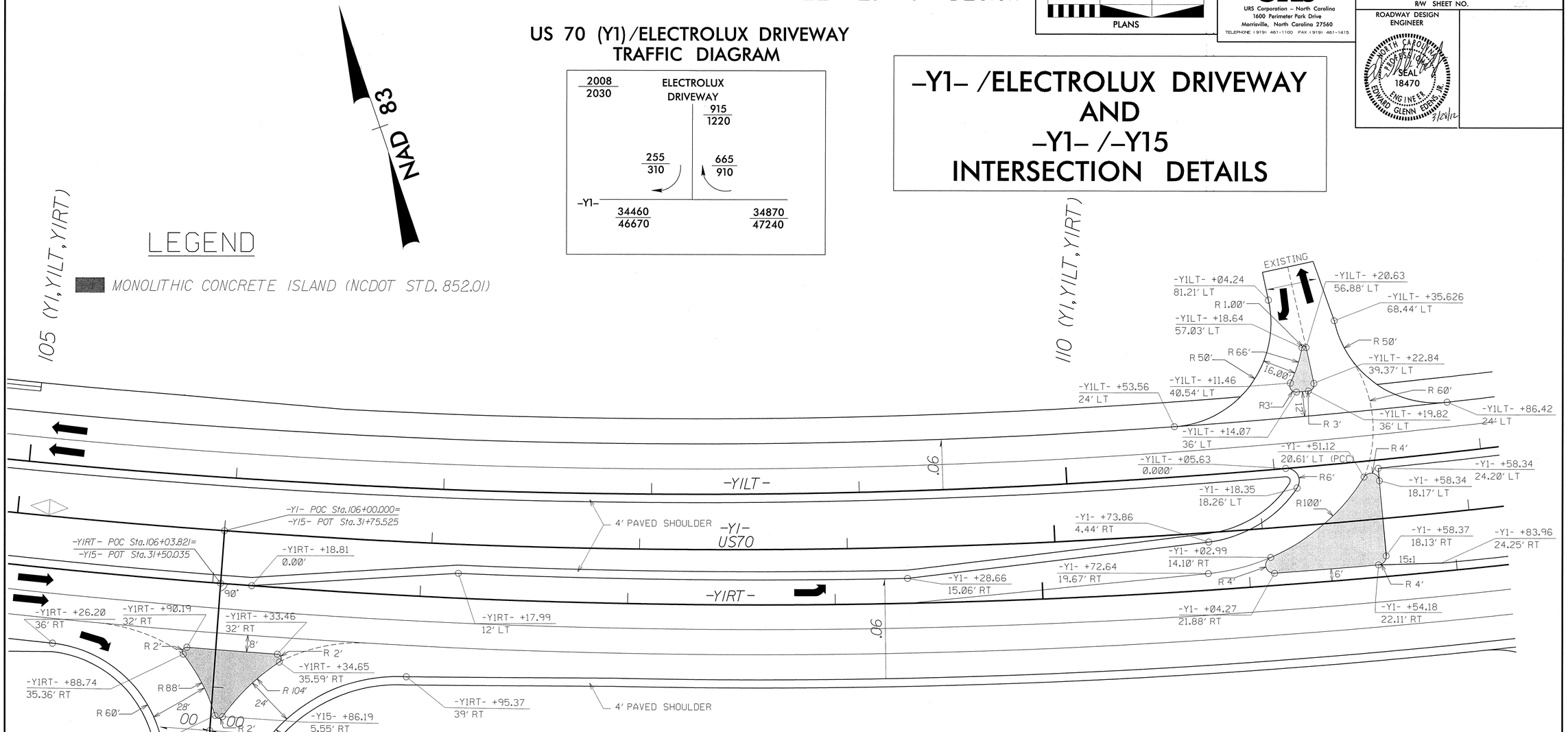
PROJECT REFERENCE NO.	SHEET NO.
R-2719AA	2-1
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER

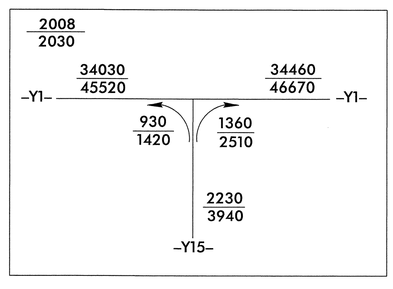
NORTH CAROLINA PROFESSIONAL SEAL 18470 ENGINEER EDWARD GLENN EDENS, JR.
3/28/12

-Y1- /ELECTROLUX DRIVEWAY AND -Y1- /-Y15 INTERSECTION DETAILS

US 70 (Y1)/ELECTROLUX DRIVEWAY TRAFFIC DIAGRAM



US 70 (Y1)/OLD US 70 (Y15) TRAFFIC DIAGRAM



-Y1- CURVE DATA

PIs Sta 101+25.48	PI Sta 109+51.23
Θs = 2° 20' 38.1"	Δ = 25° 08' 18.0" (LT)
Ls = 270.00'	D = 1° 44' 10.4"
LT = 180.02'	L = 1,447.86'
ST = 90.01'	T = 735.77'
	R = 3,300.00'
	e = 6%

-Y1LT- CURVE DATA

PIs Sta 101+09.40	PI Sta 109+29.04
Θs = 2° 21' 37.3"	Δ = 25° 06' 19.5" (LT)
Ls = 270.00'	D = 1° 44' 54.3"
LT = 180.02'	L = 1,435.89'
ST = 90.01'	T = 729.66'
	R = 3,277.00'
	e = SEE -Y1-

-Y1RT- CURVE DATA

PIs Sta 101+41.56	PI Sta 109+73.44
Θs = 2° 19' 39.7"	Δ = 25° 10' 14.8" (LT)
Ls = 270.00'	D = 1° 43' 27.2"
LT = 180.02'	L = 1,459.84'
ST = 90.01'	T = 741.89'
	R = 3,323.00'
	e = SEE -Y1-

PROJECT REFERENCE NO.	SHEET NO.
R-2719AA	2-J
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER

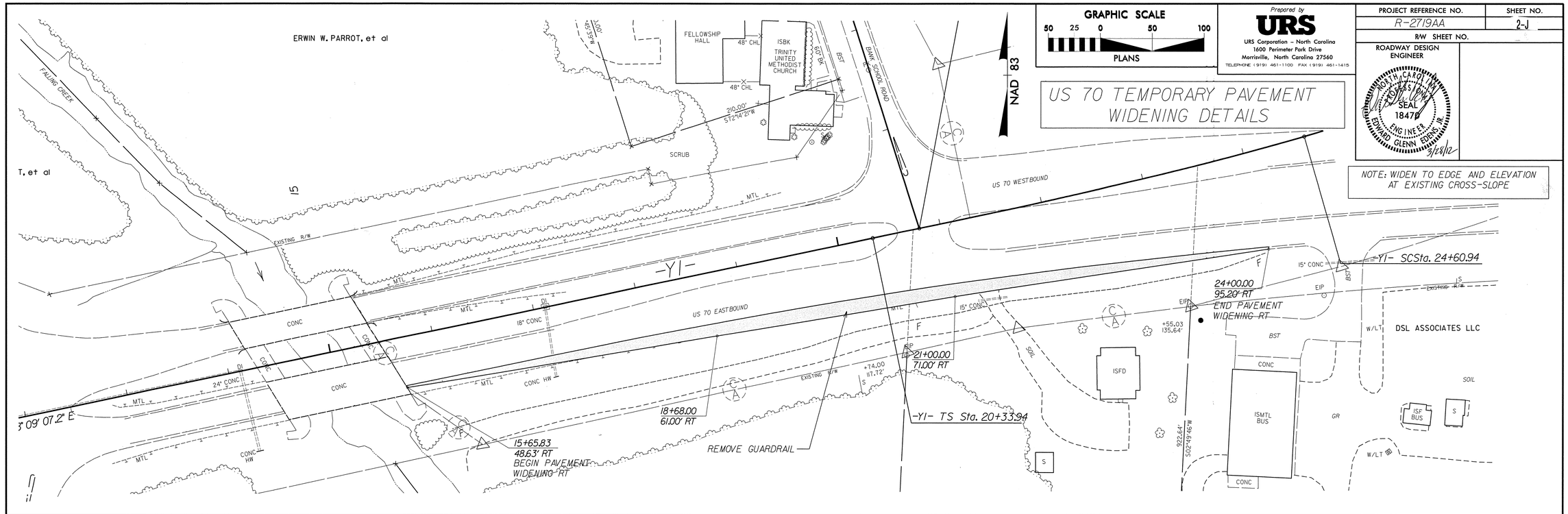
NORTH CAROLINA PROFESSIONAL SEAL 18470 ENGINEER EDWARD GLENN EDENS, III 3/28/12

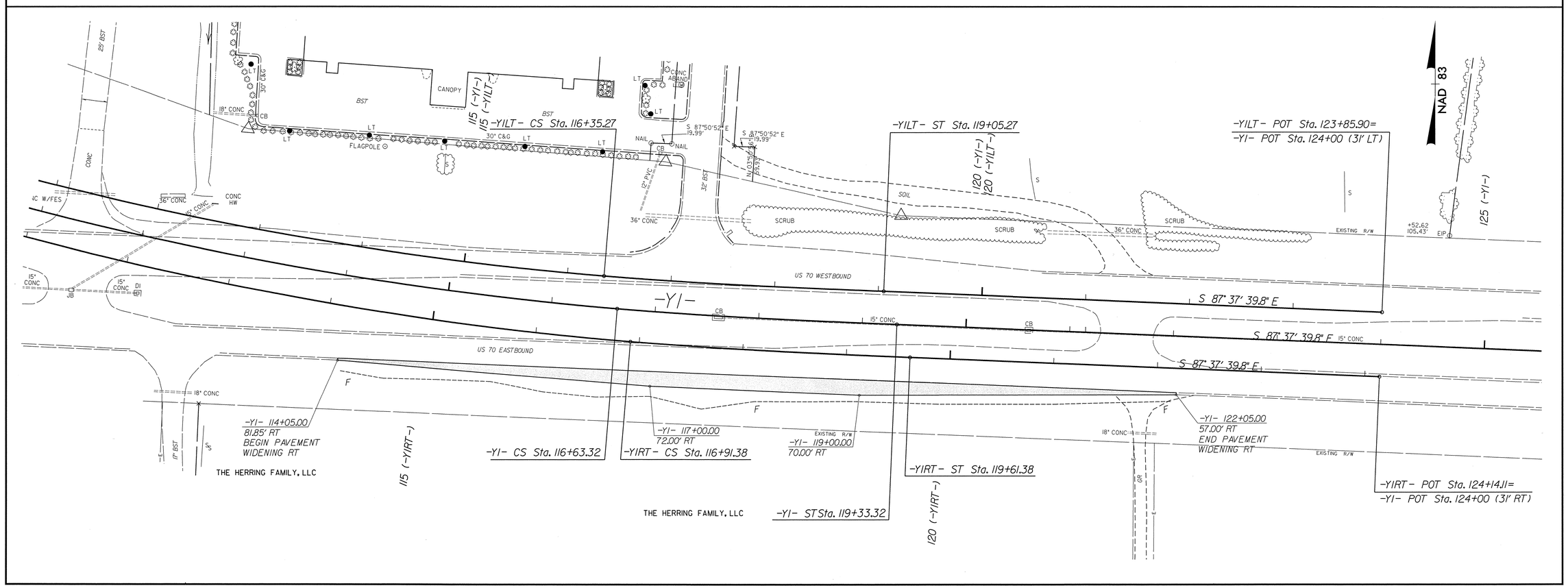
GRAPHIC SCALE
50 25 0 50 100
PLANS

Prepared by
URS
URS Corporation – North Carolina
1600 Perimeter Park Drive
Morrisville, North Carolina 27560
TELEPHONE: (919) 461-1100 FAX: (919) 461-1415

US 70 TEMPORARY PAVEMENT WIDENING DETAILS

NOTE: WIDEN TO EDGE AND ELEVATION AT EXISTING CROSS-SLOPE





8/17/99

NOISE WALL DETAIL SHEET

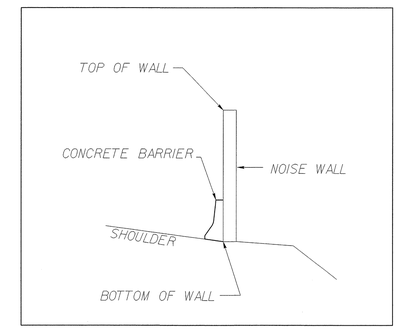
NOTE: SEE SHEET 2 FOR NOISE WALL CROSS SECTION DETAILS
NOTE: SEE SHEETS SW-1 THRU SW-3 FOR SOUND BARRIER WALL DETAILS

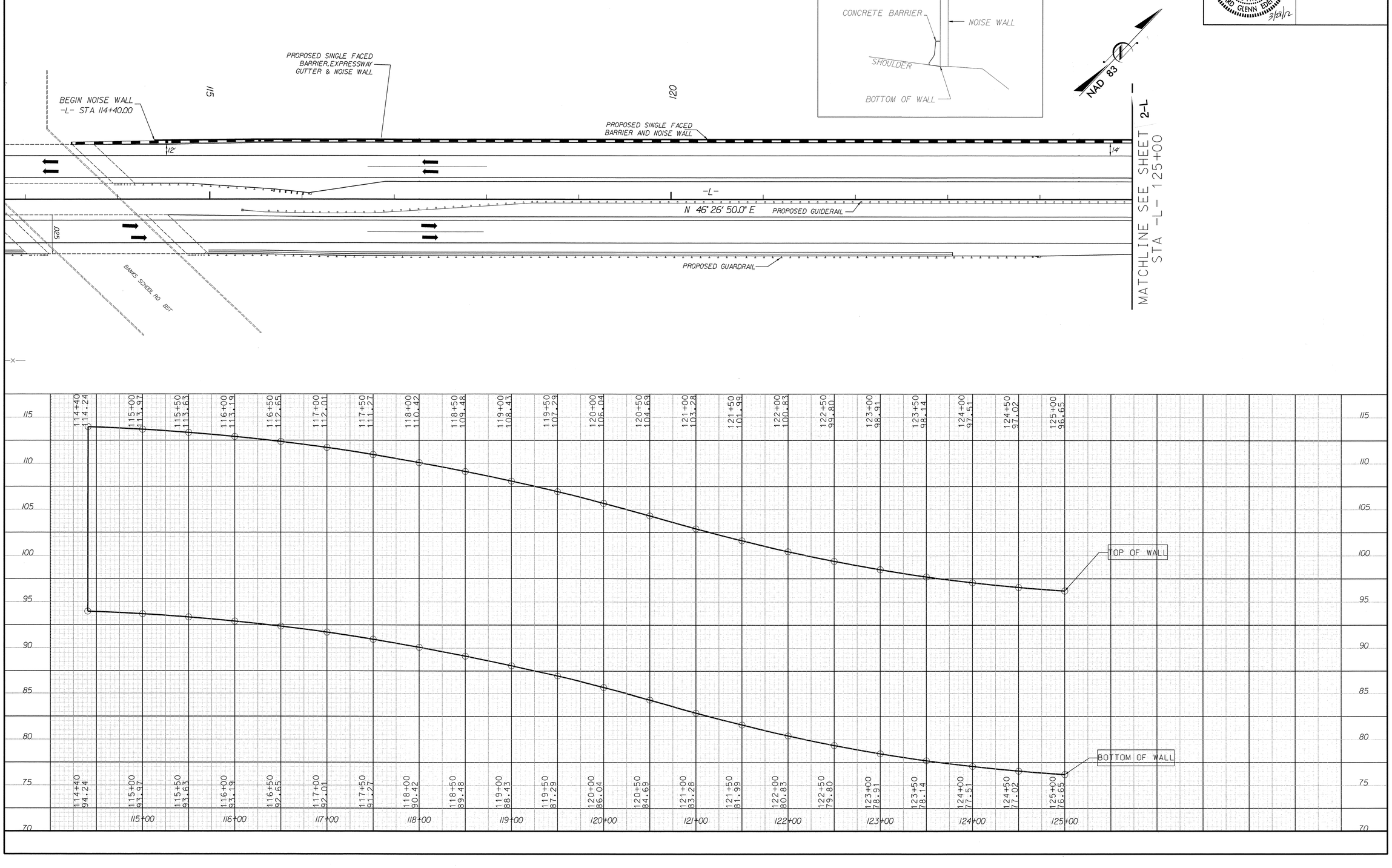
Prepared by
URS
URS Corporation – North Carolina
1600 Perimeter Park Drive
Morrisville, North Carolina 27560
TELEPHONE (919) 461-1100 FAX (919) 461-1415

PROJECT REFERENCE NO.	SHEET NO.
R-2719AA	2-K
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 18470 ENGINEER EDWARD GLENN EDENS, III
3/28/12





8/17/99

NOTE: SEE SHEET 2-A FOR NOISE WALL CROSS SECTION DETAILS
NOTE: SEE SHEETS SW-1 THRU SW-3 FOR SOUND BARRIER WALL DETAILS

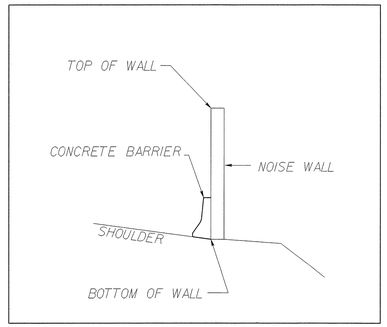
NOISE WALL DETAIL SHEET

Prepared by
URS
URS Corporation – North Carolina
1600 Perimeter Park Drive
Morrisville, North Carolina 27560
TELEPHONE (919) 461-1100 FAX (919) 461-1415

PROJECT REFERENCE NO.	SHEET NO.
R-2719AA	2-L
R/W SHEET NO.	

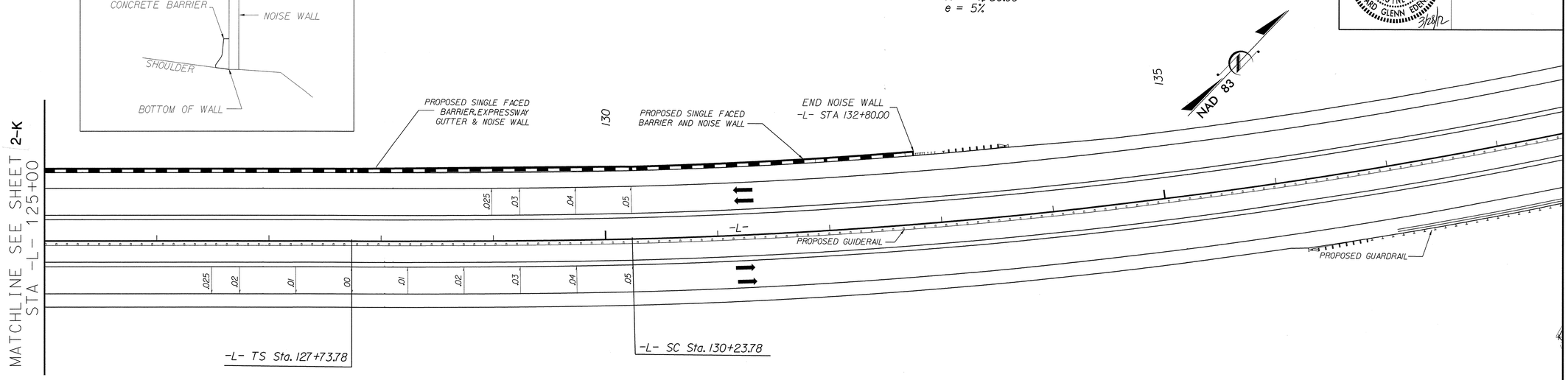
ROADWAY DESIGN ENGINEER

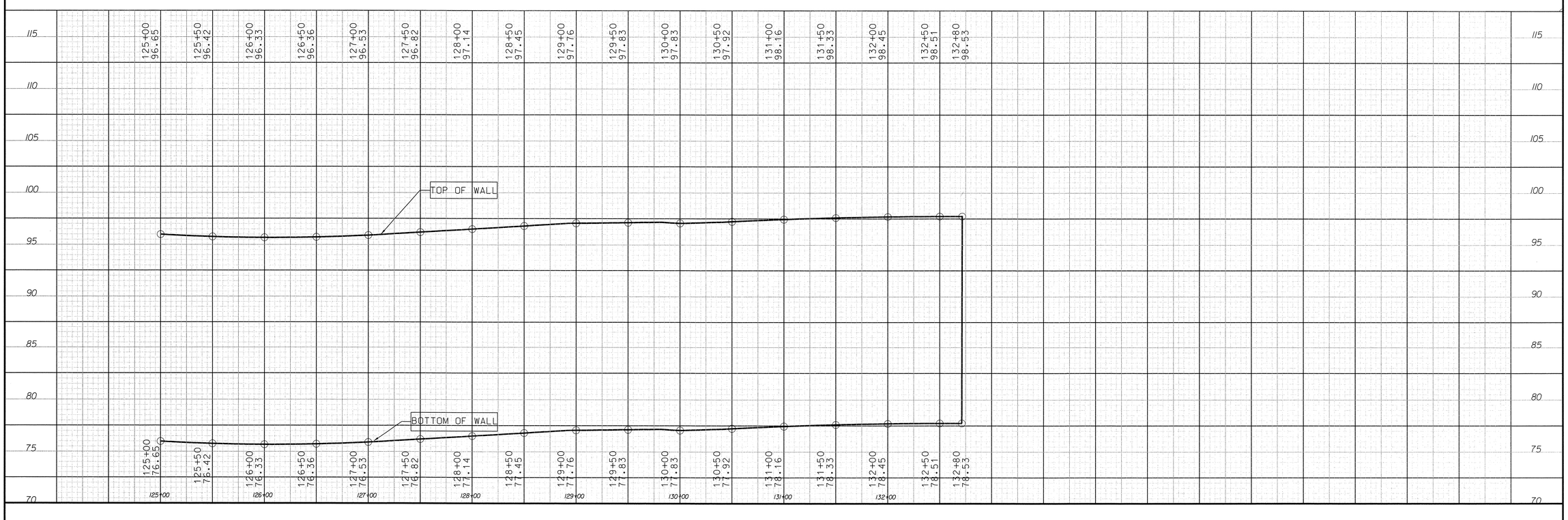
NORTH CAROLINA PROFESSIONAL SEAL 18470 ENGINEER EDWARD GLENN EDENS, III
3/28/12



-L- CURVE DATA

PIs Sta 129+40.45	PI Sta 151+30.46
Θs = 1° 30' 28.0"	Δ = 47° 50' 08.7" (LT)
Ls = 250.00'	D = 1° 12' 22.4"
LT = 166.67'	L = 3,965.73'
ST = 83.34'	T = 2106.68'
	R = 4,750.00'
	e = 5%





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NOISE WALL DETAIL SHEET

Prepared by
URS
URS Corporation – North Carolina
1600 Perimeter Park Drive
Morrisville, North Carolina 27560
TELEPHONE (919) 461-1100 FAX (919) 461-1415

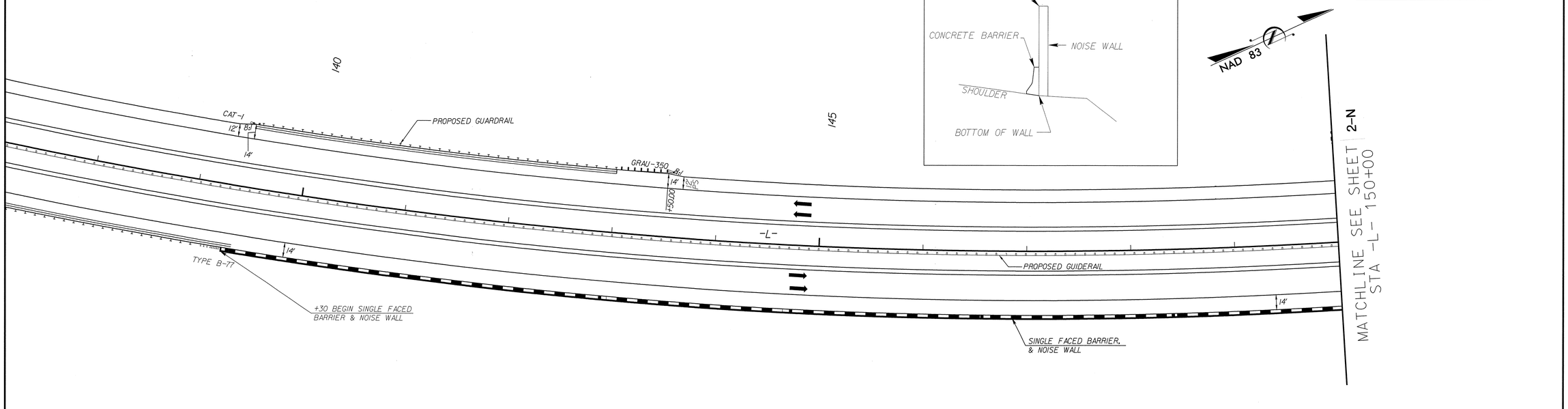
PROJECT REFERENCE NO.	SHEET NO.
R-2719AA	2-M
R/W SHEET NO.	

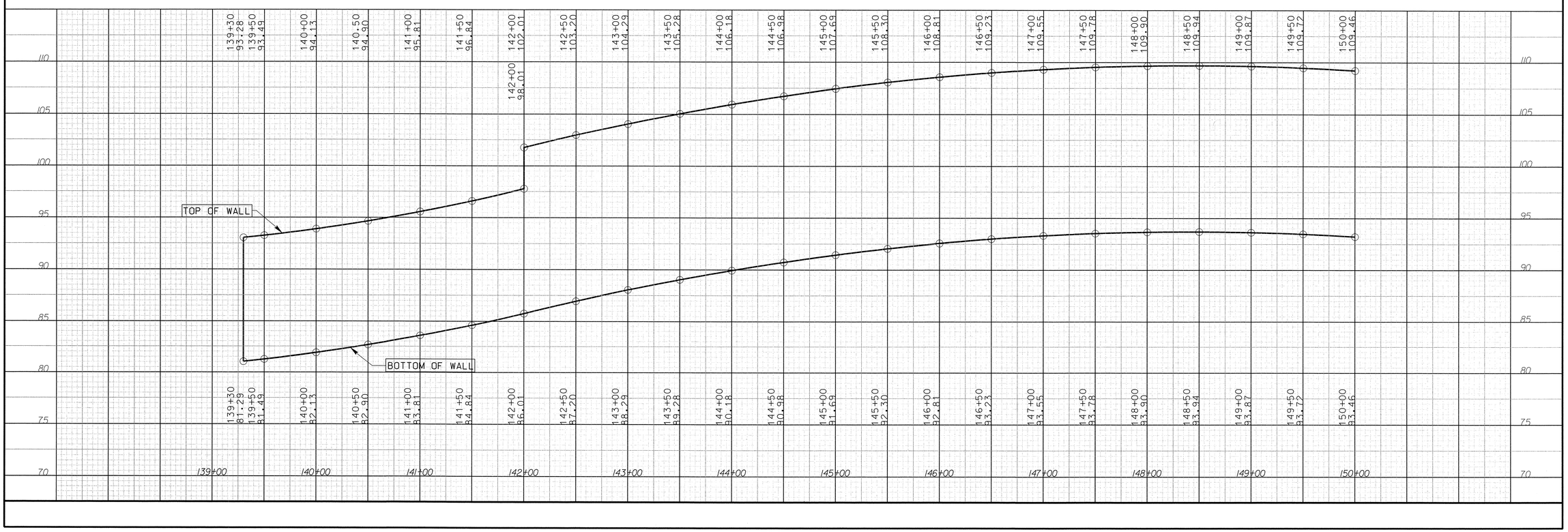
ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 18470 ENGINEER EDWARD GLENN EDENS, III
3/29/12

NOTE: SEE SHEET 2 FOR NOISE WALL CROSS SECTION DETAILS
NOTE: SEE SHEETS SW-1 THRU SW-3 FOR SOUND BARRIER WALL DETAILS

-L- CURVE DATA
PI Sta 151+30.46
△ = 47° 50' 08.7" (LT)
D = 1° 12' 22.4"
L = 3,965.73'
T = 2106.68'
R = 4,750.00'
e = 5%





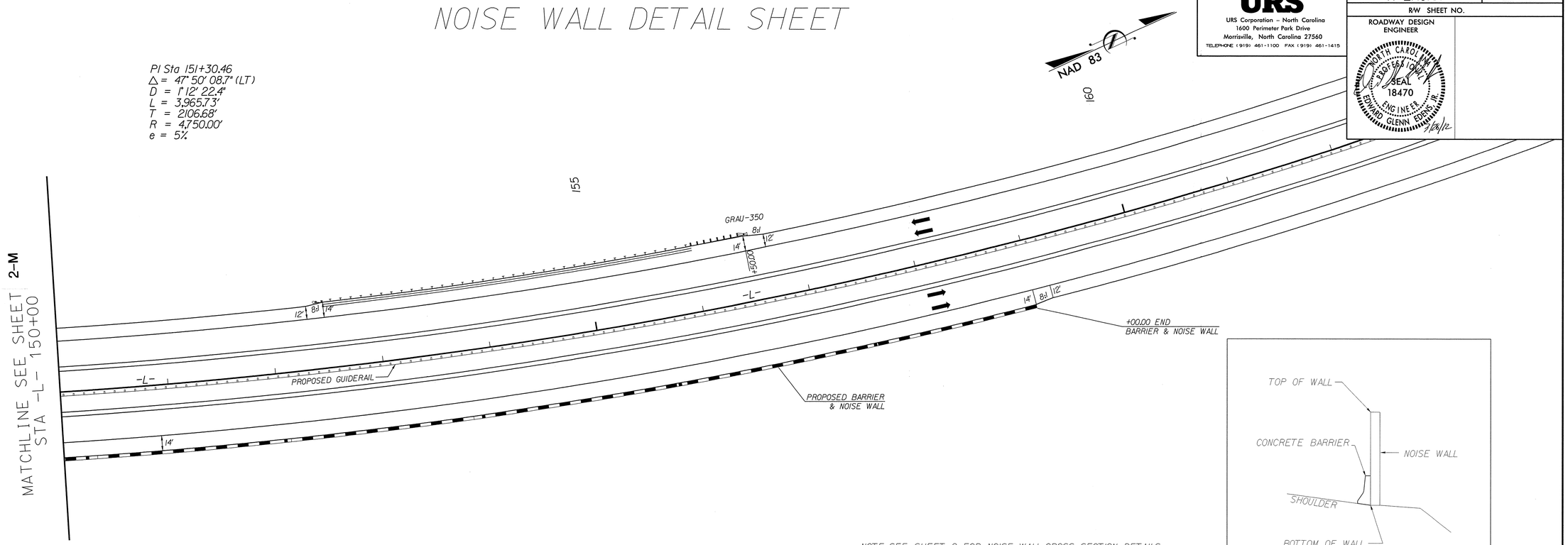
8/17/99

NOISE WALL DETAIL SHEET

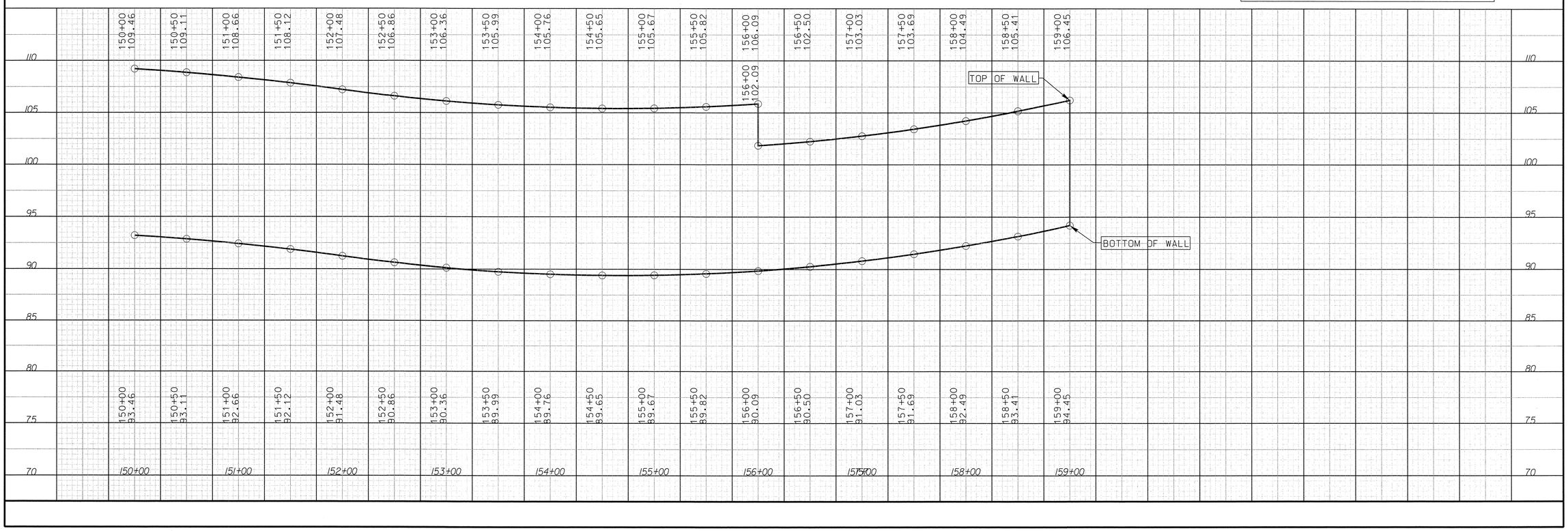
Prepared by	PROJECT REFERENCE NO.	SHEET NO.
URS	R-2719AA	2-N
URS Corporation – North Carolina 1600 Perimeter Park Drive Morrisville, North Carolina 27560 TELEPHONE (919) 461-1100 FAX (919) 461-1415	R/W SHEET NO.	
	ROADWAY DESIGN ENGINEER	

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 18470 EDWARD GLENN EDENS, III 3/28/12

PI Sta 151+30.46
△ = 47° 50' 08.7" (LT)
D = 1° 12' 22.4"
L = 3,965.73'
T = 2106.68'
R = 4,750.00'
e = 5%



NOTE: SEE SHEET 2 FOR NOISE WALL CROSS SECTION DETAILS
NOTE: SEE SHEETS SW-1 THRU SW-3 FOR SOUND BARRIER WALL DETAILS



PROJECT REFERENCE NO.	SHEET NO.
R-2719AA	3

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
ROADWAY SUMMARY OF QUANTITIES FOR CONTRACT - C202961

ItemNumber	Sec #	Quantity	Unit	Description
0000100000-N	800	Lump Sum		MOBILIZATION
0000A	801	Lump Sum		Construction Surveying
0000700000-N	SP	Lump Sum		FIELD OFFICE
0001000000-E	200	Lump Sum		CLEARING & GRUBBING .. ACRE(S)
0008000000-E	200	1	ACR	SUPPLEMENTARY CLEARING & GRUBBING
0022000000-E	225	11,380	CY	UNCLASSIFIED EXCAVATION
0106000000-E	230	105,050	CY	BORROW EXCAVATION
0134000000-E	240	460	CY	DRAINAGE DITCH EXCAVATION
0156000000-E	250	29,750	SY	REMOVAL OF EXISTING ASPHALT PAVEMENT
0192000000-N	260	70	HR	PROOF ROLLING
0196000000-E	270	100	SY	GEOTEXTILE FOR SOIL STABILIZATION
0318000000-E	300	120	TON	FOUNDATION CONDITIONING MATERIAL, MINOR STRUCTURES
0320000000-E	300	370	SY	FOUNDATION CONDITIONING GEOTEXTILE
0342000000-E	310	28	LF	**" SIDE DRAIN PIPE (30")
0342000000-E	310	176	LF	**" SIDE DRAIN PIPE (36")
0343000000-E	310	132	LF	15" SIDE DRAIN PIPE
0344000000-E	310	40	LF	18" SIDE DRAIN PIPE
0345000000-E	310	140	LF	24" SIDE DRAIN PIPE
0366000000-E	310	192	LF	15" RC PIPE CULVERTS, CLASS III
0372000000-E	310	76	LF	18" RC PIPE CULVERTS, CLASS III
0378000000-E	310	416	LF	24" RC PIPE CULVERTS, CLASS III
0390000000-E	310	404	LF	36" RC PIPE CULVERTS, CLASS III
0588000000-E	310	36	LF	18" CS PIPE CULVERTS, 0.064" THICK
0995000000-E	340	728	LF	PIPE REMOVAL
1000000000-E	462	200	SY	6" SLOPE PROTECTION
1011000000-N	500	Lump Sum		FINE GRADING
1121000000-E	520	201,100	TON	AGGREGATE BASE COURSE
1275000000-E	600	2,500	GAL	PRIME COAT
1330000000-E	607	1000	SY	INCIDENTAL MILLING
1489000000-E	610	870	TON	ASPHALT CONC BASE COURSE, TYPE B25.0B
1491000000-E	610	55,600	TON	ASPHALT CONC BASE COURSE, TYPE B25.0C
1498000000-E	610	160	TON	ASPHALT CONC INTERMEDIATE COURSE, TYPE I19.0B
1503000000-E	610	65,660	TON	ASPHALT CONC INTERMEDIATE COURSE, TYPE I19.0C
1519000000-E	610	2,090	TON	ASPHALT CONC SURFACE COURSE, TYPE S9.5B
1523000000-E	610	52,970	TON	ASPHALT CONC SURFACE COURSE, TYPE S9.5C
1575000000-E	620	8,900	TON	ASPHALT BINDER FOR PLANT MIX
1840000000-E	665	168,950	LF	MILLED RUMBLE STRIPS (ASPHALT CONCRETE)
2209000000-E	838	10.8	CY	ENDWALLS
2253000000-E	840	3	CY	PIPE COLLARS
2286000000-N	840	6	EA	MASONRY DRAINAGE STRUCTURES
2365000000-N	840	6	EA	FRAME WITH TWO GRATES, STD 840.22
2396000000-N	840	1	EA	FRAME WITH COVER, STD 840.54
2549000000-E	846	1,200	LF	2'-6" CONCRETE CURB & GUTTER
2556000000-E	846	4,714	LF	SHOULDER BERM GUTTER
2577000000-E	846	10,000	LF	CONCRETE EXPRESSWAY GUTTER
2655000000-E	852	400	SY	5" MONOLITHIC CONCRETE ISLANDS (KEYED IN)
2724000000-E	857	4,050	LF	PRECAST REINFORCED CONCRETE BARRIER, SINGLE FACED
2938000000-N	859	1	EA	CONVERT EXISTING DROP INLET TO JUNCTION BOX WITH MANHOLE
3000000000-N	SP	4	EA	IMPACT ATTENUATOR UNIT, TYPE 350
3030000000-E	862	25,500	LF	STEEL BM GUARDRAIL
3150000000-N	862	20	EA	ADDITIONAL GUARDRAIL POSTS
3210000000-N	862	18	EA	GUARDRAIL ANCHOR UNITS, TYPE CAT-1
3270000000-N	SP	26	EA	GUARDRAIL ANCHOR UNITS, TYPE 350
3285000000-N	SP	9	EA	GUARDRAIL ANCHOR UNITS, TYPE M-350
3317000000-N	862	41	EA	GUARDRAIL ANCHOR UNITS, TYPE B-77
3319000000-N	862	2	EA	GUARDRAIL ANCHOR UNITS, TYPE B-83
3360000000-E	863	1,110	LF	REMOVE EXISTING GUARDRAIL
3389400000-E	865	24,520	LF	DOUBLE FACED CABLE GUIDERAIL
3389600000-N	865	20	EA	CABLE GUIDERAIL ANCHOR UNITS
3503000000-E	866	693	LF	WOVEN WIRE FENCE, 47" FABRIC
3509000000-E	866	42	EA	4" TIMBER FENCE POSTS, 7'-6" LONG
3515000000-E	866	14	EA	5" TIMBER FENCE POSTS, 8'-0" LONG
3656000000-E	876	1,140	SY	GEOTEXTILE FOR DRAINAGE
3659000000-N	SP	1	EA	PREFORMED SCOUR HOLES WITH LEVEL SPREADER APRON
4048000000-E	902	17	CY	REINFORCED CONCRETE SIGN FOUNDATIONS
4057000000-E	SP	75	CY	OVERHEAD FOOTING
4060000000-E	903	11,511	LB	SUPPORTS, BREAKAWAY STEEL BEAM
4082000000-E	903	2,649	LF	SUPPORTS, WOOD
4082100000-N	SP	Lump Sum		SUPPORTS, OVERHEAD SIGN STRUCTURE AT STA ****** (229+00.00-L-)
4082100000-N	SP	Lump Sum		SUPPORTS, OVERHEAD SIGN STRUCTURE AT STA ****** (27+63.00-Y1-)
4082100000-N	SP	Lump Sum		SUPPORTS, OVERHEAD SIGN STRUCTURE AT STA ****** (37+00.00-Y1-)
4082100000-N	SP	Lump Sum		SUPPORTS, OVERHEAD SIGN STRUCTURE AT STA ****** (73+00.00-L-)
4082100000-N	SP	Lump Sum		SUPPORTS, OVERHEAD SIGN STRUCTURE AT STA ****** (95+00.00-L-)
4096000000-N	904	1	EA	SIGN ERECTION, TYPE D
4102000000-N	904	154	EA	SIGN ERECTION, TYPE E
4108000000-N	904	7	EA	SIGN ERECTION, TYPE F
4110000000-N	904	9	EA	SIGN ERECTION, TYPE *** (GROUND MOUNTED) (A)
4110000000-N	904	1	EA	SIGN ERECTION, TYPE *** (GROUND MOUNTED) (B)
4116100000-N	904	1	EA	SIGN ERECTION, RELOCATE, TYPE **** (GROUND MOUNTED) (E)
4158000000-N	907	2	EA	DISPOSAL OF SIGN SYSTEM, WOOD
4236000000-N	907	2	EA	DISPOSAL OF SIGN, A, B OR C (GROUND MOUNTED)
4400000000-E	1110	262	SF	WORK ZONE SIGNS (STATIONARY)
4405000000-E	1110	320	SF	WORK ZONE SIGNS (PORTABLE)
4410000000-E	1110	53	SF	WORK ZONE SIGNS (BARRICADE MOUNTED)
4415000000-N	1115	4	EA	FLASHING ARROW BOARD
4420000000-N	1120	2	EA	PORTABLE CHANGEABLE MESSAGE SIGN
4430000000-N	1130	330	EA	DRUMS
4435000000-N	1135	50	EA	CONES
4445000000-E	1145	204	LF	BARRICADES (TYPE III)
4455000000-N	1150	100	DAY	FLAGGER
4465000000-N	1160	2	EA	TEMPORARY CRASH CUSHIONS
4470000000-N	1160	2	EA	RESET TEMPORARY CRASH CUSHION
4480000000-N	1165	2	EA	TMA
4485000000-E	1170	2,236	LF	PORTABLE CONCRETE BARRIER
4500000000-E	1170	1,560	LF	RESET PORTABLE CONCRETE BARRIER
4516000000-N	1180	50	EA	SKINNY DRUM
4650000000-N	1251	450	EA	TEMPORARY RAISED PAVEMENT MARKERS
4685000000-E	1205	16,987	LF	THERMOPLASTIC PAVEMENT MARKING LINES (4", 90 MILS)
4686000000-E	1205	4,743	LF	THERMOPLASTIC PAVEMENT MARKING LINES (4", 120 MILS)
4688000000-E	1205	125,559	LF	THERMOPLASTIC PAVEMENT MARKING LINES (6", 90 MILS)
4690000000-E	1205	24,548	LF	THERMOPLASTIC PAVEMENT MARKING LINES (6", 120 MILS)
4700000000-E	1205	4,519	LF	THERMOPLASTIC PAVEMENT MARKING LINES (12", 90 MILS)
4702000000-E	1205	291	LF	THERMOPLASTIC PAVEMENT MARKING LINES (12", 120 MILS)
4710000000-E	1205	57	LF	THERMOPLASTIC PAVEMENT MARKING LINES (24", 120 MILS)
4721000000-E	1205	8	EA	THERMOPLASTIC PAVEMENT MARKING CHARACTER (120 MILS)
4725000000-E	1205	56	EA	THERMOPLASTIC PAVEMENT MARKING SYMBOL (90 MILS)
4770000000-E	1205	295	LF	COLD APPLIED PLASTIC PAVEMENT MARKING LINES, TYPE ** (4") (TYPE III PERMANENT WET REFLECTIVE)
4775000000-E	1205	5,132	LF	COLD APPLIED PLASTIC PAVEMENT MARKING LINES, TYPE ** (6") (TYPE III PERMANENT WET REFLECTIVE)
4810000000-E	1205	77,377	LF	PAINT PAVEMENT MARKING LINES (4")
4835000000-E	1205	353	LF	PAINT PAVEMENT MARKING LINES (24")
4845000000-N	1205	36	EA	PAINT PAVEMENT MARKING SYMBOL
4850000000-E	1205	11,900	LF	REMOVAL OF PAVEMENT MARKING LINES (4")
4900000000-N	1251	94	EA	PERMANENT RAISED PAVEMENT MARKERS
4905000000-N	1253	1,850	EA	SNOWPLOWABLE PAVEMENT MARKERS
4915000000-E	1264	3	EA	7' U-CHANNEL POSTS
4935000000-N	1267	205	EA	FLEXIBLE DELINEATORS (CRYSTAL)
4940000000-N	1267	40	EA	FLEXIBLE DELINEATORS (YELLOW)
4955000000-N	1264	3	EA	OBJECT MARKERS (END OF ROAD)
6000000000-E	1605	26,000	LF	TEMPORARY SILT FENCE
6006000000-E	1610	1,320	TON	STONE FOR EROSION CONTROL, CLASS A
6009000000-E	1610	1,700	TON	STONE FOR EROSION CONTROL, CLASS B
6012000000-E	1610	1,340	TON	SEDIMENT CONTROL STONE
6015000000-E	1615	20	ACR	TEMPORARY MULCHING
6018000000-E	1620	900	LB	SEED FOR TEMPORARY SEEDING
6021000000-E	1620	4.5	TON	FERTILIZER FOR TEMPORARY SEEDING
6024000000-E	1622	2,000	LF	TEMPORARY SLOPE DRAINS
6029000000-E	SP	100	LF	SAFETY FENCE
6030000000-E	1630	3,170	CY	SILT EXCAVATION
6036000000-E	1631	20,000	SY	MATTING FOR EROSION CONTROL
6037000000-E	SP	50	SY	COIR FIBER MAT
6042000000-E	1632	1,800	LF	1/4" HARDWARE CLOTH
6071010000-E	SP	3,865	LF	WATTLE
6071020000-E	SP	1,505	LB	POLYACRYLAMIDE (PAM)
6071030000-E	1640	985	LF	COIR FIBER BAFFLE
6071050000-E	SP	1	EA	**" SKIMMER (1-1/2")
6071050000-E	SP	1	EA	**" SKIMMER (2")
6084000000-E	1660	27	ACR	SEEDING & MULCHING
6087000000-E	1660	24	ACR	MOWING
6090000000-E	1661	350	LB	SEED FOR REPAIR SEEDING
6093000000-E	1661	1	TON	FERTILIZER FOR REPAIR SEEDING
6096000000-E	1662	675	LB	SEED FOR SUPPLEMENTAL SEEDING
6108000000-E	1665	19.75	TON	FERTILIZER TOPDRESSING
6114500000-N	1667	60	MHR	SPECIALIZED HAND MOWING
6117000000-N	SP	75	EA	RESPONSE FOR EROSION CONTROL
6133000000-N	SP	Lump Sum		GENERIC EROSION CONTROL ITEM REMOVAL OF EROSION CONTROL DEVICES
7060000000-E	1705	990	LF	SIGNAL CABLE
7120000000-E	1705	5	EA	VEHICLE SIGNAL HEAD (12", 3 SECTION)
7132000000-E	1705	2	EA	VEHICLE SIGNAL HEAD (12", 4 SECTION)
7144000000-E	1705	1	EA	VEHICLE SIGNAL HEAD (12", 5 SECTION)
7216000000-N	1705	1	EA	MODIFY EXISTING VEHICLE SIGNAL HEAD
7324000000-N	1716	1	EA	JUNCTION BOX (STANDARD SIZE)
7444000000-E	1725	855	LF	INDUCTIVE LOOP SAWCUT
7456000000-E	1726	1,730	LF	LEAD-IN CABLE (**********) (14-2)
7636000000-N	1745	3	EA	SIGN FOR SIGNALS
7756000000-N	1751	1	EA	CONTROLLER WITH CABINET (TYPE 2070L, BASE MOUNTED)
7780000000-N	1751	9	EA	DETECTOR CARD (TYPE 2070L)
7901000000-N	1753	1	EA	CABINET BASE EXTENDER

COMPUTED BY:	BN	DATE:	12/19/08
CHECKED BY:	MDL	DATE:	1/2/09

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

PROJECT REFERENCE NO.	SHEET NO.
R-2719AA	3-A

"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
√ = TOTAL WIDTH OF FLARE FROM BEGIN

GUARDRAIL SUMMARY

SURVEY LINE	BEG. STA.	END STA.	LOCATION	LENGTH			WARRANT POINT		"N" DIST. FROM E.O.L.	TOTAL SHOUL WIDTH	FLARE LENGTH		W		ANCHORS						IMPACT ATTENUATOR TYPE 350			REMOVE EXISTING GUARDRAIL	REMARKS
				STRAIGHT	SHOP CURVED	DOUBLE FACED	APPROACH END	TRAILING END			APPROACH END	TRAILING END	APPROACH END	TRAILING END	GRAU 350	M-350	XIII	CAT-1	B-83	B-77	EA	G	NG		
L	52+86.88	59+36.88	LT	650.00			57+50.00	52+86.88*	6	9	50	-	1	-	1					1					
L	52+83.76	58+58.76	MED-LT	575.00			57+00.00	58+58.76*	6	9	50	-	1	-	1					1					
L	70+50.56	83+52.56	LT	1302.00			83+52.56*	70+50.56	14	17	-	-	-	-				1		1					
L	52+86.88	59+36.88	LT	650.00			57+50.00	52+86.88*	6	9	50	-	1	-	1					1					
L	52+83.76	58+58.76	MED-LT	575.00			57+00.00	58+58.76*	6	9	50	-	1	-	1					1					
L	70+50.56	83+52.56	LT	1302.00			83+52.56*	70+50.56	14	17	-	-	-	-				1		1					
L	74+45.08	83+95.08	RT	950.00			83+95.08*	-	14	17	50	-	1	-	1					1					CONTINUED FROM Y1RPCA 0+00.00
L	70+50.00	75+83.48	MED-LT	533.48			70+50.00	-	6	9	50	-	1		1			1							FOR OVERHEAD SIGN STR. PROTECTION
L	81+70.08	83+95.08	MED-RT	225.00			83+95.08*	-	10	13	206.25	-	15.25	-		1				1					
L	88+22.55	112+01.14	LT	2378.59			88+52.55*	112+01.14*	14	17	-	-	-	-						2					
L	88+22.55	90+35.05	MED-LT	212.50			-	88+22.55*	12	15	193.75	-	14.42	-		1				1					
L	88+22.55	113+25.53	RT	2502.98			88+22.55*	113+25.53*	14	17	-	-	-	-						2					
L	110+68.76	112+81.26	MED-LT	212.50			112+81.26*	-	6	9	193.75	-	14.42	-		1				1					
L	113+94.92	116+07.42	MED-LT	212.50			113+94.92*	-	6	9	193.75	-	14.42	-		1				1					
L	114+75.03	124+00.03	RT	925.00			114+75.03*	124+00.03	14	17	-	-	-	-				1		1					
L	132+80.00	133+67.50	LT	87.50				132+80.00	14	17	50	-	1	-	1					1					
L	136+18.50	139+30.00	RT	312.50			136+18.50	139+30.00	14	17	50	-	1	-	1					1					
L	139+40.71	143+53.21	LT	412.50			142+00.00	139+40.71	14	17	50	-	1	-	1			1							
L	152+41.00	156+53.50	LT	412.50			155+00.00	152+41.00	14	17	50	-	1	-	1			1							
L	200+93.99	210+81.49	RT	987.50			210+81.49*	202+50.00	14	17	50	-	1	-	1					1					
L	201+88.78	211+26.28	LT	937.50			211+26.28*	201+88.78	14	17	-	-	-	-				1		1					
L	208+77.54	210+97.54	MED-RT	220.00			210+97.54*	-	6	9	201.25	-	14.92	-		1				1					
L	212+91.41	224+03.91	LT	1112.50			222+50.00	212+91.41*	14	17	50	-	1	-	1					1					
L	212+76.96	215+26.96	MED-LT	250.00			212+76.96*	-	12	15	-	231.25	-	16.92		1				1					
L	212+68.04	215+05.54	MED-RT	237.50			212+68.04*	-	6	9	-	37.5	-	4		1				1					
L	212+54.17	220+54.17	RT	800.00			212+54.17*	219+00.00	14	17	-	-	-	-				1		1					
Y1	15+30.53	19+93.03	LT	462.50			15+30.53*	-	VAR	VAR	50	-	1	-	1				1					425	
Y1	15+41.96	17+66.96	MED-LT	225.00			15+41.96*	-	VAR	VAR	200.00	-	4	-	1				1					685	
Y1RPCA	30+14.21	35+76.71	LT	562.50			37+25	-	6	9	50	-	-	1	1					1					
Y1RPCA	30+01.64	35+76.64	RT	575.00			37+25	-	12	15	50	-	-	1	1					1					
Y1	23+80.00	27+75.00	LT	395.00			27+63.00	-	13.58	6	-	-	-	-	1			1							FOR OVERHEAD SIGN STR. PROTECTION
Y1	24+75.00	27+75.00	RT	300.00			27+63.00	-	13.58	15	-	-	-	-	1			1							FOR OVERHEAD SIGN STR. PROTECTION
Y1	67+80.39	69+50.60	LT	175.00			BRIDGE	BRIDGE	N/A	N/A	-	-	-	-						2	1	X	X		BRIDGE PROTECTION
Y1	68+01.00	69+71.61	RT	175.00			BRIDGE	BRIDGE	N/A	N/A	-	-	-	-						2	1	X	X		BRIDGE PROTECTION
Y1	74+24.84	76+38.50	LT	175.00			BRIDGE	BRIDGE	N/A	N/A	-	-	-	-						2	1	X	X		BRIDGE PROTECTION
Y1	74+45.82	76+63.08	RT	175.00			BRIDGE	BRIDGE	N/A	N/A	-	-	-	-						2	1	X	X		BRIDGE PROTECTION
Y1	86+46.52	96+96.52	RT	1050.00			88+00.00	-	14	17	50	-	1	-	1					1					
Y1	34+50.00	38+79.00	RT	429.00			37+50	38+79.00	12	15	50	-	1	-	1			1							
Y1	37+70.00	40+45.00	LT	275.00			38+18.00	37+70.00	12	15	50	-	1	-	1			1							
Y1	90+74.64	96+24.64	LT	550.00			-	90+74.64	12	15	-	-	-	-				1		1					
Y1	94+33.42	96+70.92	MED-RT	237.50			96+70.92*	-	6	9	218.75	-	16.08	-		1				1					
Y1	97+56.24	105+56.24	LT	800.00			10+50	-	14	17	50	-	1	-	1					1					
Y1	97+81.76	100+19.26	MED-LT	237.50			97+81.87	-	6	9	218.75	-	16.08	-		1				1					
Y1	98+28.12	104+53.12	RT	625.00			104+53.12	-	12	15	-	-	-	-				1		1					
L	94+98.00	98+43.72	MED-RT	345.72			95+00.00		4	7					1			1							FOR OVERHEAD SIGN STR. PROTECTION
L	225+55.00	229+00.00	RT	345.00			229+00.00		4	7					1			1							FOR OVERHEAD SIGN STR. PROTECTION
L	225+55.00	229+00.00	MED-LT	345.00			229+00.00		4	7					1			1							FOR OVERHEAD SIGN STR. PROTECTION
Y24RPB	10+37.00	15+74.50		537.50			14+20.00	10+37.00	14	17	50	-	1	-	1			1							
		SUBTOTALS		27973.77											**26.00**	**9.00**		**18.00**	**2.00**	**41.00**	**4**			**1110.00**	
		LESS ANCHOR DEDUCTIONS																							
		GRAU-350	26@50'	1300.00																					
		M-350	9@37.5'	337.50																					
		CAT-1	18@6.25'	112.50																					
		B-77	41@18.75'	768.75																					
		B-83	2@25'	50																					
		TOTAL		25455.02																					
		SAY		**25500**																					
	ADDITIONAL GUARDRAIL POSTS:		**20**	**EA**																					

COMPUTED BY: BN DATE: 12/19/2008

CHECKED BY: MDL DATE: 4/21/2009

PROJECT NO.	SHEET NO.
R-2719AA	3-B1

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

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

STATION	LOCATION (LT, RT, OR CL)'	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	CLASS III R.C. PIPE (UNLESS NOTED OTHERWISE) SIZE							BITUMINOUS COATED C.S. PIPE TYPE B (UNLESS NOTED OTHERWISE) SIZE														CLASS III R.C. PIPE OR ALUMINIZED C.S. PIPE, TYPE IR OR HDPE PIPE, TYPE S OR D SIZE						
THICKNESS OR GAUGE								12"	15"	18"	24"	30"	36"	42"	48"	12"	15"	18"	24"	30"	36"	42"	48"	12"	15"	18"	24"	30"	36"	42"	48"
																.064	.064	.064	.064	.079	.079	.109	.109								
Y1, 17+09	C	215		50.6	47.6																										
Y1, 17+09		215	EX		47.6	47.0												8													
Y1, 17+10	RT	216	OUT	-	45.7	44.9												28													
Y1, 21+20	C	217		52.3	49.6																										
Y1, 21+20		217	OUT		49.6	48.3			96																						
Y1, 25+00	RT	218	OUT	-	-	-																									
SHEET TOTALS									96									36													

STATION	12" SIDE DRAIN PIPE	15" SIDE DRAIN PIPE	18" SIDE DRAIN PIPE	24" SIDE DRAIN PIPE	30" SIDE DRAIN PIPE	36" SIDE DRAIN PIPE	ENDWALLS STD. 838.01 OR STD 838.11 OR STD. 838.80 (UNLESS NOTED OTHERWISE) CU. YARDS R.C.P.	C.S.P.	QUANITIES FOR DRAINAGE STRUCTURES 'TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL. 'B') PER EACH (0' THRU 5.0')	LIN. FT. A 5.0' THRU 10.0'	B 10.0' AND ABOVE	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STANDARD 840.03 TYPE OF GRATE E	F	G	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATE STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR 840.26	G.D.I. TYPE "B" STD. 840.18 OR 840.27	G.D.I. TYPE "D" STD. 840.19 OR 840.28	G.D.I. FRAME WITH GRATE STD. 840.20	G.D.I. FRAME WITH TWO GRATES STD. 840.20	G.D.I. FRAME WITH GRATE STD. 840.22	G.D.I. FRAME WITH TWO GRATES STD. 840.22	G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.24	J.B. STD. 840.31 OR 840.32	T.B.J.B. STD. 830.34	SPECIAL DESIGN CB	MANHOLE STD. 840.51	M.H. STD. 840.51 OR 840.53	M.H. FRAME AND COVER STD. 840.54	ADJUST M.H.	MODIFIED CONCRETE FLUME	TEMPORARY 15" C.S. PIPE	TEMPORARY 36" C.S. PIPE	TEMPORARY 48" C.S. PIPE	CONVERT 2 G.I. TO JB WITH M.H.	CONVERT DI TO JB	RETAIN AND ADJUST CB	PREFORMED SCOUR HOLE	BDO STD. 850.10 OR 850.11	SPRING BOX STD. 840.41	CORR. STEEL ELBOWS NO. & SIZE	CONC. COLLARS CL. "B" C.Y. STD. 840.72	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	PIPE REMOVAL LIN. FT.	REMARKS
Y1, 17+09									1											1																								
Y1, 17+09																																								1 @ .4465			
Y1, 17+10																																	1							1 @ .4465			
Y1, 21+20									1											1																								
Y1, 21+20																																												
Y1, 25+00		132																																								48	Pipe Removal is of 15" Pipe
SHEET TOTALS		132							2											2													1							0.9		48	

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

1612DP-MX0039

COMPUTED BY:	BN	DATE:	12/19/2008
CHECKED BY:	MDL	DATE:	4/21/2009

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
R-2719AA	3-B2

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

STATION	LOCATION (LT, RT, OR CL)'	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	CLASS III R.C. PIPE (UNLESS NOTED OTHERWISE) 12"	15"	18"	24"	30"	36"	42"	48"
Y9, 13+20	LT	232	OUT	-	-	-									
Y15, 30+04	CL	237		-	47.0	46.7									
Y15, 30+04		237	OUT										112		
Y1, 109+61	RT	238		-	45.6	45.3									
Y1, 109+61		238	238A										112		
Y1, 110+00	C	238A		50.2	45.3										
Y1, 110+00		238A	OUT		45.3	44.9							108		
Y1, 111+25	LT	239	OUT	-	-	-									
Y1, 117+30	LT	240	OUT	-	-	-									
Y1, 120+60	C	241		45.6	42.8										
Y1, 120+60		241	242		42.8	42.2			4						
Y1, 120+60	C	242		46.5	42.2	-									
Y1, 120+60		242	EX												
Y9, 11+48	CL	243		-	48.2	48.0					120				
SHEET TOTALS									4		120		332		

SIZE / THICKNESS OR GAUGE

STATION	BITUMINOUS COATED C.S. PIPE TYPE B (UNLESS NOTED OTHERWISE) 12" .064	15" .064	18" .064	24" .064	30" .079	36" .079	42" .109	48" .109	CLASS III R.C. PIPE OR ALUMINIZED C.S. PIPE, TYPE IR OR HDPE PIPE, TYPE S OR D 12"	15"	18"	24"	30"	36"	42"	48"
Y9, 13+20																
Y15, 30+04																
Y15, 30+04																
Y1, 109+61																
Y1, 109+61																
Y1, 110+00																
Y1, 110+00																
Y1, 111+25																
Y1, 117+30																
Y1, 120+60																
Y1, 120+60																
Y1, 120+60																
Y1, 120+60																
Y9, 11+48																
SHEET TOTALS																

STATION	12" SIDE DRAIN PIPE	15" SIDE DRAIN PIPE	18" SIDE DRAIN PIPE	24" SIDE DRAIN PIPE	30" SIDE DRAIN PIPE	36" SIDE DRAIN PIPE	ENDWALLS STD. 838.01 OR STD 838.11 OR STD. 838.80 (UNLESS NOTED OTHERWISE) CU. YARDS R.C.P.	C.S.P.	QUANITIES FOR DRAINAGE STRUCTURES PER EACH (0' THRU 5.0')	*TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL.'B') LIN. FT. A 5.0' THRU 10.0'	B 10.0' AND ABOVE	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STANDARD 840.03 TYPE OF GRATE E	F	G
Y9, 13+20					28										
Y15, 30+04							3.4								
Y15, 30+04															
Y1, 109+61							4								
Y1, 109+61															
Y1, 110+00									1						
Y1, 110+00															
Y1, 111+25						68									
Y1, 117+30						108									
Y1, 120+60									1						
Y1, 120+60															
Y1, 120+60															
Y1, 120+60															
Y9, 11+48															
SHEET TOTALS					28	176	7.4		2						

STATION	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATE STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR 840.26	G.D.I. TYPE "B" STD. 840.18 OR 840.27	G.D.I. TYPE "D" STD. 840.19 OR 840.28	G.D.I. FRAME WITH GRATE STD. 840.20	G.D.I. FRAME WITH TWO GRATES STD. 840.20	G.D.I. FRAME WITH GRATE STD. 840.22	G.D.I. FRAME WITH TWO GRATES STD. 840.22	G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.24	J.B. STD. 840.31 OR 840.32	T.B.J.B. STD. 830.34	SPECIAL DESIGN CB	MANHOLE STD. 840.51	M.H. STD. 840.51 OR 840.53	M.H. FRAME AND COVER STD. 840.54	ADJUST M.H.
Y9, 13+20																	
Y15, 30+04																	
Y15, 30+04																	
Y1, 109+61																	
Y1, 109+61																	
Y1, 110+00				1					1								
Y1, 110+00																	
Y1, 111+25																	
Y1, 117+30																	
Y1, 120+60				1					1								
Y1, 120+60																	
Y1, 120+60																1	
Y1, 120+60																	
Y9, 11+48																	
SHEET TOTALS				2					2							1	

STATION	MODIFIED CONCRETE FLUME	TEMPORARY 15" C.S. PIPE	TEMPORARY 36" C.S. PIPE	TEMPORARY 48" C.S. PIPE	CONVERT 2 G.I. TO JB WITH M.H.	CONVERT DI TO JB	RETAIN AND ADJUST CB	PREFORMED SCOUR HOLE	BDO STD. 850.10 OR 850.11	SPRING BOX STD. 840.41	CORR. STEEL ELBOWS NO. & SIZE	CONC. COLLARS CL. "B" C.Y. STD. 840.72	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	PIPE REMOVAL LIN. FT.	REMARKS
Y9, 13+20														36	Pipe Removed is of 18" RCP
Y15, 30+04															
Y15, 30+04														88	Pipe Removal is of 36" RCP
Y1, 109+61															
Y1, 109+61															
Y1, 110+00															
Y1, 110+00															
Y1, 111+25															
Y1, 117+30														120	Pipe Removal is of two (2) 15" R.C. Pipes
Y1, 120+60															
Y1, 120+60														92	Pipe Removal is of two (2) 24" R.C. Pipes
Y1, 120+60					1										
Y1, 120+60															
Y9, 11+48														136	Pipe Removal is of a 15" RCP, 2 parallel R.C. Pipes
SHEET TOTALS					1									472	

ABBREVIATIONS

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

COMPUTED BY: BN DATE: 12/19/2008

CHECKED BY: MDL (REVISED BY MBL 8-26-11) DATE: 4/21/2009

PROJECT NO.	SHEET NO.
R-2719AA	3-B3

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

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

STATION	LOCATION (LT, RT, OR CL)'	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	CLASS III R.C. PIPE (UNLESS NOTED OTHERWISE) 12"	15"	18"	24"	30"	36"	42"	48"
Y9, 23+30	RT	244	244A	-	48.2	47.1					88				
Y9, 24+13	RT	244A		49.8	47.1										
Y9, 24+13		244A	OUT		47.1	46.9					128				
Y9, 28+05	LT	246	OUT	-	-	-									
Y9, 30+25	RT	247	OUT	-	-	-									
Y9, 31+25	LT	248	OUT	-	-	-									
Y9, 31+88	CL	249		-	45.1	44.8									
Y9, 31+88		249	OUT										72		
Y8, 14+72	CL	250	OUT		49.1	48.8				76					
Y8, 24+48	CL	251	OUT	-	45.7	45.5					80				
Y1, 78+00	CL	21A	OUT	54.6	51.8	51.2			92						
Y1, 73+50	CL	18		54.0											
SHEET TOTALS									92	76	296		72		
PROJECT TOTALS								-	192	76	416	-	404	-	-

STATION	BITUMINOUS COATED C.S. PIPE TYPE B (UNLESS NOTED OTHERWISE) 12" (.064)	15" (.064)	18" (.064)	24" (.064)	30" (.079)	36" (.079)	42" (.109)	48" (.109)	CLASS III R.C. PIPE OR ALUMINIZED C.S. PIPE, TYPE IR OR HDPE PIPE, TYPE S OR D 12"	15"	18"	24"	30"	36"	42"	48"	12" SIDE DRAIN PIPE	15" SIDE DRAIN PIPE	18" SIDE DRAIN PIPE	24" SIDE DRAIN PIPE	30" SIDE DRAIN PIPE	36" SIDE DRAIN PIPE
Y9, 28+05																			40			
Y9, 30+25																				88		
Y9, 31+25																				52		
SHEET TOTALS																			40	140		
PROJECT TOTALS	-	-	36	-	-	-	-	-	-	-	0	-	-	-	-	-	-	132	40	140	28	176

STATION	ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CU. YARDS R.C.P.	C.S.P.	QUANITIES FOR DRAINAGE STRUCTURES PER EACH (0' THRU 5.0')	*TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL.'B') LIN. FT. A 5.0' THRU 10.0'	B 10.0' AND ABOVE	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STANDARD 840.03 TYPE OF GRATE E	F	G	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATE STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR 840.26	G.D.I. TYPE "B" STD. 840.18 OR 840.27	G.D.I. TYPE "D" STD. 840.19 OR 840.28	G.D.I. FRAME WITH GRATE STD. 840.20	G.D.I. FRAME WITH TWO GRATES STD. 840.20	G.D.I. FRAME WITH GRATE STD. 840.22	G.D.I. FRAME WITH TWO GRATES STD. 840.22	G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.24
Y9, 24+13			1											1				1	
Y9, 31+88	3.4																		
Y1, 78+00			1										1					1	
SHEET TOTALS	3.4		2											1				2	
PROJECT TOTALS	10.8	-	6	-	-	-	-	-	-	-	-	-	5	1	-	-	-	6	-

STATION	J.B. STD. 840.31 OR 840.32	T.B.J.B. STD. 830.34	SPECIAL DESIGN CB	MANHOLE STD. 840.51	M.H. STD. 840.51 OR 840.53	M.H. FRAME AND COVER STD. 840.54	ADJUST M.H.	Adjust Drop Inlet		MODIFIED CONCRETE FLUME	TEMPORARY 15" C.S. PIPE	TEMPORARY 36" C.S. PIPE	TEMPORARY 48" C.S. PIPE	CONVERT 2 G.I. TO JB WITH M.H.	CONVERT DI TO JB	RETAIN AND ADJUST CB		PREFORMED SCOUR HOLE		BDO STD. 850.10 OR 850.11		SPRING BOX STD. 840.41	CORR. STEEL ELBOWS NO. & SIZE	CONC. COLLARS CL. "B" C.Y. STD. 840.72	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	PIPE REMOVAL LIN. FT.	REMARKS
Y9, 23+30																										96	Pipe Removal is of 1-15" RCP and 1-18" RCP
Y9, 28+05																										40	Pipe Removal is of 18" RCP
Y9, 30+25																										72	Pipe Removal is of 36" RCP
Y1, 78+00								1																			
Y1, 73+50																											Adjust 2GI Top Elevation
SHEET TOTALS																										208	
PROJECT TOTALS	-	-	-	-	-	1	-	1	-	-	-	-	-	1	-	-	-	1	-	-	-	-		1 SAY 3	-	728	

ABBREVIATIONS

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

COMPUTED BY: MBL	DATE: 01/31/12
CHECKED BY: JRH	DATE: 01/31/12

PROJECT REFERENCE NO.	SHEET NO.
R-2719AA	3C

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

SUMMARY OF EARTHWORK

IN CUBIC YARDS

LOCATION	UNCLASSIFIED EXCAVATION	UNDERCUT	EMBT +%	BORROW	WASTE
SUMMARY #1					
-Y1- STA. 15+30.53 TO 29+60.00	1248	0	15598	14350	0
-Y1- STA. 71+50.00 TO 75+25.00	20	0	1205	1185	0
-Y1- STA. 106+00.00 TO 121+63.73	4913	0	21189	16276	0
TOTAL SUMMARY #1	**6181**	**0**	**37992**	**31811**	**0**
SUMMARY #2					
-Y8- STA. 10+55.00 TO 14+27.78	125	0	0	0	125
-Y8- STA. 14+65.00 TO 24+72.98	1677	0	2219	542	0
TOTAL SUMMARY #2	**1802**	**0**	**2219**	**542**	**125**
SUMMARY #3					
-Y9- STA. 10+21.22 TO 33+30.87	3113	0	1396	0	1717
TOTAL SUMMARY #3	**3113**	**0**	**1396**	**0**	**1717**
SUMMARY #4					
-Y10- 10+47.24 TO 12+16.98	264	0	65	0	199
TOTAL SUMMARY #4	**264**	**0**	**65**	**0**	**199**
SUMMARY #5					
-Y15- STA. 26+57.97 TO 31+05.61	15	0	6209	6194	0
TOTAL SUMMARY #5	**15**	**0**	**6209**	**6194**	**0**
SUBTOTAL (SUMMARIES 1-5)	**11375**	**0**	**47881**	**38547**	**2041**
SHOULDER MATERIAL (L and Y Lines)			63500	63500	
WASTE IN LIEU OF BORROW				-2041	-2041
				0	
PROJECT SUBTOTAL	**11375**	**0**	**111381**	**100006**	**0**
EST. 5% FOR REPLACING TOPSOIL ON BORROW PIT				5000	
PROJECT TOTAL	11375	0	111381	105006	0
SAY	**11,380**	**-**	**-**	**105,050**	**-**

ESTIMATED DDE = 460 CY

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

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

Prepared by
URS
URS Corporation - North Carolina
1600 Perimeter Park Drive
Morrisville, North Carolina 27560
TELEPHONE (919) 461-1100 FAX (919) 461-1415

PROJECT REFERENCE NO.	SHEET NO.
R-2719AA	3D
R/W SHEET NO.	

REVISIONS

SUMMARY OF PRECAST REINFORCED CONCRETE BARRIER, SINGLE FACED

SURVEY LINE	STATION	STATION	LOCATION	LENGTH
Y1	68+60.0	68+90.0	MED - LT	30.00
Y1	68+60.0	68+90.0	MED - RT	30.00
Y1	75+27.79	75+70.0	MED - LT	42.21
Y1	75+25.40	75+68.07	MED - RT	42.67
L	113+49.38	132+80.0	LT	1930.70
L	139+30.00	159+00.0	RT	1970.00
			TOTAL:	4046
			SAY:	4050

SHOULDER BERM GUTTER SUMMARY

SURVEY LINE	STATION	STATION	LENGTH
Y1RPCA RT	11+45.43	27+73.39	1627.96
Y1RPCA RT	30+38.79	35+05.09	466.30
Y1RPCA LT	11+43.88	19+30.57	786.69
Y1RPA LT	6+00.30	10+05.18	404.88
Y1RPCA LT	0+00.01	4+04.68	404.67
L LT	53+11.04	58+75.06	564.02
L RT	79+11.31	83+70.03	458.72
		TOTAL:	4713.20
		SAY:	4714

EXPRESSWAY GUTTER SUMMARY

SURVEY LINE	STATION	STATION	LENGTH
Y1 RT	86+58.37	96+70.05	1,011.68
Y1 RT	98+51.95	99+64.99	113.04
Y1 LT	88+08.37	89+42.78	134.41
Y1 LT	90+75.00	96+00.81	525.81
Y1 LT	97+82.51	105+05.14	722.63
L RT	88+47.60	112+97.78	2,450.18
L RT	114+98.00	123+05.20	807.20
L RT	137+00.00	139+39.94	239.94
L RT	202+94.57	210+57.17	762.60
L RT	212+79.77	220+54.89	775.12
L LT	94+30.00	111+77.64	1,747.64
L LT	139+45.57	142+99.80	354.23
L LT	152+50.63	155+99.71	349.08
		TOTAL:	9,994
		SAY:	10,000

DOUBLE FACED CABLE GUIDERAIL SUMMARY

SURVEY LINE	STATION	STATION	LENGTH	END ANCHOR UNIT	INTERMEDIATE ANCHOR UNIT	COMMENTS
L	77+51	83+33	582	2		
L	88+42	111+43	2301	2	2	
L	115+34	210+64	9530	2	8	
L	215+50	247+29	3179	2	2	
Y1	15+69	20+04	435	2		
Y1	21+36	67+55	4619	2		
Y1	69+97	74+00	403	2	4	
Y1	76+88	96+05	1917	2		
Y1	98+48	110+45	1197	2		
Y1	111+92	120+48	856	2		
		SUBTOTAL:	25019	20	16	
LESS TERMINAL ANCHOR UNITS (20X25)			500			
		GRAND TOTALS:	24519			
		SAY:	24520			

SUMMARY OF EXISTING ASPHALT PAVEMENT REMOVAL

SURVEY LINE	STATION	STATION	LOCATION LT/RT/CL	YD^2
EY8	10+48.	19+56.		1856
EY7	28+82.	29+28.		124
EY7	31+46.	31+91.		105
Y1	24+02.	26+70.	RT	689
EY1	27+58.	44+99.	LT	5534
EY1	45+32.	70+00.	LT	8301
EY1	70+75.	80+50.	LT	3392
EY1	80+83.	90+01.	LT	3580
EY1	91+00.	96+85.	LT	2512
EY1	98+15.	100+58.	LT	562
EY1	97+12.	104+80.	RT	2790
Y15	18+66.	22+40.	LT	300
			TOTAL:	29745
			SAY:	29750

WOVEN WIRE FENCE

STATION TO STATION	LT. OR RT.	A FABRIC L.F.	B END BRACE	C CORNER BRACE	D LINE BRACE	E 4" POSTS	F 5" POSTS
Y1 23+16.52 TO 29+79.58	RT	692.15	1		4	42	14
TOTAL		692.15				42	14
SAY		693				42	14

PROJECT REFERENCE NO.	SHEET NO.
R-2719A	4
R/W SHEET NO.	
4	

ROADWAY DESIGN ENGINEER: 18470 — ENGINEER — 3/14/06

HYDRAULICS ENGINEER: 021163 — ENGINEER — 3/28/06

GRAPHIC SCALE: 50 25 0 50 100

PLANS

Prepared by
URS
URS Corporation – North Carolina
1600 Perimeter Park Drive
Morrisville, North Carolina 27560
TELEPHONE (919) 461-1100 FAX (919) 461-1415

NOTES: FOR -Y1- PROFILE, SEE SHEETS 47 & 48
FOR -YIRPCA- PROFILE, SEE SHEET 55
FOR -YILPC- PROFILE, SEE SHEET 57
FOR -L- PROFILE, SEE SHEET 37 AND 38

NAD 83

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "R27198-A"
WITH NAD 83 STATE PLANE GRID COORDINATES OF
NORTHING: 570474925.3171 EASTING: 2402840.1615 (ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.999874520
THE NC LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "R27198-A" TO -L- STATION 50+30.88 IS
1.6205621450 FT S 24° 55' 15.2" W
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NGVD 29

-Y1- CURVE DATA

PI Sta 66+70.52
Δ = 64°14' 25.4" (RT)
D = 1°29' 59.6"
L = 4,283.13'
T = 2,398.16'
R = 3,820.00'
e = 5.5%

PI Sta 86+39.72
Δs = 1°53' 50.3"
Ls = 253.00'
LT = 168.68'
ST = 84.34'

-Y1_RT- CURVE DATA

PI Sta 74+31.31
Δ = 6° 28' 27.8" (RT)
D = 1° 30' 32.3"
L = 566.60'
T = 281.37'
R = 3,791.00'
e = 5.5%

-YILPC- CURVE DATA

PI Sta 2+03.91
Δs = 34° 22' 38.8"
Ls = 300.00'
LT = 203.91'
ST = 103.56'

PI Sta 11+13.80
Δ = 94° 09' 14.7" (RT)
D = 22° 55' 05.9"
L = 934.48'
T = 813.87'
R = 250.00'
e = 8%

PI Sta 13+06.48
Δs = 24° 06' 12.8"
Ls = 300.00'
ST = 72.06'
LT = 130.56'
Δ1 = 128°51' 51.9"
Δ2 = 22°57' 20.4"
R1 = 327.50'
R2 = 250.00'

-YIRPCA- CURVE DATA

PI Sta 38+99.63
Δ = 116° 06' 26.3" (RT)
D = 5° 19' 47.4"
L = 2,178.44'
T = 1,723.95'
R = 1,075.00'
e = 7%

PI Sta 44+35.89
Δs = 0° 31' 44.6"
Ls = 245.00'
LT = 163.44'
ST = 81.77'

PI Sta 47+39.14
Δs = 2° 09' 59.2"
Ls = 210.00'
LT = 140.02'
ST = 70.02'

-L- CURVE DATA

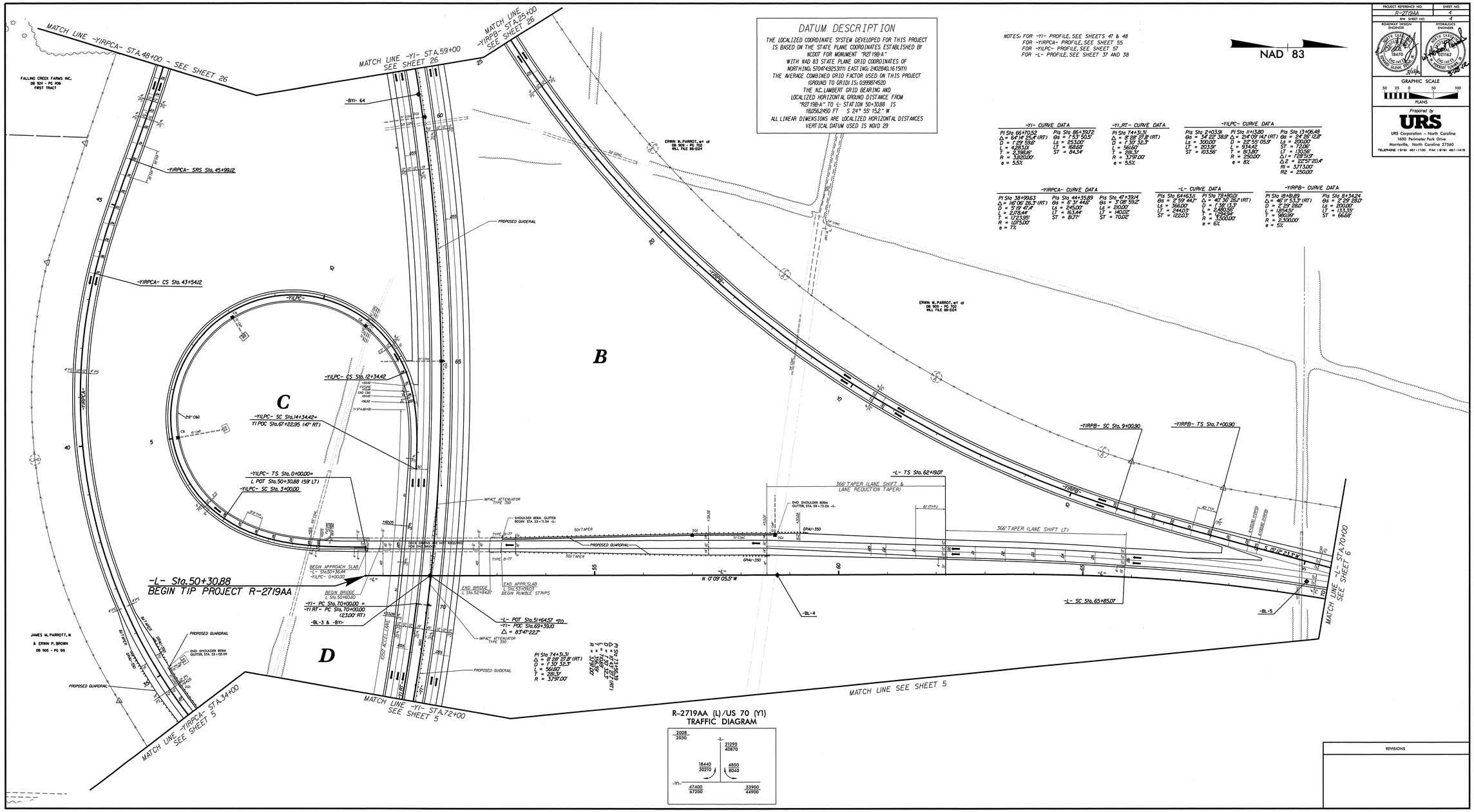
PI Sta 64+63.11
Δs = 2° 59' 44.7"
Ls = 366.00'
LT = 244.03'
ST = 122.03'

PI Sta 78+80.18
Δ = 40° 36' 26.1" (RT)
D = 1° 38' 13.3"
L = 2,480.50'
T = 1,293.39'
R = 3,500.00'
e = 6%

-YIRPB- CURVE DATA

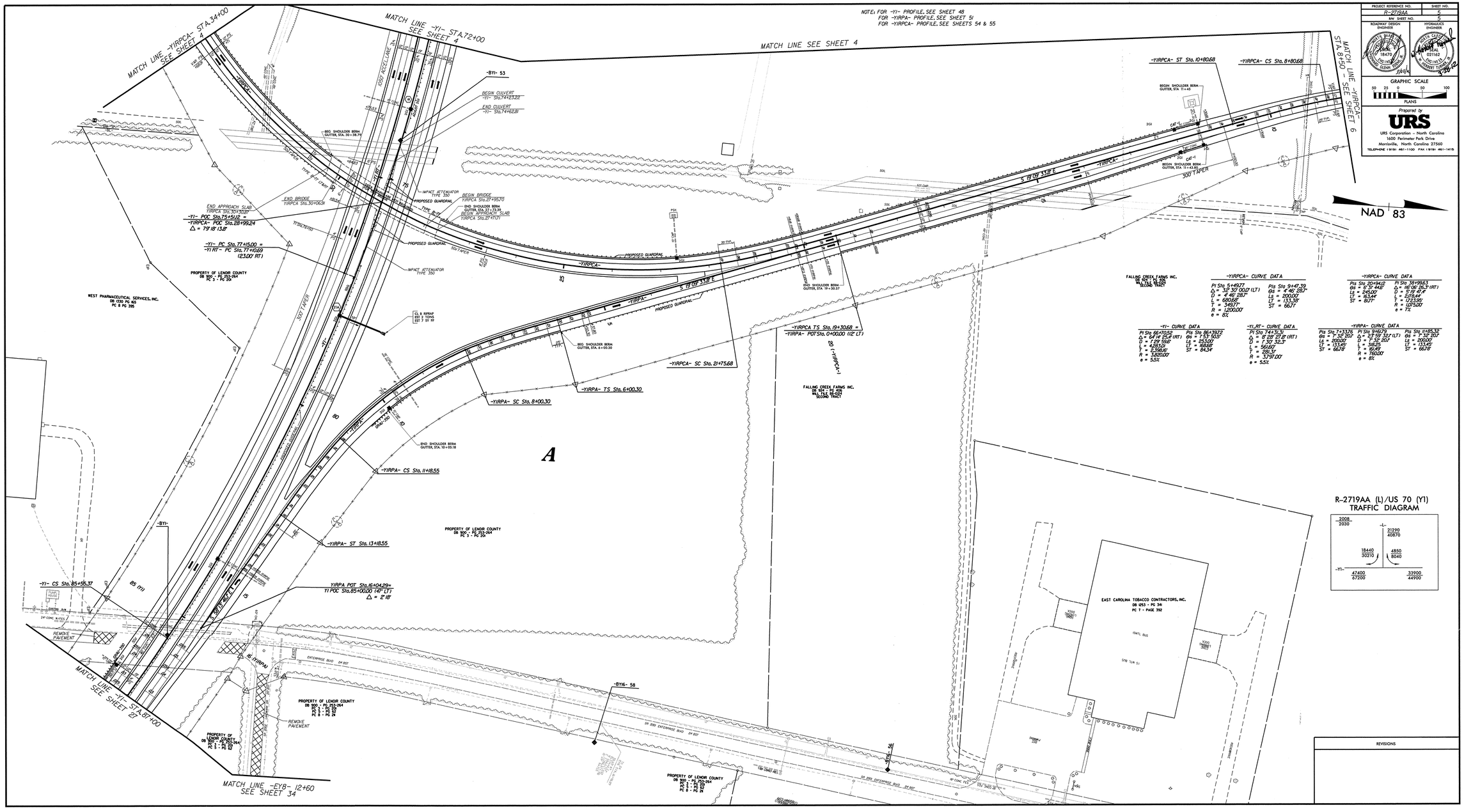
PI Sta 18+81.89
Δ = 46° 11' 53.3" (RT)
D = 2° 29' 28.0"
L = 1,854.5'
T = 980.99'
R = 2,300.00'
e = 5%

PI Sta 8+34.24
Δs = 2° 29' 28.0"
Ls = 200.00'
LT = 133.33'
ST = 66.68'



R-2719AA (L)/US 70 (Y1) TRAFFIC DIAGRAM

REVISIONS



-YI- CURVE DATA	
Pi Sta 66+70.52	Pi Sta 86+39.72
Δ = 64° 14' 25.4" (RT)	Gs = 1° 53' 50.5"
D = 1° 29' 59.8"	Ls = 253.00'
L = 428.13'	LT = 168.66'
T = 239.66'	ST = 84.34'
R = 3.820.00'	
e = 5.5%	

-Y1_RT- CURVE DATA	
Pi Sta 74+15.31	
Δ = 8° 09' 01.8" (RT)	
D = 1° 30' 32.3"	
L = 561.60'	
T = 281.31'	
R = 3.797.00'	
e = 5.5%	

-YIRPCA- CURVE DATA	
Pi Sta 5+49.77	Pi Sta 9+41.39
Δ = 32° 30' 00.0" (LT)	Gs = 4° 46' 28.7"
D = 4° 46' 28.7"	Ls = 200.00'
L = 680.68'	LT = 133.38'
T = 349.77'	ST = 66.71'
R = 1.200.00'	
e = 8%	

-YIRPCA- CURVE DATA	
Pi Sta 20+94.12	Pi Sta 38+98.63
Gs = 6° 31' 44.8"	Δ = 16° 06' 25.3" (RT)
Ls = 245.00'	D = 5° 15' 41.4"
LT = 163.44'	L = 1.218.64'
ST = 81.77'	T = 612.95'
	R = 1.073.00'
	e = 7%

-YIRPA- CURVE DATA	
Pi Sta 7+33.76	Pi Sta 9+16.73
Gs = 7° 35' 20.1"	Δ = 83° 09' 32.1" (LT)
Ls = 200.00'	D = 7° 15' 20.1"
LT = 133.45'	L = 318.25'
ST = 66.79'	T = 195.49'
	R = 790.00'
	e = 8%

-YIRPA- CURVE DATA	
Pi Sta 11+85.32	
Gs = 7° 12' 20.7"	
Ls = 200.00'	
LT = 133.45'	
ST = 66.79'	

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
R-2719AA	5
R/W SHEET NO.	5

ROADWAY DESIGN ENGINEER — 18473

HYDRAULICS ENGINEER — 021162

GRAPHIC SCALE: 50 25 0 50 100

PLANS

Prepared by

URS

URS Corporation – North Carolina
1600 Perimeter Park Drive
Morrisville, North Carolina 27560
TELEPHONE: (919) 461-1100 FAX (919) 461-1415

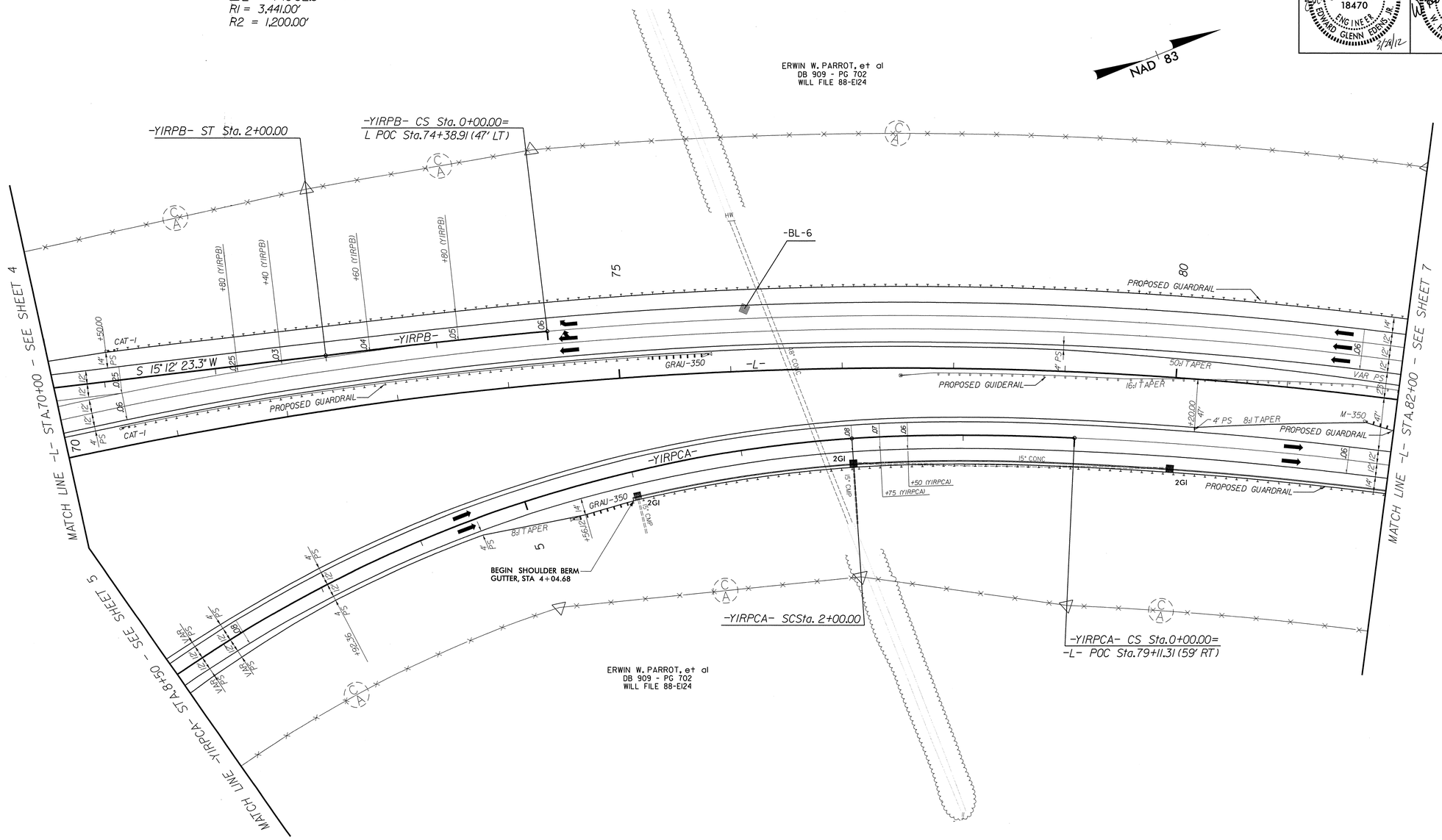
-L- CURVE DATA	-YIRPB- CURVE DATA	-YIRPCA- CURVE DATA	
PI Sta 78+80.01	PIs Sta 0+66.67	PIs Sta 1+16.20	PI Sta 5+49.77
Δ = 40° 36' 26.1" (RT)	θs = 1° 36' 55.2"	θs = 6°26'23.1" (LT)	Δ = 32° 30' 00.0" (LT)
D = 1° 38' 13.3"	Ls = 200.00'	Ls = 200.00'	D = 4° 46' 28.7"
L = 2,480.56'	LT = 133.34'	ST = 84.00'	L = 680.68'
T = 1,294.94'	ST = 66.67'	LT = 116.20'	T = 349.77'
R = 3,500.00'		Δ1 = 1°39'50.7"	R = 1,200.00'
e = 6%		Δ2 = 4°46'32.3"	e = 8%
		R1 = 3,441.00'	
		R2 = 1,200.00'	

NOTE: FOR -L- PROFILE, SEE SHEET 38
FOR -YIRPB- PROFILE, SEE SHEET 52
FOR -YIRPCA- PROFILE, SEE SHEET 54

GRAPHIC SCALE
50 25 0 50 100
PLANS

Prepared by
URS
URS Corporation - North Carolina
1600 Perimeter Park Drive
Morrisville, North Carolina 27560
TELEPHONE (919) 461-1100 FAX (919) 461-1415

PROJECT REFERENCE NO.	SHEET NO.
R-2719AA	6
R/W SHEET NO.	6
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 18470 ENGINEER EDWARD GLENN EDENS, III 9/28/12	NORTH CAROLINA PROFESSIONAL SEAL 021162 ENGINEER W. HERBERT TURNER, JR. 9-28-12



REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
R-2719AA	7
R/W SHEET NO.	7
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 18470 ENGINEER EDWARD GLENN EDENS, JR. 3/12/12

NORTH CAROLINA PROFESSIONAL SEAL 021162 ENGINEER W. HERBERT TURNER, III 3-29-12

GRAPHIC SCALE
50 25 0 50 100
PLANS

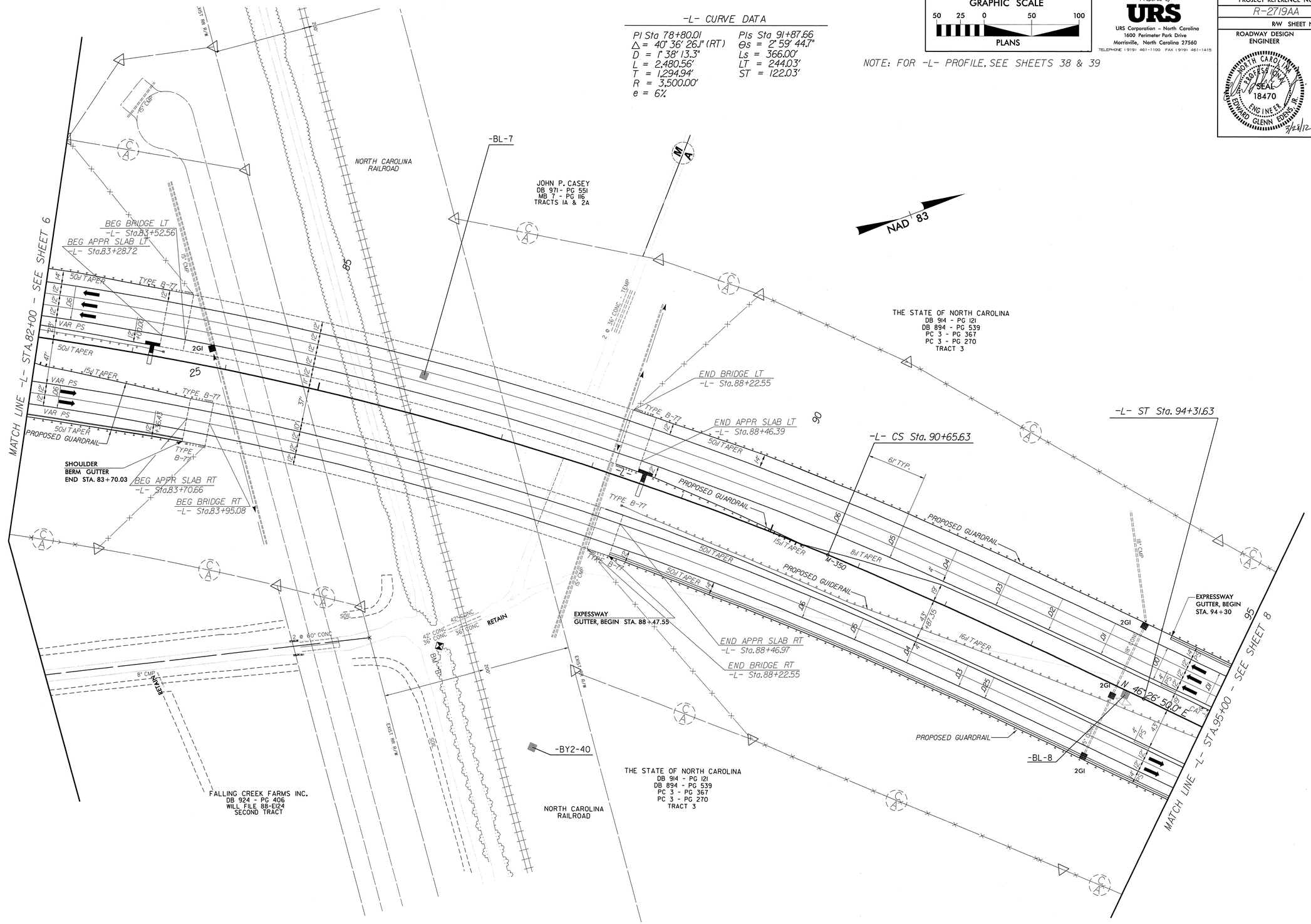
Prepared by
URS
URS Corporation – North Carolina
1600 Perimeter Park Drive
Morrisville, North Carolina 27560
TELEPHONE (919) 461-1100 FAX (919) 461-1415

REVISIONS

NOTE: FOR -L- PROFILE, SEE SHEETS 38 & 39

-L- CURVE DATA

PI Sta 78+80.01	PIs Sta 91+87.66
Δ = 40° 36' 26.1" (RT)	Θs = 2° 59' 44.7"
D = 1° 38' 13.3"	Ls = 366.00'
L = 2,480.56'	LT = 244.03'
T = 1,294.94'	ST = 122.03'
R = 3,500.00'	
e = 6%	



NOTE: FOR -L- PROFILE, SEE SHEET 39

GRAPHIC SCALE
50 25 0 50 100
PLANS

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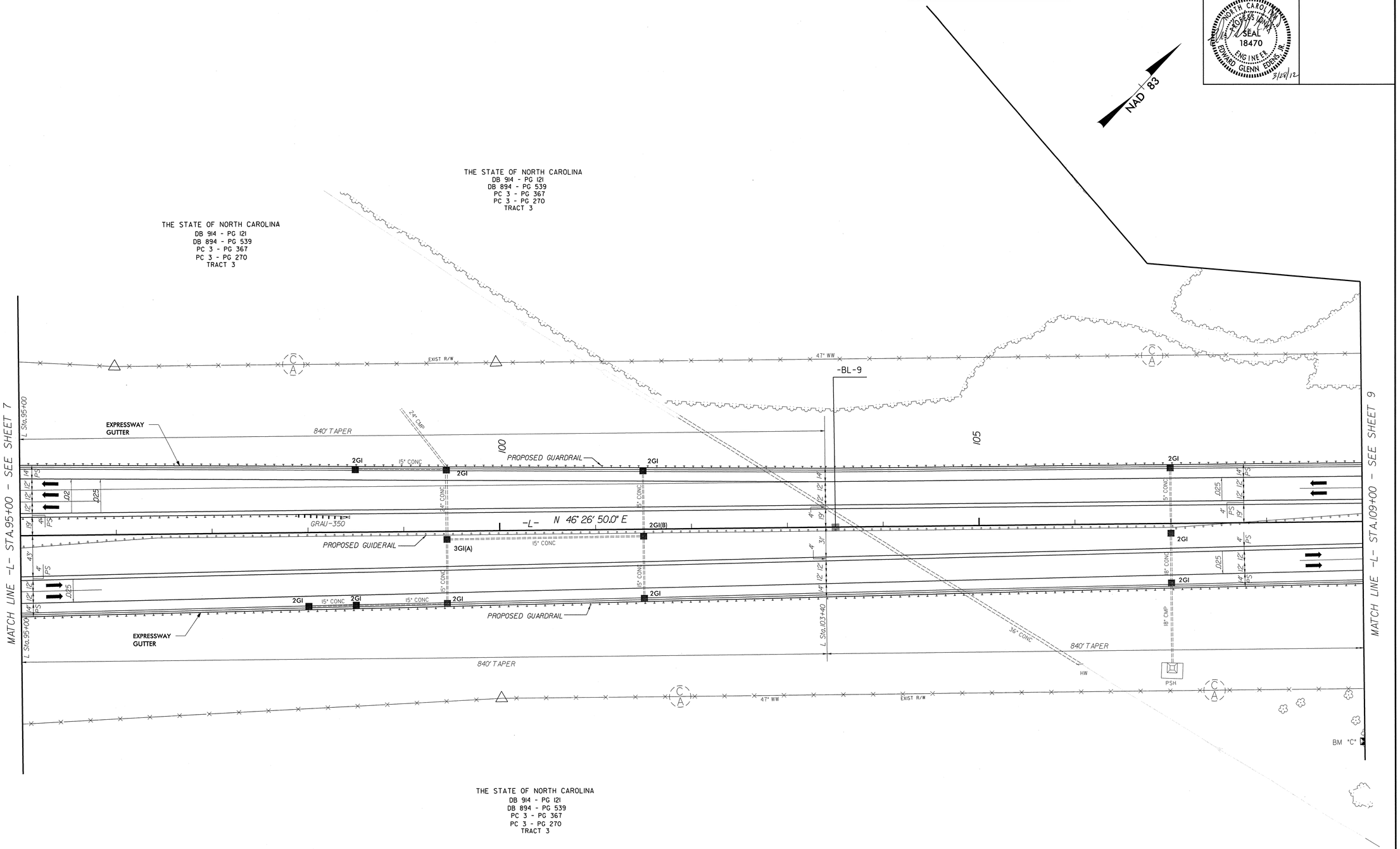
URS
URS Corporation - North Carolina
1600 Perimeter Park Drive
Morrisville, North Carolina 27560
TELEPHONE (919) 461-1100 FAX (919) 461-1415

PROJECT REFERENCE NO.	SHEET NO.
R-2719AA	8
R/W SHEET NO.	8
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 18470 ENGINEER EDWARD GLENN EDENS, JR.
3/28/12

REVISIONS



GRAPHIC SCALE
50 25 0 50 100
PLANS

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Morrisville, North Carolina 27560
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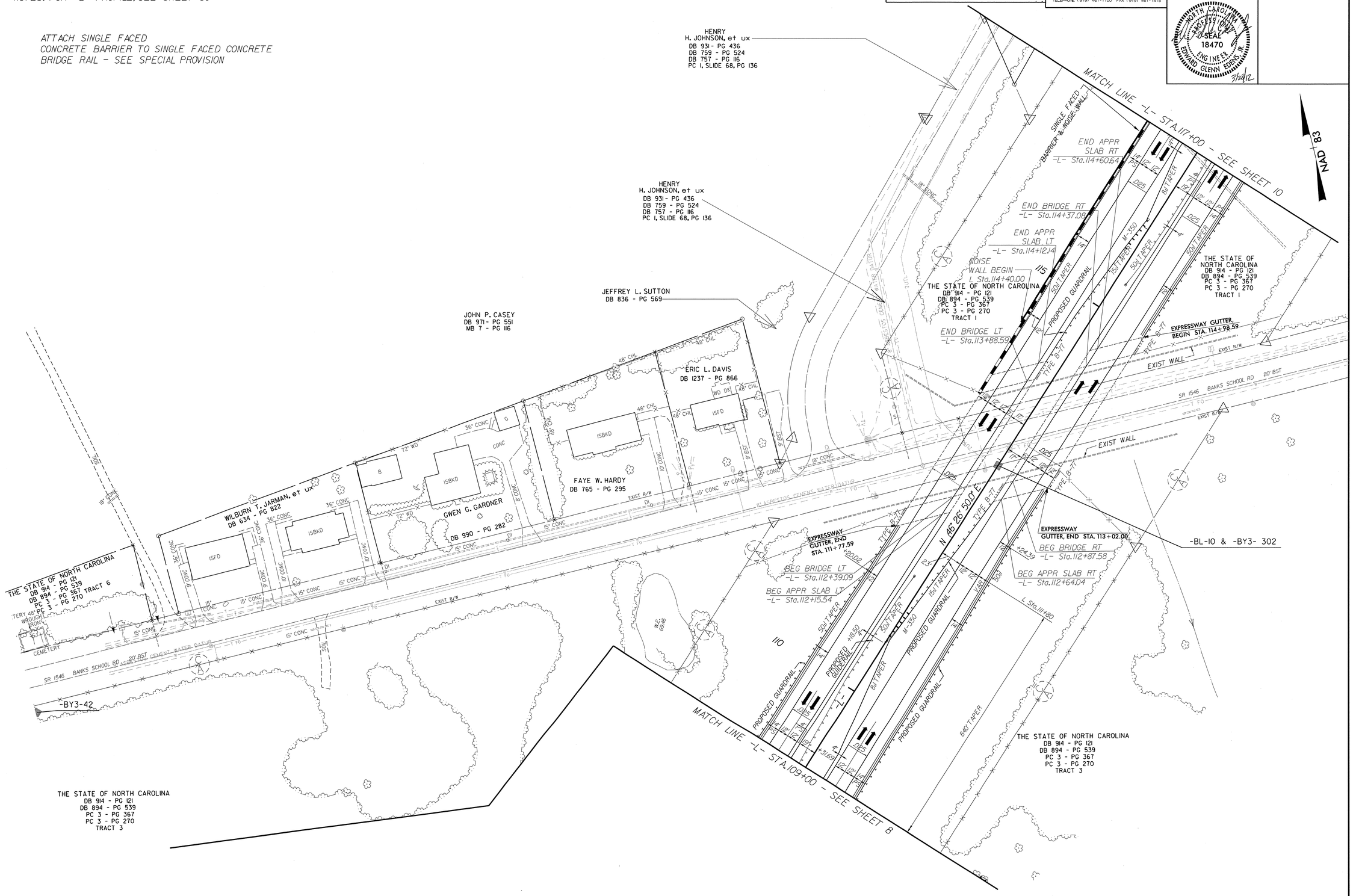
PROJECT REFERENCE NO.	SHEET NO.
R-2719AA	9
R/W SHEET NO.	9
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 18470 ENGINEER EDWARD GLENN EDENS, III
3/24/12

REVISIONS

NOTES: FOR -L- PROFILE, SEE SHEET 39

ATTACH SINGLE FACED CONCRETE BARRIER TO SINGLE FACED CONCRETE BRIDGE RAIL - SEE SPECIAL PROVISION



NOTE: FOR -L- PROFILE, SEE SHEET 40

-L- CURVE DATA

PIs Sta 129+40.45	PI Sta 151+30.46
Θs = 1° 30' 28.0"	Δ = 47° 50' 08.7" (LT)
Ls = 250.00'	D = 1° 12' 22.4"
LT = 166.67'	L = 3,965.73'
ST = 83.34'	T = 2106.68'
	R = 4,750.00'
	e = 5%

GRAPHIC SCALE

50 25 0 50 100

PLANS

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Morrisville, North Carolina 27560
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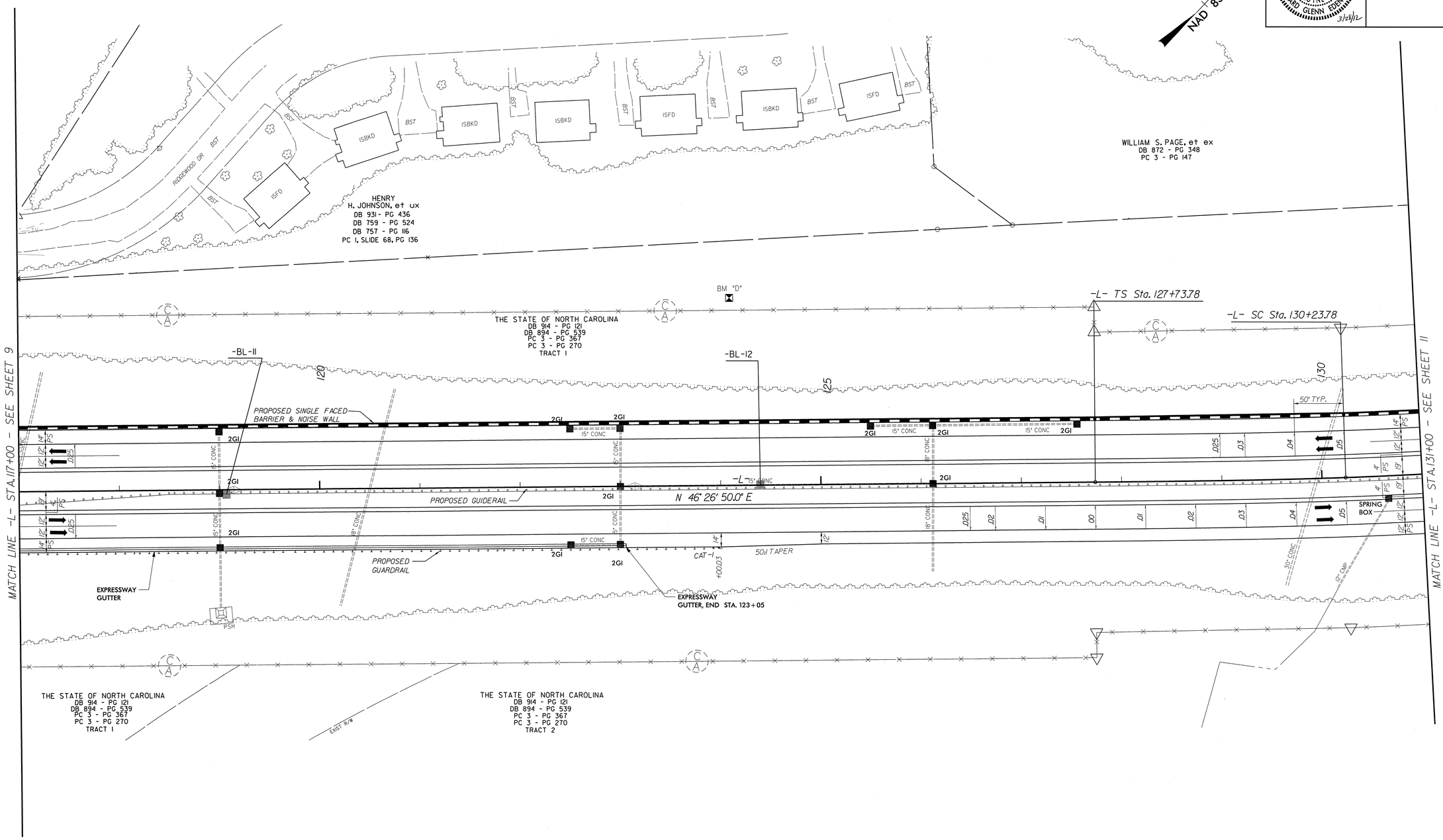
PROJECT REFERENCE NO.	SHEET NO.
R-2719AA	10
R/W SHEET NO.	10
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 18470 ENGINEER EDWARD GLENN EDENS, JR. 3/28/12



REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
R-2719AA	11
R/W SHEET NO.	11
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 18470 ENGINEER EDWARD GLENN EDENS, JR. 3/28/12

GRAPHIC SCALE
50 25 0 50 100
PLANS

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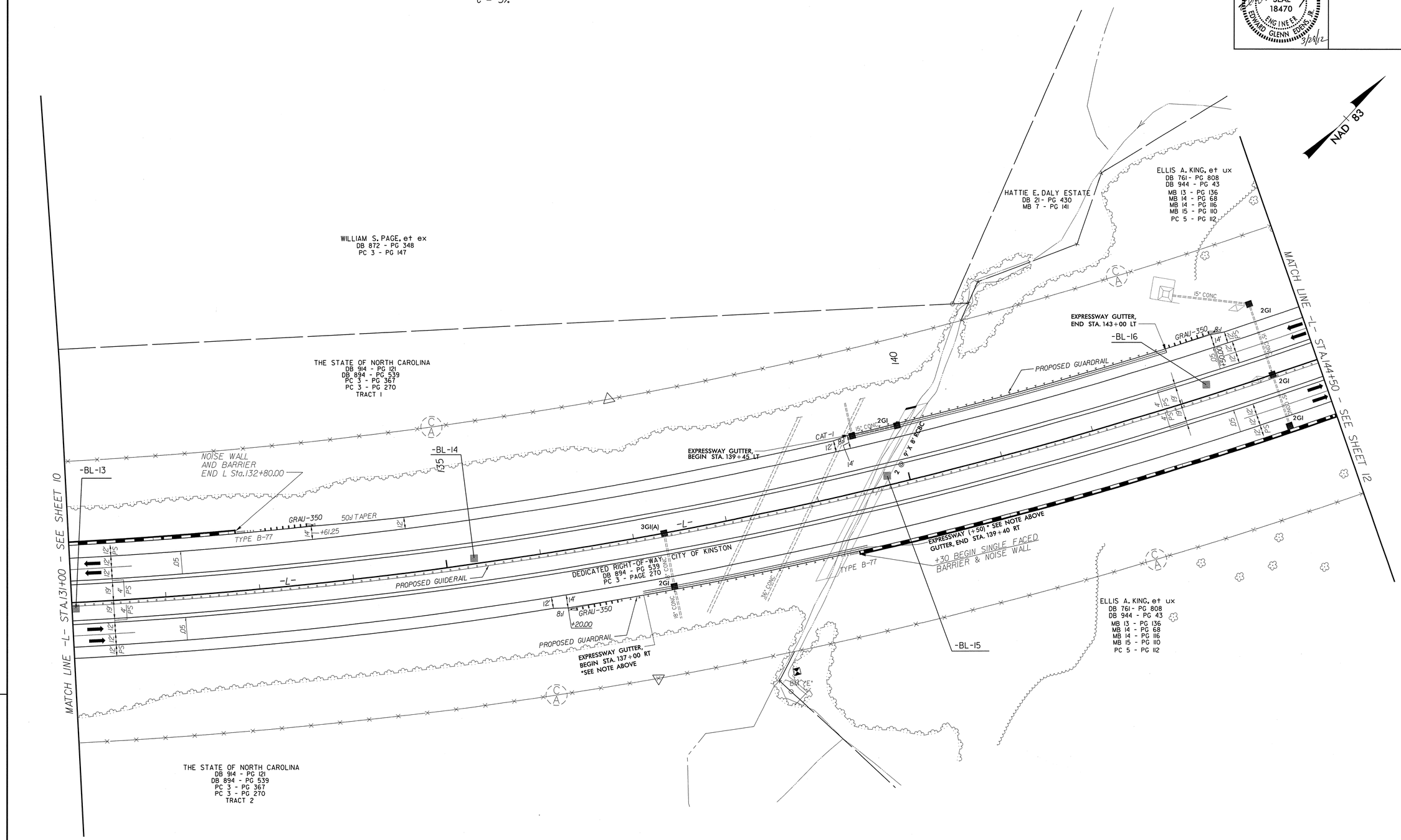
Morrisville, North Carolina 27560
TELEPHONE (919) 461-1100 FAX (919) 461-1415

-L- CURVE DATA
PI Sta 151+30.46
Δ = 47° 50' 08.7" (LT)
D = 1° 12' 22.4"
L = 3,965.73'
T = 2106.68'
R = 4,750.00'
e = 5%

NOTE: FOR -L- PROFILE, SEE SHEETS 40 & 41
* SEE SHEET 2 FOR DETAIL OF TRANSITION FROM SHOULDER TO EXPRESSWAY GUTTER



REVISIONS

-L- CURVE DATA

PI Sta 151+30.46
△ = 47° 50' 08.7" (LT)
D = 1° 12' 22.4"
L = 3,965.73'
T = 2106.68'
R = 4,750.00'
e = 5%

NOTE: FOR -L- PROFILE, SEE SHEET 41

GRAPHIC SCALE
50 25 0 50 100
PLANS

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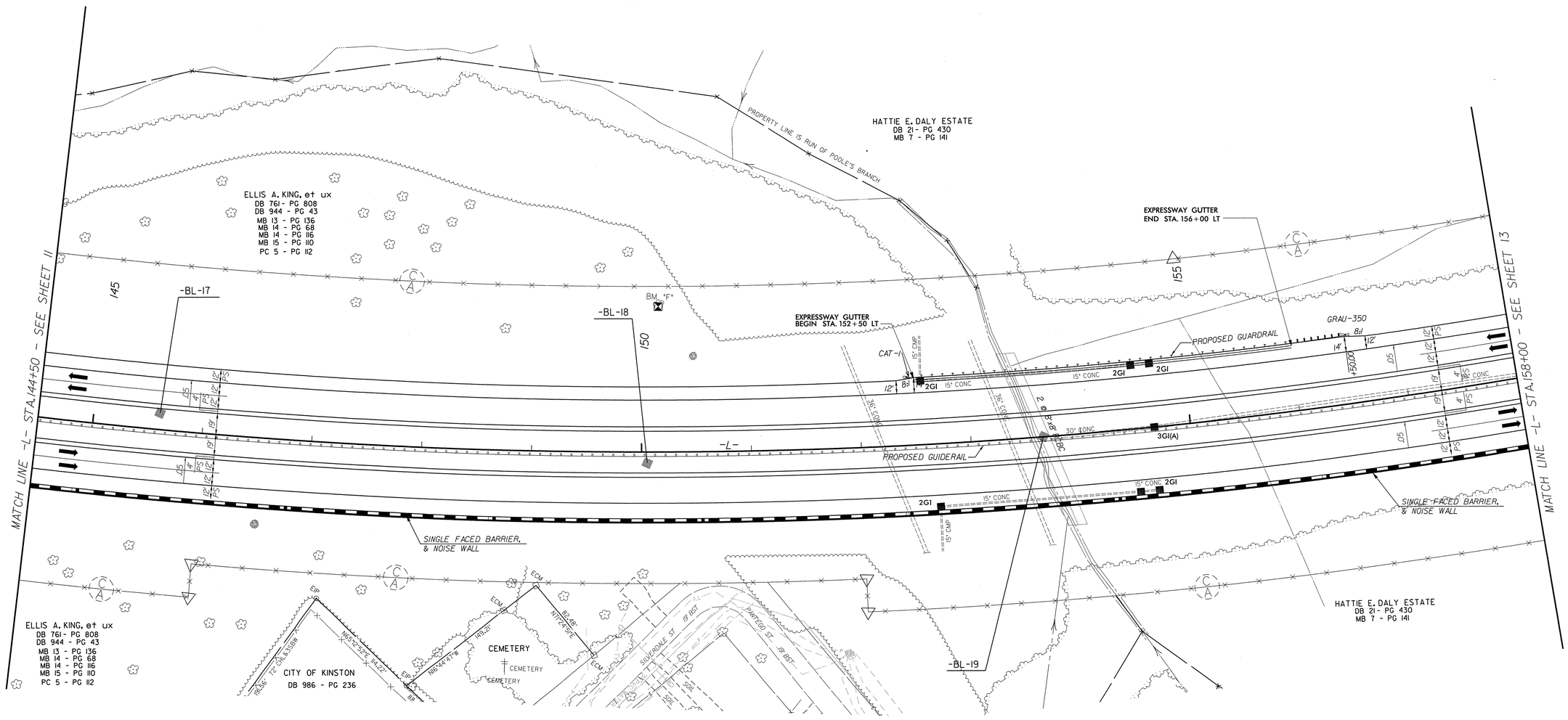
1600 Perimeter Park Drive
Morrisville, North Carolina 27560
TELEPHONE (919) 461-1100 FAX (919) 461-1415

PROJECT REFERENCE NO.	SHEET NO.
R-2719AA	12
R/W SHEET NO.	12
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 18470 ENGINEER EDWARD GLENN EDENS, JR.
3/28/12

NAD 83



PROJECT REFERENCE NO.	SHEET NO.
R-2719AA	13
R/W SHEET NO.	13
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

GRAPHIC SCALE
50 25 0 50 100
PLANS

Prepared by
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1600 Perimeter Park Drive
Morrisville, North Carolina 27560
TELEPHONE (919) 461-1100 FAX (919) 461-1415

NORTH CAROLINA PROFESSIONAL SEAL 18470 ENGINEER EDWARD GLENN EDENS JR.
3/26/12

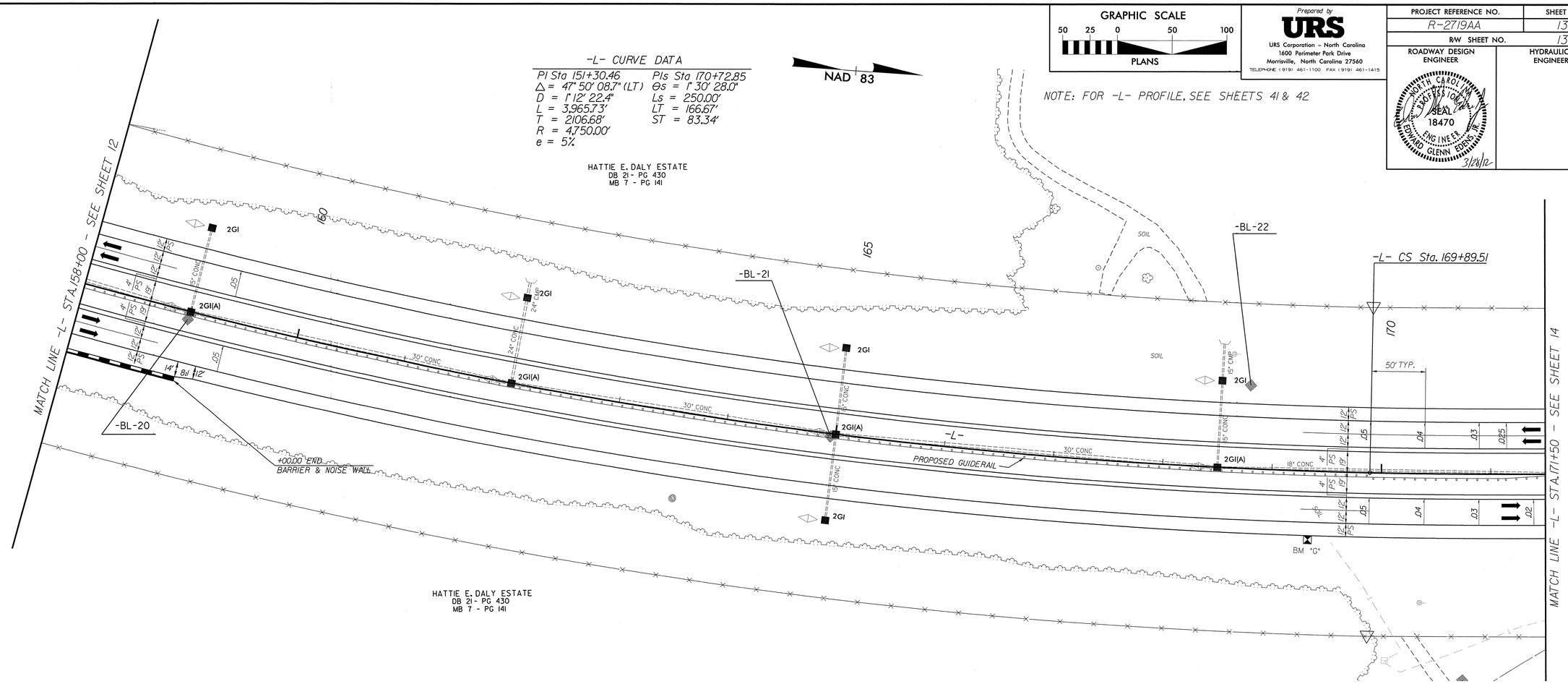
REVISIONS

-L- CURVE DATA

PI Sta 151+30.46	PIs Sta 170+72.85
Δ = 47° 50' 08.7" (LT)	Θs = 1° 30' 28.0"
D = 1° 12' 22.4"	Ls = 250.00'
L = 3,965.73'	LT = 166.67'
T = 2106.68'	ST = 83.34'
R = 4,750.00'	
e = 5%	

NAD 83

NOTE: FOR -L- PROFILE, SEE SHEETS 41 & 42



NOTE: FOR -L- PROFILE, SEE SHEET 42

GRAPHIC SCALE
50 25 0 50 100
PLANS

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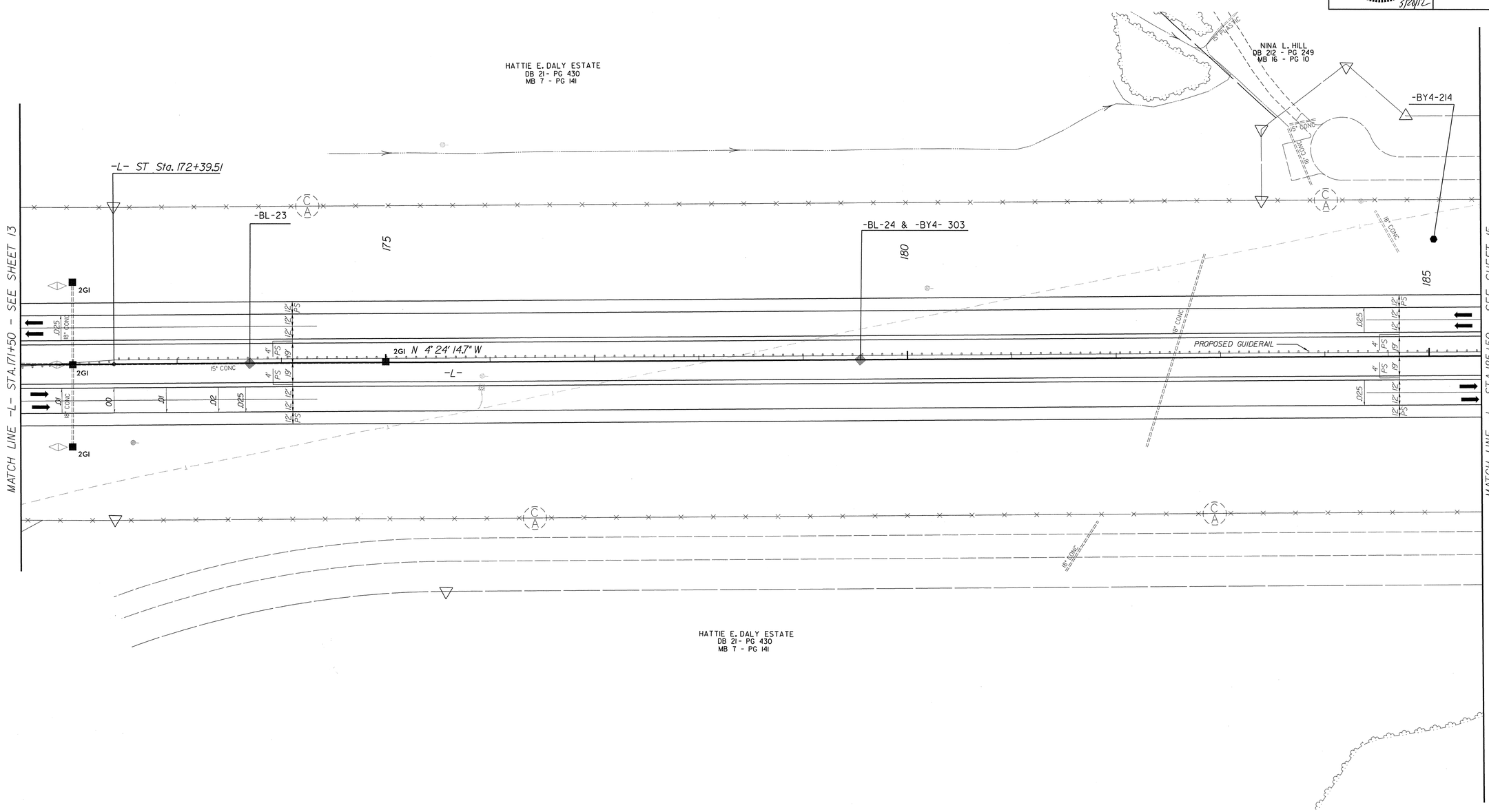
1600 Perimeter Park Drive
Morrisville, North Carolina 27560
TELEPHONE (919) 461-1100 FAX (919) 461-1415

PROJECT REFERENCE NO.	SHEET NO.
R-2719AA	14
R/W SHEET NO.	14
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 18470 ENGINEER EDWARD GLENN EDENS, III
5/26/12

REVISIONS

-L- CURVE DATA
PIs Sta 170+72.85
Θs = 1° 30' 28.0"
Ls = 250.00'
LT = 166.67'
ST = 83.34'



NOTE: FOR -L- PROFILE, SEE SHEETS 42 & 43

GRAPHIC SCALE
50 25 0 50 100
PLANS

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1600 Perimeter Park Drive
Morrisville, North Carolina 27560
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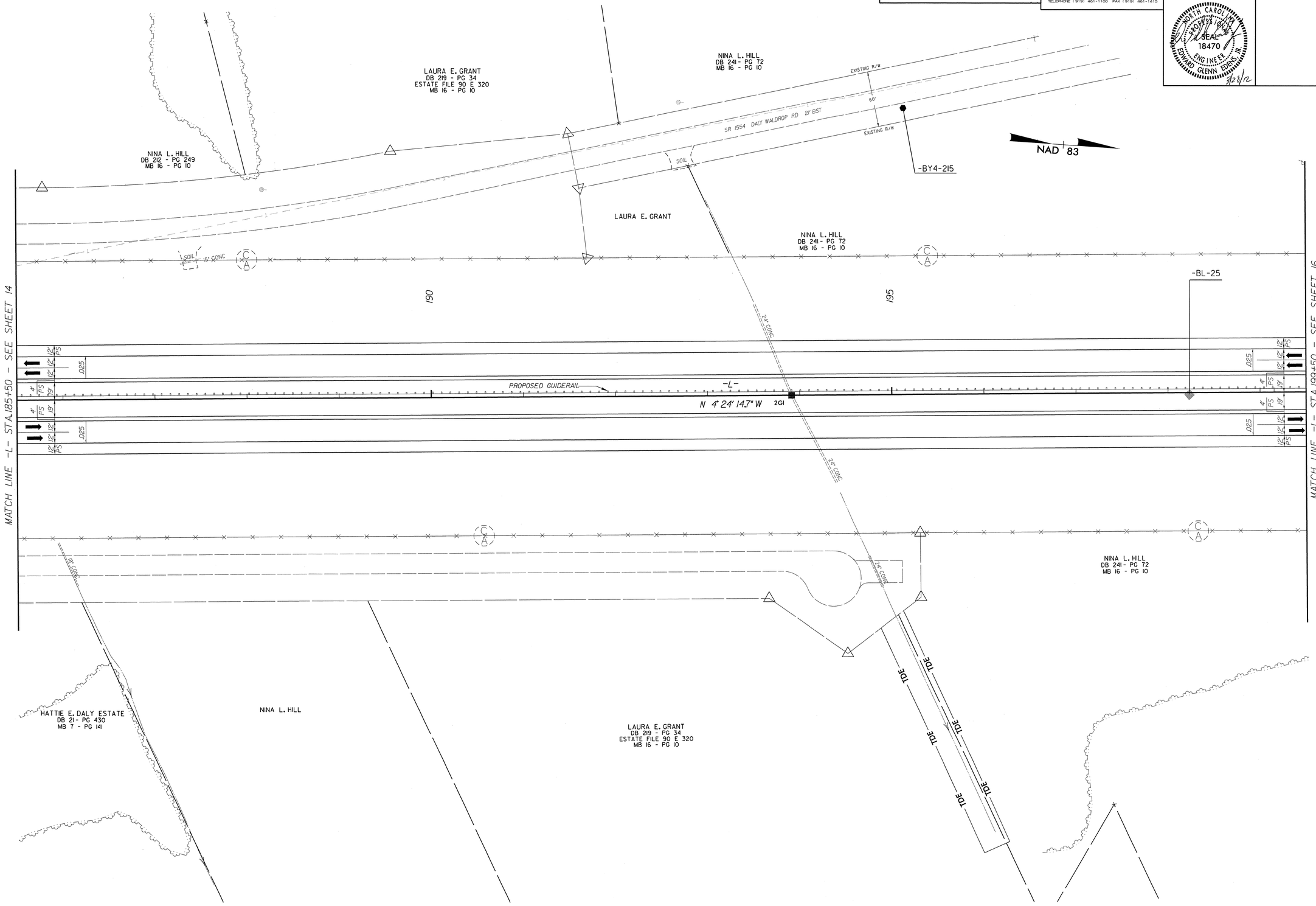
PROJECT REFERENCE NO.	SHEET NO.
R-2719AA	15
R/W SHEET NO.	15
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 18470 ENGINEER EDWARD GLENN EDENS, III
9/28/12



REVISIONS

NOTE: FOR -L- PROFILE, SEE SHEET 43

GRAPHIC SCALE
50 25 0 50 100
PLANS

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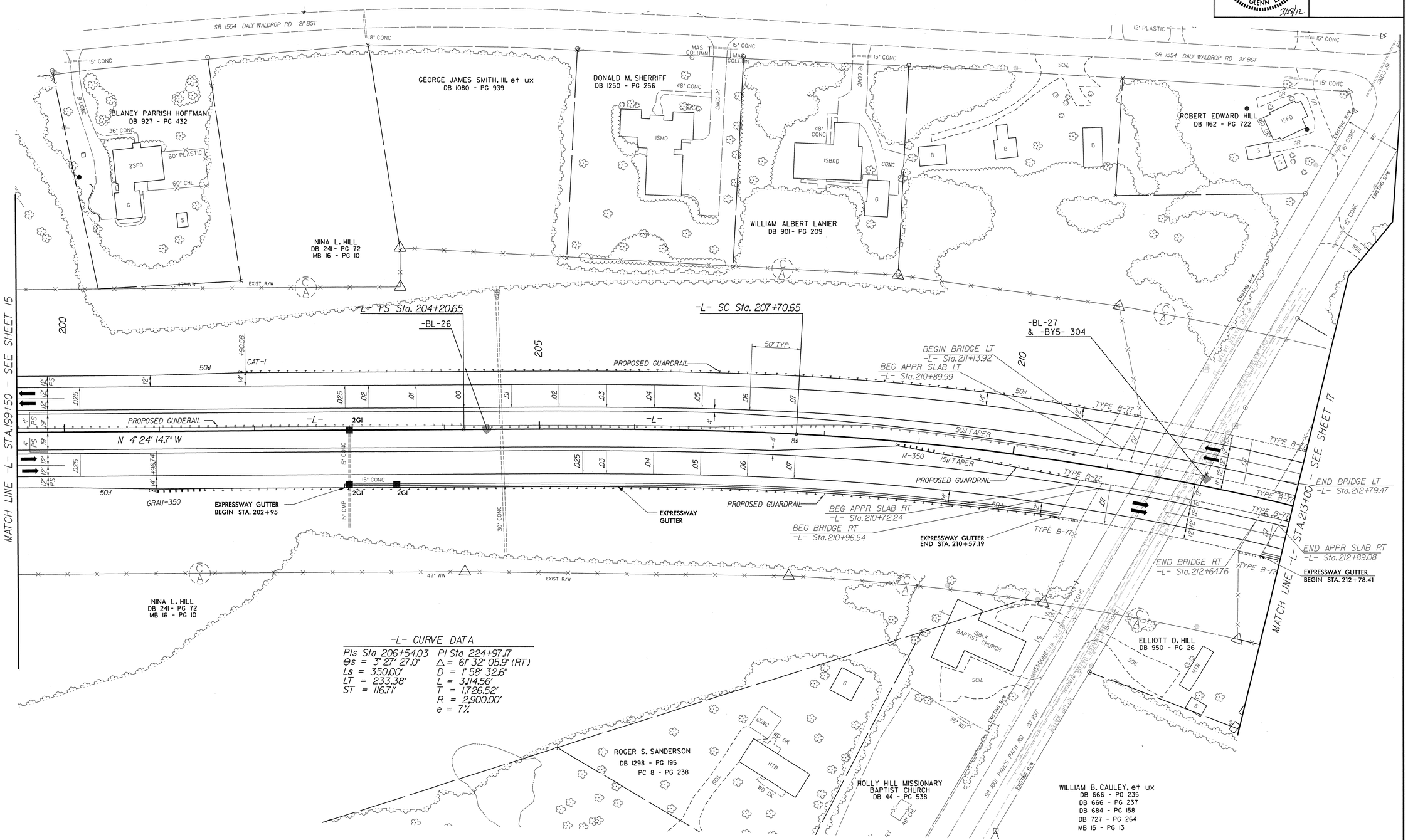
PROJECT REFERENCE NO.	SHEET NO.
R-2719AA	16
R/W SHEET NO.	16
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 18470 ENGINEER EDWARD GLENN EDENS, III
3/14/12

NAD 83



-L- CURVE DATA

PIs Sta 206+54.03	PI Sta 224+97.17
Θs = 3° 27' 27.0"	Δ = 61° 32' 05.9" (RT)
Ls = 350.00'	D = 1° 58' 32.6"
LT = 233.38'	L = 3,114.56'
ST = 116.71'	T = 1,726.52'
	R = 2,900.00'
	e = 7%

REVISIONS

NOTE: FOR -L- PROFILE, SEE SHEETS 43 & 44

GRAPHIC SCALE
50 25 0 50 100
PLANS

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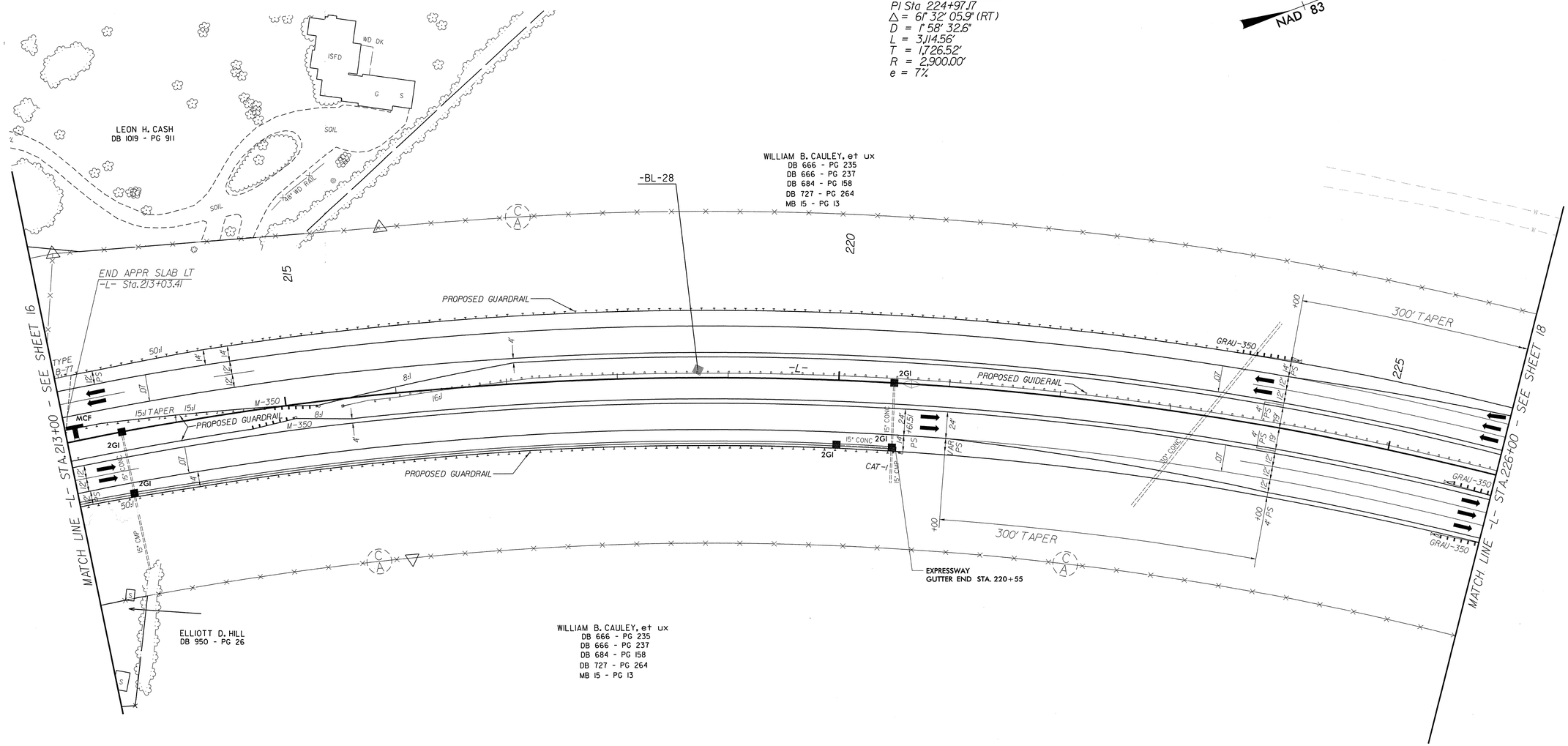
1600 Perimeter Park Drive
Morrisville, North Carolina 27560
TELEPHONE (919) 461-1100 FAX (919) 461-1415

PROJECT REFERENCE NO.	SHEET NO.
R-2719AA	17
R/W SHEET NO.	17
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 18470 ENGINEER EDWARD GLENN EDENS, JR.
3/28/12

-L- CURVE DATA
PI Sta 224+97.17
Δ = 61° 32' 05.9" (RT)
D = 1° 58' 32.6"
L = 3,114.56'
T = 1,726.52'
R = 2,900.00'
e = 7%

NAD 83



REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
R-2719AA	18
R/W SHEET NO.	
18	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 18470 ENGINEER EDWARD GLENN EDENS, JR. 3/28/12

GRAPHIC SCALE
50 25 0 50 100
PLANS

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URS
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Morrisville, North Carolina 27560
TELEPHONE (919) 461-1100 FAX (919) 461-1415

REVISIONS

-L- CURVE DATA

PI Sta 224+97.17
Δ = 61° 32' 05.9" (RT)
D = 1° 58' 32.6"
L = 3,114.56'
T = 1,726.52'
R = 2,900.00'
e = 7%

PIs Sta 240+01.92
Θs = 3° 27' 27.0"
Ls = 350.00'
LT = 233.38'
ST = 116.71'

-Y24RPB- CURVE DATA

PIs Sta 0+70.01
Θs = 2°02'29.1"
Ls = 210.00'
LT = 140.01'
ST = 70.01'

PIs Sta 5+95.85
Θs = 4° 35' 01.2"
Ls = 240.00'
LT = 160.05'
ST = 80.05'

PI Sta 8+30.75
Δ = 11° 47' 45.0" (LT)
D = 3° 49' 11.0"
L = 308.81'
T = 154.95'
R = 1,500.00'
e = 8%

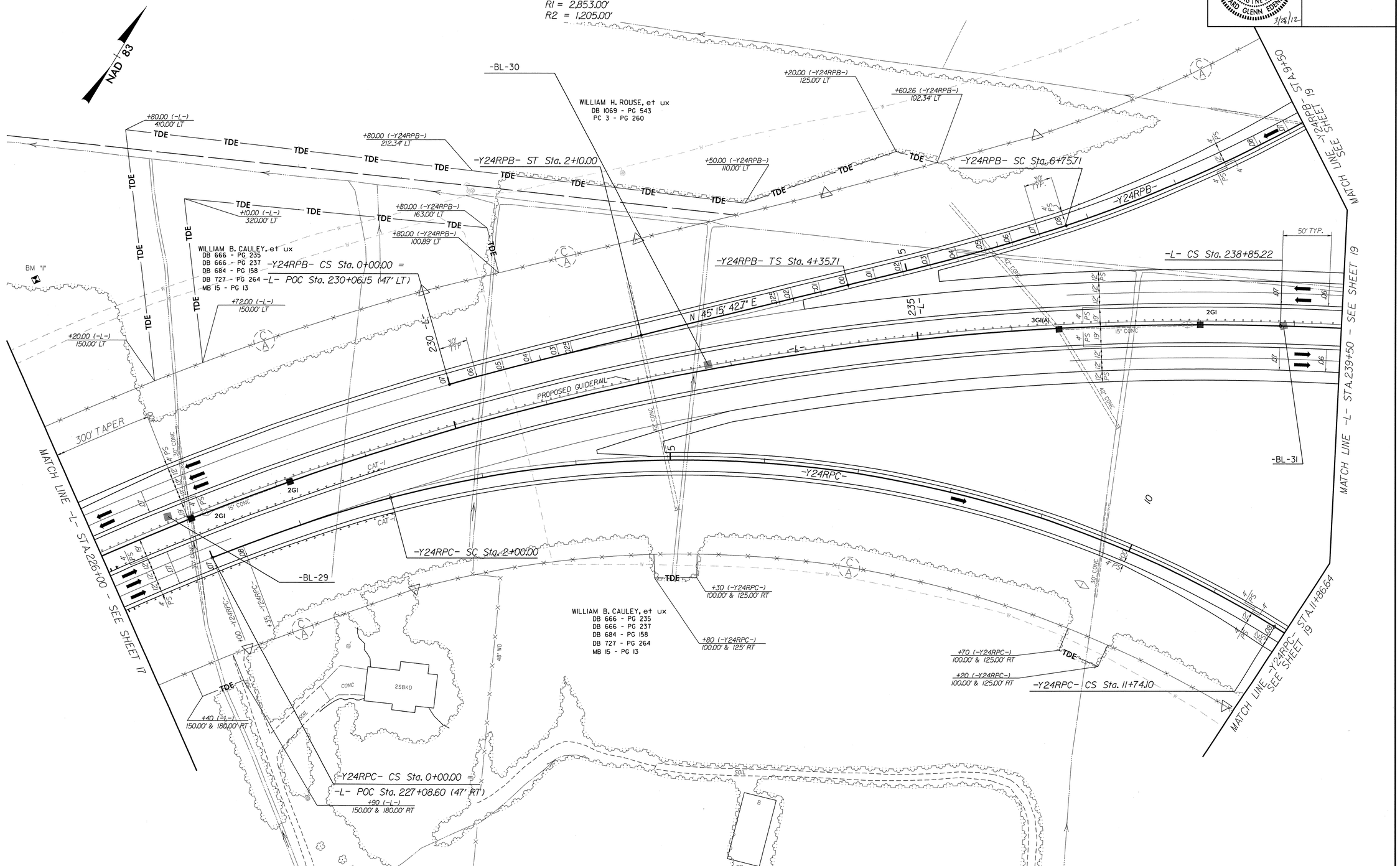
-Y24RPC- CURVE DATA

PIs Sta 1+13.65
Θs = 6°45'47.2"
Ls = 200.00'
ST = 86.57'
LT = 113.65'
Δ1 = 2°00'29.8"
Δ2 = 4°45'17.4"
R1 = 2,853.00'
R2 = 1,205.00'

PI Sta 7+15.43
Δ = 46° 19' 00.7" (RT)
D = 4° 45' 17.4"
L = 974.10'
T = 515.43'
R = 1,205.00'
e = 8%

PIs Sta 12+67.55
Θs = 6° 39' 24.4"
Ls = 280.00'
LT = 186.80'
ST = 93.45'

NOTE: FOR -L- PROFILE, SEE SHEET 44
FOR -Y24RPB- PROFILE, SEE SHEET 67
FOR -Y24RPC- PROFILE, SEE SHEET 69



PROJECT REFERENCE NO.	SHEET NO.
R-2719AA	19
R/W SHEET NO.	
	19

ROADWAY DESIGN ENGINEER — HYDRAULICS ENGINEER

GRAPHIC SCALE: 50 25 0 50 100 — PLANS

Prepared by

URS

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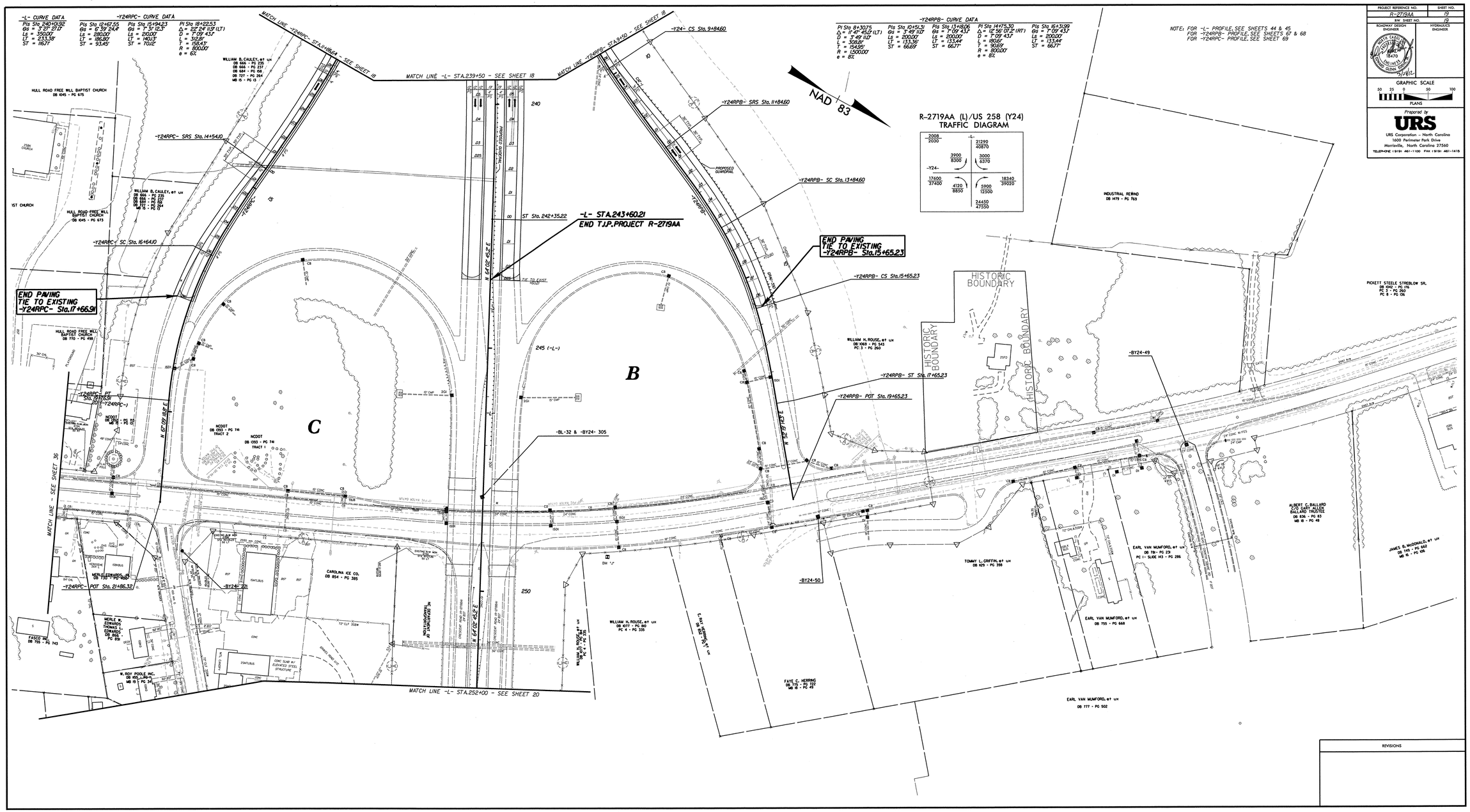
1600 Perimeter Park Drive
Morrisville, North Carolina 27560
TELEPHONE (919) 461-1100 FAX (919) 461-1415

NOTE: FOR -L- PROFILE, SEE SHEETS 44 & 45
FOR -Y24RPB- PROFILE, SEE SHEETS 67 & 68
FOR -Y24RPC- PROFILE, SEE SHEET 69



REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
R-2719AA	20
R/W SHEET NO.	20
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

GRAPHIC SCALE
50 25 0 50 100
PLANS

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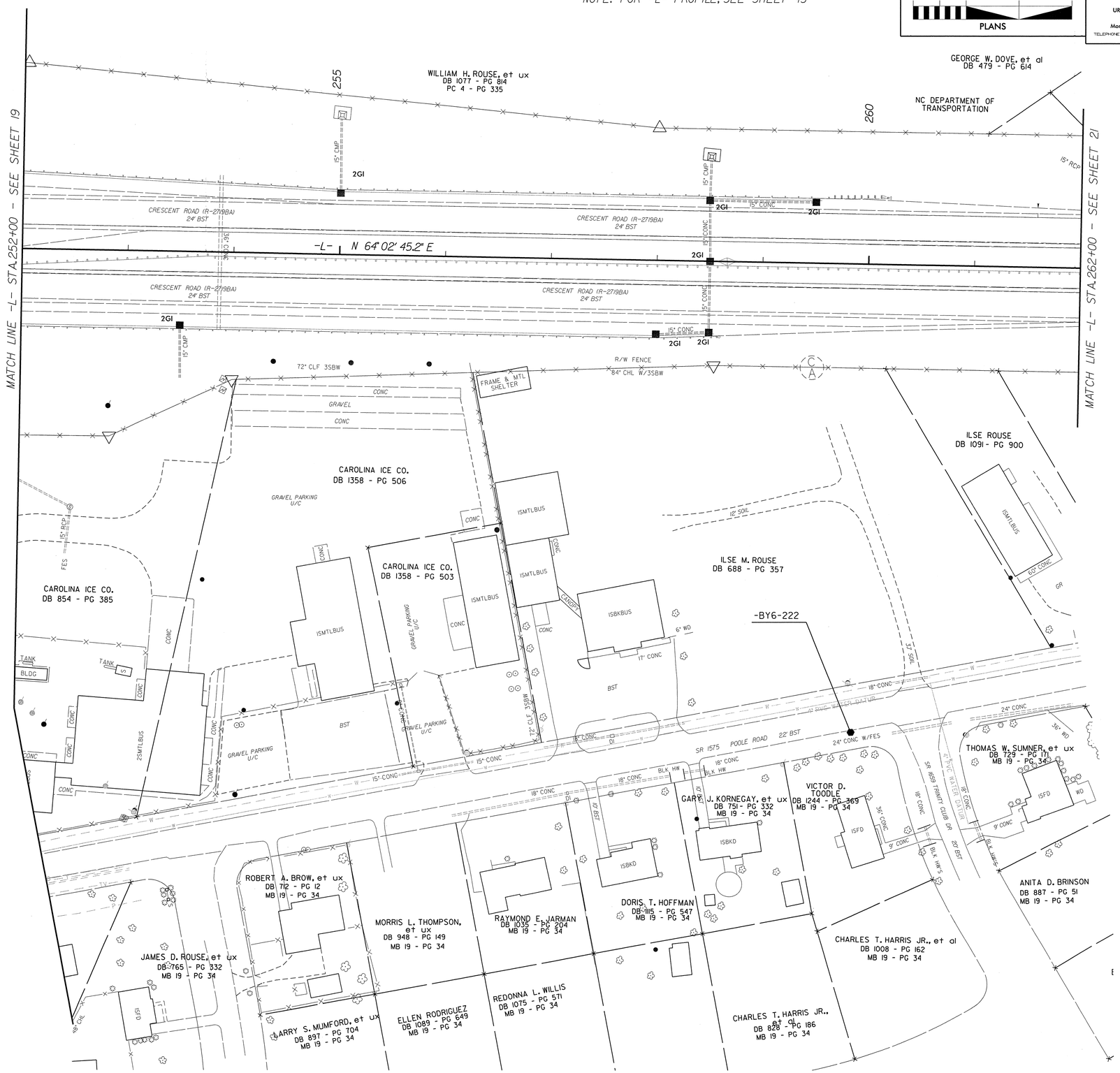
URS
URS Corporation – North Carolina
1600 Perimeter Park Drive
Morrisville, North Carolina 27560
TELEPHONE: (919) 461-1100 FAX: (919) 461-1415

NORTH CAROLINA PROFESSIONAL SEAL 18470 ENGINEER EDWARD GLENN EDENS, III
3/28/12

REVISIONS



NOTE: FOR -L- PROFILE, SEE SHEET 45

GRAPHIC SCALE
50 25 0 50 100
PLANS

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Morrisville, North Carolina 27560
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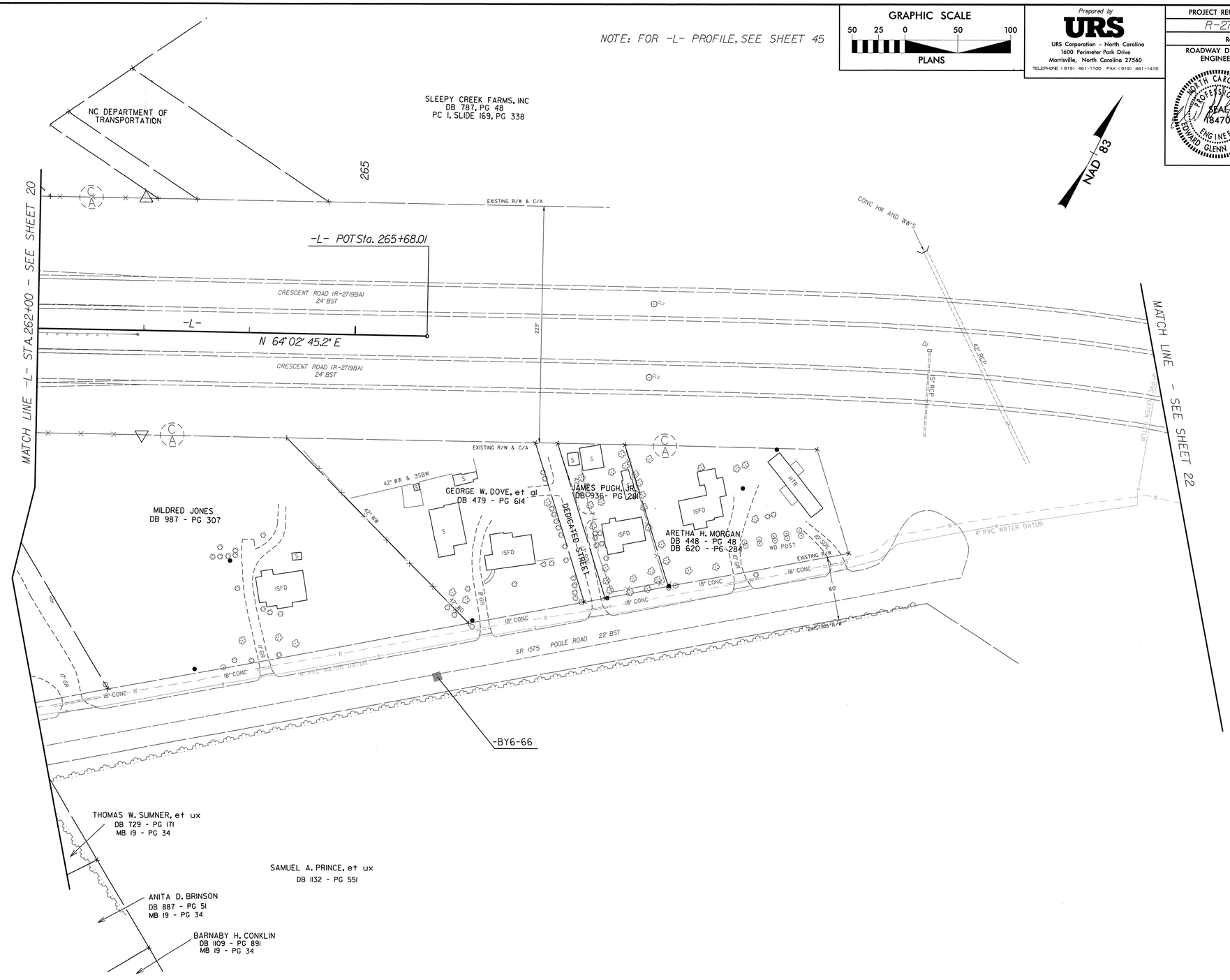
PROJECT REFERENCE NO.	SHEET NO.
R-2719AA	21
R/W SHEET NO.	21
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 18470 ENGINEER EDWARD GLENN EDENS, JR.
3/23/12



REVISIONS

GRAPHIC SCALE

50 25 0 50 100

PLANS

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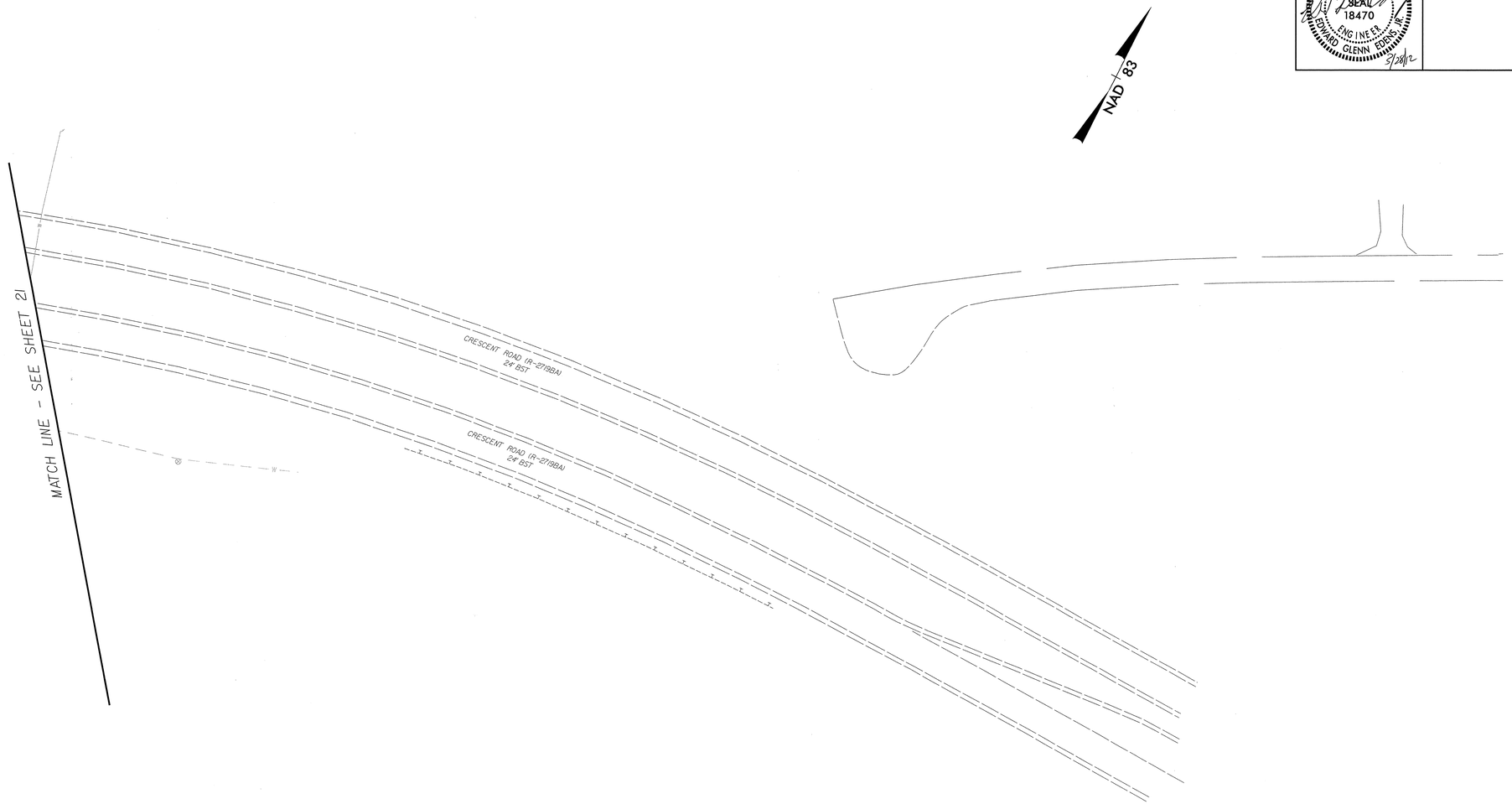
PROJECT REFERENCE NO.	SHEET NO.
R-2719AA	22
R/W SHEET NO.	22
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 18470 ENGINEER EDWARD GLENN EDENS, JR. 5/28/12

REVISIONS



NOTE: FOR -Y1- PROFILE, SEE SHEET 46
FOR -Y10- PROFILE, SEE SHEET 60
FOR INTERSECTION DETAIL SEE SHEET 2-H

GRAPHIC SCALE
50 25 0 50 100
PLANS

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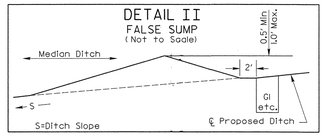
PROJECT REFERENCE NO.	SHEET NO.
R-2719AA	23
R/W SHEET NO.	23
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 18470 ENGINEER EDWARD GLENN EDENS, JR. 3/28/12

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 021162 ENGINEER W. HERBERT TURNER, JR. 3-28-12

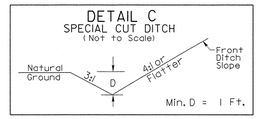
REVISIONS

DETAIL II
FALSE SUMP
(Not to Scale)



SHEET	ROADWAY	STATION	SIDE
23	-Y1-	15+60	MED

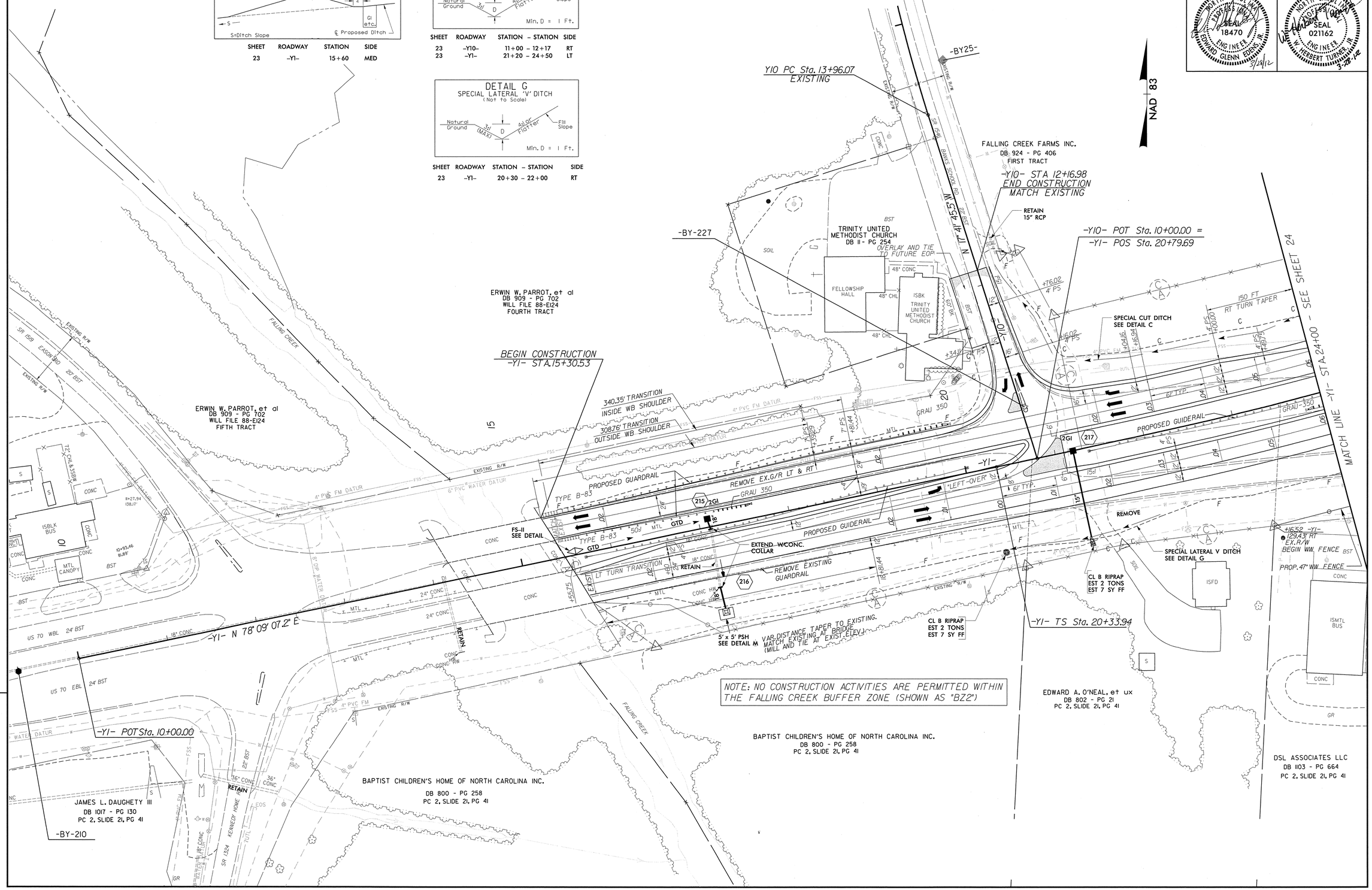
DETAIL C
SPECIAL CUT DITCH
(Not to Scale)



SHEET	ROADWAY	STATION - STATION	SIDE
23	-Y10-	11+00 - 12+17	RT
23	-Y1-	21+20 - 24+50	LT

DETAIL G
SPECIAL LATERAL 'V' DITCH
(Not to Scale)

SHEET	ROADWAY	STATION - STATION	SIDE
23	-Y1-	20+30 - 22+00	RT



NOTE: NO CONSTRUCTION ACTIVITIES ARE PERMITTED WITHIN THE FALLING CREEK BUFFER ZONE (SHOWN AS "BZ2")

GRAPHIC SCALE
50 25 0 50 100
PLANS

Prepared by
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PROJECT REFERENCE NO.	SHEET NO.
R-2719AA	24
R/W SHEET NO.	24
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 18470 ENGINEER EDWARD GLENN EDENS, III 3/28/12

NORTH CAROLINA PROFESSIONAL SEAL 021162 ENGINEER W. HERBERT TURNER, JR. 3-28-12

REVISIONS

-Y1-

PIs Sta 23+18.69
Θs = 4° 16' 10.9"
Ls = 427.00'
LT = 284.75'
ST = 142.41'

PI Sta 28+66.38
Δ = 16° 06' 33.3" (LT)
D = 1° 59' 59.5"
L = 805.52'
T = 405.44'
R = 2,865.00'
e = 7%

PIs Sta 34+08.87
Θs = 4° 16' 10.9"
Ls = 427.00'
LT = 284.75'
ST = 142.41'

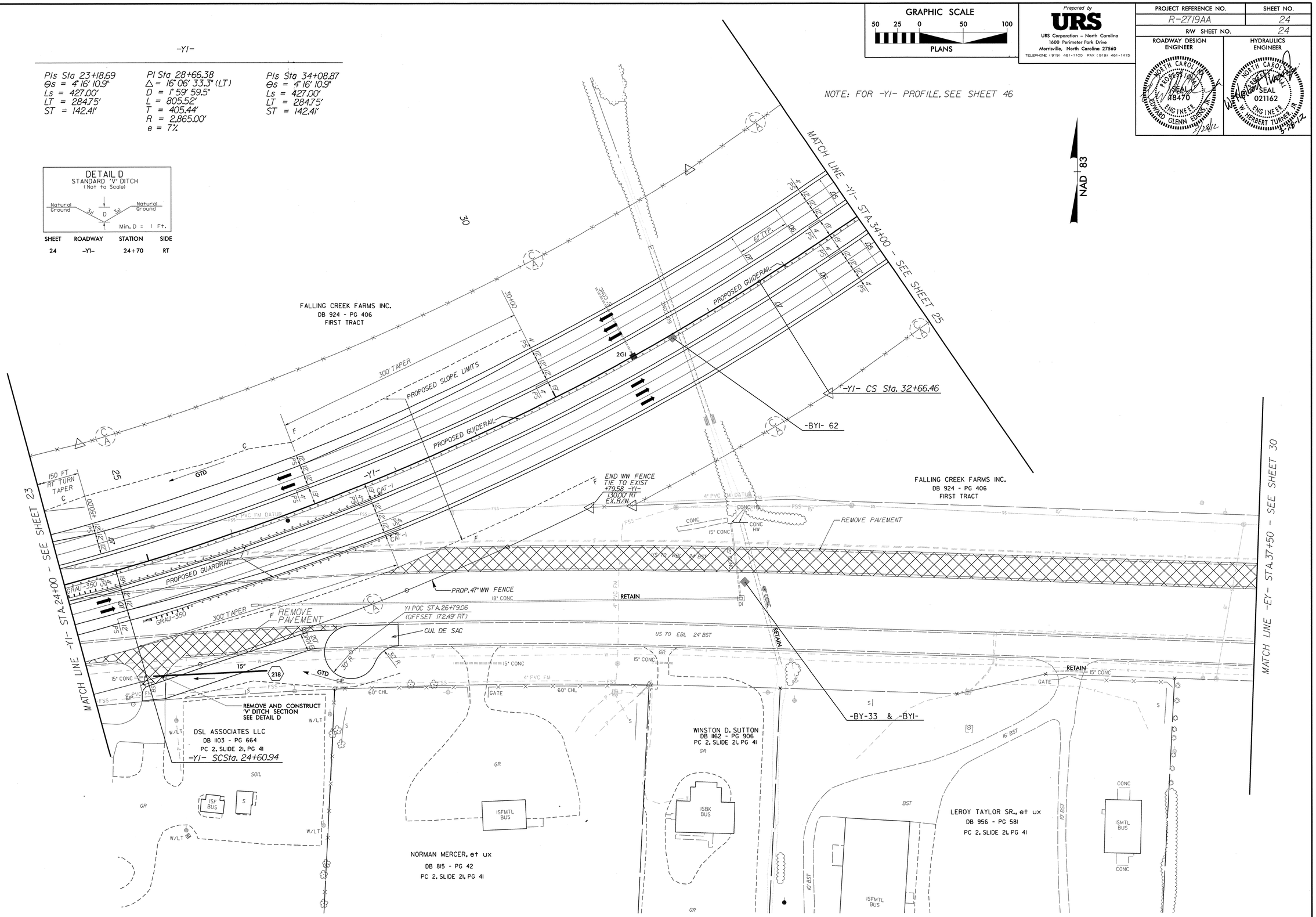
NOTE: FOR -Y1- PROFILE, SEE SHEET 46

NAD 83

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

Natural Ground — 3:1 — D — 3:1 — Natural Ground
Min. D = 1 Ft.

SHEET	ROADWAY	STATION	SIDE
24	-Y1-	24+70	RT



GRAPHIC SCALE
50 25 0 50 100
PLANS

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Morrisville, North Carolina 27560
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PROJECT REFERENCE NO.	SHEET NO.
R-2719AA	25
R/W SHEET NO.	25
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 18470 ENGINEER EDWARD GLENN EDENS, JR.
5/28/12

REVISIONS

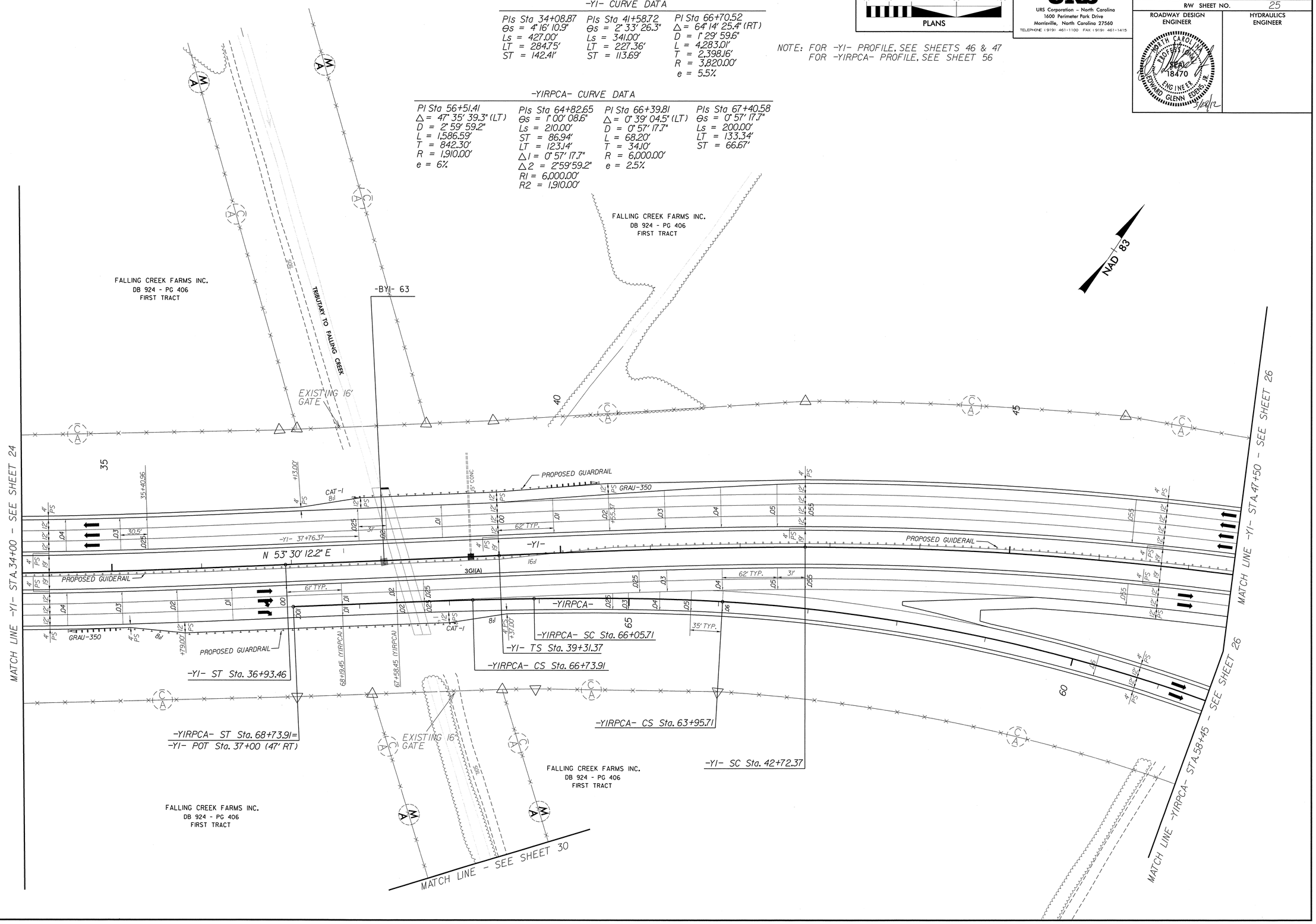
-Y1- CURVE DATA

PIs Sta 34+08.87	PIs Sta 41+58.72	PI Sta 66+70.52
Θs = 4° 16' 10.9"	Θs = 2° 33' 26.3"	Δ = 64° 14' 25.4" (RT)
Ls = 427.00'	Ls = 341.00'	D = 1° 29' 59.6"
LT = 284.75'	LT = 227.36'	L = 4,283.01'
ST = 142.41'	ST = 113.69'	T = 2,398.16'
		R = 3,820.00'
		e = 5.5%

NOTE: FOR -Y1- PROFILE, SEE SHEETS 46 & 47
FOR -YIRPCA- PROFILE, SEE SHEET 56

-YIRPCA- CURVE DATA

PI Sta 56+51.41	PIs Sta 64+82.65	PI Sta 66+39.81	PIs Sta 67+40.58
Δ = 47° 35' 39.3" (LT)	Θs = 1° 00' 08.6"	Δ = 0° 39' 04.5" (LT)	Θs = 0° 57' 17.7"
D = 2° 59' 59.2"	Ls = 210.00'	D = 0° 57' 17.7"	Ls = 200.00'
L = 1,586.59'	ST = 86.94'	L = 68.20'	LT = 133.34'
T = 842.30'	LT = 123.14'	T = 34.10'	ST = 66.67'
R = 1,910.00'	Δ1 = 0° 57' 17.7"	R = 6,000.00'	
e = 6%	Δ2 = 2°59'59.2"	e = 2.5%	
	R1 = 6,000.00'		
	R2 = 1,910.00'		



-Y1- CURVE DATA	-YIRPB- CURVE DATA		-YIRPCA- CURVE DATA	
PI Sta 66+70.52	PI Sta 18+81.89	PIs Sta 28+22.09	PIs Sta 34+88.75	PIs Sta 47+39.14
Δ = 64° 14' 25.4" (RT)	Δ = 46° 11' 53.3" (RT)	Θs = 2° 29' 28.0"	Θs = 1° 28' 37.5"	Θs = 3° 08' 59.2"
D = 1° 29' 59.6"	D = 2° 29' 28.0"	Ls = 200.00'	Ls = 200.00'	Ls = 210.00'
L = 4,283.01'	L = 1,854.51'	LT = 133.35'	LT = 133.34'	LT = 140.02'
T = 2,398.16'	T = 980.99'	ST = 66.68'	ST = 66.67'	ST = 70.02'
R = 3,820.00'	R = 2,300.00'			
e = 5.5%	e = 5%			

-YIRPCA- CURVE DATA	
PI Sta 56+51.41	
Δ = 47° 35' 39.3" (LT)	
D = 2° 59' 59.2"	
L = 1,586.59'	
T = 842.30'	
R = 1,910.00'	
e = 6%	

NOTE: FOR -Y1- PROFILE, SEE SHEET 47
FOR -YIRPCA-PROFILE, SEE SHEETS 55 & 56
FOR -YIRPB- PROFILE, SEE SHEET 52 & 53

GRAPHIC SCALE
50 25 0 50 100
PLANS

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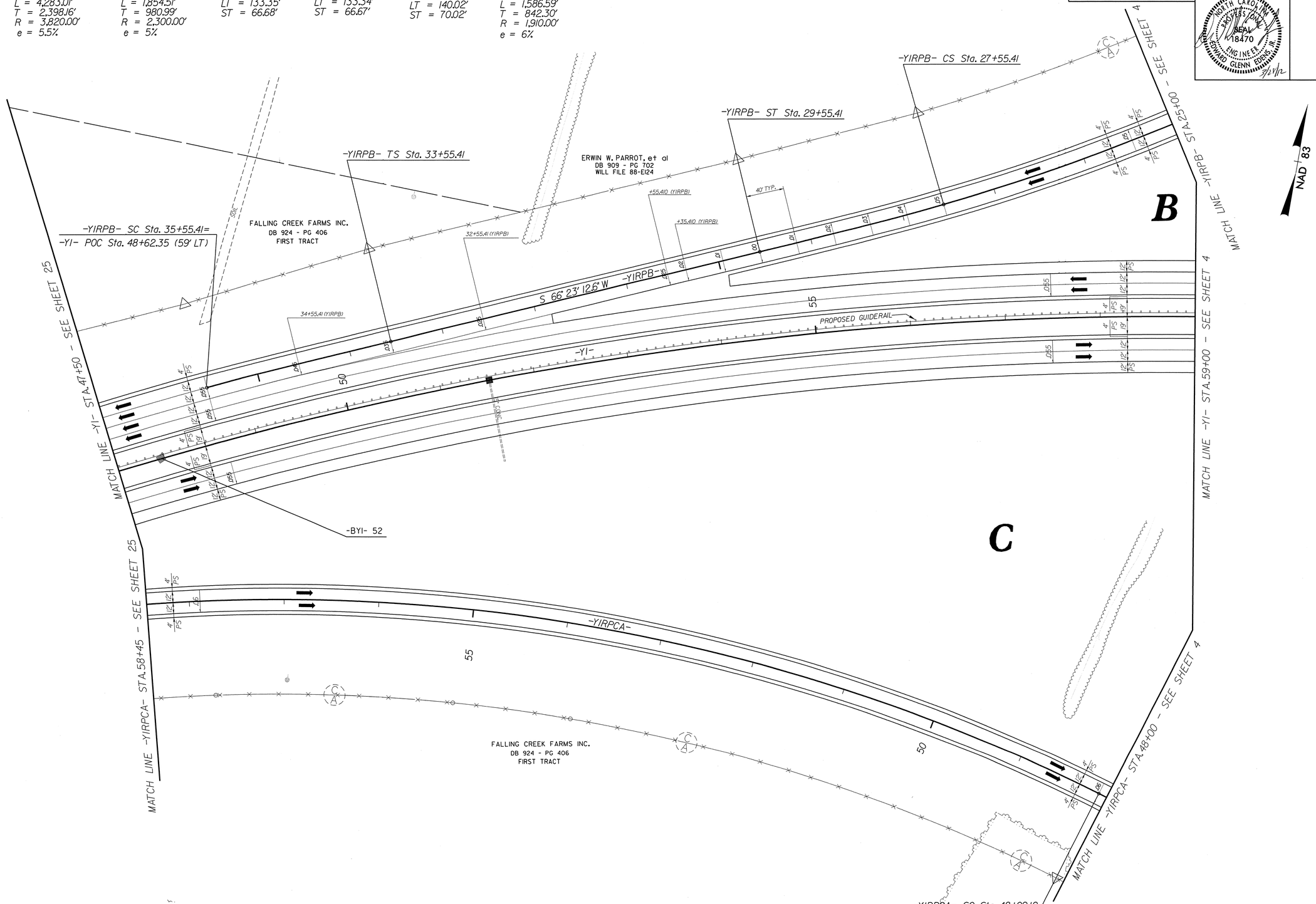
PROJECT REFERENCE NO.	SHEET NO.
R-2719AA	26
R/W SHEET NO.	26
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 18470 ENGINEER EDWARD GLENN EDRIS, JR.
7/27/12



REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
R-2719AA	27
R/W SHEET NO.	27

ROADWAY DESIGN ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 18470 ENGINEER RICHARD GLENN EDENS JR. 7/26/12

HYDRAULICS ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 021162 ENGINEER HERBERT TURNER JR. 7/26/12

GRAPHIC SCALE 50 25 0 50 100 PLANS

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REVISIONS

-Y1- CURVE DATA

PIs Sta 86+39.72	PIs Sta 101+25.48
Θs = 1° 53' 50.5"	Θs = 2° 20' 38.1"
Ls = 253.00'	Ls = 270.00'
LT = 168.68'	LT = 180.02'
ST = 84.34'	ST = 90.01'

-YIRT- CURVE DATA

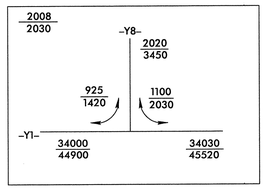
PIs Sta 101+41.56
Θs = 2° 19' 39.7"
Ls = 270.00'
LT = 180.02'
ST = 90.01'

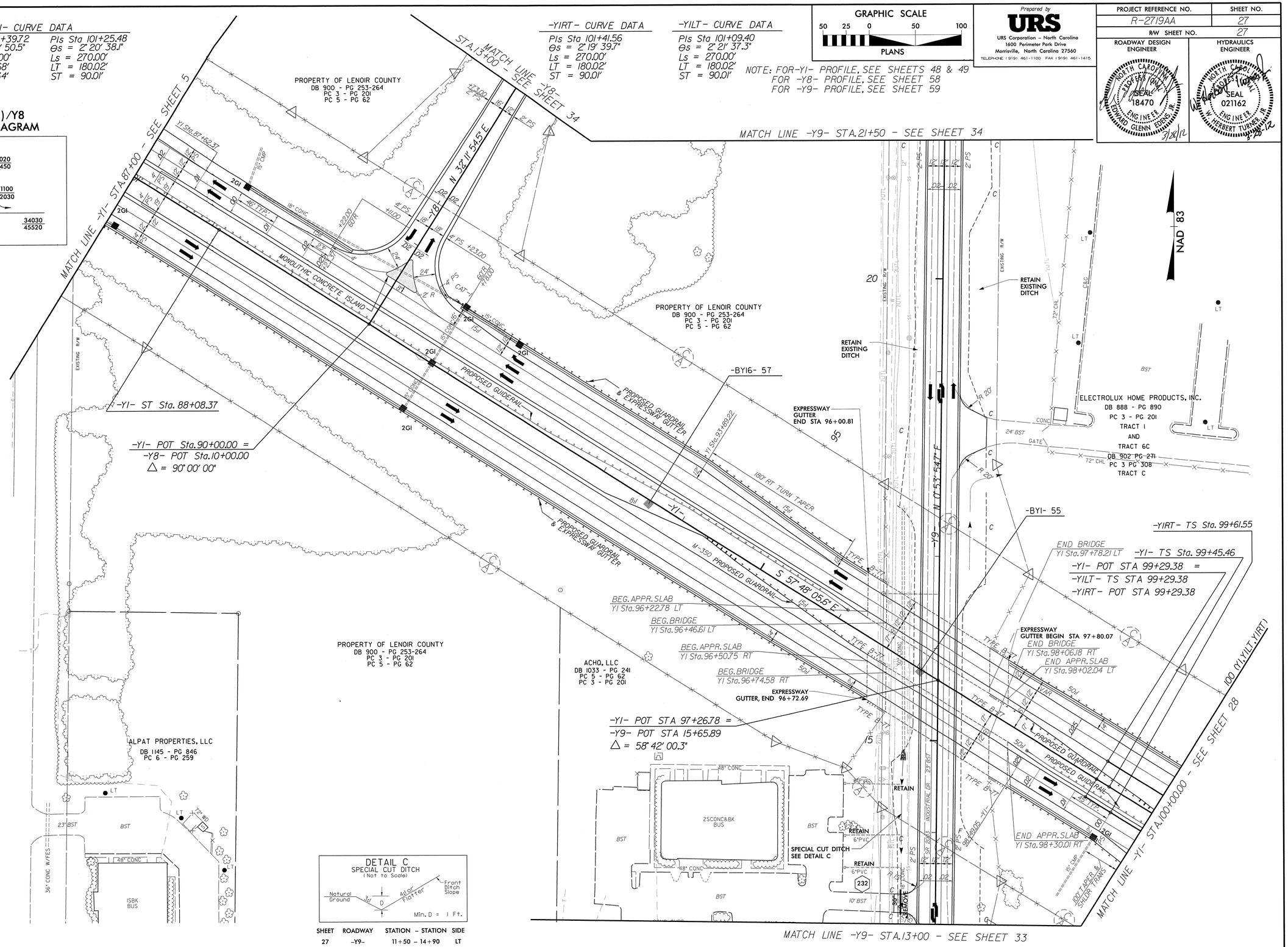
-YILT- CURVE DATA

PIs Sta 101+09.40
Θs = 2° 21' 37.3"
Ls = 270.00'
LT = 180.02'
ST = 90.01'

NOTE: FOR -Y1- PROFILE, SEE SHEETS 48 & 49
FOR -Y8- PROFILE, SEE SHEET 58
FOR -Y9- PROFILE, SEE SHEET 59

US 70 (Y1)/Y8 TRAFFIC DIAGRAM





DETAIL C
SPECIAL CUT DITCH
(Not to Scale)

SHEET	ROADWAY	STATION – STATION	SIDE
27	-Y9-	11+50 – 14+90	LT

NOTE: FOR -Y1- PROFILE, SEE SHEET 49
FOR -Y15- PROFILE, SEE SHEET 61
SEE SHEET 2-1 FOR INTERSECTION DETAILS

GRAPHIC SCALE
50 25 0 50 100
PLANS

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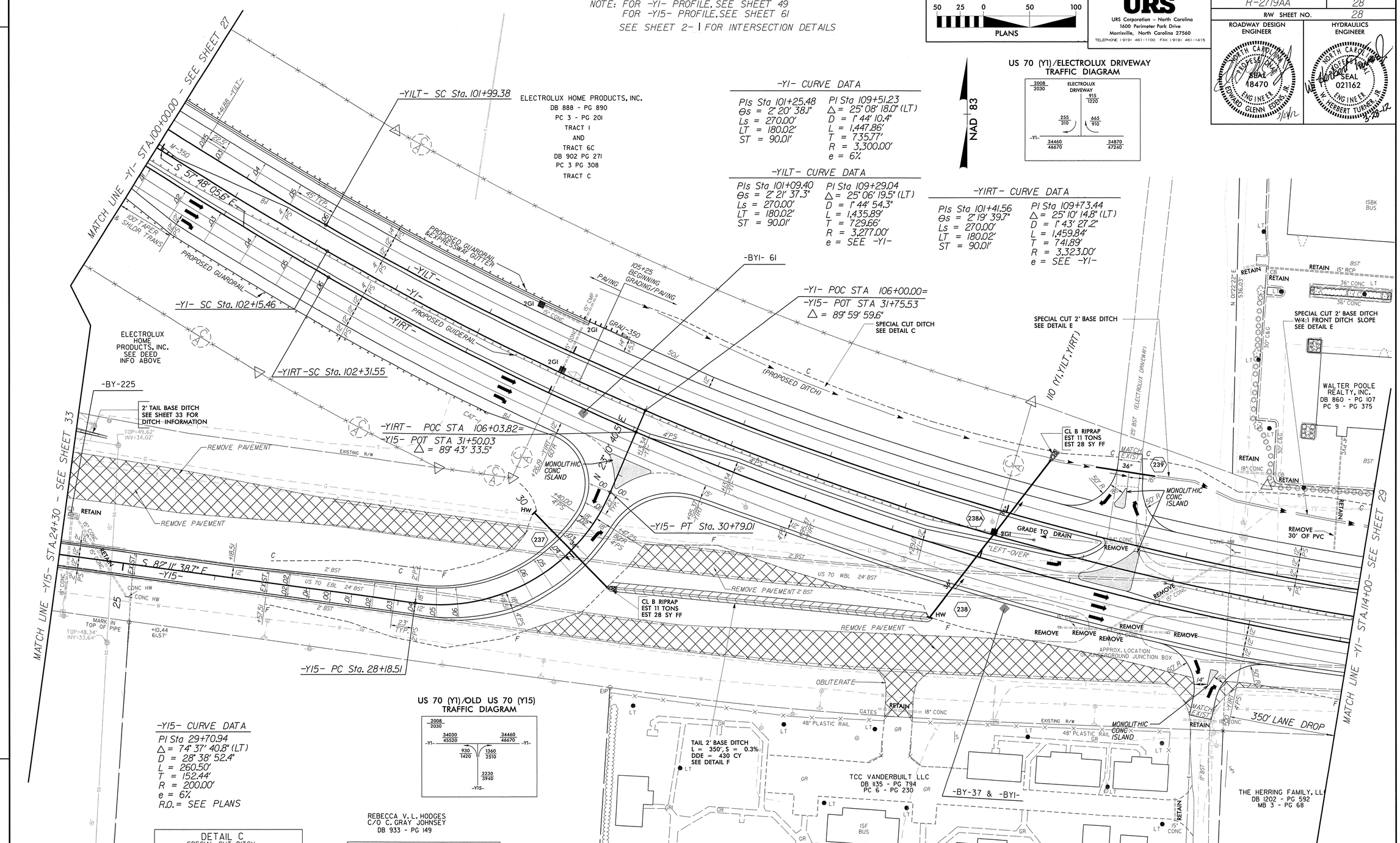
PROJECT REFERENCE NO.	SHEET NO.
R-2719AA	28
R/W SHEET NO.	28

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 18470 ENGINEER EDWARD GLENN EDENS, JR.
3/28/12

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 021162 ENGINEER W. HERBERT TURNER, JR.
3-28-12

REVISIONS



-Y1- CURVE DATA

Pls Sta 101+25.48
Θs = 2° 20' 38.1"
Ls = 270.00'
LT = 180.02'
ST = 90.01'

PI Sta 109+51.23
△ = 25° 08' 18.0" (LT)
D = 1° 44' 10.4"
L = 1,447.86'
T = 735.77'
R = 3,300.00'
e = 6%

-Y1LT- CURVE DATA

Pls Sta 101+09.40
Θs = 2° 21' 37.3"
Ls = 270.00'
LT = 180.02'
ST = 90.01'

PI Sta 109+29.04
△ = 25° 06' 19.5" (LT)
D = 1° 44' 54.3"
L = 1,435.89'
T = 729.66'
R = 3,277.00'
e = SEE -Y1-

-Y1RT- CURVE DATA

Pls Sta 101+41.56
Θs = 2° 19' 39.7"
Ls = 270.00'
LT = 180.02'
ST = 90.01'

PI Sta 109+73.44
△ = 25° 10' 14.8" (LT)
D = 1° 43' 27.2"
L = 1,459.84'
T = 741.89'
R = 3,323.00'
e = SEE -Y1-

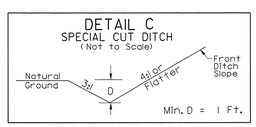
-Y15- CURVE DATA

PI Sta 29+70.94
△ = 74° 37' 40.8" (LT)
D = 28° 38' 52.4"
L = 260.50'
T = 152.44'
R = 200.00'
e = 6%
R.O. = SEE PLANS

US 70 (Y1)/ELECTROLUX DRIVEWAY TRAFFIC DIAGRAM

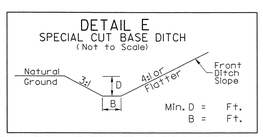
US 70 (Y1)/OLD US 70 (Y15) TRAFFIC DIAGRAM

DETAIL C
SPECIAL CUT DITCH
(Not to Scale)



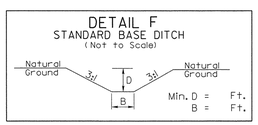
SHEET	ROADWAY	STATION – STATION	SIDE
28	-Y1-	105+00 – 110+50	LT

DETAIL E
SPECIAL CUT BASE DITCH
(Not to Scale)



SHEET	ROADWAY	STATION TO STATION	SIDE	BASE	MIN. D
28	-Y1-	110+50 – 112+40	LT	2'	1'
28,29	-Y1-	112+40 – 118+00	LT	2'	1.8'

DETAIL F
STANDARD BASE DITCH
(Not to Scale)



SHEET	ROADWAY	STATION	SIDE	BASE	MIN. D
28	-Y1-	106+30 – 109+60	RT	2'	1'

PROJECT REFERENCE NO.	SHEET NO.
R-2719AA	29
R/W SHEET NO.	29

ROADWAY DESIGN ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 18470 ENGINEER EDWARD GLENN EDENS, JR. 3/28/12

HYDRAULICS ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 021162 ENGINEER W. HERBERT TURNER, JR. 3-28-12

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GRAPHIC SCALE
50 25 0 50 100
PLANS

NOTE: FOR -Y1- PROFILE, SEE SHEET 50

-Y1- CURVE DATA

PI Sta 109+51.23
Δ = 25° 08' 18.0" (LT)
D = 1° 44' 10.4"
L = 1,447.86'
T = 735.77'
R = 3,300.00'
e = 6%

PIs Sta 117+53.34
Θs = 2° 20' 38.1"
Ls = 270.00'
LT = 180.02'
ST = 90.01'

-Y1LT- CURVE DATA

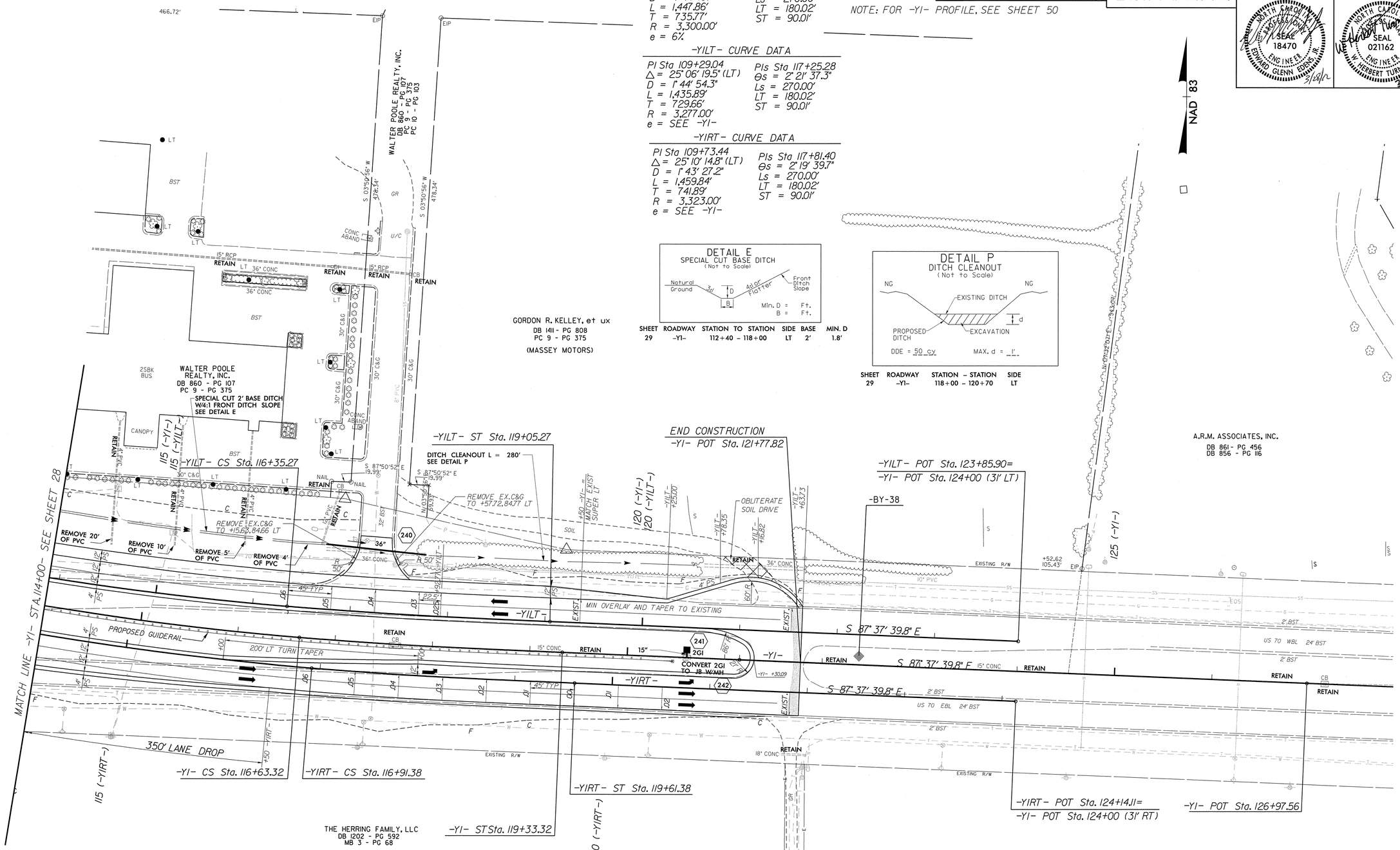
PI Sta 109+29.04
Δ = 25° 06' 19.5" (LT)
D = 1° 44' 54.3"
L = 1,435.89'
T = 729.66'
R = 3,277.00'
e = SEE -Y1-

PIs Sta 117+25.28
Θs = 2° 21' 37.3"
Ls = 270.00'
LT = 180.02'
ST = 90.01'

-Y1RT- CURVE DATA

PI Sta 109+73.44
Δ = 25° 10' 14.8" (LT)
D = 1° 43' 27.2"
L = 1,459.84'
T = 741.89'
R = 3,323.00'
e = SEE -Y1-

PIs Sta 117+81.40
Θs = 2° 19' 39.7"
Ls = 270.00'
LT = 180.02'
ST = 90.01'



DETAIL E
SPECIAL CUT BASE DITCH
(Not to Scale)

SHEET	ROADWAY	STATION TO STATION	SIDE	BASE	MIN. D
29	-Y1-	112+40 - 118+00	LT	2'	1.8'

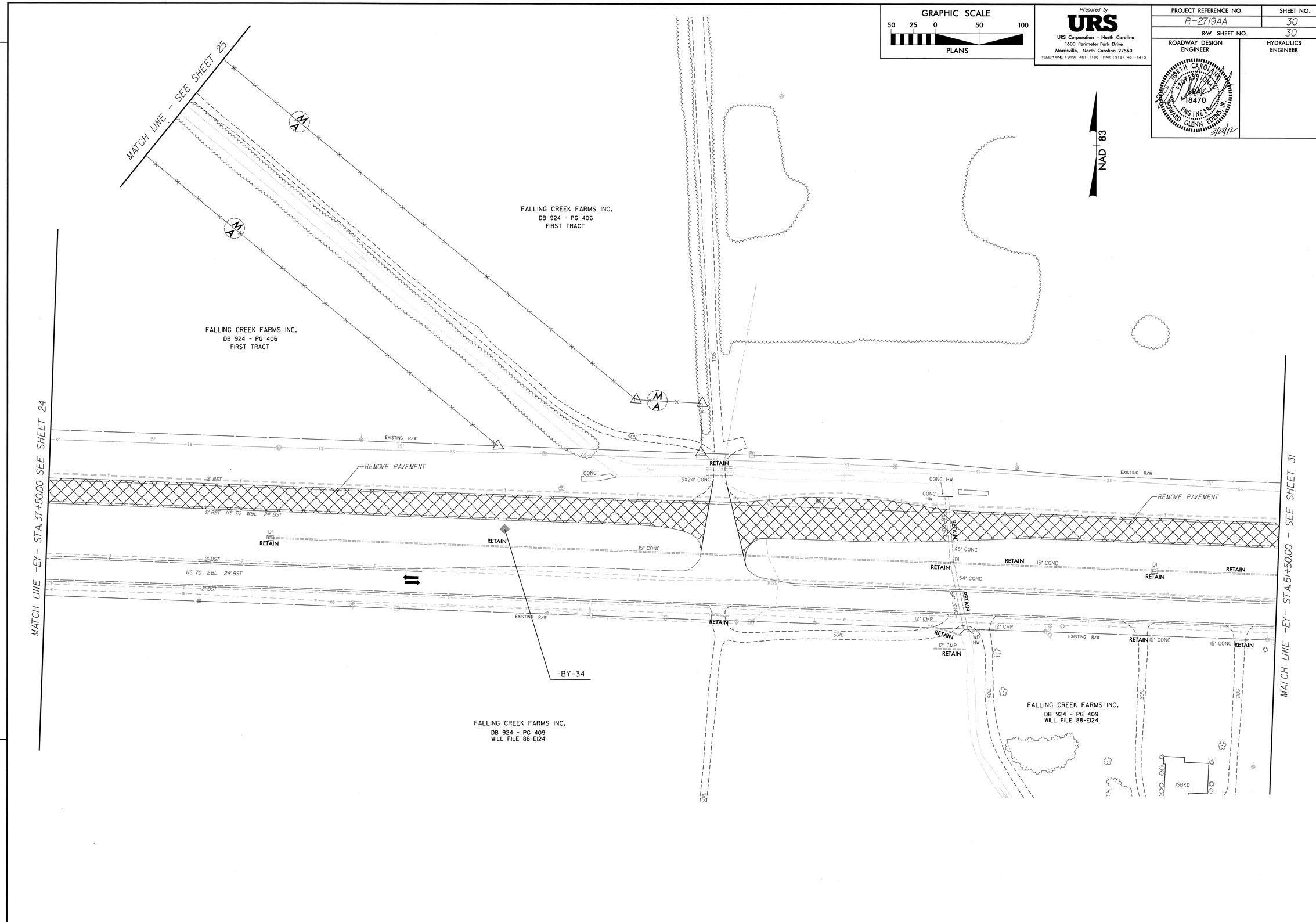
DETAIL P
DITCH CLEANOUT
(Not to Scale)

SHEET	ROADWAY	STATION - STATION	SIDE
29	-Y1-	118+00 - 120+70	LT

REVISIONS

GRAPHIC SCALE	Prepared by URS	PROJECT REFERENCE NO.	SHEET NO.
50 25 0 50 100 PLANS	URS Corporation – North Carolina 1600 Perimeter Park Drive Morrisville, North Carolina 27560 TELEPHONE (919) 461-1100 FAX (919) 461-1415	R-2719AA	30
		R/W SHEET NO.	30
		ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 18470 ENGINEER EDWARD GLENN EDENS, JR. 3/28/12



REVISIONS

GRAPHIC SCALE
50 25 0 50 100
PLANS

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Morrisville, North Carolina 27560
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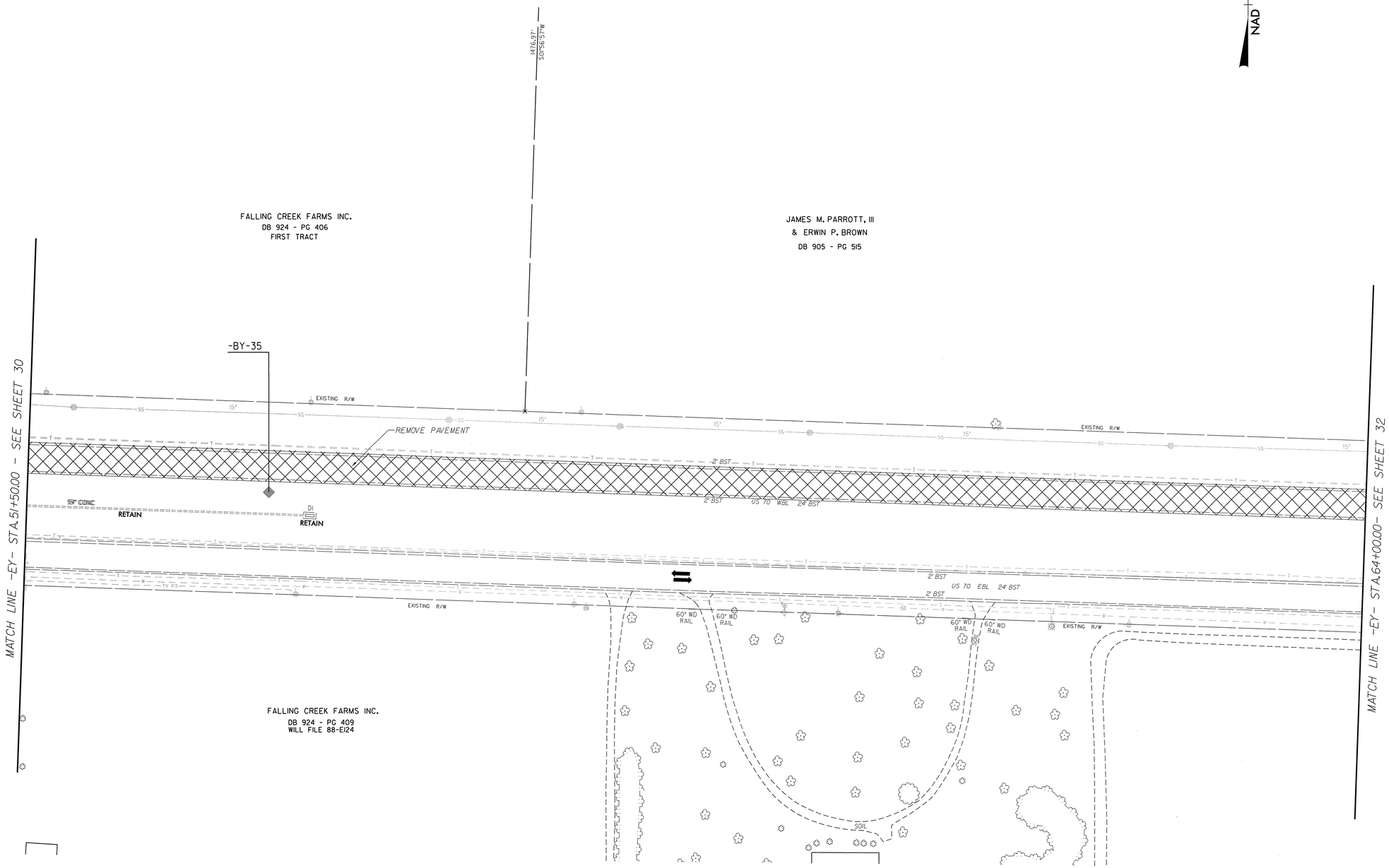
PROJECT REFERENCE NO.	SHEET NO.
R-2719AA	31
R/W SHEET NO.	31
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 18470 ENGINEER EDWARD GLENN EDENS, III
3/26/12

REVISIONS

NAD 83



GRAPHIC SCALE
50 25 0 50 100
PLANS

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Morrisville, North Carolina 27560
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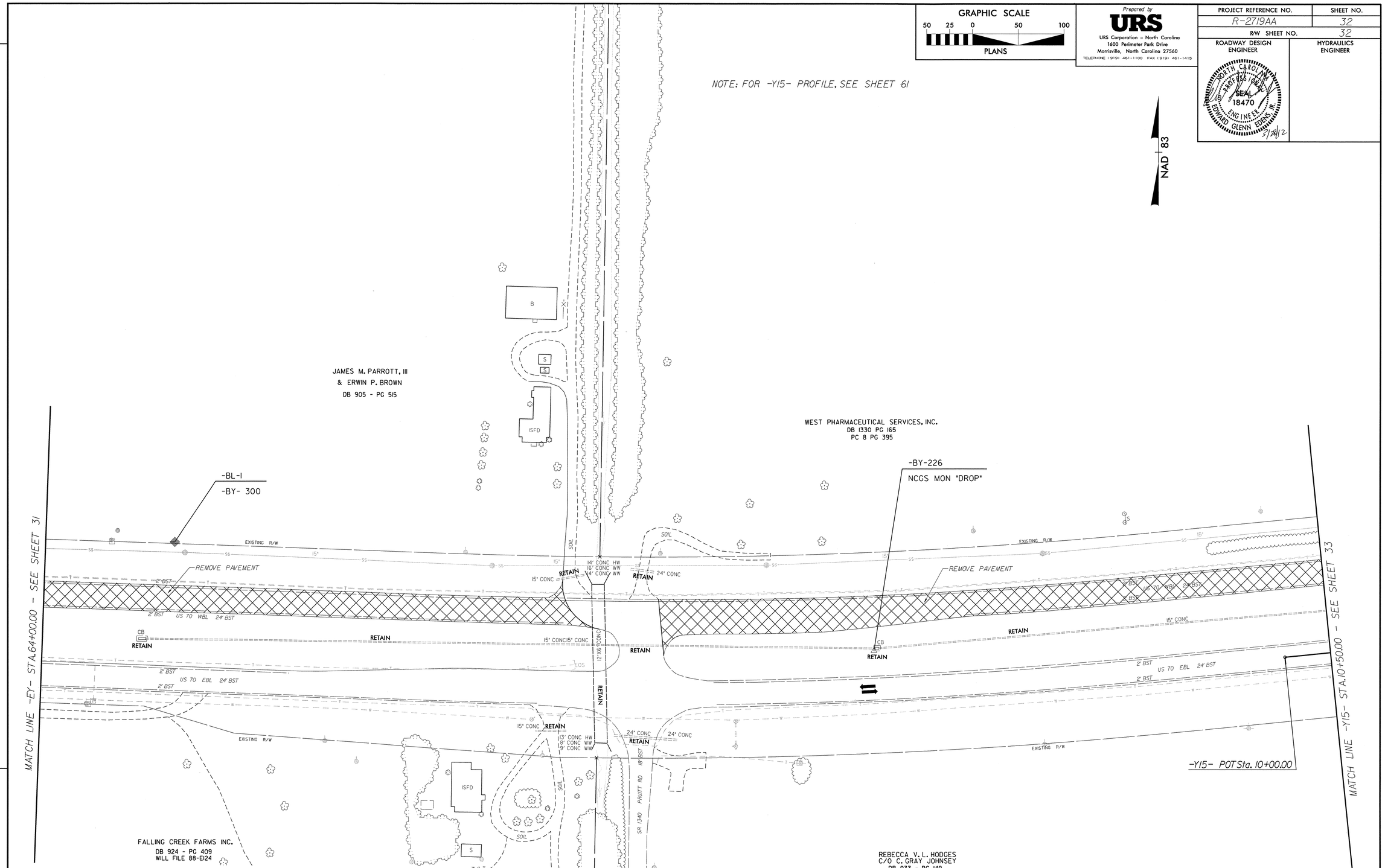
PROJECT REFERENCE NO.	SHEET NO.
R-2719AA	32
R/W SHEET NO.	32
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 18470 ENGINEER EDWARD GLENN EDENS, JR.
3/28/12

NOTE: FOR -Y15- PROFILE, SEE SHEET 61

NAD 83

REVISIONS



NOTE: FOR -Y15- PROFILE, SEE SHEET 61
FOR -Y9- PROFILE, SEE SHEET 59

GRAPHIC SCALE
50 25 0 50 100
PLANS

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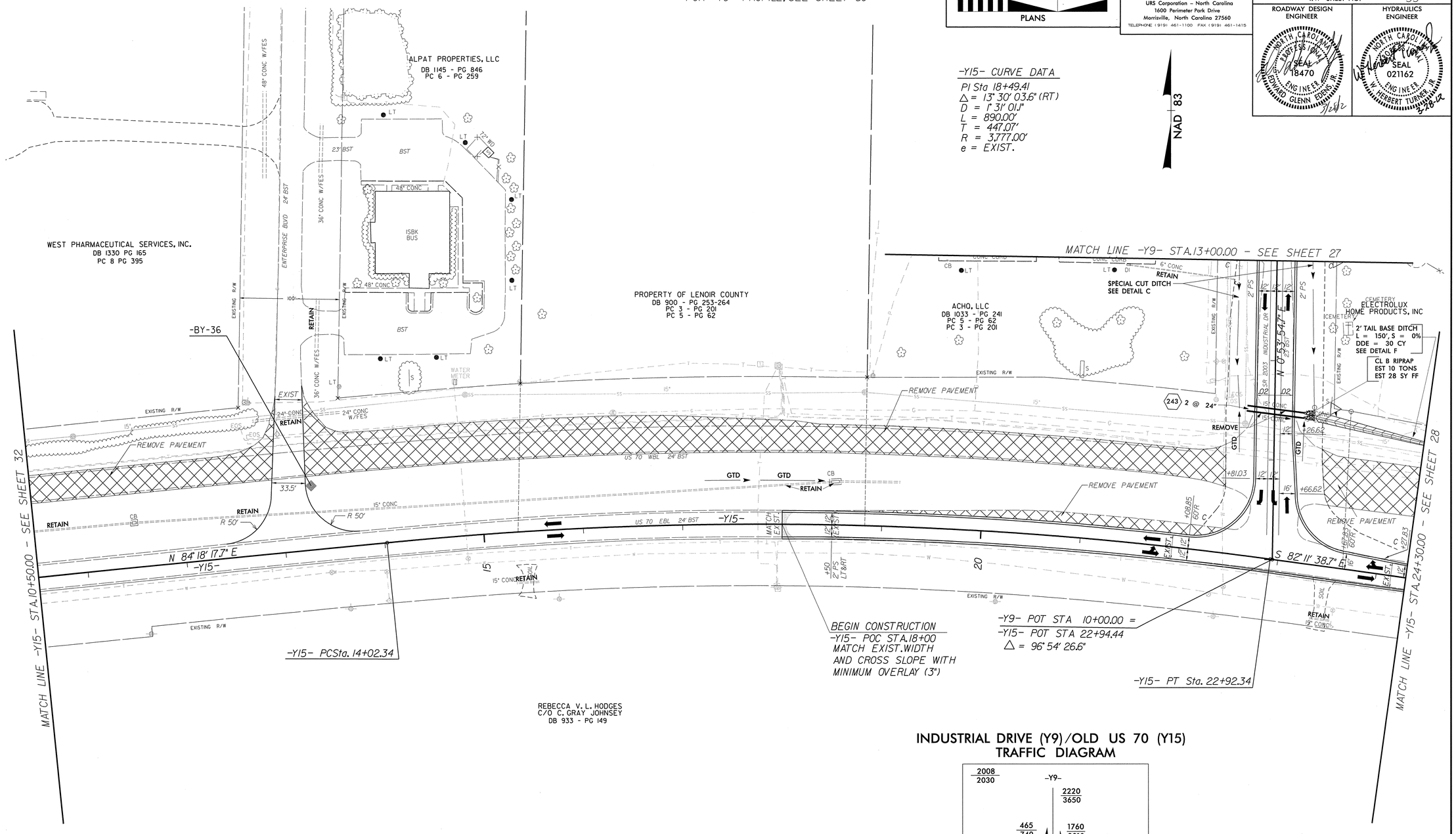
PROJECT REFERENCE NO.	SHEET NO.
R-2719AA	33
R/W SHEET NO.	33
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 18470 ENGINEER EDWARD GLENN EDENS, JR. 3/26/12

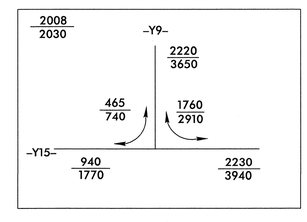
NORTH CAROLINA PROFESSIONAL SEAL 021162 ENGINEER W. HERBERT TURNER, JR. 3/28/12

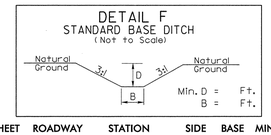
-Y15- CURVE DATA
PI Sta 18+49.41
△ = 13° 30' 03.6" (RT)
D = 1° 31' 01.1"
L = 890.00'
T = 447.07'
R = 3,777.00'
e = EXIST.

NAD 83

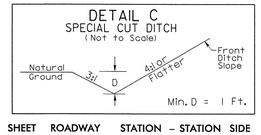


INDUSTRIAL DRIVE (Y9)/OLD US 70 (Y15) TRAFFIC DIAGRAM





SHEET	ROADWAY	STATION	SIDE	BASE	MIN. D
33	-Y9-	11+50	RT	2'	1'



SHEET	ROADWAY	STATION – STATION	SIDE
33	-Y9-	11+50 – 13+00	RT
33	-Y9-	11+50 – 14+90	LT

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
R-2719AA	34
R/W SHEET NO.	34

ROADWAY DESIGN ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 18470 ENGINEER EDWARD GLENN EDDINS, JR. 3/28/12

HYDRAULICS ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 021162 ENGINEER W. HERBERT TURNER, JR. 3-28-12

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Morrisville, North Carolina 27560
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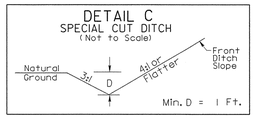
GRAPHIC SCALE
50 25 0 50 100
PLANS

REVISIONS

DETAIL C
SPECIAL CUT DITCH
(Not to Scale)



SHEET	ROADWAY	STATION – STATION	SIDE
34	-Y8-	14+85 – 15+30	RT
34	-Y8-	15+50 – 24+47	LT
34	-Y8-	17+50 – 24+47	RT
34	-Y9-	26+50 – 30+65	LT
34	-Y9-	25+50 – 31+90	RT

-Y8- CURVE DATA
PI Sta 15+17.84
Δ = 33° 25' 17.8" (LT)
D = 19° 05' 54.9"
L = 174.99'
T = 90.07'
R = 300.00'
e = 4%

PI Sta 22+04.48
Δ = 99° 27' 03.4" (LT)
D = 24° 22' 52.3"
L = 407.90'
T = 277.35'
R = 235.00'
e = 4%

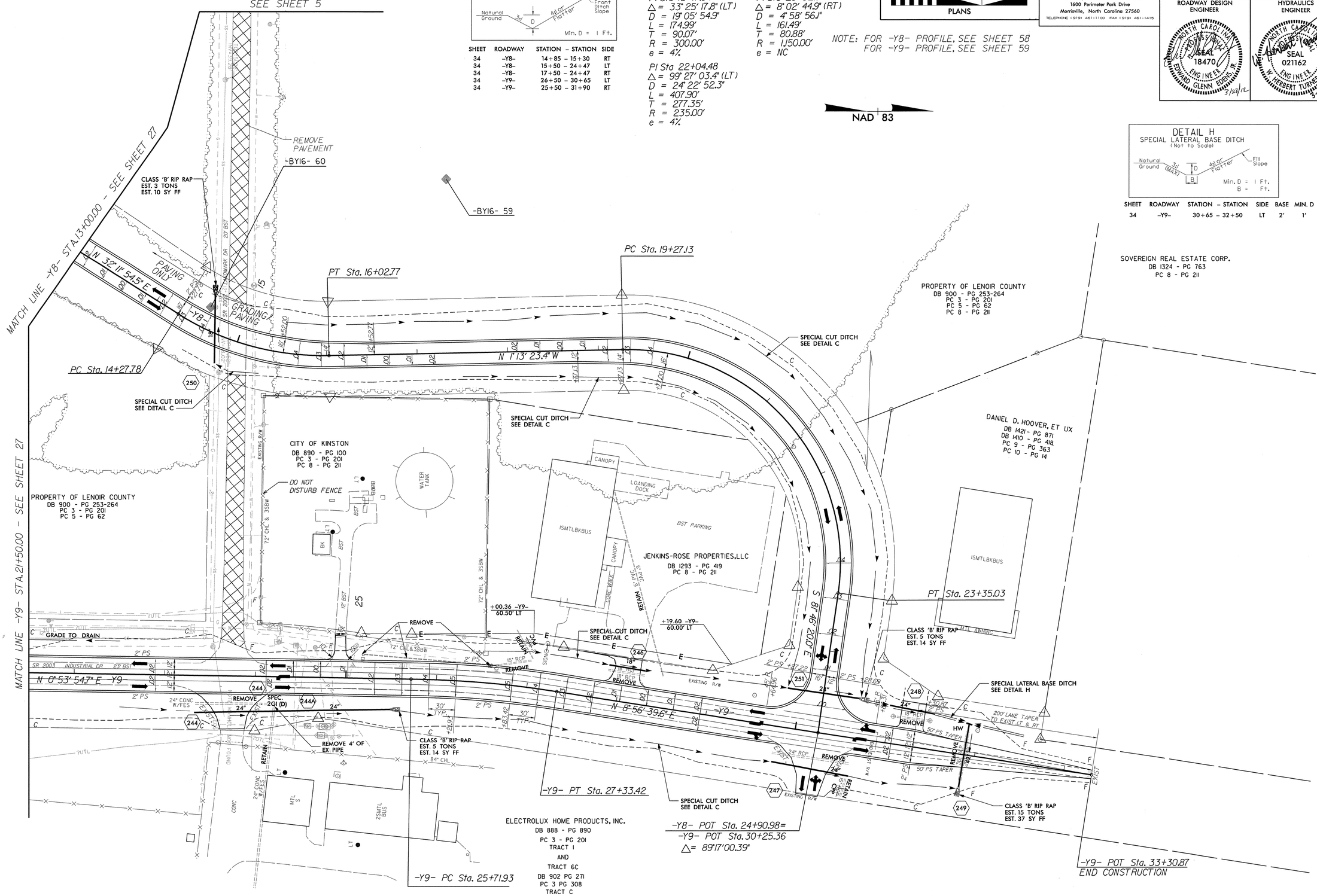
-Y9- CURVE DATA
PI Sta 26+52.81
Δ = 8° 02' 44.9" (RT)
D = 4° 58' 56.1"
L = 161.49'
T = 80.88'
R = 1,150.00'
e = NC

NOTE: FOR -Y8- PROFILE, SEE SHEET 58
FOR -Y9- PROFILE, SEE SHEET 59

NAD 83

DETAIL H
SPECIAL LATERAL BASE DITCH
(Not to Scale)

SHEET	ROADWAY	STATION – STATION	SIDE	BASE	MIN. D
34	-Y9-	30+65 – 32+50	LT	2'	1'



GRAPHIC SCALE
50 25 0 50 100
PLANS

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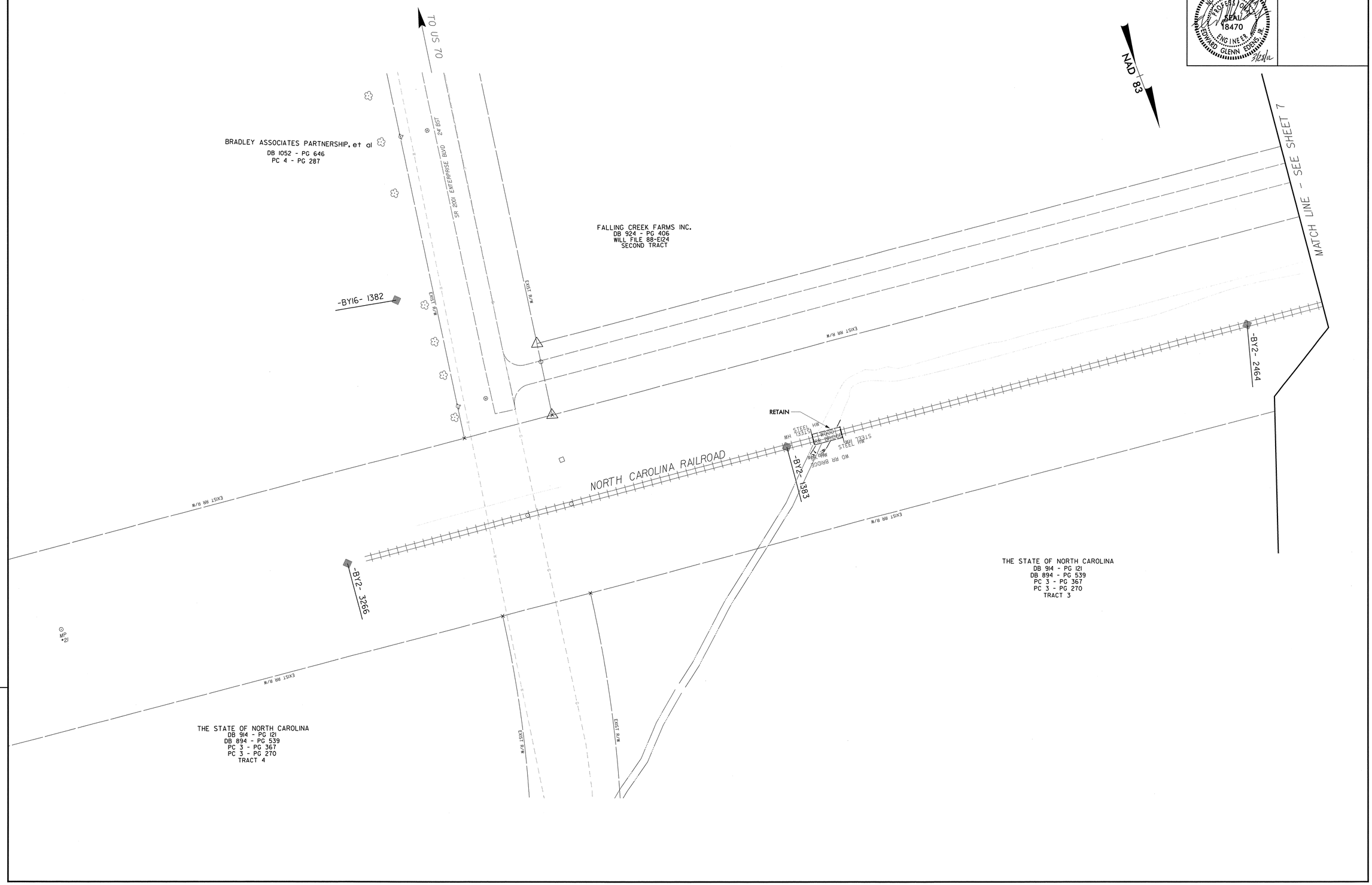
PROJECT REFERENCE NO.	SHEET NO.
R-2719AA	35
R/W SHEET NO.	35
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 18470 ENGINEER EDWARD GLENN EDENS, JR.
3/23/12

REVISIONS



GRAPHIC SCALE
50 25 0 50 100
PLANS

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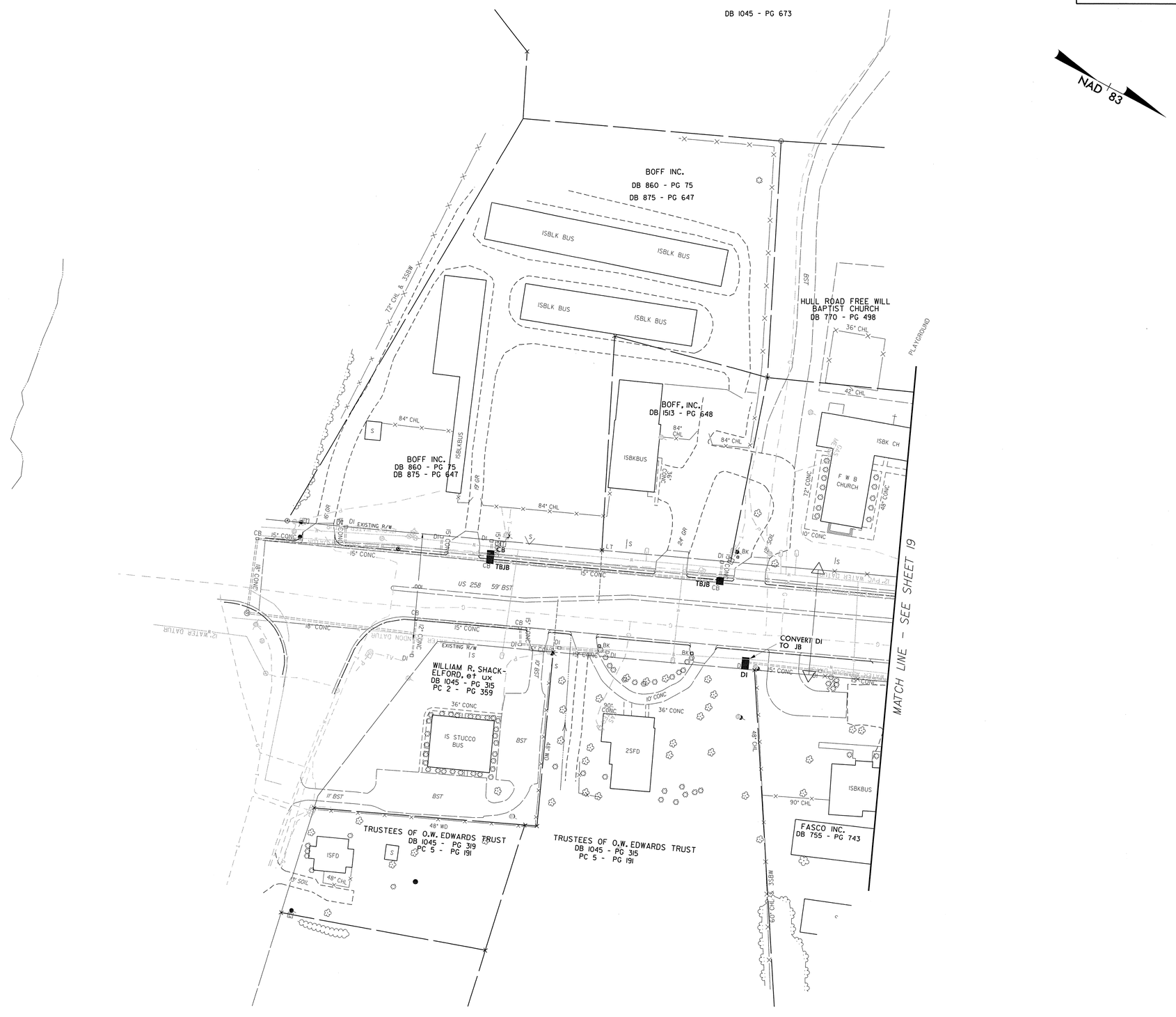
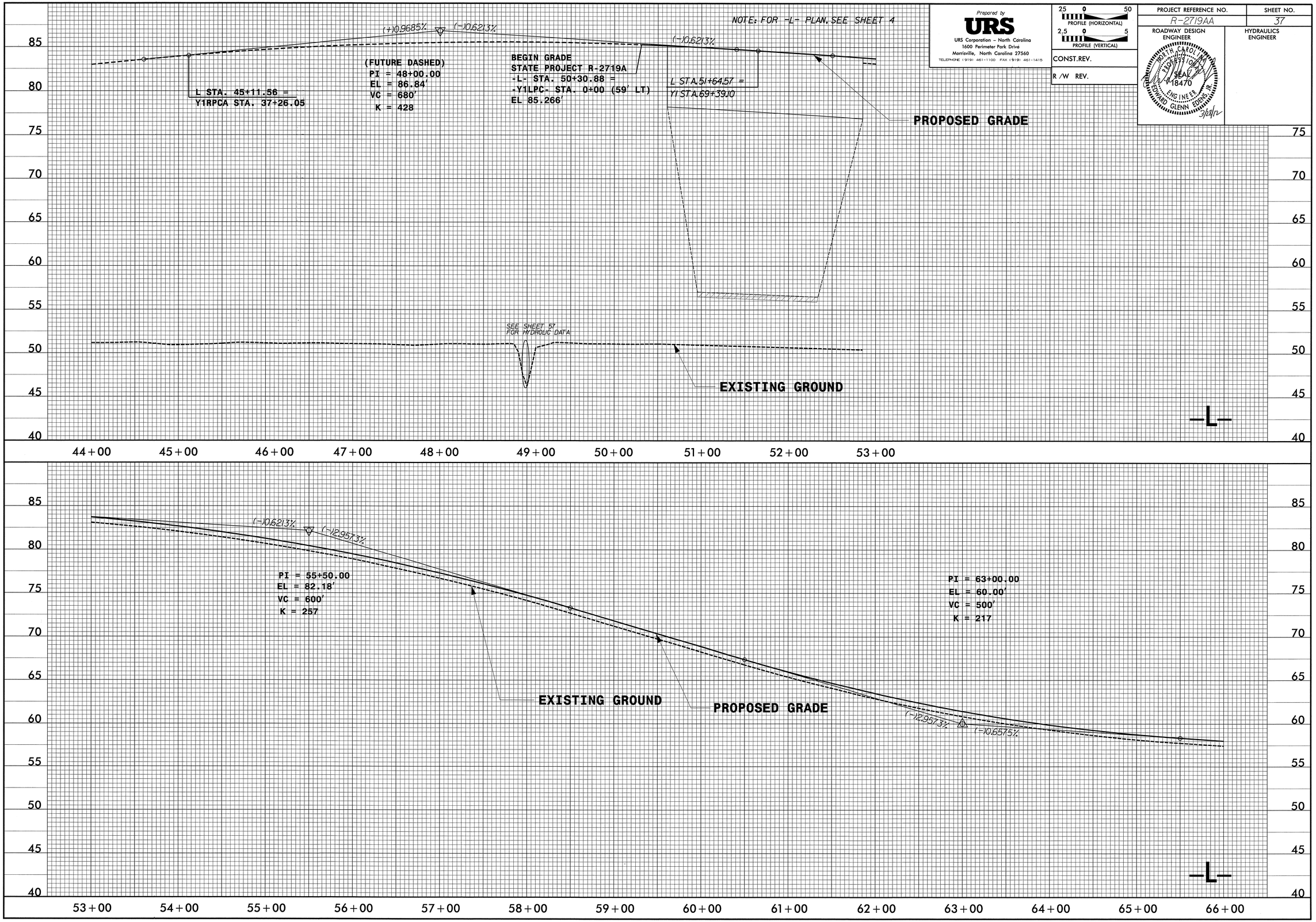
PROJECT REFERENCE NO.	SHEET NO.
R-2719AA	36
R/W SHEET NO.	36
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 18470 ENGINEER EDWARD GLENN EDENS, JR. 3/28/12

REVISIONS





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25 0 50
PROFILE (HORIZONTAL)
2.5 0 5
PROFILE (VERTICAL)

CONST.REV.

R /W REV.

PROJECT REFERENCE NO.	SHEET NO.
R-2719AA	37

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 18470 ENGINEER EDWARD GLENN EDENS, JR. 3/28/12

HYDRAULICS ENGINEER

NOTE: FOR -L- PLAN, SEE SHEETS 4,6 & 7

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Morrisville, North Carolina 27560
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25 0 50 PROFILE (HORIZONTAL)
2.5 0 5 PROFILE (VERTICAL)

CONST.REV.

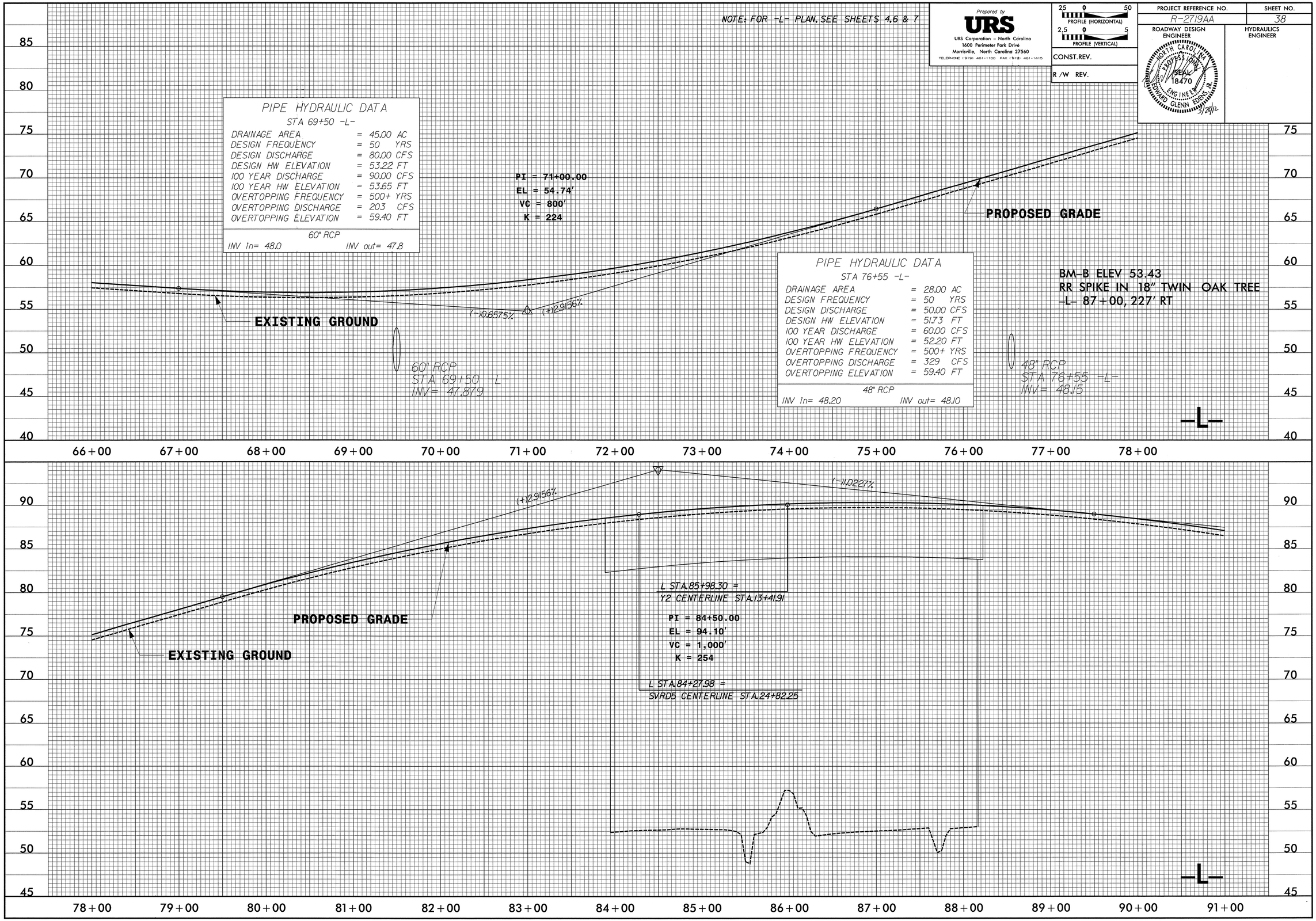
R /W REV.

PROJECT REFERENCE NO.	SHEET NO.
R-2719AA	38

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 18470 EDWARD GLENN EDRIS, III 5/28/12



NOTE: FOR -L- PLAN, SEE SHEETS 7-9

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PROFILE (HORIZONTAL) 25 0 50
PROFILE (VERTICAL) 2.5 0 5

CONST.REV.

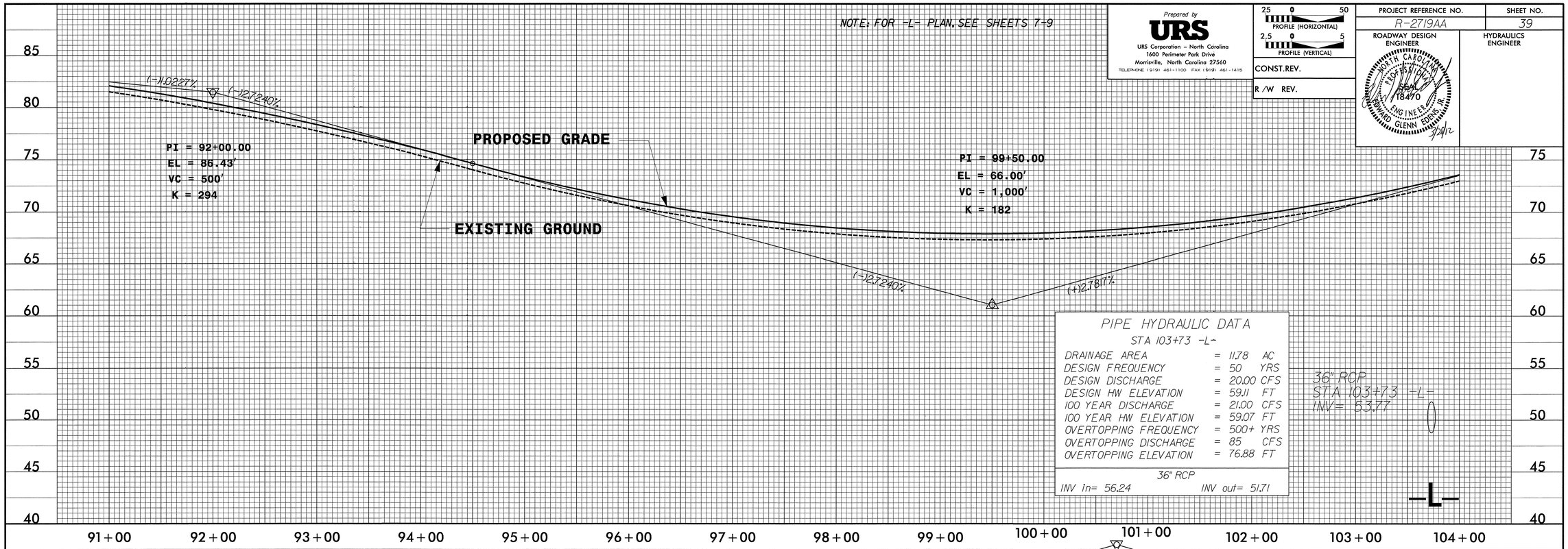
R/W REV.

PROJECT REFERENCE NO.	SHEET NO.
R-2719AA	39

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

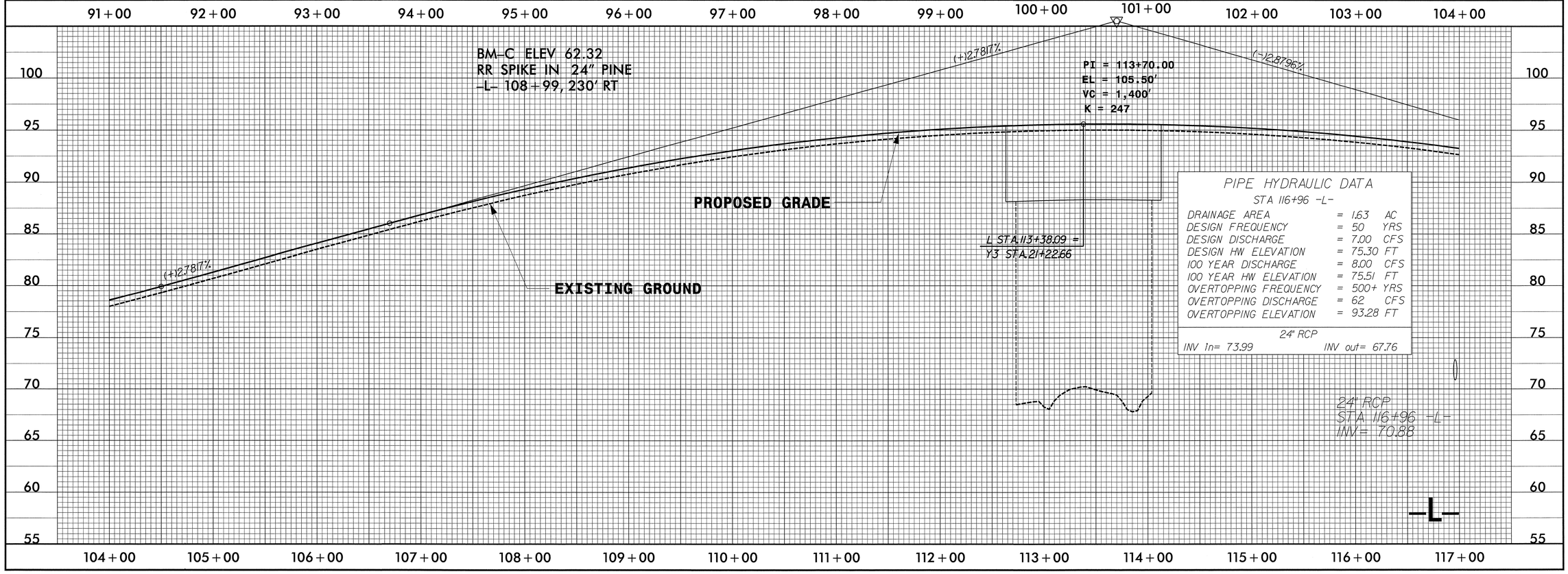
NORTH CAROLINA PROFESSIONAL SEAL 18470 ENGINEER EDWARD GLENN EDRINGTON III 3/29/12



PIPE HYDRAULIC DATA
STA 103+73 -L-

DRAINAGE AREA	=	11.78	AC
DESIGN FREQUENCY	=	50	YRS
DESIGN DISCHARGE	=	20.00	CFS
DESIGN HW ELEVATION	=	59.11	FT
100 YEAR DISCHARGE	=	21.00	CFS
100 YEAR HW ELEVATION	=	59.07	FT
OVERTOPPING FREQUENCY	=	500+	YRS
OVERTOPPING DISCHARGE	=	85	CFS
OVERTOPPING ELEVATION	=	76.88	FT

36" RCP
INV In= 56.24 INV out= 51.71



PIPE HYDRAULIC DATA
STA 116+96 -L-

DRAINAGE AREA	=	1.63	AC
DESIGN FREQUENCY	=	50	YRS
DESIGN DISCHARGE	=	7.00	CFS
DESIGN HW ELEVATION	=	75.30	FT
100 YEAR DISCHARGE	=	8.00	CFS
100 YEAR HW ELEVATION	=	75.51	FT
OVERTOPPING FREQUENCY	=	500+	YRS
OVERTOPPING DISCHARGE	=	62	CFS
OVERTOPPING ELEVATION	=	93.28	FT

24" RCP
INV In= 73.99 INV out= 67.76

NOTE: FOR -L- PLAN SEE SHEETS 10-11

Prepared by
URS
URS Corporation - North Carolina
1600 Perimeter Park Drive
Morrisville, North Carolina 27560
TELEPHONE (919) 461-1100 FAX (919) 461-1415

25 0 50 PROFILE (HORIZONTAL)
2.5 0 5 PROFILE (VERTICAL)

CONST.REV.

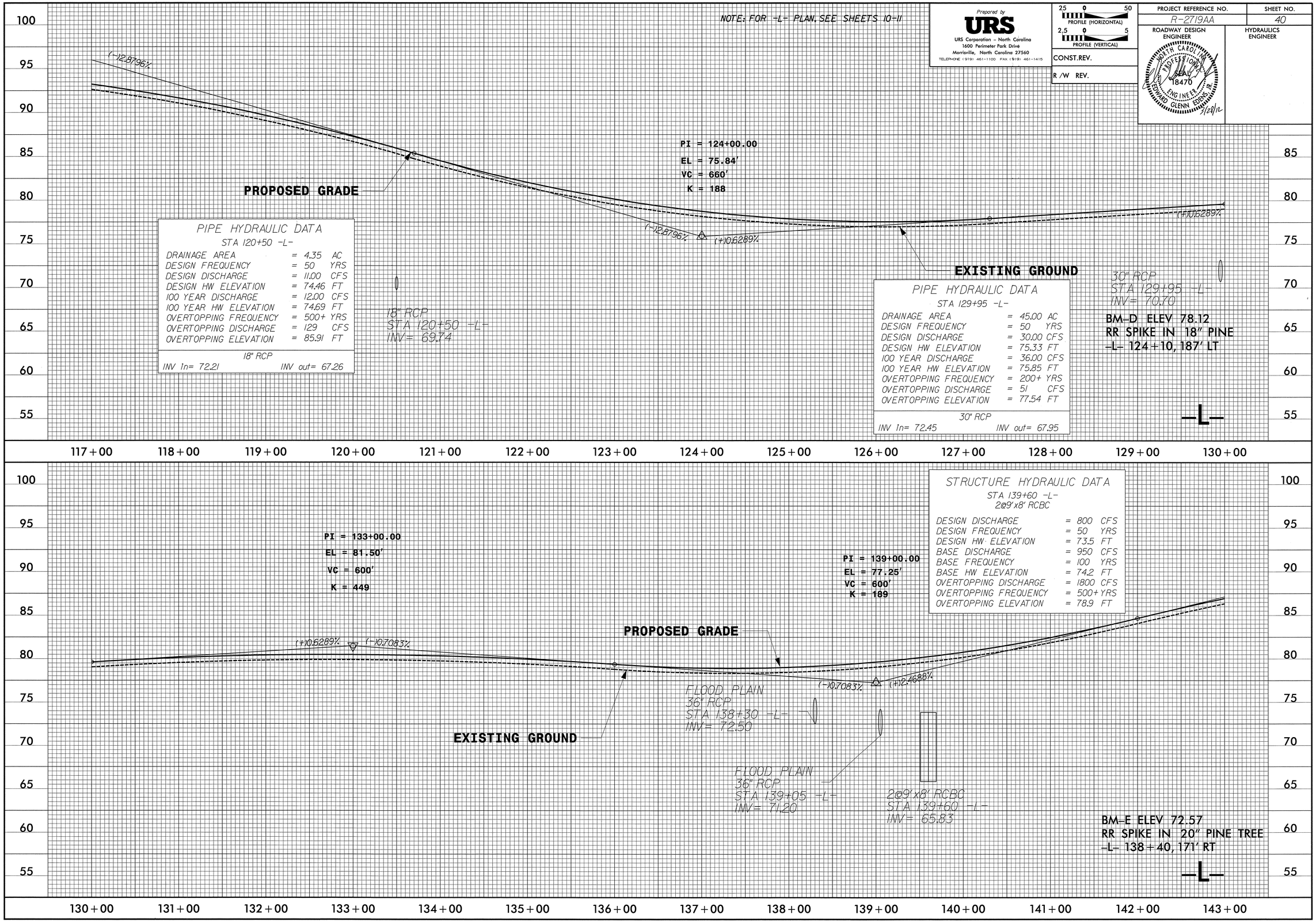
R /W REV.

PROJECT REFERENCE NO.	SHEET NO.
R-2719AA	40

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 18470 ENGINEER EDWARD GLENN EDENS, III 3/28/12



NOTE: FOR -L- PLAN, SEE SHEETS 11-13

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URS Corporation – North Carolina
1600 Perimeter Park Drive
Morrisville, North Carolina 27560
TELEPHONE (919) 461-1100 FAX (919) 461-1415

25 0 50 PROFILE (HORIZONTAL)
2.5 0 5 PROFILE (VERTICAL)

CONST.REV.

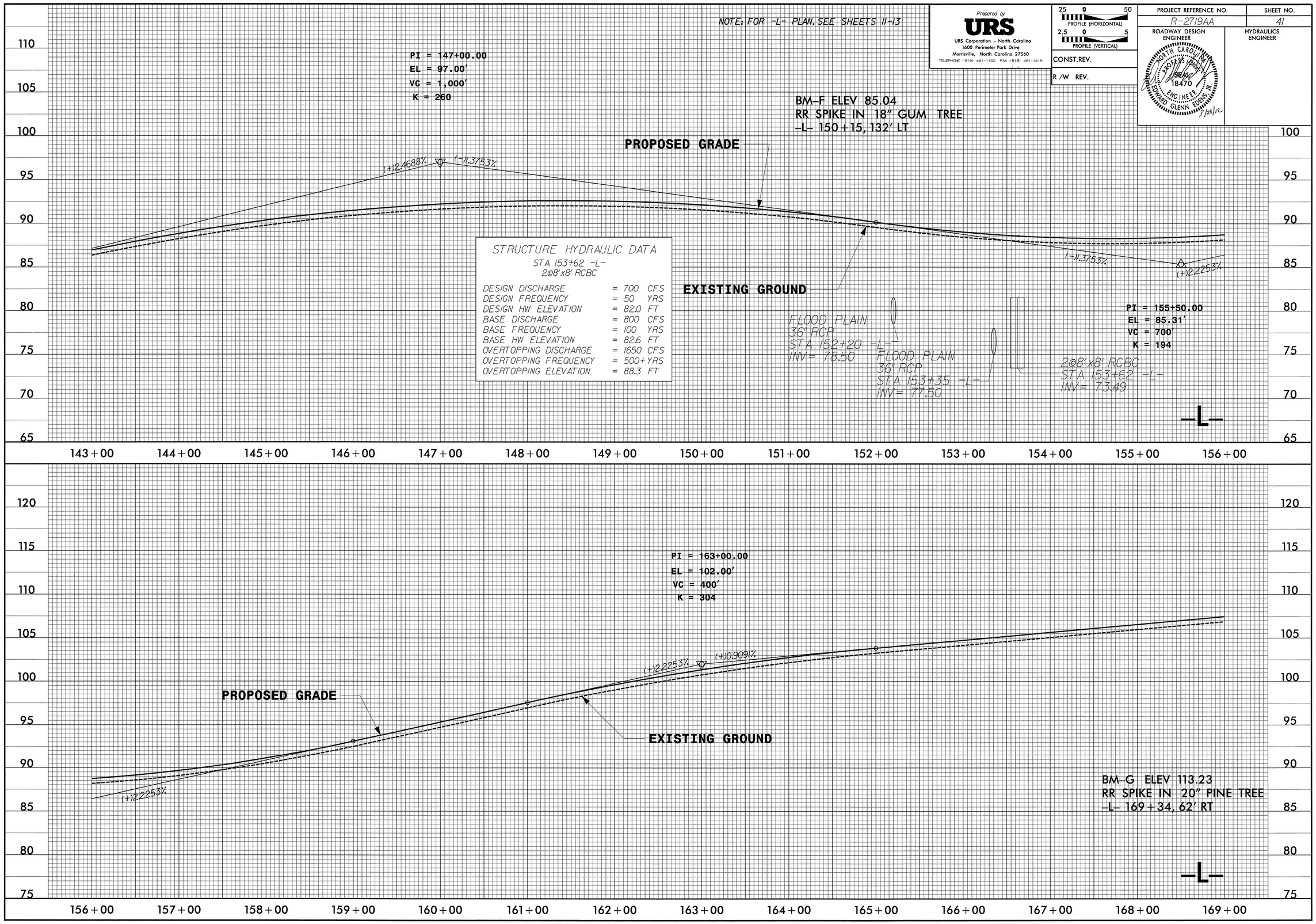
R /W REV.

PROJECT REFERENCE NO.	SHEET NO.
R-2719AA	41

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 18470 ENGINEER EDWARD GLENN EDENS, JR. 3/26/12



STRUCTURE HYDRAULIC DATA
STA 153+62 -L-
2@8'x8' RCBC

DESIGN DISCHARGE	= 700	CFS
DESIGN FREQUENCY	= 50	YRS
DESIGN HW ELEVATION	= 82.0	FT
BASE DISCHARGE	= 800	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 82.6	FT
OVERTOPPING DISCHARGE	= 1650	CFS
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING ELEVATION	= 88.3	FT

NOTE: FOR -L- PLAN, SEE SHEETS 13-15

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URS
URS Corporation – North Carolina
1600 Perimeter Park Drive
Morrisville, North Carolina 27560
TELEPHONE (919) 461-1100 FAX (919) 461-1415

25 0 50
PROFILE (HORIZONTAL)
2.5 0 5
PROFESSIONAL (VERTICAL)

CONST.REV.

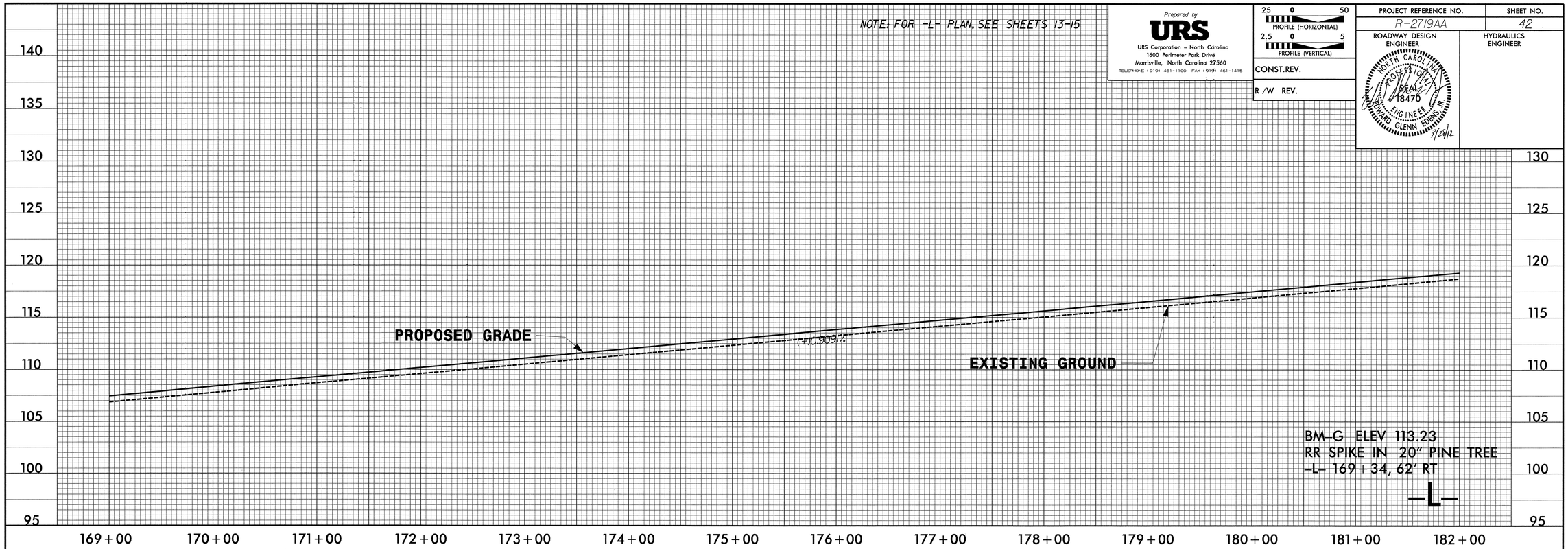
R /W REV.

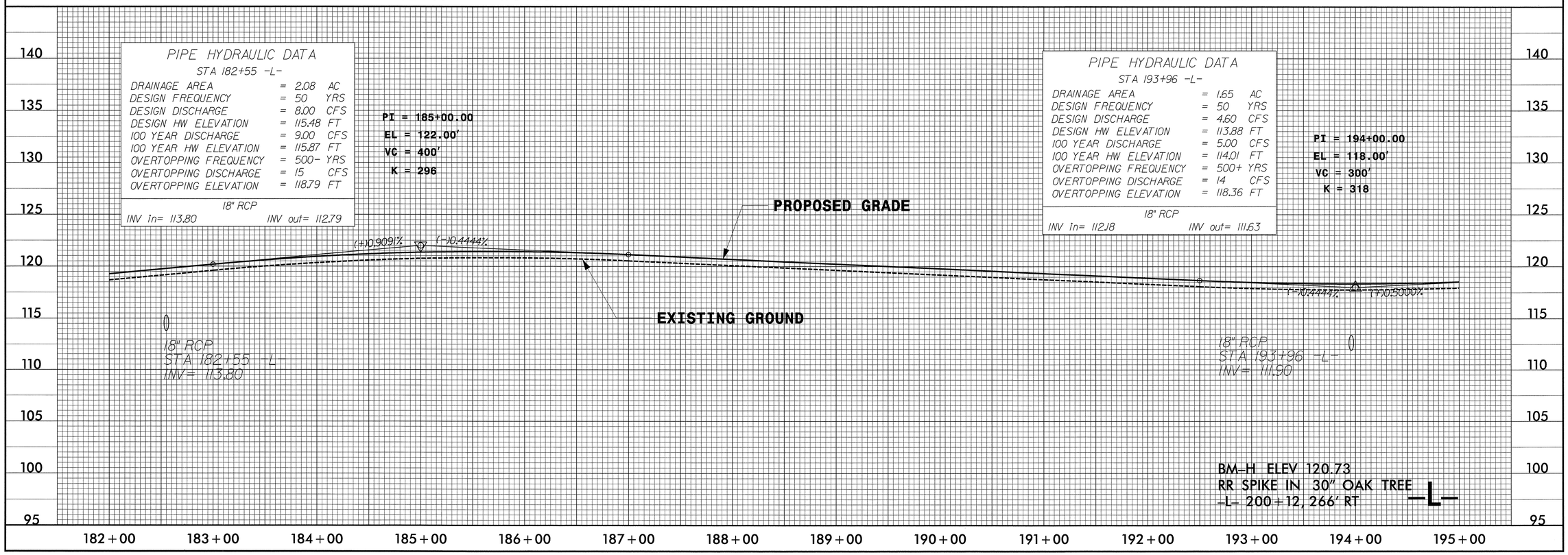
PROJECT REFERENCE NO.	SHEET NO.
R-2719AA	42

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 18470 ENGINEER EDWARD GLENN EDENS, III
7/25/12





NOTE: FOR -L- PLAN, SEE SHEETS 15-17

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URS Corporation - North Carolina
1600 Perimeter Park Drive
Morrisville, North Carolina 27560
TELEPHONE (919) 461-1100 FAX (919) 461-1415

25 0 50 PROFILE (HORIZONTAL)
2.5 0 5 PROFILE (VERTICAL)

CONST.REV.

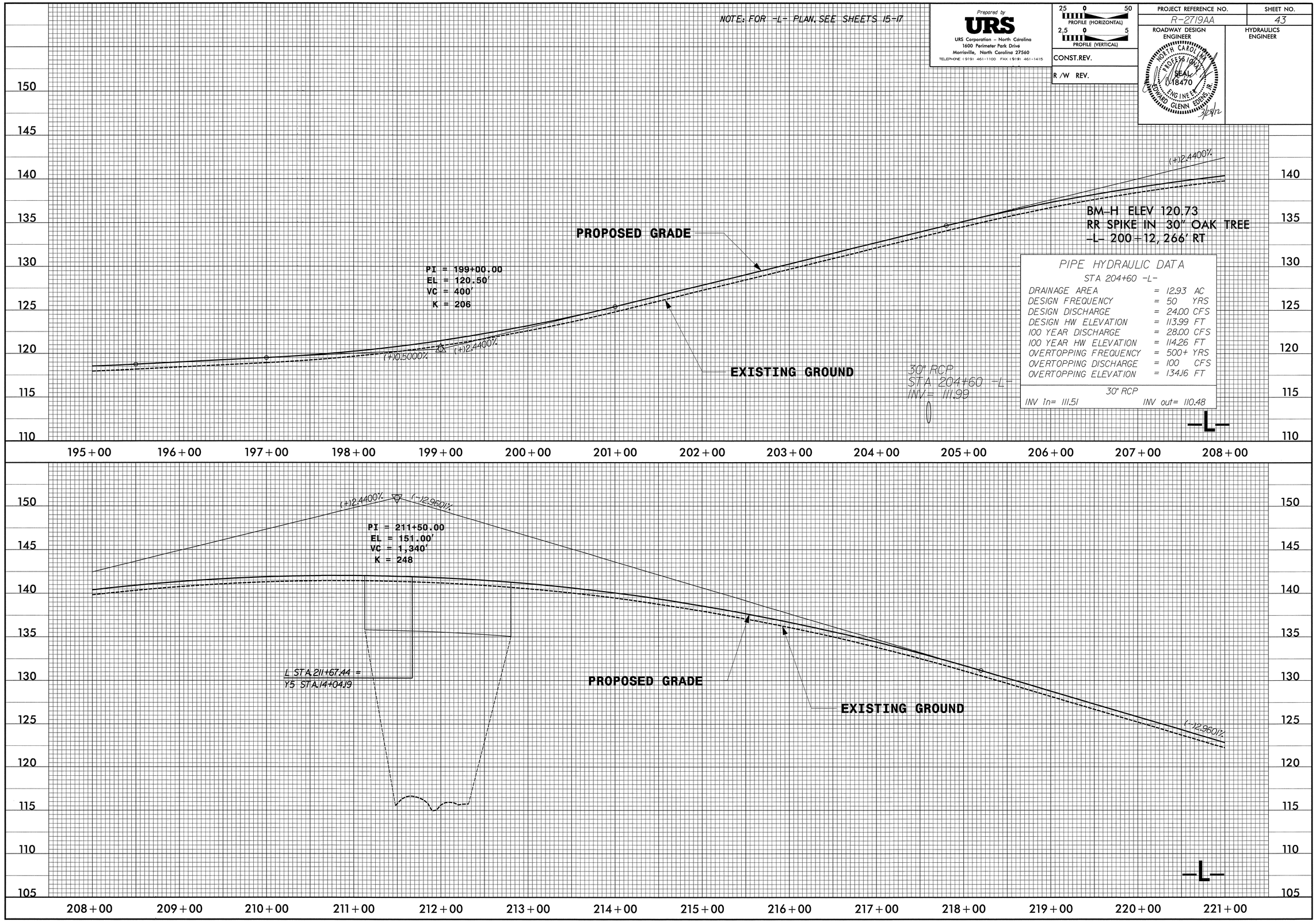
R/W REV.

PROJECT REFERENCE NO.	SHEET NO.
R-2719AA	43

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 018470 ENGINEER EDWARD GLENN EDENS, JR. 3/28/12

HYDRAULICS ENGINEER



NOTE: FOR -L- PLAN, SEE SHEETS 17-19

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1600 Perimeter Park Drive
Morrisville, North Carolina 27560
TELEPHONE (919) 461-1100 FAX (919) 461-1415

25 0 50 PROFILE (HORIZONTAL)
2.5 0 5 PROFILE (VERTICAL)

CONST.REV.

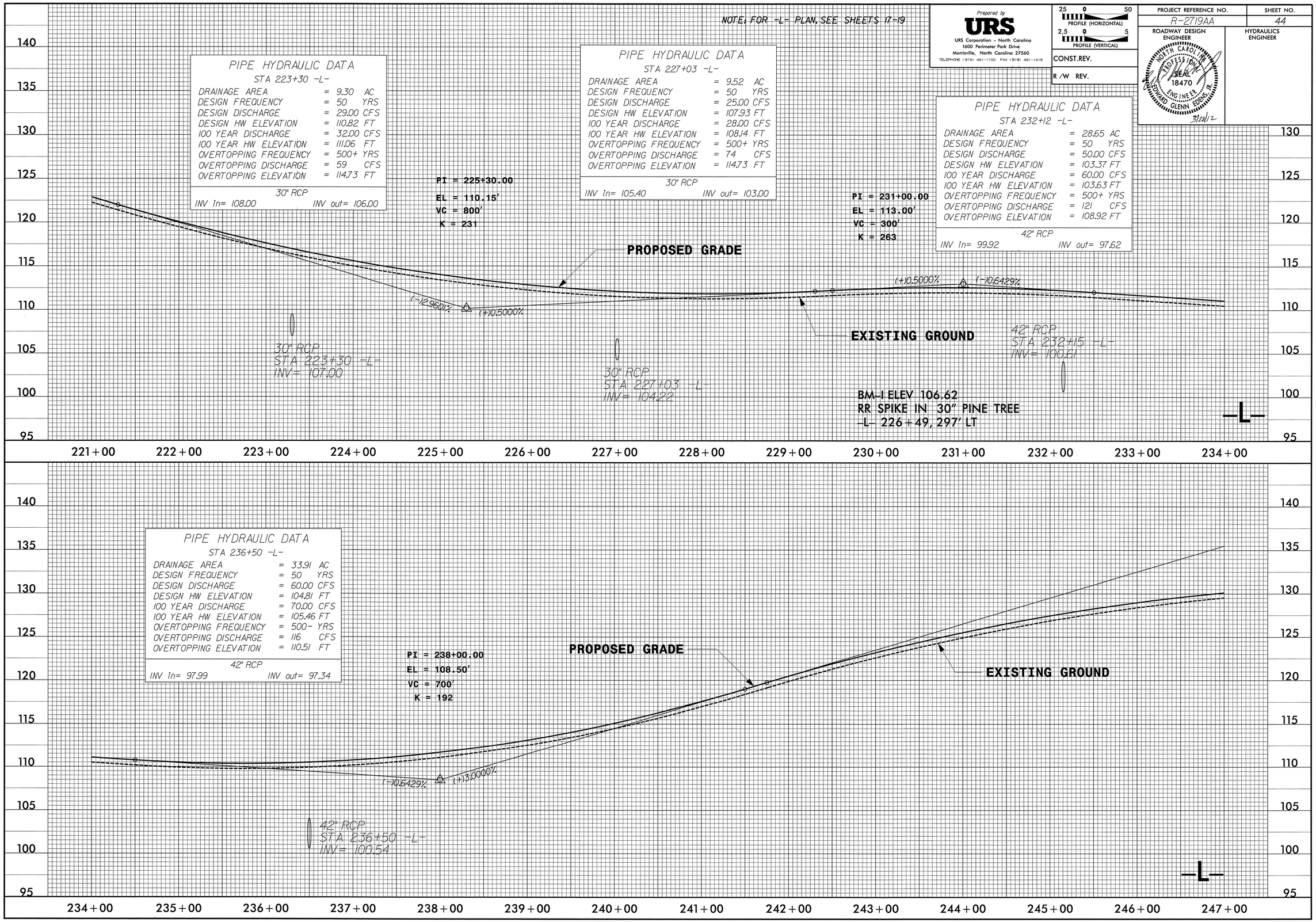
R /W REV.

PROJECT REFERENCE NO.	SHEET NO.
R-2719AA	44

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 18470 ENGINEER EDWARD GLENN EDENS, III
3/22/12



NOTE: FOR -L- PLAN, SEE SHEETS 19-21

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URS Corporation - North Carolina
1600 Perimeter Park Drive
Morrisville, North Carolina 27560
TELEPHONE (919) 461-1100 FAX (919) 461-1415

25 0 50 PROFILE (HORIZONTAL)
2.5 0 5 PROFILE (VERTICAL)

CONST.REV.

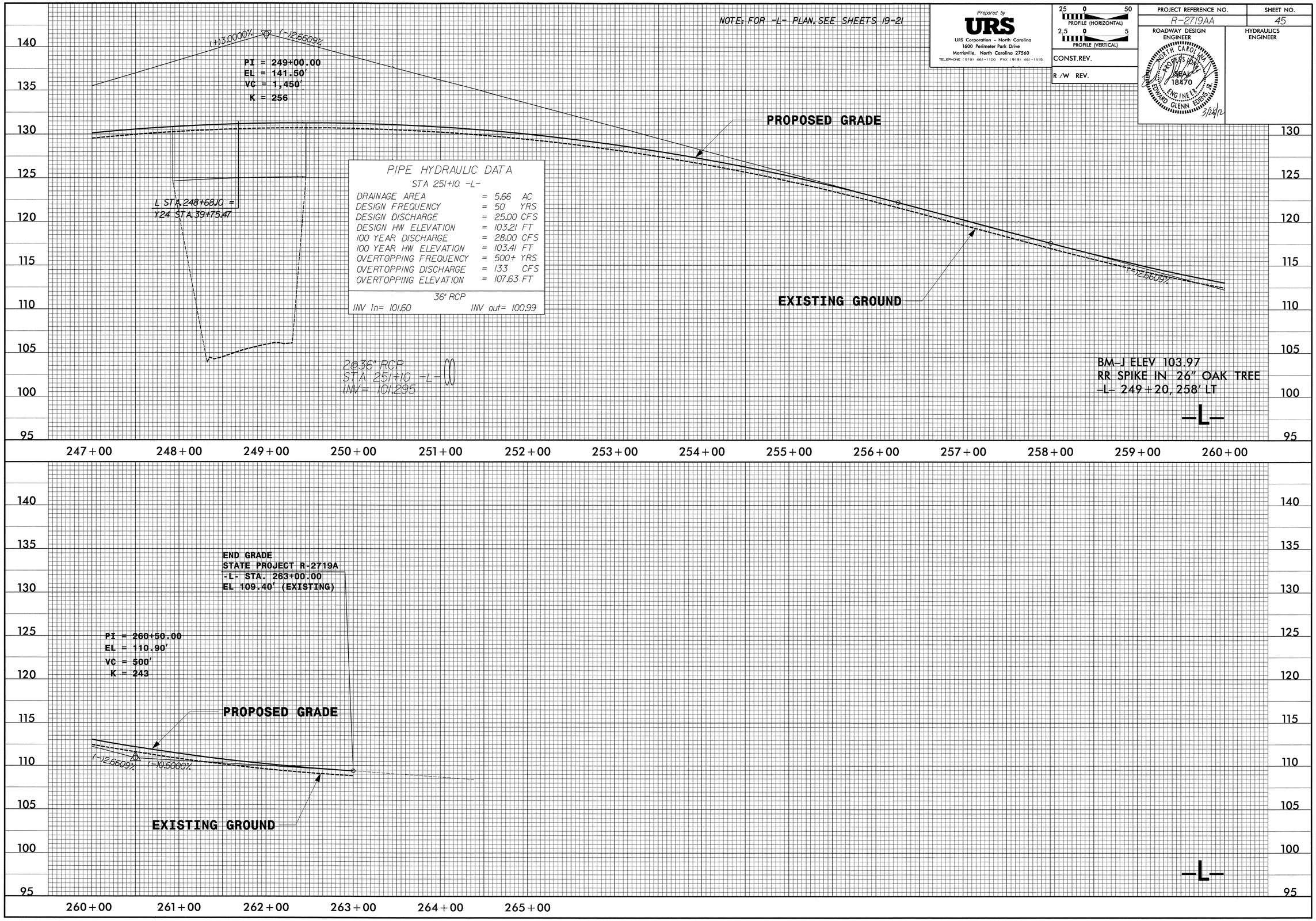
R /W REV.

PROJECT REFERENCE NO.	SHEET NO.
R-2719AA	45

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 18470 ENGINEER EDWARD GLENN EDENS, JR. 3/28/12



PIPE HYDRAULIC DATA

STA 251+10 -L-

DRAINAGE AREA	=	5.66	AC
DESIGN FREQUENCY	=	50	YRS
DESIGN DISCHARGE	=	25.00	CFS
DESIGN HW ELEVATION	=	103.21	FT
100 YEAR DISCHARGE	=	28.00	CFS
100 YEAR HW ELEVATION	=	103.41	FT
OVERTOPPING FREQUENCY	=	500+	YRS
OVERTOPPING DISCHARGE	=	133	CFS
OVERTOPPING ELEVATION	=	107.63	FT

36" RCP

INV In= 101.60 INV out= 100.99

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URS
URS Corporation - North Carolina
1600 Perimeter Park Drive
Morrisville, North Carolina 27560
TELEPHONE (919) 461-1100 FAX (919) 461-1415

25 0 50
PROFILE (HORIZONTAL)
2.5 0 5
PROFILE (VERTICAL)

CONST.REV.

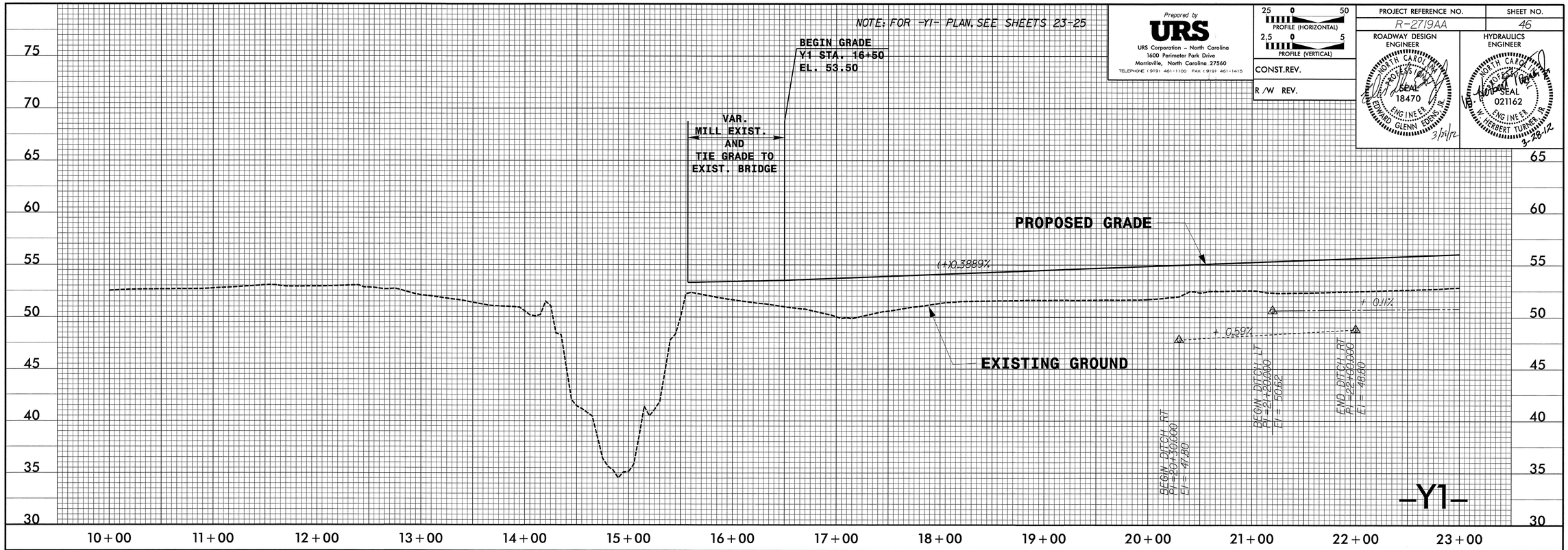
R /W REV.

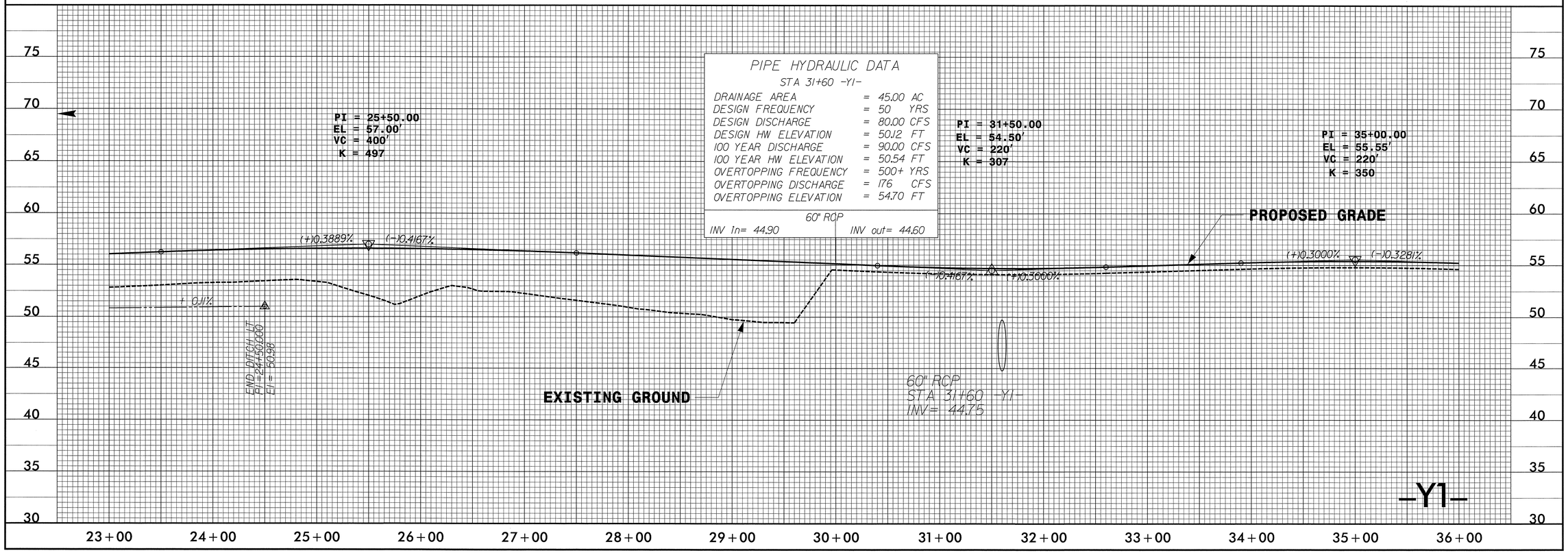
PROJECT REFERENCE NO.	SHEET NO.
R-2719AA	46

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 18470 ENGINEER EDWARD GLENN EDENS, JR.
3/28/12

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 021162 ENGINEER W. HERBERT TURNER, JR.
3-28-12

NOTE: FOR -Y1- PLAN, SEE SHEETS 23-25





NOTE: FOR -Y1- PLAN, SEE SHEETS 4,25-26

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URS Corporation – North Carolina
1600 Perimeter Park Drive
Morrisville, North Carolina 27560
TELEPHONE (919) 461-1100 FAX (919) 461-1415

25 0 50
PROFILE (HORIZONTAL)
2.5 0 5
PROFILE (VERTICAL)

CONST.REV.

R /W REV.

PROJECT REFERENCE NO.	SHEET NO.
R-2719AA	47

ROADWAY DESIGN ENGINEER

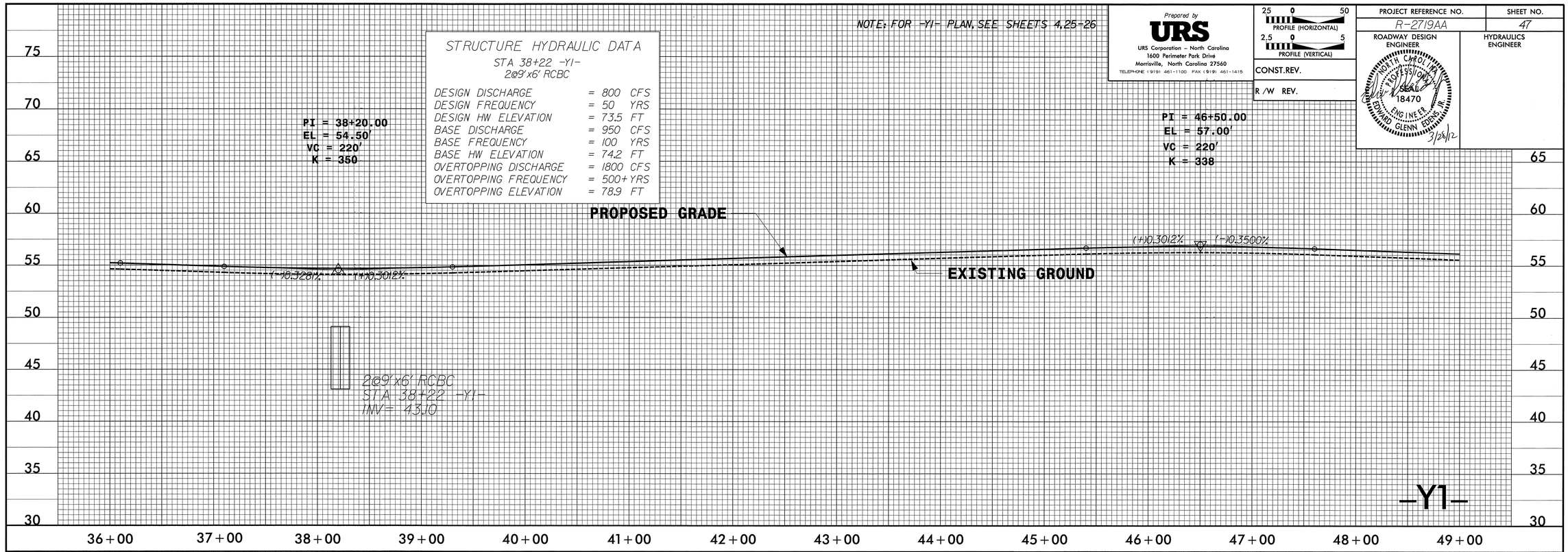
HYDRAULICS ENGINEER

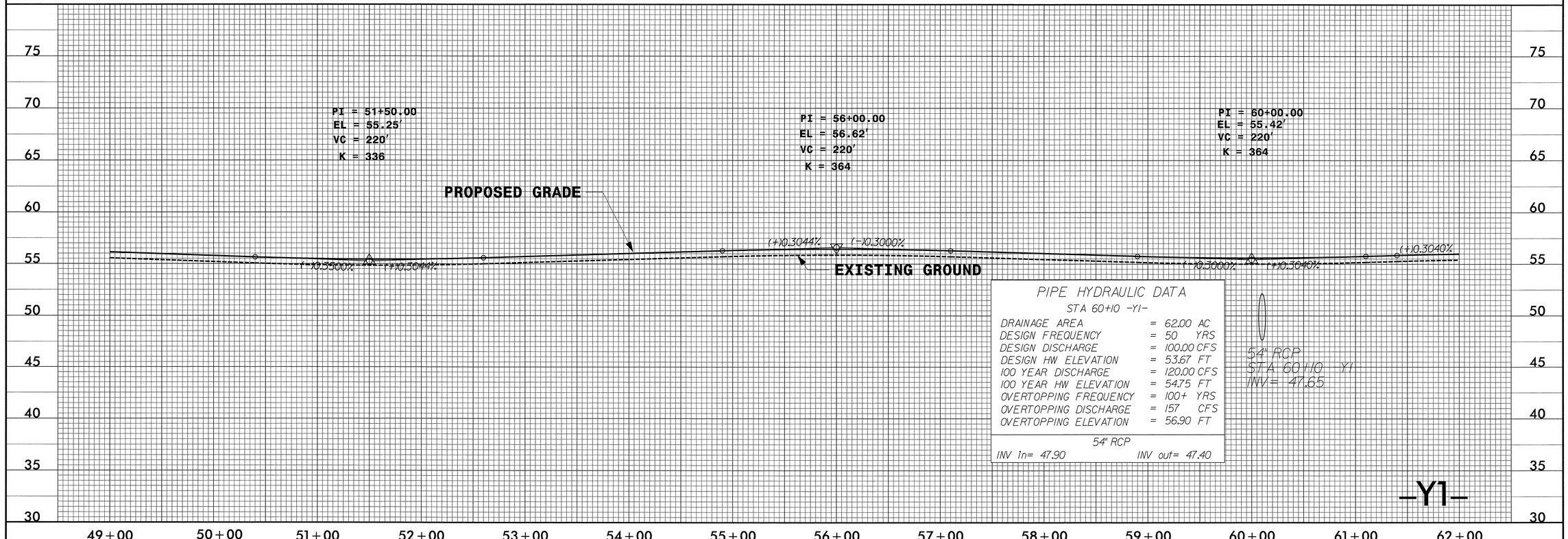
NORTH CAROLINA PROFESSIONAL SEAL 18470 ENGINEER EDWARD GLENN EDENS, III
3/26/12

STRUCTURE HYDRAULIC DATA

STA 38+22 -Y1-
2@9'x6' RCBC

DESIGN DISCHARGE	= 800	CFS
DESIGN FREQUENCY	= 50	YRS
DESIGN HW ELEVATION	= 73.5	FT
BASE DISCHARGE	= 950	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 74.2	FT
OVERTOPPING DISCHARGE	= 1800	CFS
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING ELEVATION	= 78.9	FT





PIPE HYDRAULIC DATA

STA 60+10 -Y1-

DRAINAGE AREA	= 62.00	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 100.00	CFS
DESIGN HW ELEVATION	= 53.67	FT
100 YEAR DISCHARGE	= 120.00	CFS
100 YEAR HW ELEVATION	= 54.75	FT
OVERTOPPING FREQUENCY	= 100+	YRS
OVERTOPPING DISCHARGE	= 157	CFS
OVERTOPPING ELEVATION	= 56.90	FT

54" RCP

INV In= 47.90 INV out= 47.40

NOTE: FOR -Y1- PLAN, SEE SHEETS 4,5,& 27

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URS
URS Corporation – North Carolina
1600 Perimeter Park Drive
Morrisville, North Carolina 27560
TELEPHONE (919) 461-1100 FAX (919) 461-1415

PROFILE (HORIZONTAL) 25 0 50
PROFILE (VERTICAL) 2.5 0 5

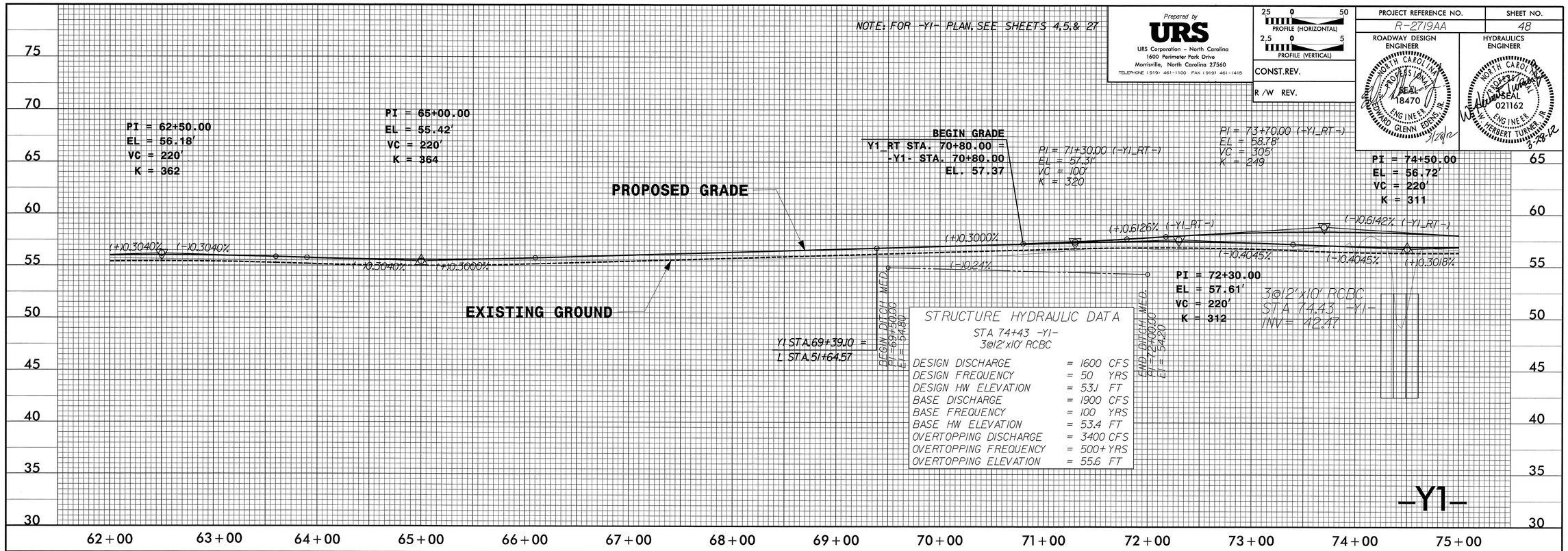
CONST.REV.

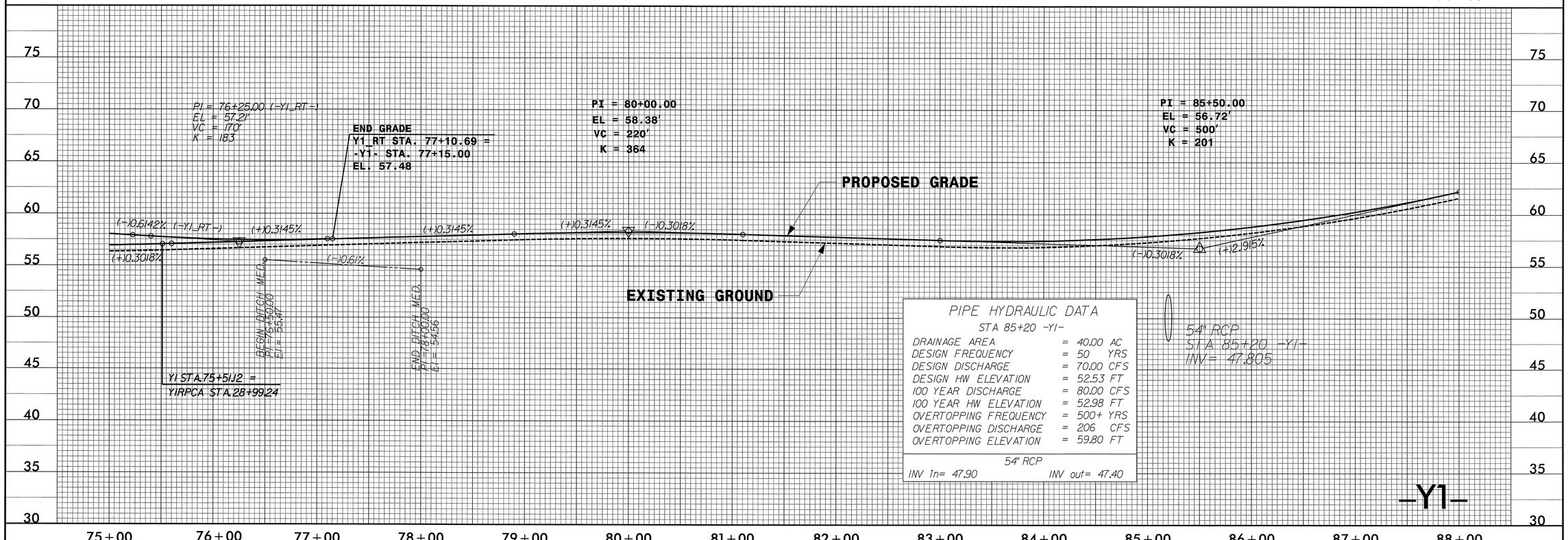
R /W REV.

PROJECT REFERENCE NO.	SHEET NO.
R-2719AA	48

ROADWAY DESIGN ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 18470 ENGINEER EDWARD GLENN EDENS, JR. 7/28/12

HYDRAULICS ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 021162 ENGINEER HERBERT TURNER, JR. 7/24/12





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URS Corporation - North Carolina
1600 Perimeter Park Drive
Morrisville, North Carolina 27560
TELEPHONE (919) 461-1100 FAX (919) 461-1415

25 0 50
PROFILE (HORIZONTAL)
2.5 0 5
PROFILE (VERTICAL)

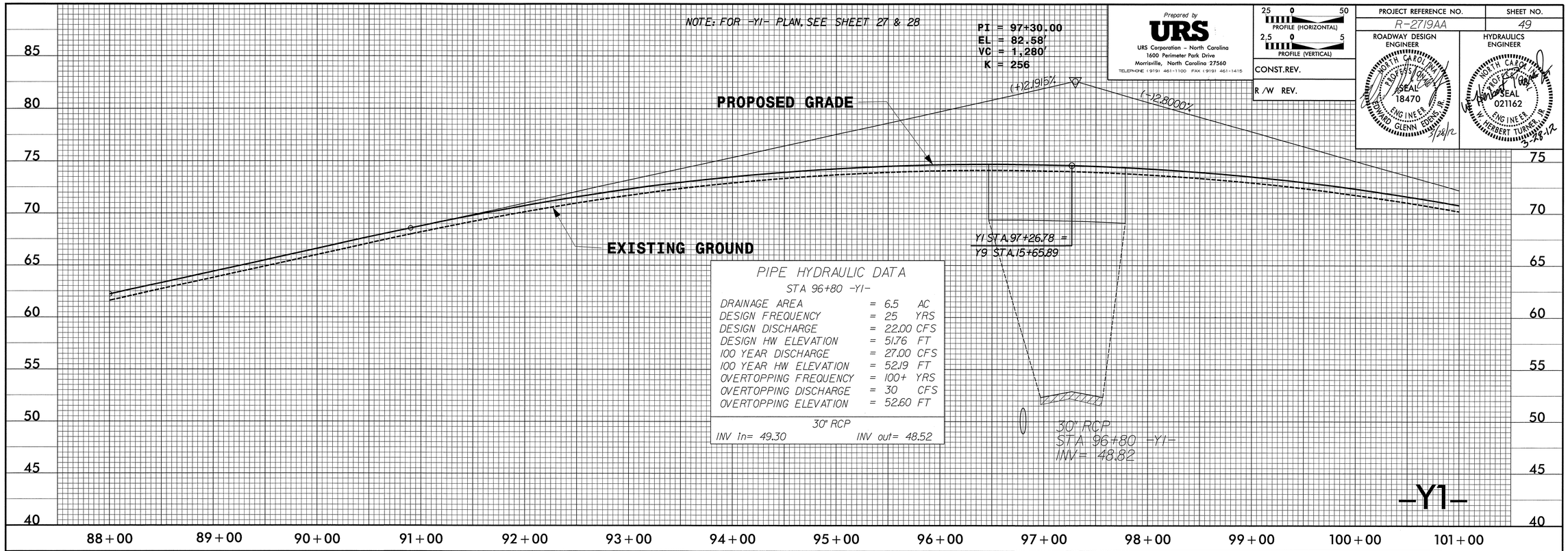
CONST.REV.

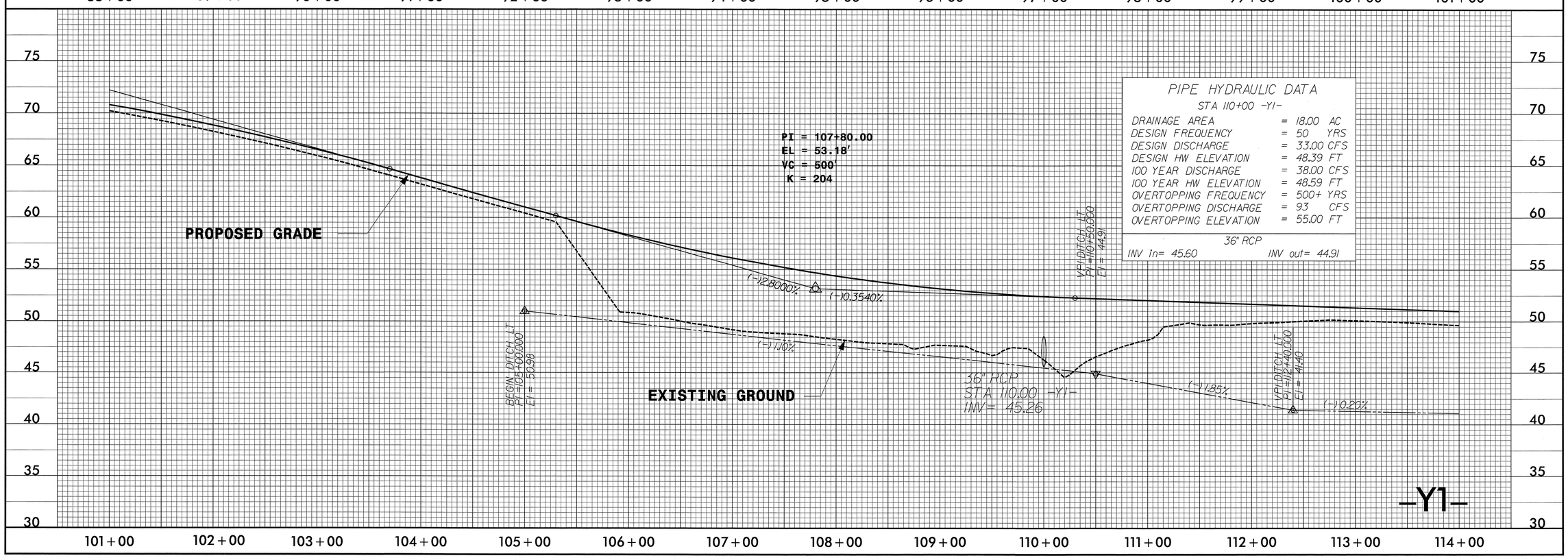
R /W REV.

PROJECT REFERENCE NO.	SHEET NO.
R-2719AA	49

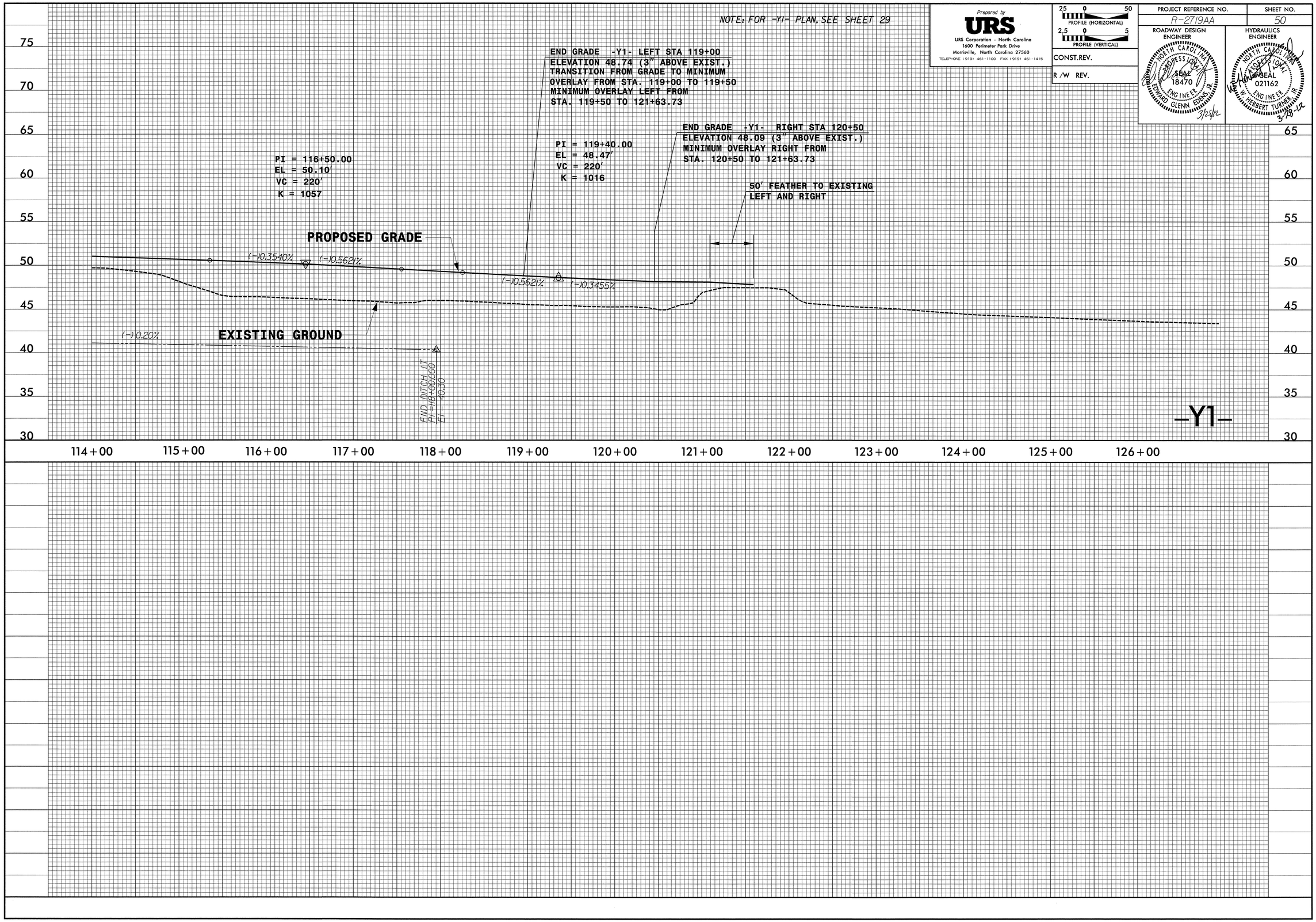
ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 18470 ENGINEER EDWARD GLENN EDRINGTON III
3/28/12

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 021162 ENGINEER HERBERT TURNER JR.
3-28-12





NOTE: FOR -Y1- PLAN, SEE SHEET 29



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URS
URS Corporation – North Carolina
1600 Perimeter Park Drive
Morrisville, North Carolina 27560
TELEPHONE (919) 461-1100 FAX (919) 461-1415

25 0 50
PROFILE (HORIZONTAL)
2.5 0 5
PROFILE (VERTICAL)

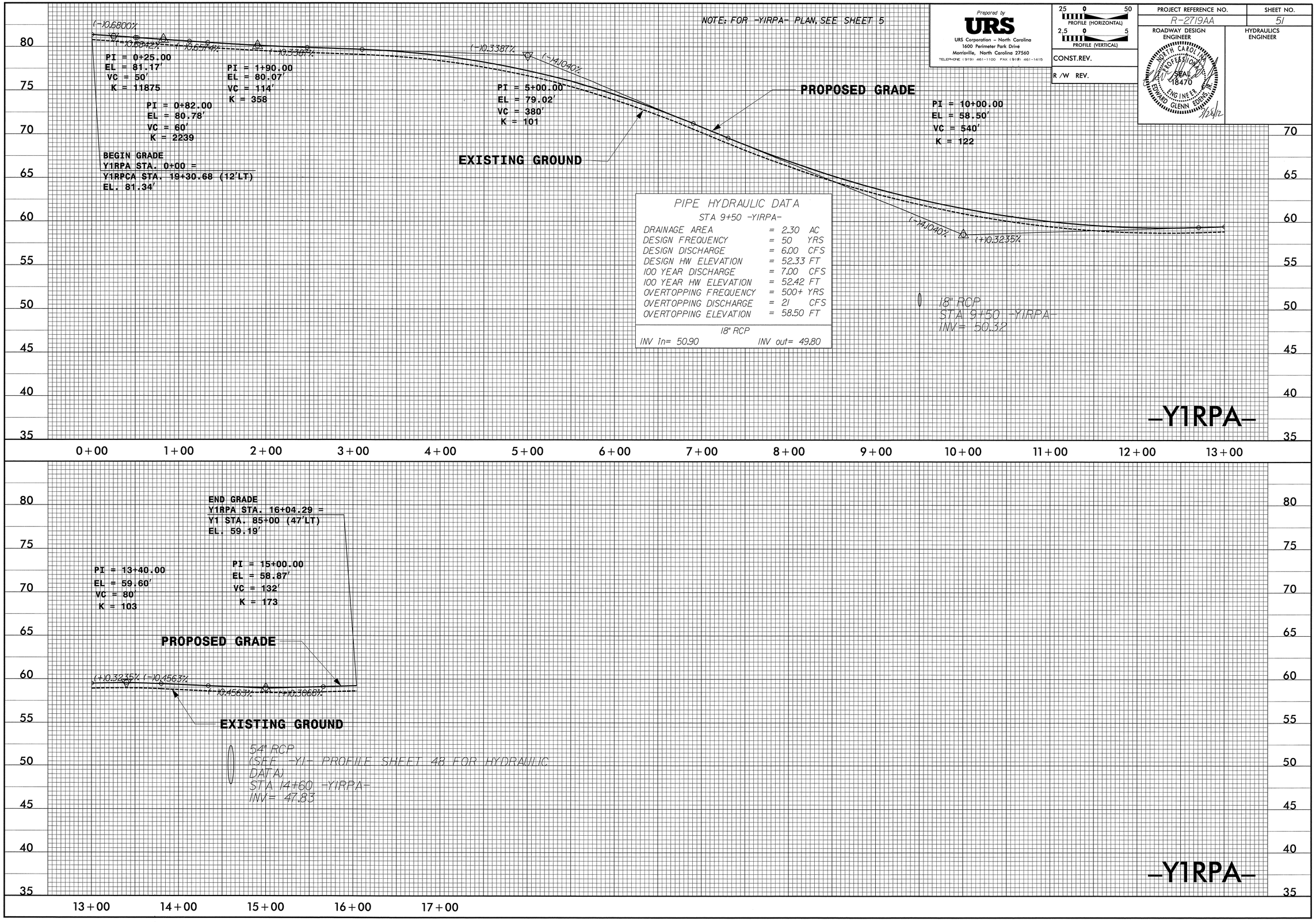
CONST.REV.

R /W REV.

PROJECT REFERENCE NO.	SHEET NO.
R-2719AA	50

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 18470 EDWARD GLENN EDENS, III
5/25/12

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 021162 W. HERBERT TURNER, JR.
3-28-12



NOTE: FOR -YIRPA- PLAN, SEE SHEET 5
Prepared by
URS
URS Corporation - North Carolina
1600 Perimeter Park Drive
Morrisville, North Carolina 27560
TELEPHONE (919) 461-1100 FAX (919) 461-1415
25 0 50
PROFILE (HORIZONTAL)
2.5 0 5
PROFILE (VERTICAL)
CONST.REV.
R /W REV.
PROJECT REFERENCE NO.
R-2719AA
SHEET NO.
51
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 18470 ENGINEER EDWARD GLENN EDENS, JR.
3/28/12
(-)0.6800%
(-)0.6842%
(-)0.6574%
(-)0.3387%
(-)0.3387%
(-)4.1040%
(-)4.1040%
(+)0.3235%
PI = 0+25.00
EL = 81.17'
VC = 50'
K = 11875
PI = 1+90.00
EL = 80.07'
VC = 114'
K = 358
PI = 0+82.00
EL = 80.78'
VC = 60'
K = 2239
PI = 5+00.00
EL = 79.02'
VC = 380'
K = 101
PI = 10+00.00
EL = 58.50'
VC = 540'
K = 122
BEGIN GRADE
Y1RPA STA. 0+00 =
Y1RPCA STA. 19+30.68 (12'LT)
EL. 81.34'
PROPOSED GRADE
EXISTING GROUND
PIPE HYDRAULIC DATA
STA 9+50 -YIRPA-
DRAINAGE AREA = 2.30 AC
DESIGN FREQUENCY = 50 YRS
DESIGN DISCHARGE = 6.00 CFS
DESIGN HW ELEVATION = 52.33 FT
100 YEAR DISCHARGE = 7.00 CFS
100 YEAR HW ELEVATION = 52.42 FT
OVERTOPPING FREQUENCY = 500+ YRS
OVERTOPPING DISCHARGE = 21 CFS
OVERTOPPING ELEVATION = 58.50 FT
18" RCP
INV in= 50.90
INV out= 49.80
18" RCP
STA 9+50 -YIRPA-
INV= 50.32
-Y1RPA-
80
75
70
65
60
55
50
45
40
35
0+00
1+00
2+00
3+00
4+00
5+00
6+00
7+00
8+00
9+00
10+00
11+00
12+00
13+00
END GRADE
Y1RPA STA. 16+04.29 =
Y1 STA. 85+00 (47'LT)
EL. 59.19'
PI = 13+40.00
EL = 59.60'
VC = 80'
K = 103
PI = 15+00.00
EL = 58.87'
VC = 132'
K = 173
PROPOSED GRADE
(+)0.3235%
(-)0.4563%
(-)0.4563%
(+)0.3068%
EXISTING GROUND
54" RCP
(SEE -Y1- PROFILE SHEET 48 FOR HYDRAULIC DATA)
STA 14+60 -YIRPA-
INV= 47.83
-Y1RPA-
13+00
14+00
15+00
16+00
17+00

Prepared by
URS
URS Corporation – North Carolina
1600 Perimeter Park Drive
Morrisville, North Carolina 27560
TELEPHONE (919) 461-1100 FAX (919) 461-1415

25 0 50 PROFILE (HORIZONTAL)
2.5 0 5 PROFILE (VERTICAL)

CONST.REV.

R /W REV.

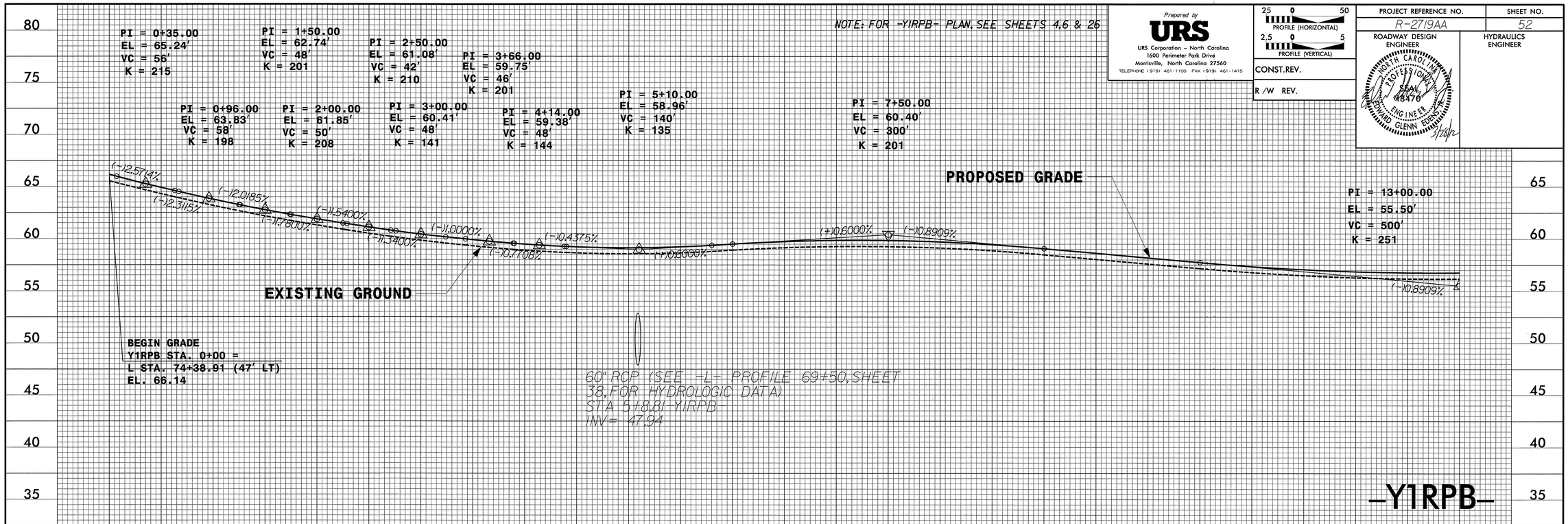
PROJECT REFERENCE NO.	SHEET NO.
R-2719AA	52

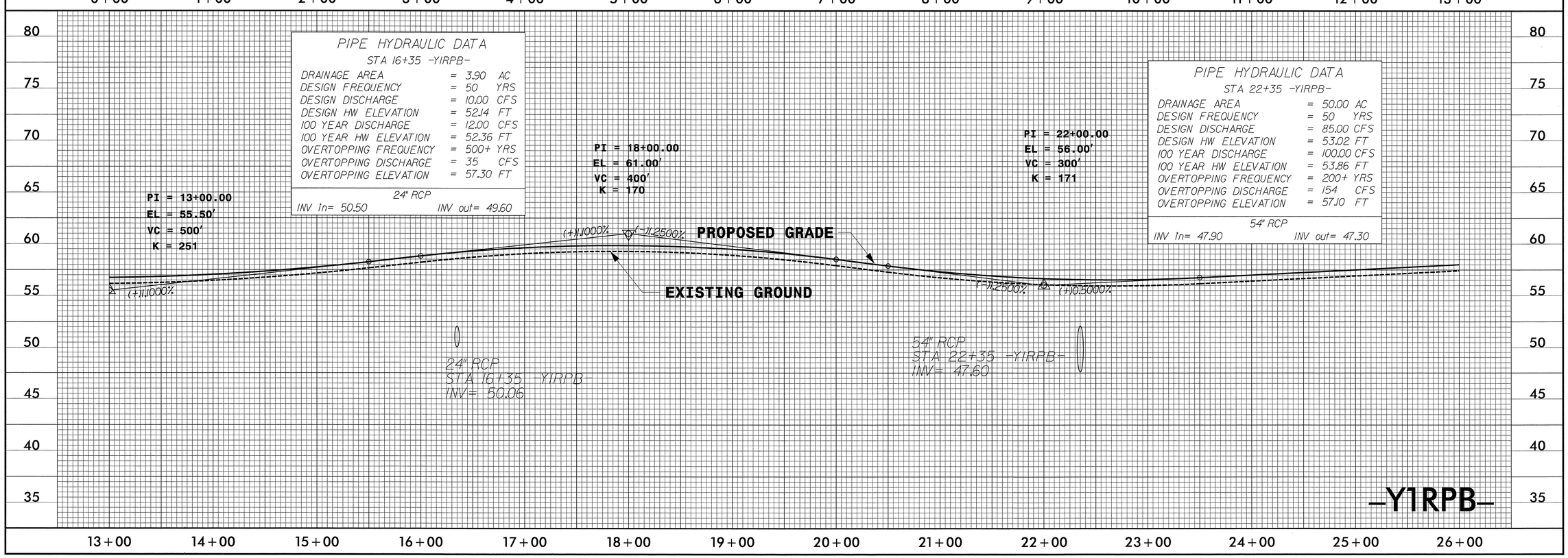
ROADWAY DESIGN ENGINEER

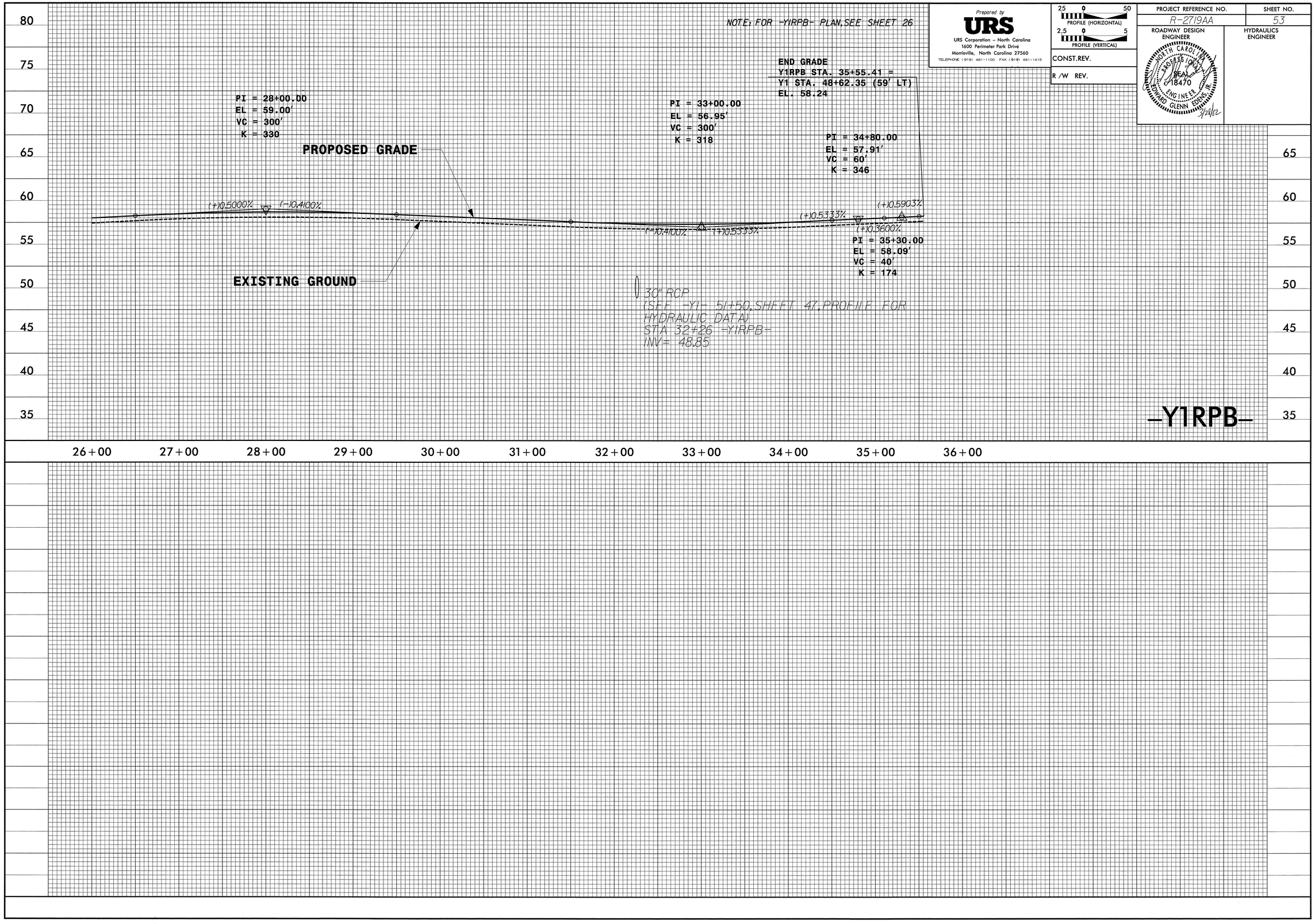
HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 018470 ENGINEER EDWARD GLENN EDENS III
3/28/12

NOTE: FOR -Y1RPB- PLAN, SEE SHEETS 4,6 & 26







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URS
URS Corporation – North Carolina
1600 Perimeter Park Drive
Morrisville, North Carolina 27560
TELEPHONE (919) 461-1100 FAX (919) 461-1415

25 0 50
PROFILE (HORIZONTAL)
2.5 0 5
PROFILE (VERTICAL)

CONST.REV.

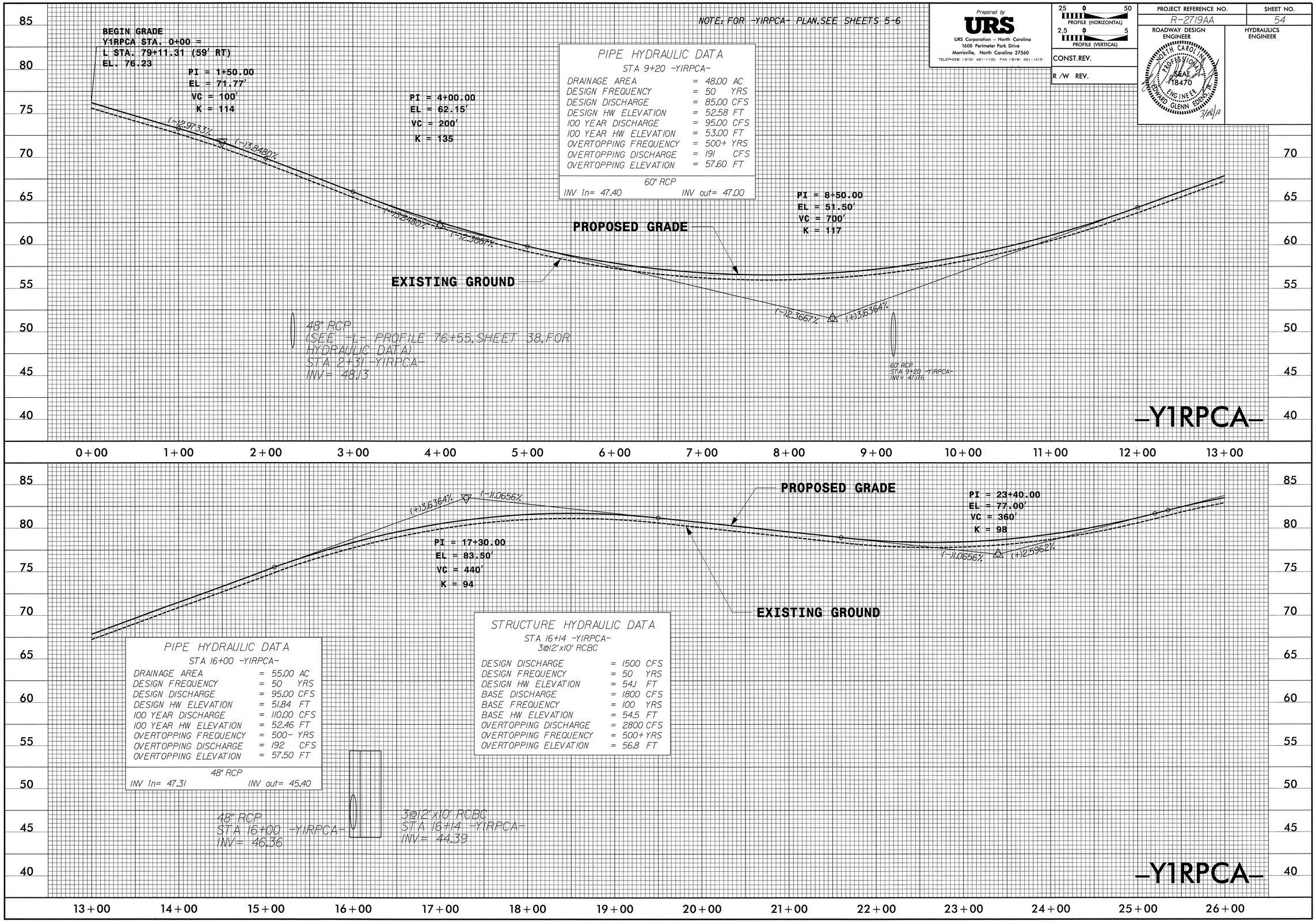
R /W REV.

PROJECT REFERENCE NO.	SHEET NO.
R-2719AA	53

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 18470 ENGINEER EDWARD GLENN EDENS, III
3/28/12

HYDRAULICS ENGINEER



PIPE HYDRAULIC DATA
STA 9+20 -Y1RPCA-

DRAINAGE AREA	=	48.00 AC
DESIGN FREQUENCY	=	50 YRS
DESIGN DISCHARGE	=	85.00 CFS
DESIGN HW ELEVATION	=	52.58 FT
100 YEAR DISCHARGE	=	95.00 CFS
100 YEAR HW ELEVATION	=	53.00 FT
OVERTOPPING FREQUENCY	=	500+ YRS
OVERTOPPING DISCHARGE	=	191 CFS
OVERTOPPING ELEVATION	=	57.60 FT

60" RCP
INV In= 47.40 INV out= 47.00

PIPE HYDRAULIC DATA
STA 16+00 -Y1RPCA-

DRAINAGE AREA	=	55.00 AC
DESIGN FREQUENCY	=	50 YRS
DESIGN DISCHARGE	=	95.00 CFS
DESIGN HW ELEVATION	=	51.84 FT
100 YEAR DISCHARGE	=	110.00 CFS
100 YEAR HW ELEVATION	=	52.46 FT
OVERTOPPING FREQUENCY	=	500- YRS
OVERTOPPING DISCHARGE	=	192 CFS
OVERTOPPING ELEVATION	=	57.50 FT

48" RCP
INV In= 47.31 INV out= 45.40

STRUCTURE HYDRAULIC DATA
STA 16+14 -Y1RPCA-
3@12'x10' RCBC

DESIGN DISCHARGE	=	1500 CFS
DESIGN FREQUENCY	=	50 YRS
DESIGN HW ELEVATION	=	54.1 FT
BASE DISCHARGE	=	1800 CFS
BASE FREQUENCY	=	100 YRS
BASE HW ELEVATION	=	54.5 FT
OVERTOPPING DISCHARGE	=	2800 CFS
OVERTOPPING FREQUENCY	=	500+ YRS
OVERTOPPING ELEVATION	=	56.8 FT

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URS
URS Corporation – North Carolina
1600 Perimeter Park Drive
Morrisville, North Carolina 27560
TELEPHONE (919) 461-1100 FAX (919) 461-1415

25 0 50 PROFILE (HORIZONTAL)
2.5 0 5 PROFILE (VERTICAL)
CONST.REV.
R/W REV.

PROJECT REFERENCE NO.	SHEET NO.
R-2719AA	54

ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 18470 ENGINEER EDWARD GLENN EDENS, JR.
3/28/12

NOTE: FOR -Y1RPCA-PLAN, SEE SHEET 4,5,26

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URS Corporation - North Carolina
1600 Perimeter Park Drive
Morrisville, North Carolina 27560
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25 0 50 PROFILE (HORIZONTAL)
2.5 0 5 PROFILE (VERTICAL)

CONST.REV.

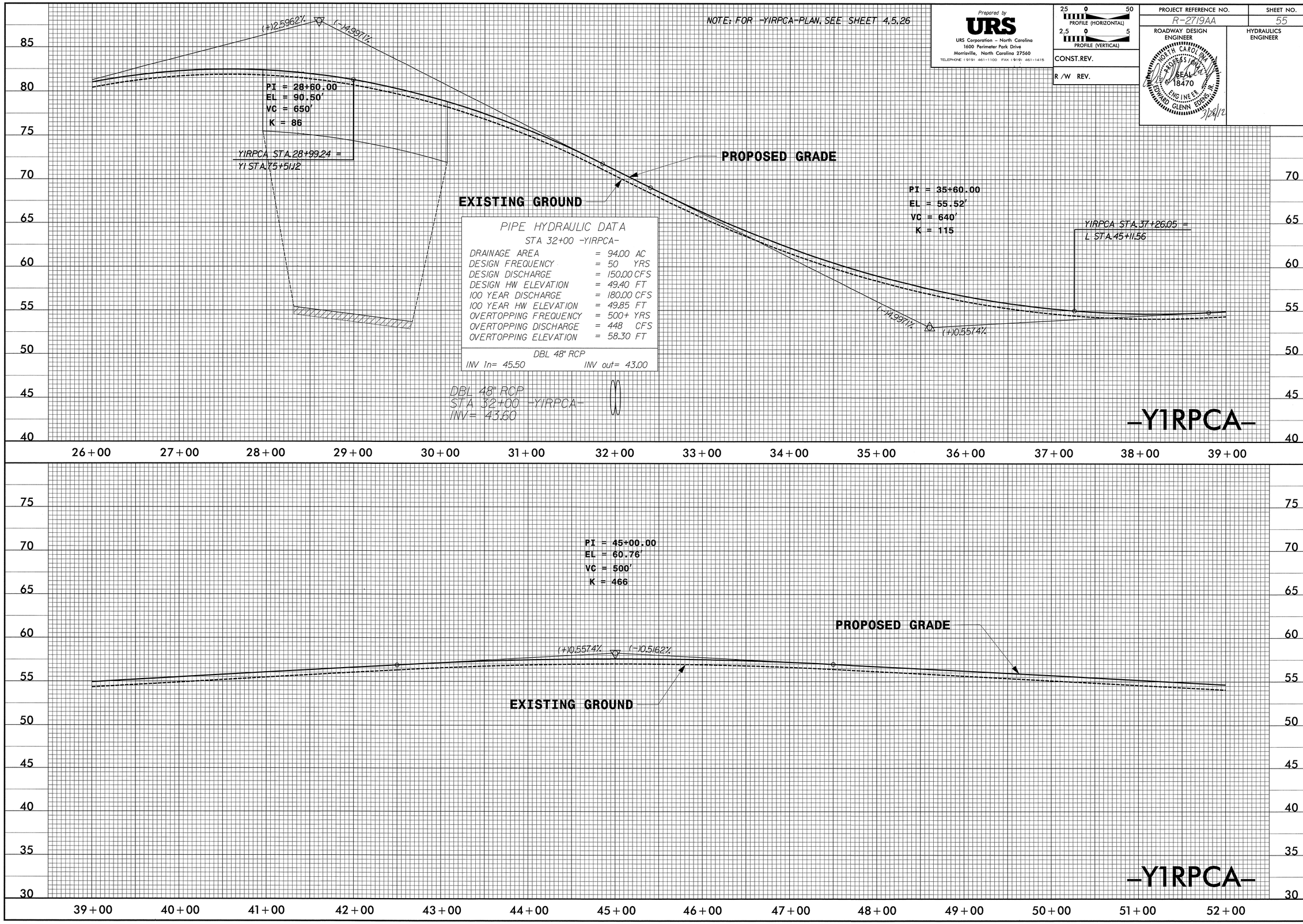
R /W REV.

PROJECT REFERENCE NO.	SHEET NO.
R-2719AA	55

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 18470 ENGINEER EDWARD GLENN EDENS, JR. 3/28/12



NOTE: FOR -Y1RPCA- PLAN, SEE SHEETS 25-26

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Morrisville, North Carolina 27560
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25 0 50
2.5 0 5

CONST.REV.

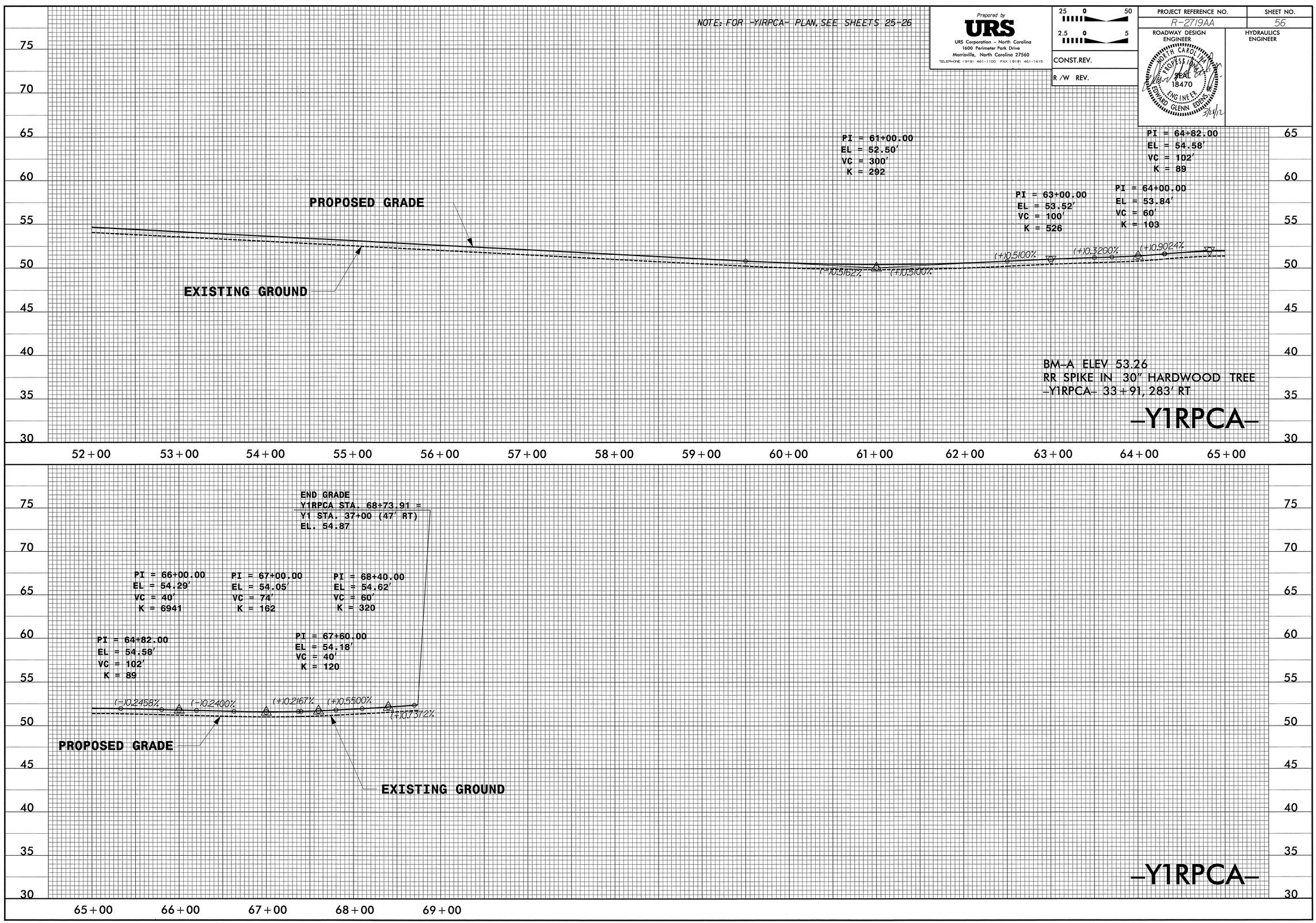
R /W REV.

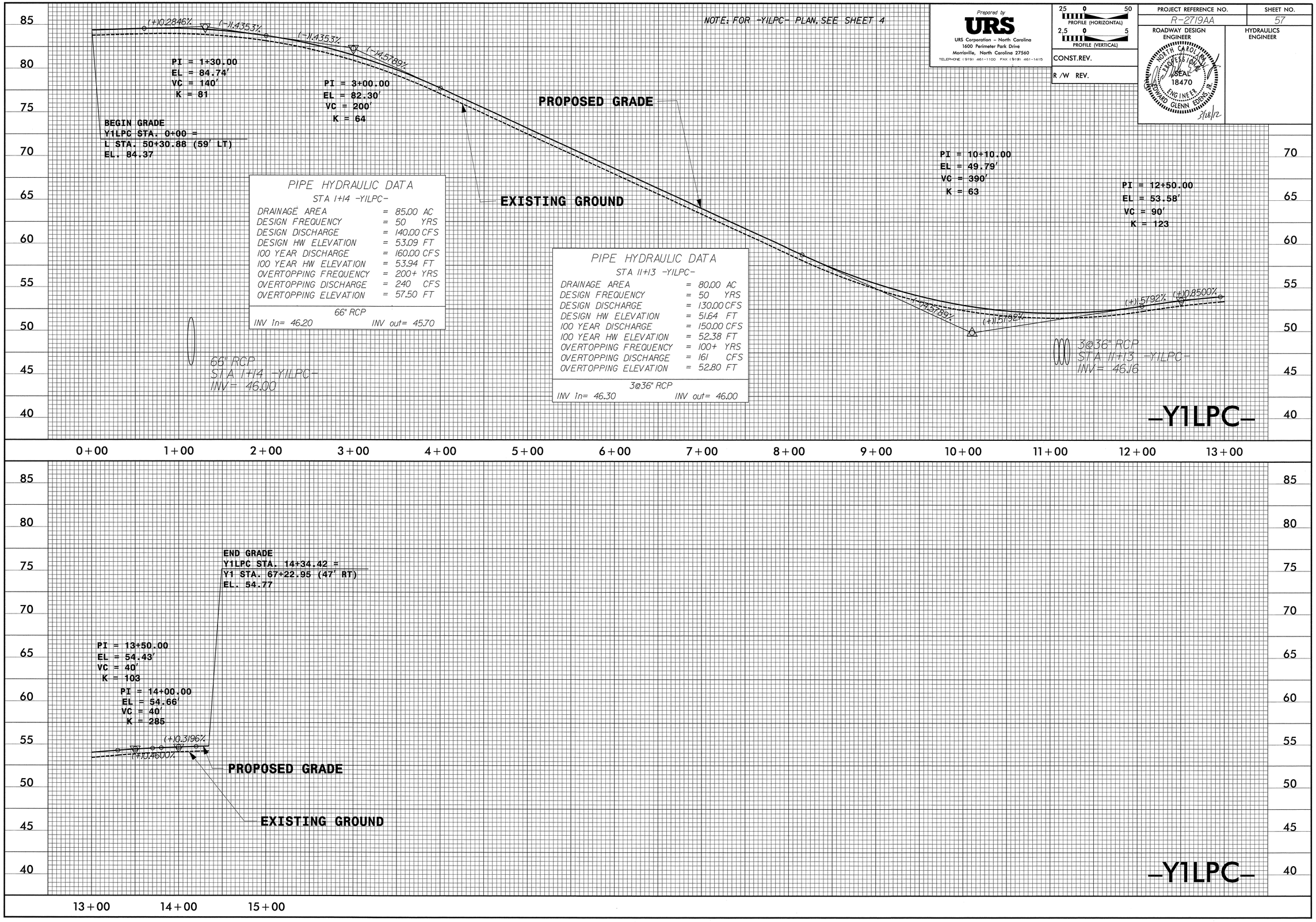
PROJECT REFERENCE NO.	SHEET NO.
R-2719AA	56

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 18470 ENGINEER EDWARD GLENN EDENS 3/13/12





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25 0 50
PROFILE (HORIZONTAL)
2.5 0 5
PROFILE (VERTICAL)

CONST.REV.

R /W REV.

PROJECT REFERENCE NO.	SHEET NO.
R-2719AA	57

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 18470 ENGINEER EDWARD GLENN EDENS, JR.
3/28/12

NOTE: FOR -Y8- PLAN, SEE SHEETS 27 & 34

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25 0 50 PROFILE (HORIZONTAL)
2.5 0 5 PROFILE (VERTICAL)

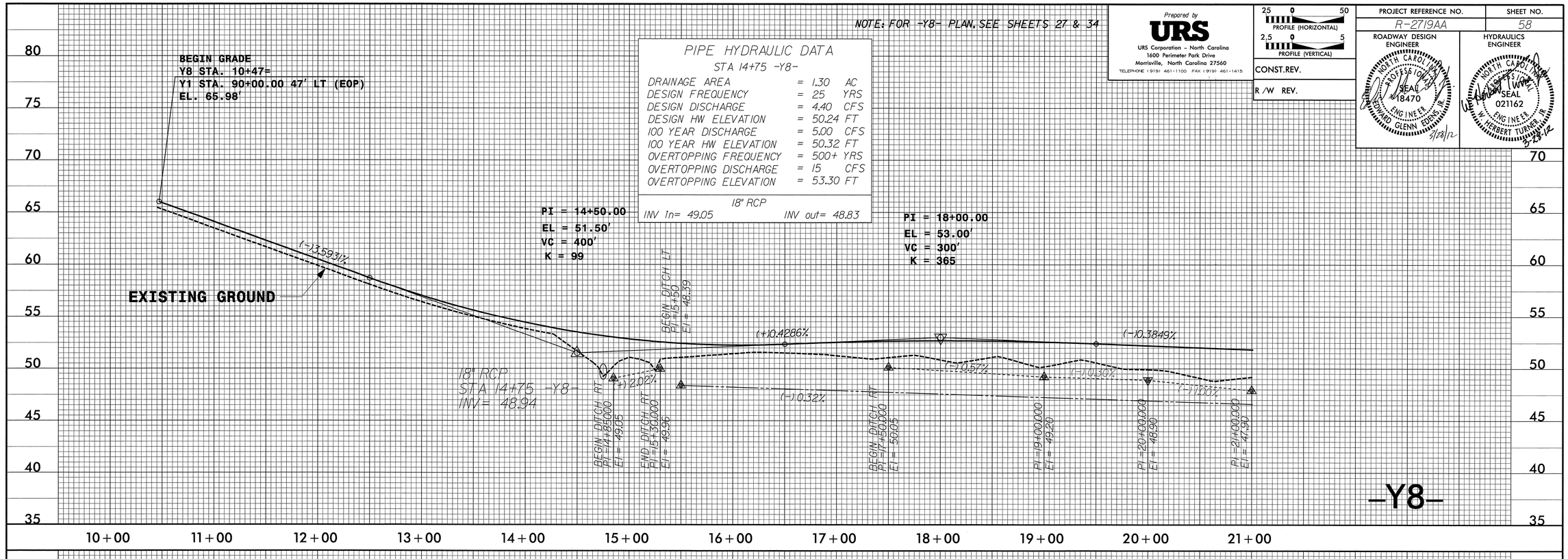
CONST.REV.

R /W REV.

PROJECT REFERENCE NO.	SHEET NO.
R-2719AA	58

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 18470 ENGINEER EDWARD GLENN EDENS, III
5/28/12

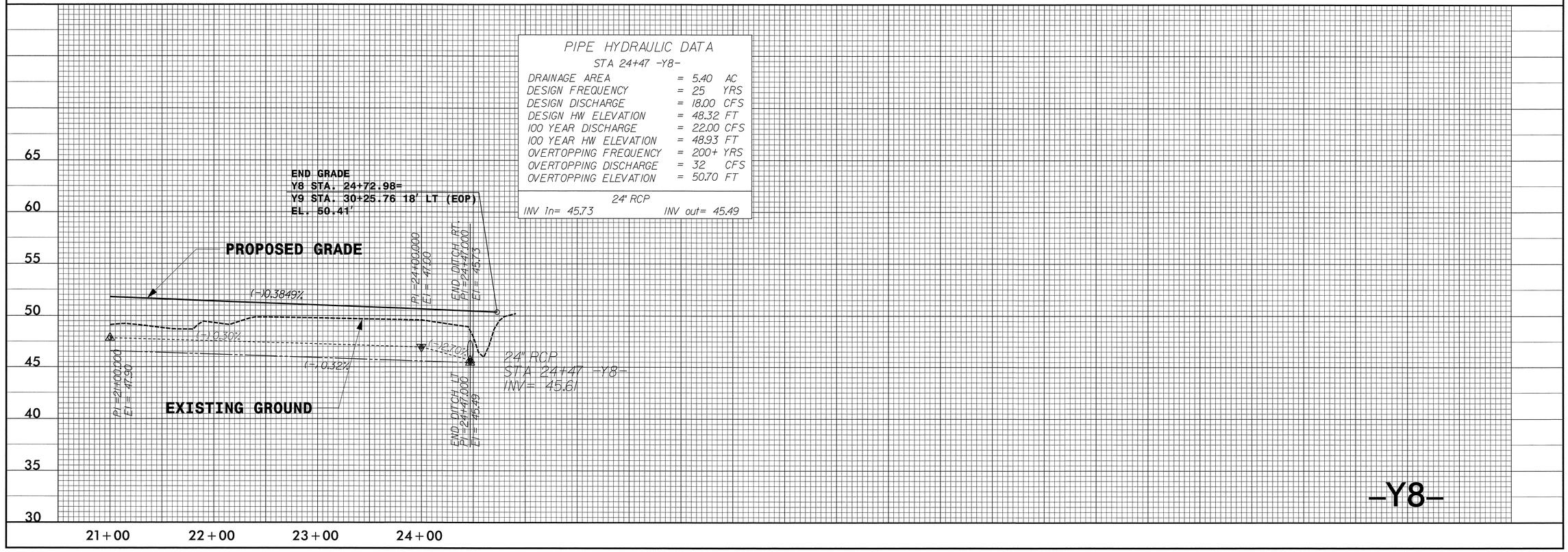
HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 021162 ENGINEER HERBERT TURNER, JR.
5-28-12



PIPE HYDRAULIC DATA
STA 14+75 -Y8-

DRAINAGE AREA	=	1.30	AC
DESIGN FREQUENCY	=	25	YRS
DESIGN DISCHARGE	=	4.40	CFS
DESIGN HW ELEVATION	=	50.24	FT
100 YEAR DISCHARGE	=	5.00	CFS
100 YEAR HW ELEVATION	=	50.32	FT
OVERTOPPING FREQUENCY	=	500+	YRS
OVERTOPPING DISCHARGE	=	15	CFS
OVERTOPPING ELEVATION	=	53.30	FT

18" RCP
INV In= 49.05 INV out= 48.83



PIPE HYDRAULIC DATA
STA 24+47 -Y8-

DRAINAGE AREA	=	5.40	AC
DESIGN FREQUENCY	=	25	YRS
DESIGN DISCHARGE	=	18.00	CFS
DESIGN HW ELEVATION	=	48.32	FT
100 YEAR DISCHARGE	=	22.00	CFS
100 YEAR HW ELEVATION	=	48.93	FT
OVERTOPPING FREQUENCY	=	200+	YRS
OVERTOPPING DISCHARGE	=	32	CFS
OVERTOPPING ELEVATION	=	50.70	FT

24" RCP
INV In= 45.73 INV out= 45.49

NOTE: FOR -Y9- PLAN, SEE SHEETS 27, 33 & 34

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25 0 50 PROFILE (HORIZONTAL)
2.5 0 5 PROFILE (VERTICAL)

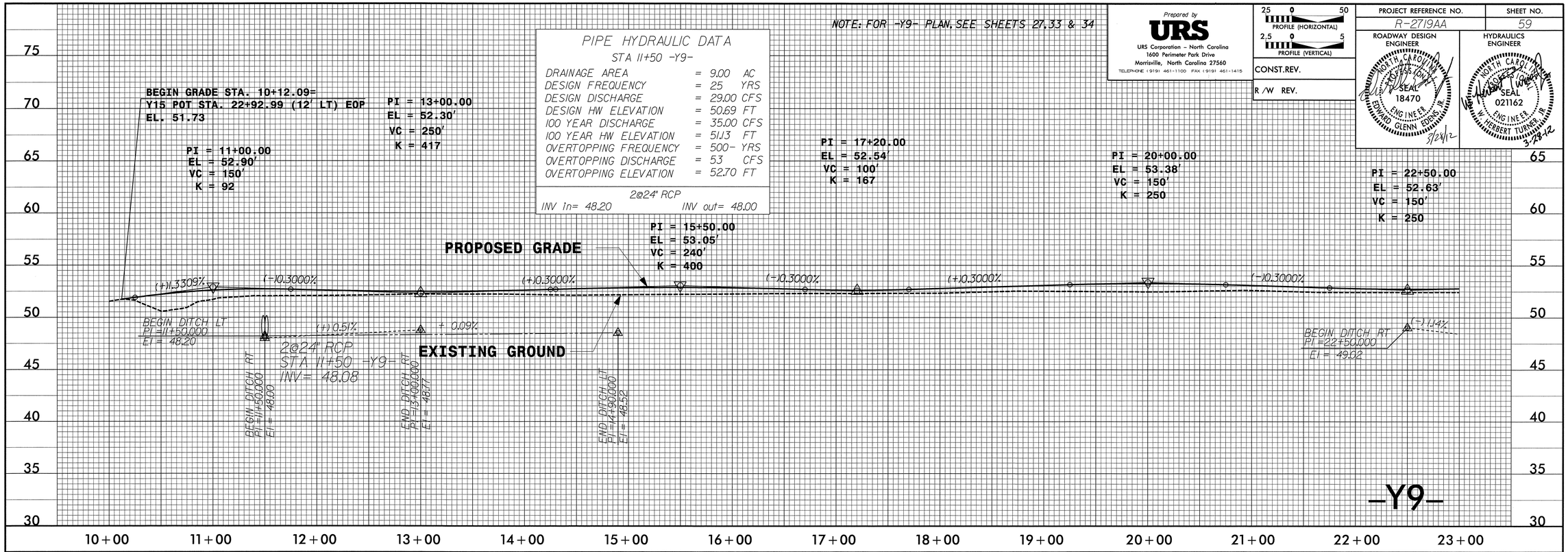
CONST.REV.

R /W REV.

PROJECT REFERENCE NO.	SHEET NO.
R-2719AA	59

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 18470 ENGINEER EDWARD GLENN EDENS, JR. 3/23/12

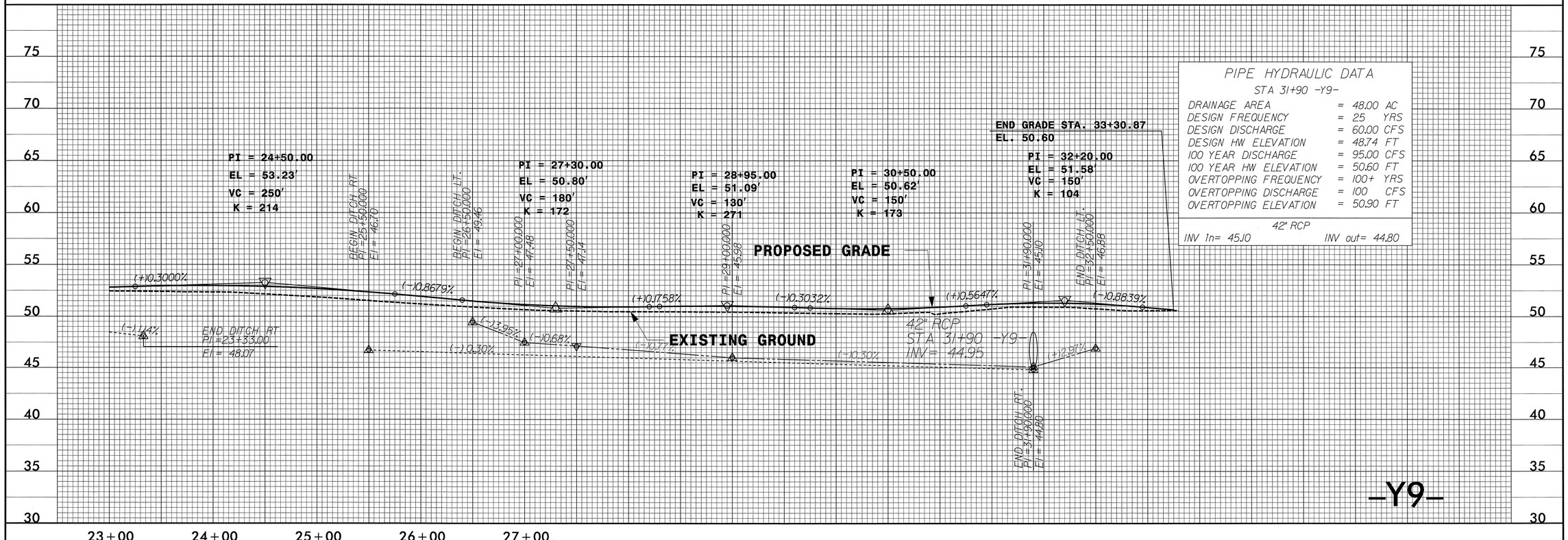
HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 021162 ENGINEER HERBERT TURNER, JR. 3-23-12



PIPE HYDRAULIC DATA
STA 11+50 -Y9-

DRAINAGE AREA	=	9.00	AC
DESIGN FREQUENCY	=	25	YRS
DESIGN DISCHARGE	=	29.00	CFS
DESIGN HW ELEVATION	=	50.69	FT
100 YEAR DISCHARGE	=	35.00	CFS
100 YEAR HW ELEVATION	=	51.13	FT
OVERTOPPING FREQUENCY	=	500-	YRS
OVERTOPPING DISCHARGE	=	53	CFS
OVERTOPPING ELEVATION	=	52.70	FT

2@24" RCP
INV In= 48.20 INV out= 48.00



PIPE HYDRAULIC DATA
STA 31+90 -Y9-

DRAINAGE AREA	=	48.00	AC
DESIGN FREQUENCY	=	25	YRS
DESIGN DISCHARGE	=	60.00	CFS
DESIGN HW ELEVATION	=	48.74	FT
100 YEAR DISCHARGE	=	95.00	CFS
100 YEAR HW ELEVATION	=	50.60	FT
OVERTOPPING FREQUENCY	=	100+	YRS
OVERTOPPING DISCHARGE	=	100	CFS
OVERTOPPING ELEVATION	=	50.90	FT

42" RCP
INV In= 45.10 INV out= 44.80

NOTE: FOR -Y10- PLAN, SEE SHEET 23

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25 0 50 PROFILE (HORIZONTAL)
2.5 0 5 PROFILE (VERTICAL)

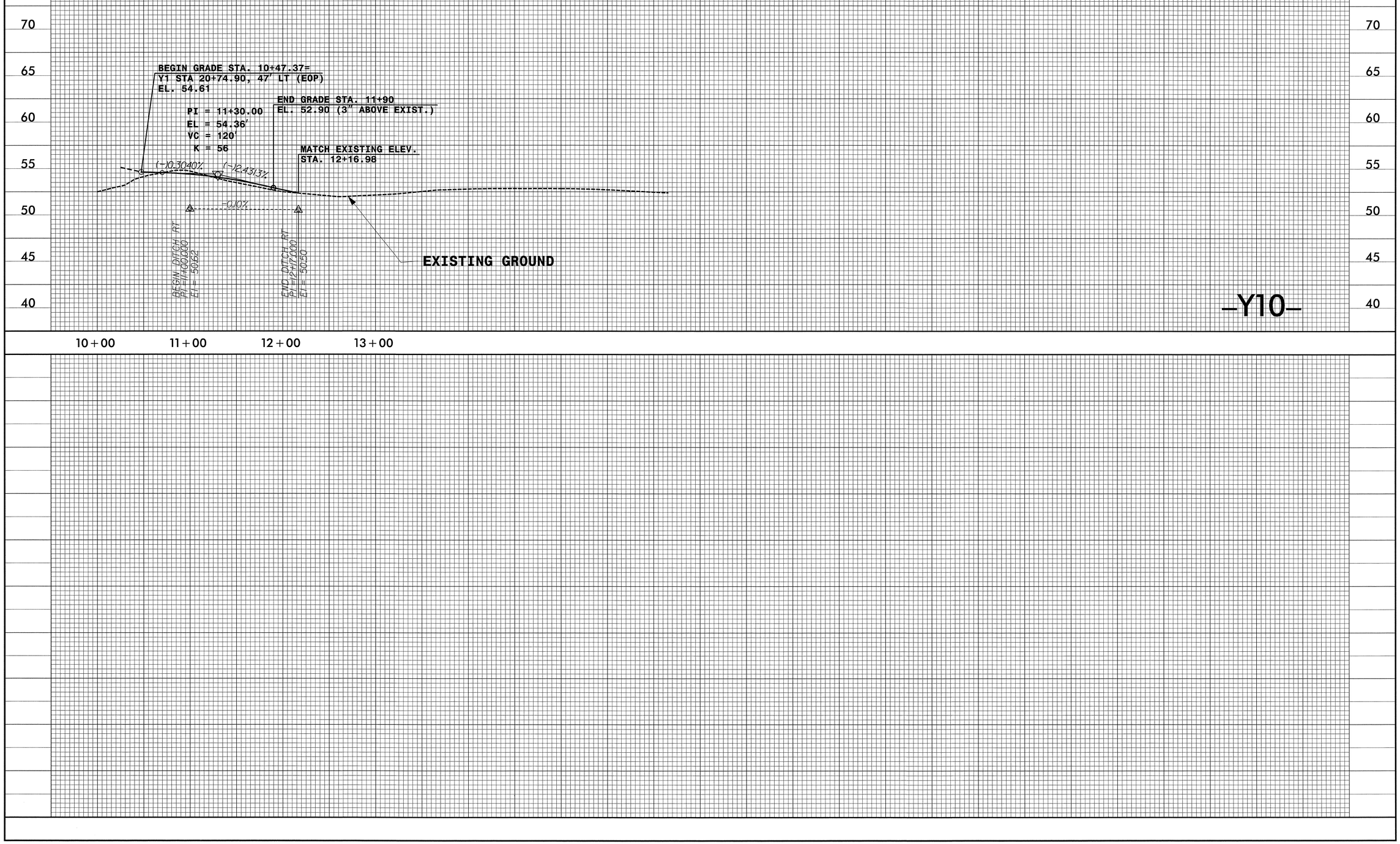
CONST.REV.

R /W REV.

PROJECT REFERENCE NO.	SHEET NO.
R-2719AA	60

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 18470 ENGINEER EDWARD GLENN EDENS, JR.
3/28/12

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 021162 ENGINEER W. HERBERT TURNER, JR.
3-28-12



NOTE: FOR -Y15- PLAN, SEE SHEETS 28,32 & 33

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25 0 50 PROFILE (HORIZONTAL)
2.5 0 5 PROFILE (VERTICAL)

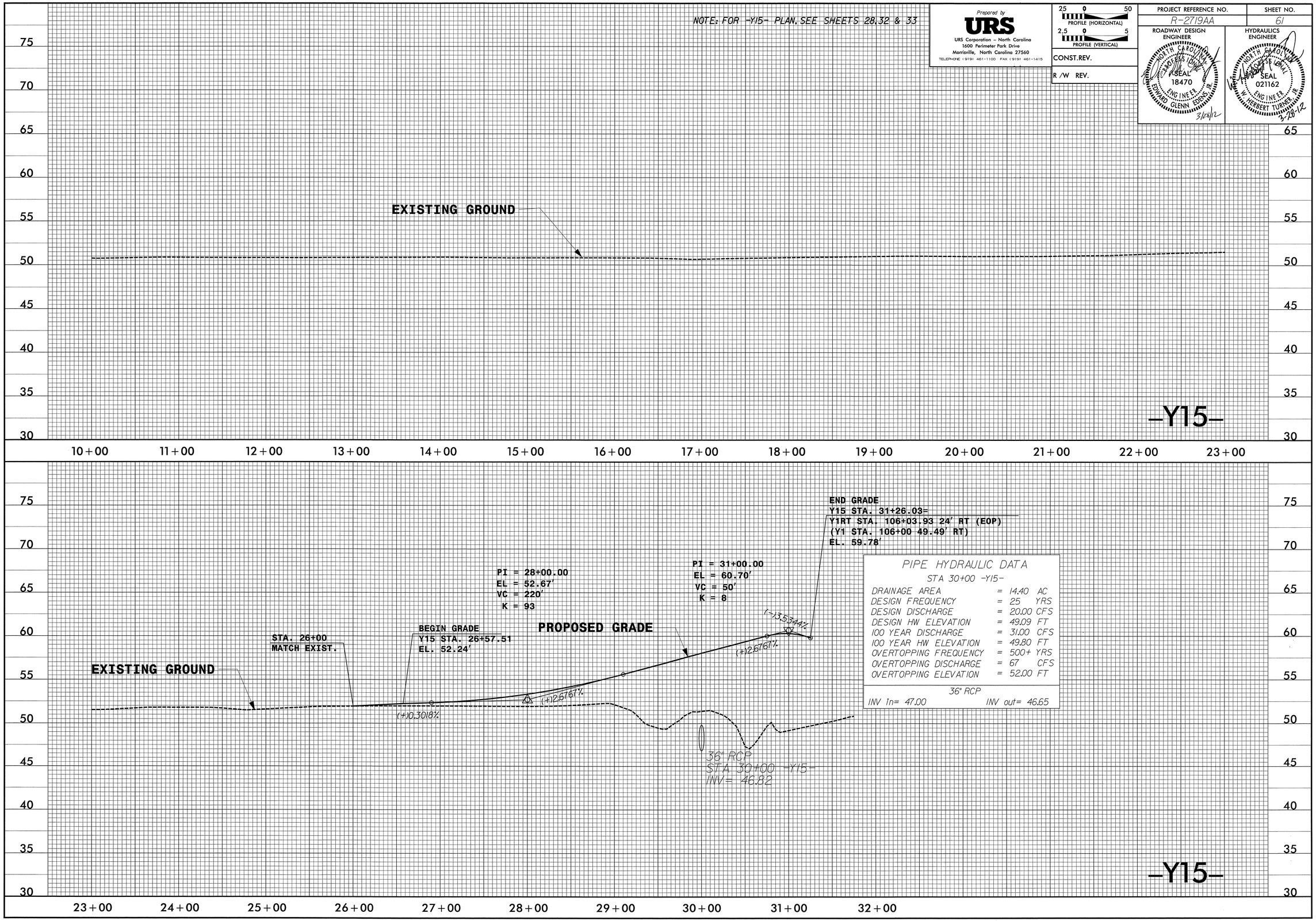
CONST.REV.

R /W REV.

PROJECT REFERENCE NO.	SHEET NO.
R-2719AA	61

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 18470 ENGINEER EDWARD GLENN EDENS, JR.
3/28/12

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 021162 ENGINEER W. HERBERT TURNER, JR.
3-28-12



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URS Corporation – North Carolina
1600 Perimeter Park Drive
Morrisville, North Carolina 27560
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25 0 50
PROFILE (HORIZONTAL)
2.5 0 5
PROFILE (VERTICAL)

CONST.REV.

R /W REV.

PROJECT REFERENCE NO.	SHEET NO.
R-2719AA	62

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 18470 ENGINEER EDWARD GLENN EDENS, III
3/28/12

HYDRAULICS ENGINEER

PIPE HYDRAULIC DATA
STA 10+20 -SVRD1-

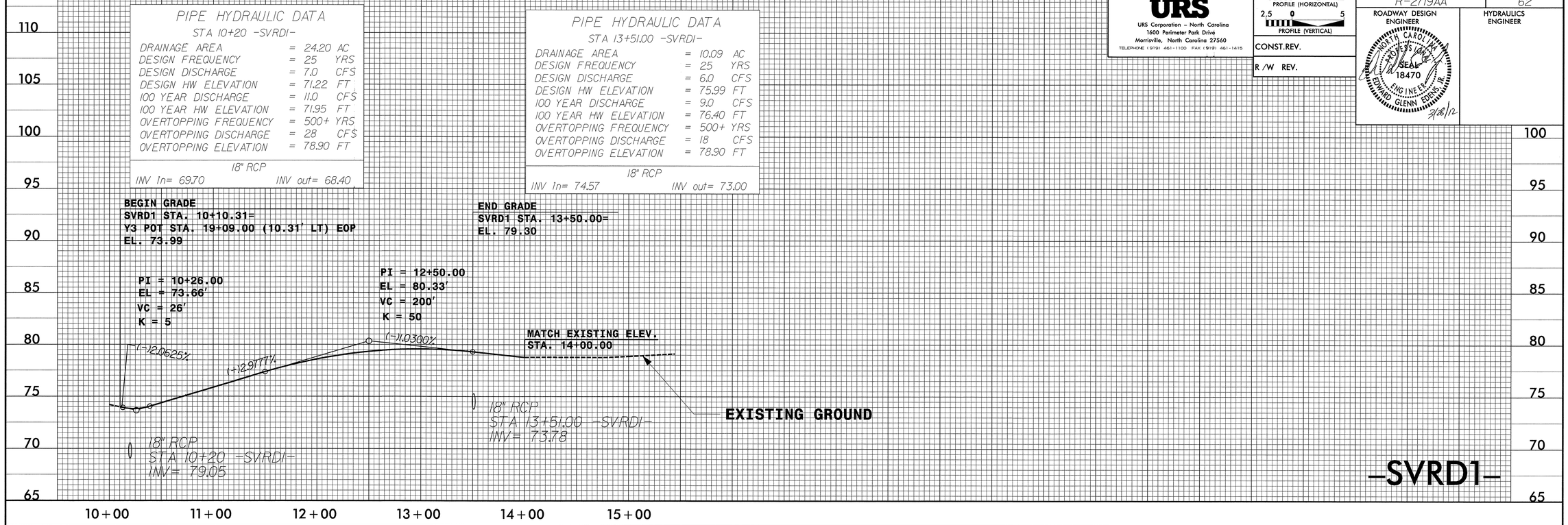
DRAINAGE AREA	=	24.20	AC
DESIGN FREQUENCY	=	25	YRS
DESIGN DISCHARGE	=	7.0	CFS
DESIGN HW ELEVATION	=	71.22	FT
100 YEAR DISCHARGE	=	11.0	CFS
100 YEAR HW ELEVATION	=	71.95	FT
OVERTOPPING FREQUENCY	=	500+	YRS
OVERTOPPING DISCHARGE	=	28	CFS
OVERTOPPING ELEVATION	=	78.90	FT

18" RCP
INV in= 69.70 INV out= 68.40

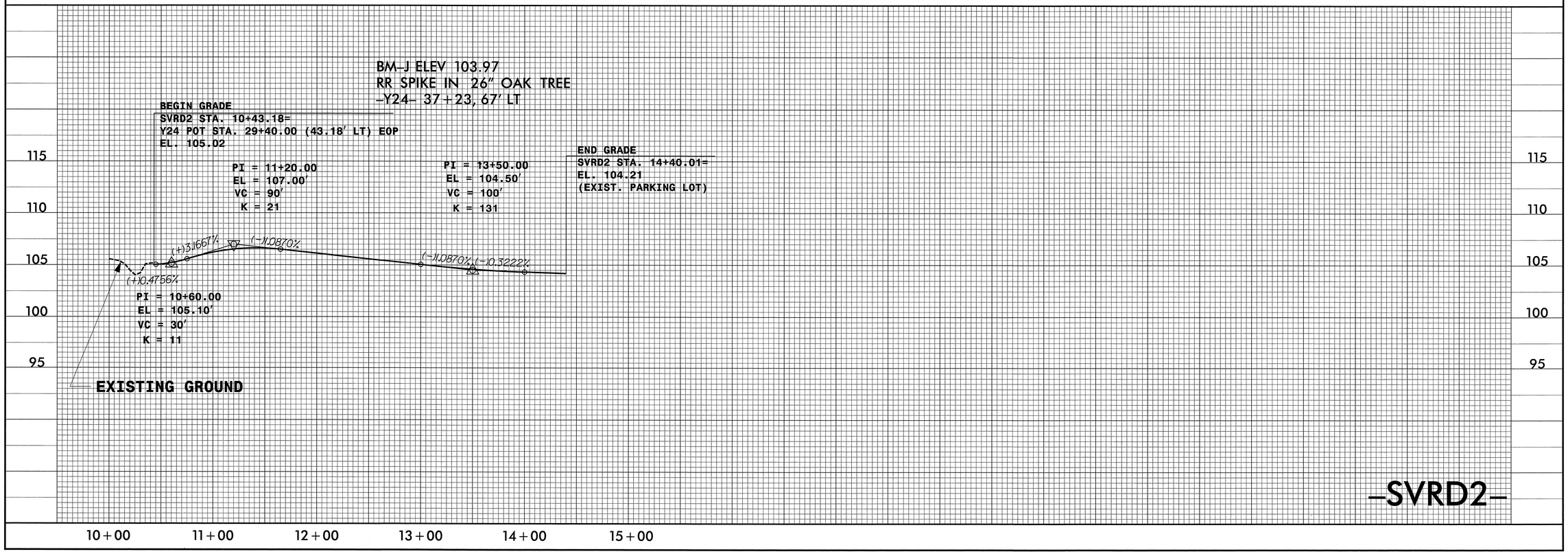
PIPE HYDRAULIC DATA
STA 13+51.00 -SVRD1-

DRAINAGE AREA	=	10.09	AC
DESIGN FREQUENCY	=	25	YRS
DESIGN DISCHARGE	=	6.0	CFS
DESIGN HW ELEVATION	=	75.99	FT
100 YEAR DISCHARGE	=	9.0	CFS
100 YEAR HW ELEVATION	=	76.40	FT
OVERTOPPING FREQUENCY	=	500+	YRS
OVERTOPPING DISCHARGE	=	18	CFS
OVERTOPPING ELEVATION	=	78.90	FT

18" RCP
INV in= 74.57 INV out= 73.00



-SVRD1-



-SVRD2-

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URS Corporation - North Carolina
1600 Perimeter Park Drive
Morrisville, North Carolina 27560
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25 0 50
PROFILE (HORIZONTAL)
2.5 0 5
PROFILE (VERTICAL)

CONST.REV.

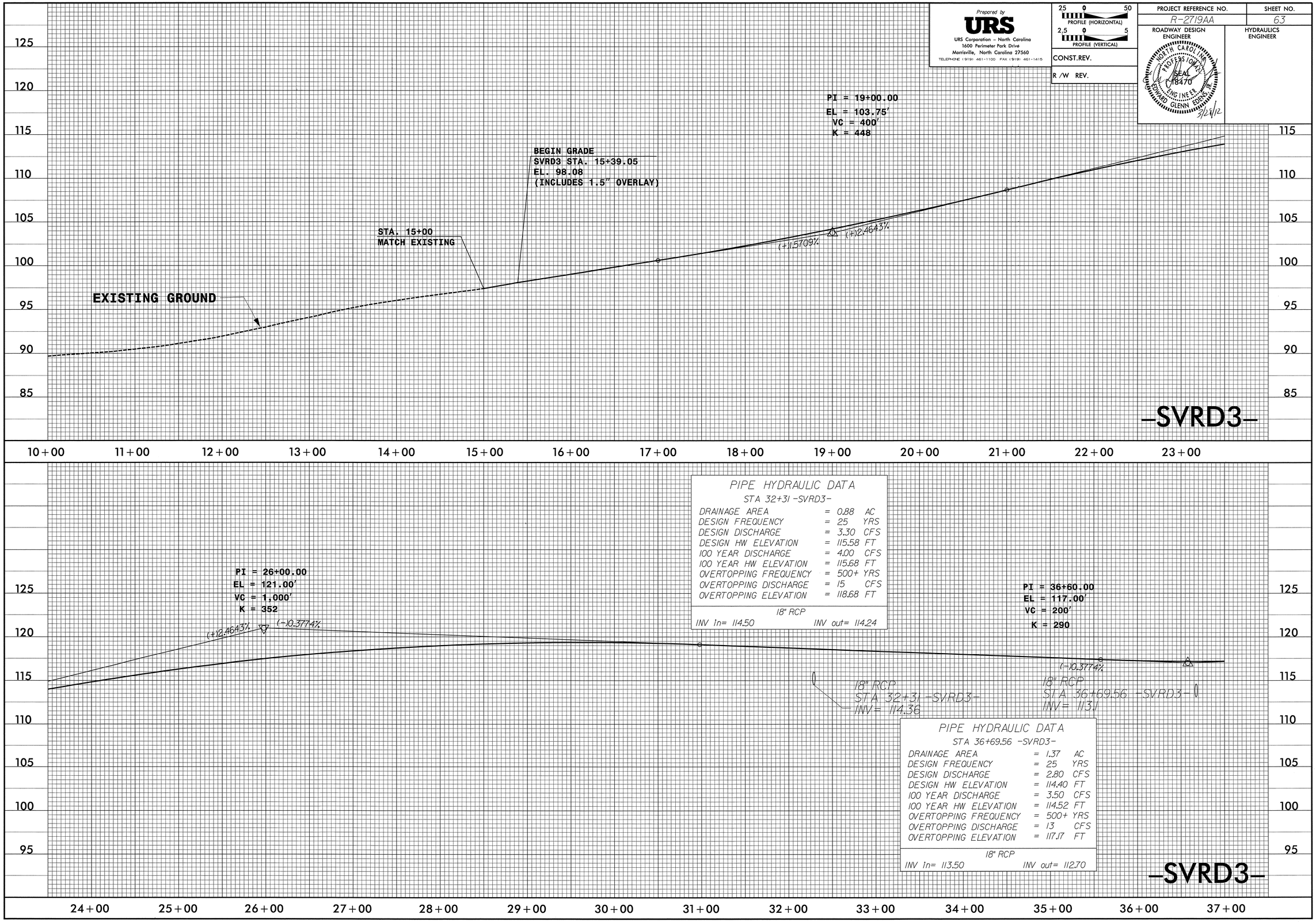
R /W REV.

PROJECT REFERENCE NO.	SHEET NO.
R-2719AA	63

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 18470 ENGINEER EDWARD GLENN EDRINGTON III
5/28/12



PIPE HYDRAULIC DATA
STA 32+31 -SVRD3-

DRAINAGE AREA	=	0.88	AC
DESIGN FREQUENCY	=	25	YRS
DESIGN DISCHARGE	=	3.30	CFS
DESIGN HW ELEVATION	=	115.58	FT
100 YEAR DISCHARGE	=	4.00	CFS
100 YEAR HW ELEVATION	=	115.68	FT
OVERTOPPING FREQUENCY	=	500+	YRS
OVERTOPPING DISCHARGE	=	15	CFS
OVERTOPPING ELEVATION	=	118.68	FT

18" RCP
INV In= 114.50 INV out= 114.24

PIPE HYDRAULIC DATA
STA 36+69.56 -SVRD3-

DRAINAGE AREA	=	1.37	AC
DESIGN FREQUENCY	=	25	YRS
DESIGN DISCHARGE	=	2.80	CFS
DESIGN HW ELEVATION	=	114.40	FT
100 YEAR DISCHARGE	=	3.50	CFS
100 YEAR HW ELEVATION	=	114.52	FT
OVERTOPPING FREQUENCY	=	500+	YRS
OVERTOPPING DISCHARGE	=	13	CFS
OVERTOPPING ELEVATION	=	117.17	FT

18" RCP
INV In= 113.50 INV out= 112.70

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1600 Perimeter Park Drive
Morrisville, North Carolina 27560
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25 0 50
PROFILE (HORIZONTAL)
2.5 0 5
PROFILE (VERTICAL)

CONST.REV.

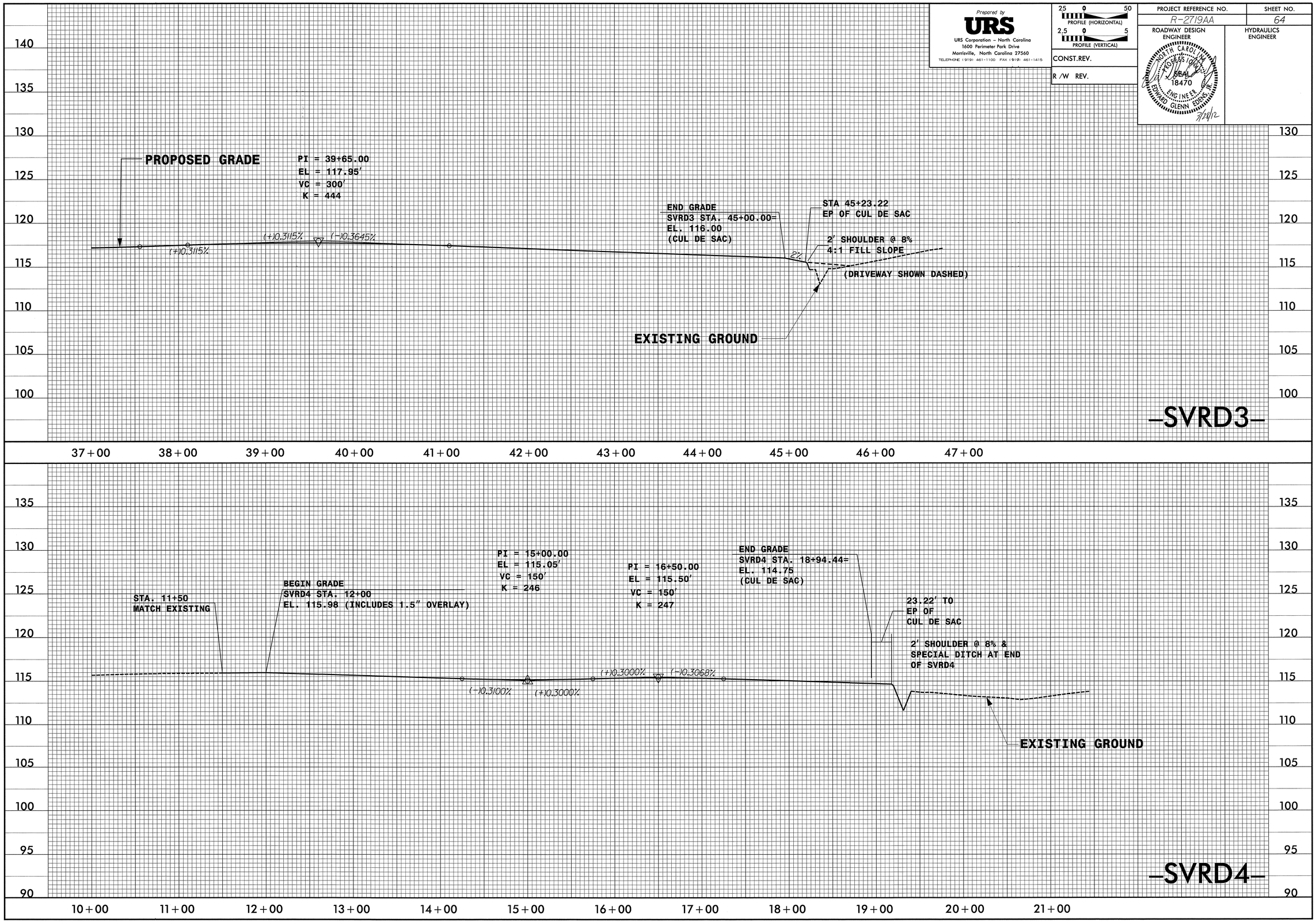
R /W REV.

PROJECT REFERENCE NO.	SHEET NO.
R-2719AA	64

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 18470 ENGINEER EDWARD GLENN EDENS, III
3/20/12



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25 0 50
PROFILE (HORIZONTAL)
2.5 0 5
PROFILE (VERTICAL)

CONST.REV.

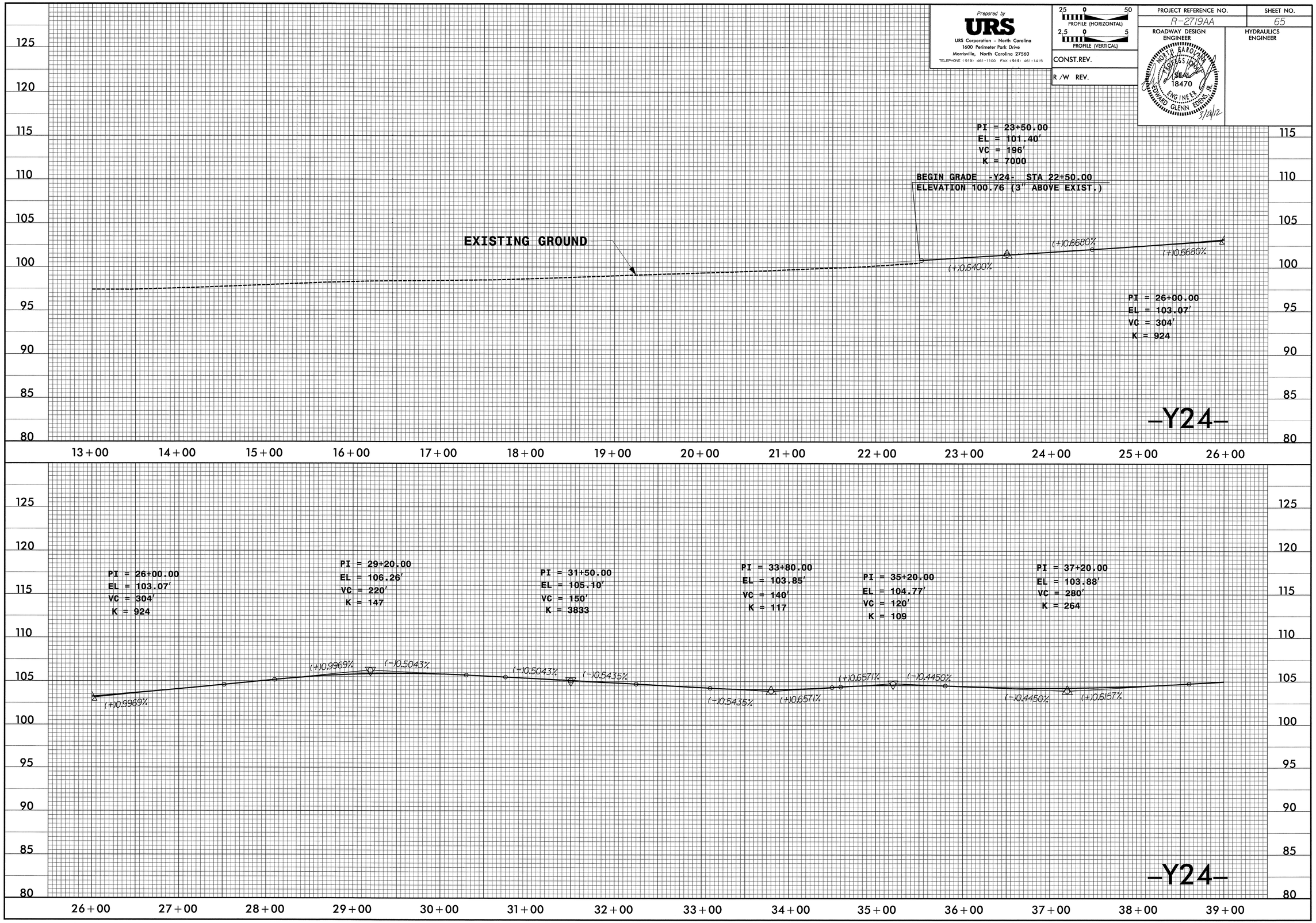
R /W REV.

PROJECT REFERENCE NO.	SHEET NO.
R-2719AA	65

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 18470 ENGINEER EDWARD GLENN EDENS, III 3/28/12



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25 0 50
PROFILE (HORIZONTAL)
2.5 0 5
PROFILE (VERTICAL)

CONST.REV.

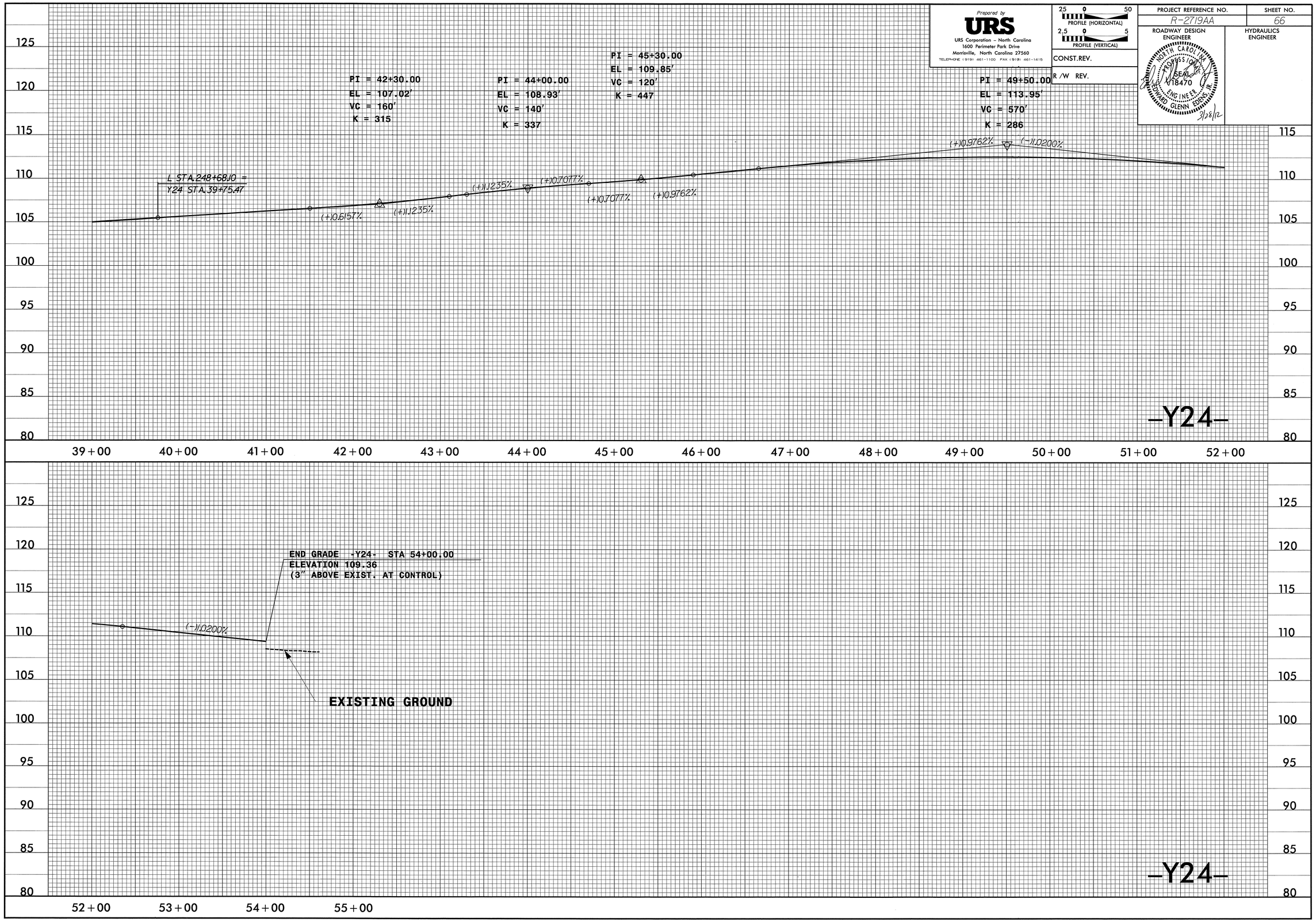
R /W REV.

PROJECT REFERENCE NO.	SHEET NO.
R-2719AA	66

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 018470 ENGINEER EDWARD GLENN EDENS, III
3/28/12



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25 0 50 PROFILE (HORIZONTAL)
2.5 0 5 PROFILE (VERTICAL)

CONST.REV.

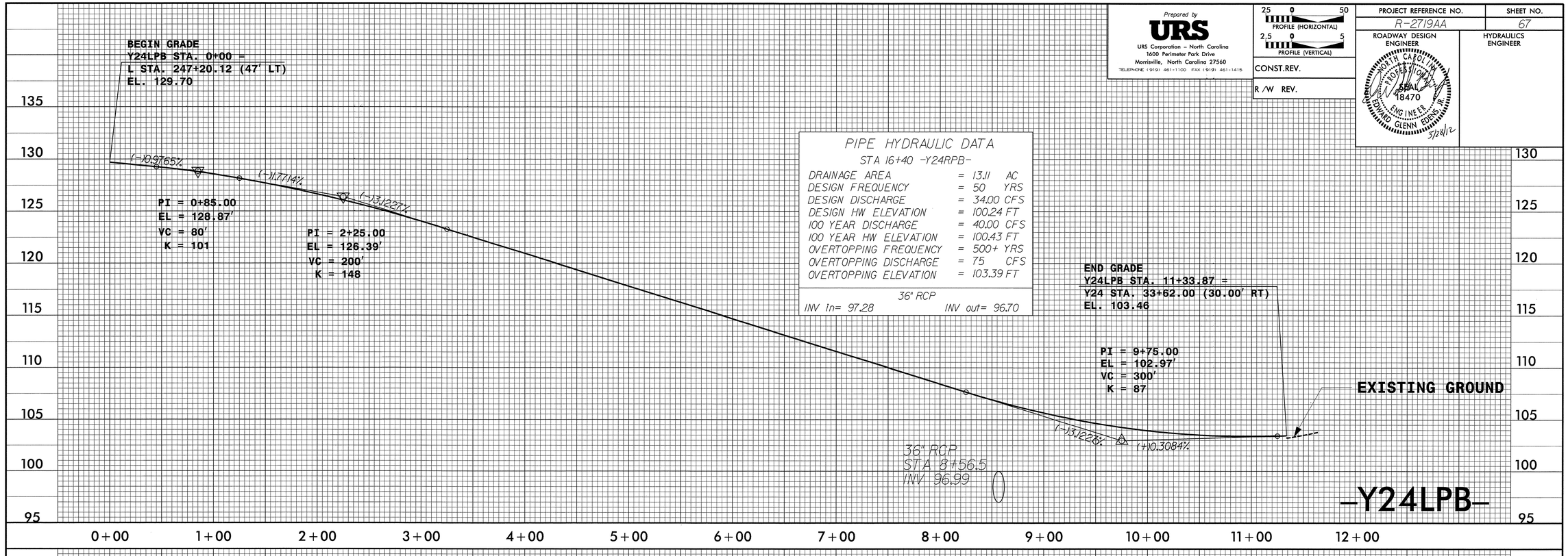
R /W REV.

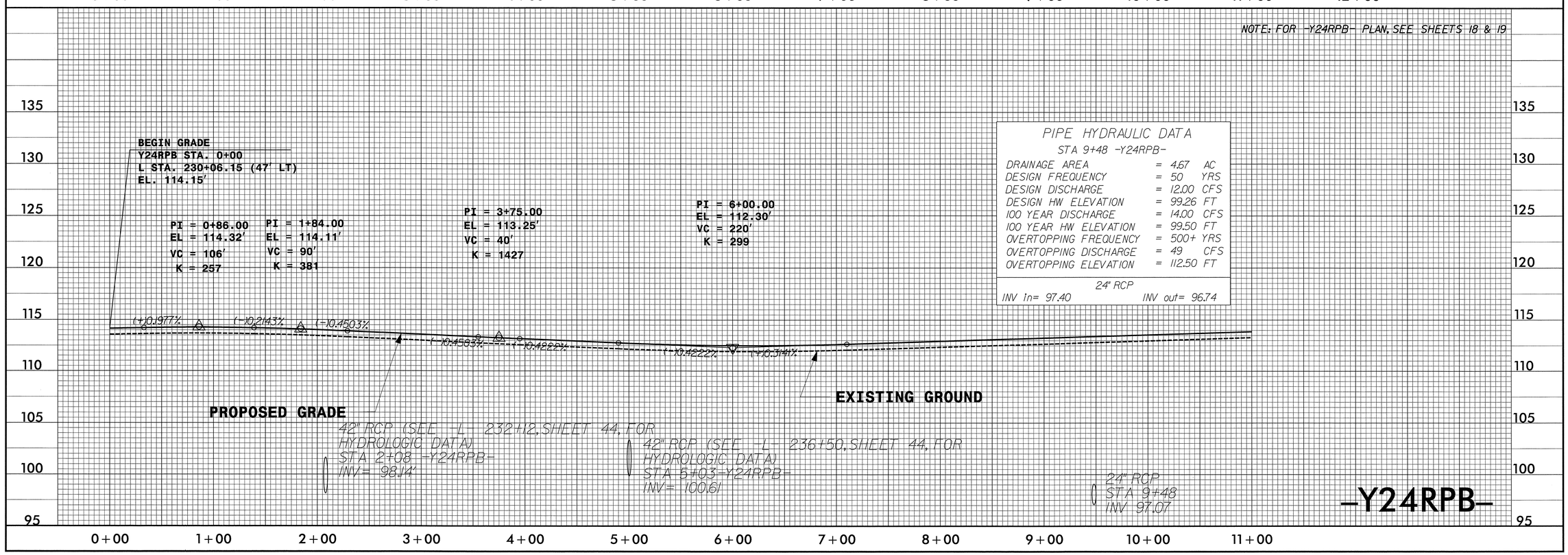
PROJECT REFERENCE NO.	SHEET NO.
R-2719AA	67

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 18470 ENGINEER EDWARD GLENN EDENS, III
5/28/12

HYDRAULICS ENGINEER





NOTE: FOR -Y24RPB- PLAN, SEE SHEET 19

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25 0 50
PROFILE (HORIZONTAL)
2.5 0 5
PROFILE (VERTICAL)

CONST.REV.

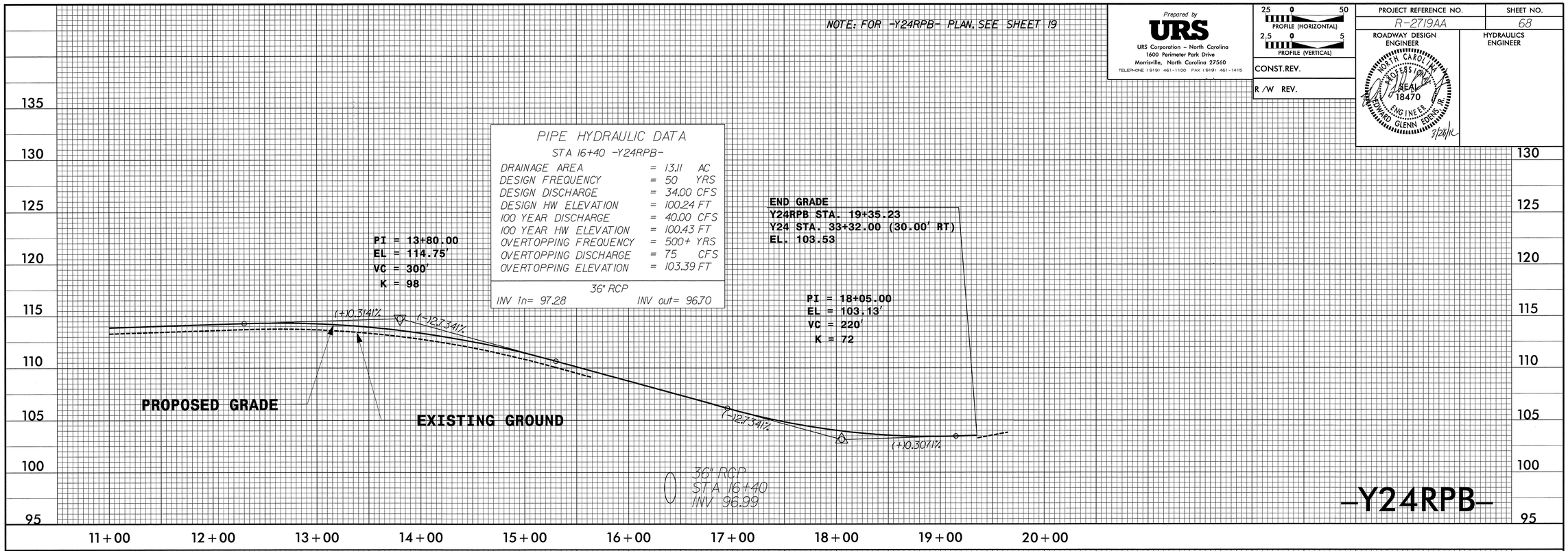
R /W REV.

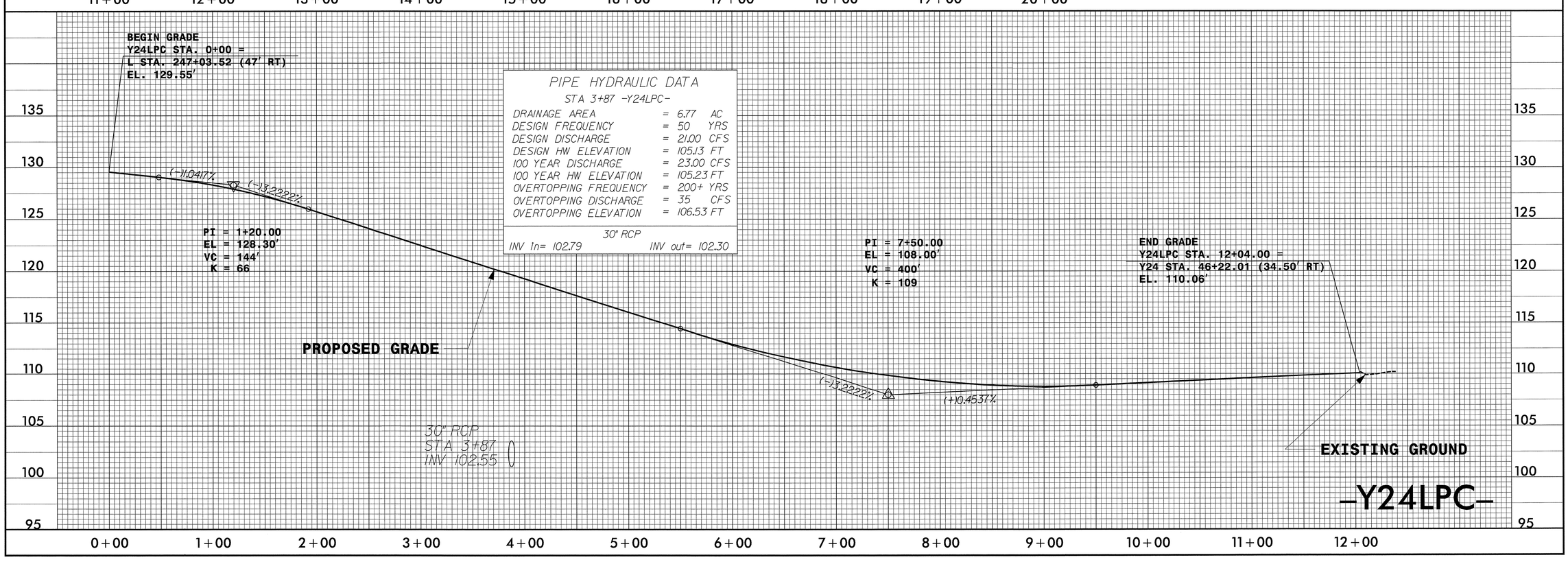
PROJECT REFERENCE NO.	SHEET NO.
R-2719AA	68

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 18470 ENGINEER EDWARD GLENN EDENS, JR. 3/28/12





NOTE: FOR -Y24RPC- PLAN, SEE SHEETS 18 & 19

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URS
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1600 Perimeter Park Drive
Morrisville, North Carolina 27560
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25 0 50 PROFILE (HORIZONTAL)
2.5 0 5 PROFILE (VERTICAL)

CONST.REV.

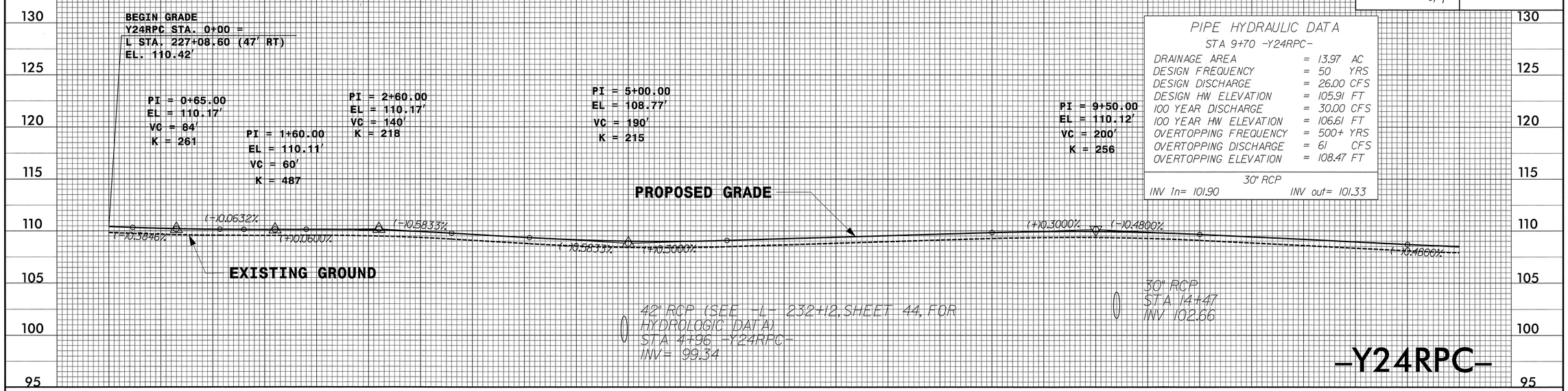
R /W REV.

PROJECT REFERENCE NO.	SHEET NO.
R-2719AA	69

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

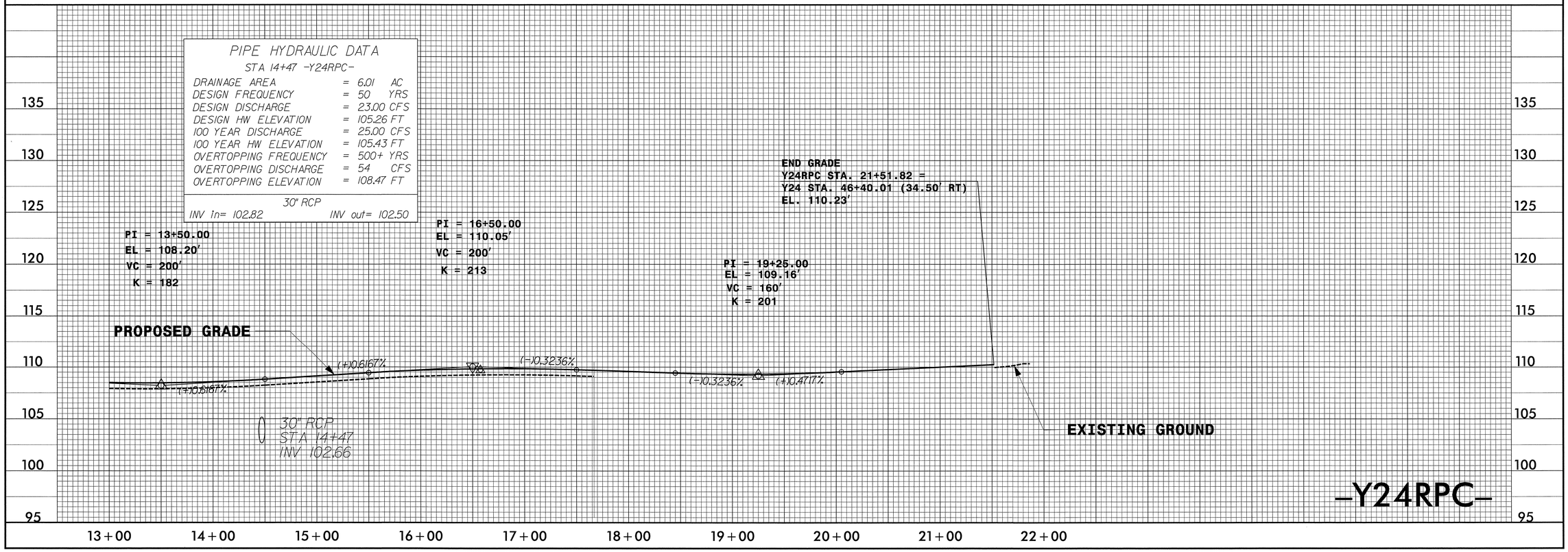
NORTH CAROLINA PROFESSIONAL SEAL 18470 ENGINEER EDWARD GLENN EDENS, III
3/26/12



PIPE HYDRAULIC DATA
STA 9+70 -Y24RPC-

DRAINAGE AREA	= 13.97	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 26.00	CFS
DESIGN HW ELEVATION	= 105.91	FT
100 YEAR DISCHARGE	= 30.00	CFS
100 YEAR HW ELEVATION	= 106.61	FT
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING DISCHARGE	= 61	CFS
OVERTOPPING ELEVATION	= 108.47	FT

30" RCP
INV In= 101.90 INV out= 101.33



PIPE HYDRAULIC DATA
STA 14+47 -Y24RPC-

DRAINAGE AREA	= 6.01	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 23.00	CFS
DESIGN HW ELEVATION	= 105.26	FT
100 YEAR DISCHARGE	= 25.00	CFS
100 YEAR HW ELEVATION	= 105.43	FT
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING DISCHARGE	= 54	CFS
OVERTOPPING ELEVATION	= 108.47	FT

30" RCP
INV In= 102.82 INV out= 102.50

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1600 Perimeter Park Drive
Morrisville, North Carolina 27560
TELEPHONE (919) 461-1100 FAX (919) 461-1415

25 0 50
PROFILE (HORIZONTAL)
2.5 0 5
PROFILE (VERTICAL)

CONST.REV.

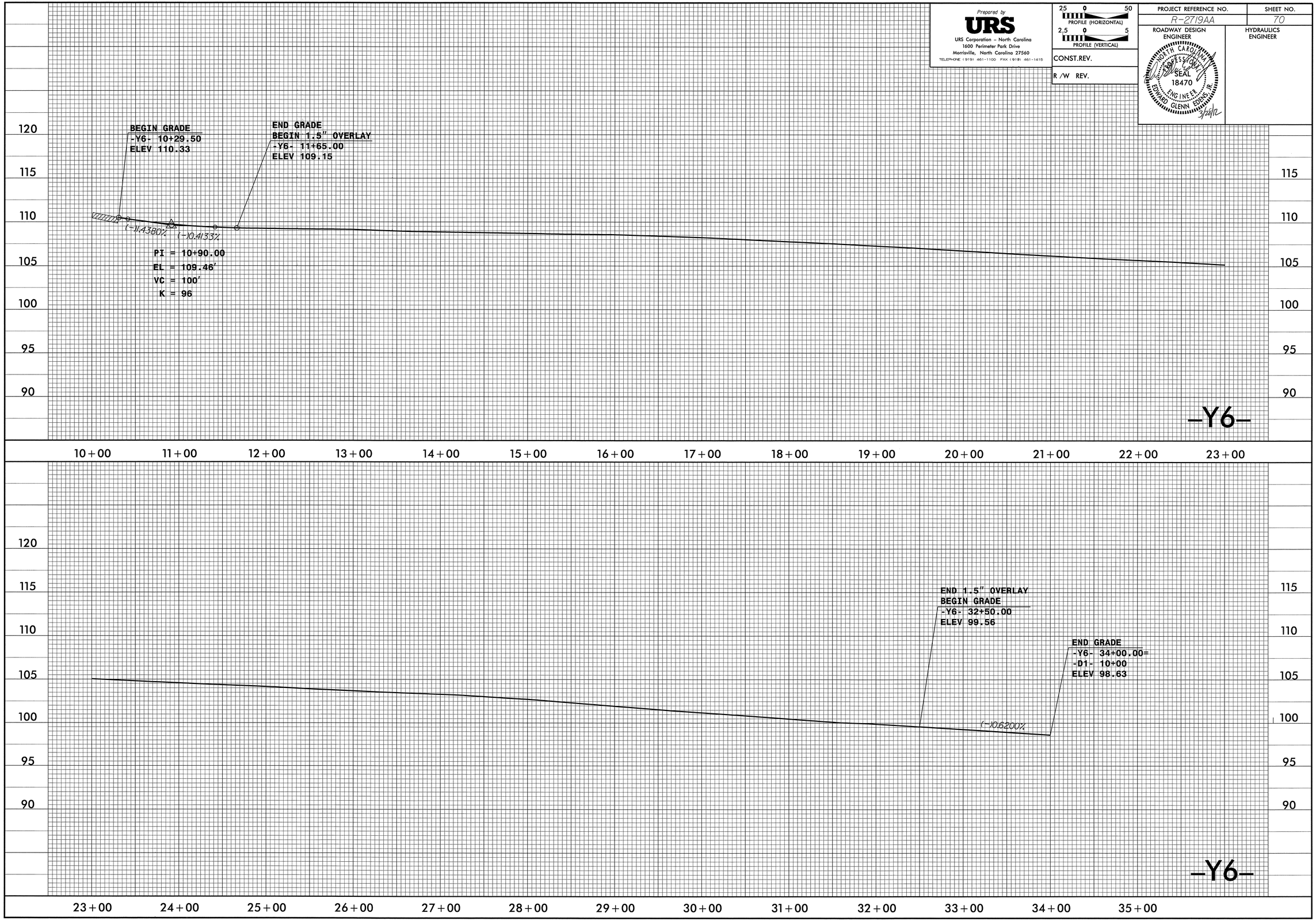
R /W REV.

PROJECT REFERENCE NO.	SHEET NO.
R-2719AA	70

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 18470 ENGINEER EDWARD GLENN EDENS, III
3/28/12

HYDRAULICS ENGINEER



Prepared by
URS
URS Corporation – North Carolina
1600 Perimeter Park Drive
Morrisville, North Carolina 27560
TELEPHONE (919) 461-1100 FAX (919) 461-1415

25 0 50 PROFILE (HORIZONTAL)
2.5 0 5 PROFILE (VERTICAL)

CONST.REV.

R /W REV.

PROJECT REFERENCE NO.	SHEET NO.
R-2719AA	71

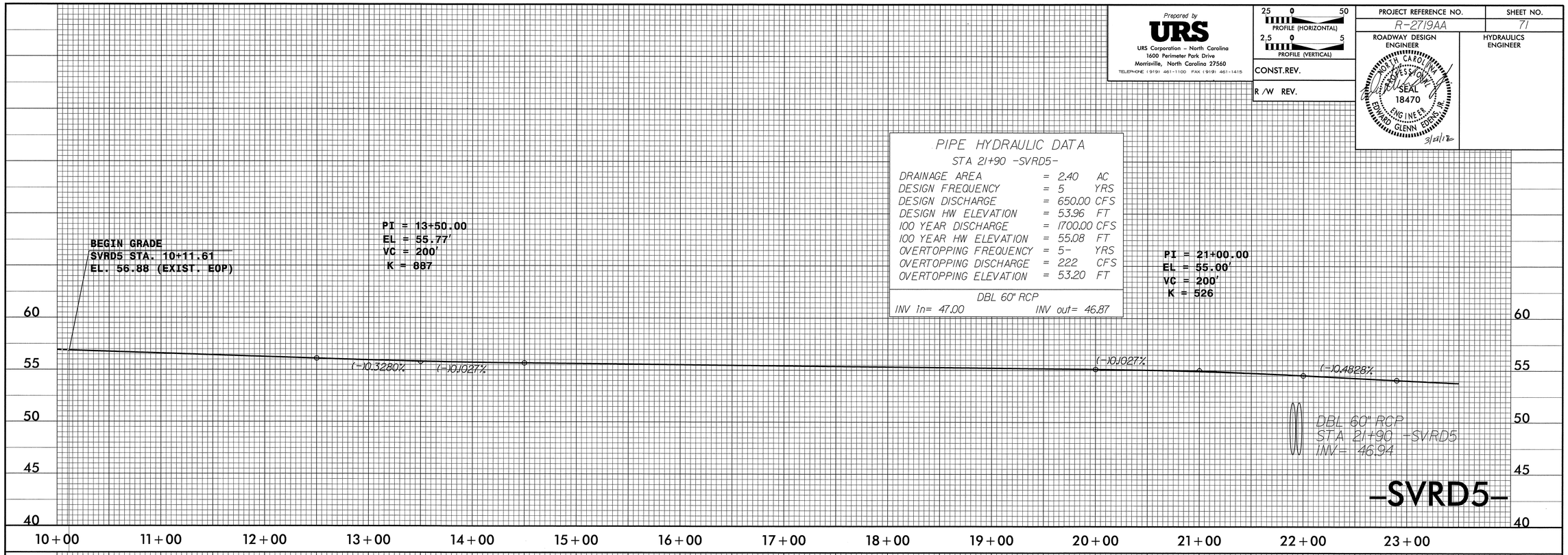
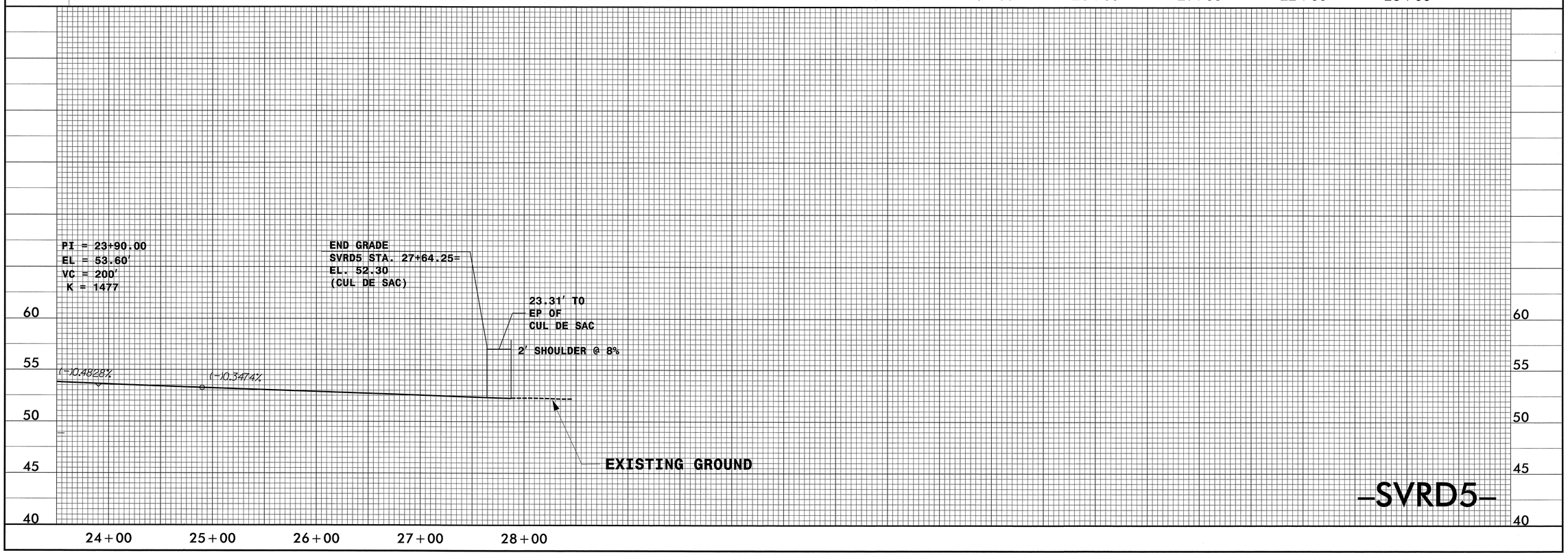
ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 18470 ENGINEER EDWARD GLENN EDENS, III
3/28/12

HYDRAULICS ENGINEER

PIPE HYDRAULIC DATA

STA 21+90 -SVRD5-

DRAINAGE AREA	=	2.40	AC
DESIGN FREQUENCY	=	5	YRS
DESIGN DISCHARGE	=	650.00	CFS
DESIGN HW ELEVATION	=	53.96	FT
100 YEAR DISCHARGE	=	1700.00	CFS
100 YEAR HW ELEVATION	=	55.08	FT
OVERTOPPING FREQUENCY	=	5-	YRS
OVERTOPPING DISCHARGE	=	222	CFS
OVERTOPPING ELEVATION	=	53.20	FT

DBL 60" RCP
INV In= 47.00 INV out= 46.87