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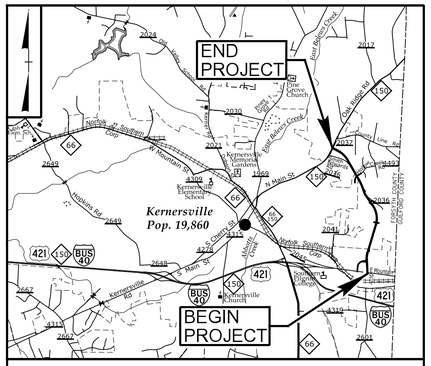
TIP PROJECT: U–4734

CONTRACT: C204124

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



VICINITY MAP

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

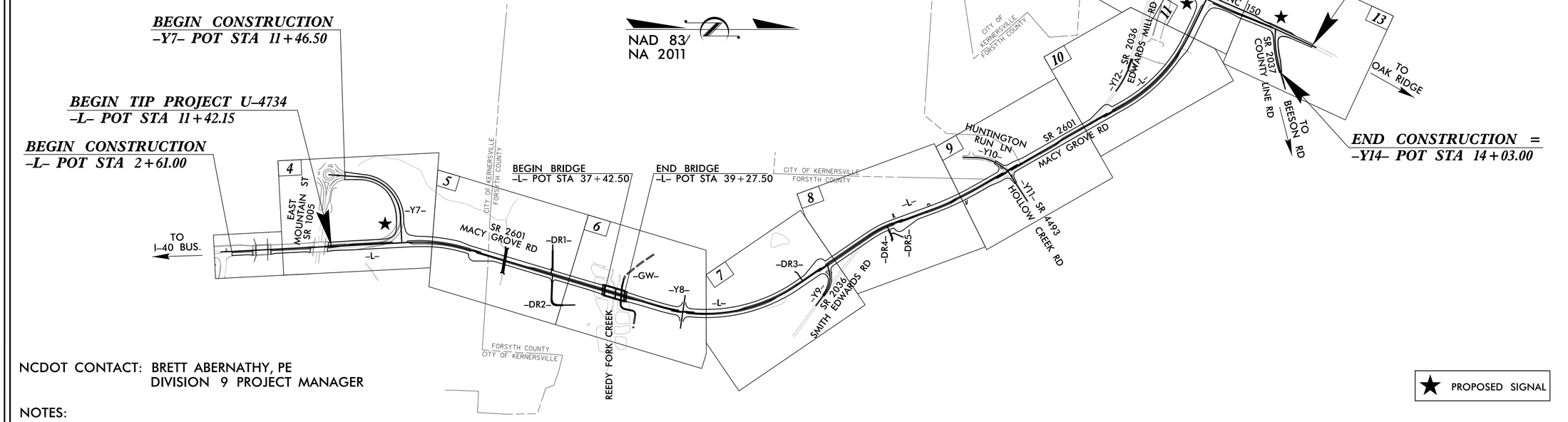
FORSYTH COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U–4734	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
36600.1.2	STP–2601(3)	PE
36600.2.1		RW
36600.2.2		UTIL
36600.3.1		CONST

LOCATION: KERNERSVILLE – SR 2601 (MACY GROVE RD) EXTENSION FROM NORTH OF SR 1005 (EAST MOUNTAIN ST) TO NC 150 (NORTH MAIN ST)

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



NCDOT CONTACT: BRETT ABERNATHY, PE
DIVISION 9 PROJECT MANAGER

NOTES:

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

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

GRAPHIC SCALES

PLANS: 50 25 0 50 100
PROFILE (HORIZONTAL): 50 25 0 50 100
PROFILE (VERTICAL): 10 5 0 10 20

DESIGN DATA

ADT (2018) = 7,400
ADT (2038) = 10,300
K = 11 %
D = 55 %
T = 6 % *
V = 50 MPH
* TTST = 2% DUAL 4%
FUNC CLASS = COLLECTOR
REGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT U–4734 = 1.694 MILES
LENGTH STRUCTURES TIP PROJECT U–4734 = 0.035 MILES
TOTAL LENGTH TIP PROJECT U–4734 = 1.729 MILES

Prepared for the North Carolina Department of Transportation In the office of:

HDR Engineering, Inc. of the Carolinas
555 Fayetteville St, Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116

2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: JAN 20, 2017

LETTING DATE: JUNE 19, 2018

DENA C. SNEAD, PE
PROJECT ENGINEER

JORDAN C. BOND, PE
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

TRENTON J. CORMIER
DocuSigned by: 4/26/2018
SIGNATURE: P.E.
SEAL 034364 NORTH CAROLINA PROFESSIONAL ENGINEER TRENTON J. CORMIER

ROADWAY DESIGN ENGINEER

DENA C. SNEAD
DocuSigned by: 4/25/2018
SIGNATURE: P.E.
SEAL 032074 NORTH CAROLINA PROFESSIONAL ENGINEER DENA C. SNEAD

DIVISION OF HIGHWAYS

STATE OF NORTH CAROLINA

4/25/2018
U-4734_RDY_TSH.dgn
HDR ENGINEERING, INC.

ICA Engineering, Inc.
555 Fayetteville St,
Suite 900
Raleigh, NC 27601
NC License No: F-0258

PROJECT REFERENCE NO.	SHEET NO.
U-4734	1A
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 032074 ENGINEER DENA C. SNEAD

DocuSigned by: 4/25/2018
Dena C. Snead

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

INDEX OF SHEETS

GENERAL NOTES:

2018 SPECIFICATIONS
EFFECTIVE: 01-16-2018
REVISED:

GRADING AND SURFACING OR RESURFACING AND WIDENING:

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

CLEARING:

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

SUPERELEVATION:

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

SHOULDER CONSTRUCTION:

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

SUBSURFACE DRAINS:

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

DRIVEWAYS:

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

STREET TURNOUT:

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

GUARDRAIL:

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

TEMPORARY SHORING:

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

END BENTS:

THE ENGINEER SHALL CHECK THE STRUCTURE END BENT PLANS, DETAILS, AND CROSS-SECTION PRIOR TO SETTING OF THE SLOPE STAKES FOR THE EMBANKMENT OR EXCAVATION APPROACHING A BRIDGE.

UTILITIES:

UTILITY OWNERS ON THIS PROJECT ARE

Winston-Salem/ Forsyth County Utilities Commission, Piedmont Natural Gas.

Duke Energy, Century Link, and TWC/Charter/Spectrum.

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

RIGHT-OF-WAY MARKERS:

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

EFF. 01-16-2018
REV.

2018 ROADWAY ENGLISH STANDARD DRAWINGS

The following Roadway Standards as appear in "Roadway Standard Drawings" Highway Design Branch - N. C. Department of Transportation - Raleigh, N. C., Dated January, 2018 are applicable to this project and by reference hereby are considered a part of these plans:

STD.NO.	TITLE
DIVISION 2 - EARTHWORK	
200.03	Method of Clearing - Method III
225.02	Guide for Grading Subgrade - Secondary and Local
225.04	Method of Obtaining Superelevation - Two Lane Pavement
225.06	Method of Grading Sight Distance at Intersections
235.01	Embankment Monitoring
DIVISION 3 - PIPE CULVERTS	
300.01	Method of Pipe Installation
310.10	Driveway Pipe Construction
DIVISION 4 - MAJOR STRUCTURES	
422.01	Bridge Approach Fills - Type I Standard Approach Fill
422.03	Reinforced Bridge Approach Fills - Type A Alternate Approach Fill for Integral Abutment
DIVISION 5 - SUBGRADE, BASES AND SHOULDERS	
560.01	Method of Shoulder Construction - High Side of Superelevated Curve - Method I
DIVISION 8 - INCIDENTALS	
806.01	Concrete Right-of-Way Marker
806.02	Granite Right-of-Way Marker
806.03	Concrete Contol of Access Marker
815.02	Subsurface Drain
838.01	Concrete Endwall for Single and Double Pipe Culverts - 15" thru 48" Pipe 90 Skew
838.11	Brick Endwall for Single and Double Pipe Culverts - 15" thru 48" Pipe 90 Skew
840.00	Concrete Base Pad for Drainage Structures
840.01	Brick Catch Basin - 12" thru 54" Pipe
840.02	Concrete Catch Basin - 12" thru 54" Pipe
840.03	Frame, Grates and Hood - for Use on Standard Catch Basin
840.14	Concrete Drop Inlet - 12" thru 30" Pipe
840.15	Brick Drop Inlet - 12" thru 30" Pipe
840.16	Drop Inlet Frame and Grates - for use with Std. Dwg 840.14 and 840.15
840.17	Concrete Grated Drop Inlet Type 'A' - 12" thru 72" Pipe
840.18	Concrete Grated Drop Inlet Type 'B' - 12" thru 36" Pipe
840.19	Concrete Grated Drop Inlet Type 'D' - 12" thru 36" Pipe
840.22	Frames and Wide Slot Sag Grates
840.24	Frames and Narrow Slot Sag Grates
840.25	Anchorage for Frames - Brick or Concrete or Precast
840.26	Brick Grated Drop Inlet Type 'A' - 12" thru 72" Pipe
840.27	Brick Grated Drop Inlet Type 'B' - 12" thru 36" Pipe
840.28	Brick Grated Drop Inlet Type 'D' - 12" thru 36" Pipe
840.29	Frames and Narrow Slot Flat Grates
840.31	Concrete Junction Box - 12" thru 66" Pipe
840.32	Brick Junction Box - 12" thru 66" Pipe
840.45	Precast Drainage Structure
840.54	Manhole Frame and Cover
840.66	Drainage Structure Steps
840.72	Pipe Collar
846.01	Concrete Curb, Gutter and Curb & Gutter
848.02	Driveway Turnout - Radius Type
848.04	Street Turnout
852.01	Concrete Islands
852.04	Method for Placement of Drop Inlets in Grassed Median - Using 1'-6" Curb and Gutter
852.06	Method for Placement of Drop Inlets in Concrete Islands
852.10	Median Construction - with Curb and Gutter
862.01	Guardrail Placement
862.02	Guardrail Installation
862.03	Structure Anchor Units (Special Detail for Type III Anchor Units Sheets 1 of 7 and 2 of 7)
866.02	Woven Wire Fence - with Wood Post
866.03	Woven Wire Fence - with Steel 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

4/25/2018
U-4734_ROW_TSH_01A.dgn
HDR ENGINEERING, INC.

04/06/15

PROJECT REFERENCE NO.	SHEET NO.
U-4734	1B

STATE OF NORTH CAROLINA, DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

Note: Not to Scale **S.U.E. = Subsurface Utility Engineering*

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
- Existing Historic Property Boundary — HPB
- Known Contamination Area: Soil
- Potential Contamination Area: Soil
- Known Contamination Area: Water
- Potential Contamination Area: Water
- Contaminated Site: Known or Potential

BUILDINGS AND OTHER CULTURE:

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

HYDROLOGY:

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

RAILROADS:

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

RIGHT OF WAY:

- Baseline Control Point
- Existing Right of Way Marker
- Existing Right of Way Line
- Proposed Right of Way Line — RW
- Proposed Right of Way Line with Iron Pin and Cap Marker — RW
- Proposed Right of Way Line with Concrete or Granite R/W Marker — RW
- Proposed Control of Access Line with Concrete C/A Marker — CA
- Existing Control of Access — CA
- Proposed Control of Access — CA
- Existing Easement Line — E
- Proposed Temporary Construction Easement — E
- Proposed Temporary Drainage Easement — TDE
- Proposed Permanent Drainage Easement — PDE
- Proposed Permanent Drainage / Utility Easement — DUE
- Proposed Permanent Utility Easement — PUE
- Proposed Temporary Utility Easement — TUE
- Proposed Aerial Utility Easement — AUE
- Proposed Permanent Easement with Iron Pin and Cap Marker

ROADS AND RELATED FEATURES:

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

VEGETATION:

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

EXISTING STRUCTURES:

MAJOR:

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

MINOR:

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

UTILITIES:

POWER:

- Existing Power Pole
- Proposed Power Pole
- Existing Joint Use Pole
- Proposed Joint Use Pole
- Power Manhole — P
- Power Line Tower
- Power Transformer
- U/G Power Cable Hand Hole
- H–Frame Pole
- U/G Power Line LOS B (S.U.E.*) — P
- U/G Power Line LOS C (S.U.E.*) — P
- U/G Power Line LOS D (S.U.E.*) — P

TELEPHONE:

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

WATER:

- Water Manhole — W
- Water Meter
- Water Valve
- Water Hydrant
- U/G Water Line LOS B (S.U.E*) — W
- U/G Water Line LOS C (S.U.E*) — W
- U/G Water Line LOS D (S.U.E*) — W
- Above Ground Water Line — A/G Water

TV:

- TV Pedestal — C
- TV Tower
- U/G TV Cable Hand Hole — HH
- U/G TV Cable LOS B (S.U.E.*) — TV
- U/G TV Cable LOS C (S.U.E.*) — TV
- U/G TV Cable LOS D (S.U.E.*) — TV
- U/G Fiber Optic Cable LOS B (S.U.E.*) — TV FO
- U/G Fiber Optic Cable LOS C (S.U.E.*) — TV FO
- U/G Fiber Optic Cable LOS D (S.U.E.*) — TV FO

GAS:

- Gas Valve
- Gas Meter
- U/G Gas Line LOS B (S.U.E.*) — G
- U/G Gas Line LOS C (S.U.E.*) — G
- U/G Gas Line LOS D (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
- SS Forced Main Line LOS B (S.U.E.*) — FSS
- SS Forced Main Line LOS C (S.U.E.*) — FSS
- SS Forced Main Line LOS D (S.U.E.*) — FSS

MISCELLANEOUS:

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

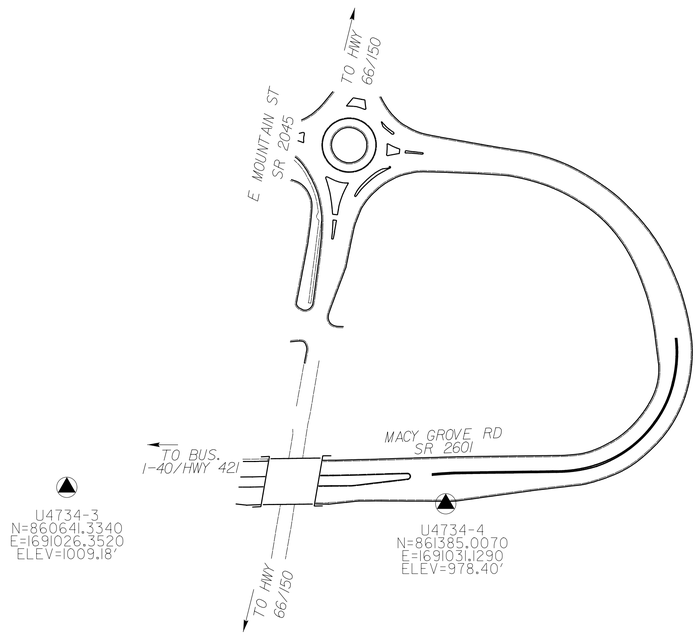
4/25/2016
U4734_RDY_TSH_01B.dgn
HDR ENGINEERING, INC.

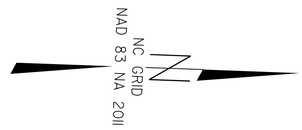
6/2/99

PROJECT REFERENCE NO.	SHEET NO.
U-4734	1C-1
Location and Surveys	

SURVEY CONTROL SHEET U-4734

W/ EXISTING CENTERLINE ALIGNMENTS PRIOR TO CONSTRUCTION





U4734-3
N=860641.3340
E=1691026.3520
ELEV=1009.18'

U4734-4
N=861385.0070
E=1691031.1290
ELEV=978.40'

BL-10
N=862126.0270
E=1691005.9610
ELEV.=966.86'

BL-11
N=862320.8980
E=1690932.0170
ELEV.=955.71'

BL-12
N=862604.1630
E=1690996.9530
ELEV.=921.72'

BL-13
N=862821.0340
E=1691143.4190
ELEV.=893.81'

BM#2
N=863486.8020
E=1691107.4650
ELEV.=924.01'

BL-14
N=863149.1220
E=1691235.6060
ELEV.=939.54'

BM#1
N=862861.6120
E=1691298.0100
ELEV.=898.38'

BL-15
N=863390.0390
E=1691312.0820
ELEV.=947.38'

BL-16
N=863948.3290
E=1691491.6840
ELEV.=891.63'

BL-17
N=864243.2460
E=1691548.0360
ELEV.=919.33'

BM#3
N=864001.2730
E=1691642.8350
ELEV.=891.20'

BL-18
N=864547.9630
E=1691656.0660
ELEV.=921.85'

MATCHLINE IC-2

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "U4734-1" WITH NAD 83/NA 2011 STATE PLANE GRID COORDINATES OF NORTHING: 865552.146(ft) EASTING: 1691621.319(ft) ELEVATION: 956.93(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.999947655
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "U4734-1" TO -L- STATION 10+00.00 IS S 07°47'12.1" W 4575.48'
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

NOTES:

1. PROJECT CONTROL WAS ESTABLISHED USING GNSS, THE GLOBAL NAVIGATION SATELLITE SYSTEM.
2. THE SURVEY CONTROL DATA FOR THIS PROJECT HAS BEEN COMPILED FROM VARIOUS SOURCES. IF FURTHER INFORMATION REGARDING PROJECT CONTROL IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

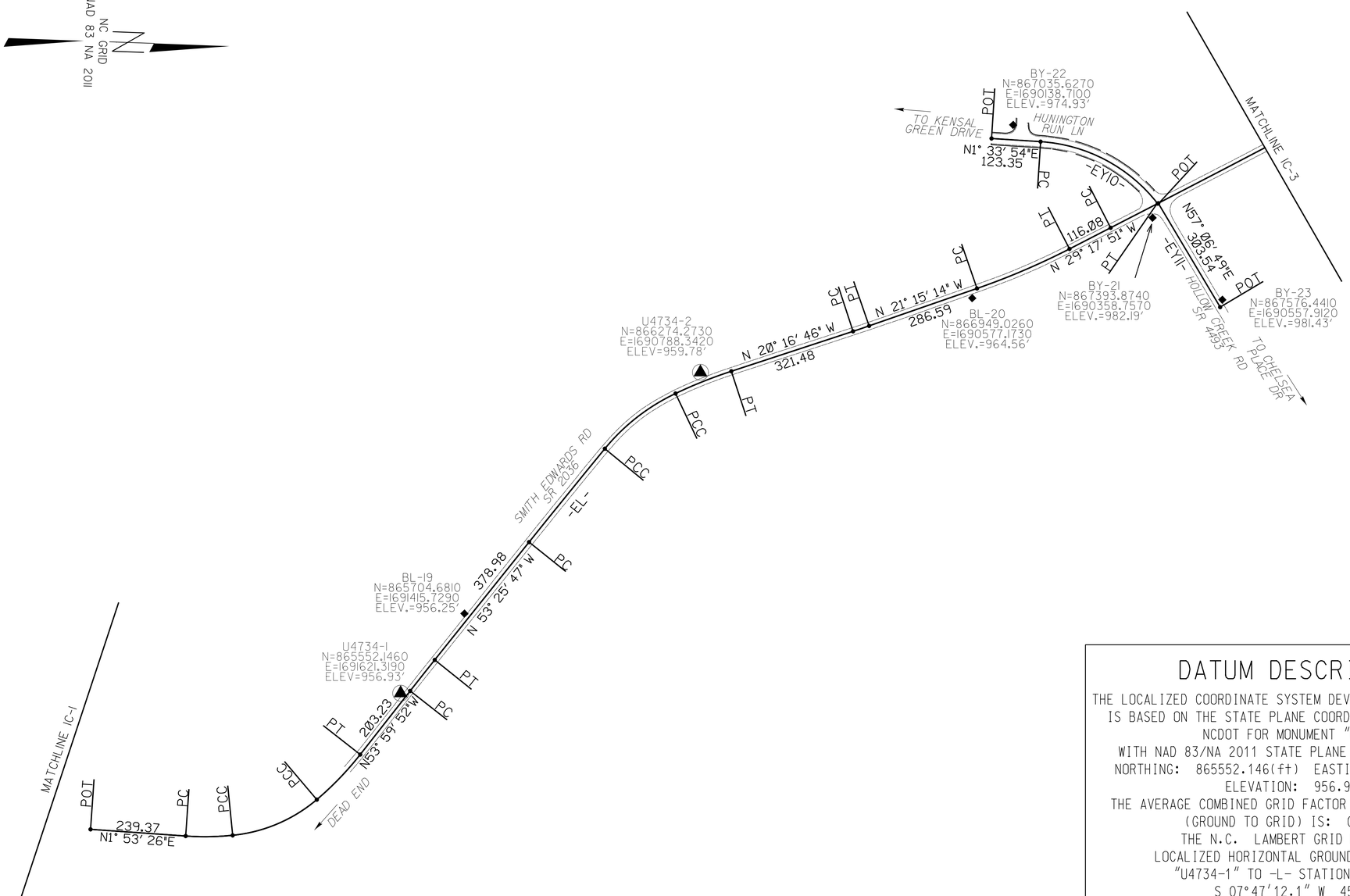
$$$$$$SYSTIME$$$$$$ $$$$$$DGN$$$$$$ $$$$$$USERNAME$$$$$$

PROJECT REFERENCE NO.	SHEET NO.
U-4734	1C-2
Location and Surveys	

SURVEY CONTROL SHEET U-4734

W/ EXISTING CENTERLINE ALIGNMENTS PRIOR TO CONSTRUCTION

NC GRID
NAD 83 NA 2011



DATUM DESCRIPTION

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ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
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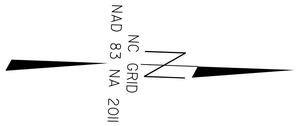
6/2/99

4/25/2018
J:\TIP\U4734\Roadway\Proj\Survey Control Sheets\U4734_LS_1c-2.dgn
HDR ENGINEERING INC.

PROJECT REFERENCE NO.	SHEET NO.
U-4734	1C-3
Location and Surveys	

SURVEY CONTROL SHEET U-4734

W/ EXISTING CENTERLINE ALIGNMENTS PRIOR TO CONSTRUCTION



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ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
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NOTES:

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PROJECT REFERENCE NO.	SHEET NO.
U-4734	1C-4
Location and Surveys	

SURVEY CONTROL SHEET U-4734

W/ EXISTING CENTERLINE ALIGNMENTS PRIOR TO CONSTRUCTION

BASELINE

BL

POINT	DESC.	NORTH	EAST	ELEVATION
3	U4734-3	860641.3340	1691026.3520	1009.18
4	U4734-4	861385.0070	1691031.1290	978.40
10	BL-10	862126.0270	1691005.9610	966.86
11	BL-11	862320.8980	1690932.0170	955.71
12	BL-12	862604.1630	1690996.9530	921.72
13	BL-13	862821.0340	1691143.4190	893.81
14	BL-14	863149.1220	1691235.6060	939.54
15	BL-15	863390.0390	1691312.0820	947.38
16	BL-16	863948.3290	1691491.6840	891.63
17	BL-17	864243.2460	1691548.0360	919.33
18	BL-18	864547.9630	1691656.0660	921.85
19	BL-19	865704.6810	1691415.7290	956.25
2	U4734-2	866274.2730	1690788.3420	959.78
20	BL-20	866949.0260	1690577.1730	964.56
21	BL-21	867393.8740	1690358.7570	982.19
24	BL-24	868002.6260	1689962.3160	986.34
25	BL-25	868406.3520	1689562.8170	982.60
5	U4734-5	868649.1730	1688928.0240	996.85
6	U4734-6	869044.3740	1688593.3970	987.40

BY9

POINT	DESC.	NORTH	EAST	ELEVATION
1	U4734-1	865552.1460	1691621.3190	956.93
E19		865704.6810	1691415.7290	956.31

BY10

POINT	DESC.	NORTH	EAST	ELEVATION
22	BY10-22	867035.6270	1690138.7100	974.93
E21		867393.8740	1690358.7570	982.19

BY11

POINT	DESC.	NORTH	EAST	ELEVATION
EE21		867393.8740	1690358.7570	982.19
23	BY11-23	867576.4410	1690557.9120	981.43

BY13

POINT	DESC.	NORTH	EAST	ELEVATION
26	BY13-26	868666.7200	1688455.4670	996.75
E6		869044.3740	1688593.3970	987.40
27	BY13-27	869608.9010	1688913.7120	988.53

****
BM1 ELEVATION = 898.38'
N 862862 E 1691298
RR SPIKE PLACED IN BASE OF 18" DOUBLE POPLAR
****
BM2 ELEVATION = 924.01'
N 863487 E 1691107
RR SPIKE PLACED IN BASE OF 12" MAPLE
****
****
BM3 ELEVATION = 891.20'
N 864001 E 1691643
RR SPIKE PLACED IN BASE OF 12" POPLAR
****

NOTES:

1. PROJECT CONTROL WAS ESTABLISHED USING GNSS, THE GLOBAL NAVIGATION SATELLITE SYSTEM.

2. THE SURVEY CONTROL DATA FOR THIS PROJECT HAS BEEN COMPILED FROM VARIOUS SOURCES. IF FURTHER INFORMATION REGARDING PROJECT CONTROL IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

6/2/99

PROJECT REFERENCE NO.	SHEET NO.
U-4734	1C-5
Location and Surveys	

SURVEY CONTROL SHEET U-4734

W/ EXISTING CENTERLINE ALIGNMENTS PRIOR TO CONSTRUCTION

EL

POINT	N	E	BEARING	DIST	DELTA	D	L	T	R
POT	864786.906	1691991.673							
LINE			N 01°53'26.0" E	239.37					
PC	865026.150	1691999.571							
CURVE			N 02°56'38.4" W	117.99	09°40'08.9"(LT)	08°11'06.4"	118.13	59.21	700.00
PCC	865143.985	1691993.511							
CURVE			N 25°06'36.7" W	229.38	34°39'47.7"(LT)	14°52'55.3"	232.92	120.15	385.00
PCC	865351.691	1691896.169							
CURVE			N 48°13'11.2" W	157.05	11°33'21.2"(LT)	07°20'44.2"	157.32	78.93	780.00
PT	865456.330	1691779.055							
LINE			N 53°59'51.8" W	203.23					
PC	865575.791	1691614.646							
CURVE			N 53°42'49.4" W	99.13	00°34'04.6"(RT)	00°34'22.6"	99.13	49.56	10000.00
PT	865634.456	1691534.743							
LINE			N 53°25'47.1" W	378.98					
PC	865860.256	1691230.372							
CURVE			N 53°05'01.5" W	301.95	00°41'31.3"(RT)	00°13'45.1"	301.95	150.98	25000.00
PCC	866041.621	1690988.960							
CURVE			N 40°06'35.4" W	225.18	25°15'20.9"(RT)	11°07'31.4"	227.01	115.38	515.00
PCC	866213.839	1690843.889							
CURVE			N 23°52'50.3" W	150.75	07°12'09.2"(RT)	04°46'28.7"	150.85	75.52	1200.00
PT	866351.683	1690782.860							
LINE			N 20°16'45.8" W	321.48					
PC	866653.239	1690671.435							
CURVE			N 20°45'59.7" W	42.52	00°58'28.0"(LT)	02°17'30.6"	42.52	21.26	2500.00
PT	866692.994	1690656.360							
LINE			N 21°15'13.7" W	286.59					
PC	866960.089	1690552.472							
CURVE			N 25°16'32.4" W	252.49	08°02'37.3"(LT)	03°10'59.2"	252.70	126.56	1800.00
PT	867188.409	1690444.664							
LINE			N 29°17'51.1" W	116.08					
PC	867289.643	1690387.860							
CURVE			N 29°36'36.7" W	545.70	00°37'31.2"(LT)	00°06'52.5"	545.70	272.85	50000.00
PT	867764.077	1690118.232							
LINE			N 29°55'22.3" W	261.59					
PC	867990.801	1689987.740							
CURVE			N 41°33'41.1" W	312.69	23°16'37.7"(LT)	07°23'34.8"	314.85	159.63	775.00
PT	868224.772	1689780.292							
LINE			N 53°12'00.0" W	267.15					
PC	868384.803	1689566.373							
CURVE			N 63°36'30.0" W	325.19	20°49'00.0"(LT)	06°21'58.3"	326.99	165.32	900.00
PT	868529.353	1689275.074							
LINE			N 74°01'00.0" W	725.70					
PC	868729.180	1688577.427							
CURVE			N 69°29'15.2" W	101.08	09°03'29.5"(RT)	08°57'08.9"	101.18	50.70	640.00
PT	868729.180	1688577.427							

EY10

POINT	N	E	BEARING	DIST	DELTA	D	L	T	R
POT	866982.701	1690174.829							
LINE			N 01°33'54.2" E	123.35					
PC	867106.007	1690178.199							
CURVE			N 25°47'20.2" E	332.35	48°26'51.9"(RT)	14°08'49.6"	342.46	182.22	405.00
PT	867106.007	1690178.199							

EY11

POINT	N	E	BEARING	DIST
POT	867406.838	1690321.892		
LINE			N 57°06'48.9" E	303.54
POT	867571.654	1690576.790		

EY13

POINT	N	E	BEARING	DIST	DELTA	D	L	T	R
PC	868640.761	1688404.537							
CURVE			N 30°25'24.2" E	304.97	07°08'12.1"(LT)	02°20'19.0"	305.17	152.78	2450.00
PCC	868903.740	1688558.971							
CURVE			N 25°38'27.9" E	360.80	02°25'40.5"(LT)	00°40'22.4"	360.82	180.44	8515.00
PT	869229.007	1688715.099							
LINE			N 24°25'37.6" E	355.16					
PC	869552.374	1688861.970							
CURVE			N 24°39'15.3" E	39.64	00°27'15.3"(RT)	01°08'45.3"	39.64	19.82	5000.00
PT	869588.401	1688878.505							
LINE			N 24°52'52.9" E	381.82					
POT	869934.780	1689039.152							

EY14

POINT	N	E	BEARING	DIST	DELTA	D	L	T	R
POT	869922.620	1689499.271							
LINE			S 74°18'08.4" W	134.51					
PC	869886.228	1689369.782							
CURVE			S 84°57'13.0" W	369.66	21°18'09.2"(RT)	05°43'46.5"	371.80	188.07	1000.00
PT	869886.228	1689369.782							

NOTES:

1. PROJECT CONTROL WAS ESTABLISHED USING GNSS, THE GLOBAL NAVIGATION SATELLITE SYSTEM.

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4/25/2018
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JDR ENGINEERING INC

PROPOSED ALIGNMENT CONTROL SHEET U-4734

L

TYPE	STATION	NORTH	EAST
POT	10+00.00	861018.8524	1691001.4069
PC	19+14.27	861931.9494	1690955.1542
PT	24+20.33	862431.9098	1691015.6200
PC	42+65.55	864199.3776	1691545.6055
PT	55+83.57	865459.1947	1691350.1064
PC	63+90.08	866125.1868	1690895.2295
PT	66+20.30	866329.3474	1690790.1174
PC	70+14.76	866699.6683	1690654.2327
PT	74+59.29	867102.2820	1690467.0252
PC	90+17.77	868455.6903	1689694.2719
PT	99+05.05	869052.9076	1689056.0777
POT	103+93.45	869266.4403	1688616.8233

Y7

TYPE	STATION	NORTH	EAST
POT	10+00.00	861169.9374	1690335.1968
PC	13+03.36	861472.5893	1690355.9642
PT	18+55.00	861826.0889	1690715.8486
POT	20+99.35	861838.4508	1690959.8904

Y8

TYPE	STATION	NORTH	EAST
POT	10+00.00	864434.8596	1691444.3819
POT	11+50.00	864413.4756	1691592.8498
POT	13+00.00	864392.0915	1691741.3177

Y9

TYPE	STATION	NORTH	EAST
POT	10+00.00	865737.0121	1691160.3554
PC	10+37.25	865749.3432	1691195.5021
PT	12+81.17	865714.2229	1691427.2199
POT	14+15.05	865634.4556	1691534.7432

Y10

TYPE	STATION	NORTH	EAST
POT	10+00.00	866982.7010	1690174.8295
PC	11+23.35	867106.0071	1690178.1985
PT	13+74.59	867339.2927	1690260.0621
POT	14+42.26	867393.2572	1690300.8876

Y11

TYPE	STATION	NORTH	EAST
POT	10+00.00	867393.2572	1690300.8876
POT	13+28.55	867571.6536	1690576.7899

Y12

TYPE	STATION	NORTH	EAST
PC	10+00.00	868384.8035	1689566.3732
PT	13+26.99	868529.3529	1689275.0739

Y13

TYPE	STATION	NORTH	EAST
PC	10+00.00	868422.2444	1688224.6033
PCC	12+84.15	868641.5972	1688404.7015
PT	19+01.97	869178.5465	1688708.6551
PC	20+54.63	869317.5474	1688771.7881
PRC	23+23.75	869565.1070	1688877.2514
PT	26+38.05	869853.7367	1689001.5651
PC	27+83.07	869985.2964	1689062.5810
PT	28+44.12	870040.7779	1689088.0560
POT	30+36.34	870215.7661	1689167.5967

Y14

TYPE	STATION	NORTH	EAST
POT	10+00.00	869846.4322	1688998.1836
PC	10+54.75	869843.8725	1689052.8776
PCC	12+02.16	869850.9476	1689199.8907
PT	13+85.60	869888.8852	1689379.2369
POT	15+60.29	869936.1481	1689547.4061

DR1

TYPE	STATION	NORTH	EAST
POT	10+00.00	863222.0508	1690979.3199
PC	12+02.88	863219.9371	1691182.1843
PT	12+16.92	863217.8330	1691196.0244
POT	12+69.85	863202.6301	1691246.7250

DR2

TYPE	STATION	NORTH	EAST
POT	10+00.00	863235.7954	1691256.6698
PC	10+52.93	863220.5925	1691307.3703
PT	10+66.98	863218.4885	1691321.2104
PC	12+48.10	863216.6013	1691502.3287
PT	12+95.98	863247.0366	1691532.6381
POT	14+71.46	863422.5008	1691530.0821

DR3

TYPE	STATION	NORTH	EAST
PC	10+00.00	865441.1127	1691226.5317
PT	10+27.40	865464.1363	1691239.5604
POT	11+15.90	865514.0501	1691312.6399

DR4

TYPE	STATION	NORTH	EAST
POT	10+00.00	866287.2182	1690806.7511
PC	11+11.49	866330.6755	1690909.4252
PT	11+24.03	866333.0437	1690921.6411
POT	11+44.37	866332.6894	1690941.9789

DR5

TYPE	STATION	NORTH	EAST
POT	10+00.00	866318.4006	1690880.4238
PC	10+16.84	866333.7398	1690873.4706
PT	10+37.80	866354.0908	1690873.3406
POT	11+22.35	866431.5415	1690907.2624

GW

TYPE	STATION	NORTH	EAST
POT	10+00.00	863872.7964	1691296.0706
PC	10+56.11	863859.9039	1691350.6804
PT	10+78.59	863856.3941	1691372.8663
PC	12+23.64	863844.5201	1691517.4298
PT	12+87.97	863879.4002	1691564.9955
PC	13+60.69	863950.3210	1691581.1069
PT	14+13.18	863977.1624	1691620.5469

NOTES:

1. PROJECT CONTROL WAS ESTABLISHED USING GNSS, THE GLOBAL NAVIGATION SATELLITE SYSTEM.
2. THE PROPOSED ALIGNMENT CONTROL DATA FOR THIS PROJECT HAS BEEN COMPILED FROM VARIOUS SOURCES. IF FURTHER INFORMATINO REGARDING PROJECT CONTROL IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

PROJECT REFERENCE NO.	SHEET NO.
U-4734	1E-1

Location and Surveys

PROJECT SURVEYOR

NORTH CAROLINA PROFESSIONAL SEAL L-3877 LAND SURVEYOR MICHAEL L. MOTSINGER

RIGHT OF WAY CONTROL SHEET U-4734

ROW MARKER CONCRETE OR GRANITE-E

ALIGN	STATION	OFFSET	NORTH	EAST
L	24+20.33	120.00	862397.4433	1691130.5637
L	24+20.33	-120.00	862466.3764	1690900.6763
L	25+00.00	155.00	862463.7007	1691186.9710
L	25+50.00	145.00	862514.4661	1691191.7534
L	25+75.00	120.00	862545.5932	1691174.9873
L	26+88.00	120.00	862653.8319	1691207.4433
L	34+40.00	-120.00	863443.0789	1691193.5462
L	34+40.00	120.00	863374.1458	1691423.4337
L	42+65.55	120.00	864164.9107	1691660.5491
L	42+65.55	75.00	864177.8356	1691617.4452
L	42+65.55	-75.00	864220.9188	1691473.7656
L	42+65.55	-120.00	864233.8438	1691430.6617
L	44+20.00	75.00	864335.4227	1691655.8668
L	44+20.00	90.00	864332.6345	1691670.6053
L	44+20.00	-75.00	864363.3046	1691508.4809
L	44+20.00	-90.00	864366.0927	1691493.7423
L	45+50.00	-75.00	864485.4169	1691526.0689
L	45+50.00	-90.00	864486.9014	1691511.1425
L	46+85.00	90.00	864612.0423	1691697.9172
L	46+85.00	100.00	864611.9631	1691707.9169
L	51+50.00	100.00	865100.8517	1691634.4377
L	53+00.00	105.00	865252.8108	1691583.0975
L	54+00.00	110.00	865351.9095	1691541.7997
L	55+83.57	100.00	865515.5954	1691432.6835

ROW MARKER CONCRETE OR GRANITE-E

ALIGN	STATION	OFFSET	NORTH	EAST
L	55+83.57	-75.00	865416.8942	1691288.1737
L	56+10.00	88.49	865530.9282	1691408.2726
L	56+10.00	100.00	865537.4199	1691417.7772
L	56+85.00	-75.00	865500.6515	1691230.9669
L	57+95.00	-135.00	865557.6459	1691119.3799
L	58+50.00	-135.00	865603.0632	1691088.3596
L	59+00.00	-115.00	865655.6319	1691076.6747
L	59+40.00	-75.00	865711.2230	1691087.1452
L	59+80.00	-75.00	865744.2538	1691064.5849
L	62+28.96	75.00	866034.4410	1691048.0337
L	63+90.08	-75.00	866082.8863	1690833.2967
L	63+90.08	75.00	866167.4873	1690957.1622
L	65+50.00	75.00	866295.4086	1690885.0613
L	65+50.00	100.00	866305.7683	1690907.8137
L	66+20.30	-60.00	866308.6786	1690733.7898
L	66+20.30	-75.00	866303.5114	1690719.7079
L	66+65.00	155.00	866424.7072	1690920.2318
L	66+65.00	120.00	866412.6504	1690887.3740
L	68+65.00	60.00	866579.7404	1690762.1505
L	70+14.76	60.00	866720.3370	1690710.5603
L	70+14.76	-60.00	866678.9995	1690597.9050
L	74+59.29	-60.00	867072.5318	1690414.9203
L	74+59.29	60.00	867132.0323	1690519.1301

ROW MARKER CONCRETE OR GRANITE-E

ALIGN	STATION	OFFSET	NORTH	EAST
L	75+85.00	60.00	867241.2011	1690456.7982
L	76+84.00	61.50	867327.9180	1690409.0129
L	76+95.00	-60.00	867277.2263	1690298.0462
L	77+34.75	61.50	867371.9901	1690383.8491
L	78+30.00	-72.00	867388.5123	1690220.6871
L	78+50.00	60.00	867471.3312	1690325.4012
L	79+40.00	-72.00	867484.0380	1690166.1450
L	80+28.00	-60.00	867566.4086	1690132.9323
L	86+75.00	60.00	868187.7737	1689916.3351
L	86+75.00	-60.00	868128.2732	1689812.1253
L	88+70.00	-113.94	868270.8687	1689668.5946
L	90+17.77	60.00	868485.4406	1689746.3768
L	92+20.00	-60.00	868587.3532	1689534.7639
L	96+15.00	-85.00	868833.6833	1689251.5450
L	96+15.00	-60.00	868853.6087	1689266.6441
L	96+70.00	60.00	868982.9594	1689292.8751
L	97+65.00	72.00	869047.3058	1689216.4036
L	97+95.00	90.00	869078.9575	1689198.4227
L	99+50.00	-75.00	869005.1093	1688982.8578
L	99+70.00	95.00	869166.7451	1689039.1950
L	101+35.00	95.00	869238.8836	1688890.8002
L	101+35.00	-85.00	869076.9983	1688812.1036

ROW MARKER CONCRETE OR GRANITE-E

ALIGN	STATION	OFFSET	NORTH	EAST
Y9	12+32.34	25.65	865716.1402	1691374.4240

ROW MARKER CONCRETE OR GRANITE-E

ALIGN	STATION	OFFSET	NORTH	EAST
Y10	13+00.00	-30.04	867289.4356	1690193.9077
Y10	13+11.27	29.61	867272.0478	1690252.0603

ROW MARKER CONCRETE OR GRANITE-E

ALIGN	STATION	OFFSET	NORTH	EAST
Y11	10+82.00	30.15	867412.4627	1690386.1177
Y11	10+85.00	-29.87	867464.4934	1690356.0476

I, Michael L. Motsinger, a Professional Land Surveyor in the state of North Carolina hereby certify to the best of my knowledge and belief that the following work item(s) (R/W Staking) performed under my responsible charge meet NCDOT Survey Standards as directed in the NCDOT Location & Surveys guidelines and procedures.

I further certify that the right of way and permanent easement points shown herein and outlined in the tables shown hereon (localized coordinates, station/offset) have been checked and are accurate representations of the right of way and permanent easement points depicted on the corresponding highway plans. I also certify that the right of way and permanent easement points shown herein have been field monumented under my supervision from existing survey control provided by others; that the depicted property data shown herein were surveyed by others; and these monuments denote the right of way and easement boundaries at the time of staking which may be subject to change due to right of way revisions (See deeds for final determination).

Witness my original signature, registration number and seal this 19th day of February, 2018.

DocuSigned by: Michael L. Motsinger

Professional Land Surveyor   L-3877 PLS #   Seal

NOTES:

1. IF FURTHER INFORMATION REGARDING PROJECT CONTROL IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

2. PROJECT CONTROL WAS ESTABLISHED USING GNSS, THE GLOBAL NAVIGATION SATELLITE SYSTEM.

REVISIONS

6/2/99

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

6/2/99

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
U-4734	1E-2
Location and Surveys	

PROJECT SURVEYOR

NORTH CAROLINA PROFESSIONAL SEAL L-3877 LAND SURVEYOR MICHAEL L. MOTSINGER

RIGHT OF WAY CONTROL SHEET U-4734

ROW MARKER CONCRETE OR GRANITE-E

ALIGN	STATION	OFFSET	NORTH	EAST
Y12	12+85.00	80.00	868592.6505	1689340.7452
Y12	13+25.00	30.00	868557.6255	1689285.3083

ROW MARKER CONCRETE OR GRANITE-E

ALIGN	STATION	OFFSET	NORTH	EAST
Y13	11+97.18	35.24	868549.8374	1688381.4514
Y13	12+00.00	50.00	868543.1505	1688394.9287
Y13	12+15.00	-29.61	868603.2852	1688340.6222
Y13	13+10.00	-50.00	868691.0184	1688377.9361
Y13	14+15.66	82.00	868707.2601	1688546.5258
Y13	14+74.47	75.00	868761.9882	1688572.4076
Y13	15+30.00	-50.00	868874.1475	1688493.9847
Y13	15+30.00	-60.00	868879.2305	1688485.3730
Y13	16+00.00	90.00	868865.1882	1688650.4266
Y13	17+05.56	-60.00	869029.9618	1688569.2898
Y13	18+00.00	95.00	869044.5342	1688750.4422
Y13	18+80.00	-105.00	869202.5979	1688604.1824
Y13	20+00.00	-105.00	869311.2251	1688653.5938
Y13	20+85.00	75.00	869314.5777	1688852.7227
Y13	21+00.00	-95.00	869397.5231	1688703.5777
Y13	22+05.00	-72.00	869483.2932	1688765.8392
Y13	22+10.00	60.00	869436.5503	1688889.3869
Y13	23+23.75	-72.00	869591.7545	1688810.3641
Y13	23+23.75	60.00	869542.9008	1688932.9908
Y13	25+00.00	-60.00	869751.7289	1688889.9781
Y13	25+45.00	60.00	869744.6559	1689017.9419
Y13	26+38.05	-60.00	869878.9812	1688947.1342
Y13	27+83.07	-60.00	870010.5408	1689008.1502
Y13	27+95.00	30.00	869983.5416	1689094.8268
Y13	28+00.00	-30.00	870013.2275	1689042.4460
Y13	28+00.00	-60.00	870025.7921	1689015.2040

ROW MARKER CONCRETE OR GRANITE-E

ALIGN	STATION	OFFSET	NORTH	EAST
Y14	11+00.00	40.00	869803.0767	1689098.5689
Y14	11+40.00	-65.00	869909.4331	1689133.9894
Y14	12+02.16	40.00	869811.3556	1689205.5890
Y14	12+02.16	-60.00	869910.3357	1689191.3433
Y14	13+55.00	-60.00	869939.0308	1689334.7189
Y14	13+55.00	-29.88	869909.8644	1689342.2321
Y14	13+65.00	40.00	869844.7935	1689369.6156
Y14	13+75.00	30.04	869857.0745	1689376.9259

I, Michael L. Motsinger, a Professional Land Surveyor in the state of North Carolina hereby certify to the best of my knowledge and belief that the following work item(s) (R/W Staking) performed under my responsible charge meet NCDOT Survey Standards as directed in the NCDOT Location & Surveys guidelines and procedures.

I further certify that the right of way and permanent easement points shown herein and outlined in the tables shown hereon (localized coordinates, station/offset) have been checked and are accurate representations of the right of way and permanent easement points depicted on the corresponding highway plans. I also certify that the right of way and permanent easement points shown herein have been field monumented under my supervision from existing survey control provided by others; that the depicted property data shown herein were surveyed by others; and these monuments denote the right of way and easement boundaries at the time of staking which may be subject to change due to right of way revisions (See deeds for final determination).

Witness my original signature, registration number and seal this 19th day of February, 2018.

DocuSigned by: Michael L. Motsinger

Professional Land Surveyor | PLS # L-3877 | Seal

NOTES:

1. IF FURTHER INFORMATION REGARDING PROJECT CONTROL IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

2. PROJECT CONTROL WAS ESTABLISHED USING GNSS, THE GLOBAL NAVIGATION SATELLITE SYSTEM.

SYSTEMS ENGINEERING

PROJECT SURVEYOR

NORTH CAROLINA PROFESSIONAL SEAL L-3877 LAND SURVEYOR MICHAEL L. MOTSINGER

PERMANENT EASEMENT CONTROL SHEET U-4734

ROW MARKER PERMANENT EASEMENT-E

ALIGN	STATION	OFFSET	NORTH	EAST
L	27+35.00	-190.00	862787.8901	1690924.0048
L	27+45.00	-120.00	862777.3632	1690993.9275
L	27+70.00	-190.00	862821.4153	1690934.0575
L	27+75.00	120.00	862737.1661	1691232.4316
L	27+90.00	155.00	862741.4813	1691270.2651
L	28+50.00	-120.00	862877.9390	1691024.0857
L	29+10.00	120.00	862866.4778	1691271.2064
L	29+10.00	135.00	862862.1694	1691285.5744
L	39+05.00	120.00	863819.5527	1691556.9915
L	39+40.00	140.00	863847.3335	1691586.2015
L	40+95.00	120.00	864001.5469	1691611.5636
L	40+95.00	140.00	863995.8025	1691630.7208
L	46+80.00	-90.00	864608.7708	1691517.8778
L	46+80.00	-75.00	864608.6014	1691532.8768
L	47+10.00	-75.00	864637.0807	1691532.9098
L	47+10.00	-90.00	864636.9460	1691517.9104
L	61+90.00	-91.00	865908.6414	1690932.9312
L	61+90.00	-75.00	865917.6655	1690946.1436
L	62+07.78	82.11	866020.9588	1691065.8523
L	62+10.22	-91.00	865925.3424	1690921.5244

ROW MARKER PERMANENT EASEMENT-E

ALIGN	STATION	OFFSET	NORTH	EAST
L	65+92.00	144.00	866356.6282	1690933.8829
L	66+00.00	124.28	866355.7171	1690913.0284
L	66+69.00	-60.00	866354.3993	1690717.0131
L	66+69.00	-86.00	866345.4429	1690692.6045
L	66+99.00	-60.00	866382.5632	1690706.6788
L	66+99.00	-86.00	866373.6067	1690682.2701
L	67+23.00	102.60	866461.1065	1690851.0592
L	67+35.00	130.00	866481.8108	1690872.6484
L	67+48.00	95.10	866481.9928	1690835.4062
L	67+60.00	125.00	866503.5582	1690859.3424
L	67+66.00	-60.00	866445.4624	1690683.5987
L	67+66.00	-82.00	866437.8838	1690662.9452
L	67+97.00	-60.00	866474.5650	1690672.9198
L	67+97.00	-82.00	866466.9864	1690652.2663
L	69+41.00	60.00	866651.0888	1690735.9701
L	69+41.00	82.00	866658.6673	1690756.6236
L	70+14.76	82.00	866727.9155	1690731.2138
L	72+95.00	82.00	866993.3721	1690617.6137
L	73+35.00	60.00	867020.2308	1690579.5467
L	73+35.00	90.00	867033.8729	1690606.2655

ROW MARKER PERMANENT EASEMENT-E

ALIGN	STATION	OFFSET	NORTH	EAST
L	62+13.05	-75.00	865936.6976	1690933.1445
L	62+15.00	-240.00	865845.2487	1690795.7913
L	62+15.63	102.00	866038.6615	1691077.8478
L	62+34.43	75.00	866038.9556	1691044.9502
L	62+40.00	-315.00	865823.5925	1690719.7584
L	62+40.00	-260.00	865854.6128	1690765.1757
L	62+40.00	-75.00	865958.9540	1690917.9432
L	62+41.00	92.00	866053.9689	1691055.2829
L	62+70.00	-315.00	865848.3656	1690702.8382
L	62+70.00	-260.00	865879.3859	1690748.2555
L	63+15.00	-260.00	865916.5456	1690722.8752
L	63+30.00	-75.00	866033.2734	1690867.1826
L	63+65.00	88.00	866154.1084	1690982.0430
L	64+11.00	-91.00	866092.9710	1690807.3457
L	64+11.00	-75.00	866101.6957	1690820.7576
L	64+30.61	-92.00	866110.6134	1690794.9472
L	64+30.67	-75.00	866119.6357	1690809.3557
L	65+30.00	119.00	866987.5580	1690438.7708
L	65+34.55	86.50	866287.4686	1690901.4404
L	65+35.76	75.00	866283.5398	1690890.5754

ROW MARKER PERMANENT EASEMENT-E

ALIGN	STATION	OFFSET	NORTH	EAST
L	73+60.00	60.00	867042.9438	1690567.8151
L	73+60.00	90.00	867056.8363	1690594.4045
L	73+71.00	-80.00	866987.5580	1690438.7708
L	73+71.00	-60.00	866996.8929	1690456.4586
L	74+00.00	76.00	867086.6740	1690562.6700
L	74+04.00	-80.00	867015.7717	1690423.6562
L	74+04.00	-60.00	867025.3254	1690441.2269
L	74+51.00	-60.00	867065.4891	1690418.9269
L	74+59.29	76.00	867139.9657	1690533.0248
L	74+73.00	-88.00	867070.5546	1690383.8065
L	74+85.00	-60.00	867094.8591	1690402.1721
L	74+94.00	-72.00	867096.7248	1690387.2886
L	75+62.14	75.50	867229.0346	1690481.5934
L	76+75.00	77.00	867327.7877	1690426.9358
L	76+95.00	-102.50	867256.1532	1690261.1385
L	76+97.00	77.00	867346.8929	1690416.0274
L	76+97.00	81.00	867348.8762	1690419.5011
L	77+28.00	77.00	867373.8137	1690400.6564
L	77+28.00	82.00	867376.2929	1690404.9985
L	77+58.68	77.00	867400.4574	1690385.4437

I, Michael L. Motsinger, a Professional Land Surveyor in the state of North Carolina hereby certify to the best of my knowledge and belief that the following work item(s) (R/W Staking) performed under my responsible charge meet NCDOT Survey Standards as directed in the NCDOT Location & Surveys guidelines and procedures.

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Witness my original signature, registration number and seal this 19th day of February, 2018.

DocuSigned by: Michael L. Motsinger

Professional Land Surveyor   L-3877 PLS #   Seal

NOTES:

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REVISIONS

6/2/99

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

PROJECT SURVEYOR

NORTH CAROLINA PROFESSIONAL SEAL L-3877 LAND SURVEYOR MICHAEL L. MOTSINGER

6/2/99

REVISIONS

PERMANENT EASEMENT CONTROL SHEET U-4734

ROW MARKER PERMANENT EASEMENT-E

ALIGN	STATION	OFFSET	NORTH	EAST
L	78+28.15	-95.00	867375.4999	1690201.6317
L	79+14.00	60.00	867526.9097	1690293.6676
L	79+14.00	80.00	867536.8265	1690311.0359
L	79+14.00	86.50	867540.0494	1690316.6806
L	79+34.00	60.00	867544.2780	1690283.7508
L	79+34.00	86.50	867557.4177	1690306.7638
L	79+40.00	-95.00	867472.6337	1690146.1714
L	80+28.00	-75.00	867558.9710	1690119.9060
L	80+50.00	60.00	867645.0142	1690226.2337
L	80+56.00	89.00	867664.6040	1690248.4427
L	80+59.00	-60.00	867593.3294	1690117.5613
L	80+59.00	-75.00	867585.8919	1690104.5351
L	80+71.50	60.00	867663.6851	1690215.5731
L	80+76.00	85.00	867679.9889	1690235.0523
L	81+49.00	-60.00	867671.4868	1690072.9359
L	81+81.00	-91.00	867683.9051	1690030.1482
L	82+10.00	-60.00	867724.4601	1690042.6898
L	83+40.00	-60.00	867837.3541	1689978.2309
L	83+75.00	-91.00	867852.3777	1689933.9557
L	84+06.99	-60.00	867895.5271	1689945.0160
L	85+19.00	76.00	868060.2344	1690007.5804
L	85+35.00	110.00	868090.9875	1690029.1732
L	85+44.50	60.00	868074.4455	1689981.0419
L	86+04.00	60.00	868126.1163	1689951.5396
L	86+75.00	-88.00	868114.3898	1689787.8097
L	87+05.00	-88.00	868140.4422	1689772.9345
L	88+92.00	-150.00	868272.0939	1689626.3712
L	93+30.00	108.00	868780.5618	1689592.6028
L	93+30.00	60.00	868748.5604	1689556.8270
L	93+90.00	60.00	868794.2369	1689514.2719
L	93+90.00	100.00	868822.0911	1689542.9798

ROW MARKER PERMANENT EASEMENT-E

ALIGN	STATION	OFFSET	NORTH	EAST
Y10	13+36.11	-39.81	867328.4439	1690204.4519
Y10	13+38.92	-57.00	867340.1931	1690191.5149

ROW MARKER PERMANENT EASEMENT-E

ALIGN	STATION	OFFSET	NORTH	EAST
Y11	10+80.45	-34.50	867465.9098	1690349.7112

ROW MARKER PERMANENT EASEMENT-E

ALIGN	STATION	OFFSET	NORTH	EAST
Y12	10+00.00	-30.00	868360.7815	1689548.4025
Y12	10+00.00	-62.12	868335.0620	1689529.1619
Y12	10+05.00	-110.00	868299.3423	1689496.9590
Y12	10+45.00	-105.00	868323.7324	1689471.0648
Y12	10+53.00	-64.00	868361.8698	1689487.7695
Y12	10+53.00	-30.00	868390.2462	1689506.4987

ROW MARKER PERMANENT EASEMENT-E

ALIGN	STATION	OFFSET	NORTH	EAST
Y13	12+05.00	-58.00	868612.6388	1688312.1021
Y13	12+09.00	-77.00	868627.1856	1688299.2902
Y13	12+18.00	-55.00	868620.8623	1688322.0684
Y13	12+22.00	-74.00	868635.3163	1688309.1498
Y13	13+15.00	-73.00	868707.9894	1688361.6539
Y13	13+47.00	-93.00	868745.0720	1688362.4292
Y13	13+71.00	-50.00	868741.0545	1688411.2698
Y13	14+79.43	94.00	868756.4211	1688591.2719
Y13	15+49.00	-60.00	868895.3366	1688494.8204
Y13	15+49.00	-80.00	868905.4086	1688477.5417
Y13	15+70.00	-60.00	868913.1977	1688505.1598
Y13	15+70.00	-81.00	868923.6636	1688486.9537
Y13	15+99.00	108.50	868855.2085	1688666.0379
Y13	18+26.39	115.00	869060.2557	1688780.3031
Y13	20+63.02	102.50	869282.9380	1688868.6389
Y13	22+10.00	78.50	869429.3618	1688906.4332
Y13	22+17.00	-72.00	869494.2114	1688770.4412
Y13	22+17.00	-93.00	869502.3475	1688751.0813
Y13	22+28.50	-72.00	869504.6837	1688774.8298
Y13	22+28.50	-93.00	869512.7808	1688755.4536
Y13	23+00.00	74.59	869515.1704	1688937.5944
Y13	24+41.00	-63.40	869698.2512	1688863.3616
Y13	24+41.00	-84.50	869706.4620	1688843.9247
Y13	24+42.16	77.00	869644.6682	1688993.1398
Y13	24+52.50	-62.69	869708.6805	1688868.5507
Y13	24+52.50	-84.00	869717.0125	1688848.9371
Y13	29+30.00	-51.00	870140.0639	1689077.1649
Y13	29+30.00	-30.00	870131.3740	1689096.2825
Y13	29+35.00	50.00	870102.8214	1689171.1808
Y13	29+35.00	40.00	870106.9594	1689162.0771
Y13	29+42.00	-30.00	870142.2984	1689101.2482
Y13	29+42.00	-51.00	870150.9883	1689082.1305

ROW MARKER PERMANENT EASEMENT-E

ALIGN	STATION	OFFSET	NORTH	EAST
Y14	10+69.00	87.50	869755.8724	1689064.6261
Y14	10+81.79	54.00	869789.0825	1689079.2554
Y14	15+23.53	-29.98	869955.0629	1689503.9103
Y14	15+23.53	-39.92	869964.6372	1689501.2195

I, Michael L. Motsinger, a Professional Land Surveyor in the state of North Carolina hereby certify to the best of my knowledge and belief that the following work item(s) (R/W Staking) performed under my responsible charge meet NCDOT Survey Standards as directed in the NCDOT Location & Surveys guidelines and procedures.

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

FINAL PAVEMENT SCHEDULE

(BASED ON U-4734 PAVEMENT DESIGN; OCTOBER 19, 2016)

C1	PROP. APPROX. 1.5" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD. IN ONE LAYER.	J1	PROP. APPROX. 6" AGGREGATE BASE COURSE	T	EARTH MATERIAL
C2	PROP. APPROX. 2" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.	J2	PROP. APPROX. 8" AGGREGATE BASE COURSE	U	EXISTING PAVEMENT
C3	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.	K	SUBGRADE TO BE TREATED WITH LIME TO A DEPTH OF 8", AT A RATE OF 20 LBS. PER SQ. YD. AS DIRECTED BY THE ENGINEER. (SLURRY METHOD - 40%) OR SUBGRADE TO BE TREATED WITH CEMENT TO A DEPTH OF 7", AT A RATE OF 55 LBS. PER SQ. YD. AS DIRECTED BY THE ENGINEER.(60%)	V	4" CLASS B CONCRETE GREENWAY WITH WELDED WIRE MESH
C4	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT TO EXCEED 1.5" IN DEPTH.			W1	VARIABLE DEPTH ASPHALT PAVEMENT (SEE STANDARD WEDGING DETAIL ON THIS PAGE.)
D1	PROP. APPROX. 4" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.	N	GEOTEXTILE FOR PAVEMENT STABILIZATION	W2	VARIABLE DEPTH ASPHALT PAVEMENT (SEE STANDARD WEDGING DETAIL ON SHEET 2A-3)
D2	PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 2½" IN DEPTH OR GREATER THAN 4" IN DEPTH.	R1	PROP. 2'-6" CONCRETE CURB & GUTTER	W3	VARIABLE DEPTH ASPHALT PAVEMENT (SEE STANDARD WEDGING DETAIL ON SHEET 2A-4)
E1	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.	R2	PROP. 1'-6" MOUNTABLE CONCRETE CURB & GUTTER	W4	VARIABLE DEPTH ASPHALT PAVEMENT (SEE STANDARD WEDGING DETAIL ON SHEET 2A-5)
E2	PROP. APPROX. 5" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 570 LBS. PER SQ. YD.	R3	PROP. 5" MONOLITHIC CONCRETE ISLAND (KEYED-IN) (SEE PLANS FOR LOCATION)	X	MILLING ASPHALT PAVEMENT, 1.5" DEPTH
E3	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 3" IN DEPTH OR GREATER THAN 5½" IN DEPTH.	S	4" CONCRETE SIDEWALK		

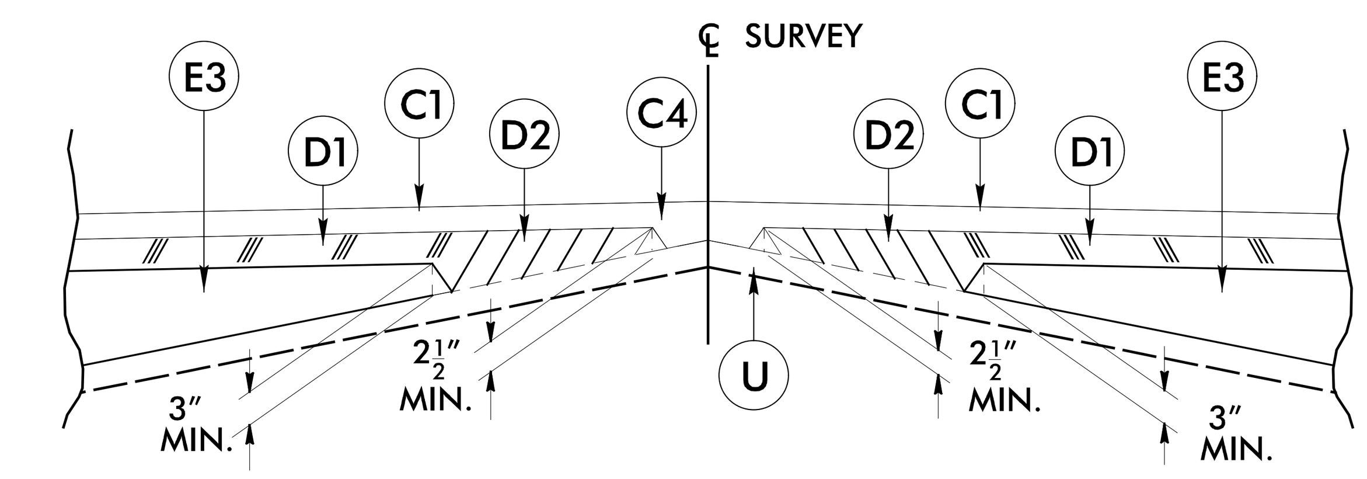
NOTE: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.

HDR | ICA

ICA Engineering, Inc.
555 Fayetteville St, Suite 900
Raleigh, NC 27601
NC License No: F-0258

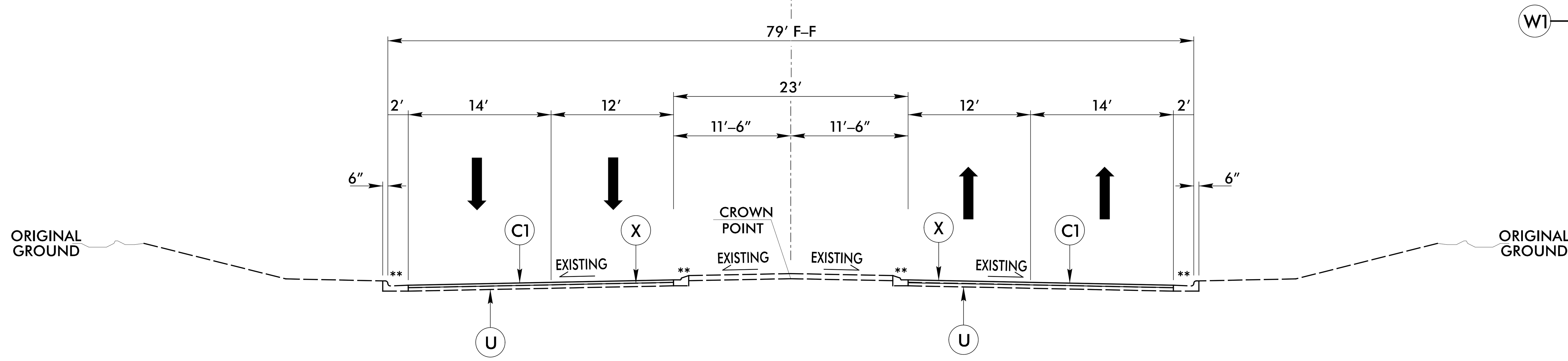
PROJECT REFERENCE NO.	SHEET NO.
U-4734	2A-1
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 032074 ENGINEER DENA C. SNEAD	NORTH CAROLINA PROFESSIONAL SEAL 024964 ENGINEER JOSEPH T. HOLLAND
DocuSigned by: Dena C. Snead 4/30/2018	DocuSigned by: Joseph T. Holland 4/30/2018

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



W1 Detail Showing Method of Wedging FOR -L- AND -Y13-

℄ -L- MACY GROVE ROAD (SR 2601)



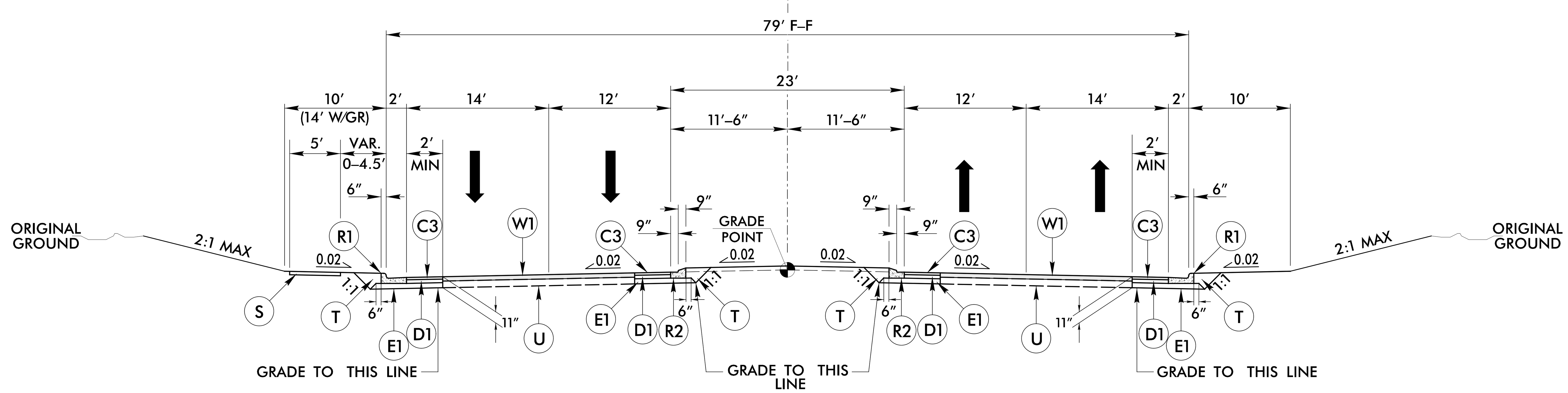
** RETAIN EXISTING CURB AND GUTTER

TYPICAL SECTION NO. 1

USE TYPICAL SECTION NO. 1 FOR:

-L- RT STA 2+61.00 TO STA 4+53.18 (BEGIN OF APPROACH SLAB)
-L- RT STA 6+18.01 (END OF APPROACH SLAB) TO STA 9+83.41 (BEGIN APPROACH SLAB)
-L- LT & RT STA 11+42.15 (END OF APPROACH SLAB) TO STA 11+75.00

℄ -L- MACY GROVE ROAD (SR 2601)*



TYPICAL SECTION NO. 2

USE TYPICAL SECTION NO. 2 FOR:

-L- STA 11+75.00 TO STA 17+50.00

* PROOF ROLLING

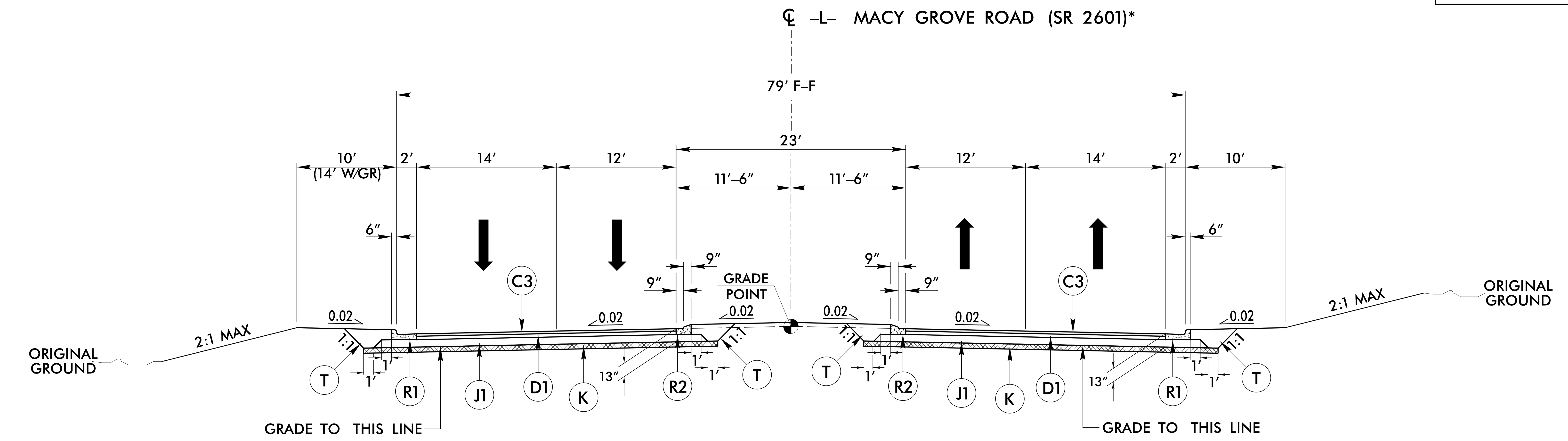
4/30/2018
U4734_Rdy_typ.dgn
HDR ENGINEERING, INC.

C1	1½″ S9.5B
C2	2″ S9.5B
C3	3″ S9.5B
C4	VAR S9.5B
D1	4″ I19.0C
D2	VAR I19.0C
E1	4″ B25.0C
E2	5″ B25.0C
E3	VAR B25.0C
J1	6″ ABC
J2	8″ ABC
K	STABILIZATION
N	GEOTEXTILE
R1	2′-6″ C&G
R2	1′-6″ MOUNTABLE C&G
R3	5″ MONO. CONC. ISLAND
S	4″ SIDEWALK
T	EARTH MATERIAL
U	EXIST. PAVEMENT
V	4″ CONCRETE GREENWAY
W1	VAR WEDGING
W2	VAR WEDGING
W3	VAR WEDGING
W4	VAR WEDGING
X	MILLING 1.5″

HDR | ICA
ICA Engineering, Inc.
555 Fayetteville St, Suite 900
Raleigh, NC 27601
NC License No: F-0258

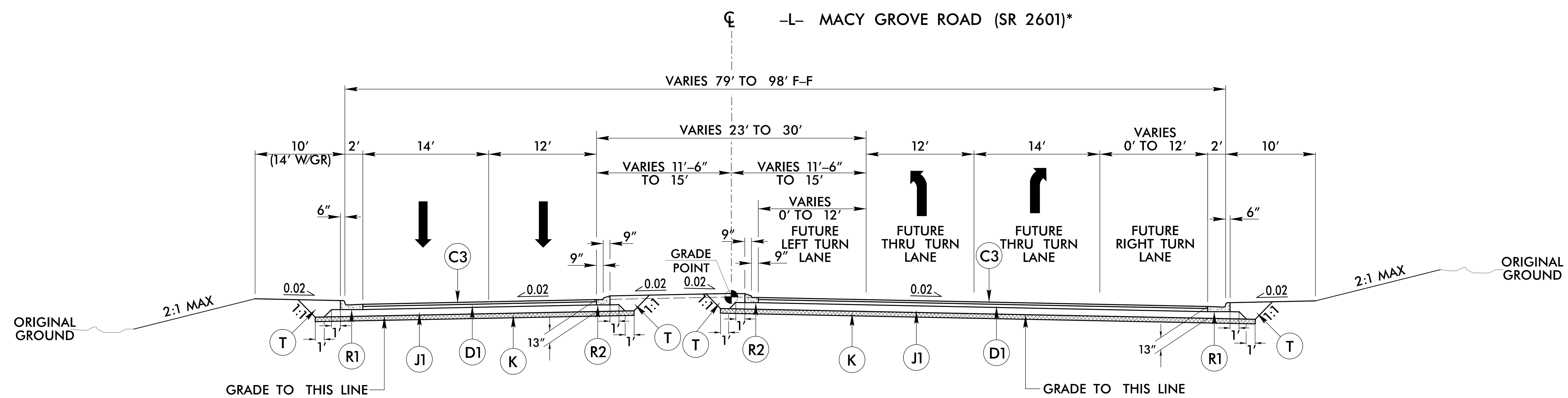
PROJECT REFERENCE NO.	SHEET NO.
U-4734	2A-2
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER
SEAL 032074 DENA C. SNEAD 4/30/2018	SEAL 024964 JOSEPH T. HOLLAND 4/30/2018

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



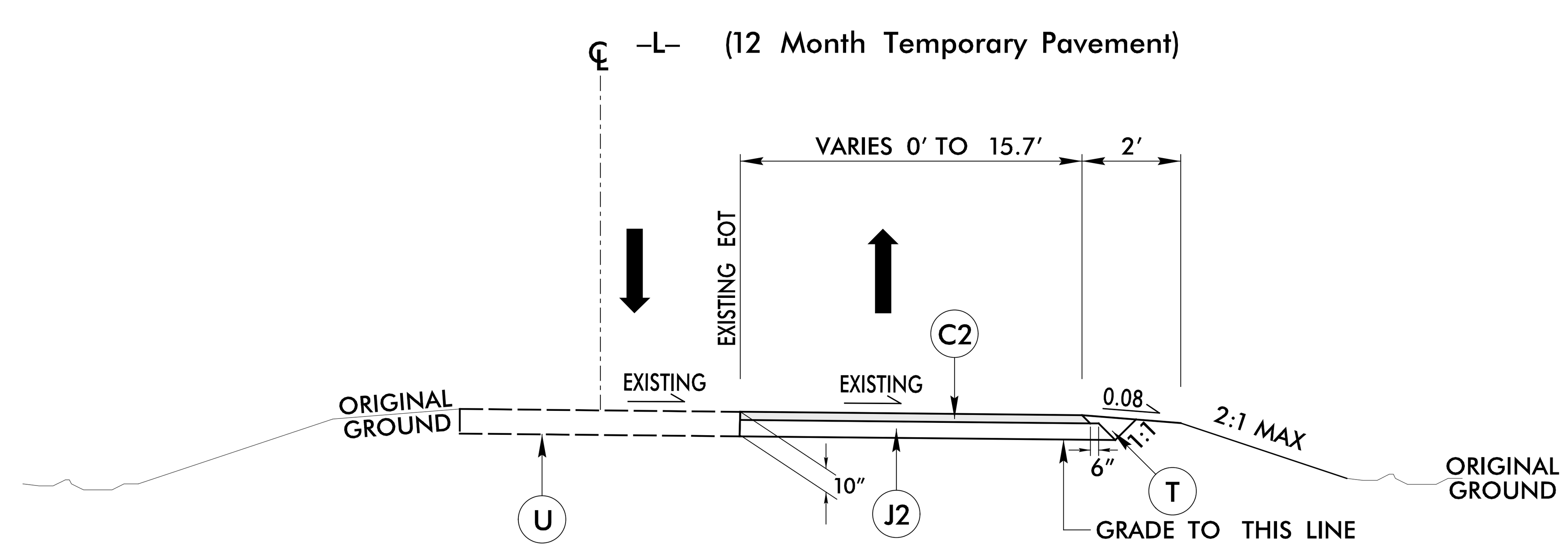
TYPICAL SECTION NO. 3

USE TYPICAL SECTION NO. 3 FOR:
-L- STA 17+50.00 TO STA 37+42.50 BEGIN BRIDGE
-L- STA 39+27.50 END BRIDGE TO STA 97+00.00



TYPICAL SECTION NO. 4

USE TYPICAL SECTION NO. 4 FOR:
-L- STA 97+00.00 TO STA 102+46.44



TYPICAL SECTION NO. 5

USE TYPICAL SECTION NO. 5 FOR:
-L- STA 61+86.59 TO STA 73+87.53
SEE TMP PLANS FOR TEMPORARY PAVEMENT LOCATIONS

* PROOF ROLLING

4/30/2018
U4734_RDY_TYP.dgn
HDR ENGINEERING, INC.

C1	1½" S9.5B
C2	2" S9.5B
C3	3" S9.5B
C4	VAR S9.5B
D1	4" I19.0C
D2	VAR I19.0C
E1	4" B25.0C
E2	5" B25.0C
E3	VAR B25.0C
J1	6" ABC
J2	8" ABC
K	STABILIZATION
N	GEOTEXTILE
R1	2'-6" C&G
R2	1'-6" MOUNTABLE C&G
R3	5" MONO. CONC. ISLAND
S	4" SIDEWALK
T	EARTH MATERIAL
U	EXIST. PAVEMENT
V	4" CONCRETE GREENWAY
W1	VAR WEDGING
W2	VAR WEDGING
W3	VAR WEDGING
W4	VAR WEDGING
X	MILLING 1.5"

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ICA Engineering, Inc.
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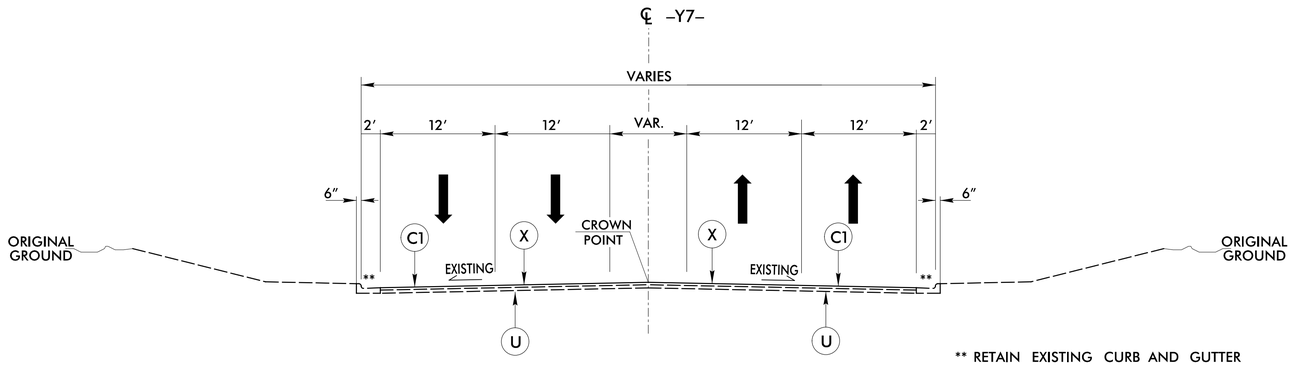
Suite 900
Raleigh, NC 27601
NC License No: F-0258

PROJECT REFERENCE NO.	SHEET NO.
U-4734	2A-3

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 032074 ENGINEER DENA C SNEAD
DocuSigned by: 4/30/2018
Dena C. Snead

PAVEMENT DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 024964 ENGINEER JOSEPH T HOLLAND
DocuSigned by: 4/30/2018
Joseph T. Holland

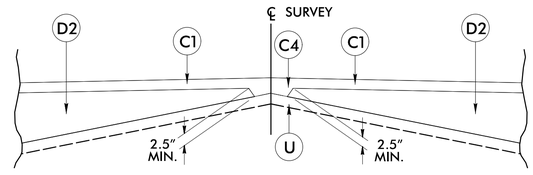
2ABS DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



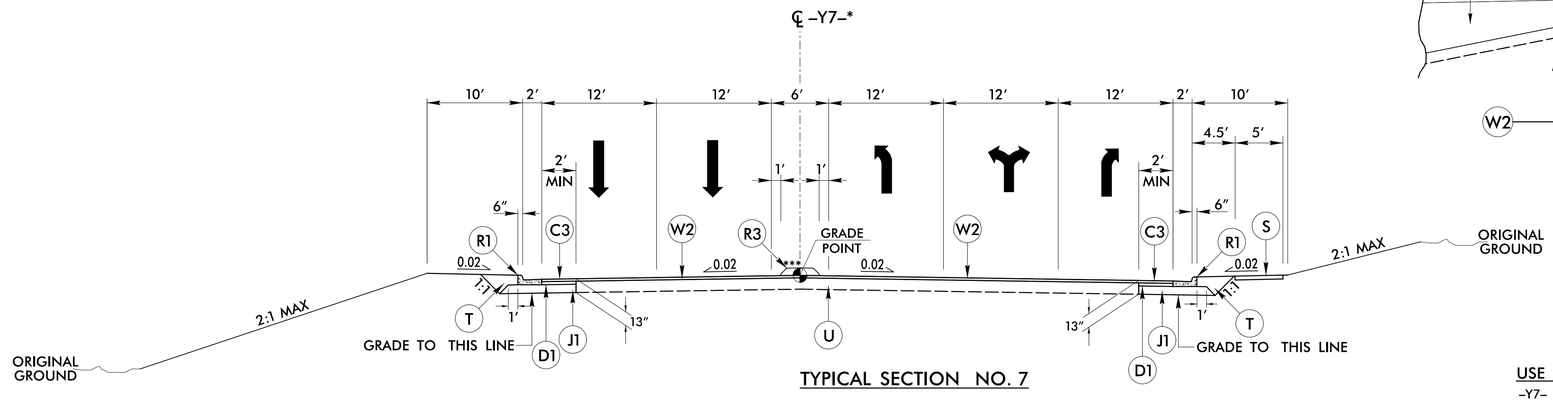
** RETAIN EXISTING CURB AND GUTTER

TYPICAL SECTION NO. 6

USE TYPICAL SECTION NO. 6 FOR:
–Y7– STA 11+46.50 TO STA 18+00.00



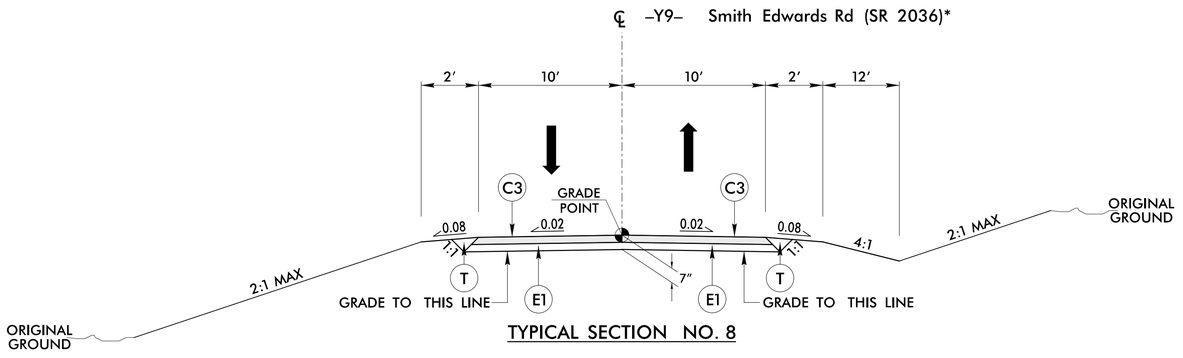
W2 Detail Showing Method of Wedging
FOR –Y7–, –Y10–, AND –Y11–



TYPICAL SECTION NO. 7

*** ALL CONC. ISLANDS TO BE KEYED–IN

USE TYPICAL SECTION NO. 7 FOR:
–Y7– STA 18+00.00 TO STA 20+58.35



TYPICAL SECTION NO. 8

USE TYPICAL SECTION NO. 8 FOR:
–Y9– STA 10+38.82 TO STA 11+75.00

* PROOF ROLLING

C1	1½″ S9.5B
C2	2″ S9.5B
C3	3″ S9.5B
C4	VAR S9.5B
D1	4″ I19.0C
D2	VAR I19.0C
E1	4″ B25.0C
E2	5″ B25.0C
E3	VAR B25.0C
J1	6″ ABC
J2	8″ ABC
K	STABILIZATION
N	GEOTEXTILE
R1	2′-6″ C&G
R2	1′-6″ MOUNTABLE C&G
R3	5″ MONO. CONC. ISLAND
S	4″ SIDEWALK
T	EARTH MATERIAL
U	EXIST. PAVEMENT
V	4″ CONCRETE GREENWAY
W1	VAR WEDGING
W2	VAR WEDGING
W3	VAR WEDGING
W4	VAR WEDGING
X	MILLING 1.5″

* PROOF ROLLING

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Raleigh, NC 27601
NC License No: F-0258

PROJECT REFERENCE NO. U-4734
SHEET NO. 2A-4

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 032074 ENGINEER DENA C. SNEAD — 4/30/2018
PAVEMENT DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 024964 ENGINEER JOSEPH T. HOLLAND — 4/30/2018

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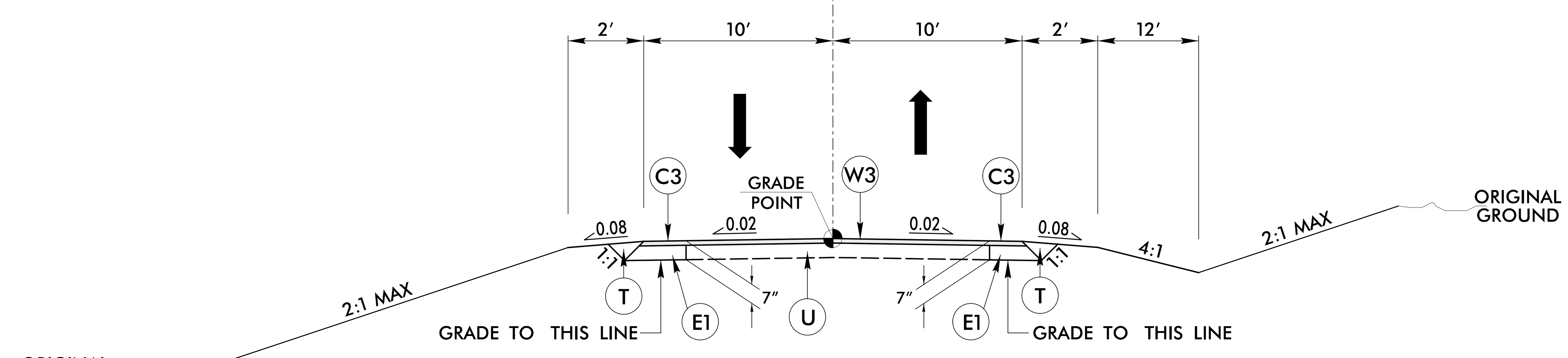
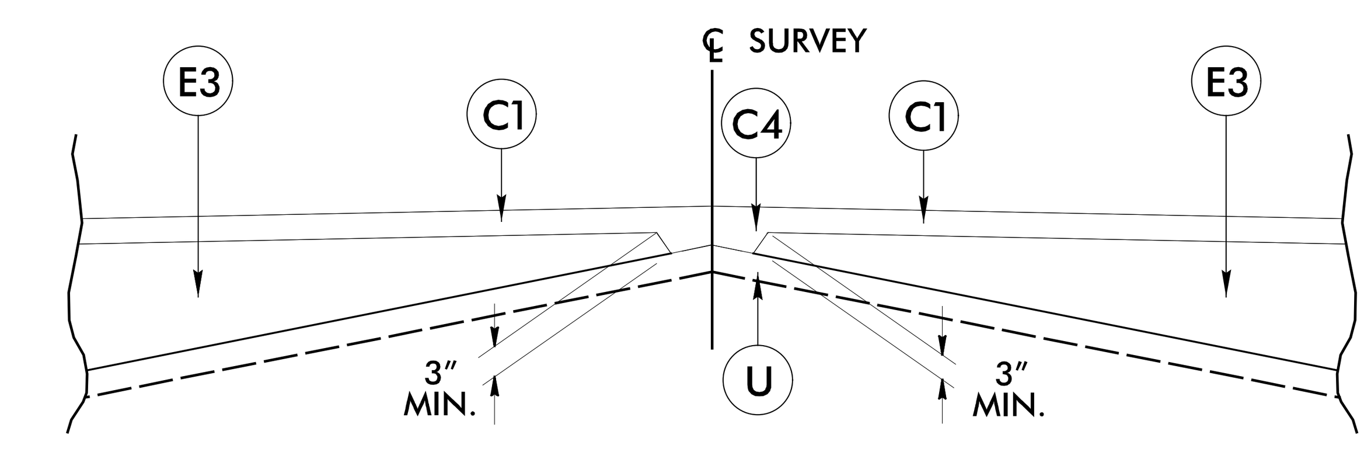
℄ -Y9- Smith Edwards Rd (SR 2036)*



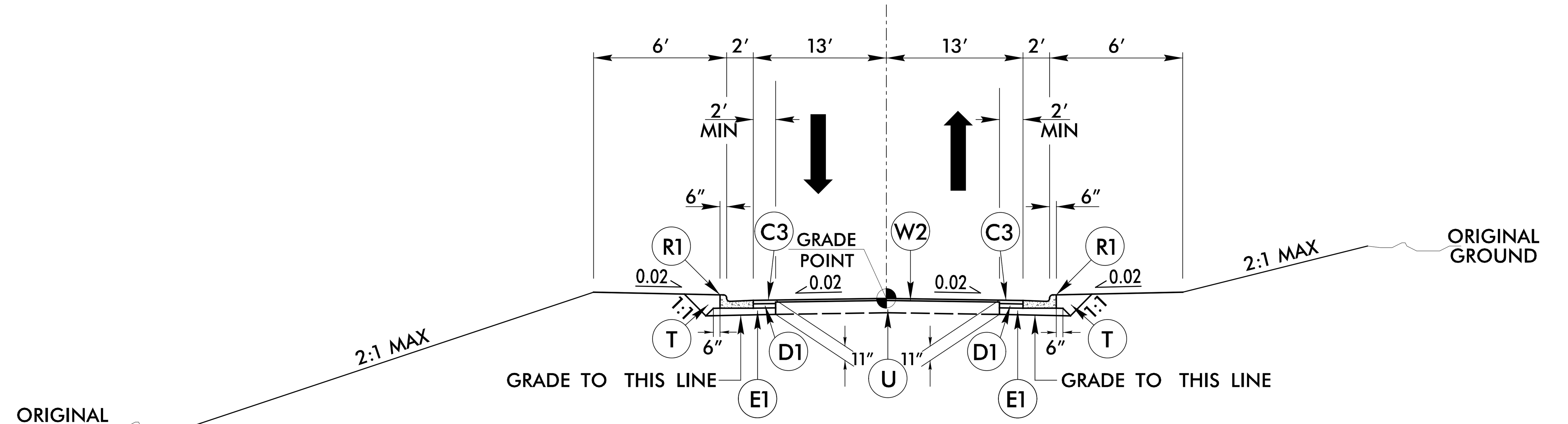
TYPICAL SECTION NO. 9

USE TYPICAL SECTION NO. 10 FOR:
-Y9- STA 11+75.00 TO STA 13+00.00



W3 Detail Showing Method of Wedging FOR -Y9- AND -Y14-

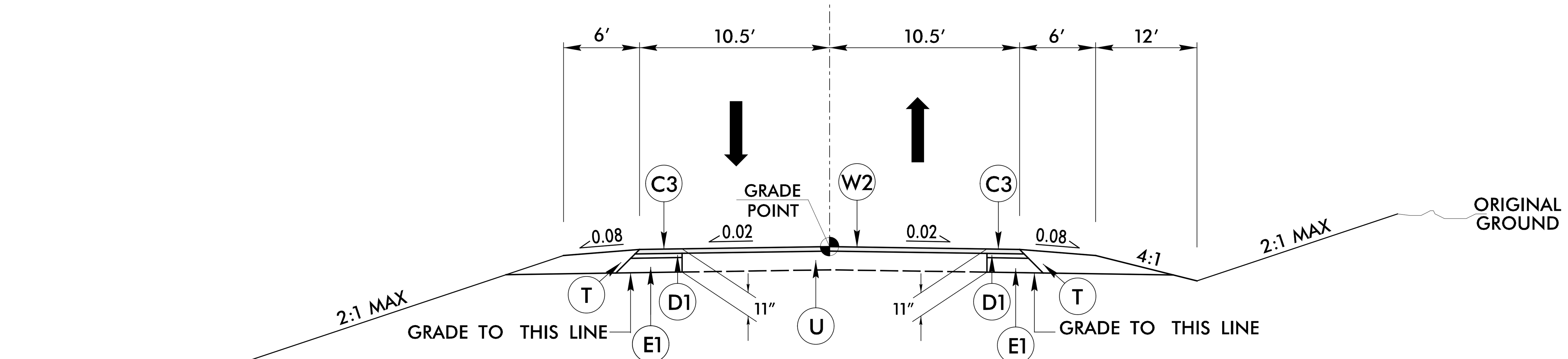
℄ -Y10- Huntington Run Lane*



TYPICAL SECTION NO. 10

USE TYPICAL SECTION NO. 10 FOR:
-Y10- STA 13+00.00 TO STA 14+01.47

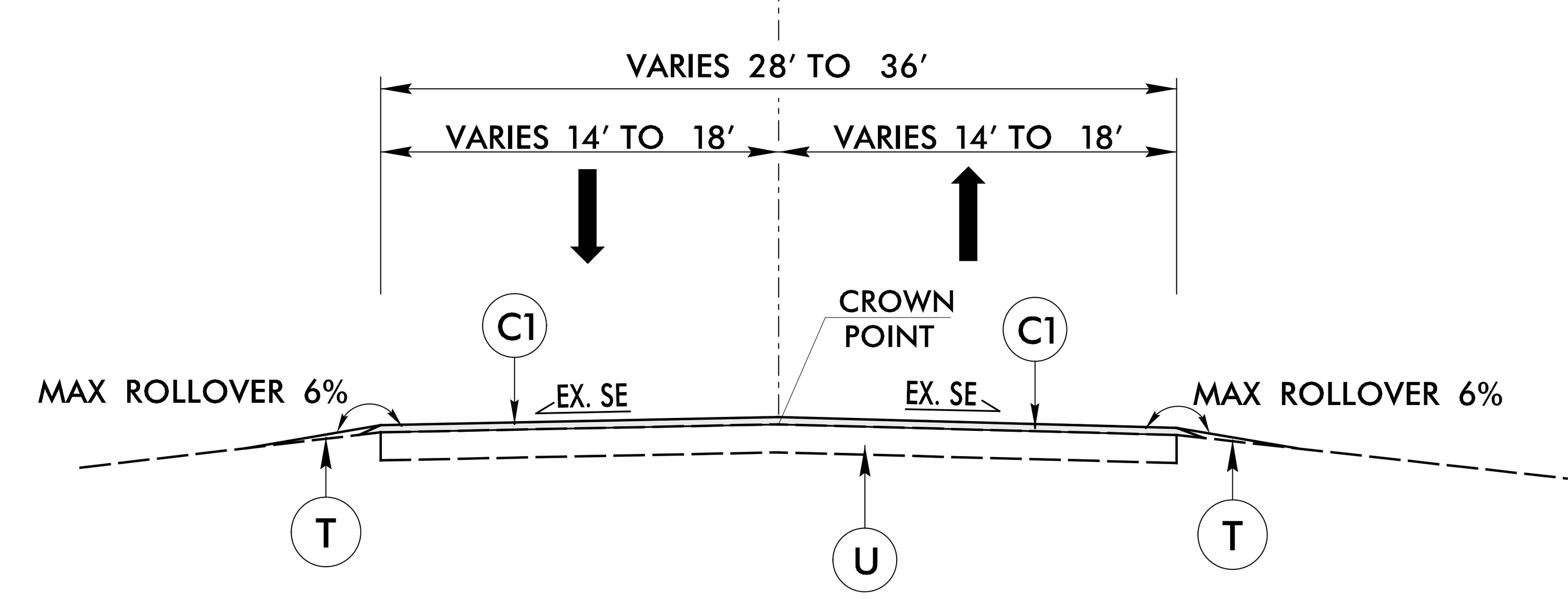
℄ -Y11- Hollow Creek Ln (SR 4483)*



TYPICAL SECTION NO. 11

USE TYPICAL SECTION NO. 11 FOR:
-Y11- STA 10+37.56 TO STA 11+30.00

℄ -Y13- North Main St (NC 150)



TYPICAL SECTION NO. 12

USE TYPICAL SECTION NO. 12 FOR:
-Y13- STA 10+00.00 TO STA 12+00.00
-Y13- STA 26+35.00 TO STA 30+00.00

C1	1½″ S9.5B
C2	2″ S9.5B
C3	3″ S9.5B
C4	VAR S9.5B
D1	4″ I19.0C
D2	VAR I19.0C
E1	4″ B25.0C
E2	5″ B25.0C
E3	VAR B25.0C
J1	6″ ABC
J2	8″ ABC
K	STABILIZATION
N	GEOTEXTILE
R1	2′-6″ C&G
R2	1′-6″ MOUNTABLE C&G
R3	5″ MONO. CONC. ISLAND
S	4″ SIDEWALK
T	EARTH MATERIAL
U	EXIST. PAVEMENT
V	4″ CONCRETE GREENWAY
W1	VAR WEDGING
W2	VAR WEDGING
W3	VAR WEDGING
W4	VAR WEDGING
X	MILLING 1.5″

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ICA Engineering, Inc.
555 Fayetteville St,
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Raleigh, NC 27601
NC License No: F-0258

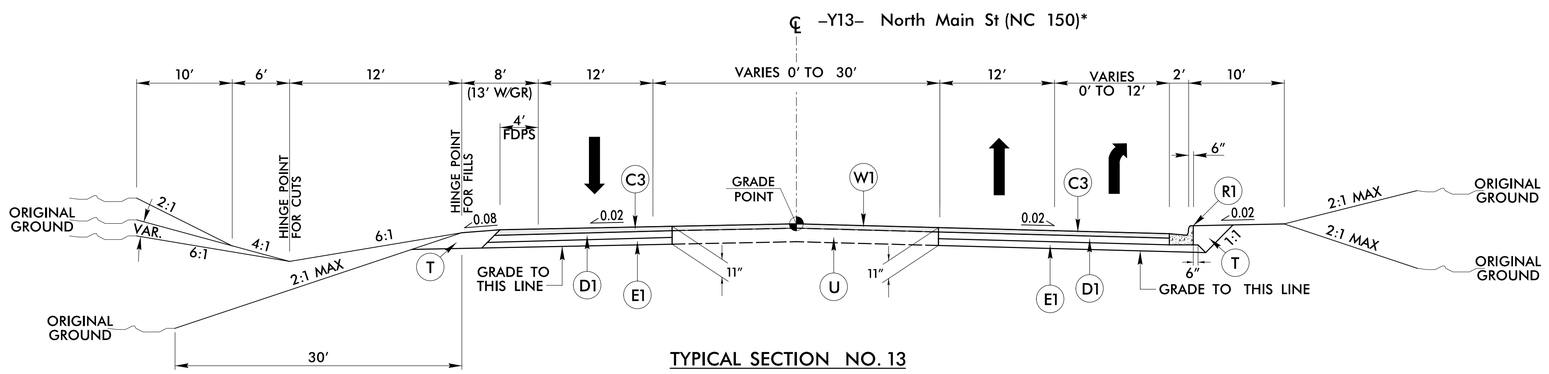
PROJECT REFERENCE NO.	SHEET NO.
U-4734	2A-5

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 032074 ENGINEER DENA C SNEAD
DocuSigned by: 4/30/2018
Dena C. Snead

PAVEMENT DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 024964 ENGINEER JOSEPH T HOLLAND
DocuSigned by: 4/30/2018
Joseph T. Holland

2A85 **DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED**

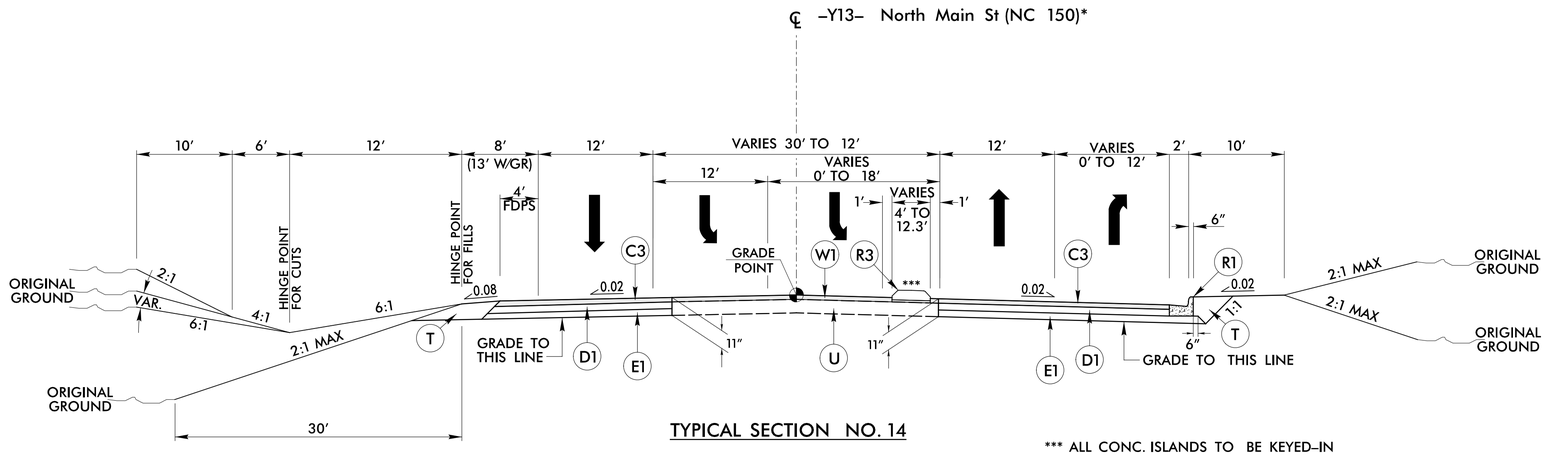
℄ –Y13– North Main St (NC 150)*



TYPICAL SECTION NO. 13

USE TYPICAL SECTION NO. 13 FOR:
–Y13– STA 12+00.00 TO STA 20+11.00

℄ –Y13– North Main St (NC 150)*

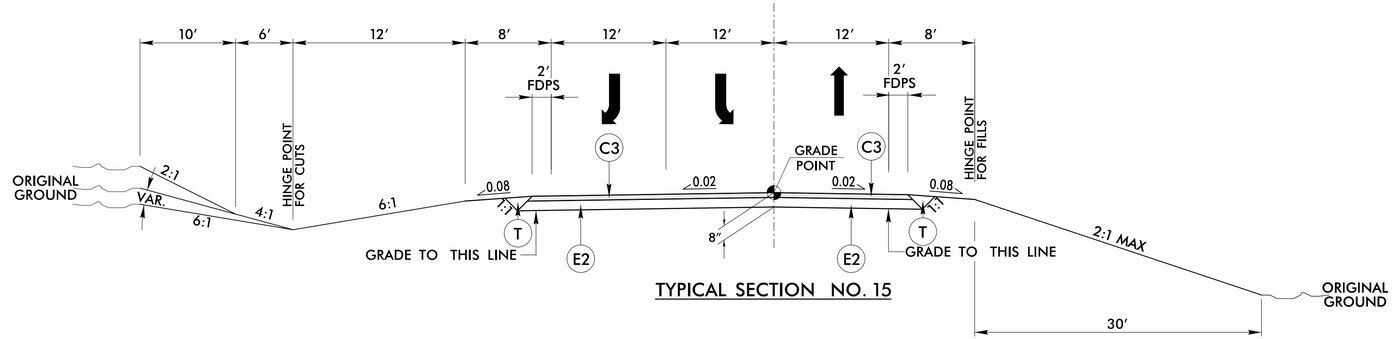


TYPICAL SECTION NO. 14

*** ALL CONC. ISLANDS TO BE KEYED–IN

USE TYPICAL SECTION NO. 14 FOR:
–Y13– STA 20+11.00 TO STA 26+35.00

℄ –Y14– County Line Rd (SR 2037)*



TYPICAL SECTION NO. 15

USE TYPICAL SECTION NO. 15 FOR:
–Y14– STA 10+32.40 TO STA 11+50.00

* PROOF ROLLING

C1	1½″ S9.5B
C2	2″ S9.5B
C3	3″ S9.5B
C4	VAR S9.5B
D1	4″ I19.0C
D2	VAR I19.0C
E1	4″ B25.0C
E2	5″ B25.0C
E3	VAR B25.0C
J1	6″ ABC
J2	8″ ABC
K	STABILIZATION
N	GEOTEXTILE
R1	2′-6″ C&G
R2	1′-6″ MOUNTABLE C&G
R3	5″ MONO. CONC. ISLAND
S	4″ SIDEWALK
T	EARTH MATERIAL
U	EXIST. PAVEMENT
V	4″ CONCRETE GREENWAY
W1	VAR WEDGING
W2	VAR WEDGING
W3	VAR WEDGING
W4	VAR WEDGING
X	MILLING 1.5″

ICA Engineering, Inc.
555 Fayetteville St,
Suite 900
Raleigh, NC 27601
NC License No: F-0258

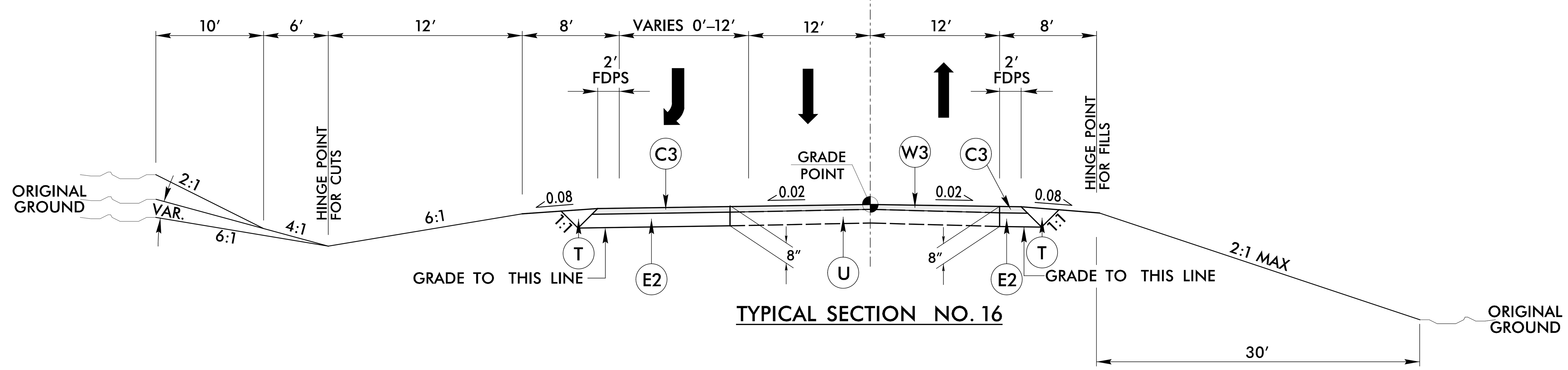
PROJECT REFERENCE NO.	SHEET NO.
U-4734	2A-6

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 032074 ENGINEER DENA C. SNEAD — 4/30/2018

PAVEMENT DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 024964 ENGINEER JOSEPH T. HOLLAND — 4/30/2018

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

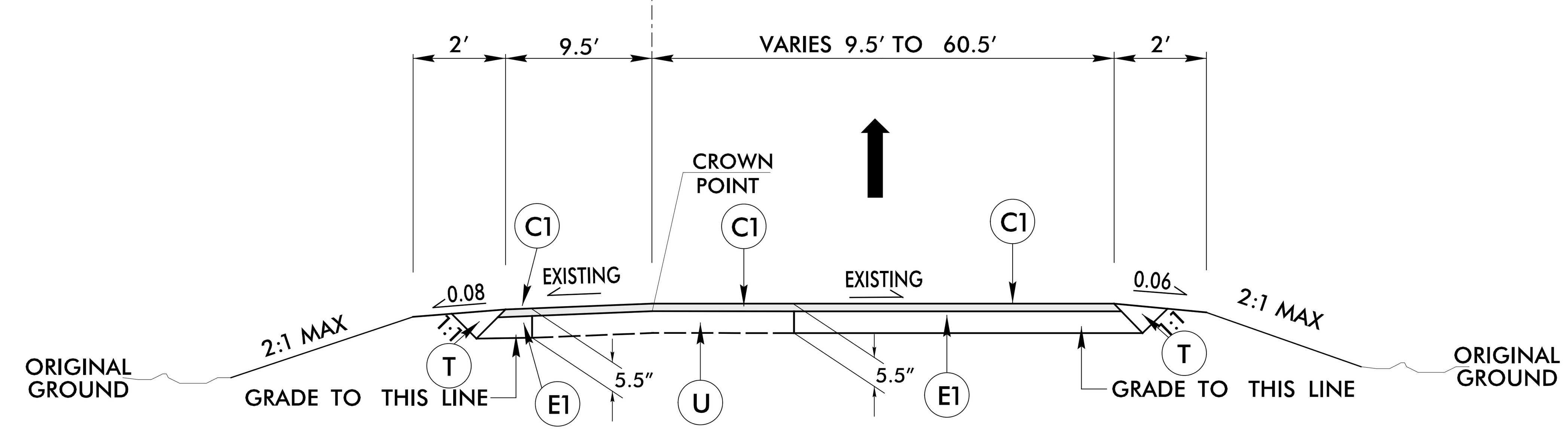
℄ -Y14- County Line Rd (SR 2037)*



TYPICAL SECTION NO. 16

USE TYPICAL SECTION NO. 16 FOR:
-Y14- STA 11+50.00 TO STA 14+03.00

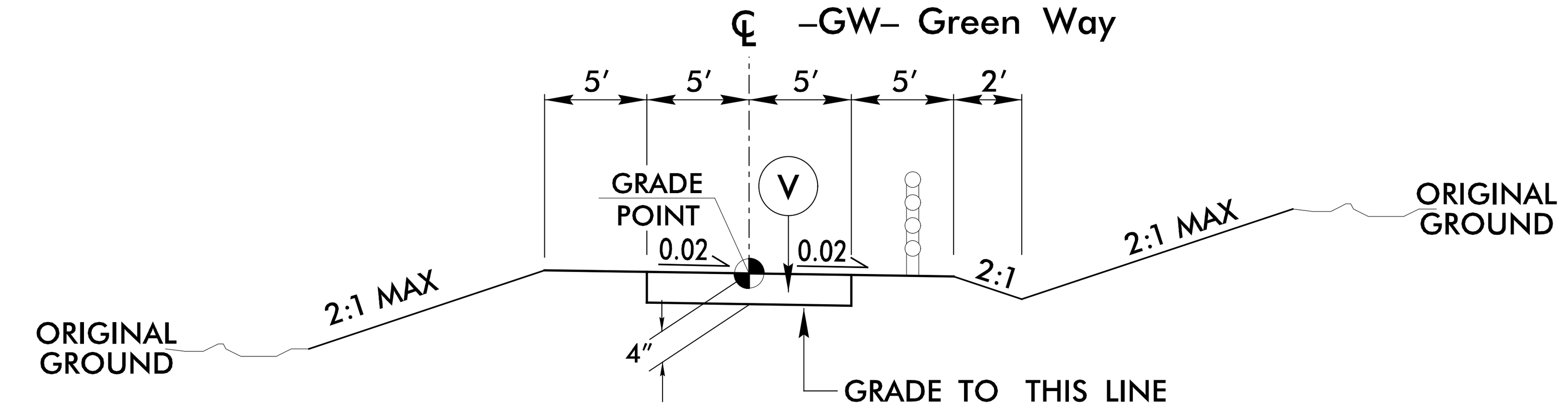
℄ -Y12- Cul-De-Sac*



TYPICAL SECTION NO. 17

USE TYPICAL SECTION NO. 17 FOR:
-Y12- STA 12+15.00 TO STA 13+26.00

℄ -GW- Green Way

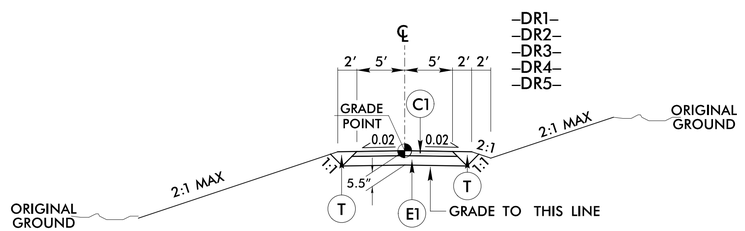


TYPICAL SECTION NO. 18

USE TYPICAL SECTION NO. 18 FOR:
-GW- STA 10+00.00 TO STA 14+13.18

* PROOF ROLLING

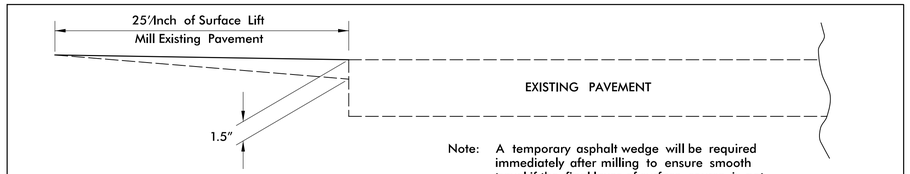
C1	1½" S9.5B
C2	2" S9.5B
C3	3" S9.5B
C4	VAR S9.5B
D1	4" I19.0C
D2	VAR I19.0C
E1	4" B25.0C
E2	5" B25.0C
E3	VAR B25.0C
J1	6" ABC
J2	8" ABC
K	STABILIZATION
N	GEOTEXTILE
R1	2'-6" C&G
R2	1'-6" MOUNTABLE C&G
R3	5" MONO. CONC. ISLAND
S	4" SIDEWALK
T	EARTH MATERIAL
U	EXIST. PAVEMENT
V	4" CONCRETE GREENWAY
W1	VAR WEDGING
W2	VAR WEDGING
W3	VAR WEDGING
W4	VAR WEDGING
X	MILLING 1.5"



TYPICAL SECTION NO. 19

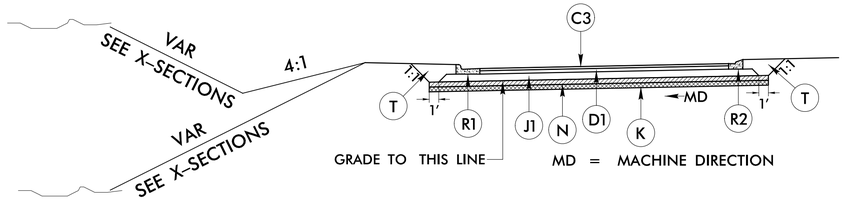
USE TYPICAL SECTION NO. 19 FOR:

–DR1– STA 10+54.00 TO STA 12+27.35
–DR2– STA 10+38.73 TO STA 13+65.00
–DR3– STA 10+00.00 TO STA 10+66.40
–DR4– STA 10+49.56 TO STA 11+35.00
–DR5– STA 10+05.00 TO STA 11+20.00



Incidental Milling Pavement Key–In Detail (Tie–In)

GEOTEXTILE FOR PAVEMENT STABILIZATION DETAIL



USE GEOTEXTILE FOR PAVEMENT STABLILIZATION DETAIL IN CONJUNCTION WITH APPROPRIATE TYPICAL SECTIONS AT LOCATIONS NOTED BELOW.

SURVEY LINE	STATION	STATION	OFFSET	SY
–L–	19+75	21+75	LT	711
–L–	24+40	29+50	CL	3627
–L–	36+25	37+45	CL	853
–L–	39+25	41+00	CL	1244
–L–	53+00	55+00	RT	711
			TOTAL:	7146

SEE SHEET 3G–1 FOR ADDITIONAL INFORMATION.

(THESE LOCATIONS TO BE INVESTIGATED DURING CONSTRUCTION)

ICA Engineering, Inc.
555 Fayetteville St,
Suite 900
Raleigh, NC 27601
NC License No: F–0258

PROJECT REFERENCE NO.	SHEET NO.
U–4734	2A–7

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 032074 ENGINEER DENA C SNEAD
DocuSigned by: 4/30/2018
Dena C. Snead

PAVEMENT DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 024964 ENGINEER JOSEPH T HOLLAND
DocuSigned by: 4/30/2018
Joseph T. Holland

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PROJECT REFERENCE NO.	SHEET NO.
U-4734	2B-1

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 032074 ENGINEER DENA C. SNEAD

DocuSigned by: Dena C. Snead 4/25/2018

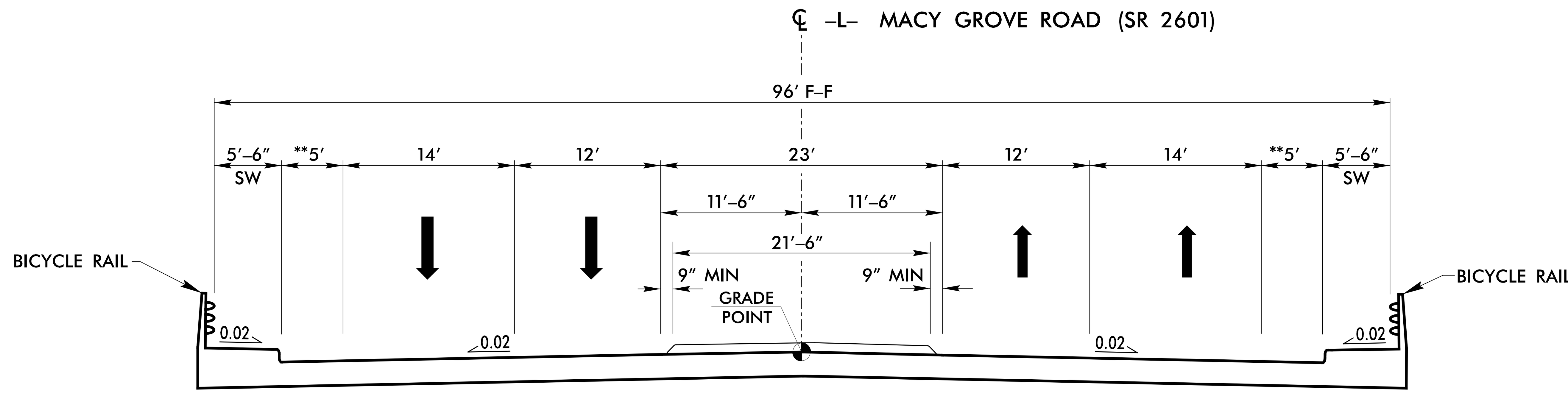
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

HDR Engineering, Inc. of the Carolinas
555 Fayetteville St, Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116

-L-
FUNCTIONAL CLASS: COLLECTOR
2018 ADT = 7,400
2038 ADT = 10,300
DHV = 11%
D = 55%
TTST = 2% DUAL = 4%
V = 50mph

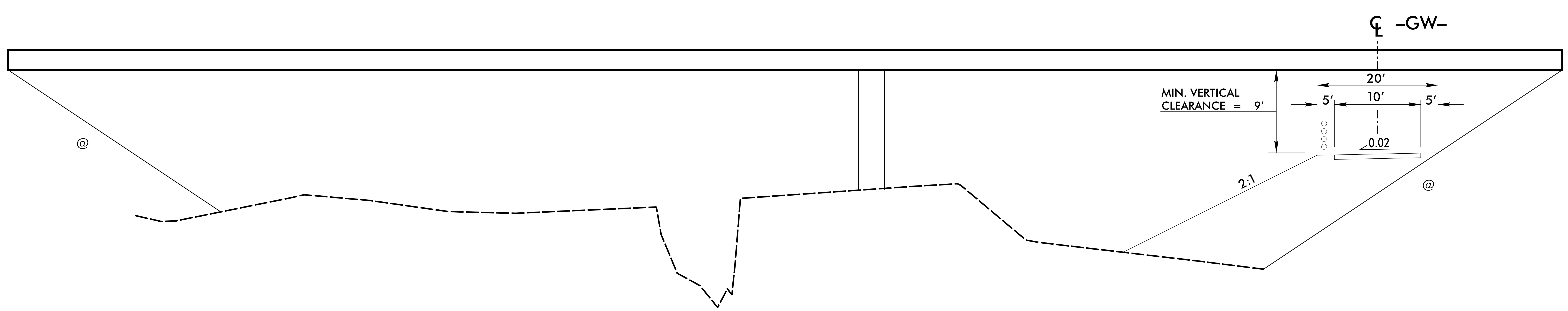
STRUCTURE TYPICAL SECTIONS

-L- (SR 2601 - MACY GROVE ROAD) OVER REEDY FORK CREEK AND -GW- (GREEN WAY)



TYPICAL SECTION ON -L- STRUCTURE OVER REEDY FORK CREEK
-L- 37+42.50 TO STA 39+27.50

**2' SHOULDER + 3' WIDENING FOR SPREAD



TYPICAL SECTION -L- OVER REEDY FORK CREEK AND GREENWAY

@ SLOPE DETERMINED BY THE SOILS AND FOUNDATION SECTION

PAVEMENT–BRIDGE RELATIONSHIP SKETCH

–L– (SR 2601 – MACY GROVE ROAD) OVER REEDY FORK CREEK AND –GW– (GREEN WAY)

PROJECT REFERENCE NO.	SHEET NO.
U-4734	2B-2

ROADWAY DESIGN ENGINEER

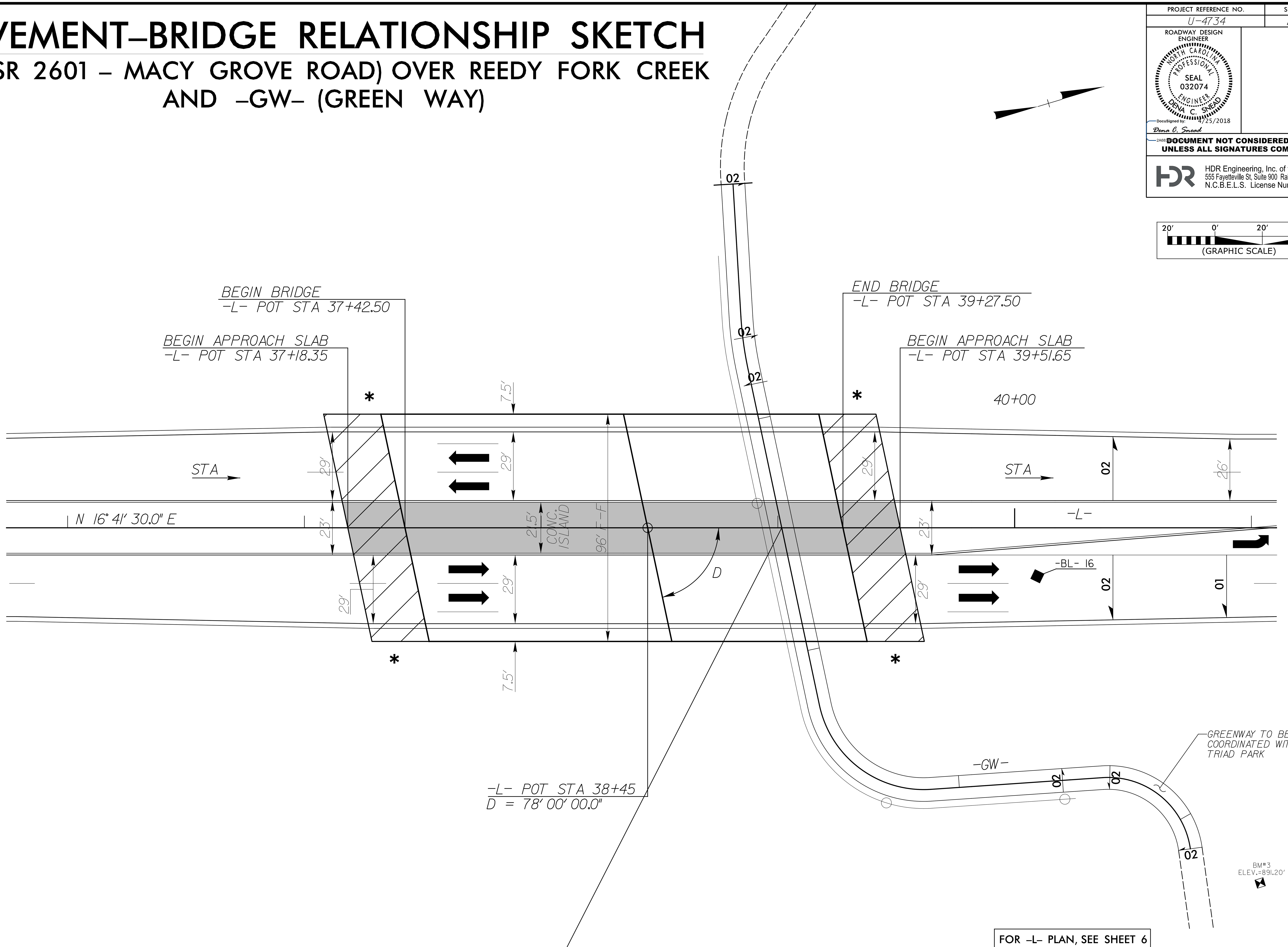
NORTH CAROLINA PROFESSIONAL SEAL 032074 ENGINEER DENA C. SNEAD

DocuSigned by: Dena C. Snead 4/25/2018

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

HDR Engineering, Inc. of the Carolinas
555 Fayetteville St, Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116

20' 0' 20' 40'
(GRAPHIC SCALE)



FOR –L– PLAN, SEE SHEET 6

BRIDGE APPROACH SLAB

* GUARDRAIL ANCHOR UNIT REQUIRED

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
U-4734	2B-3
RW SHEET NO.	

ROADWAY DESIGN ENGINEER

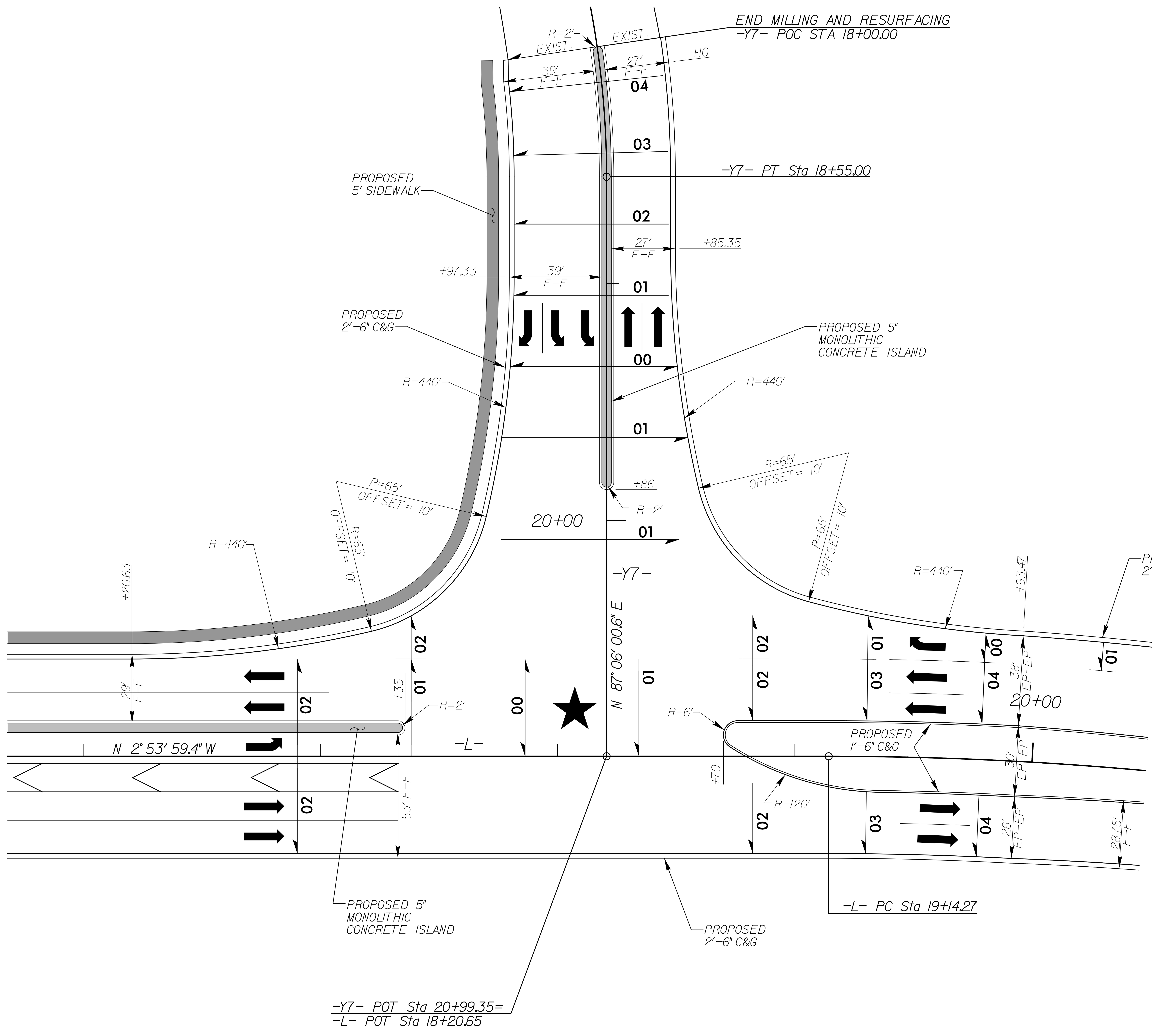
NORTH CAROLINA PROFESSIONAL SEAL 032074 ENGINEER DENA C. SNEAD

DocuSigned by: 4/25/2018
Dena C. Snead

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

HDR Engineering, Inc. of the Carolinas
555 Fayetteville St, Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116

NAD 83/2011



PROPOSED SIGNAL

25' 0' 25' 50'

GRAPHIC SCALE

4/25/2018
U4734_RDY_INTERSECTION_DETAILS.dgn
HDR ENGINEERING, INC.

DETAIL OF INTERSECTION -L- & -Y7-

FOR FULL VIEW OF THIS AREA, SEE PLAN SHEET 4

PROJECT REFERENCE NO.	SHEET NO.
U-4734	2B-4
RW SHEET NO.	

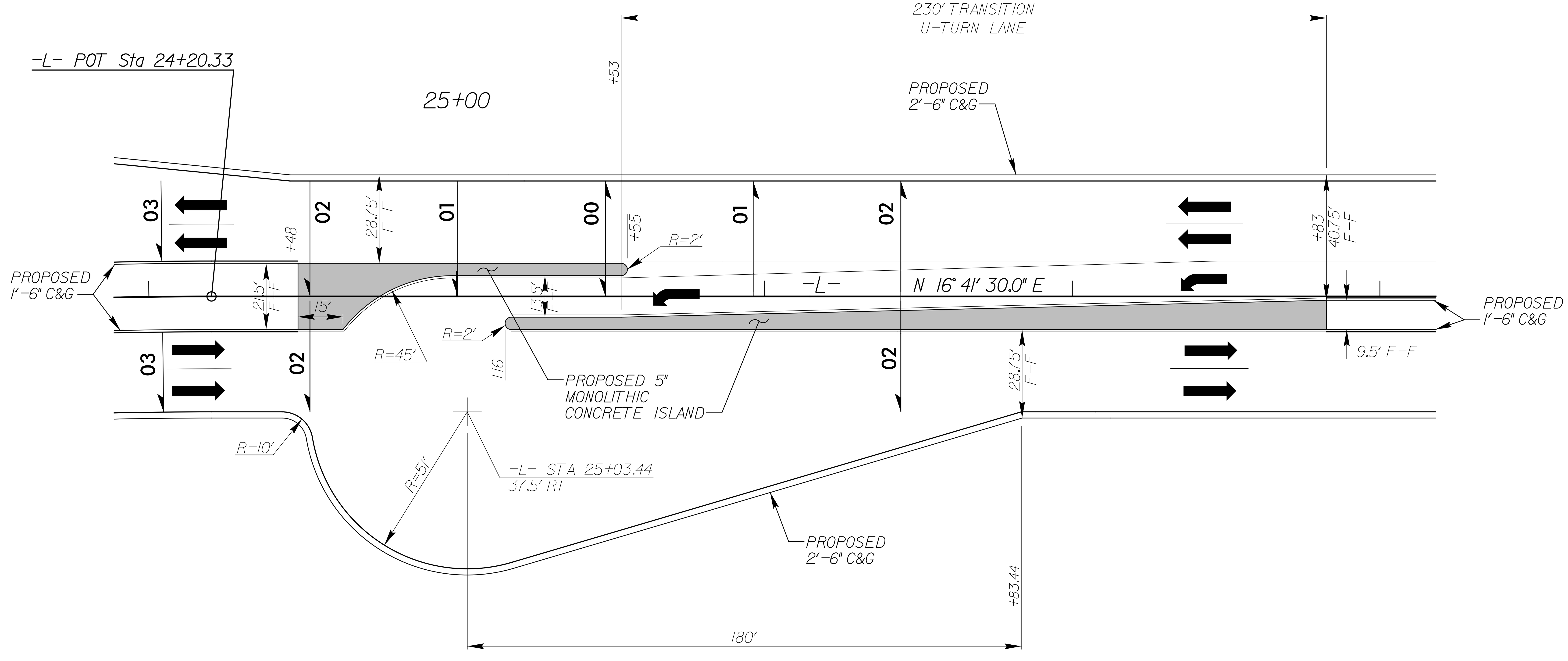
ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 032074 ENGINEER DENA C. SNEAD

DocuSigned by: Dena C. Snead 4/25/2018

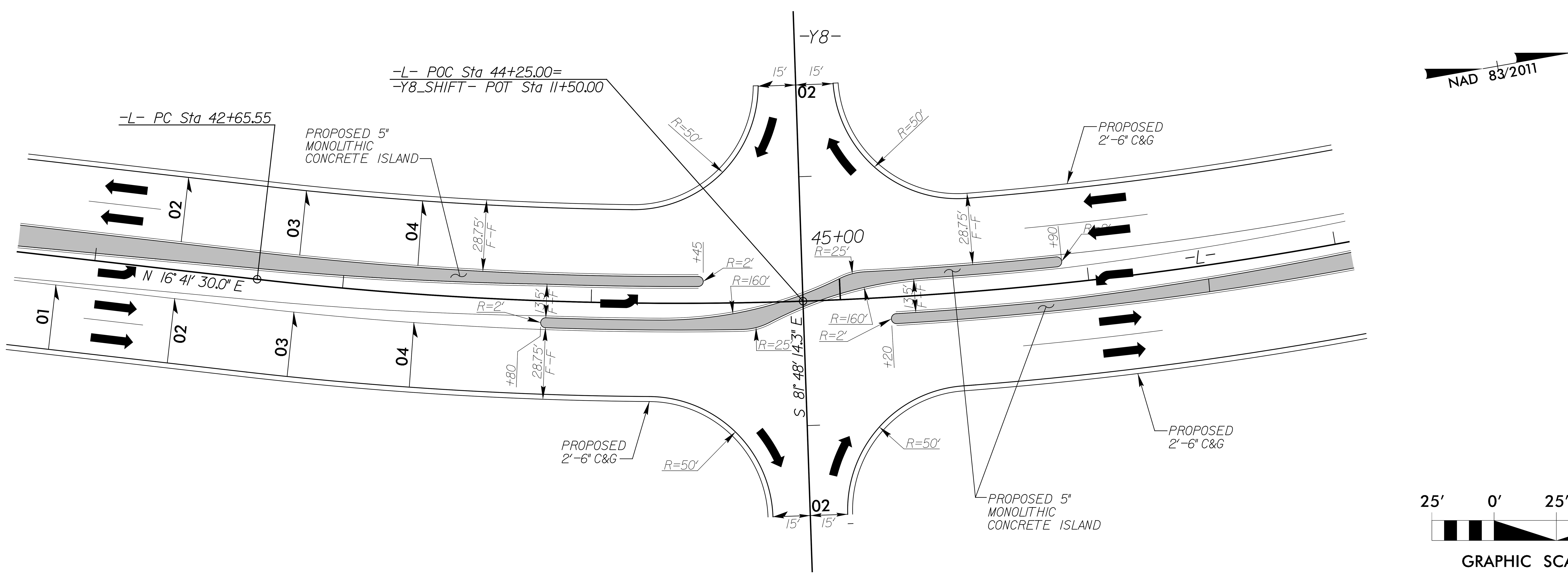
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

HDR Engineering, Inc. of the Carolinas
555 Fayetteville St, Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116



DETAIL OF LEFT OVER AT -L- STA 25+00

FOR FULL VIEW OF THIS AREA, SEE PLAN SHEET 5



DETAIL OF INTERSECTION -L- & -Y8-

FOR FULL VIEW OF THIS AREA, SEE PLAN SHEET 6

25' 0' 25' 50'
GRAPHIC SCALE

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
U-4734	2B-5
R/W SHEET NO.	

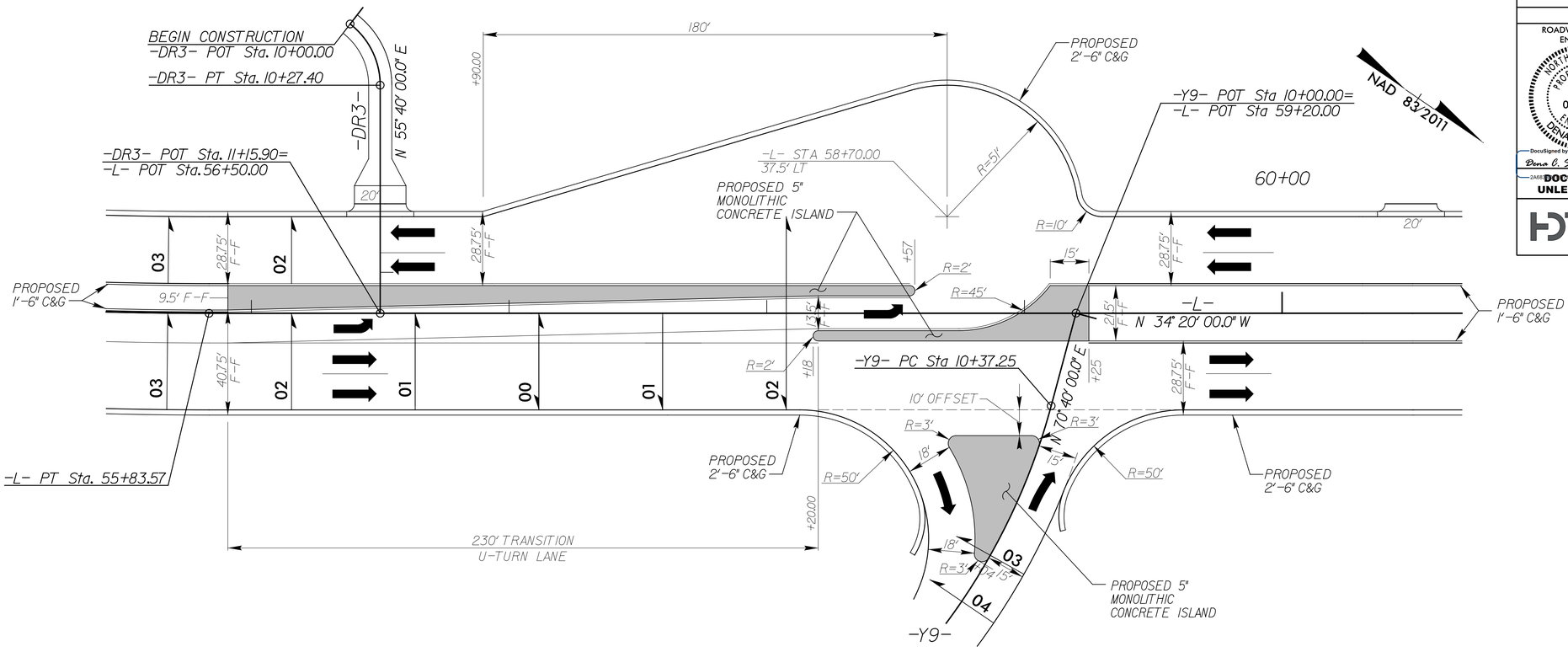
ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 032074 ENGINEER DENA C. SNEAD

DocuSigned by: 4/25/2018
Dena C. Snead
2A6B...

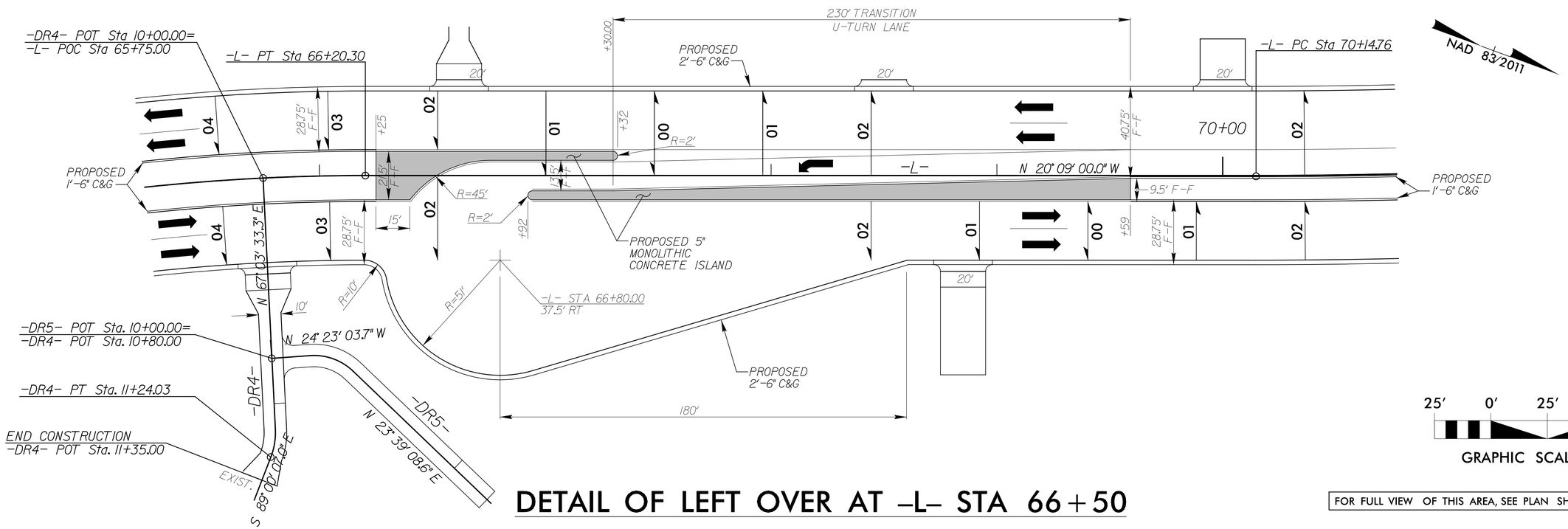
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

HDR Engineering, Inc. of the Carolinas
555 Fayetteville St, Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116



DETAIL OF INTERSECTION -L- & -Y9-

FOR FULL VIEW OF THIS AREA, SEE PLAN SHEET 7



DETAIL OF LEFT OVER AT -L- STA 66+50

FOR FULL VIEW OF THIS AREA, SEE PLAN SHEET 8

25' 0' 25' 50'

GRAPHIC SCALE

4/25/2018
U-4734 RDY_INTERSECTION_DETAILS.dgn
HDR ENGINEERING, INC.

8/17/99

HDR Engineering, Inc. of the Carolinas
555 Fayetteville St, Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116

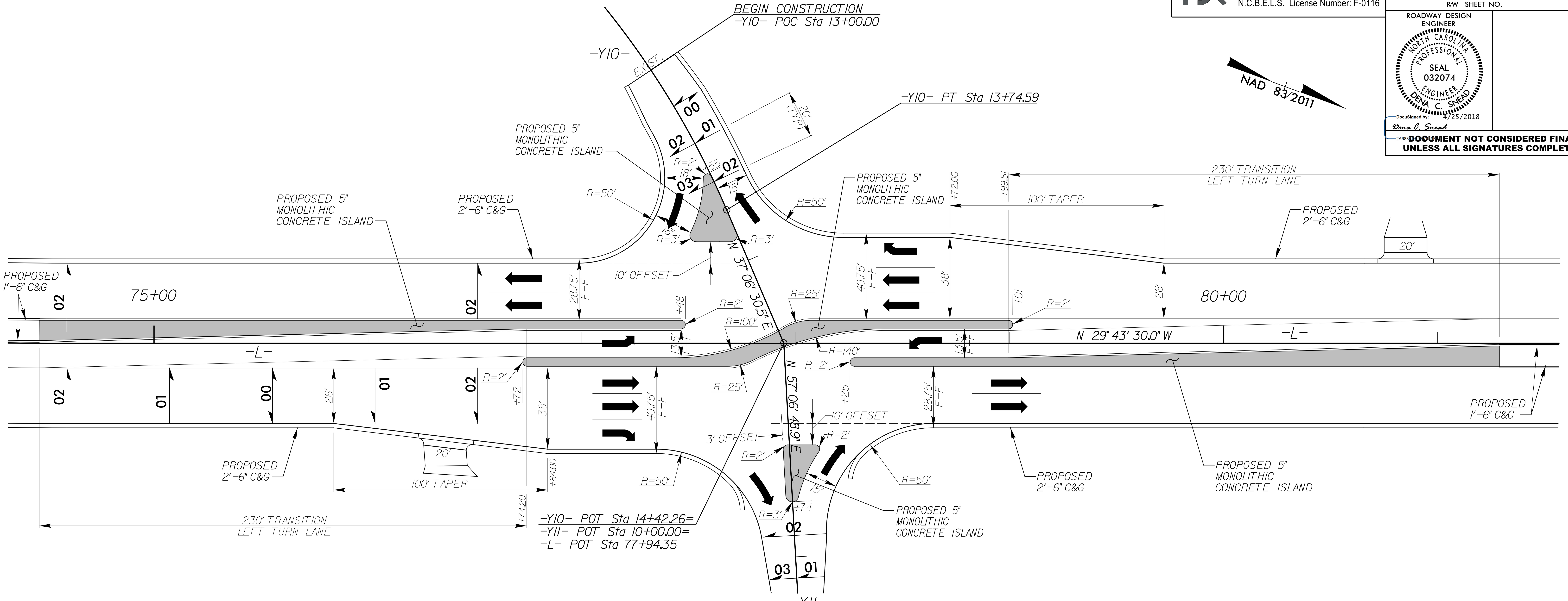
PROJECT REFERENCE NO.	SHEET NO.
U-4734	2B-6
RW SHEET NO.	

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 032074 ENGINEER DENA C. SNEAD

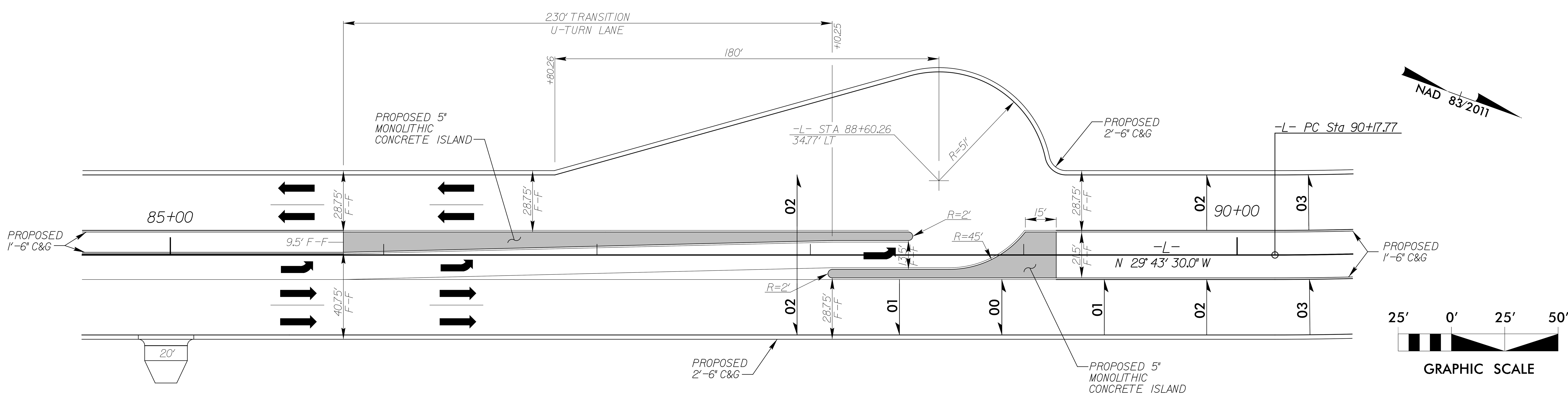
DocuSigned by: Dena C. Snead 4/25/2018

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



DETAIL OF INTERSECTION -L-, -Y10- & -Y11-

FOR FULL VIEW OF THIS AREA, SEE PLAN SHEET 9



DETAIL OF LEFT OVER AT -L- STA 88+50

FOR FULL VIEW OF THIS AREA, SEE PLAN SHEET 10

4/25/2018
U4734_RDY_INTERSECTION_DETAILS.dgn
HDR ENGINEERING, INC.

PROJECT REFERENCE NO.	SHEET NO.
U-4734	2B-7
RW SHEET NO.	

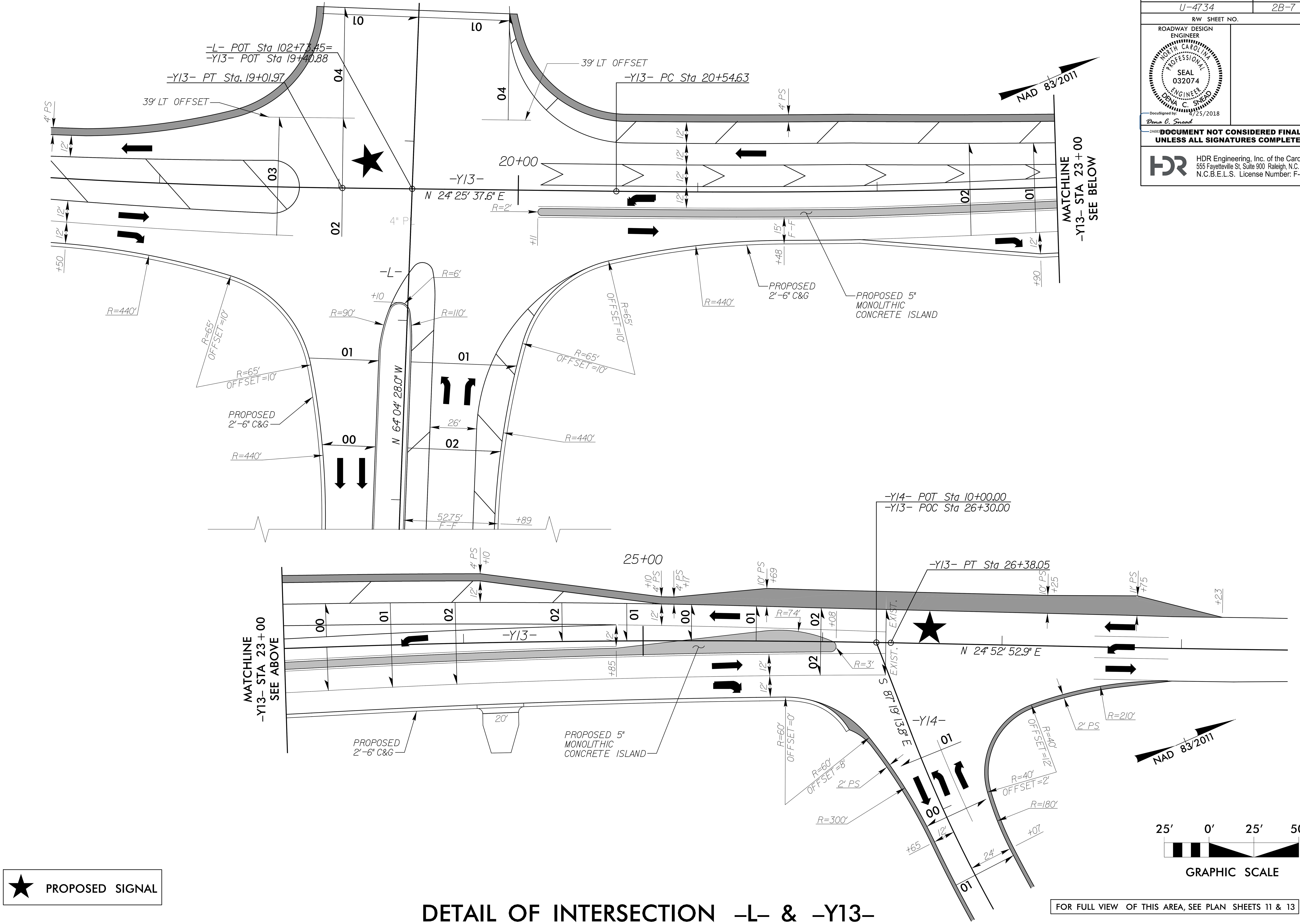
ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 032074 ENGINEER DENA C. SNEAD

DocuSigned by: Dena C. Snead 4/25/2018

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

HDR Engineering, Inc. of the Carolinas
555 Fayetteville St, Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116



★ PROPOSED SIGNAL

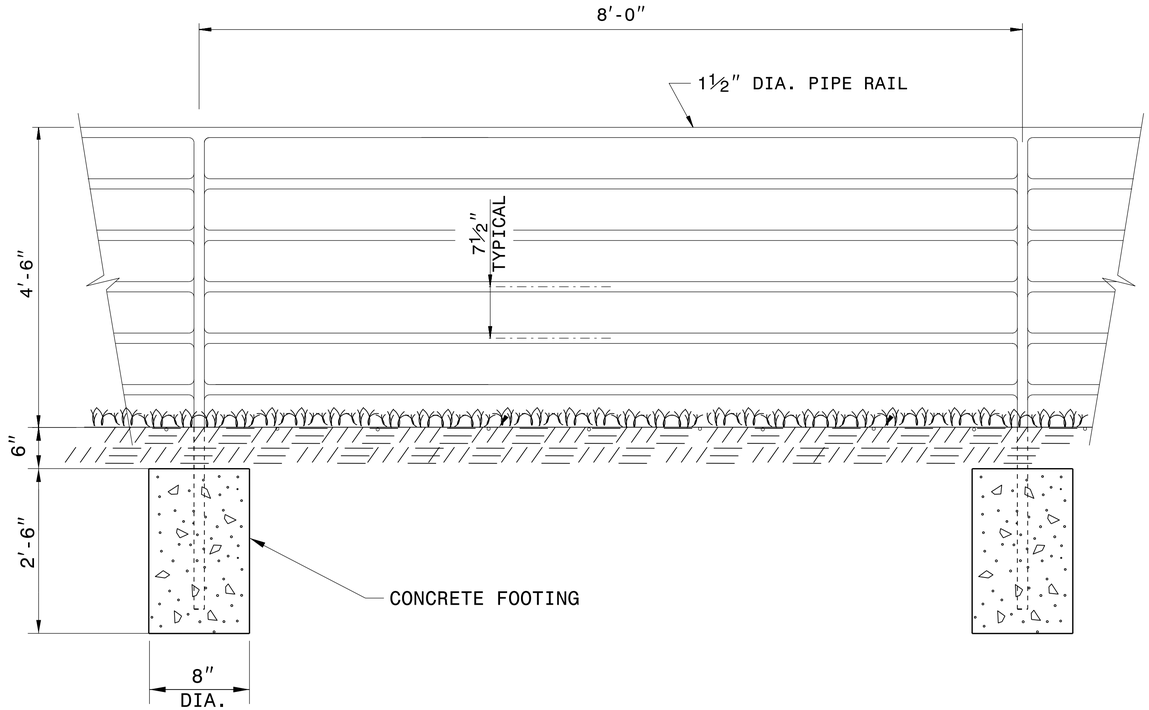
DETAIL OF INTERSECTION -L- & -Y13-

FOR FULL VIEW OF THIS AREA, SEE PLAN SHEETS 11 & 13

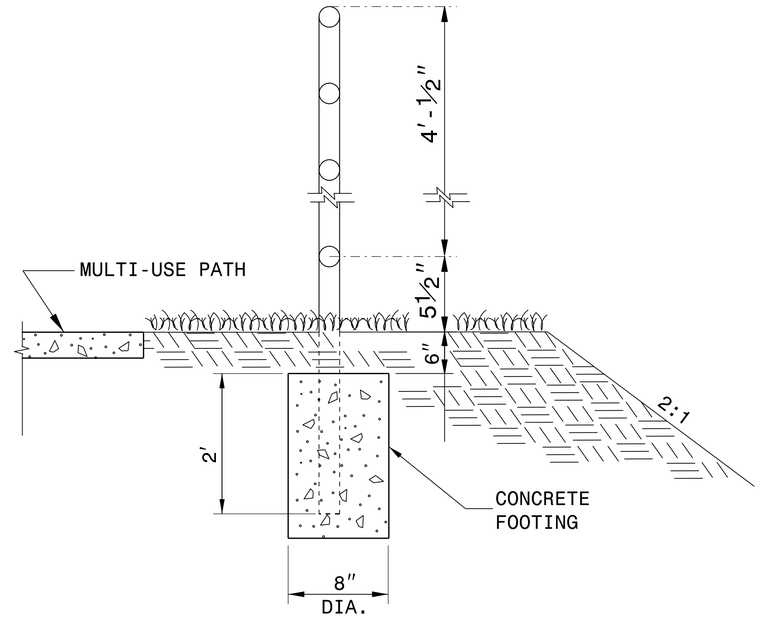
4/25/2018
U4734_Rdy_INTERSECTION_DETAILS.dgn
HDR ENGINEERING, INC.

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
U-4734	2C-1



ELEVATION OF HANDRAIL



INSET 'A'

NOTES:

CONSTRUCT PROPOSED STEEL PIPE RAIL OF 1½″ DIAMETER SCHEDULE 40 PLAIN END GALVANIZED STEEL PIPE MEETING THE REQUIREMENTS OF ASTM A53.

REPAIR GALVANIZING IN ACCORDANCE WITH SECTION 1076 OF THE NCDOT STANDARD SPECIFICATIONS.

PAINT, IF REQUIRED BY THE ENGINEER, IN ACCORDANCE WITH SECTION 1080 OF THE STANDARD SPECIFICATIONS.

WELD IN ACCORDANCE WITH ARTICLE 1072-18 OF THE STANDARD SPECIFICATIONS.

USE CLASS 'B' CONCRETE FOR HANDRAIL FOOTINGS.

PLACEMENT OF HANDRAIL IN RELATION TO SHOULDER BREAK POINT AND PATH MAY BE MODIFIED AS DIRECTED BY THE ENGINEER.

NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER Joel S. Howerton

DocuSigned by:
873F3D17DCDC45F...
4/25/2018

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

PROPOSED BIKE/PED SAFETY RAIL

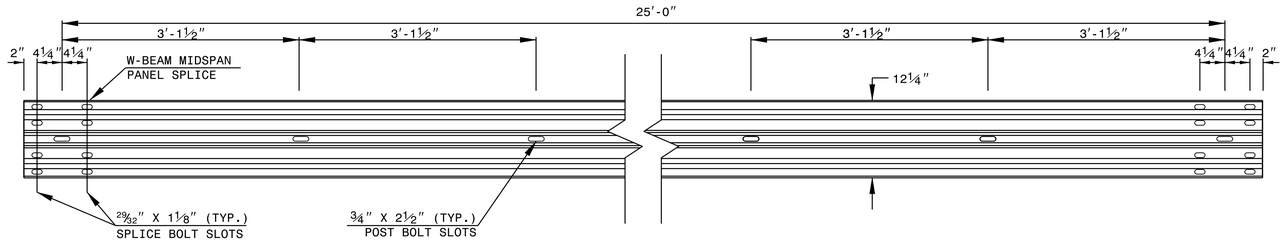
ORIGINAL BY: E.E. WARD DATE: 12-99
MODIFIED BY: _____ DATE: _____
CHECKED BY: _____ DATE: _____
FILE SPEC.: jhowerton/handrail adjacent to sidewalk.dgn

25-JAN-2018 07:30
S:\Contracts\Special Details\jhowerton\Handrail Adjacent to Sidewalk.dgn
jhowerton
AT CSD-292595

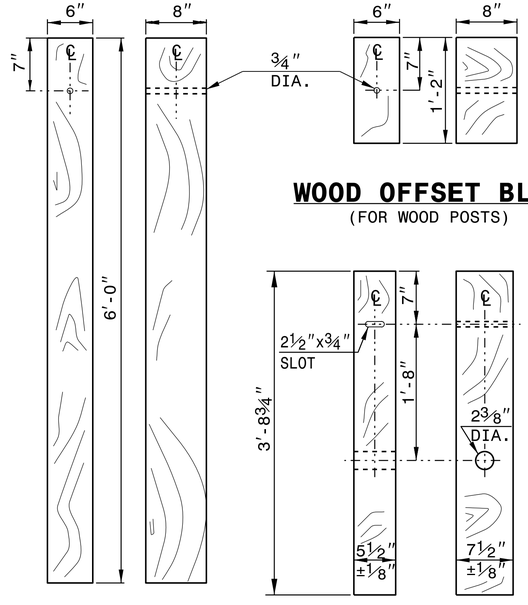
PROJECT REFERENCE NO.	SHEET NO.
U-4734	2C-2
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

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

ROADWAY DETAIL DRAWING FOR
GUARDRAIL INSTALLATION



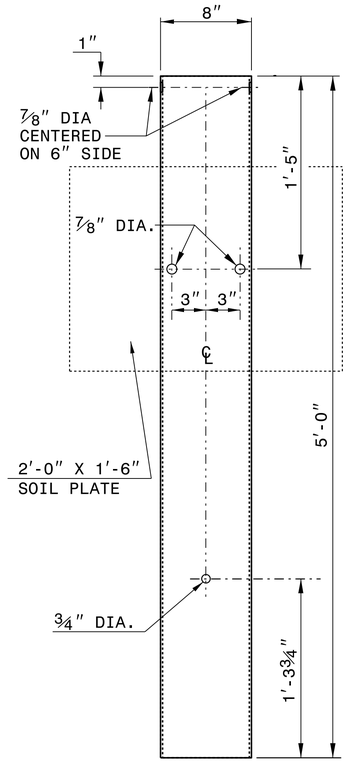
STANDARD W-BEAM GUARDRAIL



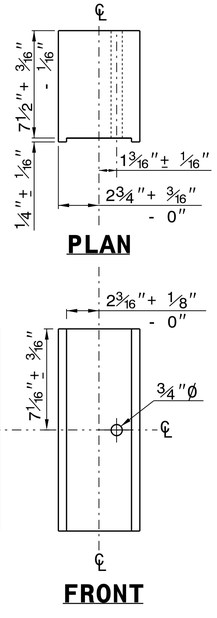
WOOD OFFSET BLOCK
(FOR WOOD POSTS)

STANDARD LINE POST

SHORT WOOD BREAKAWAY POST



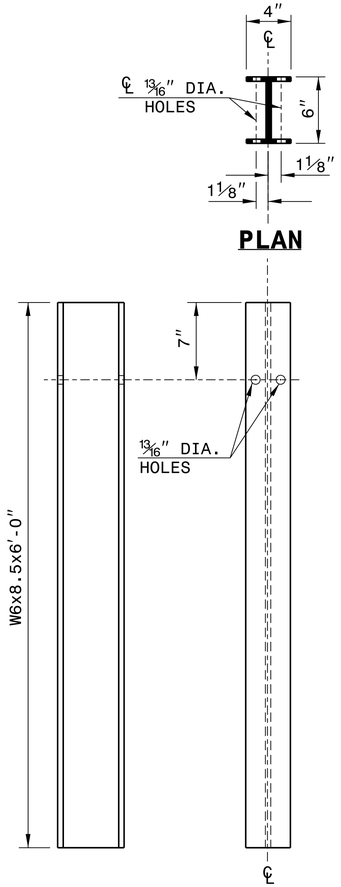
STEEL TUBE
TS 6"x8"x0.1875"



PLAN

SIDE **FRONT**

ROUTED OFFSET BLOCK



PLAN

SIDE **FRONT**

"W6" STEEL POST

SYSTEM PARTS

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

ROADWAY DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

SHEET 6 OF 8
862D02

SHEET 6 OF 8
862D02

NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER JOHN S. HOWERTON

DocuSigned by:
873F3D17DCDC45F...
4/25/2018

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

SEE TITLE BLOCK

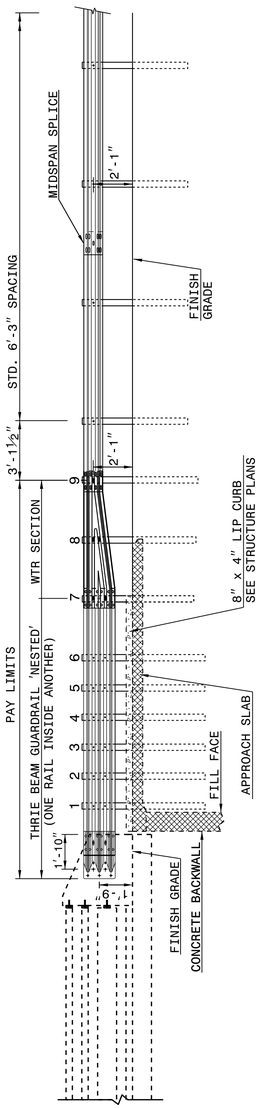
ORIGINAL BY: J.HOWERTON DATE: 3-7-2018
MODIFIED BY: DATE:
CHECKED BY: DATE:
FILE SPEC.:

PROJECT REFERENCE NO.	SHEET NO.
U-4734	2C-3

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

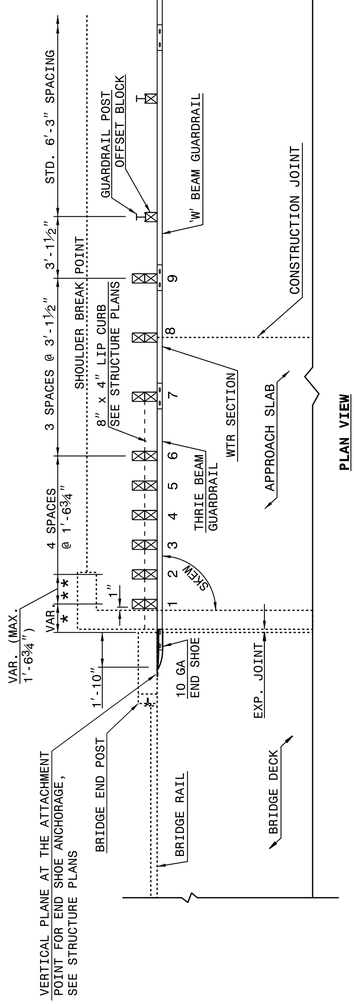
ROADWAY DETAIL DRAWING FOR
STRUCTURE ANCHOR UNITS
GUARDRAIL ANCHOR UNIT, TYPE III
FOR ATTACHMENT TO RAIL ON BRIDGE

SHEET 1 OF 7
862D03



ELEVATION

NOTE:
**POST NOT REQUIRED FOR SKEW ANGLES GREATER THAN 150° OR LESS THAN 30° UNLESS OTHERWISE DIRECTED BY THE ENGINEER.
*THE DISTANCE FROM END OF BRIDGE RAIL TO CENTER LINE OF THE FIRST POST SHOULD BE 11½" IF CONCRETE BACKWALL IS NOT PRESENT.
-SHOULDER BERM GUTTER MUST BE INSTALLED TO THE LIMITS 8" x 4" LIP CURB IS SHOWN IF ANCHOR UNIT IS NOT ADJACENT TO AN APPROACH SLAB.
-MEASURE GUARDRAIL HEIGHT FROM THE TOP OF ADJACENT SURFACE (SHOULDER, BERM, OR GUTTER).
-LAP JOINTS IN THE DIRECTION OF TRAFFIC FLOW.
-SEE SHEET 3 FOR POST SECTIONS 1 THRU 9.



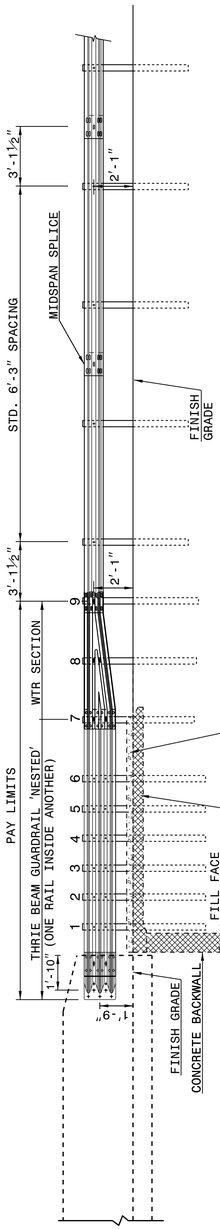
PLAN VIEW

GUARDRAIL ANCHOR UNIT, TYPE III
FOR ATTACHMENT TO RAIL ON BRIDGE

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

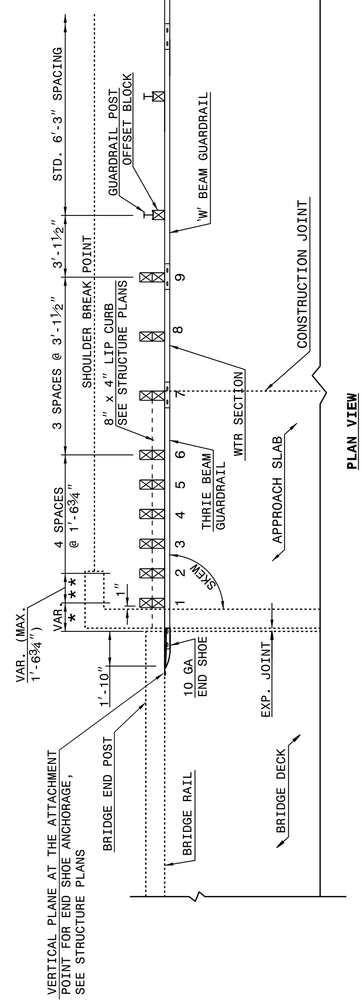
ROADWAY DETAIL DRAWING FOR
STRUCTURE ANCHOR UNITS
GUARDRAIL ANCHOR UNIT, TYPE III FOR ATTACHMENT TO
RAIL ON BRIDGE - SUB REGIONAL TIER

SHEET 2 OF 7
862D03



ELEVATION

NOTE:
**POST NOT REQUIRED FOR SKEW ANGLES GREATER THAN 150° OR LESS THAN 30° UNLESS OTHERWISE DIRECTED BY THE ENGINEER.
*THE DISTANCE FROM END OF BRIDGE RAIL TO CENTER LINE OF THE FIRST POST SHOULD BE 11½" IF CONCRETE BACKWALL IS NOT PRESENT.
-SHOULDER BERM GUTTER MUST BE INSTALLED TO THE LIMITS 8" x 4" LIP CURB IS SHOWN IF ANCHOR UNIT IS NOT ADJACENT TO AN APPROACH SLAB.
-MEASURE GUARDRAIL HEIGHT FROM THE TOP OF ADJACENT SURFACE (SHOULDER, BERM, OR GUTTER).
-LAP JOINTS IN THE DIRECTION OF TRAFFIC FLOW.
-SEE SHEET 3 FOR POST SECTIONS 1 THRU 9.



PLAN VIEW

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

NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER Joel S. Howerton

DocuSigned by:
Joel S Howerton
873F3D17DCDC45F...
4/25/2018

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

SEE TITLE BLOCK

ORIGINAL BY: J HOWERTON DATE: 06-22-12
MODIFIED BY: _____ DATE: _____
CHECKED BY: _____ DATE: _____
FILE SPEC.: _____

14-DEC-2017 10:36
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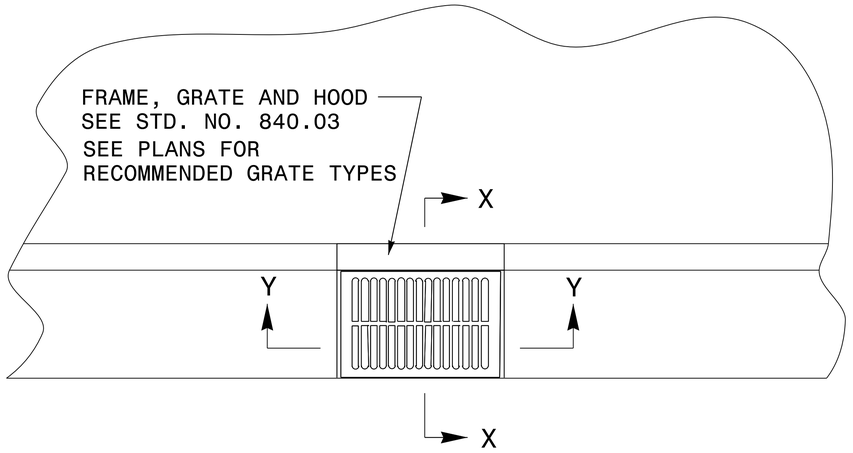
jhowerton AT CSD-2425965

5/14/99

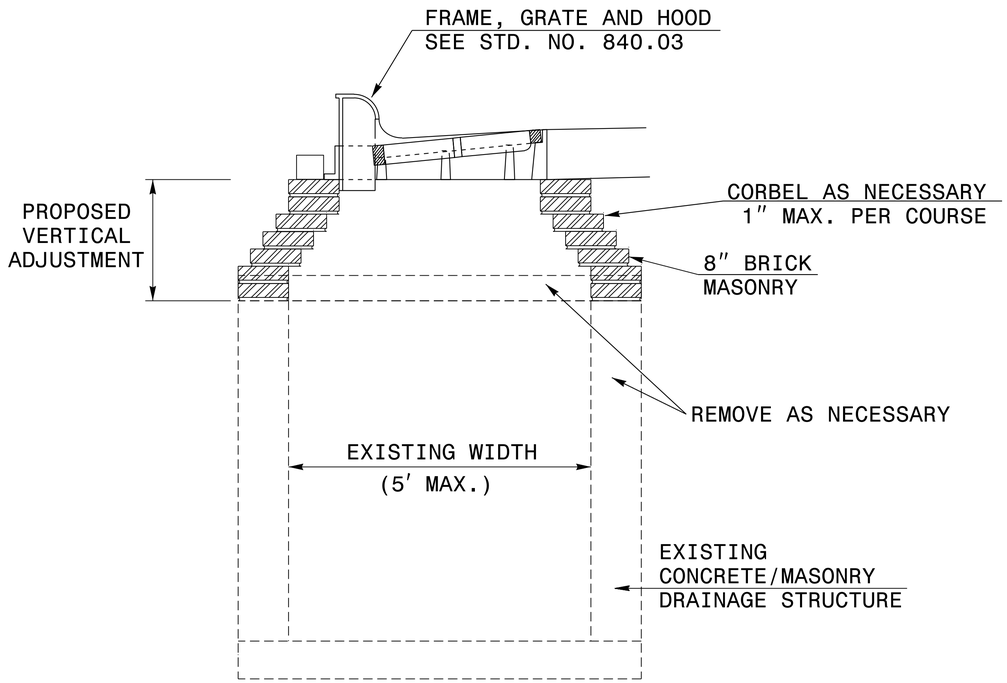
PROJECT REFERENCE NO.	SHEET NO.
U-4734	2C-4



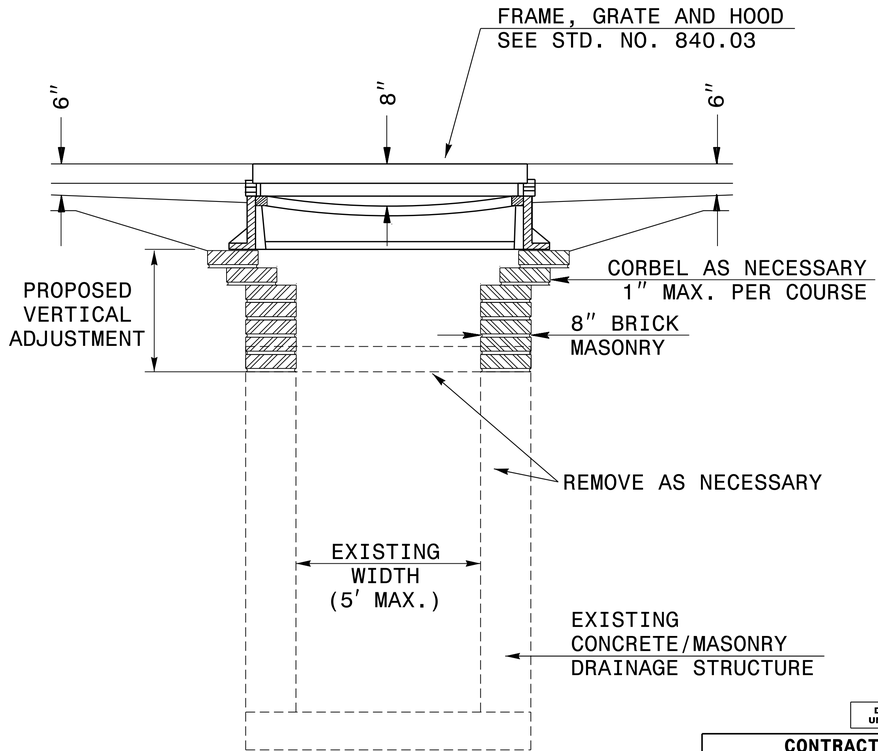
PLAN

GENERAL NOTES:

- THE ROADWAY PLANS INDICATE STRUCTURES TO BE CONVERTED.
- AFTER REMOVAL, STORE GRATES AND FRAMES AS DIRECTED BY THE ENGINEER.
- 4″ SOLID CLAY BRICK, JUMBO BRICK, CONCRETE, OR 4″ SOLID CONCRETE BLOCK MAY BE USED FOR VERTICAL ADJUSTMENT OF THE STRUCTURE.
- CONVERT IN ACCORDANCE WITH SECTION 859 OF THE STANDARD SPECIFICATIONS.



SECTION X-X



SECTION Y-Y

NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER Joel S. Howerton

DocuSigned by: 87F3F3D172CDCA5F... 4/25/2018

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

DETAIL TO CONVERT DROP INLET OR JB TO CATCH BASIN

ORIGINAL BY: E.E. WARD DATE: 11-97
MODIFIED BY: DATE:
CHECKED BY: DATE:
FILE SPEC.: DS37:usr\details\stand\jbtocb.dgn

26-JUN-2017 10:42
S:\Contracts\Special Details\jhowerton\convert DI or JB to CB.dgn
jhowerton AT CSD-292595

PROJECT REFERENCE NO.	SHEET NO.
U-4734	2C-5

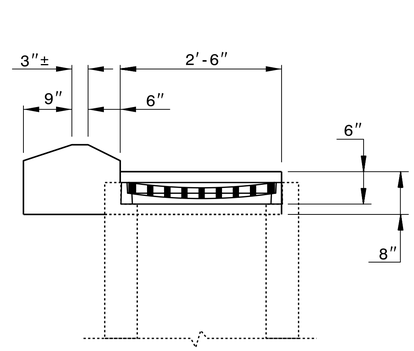
STATE OF
NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ENGLISH DETAIL DRAWING FOR

METHOD FOR PLACEMENT OF DROP INLETS IN CONCRETE ISLANDS

SHEET 1 OF 1

852D06



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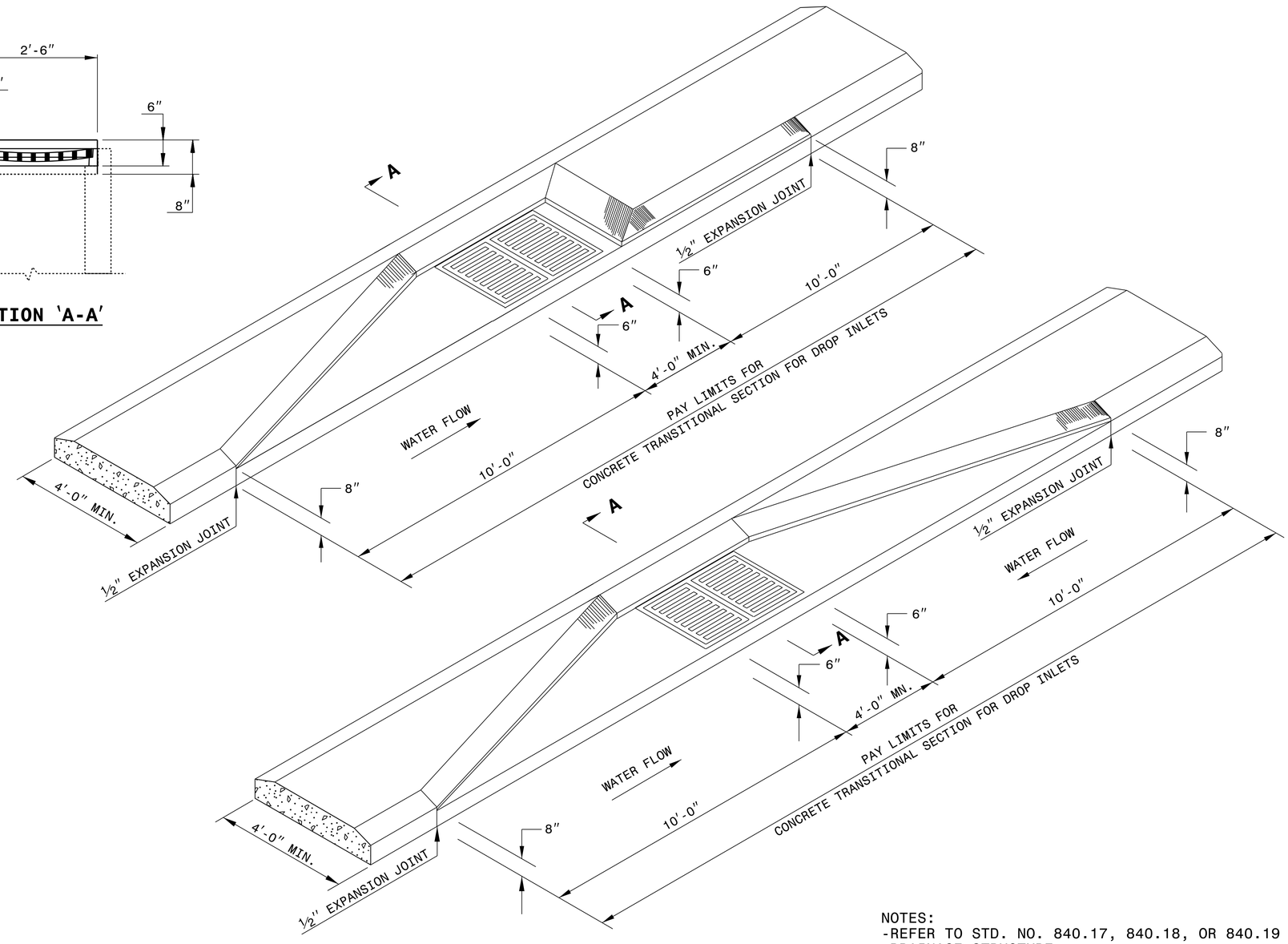

NOTES:
-REFER TO STD. NO. 840.17, 840.18, OR 840.19 FOR DRAINAGE STRUCTURE.
-REFER TO STD. NO. 840.20 OR 840.29 FOR GRATE AND FRAME.

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

ENGLISH DETAIL DRAWING FOR

METHOD FOR PLACEMENT OF DROP INLETS IN CONCRETE ISLANDS

SHEET 1 OF 1

852D06

NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER Joel S. Hoverman

DocuSigned by: Joel S Hoverman 873F3D17DCDC45F...
4/25/2018

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

SEE TITLE PLATE

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

06-MAR-2018 10:58
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jhowerton AT CSD-292595

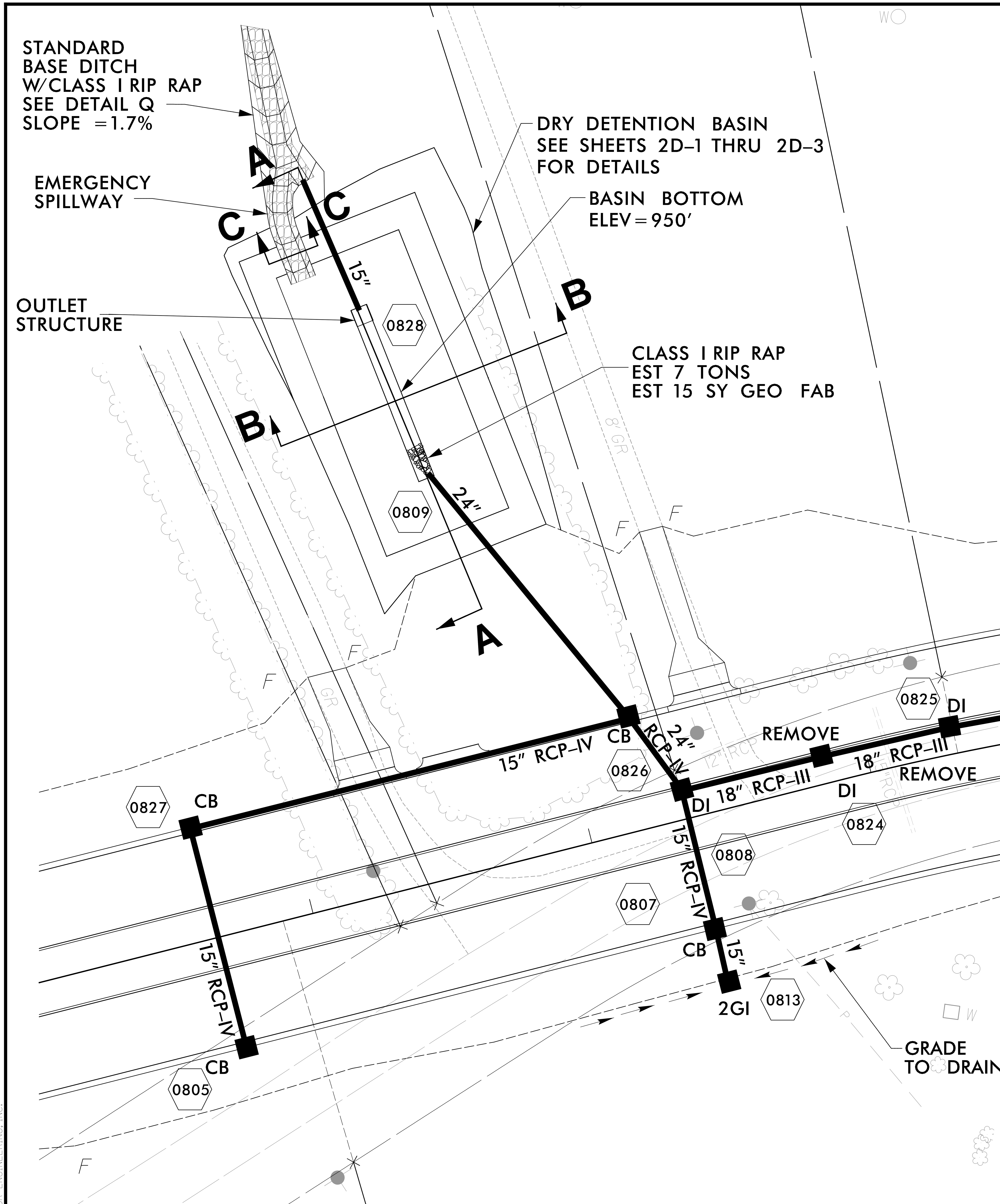
HDR Engineering, Inc. of the Carolinas
555 Fayetteville St, Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116

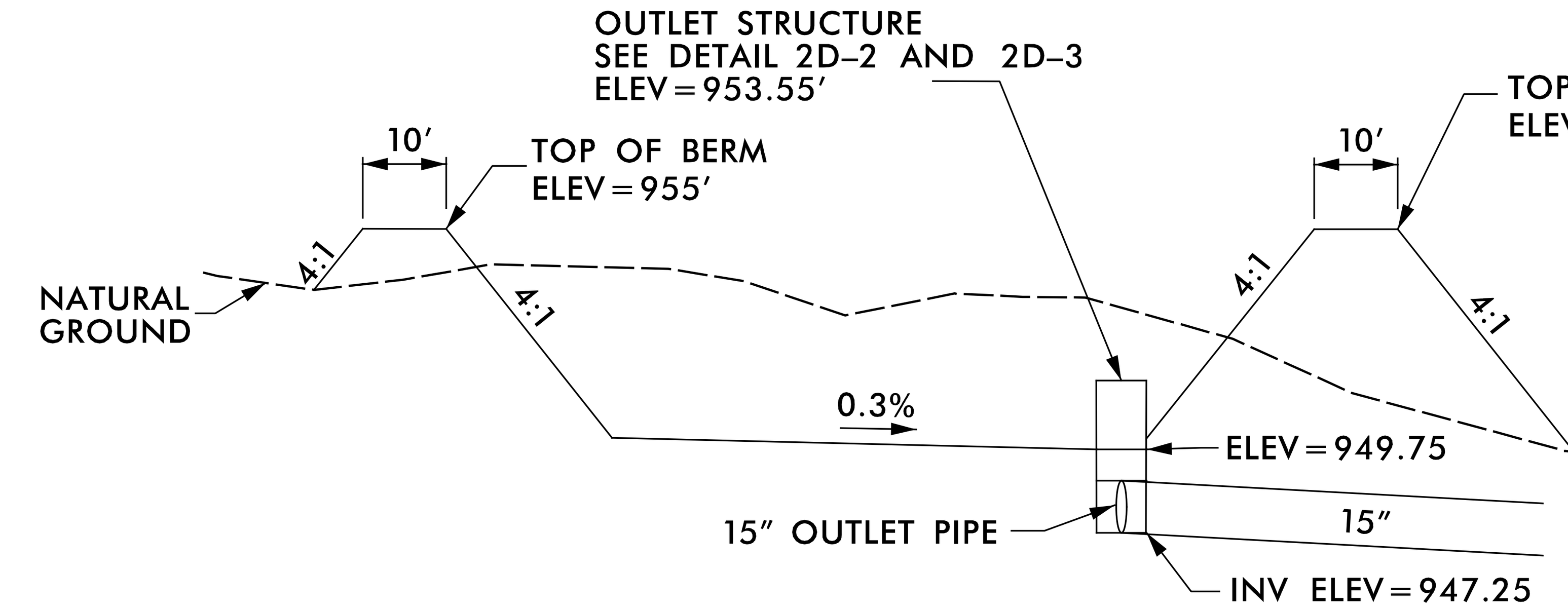
PROJECT REFERENCE NO.	SHEET NO.
U-4734	2D-1
RW SHEET NO.	

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 032074 DENA C. SNEAD — DocuSigned by: Dena C. Snead 4/25/2018

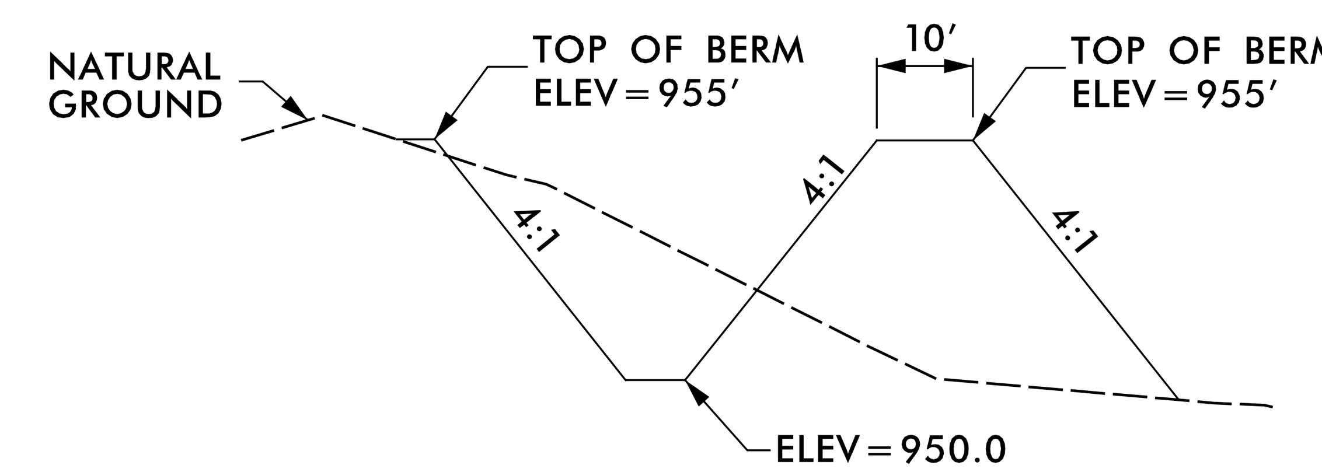
HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 034364 TRENTON J. CORMIER — DocuSigned by: Trenton J. Cormier 4/26/2018

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

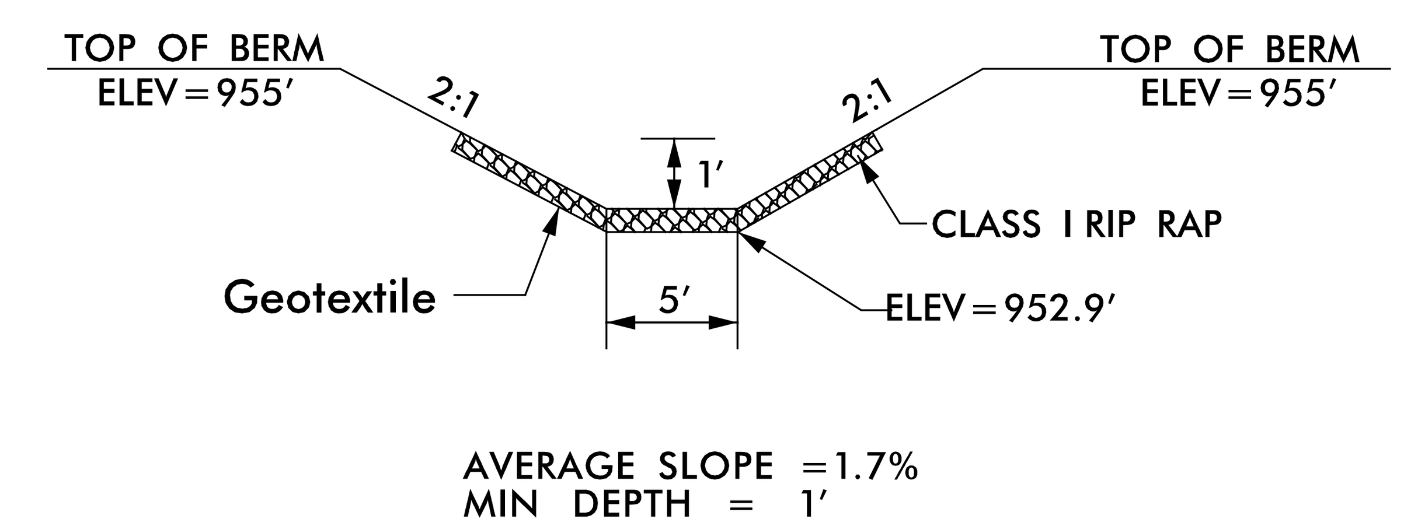




SECTION A-A



SECTION B-B



SECTION C-C

STA. 63+00 -L- BASIN DETAIL

4/25/2018
U4734_hyd_basin_detail_2D_1.dgn
HDR ENGINEERING, INC.

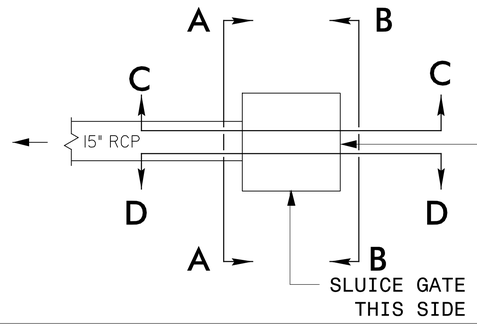
HDR Engineering, Inc. of the Carolinas
555 Fayetteville St, Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116

PROJECT REFERENCE NO.	SHEET NO.
U-4734	2D-2
R/W SHEET NO.	

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 034364 ENGINEER TRENTON J. CORMIER
DocuSigned by: Trenton J. Cormier 4/26/2018

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SECTION VIEW SCHEMATIC OF OUTLET STRUCTURE



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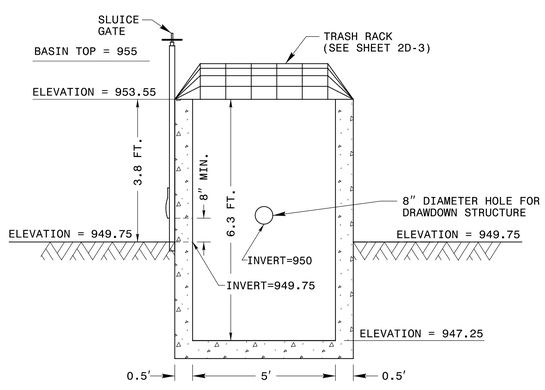

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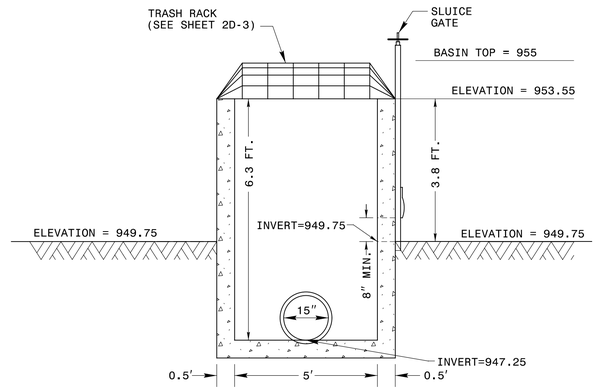
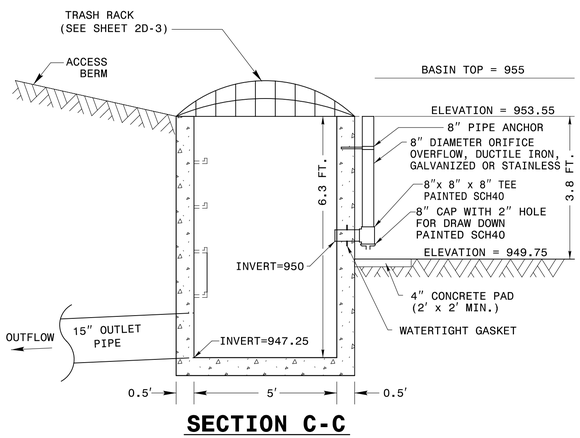


SECTION A-A



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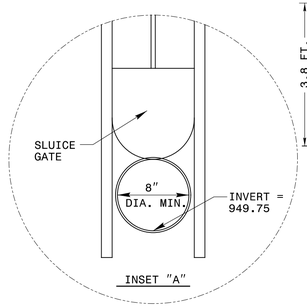
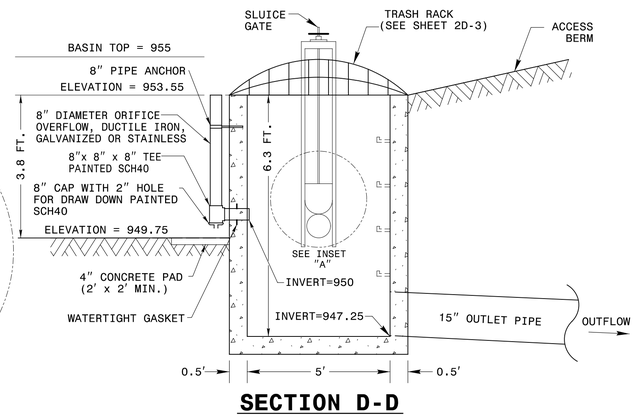




SECTION D-D

NOTES

1. **8" MIN. SLUICE GATE IS FOR MAINTENANCE AND SHOULD REMAIN CLOSED DURING NORMAL OPERATION.**

*** NOT TO SCALE**

DRY DETENTION BASIN
OUTLET CONTROL STRUCTURE

DRY DETENTION BASIN
OUTLET CONTROL STRUCTURE

STA. 63+00 -L- OUTLET CONTROL STRUCTURE DETAIL

HDR Engineering, Inc. of the Carolinas
555 Fayetteville St, Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116

PROJECT REFERENCE NO.	SHEET NO.
U-4734	2D-3
R/W SHEET NO.	

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 034364 ENGINEER TRENTON J. CORMIER

DocuSigned by: Trenton J. Cormier 4/26/2018

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

BASIN DETAIL FOR STA. 63+00 -L- AND STA. 10+50 -Y12- BASINS

DRY DETENTION BASIN NOTES

SEQUENCE OF CONSTRUCTION FOR DRY DETENTION BASIN

1. INSTALL ALL EROSION CONTROL MEASURES (AS NEEDED THROUGH CONSTRUCTION STAGES).
2. EXCAVATE FOR THE BASIN. PREPARE THE BASIN FLOOR AT THE GIVEN GRADE.
3. CONSTRUCT MAIN POND.
4. CONSTRUCT AND INSTALL BOXES. CREATE OPENINGS IN BOXES AND CONNECT PIPES WITH BOXES.
5. ADD GRATES/TRASH RACK ON ALL BOXES.

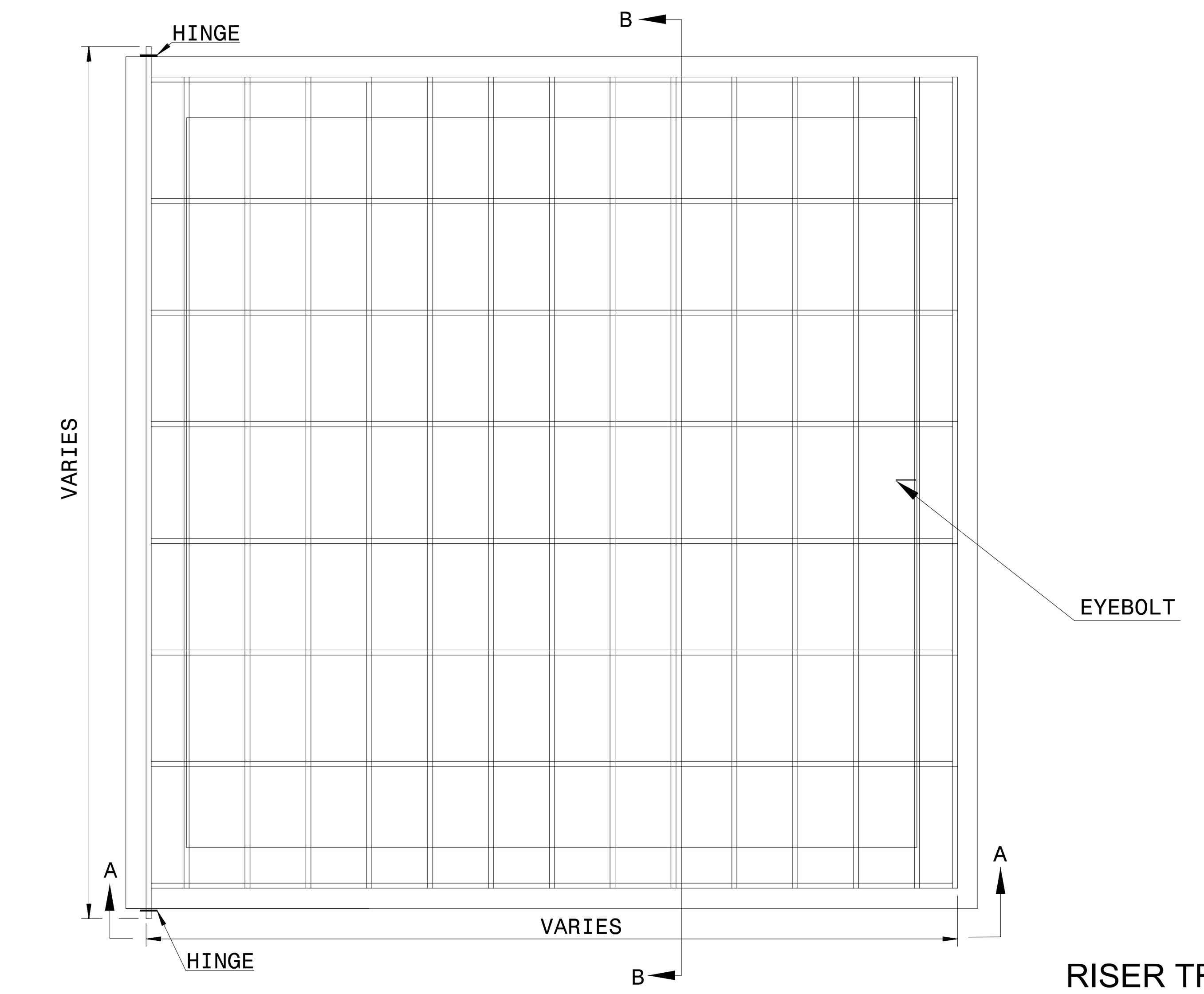
GENERAL NOTES FOR DRY DETENTION BASIN

1. APPLY SEEDING OVER THE SIDE SLOPES AND ANY EXPOSED SURFACE THAT NEEDS TO BE PROTECTED AGAINST IMMEDIATE POTENTIAL STORM EVENT.
2. THE SURVEYOR SHALL VERIFY THE INVERTS AND ELEVATIONS AT THE FOLLOWING POINTS AT THE END OF EACH PHASE OF CONSTRUCTION:
   -INVERTS IN THE PIPE AND THE BOXES.
3. THE BERM SHALL BE CONSTRUCTED WITH SUITABLE FILL MATERIAL PER THE ENGINEER.
4. ANY FILL MATERIAL SHALL BE COMPACTED.

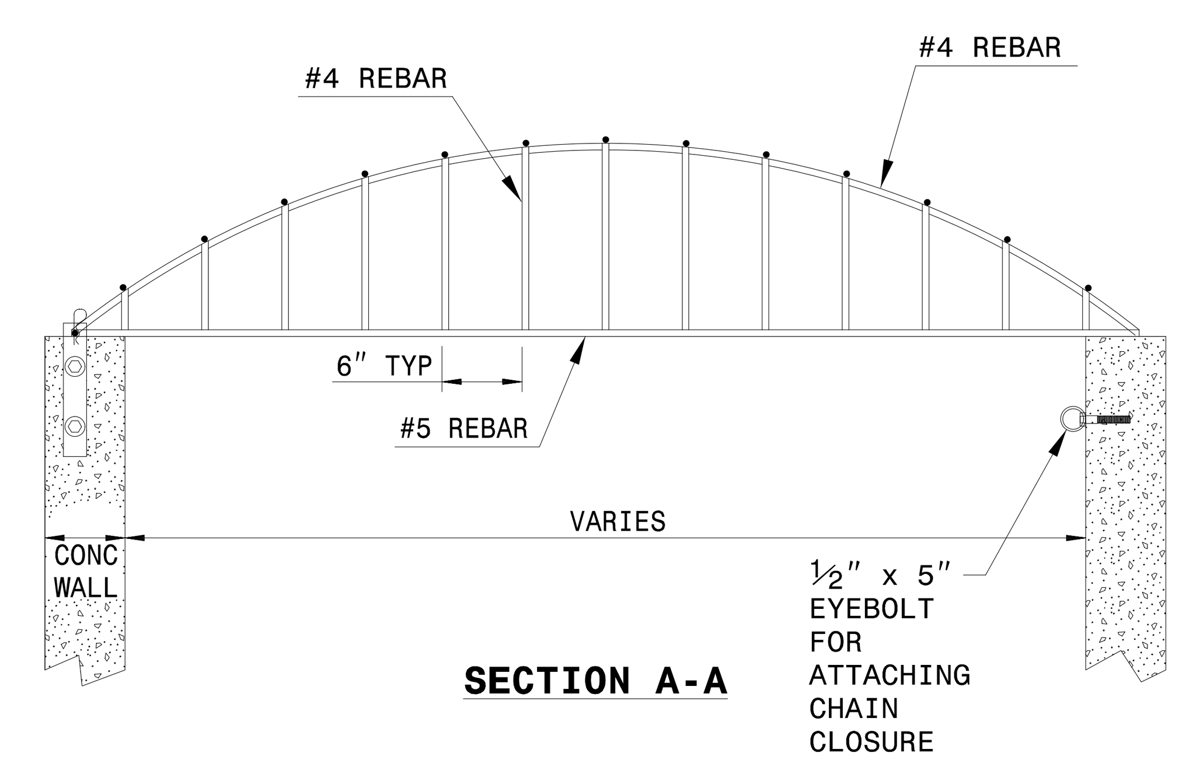
MAINTENANCE REQUIREMENTS

1. REMOVE DEBRIS, TRASH AND SEDIMENT BUILDUP FROM THE BASIN AS NECESSARY TO MINIMIZE OUTLET CLOGGING AND IMPROVE AESTHETICS.
2. REPAIR AND REVEGETATE ERODED AREAS AS NEEDED.
3. CHECK INLETS AND OUTLETS FOR STRUCTURAL REPAIR TO CONFIRM THAT THEY ARE OPERATIONAL.
4. MOW AS NECESSARY TO LIMIT UNWANTED VEGETATION AND REMOVE CLIPPINGS AS PRACTICAL.
5. NO PORTION OF THE DRY DETENTION POND SHOULD BE FERTILIZED AFTER THE FIRST INITIAL FERTILIZATION THAT IS REQUIRED TO ESTABLISH VEGETATION.
6. STABLE GROUNDCOVER SHOULD BE MAINTAINED IN THE DRAINAGE AREA TO REDUCE THE SEDIMENT LOAD TO THE DRY DETENTION POND.
7. ONCE A YEAR, A DAM SAFETY EXPERT SHOULD INSPECT THE EMBANKMENT (IF APPLICABLE).
8. RECORDS OF OPERATION AND MAINTENANCE SHOULD BE KEPT IN A KNOWN SET LOCATION AND MUST BE AVAILABLE UPON REQUEST.

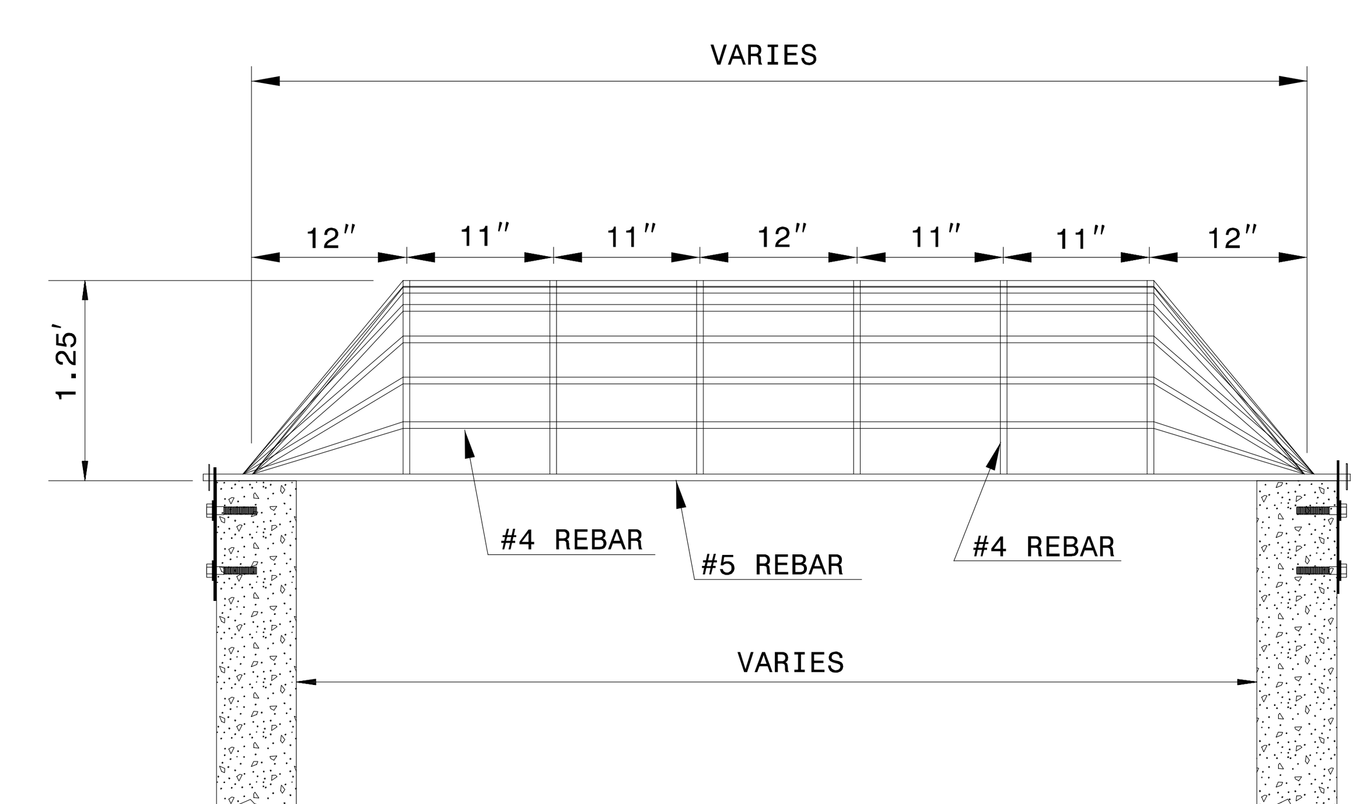
TRASH RACKS FOR OUTLET STRUCTURES



PLAN



SECTION A-A



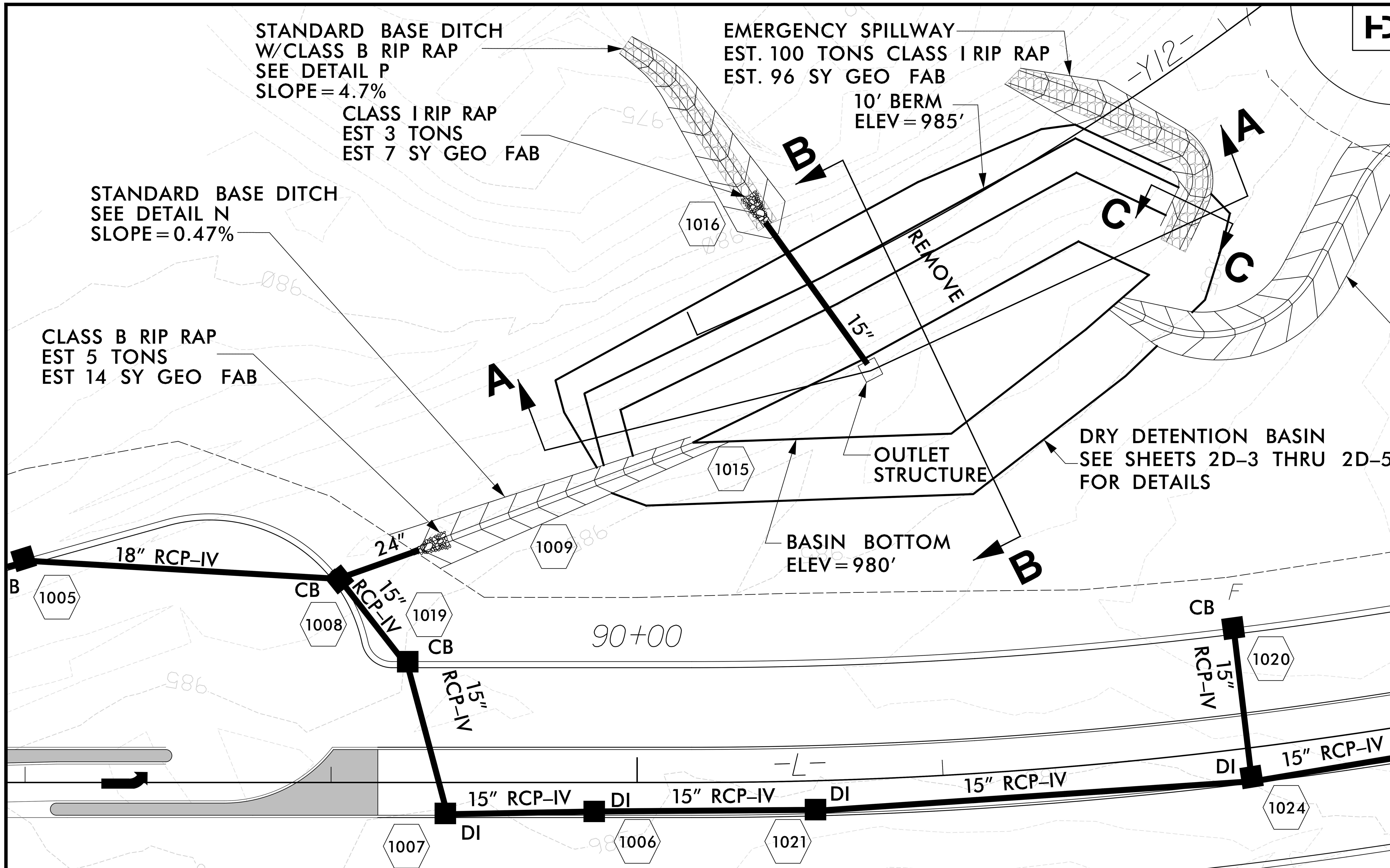
SECTION B-B

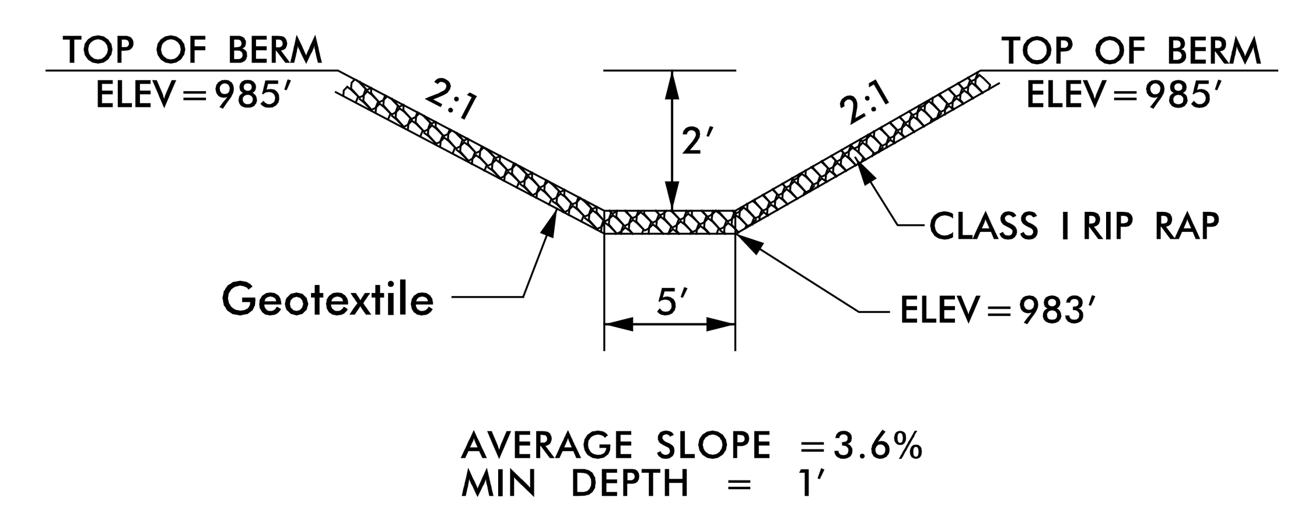
RISER TRASH RACK NOTES:
1. ALL JOINTS SHALL BE FULLY WELDED AROUND JOINT WITH A MINIMUM OF A $\frac{1}{4}$" BEAD.
2. IF BOLTS ARE ANCHORED IN CONCRETE, FOLLOW STD. DWG. 862.03 AND 862.04 FOR ANCHORING PROCEDURE.
3. EYEBOLT FOR CHAIN CLOSURE SHALL BE INSTALLED BY THE SAME METHOD AS THE HINGE PLATE BOLTS.
4. RACK AND HARDWARE SHALL BE REBAR AND GALVANIZED IN ACCORDANCE WITH ASTM A-153.

HDR Engineering, Inc. of the Carolinas
555 Fayetteville St, Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116

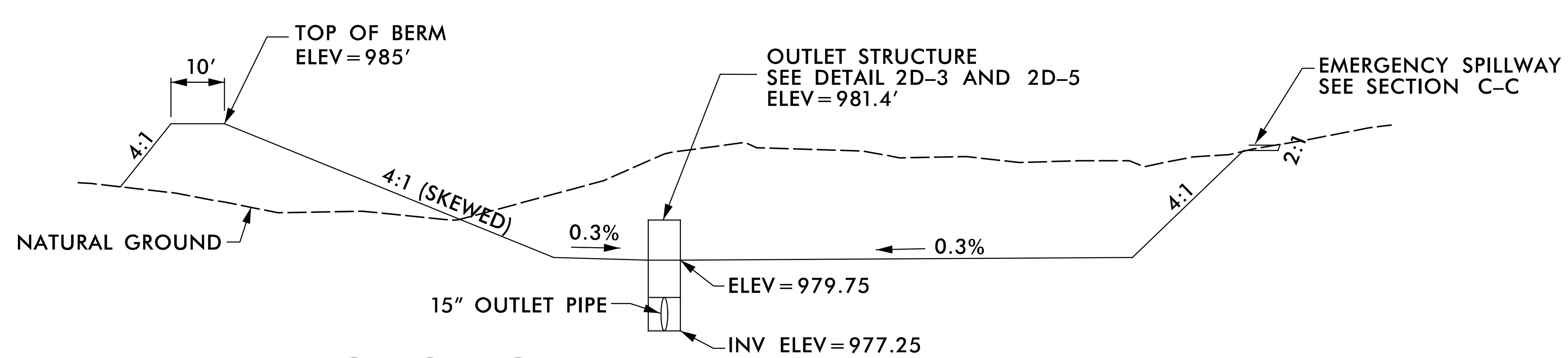
PROJECT REFERENCE NO.	SHEET NO.
U-4734	2D-4
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
SEAL 032074 DENA C. SNEAD 4/25/2018	SEAL 034364 TRENTON J. CORMIER 4/26/2018

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

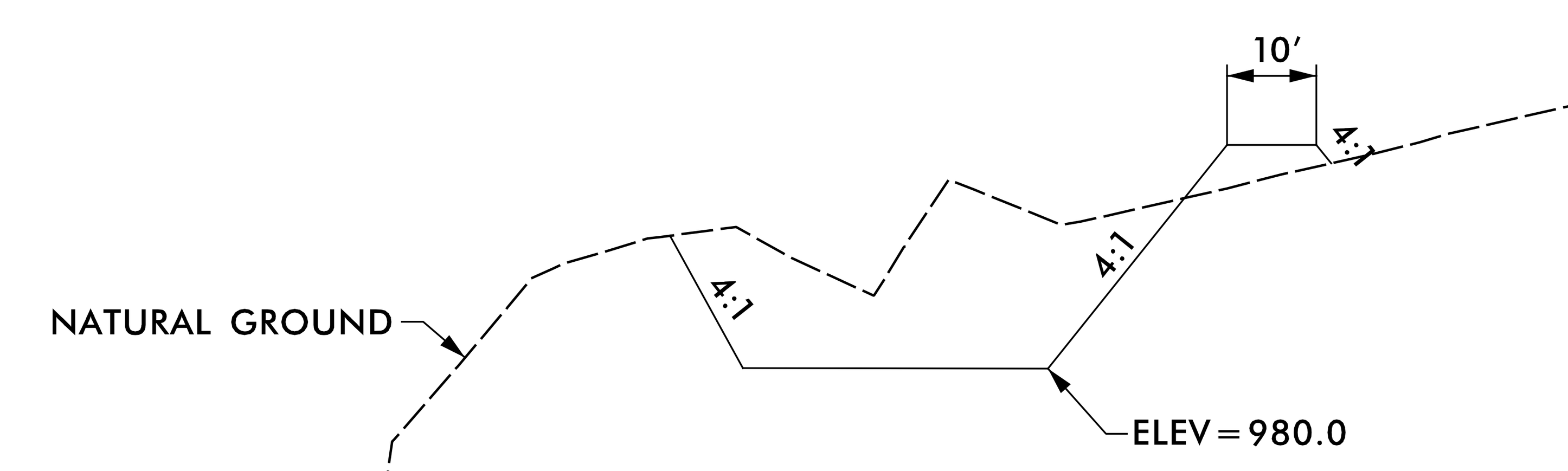

STANDARD BASE DITCH
W/CLASS B RIP RAP
SEE DETAIL P
SLOPE=4.7%
CLASS I RIP RAP
EST 3 TONS
EST 7 SY GEO FAB
EMERGENCY SPILLWAY
EST. 100 TONS CLASS I RIP RAP
EST. 96 SY GEO FAB
10' BERM
ELEV=985'
-Y12-
STANDARD BASE DITCH
SEE DETAIL N
SLOPE=0.47%
CLASS B RIP RAP
EST 5 TONS
EST 14 SY GEO FAB
REMOVE
15"
OUTLET
STRUCTURE
DRY DETENTION BASIN
SEE SHEETS 2D-3 THRU 2D-5
FOR DETAILS
BASIN BOTTOM
ELEV=980'
STANDARD
BASE DITCH
SEE DETAIL N
SLOPE=2.36%
NAD 83/2011
A
B
C
18" RCP-IV
24"
15" RCP-IV
CB
90+00
-L-
DI
1005
1007
1008
1009
1006
1015
1016
1019
1020
1021
1024



SECTION C-C



SECTION A-A



SECTION B-B

STA. 10+50 -Y12- BASIN DETAIL

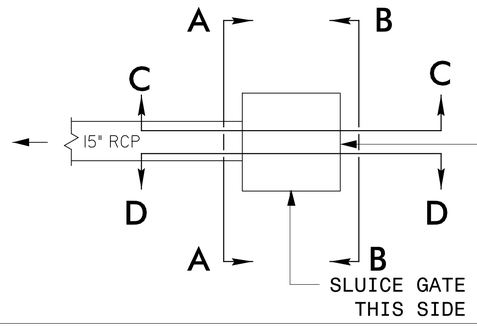
HDR Engineering, Inc. of the Carolinas
555 Fayetteville St, Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116

PROJECT REFERENCE NO.	SHEET NO.
U-4734	2D-5
R/W SHEET NO.	

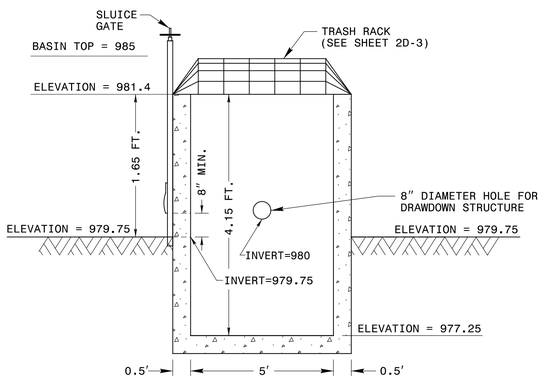
HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 034364 ENGINEER TRENTON J. CORMIER
DocuSigned by: 4/26/2018

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SECTION VIEW SCHEMATIC OF OUTLET STRUCTURE



* NOT TO SCALE



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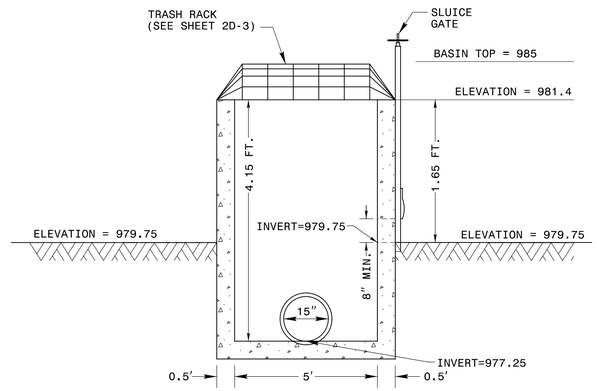
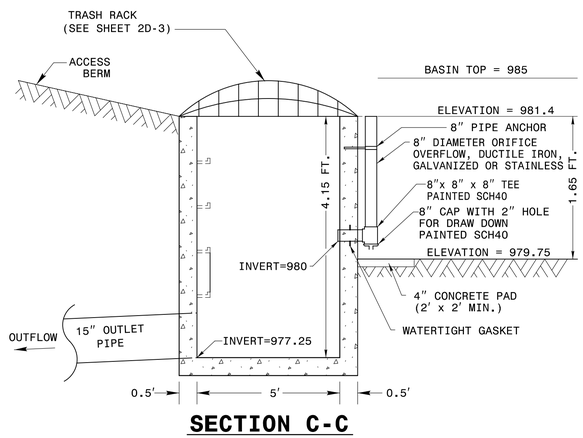
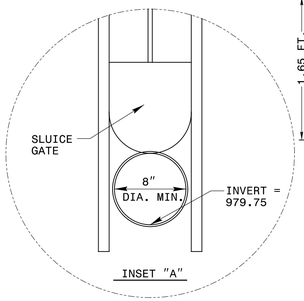


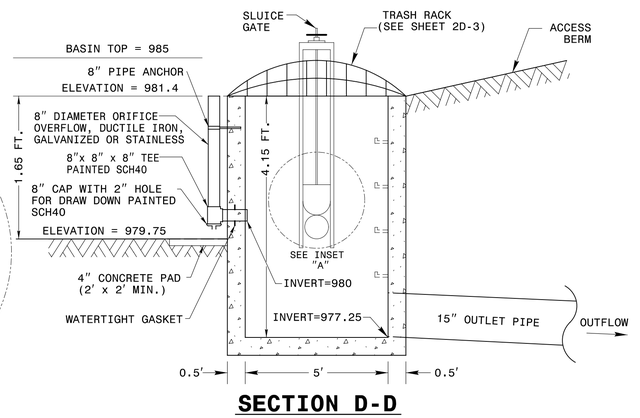
SECTION A-A



SECTION C-C



INSET "A"



SECTION D-D

NOTES

1. **8" MIN. SLUICE GATE IS FOR MAINTENANCE AND SHOULD REMAIN CLOSED DURING NORMAL OPERATION.**

* NOT TO SCALE

DRY DETENTION BASIN
OUTLET CONTROL STRUCTURE

DRY DETENTION BASIN
OUTLET CONTROL STRUCTURE

STA. 10+50 -Y12- OUTLET CONTROL STRUCTURE DETAIL

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PROJECT REFERENCE NO.	SHEET NO.
U-4734	2D-6

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 034364 ENGINEER TRENTON J. CORMIER
DocuSigned by: 4/26/2018

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

HDR Engineering, Inc. of the Carolinas
555 Fayetteville St, Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116

SUMMARY OF BASIN COMPONENT ITEMS
(for Stormwater BMP's)

ITEM DESCRIPTION	UNIT	QUANTITY		
		BASIN STA. 63+00 -L-	BASIN STA. 10+50 -Y12-	PROJECT TOTALS
OUTLET CONTROL STRUCTURE BOX STD. 845.45 (4'x4' INSIDE WALLS)*	EA	1	1	2
CONCRETE PAD 2' x 2' x 4" THICK	EA	1	1	2
8" SLUICE GATE*	EA	1	1	2
RISER TRASH RACK	EA	1	1	2
8" PIPE ANCHOR	EA	1	1	2
8" DUCTILE IRON PIPE (DIP)	LF	4	4	8
8" x 8" x 8" TEE (PAINTED SCH40)	EA	1	1	2
8" DIP CAP (WITH 2" HOLE PAINTED SCH40	EA	1	1	2
WATERTIGHT GASKET	EA	1	1	2
15" DRAINAGE PIPE*	LF	48	56	104

* Included with pay items on the Drainage Summary

SUMMARY OF EARTHWORK
(for Stormwater BMP's)

ITEM DESCRIPTION	UNIT	QUANTITY		
		BASIN STA. 63+00 -L-	BASIN STA. 10+50 -Y12-	PROJECT TOTALS
BASIN EXCAVATION	CY	235	1233	1468
BASIN BORROW	CY	565	60	625
BASIN WASTE	CY	0	1173	1173
BASIN CLEARING AND GRUBBING	ACR	0.38	0.57	2

PROJECT REFERENCE NO.	SHEET NO.
U-4734	2G-1

GEOTECHNICAL ENGINEER

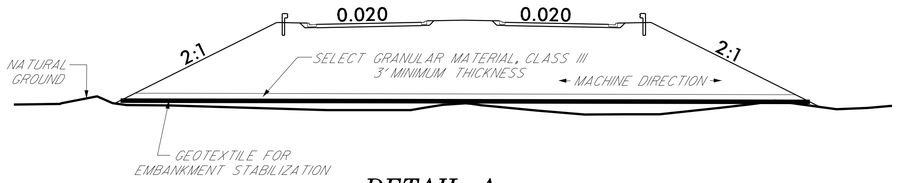
NORTH CAROLINA PROFESSIONAL SEAL 038206 ENGINEER KENNETH R. BUSSEY

DocuSigned by: Kenneth R. Bussey, Jr. 3/29/2018

SIGNATURE DATE

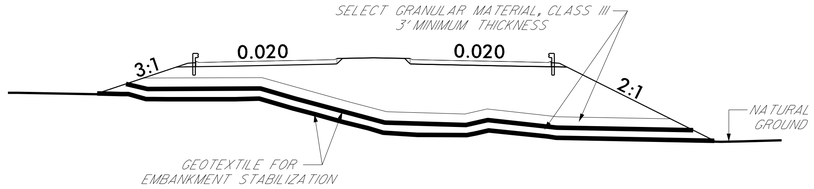
ENGINEER

SIGNATURE DATE



DETAIL A

36+40 TO 37+85 -L-

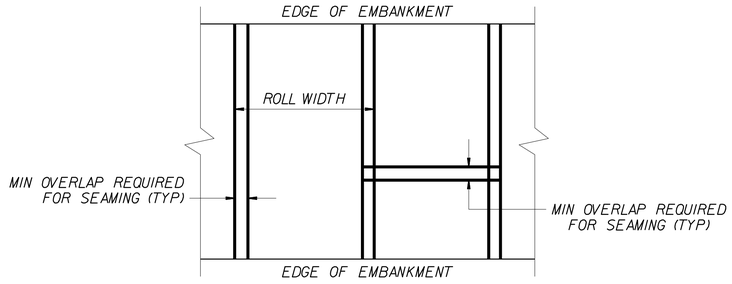


DETAIL B

38+60 TO 39+50 -L-

NOTES

1. FOR EMBANKMENT STABILIZATION ON -L-.
2. PLACE ALL FABRIC PERPENDICULAR TO THE SLOPE FACE.
3. THE CONTRACTOR TO SUBMIT DETAIL OF FABRIC LAYOUT IN TRANSITION ZONES FOR APPROVAL BY THE ENGINEER PRIOR TO CONSTRUCTION. IT WILL BE NECESSARY TO PROVIDE SIGNIFICANT FABRIC OVERLAP IN TRANSITION ZONES.
4. PLACE GEOTEXTILE FROM TOE TO TOE.
5. FOR DETAIL B, GEOTEXTILE FOR EMBANKMENT STABILIZATION SHALL BE PLACED SO THE GEOTEXTILE IS 2 FOOT BELOW THE GRADE OF THE ADJACENT GREENWAY. THE THICKNESS OF SELECT GRANULAR MATERIAL, CLASS III, BETWEEN GEOTEXTILE LAYERS MAY BE ADJUSTED BY 1FOOT TO ACHIEVE THIS REQUIREMENT.



GEOTEXTILE SEAMING DETAIL

(PLAN VIEW)

NOTE

ALL SEAMS SHALL BE SOWN TO ACHIEVE THE SAME OR BETTER STRENGTH OF THE GEOTEXTILE.

ESTIMATED QUANTITIES

GEOTEXTILE FOR EMBANKMENT STABILIZATION	6,310 S.Y.
SELECT GRANULAR MATERIAL, CLASS III	6,310 C.Y.

NOT TO SCALE

PREPARED BY: W. SHUECRAFT	DATE: 3/8/2018
REVIEWED BY: K. BUSSEY	DATE: 3/12/2018

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

GEOTECHNICAL ENGINEERING UNIT

GEOTEXTILE FOR EMBANKMENT STABILIZATION DETAILS

REVISIONS

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

PROJECT REFERENCE NO.	SHEET
U-4734	2H-1

GEOENVIRONMENTAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 31499 ENGINEER CYRUS F. PARKER

DocuSigned by: Cyrus Parker C96492AF5E824DF... 4/24/2017

SIGNATURE DATE

ENGINEER

SIGNATURE DATE

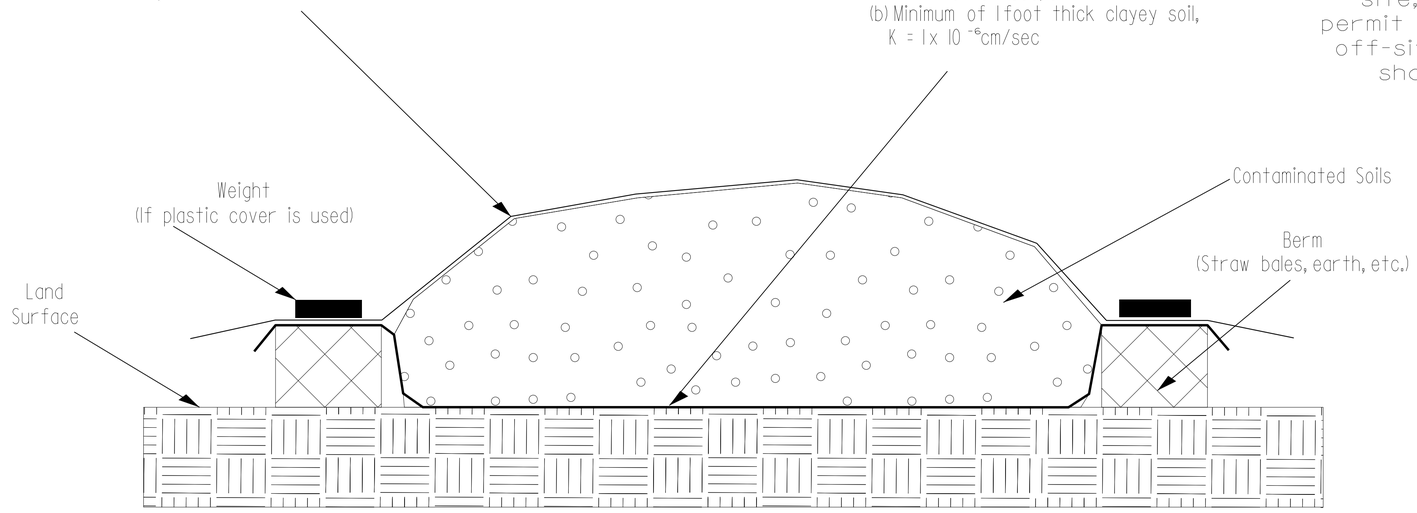
Detail for Temporary Containment of Contaminated Soil

Cross-Section View

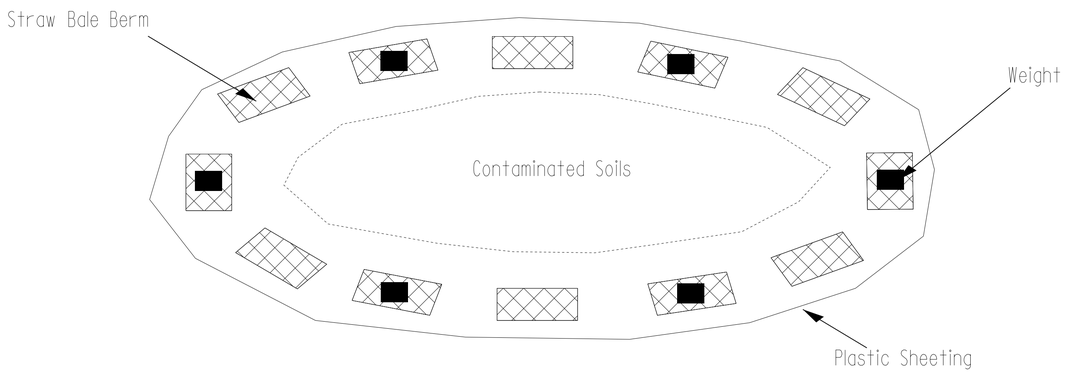
Top Plastic Cover Sheeting
(1 Layer, minimum: 10 mil thick)
Not necessary if leachate collection & treatment system is installed

Underliner:
(a) Minimum of 1 Layer, 10 mil thick plastic, $K = 1 \times 10^{-7}$ cm/sec, or
(b) Minimum of 1 foot thick clayey soil, $K = 1 \times 10^{-6}$ cm/sec

NOTE:
The Contractor shall stockpile all contaminated soil excavated from a property in a location within the property boundaries of the source parcel. If the volume of contaminated material exceeds available space on site, the Contractor shall obtain a permit from the NCDEQ UST Section for off-site temporary storage. Stockpile shall be removed within 45 days.



Map View



PREPARED BY:	DATE:
REVIEWED BY:	DATE:

GEOTECHNICAL ENGINEERING UNIT

☐ *EASTERN REGIONAL OFFICE*
☐ *WESTERN REGIONAL OFFICE*
☒ *CONTRACT OFFICE*

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STOCKPILE CONTAINMENT DETAIL

REVISIONS

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

COMPUTED BY: JCB	DATE: 4/4/2018

PROJECT NUMBER	SHEET NUMBER
U-4734	3B-1

RD:

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SUMMARY OF EARTHWORK

CHAIN	BEGINNING STATION	ENDING STATION	UNCL. EXCA. C.Y.	UNDERCUT C.Y.	EMBANK. +% C.Y.	BORROW C.Y.	WASTE C.Y.
SUMMARY 1							
-L-	11+75.00	37+42.50	116,823		96,710		20,113
-Y7-	18+00.00	20+00.00	137		236	99	
-DR1-	11+00.00	12+00.00	4,882				4,882
-DR2-	10+50.00	13+65.00	18,160				18,160
SUBTOTAL			**140,002**		**96,946**	**99**	**43,155**
SUMMARY 2							
-L-	39+27.50	59+00.00	26,340	3,388	40,101	13,761	3,388
-DR3-	10+00.00	10+50.00	31				31
-GW-	10+00.00	14+13.18	110		2,038	1,928	
SUBTOTAL			**26,481**	**3,388**	**42,138**	**15,688**	**3,419**
SUMMARY 3							
-L-	59+00.00	78+00.00	2,405		20,856	18,451	
-Y9-	10+80.00	13+00.00	2		337	335	
-Y10-	13+00.00	13+70.00	70		3		67
-Y11-	10+50.00	11+30.00	6		20	14	
-DR4-	10+50.00	11+00.00	12				12
-DR5-	10+00.00	11+00.00	44				44
SUBTOTAL			**2,539**		**21,216**	**18,800**	**123**
SUMMARY 4							
-L-	78+00.00	102+45.00	7,898		21,453	13,555	
-Y12-	10+50.00	11+57.73	183	281	334	151	281
-Y13-	12+00.00	26+35.00	3,396		4,893	1,497	
-Y14-	10+32.40	14+03.00	1,116		58		1,059
SUBTOTAL			**12,593**	**281**	**26,738**	**15,203**	**1,340**
SHEET TOTALS			**181,615**	**3,669**	**187,038**	**49,790**	**48,036**
LOSS DUE TO CLEARING AND GRUBBING			**-4,300**				**-4,300**
ADDITIONAL UNDERCUT (PER GEOTECH)				**830**	**955**	**955**	**830**
SELECT GRANULAR MATERIAL CLASS III (PER GEOTECH)					**-7,257**	**-7,257**	
SELECT GRANULAR MATERIAL (PER GEOTECH)					**-4,629**	**-4,629**	
EARTH WASTE IN LIEU OF BORROW						**-38,859**	**-38,859**
PROJECT TOTAL			**177,315**	**4,499**	**176,108**		**5,706**
EST. 5% TO REPLACE TOP SOIL ON BORROW PIT							
GRAND TOTAL			**177,315**				
SAY			**177,500**				

CHAIN	BEGINNING STATION	ENDING STATION	UNCL. EXCA. C.Y.	UNDERCUT C.Y.	EMBANK. +% C.Y.	BORROW C.Y.	WASTE C.Y.

EST. DDE = 1950 C.Y.
-L-, -DR1-, & -DR2- PAVEMENT STRUCTURE VOLUME = 5630 C.Y.
SHOULDER BORROW = 280 C.Y
CONTINGENCY ITEMS PER GEOTECHNICAL RECOMMENDATIONS
EST. SHALLOW UNDERCUT = 750 C.Y.

Note: These earthwork quantities are based in part on subsurface data provided by the Geotechnical Engineering Unit.

COMPUTED BY: ADS **DATE:** 11/30/16
CHECKED BY: JCB **DATE:** 2/13/18

PROJECT REFERENCE NO.	SHEET NO.
U-4734	3B-2

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA
GUARDRAIL SUMMARY

NC10481

"N" = DISTANCE FROM EDGE OF LANE TO FACE OF GUARDRAIL
TOTAL SHOULDER WIDTH = DISTANCE FROM EDGE OF TRAVEL LANE TO SHOULDER BREAK POINT.
FLARE LENGTH = DISTANCE FROM LAST SECTION OF PARALLEL GUARDRAIL TO END OF GUARDRAIL
W = TOTAL WIDTH OF FLARE FROM BEGINNING OF TAPER TO END OF GUARDRAIL

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

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		SINGLE FACED CONCRETE BARRIER	REMOVE EXISTING GUARDRAIL	REMOVE & STOCKPILE EXISTING GUARDRAIL	REMARKS
				STRAIGHT	SHOP CURVED	DOUBLE FACED	APPROACH END	TRAILING END			APPROACH END	TRAILING END	APPROACH END	TRAILING END	XI MOD	XI	GREU TL-3	AT-1	CAT-1	VI MOD	TES	TYPE III	G	NG				
L	11+75.00	16+56.25	RT	481.25				16+56.25	14	16									1									
L	11+75.00	16+06.25	LT	431.25			15+06.25		14	16	50		1				1											
L	19+25.00	29+93.75	LT	1068.75			28+93.75	19+25.00	14	16	50		1				1		1									
L	26+00.00	29+25.00	RT	325.00			27+00.00	29+25.00	14	16	50		1				1		1									
L	35+40.50	37+53.00	RT	212.50			37+53.00		12	14	50		1				1					1						
L	35+94.50	37+32.00	LT	137.50				35+94.50	12	14									1			1						
L	39+37.70	40+62.70	RT	125.00				40+62.70	12	14									1			1						
L	39+17.00	41+29.50	LT	212.50			39+17.00		12	14	50		1				1					1						
L	44+72.00	44+97.00	LT	25.00																								
L	44+73.00	44+98.00	RT	25.00																								
Y13	18+93.00	19+93.00	LT	100.00																								
Y13	25+68.75	27+75.00	LT	206.25			27+25.00	25+68.75	10	13	50		1				1		1									
US 421			CL	100.00																						100		Overhead Sign Support Installation in Median (TMP-3)
TOTALS				3450.00													6		6			4				100		
DEDUCTIONS FOR ANCHOR UNITS																												
	GREU TL-3	6	50	-300																								
	CAT-1	6	6.25	-37.5																								
	TYPE III	4	18.75	-75																								
	AT-1	0	6.25	0																								
		GRAND TOTAL		3037.50													6		6			4				100		
		SAY		**3100.00**			**5 EACH ADDITIONAL GUARDRAIL POSTS**																					

COMPUTED BY: MMO DATE: 11/17/17

CHECKED BY: JPM DATE: 11/18/17

PROJECT NO.	SHEET NO.
U-4734	3B-3

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

REMOVAL OF EXISTING ASPHALT PAVEMENT SUMMARY

IN SQUARE YARDS

SURVEY LINE	Beginning Station	Ending Station	LOCATION LT/RT/CL	ASPHALT REMOVAL
-L-	16+00	17+80	LT	436.63
-L-	57+99	62+19	RT	952.31
-L-	62+19	63+56	RT	365.85
-L-	63+56	73+07	CL	1978.07
-L-	73+07	86+17	RT	2771.19
-L-	86+17	86+94	CL	159.19
-L-	86+94	88+87	LT	485.35
-L-	88+87	92+35	LT	825.76
-Y14-	10+32	11+25	CL	506.59
		TOTAL:		8480.94
		SAY:		8,490

RAL-PF12KCT9

COMPUTED BY: SHB DATE: 12/9/2016
CHECKED BY: YM DATE: 12/12/2016

PROJECT NO.	SHEET NO.
U-4734	3D-1

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

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

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

LINE & STATION	OFFSET	STRUCTURE NUMBER		TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	MINIMUM REQUIRED SLOPE	Drainage Pipe (RCP, CSP, CAAP, HDPE, or PVC)													R. C. PIPE CLASS III								R. C. PIPE CLASS IV							
SIZE								12	15	18	24	30	36	42	48	DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE	DO NOT USE PVC	12	15	18	24	30	36	42	48	12	15	18	24	30	36	42	48
THICKNESS OR GAUGE		FROM	TO	FT.	FT.	FT.	%																													
L 16+00	43 LT	0401		972.6																																
L 16+98	50 LT	0403		971.3																																
		0403	0404		964.8	964.7																								16						
L 17+03	35 LT	0404		966.0																																
L 16+00	10 LT	0405		973.5																																
		0405	0406		969.8	964.5																								116						
L 17+14	10 LT	0406		972.1																																
L 17+31	31 RT	0407		965.4																																
		0407	0411		964.2	964.1																								12						
L 15+00	43 RT	0408		974.5																																
		0408	0411		970.7	967.3																								236						
L 20+19	60 RT	0409		963.0																																
		0409	0410		960.3	959.2			120																											
L 18+95	43 RT	0410		968.0																																
L 17+33	43 RT	0411		971.0																																
Y7 20+00	83 RT	0413		966.8																																
		0413	0415		964.1	963.6																								92						
Y7 19+65	36 LT	0414		968.2																																
		0414	0415		964.5	964.1																								40						
Y7 19+65	1 RT	0415		968.8																																
		0415	0416		963.6	960.2																								132						
Y7 18+37	1 LT	0416		965.6																																
		0416	0417		960.2	960.2																								8						
Y7 18+36	7 LT	0417		961.4																																
L 13+92	43 LT	0419		977.2																																
		0419	0420		973.4	963.4	0.8		52							X																				
L 23+00	39 RT	0501		948.9																																
		0501	0502		945.2	944.9																								52						
L 23+00	10 LT	0502		951.2																																
		0502	0503		944.9	940.5	0.7																							132						
L 24+29	10 LT	0503		944.3																																
		0503	0522		940.5	936.7	0.9																							72						
L 25+39	119 RT	0504		930.3																																
		0504	0505		928.8	928.7				40																										
L 25+36	83 RT	0505		936.5																																
		0505	0506		928.7	928.3	0.4																76													
L 25+36	7 RT	0506		938.3																																
		0506	0507		927.8	922.7	0.3																									216				
L 27+50	2 RT	0507		927.2																																
		0507	0508		922.7	921.7	0.4																									44				
L 27+50	39 LT	0508		926.2																																
		0508	0509		921.7	897.5	1.7				68					X																				
L 27+50	104 LT	0509		901.9																																
		0509	0510		897.5	892.5	1.7				16					X																				
L 29+74	40 LT	0511		915.3																																
		0511	0513		910.9	910.5																								80						
L 29+74	39 RT	0513		915.3																																
		0513	0514		910.5	910.3			40																											
L 29+74	76 RT	0514		914.5																																
		0514	0515		910.3	893.5	1.0		104							X																				
							SHEET TOTALS		316	40	84												76								988		260				

LINE & STATION	STRUCTURE NUMBER FROM	STRUCTURE NUMBER TO	15" SIDE DRAIN PIPE	18" SIDE DRAIN PIPE	ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CY	REINFORCED ENDWALLS CY	DRAINAGE STRUCTURE MASONRY CY	QUANTITIES FOR DRAINAGE STRUCTURES (NOTE: TOTAL LIN. FT. FOR PAY QUANTITY SHALL BE A + (1.3 X B)) 0' THRU 5' EACH	A 5' THRU 10' LIN. FT.	B 10' AND ABOVE LIN. FT.	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STD. 840.03 GRATE TYPE E	F	G		CONCRETE TRANSITIONAL SECTION D.I. STD. 852.04 OR STD. 852.06	SEE DETAIL 2C-5	OPEN THROAT C.B. STD. 840.04 OR STD. 840.05	CONCRETE BRIDGE APPROACH D.I. STD. 840.13	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATES STD. 840.16	G.D.I. TYPE "A", STD. 840.17 OR STD. 840.26	G.D.I. TYPE "B" STD. 840.18 OR STD. 840.27	G.D.I. TYPE "D" STD. 840.19 OR STD. 840.28	G.D.I. (W.S. FLAT) FRAME WITH GRATE STD. 840.20	G.D.I. (W.S. FLAT) FRAME W/ 2 GRATES STD. 840.20	G.D.I. (W.S. SAG) FRAME W/ GRATE STD. 840.22	G.D.I. (W.S. SAG) FRAME W/ 2 GRATES STD. 840.22	G.D.I. (N.S. SAG) FRAME W/ GRATE STD. 840.24	G.D.I. (N.S. SAG) FRAME W/ 2 GRATES STD. 840.24	G.D.I. (N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29	J.B. STD. 840.31 OR STD. 840.32
L 16+00	0401							1			1			1																		
L 16+98	0403							1	1.5		1			1																		
	0403	0404																														
L 17+03	0404																															
L 16+00	0405							1								1				1	1											
	0405	0406																														
L 17+14	0406							1	2.6							1				1	1											
L 17+31	0407																															
	0407	0411																														
L 15+00	0408							1			1		1																			
	0408	0411																														
L 20+19	0409							1															1					1				
	0409	0410																														
L 18+95	0410							1	3.8		1		1																			
L 17+33	0411												1																			
Y7 20+00	0413							1															1					1				
	0413	0415																														
Y7 19+65	0414							1			1		1																			
	0414	0415																														
Y7 19+65	0415							1	0.2							1				1	1											
	0415	0416																														
Y7 18+37	0416							1	0.3							1				1	1											
	0416	0417																														
Y7 18+36	0417																															
L 13+92	0419							1			1			1																		
	0419	0420																														
L 23+00	0501							1			1		1																			
	0501	0502																														
L 23+00	0502							1	1.3							1				1	1											
	0502	0503																														
L 24+29	0503							1								1				1	1											
	0503	0522																														
L 25+39	0504																															
	0504	0505																														
L 25+36	0505							1	2.9		1		1																			
	0505	0506																														
L 25+36	0506							1	5.0	0.5						1				1	1											
	0506	0507																														
L 27+50	0507							1								1				1	1											
	0507	0508																														
L 27+50	0508							1			1			1																		
	0508	0509																														
L 27+50	0509							1																								1
	0509	0510																														
L 29+74	0511							1			1			1																		
	0511	0513																														
L 29+74	0513							1			1		1																			
	0513	0514																														
L 29+74	0514							1																								1
	0514	0515																														
SHEET TOTALS								23	17.6	0.5	11		7	5		8				8	8		2					2				2

LINE & STATION	STRUCTURE NUMBER FROM	STRUCTURE NUMBER TO	ANGLED VANE GRATES AND FRAMES STD. 840.33	T.B.J.B. STD. 840.34	T.B.D.I. STD. 840.35	T.B.D.I. FOR STEEL GRATES STD. 840.36	STEEL FRAME WITH TWO GRATES STD. 840.37	TEMP STEEL PLATE COVER MASONRY DRAINAGE	M.H. STD. 840.51, STD. 840.52, OR STD. 840.53	M.H. FRAME AND COVER STD. 840.54	CONVERT EXISTING C.B. TO J.B.	CONVERT EXISTING D.I. TO C.B., SEE DETAIL 2C-4	CONVERT EXISTING D.I. TO J.B.	CONVERT EXISTING J.B. TO D.I.	ADJUST C.B.	ADJUST D.I.	15" DRAINAGE PIPE ELBOW	18" DRAINAGE PIPE ELBOW	24" DRAINAGE PIPE ELBOW	DRY DET. BASIN OUTLET STR, DETAIL 2D-1 TO 2D-5	8" SLUICE GATE, SEE DETAIL 2D-2 & 2D-5	PREFORMED SCOUR HOLE (PER EACH)	CONCRETE COLLARS CL. "B" STD. 840.72 CY	PIPE REMOVAL LIN. FT.	REMARKS
L 16+00	0401																								Remove Existing CB
L 16+98	0403																								Remove Existing DI
	0403	0404																							
L 17+03	0404																						0.3990		
L 16+00	0405																								
	0405	0406																							
L 17+14	0406																								
L 17+31	0407																						0.3990		Remove Existing JB w/MH
	0407	0411																							Remove Exist 15" RCP
L 15+00	0408																								Remove Exist. CB
	0408	0411																						277	Remove Exist. 15" RCP
L 20+19	0409																								
	0409	0410																							
L 18+95	0410																								Remove Exist. DI
L 17+33	0411											1													Convert DI to CB and Adjust 2.8'.
Y7 20+00	0413																								
	0413	0415																							
Y7 19+65	0414																								
	0414	0415																							
Y7 19+65	0415																								
	0415	0416																							
Y7 18+37	0416																								Remove Existing DI
	0416	0417																							
Y7 18+36	0417																						0.3990		
L 13+92	0419																								
	0419	0420															2								Rod and Lug Connectors
L 23+00	0501																								
	0501	0502																							
L 23+00	0502																								
	0502	0503																							
L 24+29	0503																								
	0503	0522																							
L 25+39	0504																								
	0504	0505																							
L 25+36	0505																								
	0505	0506																							
L 25+36	0506																								
	0506	0507																							
L 27+50	0507																								
	0507	0508																							
L 27+50	0508																								
	0508	0509																	2						
L 27+50	0509									1															
	0509	0510																							
L 29+74	0511																								
	0511	0513																							
L 29+74	0513																								
	0513	0514																							
L 29+74	0514									1															
	0514	0515															2								
SHEET TOTALS										2		1					4		2				1.1970	277	

ABBREVIATIONS

C.A.A.	CORRUGATED ALUMINIUM ALLOY
C.B.	CATCH BASIN
C.S.	CORRUGATED STEEL
D.I.	DROP INLET
G.D.I.	GRATED DROP INLET
H.D.P.E.	HIGH DENSITY POLYETHYLENE
J.B.	JUNCTION BOX
M.H.	MANHOLE
N.S.	NARROW SLOT
P.V.C.	POLYVINYL CHLORIDE
R.C.	REINFORCED CONCRETE
T.B.D.I.	TRAFFIC BEARING DROP INLET
T.B.J.B.	TRAFFIC BEARING JUNCTION BOX
W.S.	WIDE SLOT

RAL-PF12KCT9

COMPUTED BY: SHB DATE: 12/9/2016

CHECKED BY: YM DATE: 12/12/2016

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
U-4734	3D-2

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

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

LINE & STATION SIZE THICKNESS OR GAUGE	OFFSET	STRUCTURE NUMBER		TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	MINIMUM REQUIRED SLOPE	Drainage Pipe (RCP, CSP, CAAP, HDPE, or PVC)								DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE	DO NOT USE PVC	R. C. PIPE CLASS III								R. C. PIPE CLASS IV								15" SIDE DRAIN PIPE	18" SIDE DRAIN PIPE	ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE)	REINFORCED ENDWALLS	DRAINAGE STRUCTURE MASONRY	QUANTITIES FOR DRAINAGE STRUCTURES NOTE: TOTAL LIN. FT. FOR PAY QUANTITY SHALL BE A + (1.3 X B)			C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STD. 840.03 GRATE TYPE			
		FROM	TO	FT.	FT.	FT.	%	12	15	18	24	30	36	42	48						12	15	18	24	30	36	42	48	12	15	18	24	30	36	42	48			CY	CY	CY	0' THRU 5' EACH	A 5' THRU 10' LIN. FT.	B 10' AND ABOVE LIN. FT.		E	F	G	
L 28+81	118 RT	0515		894.8																																													
		0516	0517		903.8	903.6			32																																								
DR1 12+18	14 RT	0516		906.5																																						1							
		0517	0518		903.6	903.4			16																																								
DR1 12+17	14 LT	0517		906.5																																						1							
L 32+44	40 LT	0518		907.1																																						1			1			1	
		0518	0521		903.4	902.6																								92																			
		0519	0520		903.3	903.1			32																																								
DR2 10+50	14 RT	0519		906.1																																						1							
DR2 10+57	14 LT	0520		905.8																																						1							
		0520	0521		903.1	902.6			24																																								
L 32+90	39 RT	0521		906.3																																						1			1		1		
		0521	0620		902.6	900.5	0.7																							212																			
L 25+00	10 LT	0522		940.4																																						1							
		0522	0506		936.7	934.5	1.0																							44																			
L 22+00	10 LT	0523		956.4																																						1							
		0523	0502		952.6	947.4																								104																			
L 37+00	43 LT	0601		902.6																																						1			1			1	
		0601	0602		898.8	898.4																								84																			
L 37+00	43 RT	0602		902.6																																						1			1		1		
		0602	0617		898.1	882.6	4.1			44						X																																	
L 45+50	9 RT	0604		912.4																																						1							
		0604	0606		908.7	908.0																								20																			
L 45+50	39 LT	0605		910.1																																						1			1		1		
		0605	0606		906.4	906.2																								32																			
L 45+50	8 LT	0606		911.7																																						1	0.5						
		0606	0628		906.2	903.7																								128																			
L 44+25	9 RT	0607		908.2																																						1							
		0607	0628		904.4	903.7																								20																			
L 43+30	8 LT	0608		904.5																																						1							
		0608	0623		900.7	899.1	0.3																							72																			
L 42+10	6 LT	0609		902.1																																						1	0.1						
		0609	0610		897.0	896.8																									48																		
L 42+10	39 RT	0610		902.5																																						1	0.8		1			1	
		0610	0611		896.8	895.9																									172																		
		0611	0614		895.4	895.3																										24																	
L 40+42	41 RT	0611		900.1																																						1			1	1			
		0612	0613		896.3	896.1																								44																			
L 40+64	40 LT	0612		900.1																																						1			1	1			
L 40+20	41 LT	0613		900.1																																						1			1			1	
		0613	0614		896.1	895.7																								84																			
L 40+20	41 RT	0614		900.1																																						1	0.2		1		1		
		0614	0615		894.9	881.7	0.9				48					X																																	
L 40+19	89 RT	0615		884.4																																						1							
		0615	0616		881.7	881.3					40																																						
L 37+00	84 RT	0617		886.5																																						1	0.9						
		0617	0603		880.6	880.5					12																																						
GW 13+86	0 CL	0618							48																																								
L 35+00	40 LT	0619		904.3																																						1			1			1	
		0619	0620		900.5	900.1																								80																			
SHEET TOTALS									152	44	100																			1016	220	24										24	2.5		11	2	4	5	

LINE & STATION	OFFSET	FROM	TO	CONCRETE TRANSITIONAL SECTION D.I. STD. 852.04 OR STD. 852.06	CONCRETE TRANSITIONAL SECTION SEE DETAIL 2C-5	OPEN THROAT C.B. STD. 840.04 OR STD. 840.05	CONCRETE BRIDGE APPROACH D.I. STD. 840.13	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATES STD. 840.16	G.D.I. TYPE "A", STD. 840.17 OR STD. 840.26	G.D.I. TYPE "B" STD. 840.18 OR STD. 840.27	G.D.I. TYPE "D" STD. 840.19 OR STD. 840.28	G.D.I. (W.S. FLAT) FRAME WITH GRATE STD. 840.20	G.D.I. (W.S. FLAT) FRAME W/ 2 GRATES STD. 840.20	G.D.I. (W.S. SAG) FRAME W/ GRATE STD. 840.22	G.D.I. (W.S. SAG) FRAME W/ 2 GRATES STD. 840.22	G.D.I. (N.S. SAG) FRAME W/ GRATE STD. 840.24	G.D.I. (N.S. SAG) FRAME W/ 2 GRATES STD. 840.24	G.D.I. (N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29	J.B. STD. 840.31 OR STD. 840.32	ANGLED VANE GRATES AND FRAMES STD. 840.33	T.B.J.B. STD. 840.34	T.B.D.I. STD. 840.35	T.B.D.I. FOR STEEL GRATES STD. 840.36	STEEL FRAME WITH TWO GRATES STD. 840.37	TEMP STEEL PLATE COVER MASONRY DRAINAGE	M.H. STD. 840.51, STD. 840.52, OR STD. 840.53	M.H. FRAME AND COVER STD. 840.54	CONVERT EXISTING C.B. TO J.B.	CONVERT EXISTING D.I. TO C.B., SEE DETAIL 2C-4	CONVERT EXISTING D.I. TO J.B.	CONVERT EXISTING J.B. TO D.I.	ADJUST C.B.	ADJUST D.I.	15" DRAINAGE PIPE ELBOW	18" DRAINAGE PIPE ELBOW	24" DRAINAGE PIPE ELBOW	DRY DET. BASIN OUTLET STR, DETAIL 2D-1 TO 2D-5	8" SLUICE GATE, SEE DETAIL 2D-2 & 2D-5	PREFORMED SCOUR HOLE (PER EACH)	CONCRETE COLLARS CL. "B" STD. 840.72 CY	PIPE REMOVAL LIN. FT.	REMARKS
L 28+81	118 RT	0515																																						1			
		0516	0517																																								
DR1 12+18	14 RT	0516									1							1																									
		0517	0518																																								
DR1 12+17	14 LT	0517									1							1																									
L 32+44	40 LT	0518																																									
		0518	0521																																								
		0519	0520																																							22	Remove Exist. 15" RCP -DR2-
DR2 10+50	14 RT	0519									1							1																									
DR2 10+57	14 LT	0520									1							1																									
		0520	0521																																								
L 32+90	39 RT	0521																																									
		0521	0620																																								
L 25+00	10 LT	0522		1				1	1																																		
		0522	0506																																								
L 22+00	10 LT	0523		1				1	1																																		
		0523	0502																																								
L 37+00	43 LT	0601																																									
		0601	0602																																								
L 37+00	43 RT	0602																																									
		0602	0617																																	2							
L 45+50	9 RT	0604		1				1	1																																		
		0604	0606																																								
L 45+50	39 LT	0605																																									
		0605	0606																																								
L 45+50	8 LT	0606		1				1	1																																		
		0606	0628																																								
L 44+25	9 RT	0607		1				1	1																																		
		0607	0628																																								
L 43+30	8 LT	0608		1				1	1																																		
		0608	0623																																								
L 42+10	6 LT	0609		1				1	1																																		
		0609	0610																																								
L 42+10	39 RT	0610																																									
		0610	0611																																								
		0611	0614																																								
L 40+42	41 RT	0611																																									
		0612	0613																																								
L 40+64	40 LT	0612																																									
L 40+20	41 LT	0613																																									
		0613	0614																																								
L 40+20	41 RT	0614																																									
		0614	0615																																		2						
L 40+19	89 RT	0615										1				1																											
		0615	0616																																								
L 37+00	84 RT	0617																		1								1															
		0617	0603																																								
GW 13+86	0 CL	0618																																									
L 35+00	40 LT	0619																																									
		0619	0620																																								
SHEET TOTALS				7				7	7		4	1				1		4		1								1								2	2			1		22	

ABBREVIATIONS

C.A.A.	CORRUGATED ALUMINIUM ALLOY
C.B.	CATCH BASIN
C.S.	CORRUGATED STEEL
D.I.	DROP INLET
G.D.I.	GRATED DROP INLET
H.D.P.E.	HIGH DENSITY POLYETHYLENE
J.B.	JUNCTION BOX
M.H.	MANHOLE
N.S.	NARROW SLOT
P.V.C.	POLYVINYL CHLORIDE
R.C.	REINFORCED CONCRETE
T.B.D.I.	TRAFFIC BEARING DROP INLET
T.B.J.B.	TRAFFIC BEARING JUNCTION BOX
W.S.	WIDE SLOT

RAL-PF12KCT9

COMPUTED BY: SHB DATE: 12/9/2016

CHECKED BY: YM DATE: 12/12/2016

PROJECT NO.	SHEET NO.
U-4734	3D-3

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

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

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

LINE & STATION	OFFSET		STRUCTURE NUMBER		TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	MINIMUM REQUIRED SLOPE	Drainage Pipe (RCP, CSP, CAAP, HDPE, or PVC)													R. C. PIPE CLASS III								R. C. PIPE CLASS IV							
SIZE									12	15	18	24	30	36	42	48	DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE	DO NOT USE PVC	12	15	18	24	30	36	42	48	12	15	18	24	30	36	42	48
THICKNESS OR GAUGE			FROM	TO	FT.	FT.	FT.	%																													
L 35+00	39	RT	0620		904.3																																
			0620	0621		899.9	898.7	0.7																								176					
L 36+75	42	RT	0621		902.9																																
			0621	0602		898.7	898.5	0.8																								28					
L 36+75	42	LT	0622		902.9																																
			0622	0601		899.1	898.8																								28						
L 42+58	8	LT	0623		902.8																																
			0623	0609		899.1	898.4	0.4																							48						
L 39+50	42	LT	0625		900.6																																
			0625	0613		896.9	896.4																								72						
L 39+68	42	RT	0626		900.5																																
			0626	0614		896.7	896.4																								52						
L 42+10	40	LT	0627		901.2																																
			0627	0609		897.4	897.2																								36						
L 44+25	10	LT	0628		907.5																																
			0628	0608		903.7	900.7																								96						
L 44+47	47	RT	0629		910.1																																
			0629	0607		906.4	904.4																								44						
GW 10+65	0	CL	0630							44																											
L 53+05	8	RT	0701		938.4																																
			0701	0702		934.7	932.2																								48						
L 53+00	39	LT	0702		936.0																																
			0702	0705		932.2	924.1	1.1																							224						
L 50+72	10	RT	0703		930.1																																
			0703	0705		926.4	924.1																								52						
L 50+72	59	LT	0704		927.7																																
			0704	0705		925.5	924.1			20																											
L 50+72	39	LT	0705		927.8																																
			0705	0708		923.8	911.7	1.1																								348					
L 47+15	60	RT	0706		917.0																																
			0706	0707		914.0	912.3																												48		
L 47+15	10	RT	0707		918.0																																
			0707	0708		912.3	910.2																												52		
L 47+15	40	LT	0708		915.7																																
			0708	0709		909.7	909.5	0.4																	36											
L 59+70	39	RT	0710		960.1																																
			0710	0711		956.3	955.9																								80						
L 59+70	40	LT	0711		960.1																																
			0711	0714		955.9	952.9																								124						
L 55+20	40	LT	0713		944.4																																
			0713	0702		940.6	932.2	0.3																							216						
L 58+59	89	LT	0714		956.7																																
			0714	0715		947.2	946.9			44																											
Y9 11+10	28	RT	0716		958.6																																
			0716	0717		954.8	954.5			28																											
L 55+20	1	LT	0718		946.2																																
			0718	0713		942.4	940.6																								40						
L 70+19	40	LT	0801		964.2																																
			0801	0802		959.9	959.7																								52						
L 70+12	9	RT	0802		965.4																																
SHEET TOTALS										136																	36				1212	552			100		

LINE & STATION	STRUCTURE NUMBER		15" SIDE DRAIN PIPE	18" SIDE DRAIN PIPE	ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE)	REINFORCED ENDWALLS	DRAINAGE STRUCTURE	QUANTITIES FOR DRAINAGE STRUCTURES NOTE: TOTAL LIN. FT. FOR PAY QUANTITY SHALL BE A + (1.3 X B)			C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STD. 840.03				CONCRETE TRANSITIONAL SECTION		OPEN THROAT C.B. STD. 840.04 OR STD. 840.05	CONCRETE BRIDGE APPROACH D.I. STD. 840.13	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATES STD. 840.16	G.D.I. TYPE "A", STD. 840.17 OR STD. 840.26	G.D.I. TYPE "B" STD. 840.18 OR STD. 840.27	G.D.I. TYPE "D" STD. 840.19 OR STD. 840.28	G.D.I. (W.S. FLAT) FRAME WITH GRATE STD. 840.20	G.D.I. (W.S. FLAT) FRAME W/ 2 GRATES STD. 840.20	G.D.I. (W.S. SAG) FRAME W/ GRATE STD. 840.22	G.D.I. (W.S. SAG) FRAME W/ 2 GRATES STD. 840.22	G.D.I. (N.S. SAG) FRAME W/ GRATE STD. 840.24	G.D.I. (N.S. SAG) FRAME W/ 2 GRATES STD. 840.24	G.D.I. (N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29
	FROM	TO			CY	CY	MASONRY CY	0' THRU 5' EACH	A 5' THRU 10' LIN. FT.	B 10' AND ABOVE LIN. FT.		GRATE TYPE E	F	G		D.I. STD. 852.04 OR STD. 852.06	SEE DETAIL 2C-5														
L 35+00	0620							1			1		1																		
	0620	0621																													
L 36+75	0621							1			1		1																		
	0621	0602																													
L 36+75	0622							1			1			1																	
	0622	0601																													
L 42+58	0623							1								1				1	1										
	0623	0609																													
L 39+50	0625							1			1			1																	
	0625	0613																													
L 39+68	0626							1			1		1																		
	0626	0614																													
L 42+10	0627							1			1		1																		
	0627	0609																													
L 44+25	0628							1								1				1	1										
	0628	0608																													
L 44+47	0629							1			1			1																	
	0629	0607																													
GW 10+65	0630																														
L 53+05	0701							1								1				1	1										
	0701	0702																													
L 53+00	0702							1			1		1																		
	0702	0705																													
L 50+72	0703							1								1				1	1										
	0703	0705																													
L 50+72	0704							1															1							1	
	0704	0705																													
L 50+72	0705							1			1		1																		
	0705	0708																													
L 47+15	0706				3.400																										
	0706	0707																													
L 47+15	0707							1	0.8								1					1									1
	0707	0708																													
L 47+15	0708							1	1.1		1		1																		
	0708	0709																													
L 59+70	0710							1			1			1																	
	0710	0711																													
L 59+70	0711							1			1		1																		
	0711	0714																													
L 55+20	0713							1			1		1																		
	0713	0702																													
L 58+59	0714							1	4.5		1		1																		
	0714	0715																													
Y9 11+10	0716							1			1		1																		
	0716	0717																													
L 55+20	0718							1								1				1	1										
	0718	0713																													
L 70+19	0801							1			1		1																		
	0801	0802																													
L 70+12	0802							1	0.7							1				1	1										
SHEET TOTALS					3.400			24	7.1		16		12	4		6	1			6	6	1	1							1	1

LINE & STATION	STRUCTURE NUMBER		J.B. STD. 840.31 OR STD. 840.32	ANGLED VANE GRATES AND FRAMES STD. 840.33	T.B.J.B. STD. 840.34	T.B.D.I. STD. 840.35	T.B.D.I. FOR STEEL GRATES STD. 840.36	STEEL FRAME WITH TWO GRATES STD. 840.37	TEMP STEEL PLATE COVER MASONRY DRAINAGE	M.H. STD. 840.51, STD. 840.52, OR STD. 840.53	M.H. FRAME AND COVER STD. 840.54	CONVERT EXISTING C.B. TO J.B.	CONVERT EXISTING D.I. TO C.B., SEE DETAIL 2C-4	CONVERT EXISTING D.I. TO J.B.	CONVERT EXISTING J.B. TO D.I.	ADJUST C.B.	ADJUST D.I.	15" DRAINAGE PIPE ELBOW	18" DRAINAGE PIPE ELBOW	24" DRAINAGE PIPE ELBOW	DRY DET. BASIN OUTLET STR, DETAIL 2D-1 TO 2D-5	8" SLUICE GATE, SEE DETAIL 2D-2 & 2D-5	PREFORMED SCOUR HOLE (PER EACH)	CONCRETE COLLARS CL. "B" STD. 840.72	PIPE REMOVAL	REMARKS
	FROM	TO																						CY	LIN. FT.	
L 35+00	0620																									
	0620	0621																								
L 36+75	0621																									
	0621	0602																								
L 36+75	0622																									
	0622	0601																								
L 42+58	0623																									
	0623	0609																								
L 39+50	0625																									
	0625	0613																								
L 39+68	0626																									
	0626	0614																								
L 42+10	0627																									
	0627	0609																								
L 44+25	0628																									
	0628	0608																								
L 44+47	0629																									
	0629	0607																								
GW 10+65	0630																									
L 53+05	0701																									
	0701	0702																								
L 53+00	0702																									
	0702	0705																								
L 50+72	0703																									
	0703	0705																								
L 50+72	0704																									
	0704	0705																								
L 50+72	0705																									
	0705	0708																								
L 47+15	0706																									
	0706	0707																								
L 47+15	0707																									Special Detail
	0707	0708																								
L 47+15	0708																									
	0708	0709																								
L 59+70	0710																									
	0710	0711																							29	Remove Exist 12" RCP, RT
L 59+70	0711																									
	0711	0714																								
L 55+20	0713																									
	0713	0702																								
L 58+59	0714																									
	0714	0715																								
Y9 11+10	0716																									
	0716	0717																								
L 55+20	0718																									
	0718	0713																								
L 70+19	0801																									
	0801	0802																								
L 70+12	0802																									
SHEET TOTALS																									29	

ABBREVIATIONS

C.A.A.	CORRUGATED ALUMINIUM ALLOY
C.B.	CATCH BASIN
C.S.	CORRUGATED STEEL
D.I.	DROP INLET
G.D.I.	GRATED DROP INLET
H.D.P.E.	HIGH DENSITY POLYETHYLENE
J.B.	JUNCTION BOX
M.H.	MANHOLE
N.S.	NARROW SLOT
P.V.C.	POLYVINYL CHLORIDE
R.C.	REINFORCED CONCRETE
T.B.D.I.	TRAFFIC BEARING DROP INLET
T.B.J.B.	TRAFFIC BEARING JUNCTION BOX
W.S.	WIDE SLOT

RAL-PF12KCT9

COMPUTED BY:	SHB	DATE:	12/9/2016
CHECKED BY:	YM	DATE:	12/12/2016

PROJECT NO.	SHEET NO.
U-4734	3D-4

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

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

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

LINE & STATION / SIZE / THICKNESS OR GAUGE	OFFSET	STRUCTURE NUMBER FROM	STRUCTURE NUMBER TO	TOP ELEVATION FT.	INVERT ELEVATION FT.	INVERT ELEVATION FT.	MINIMUM REQUIRED SLOPE %	Drainage Pipe (RCP, CSP, CAAP, HDPE, or PVC) 12	15	18	24	30	36	42	48	DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE	DO NOT USE PVC	R. C. PIPE CLASS III 12	15	18	24	30	36	42	48	R. C. PIPE CLASS IV 12	15	18	24	30	36	42	48	15" SIDE DRAIN PIPE	18" SIDE DRAIN PIPE	ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CY	REINFORCED ENDWALLS CY	DRAINAGE STRUCTURE MASONRY CY	QUANTITIES FOR DRAINAGE STRUCTURES (NOTE: TOTAL LIN. FT. FOR PAY QUANTITY SHALL BE A + (1.3 X B)) 0' THRU 5' EACH	A 5' THRU 10' LIN. FT.	B 10' AND ABOVE LIN. FT.	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STD. 840.03 GRATE TYPE E	F	G		CONCRETE TRANSITIONAL SECTION D.I. STD. 852.04 OR STD. 852.06	SEE DETAIL 2C-5	OPEN THROAT C.B. STD. 840.04 OR STD. 840.05	CONCRETE BRIDGE APPROACH D.I. STD. 840.13	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATES STD. 840.16	G.D.I. TYPE "A", STD. 840.17 OR STD. 840.26	G.D.I. TYPE "B" STD. 840.18 OR STD. 840.27	G.D.I. TYPE "D" STD. 840.19 OR STD. 840.28	G.D.I. (W.S. FLAT) FRAME WITH GRATE STD. 840.20	G.D.I. (W.S. FLAT) FRAME W/ 2 GRATES STD. 840.20	G.D.I. (W.S. SAG) FRAME W/ GRATE STD. 840.22	G.D.I. (W.S. SAG) FRAME W/ 2 GRATES STD. 840.22	G.D.I. (N.S. SAG) FRAME W/ GRATE STD. 840.24	G.D.I. (N.S. SAG) FRAME W/ 2 GRATES STD. 840.24	G.D.I. (N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29	J.B. STD. 840.31 OR STD. 840.32	ANGLED VANE GRATES AND FRAMES STD. 840.33	T.B.J.B. STD. 840.34	T.B.D.I. STD. 840.35	T.B.D.I. FOR STEEL GRATES STD. 840.36	STEEL FRAME WITH TWO GRATES STD. 840.37	TEMP STEEL PLATE COVER MASONRY DRAINAGE	M.H. STD. 840.51, STD. 840.52, OR STD. 840.53	M.H. FRAME AND COVER STD. 840.54	CONVERT EXISTING C.B. TO J.B.	CONVERT EXISTING D.I. TO C.B., SEE DETAIL 2C-4	CONVERT EXISTING D.I. TO J.B.	CONVERT EXISTING J.B. TO D.I.	ADJUST C.B.	ADJUST D.I.	15" DRAINAGE PIPE ELBOW	18" DRAINAGE PIPE ELBOW	24" DRAINAGE PIPE ELBOW	DRY DET. BASIN OUTLET STR, DETAIL 2D-1 TO 2D-5	8" SLUICE GATE, SEE DETAIL 2D-2 & 2D-5	PREFORMED SCOUR HOLE (PER EACH)	CONCRETE COLLARS CL. "B" STD. 840.72 CY	PIPE REMOVAL LIN. FT.	REMARKS
		0802	0818		959.7	958.6																216																																																																			
L 67+97	40 LT	0803		963.8																																						1			1		1																																												
		0803	0818		959.6	959.3																									44																																																													
L 67+05	7 RT	0804		964.0																																						1	0.9							1				1	1																																			26	Remove Exist. 15" RCP, LT
		0804	0823		958.2	957.9	0.5															56																																																																						
L 61+66	39 RT	0805		961.3																																						1			1			1																																											
		0805	0827		957.5	957.1																									80																																																														
L 65+01	10 LT	0806		963.9																																						1	2.0							1				1	1																																				
		0806	0825		956.9	956.5																	72																																																																						25	Remove Exist. 12" RCP, LT
L 63+34	39 RT	0807		961.9																																						1			1			1																																											
		0807	0808		957.4	957.1																									52																																																														
L 63+35	10 LT	0808		963.1																																						1	2.5							1				1	1																																				
		0808	0826		955.5	955.4																											32																																																											
		0810	0811		958.3	958.0																									52																																																													
L 66+80	91 RT	0810		962.0																																						1			1	1																																													
L 67+27	79 RT	0811		962.4																																						1			1			1																																											
		0811	0812		958.0	954.8			36																																																																																				
L 63+34	59 RT	0813		960.3																																						1															1							1																											
		0813	0807		957.5	957.4			20																																																																																				
L 70+60	10 RT	0814		965.6																																						1								1				1	1																																				
		0814	0802		961.8	961.6																									52																																																														
L 71+10	10 RT	0815		965.9																																						1								1				1	1																																				
		0815	0814		962.0	961.8																									52																																																														
L 70+84	40 LT	0816		964.0																																						1			1		1																																											
		0816	0801		960.3	959.9																									68																																																														
L 68+80	40 LT	0817		963.7																																						1			1		1																																											
		0817	0803		960.0	959.6																									84																																																														
L 67+97	6 RT	0818		964.4																																						1	0.8							1				1	1																																				
		0818	0804		958.6	958.2	0.4															96																																																																						
L 66+04	9 LT	0820		964.2																																						1	1.8							1				1	1																																				
		0820	0806		957.4	956.9																	108																																																																						
L 71+60	10 RT	0821		966.1																																						1								1				1	1																																				
		0821	0815		962.3	962.0																									52																																																														
L 72+10	7 RT	0822		966.3																																						1								1				1	1																																				
		0822	0821		962.6	962.3																									52																																																														
L 66+52	9 LT	0823		964.2																																						1	1.6							1				1	1																																				
		0823	0820		957.6	957.4																	52																																																																							
L 63+85	10 LT	0824		963.3																																						1	2.0							1				1	1																																				
		0824	0808		956.3	956.0	0.3																52																																																																					21	Remove Exist. 12" RCP, LT
L 64+30	9 LT	0825		963.6																																						1	2.1							1				1	1																																				
		0825	0824		956.5	956.3																	48																																																																					46	Remove Exist. 15" RCP
L 63+22	40 LT	0826		963.5																																						1	5.0	2.0	1		1																																												
		0826	0809		951.5	950.0					112																																																																																		
L 61+66	40 LT	0827		961.3																																						1			1		1																																											
		0827	0826		957.1	956.4																									160																																																														
L 62+67	199 LT	0828																																								1	1.3																																									1	1				Outlet Structure For Pond
		0828	0829		947.8	947.0			48																																																																																			
L 78+31	39 LT	0901		984.6																																						1			1		1																																											
		0901	0902		980.8	972.7	0.4																								228																																																													77	Remove Exist. 18" CMP
L 76+04	39 LT	0902		976.4																																						1			1		1																																											
SHEET TOTALS									104		112											368	332								976		32											25	20.0	2.0	11	1	7	3		12				12	12		1							1																				1	1			195	

ABBREVIATIONS

C.A.A.	CORRUGATED ALUMINIUM ALLOY
C.B.	CATCH BASIN
C.S.	CORRUGATED STEEL
D.I.	DROP INLET
G.D.I.	GRATED DROP INLET
H.D.P.E.	HIGH DENSITY POLYETHYLENE
J.B.	JUNCTION BOX
M.H.	MANHOLE
N.S.	NARROW SLOT
P.V.C.	POLYVINYL CHLORIDE
R.C.	REINFORCED CONCRETE
T.B.D.I.	TRAFFIC BEARING DROP INLET
T.B.J.B.	TRAFFIC BEARING JUNCTION BOX
W.S.	WIDE SLOT

RAL-PF12KCT9

COMPUTED BY: SHB DATE: 12/9/2016

CHECKED BY: YM DATE: 12/12/2016

PROJECT NO.	SHEET NO.
U-4734	3D-5

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

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

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

LINE & STATION SIZE THICKNESS OR GAUGE	OFFSET	STRUCTURE NUMBER FROM	STRUCTURE NUMBER TO	TOP ELEVATION FT.	INVERT ELEVATION FT.	INVERT ELEVATION FT.	MINIMUM REQUIRED SLOPE %	Drainage Pipe (RCP, CSP, CAAP, HDPE, or PVC)												R. C. PIPE CLASS III								R. C. PIPE CLASS IV						
								12	15	18	24	30	36	42	48	DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE	DO NOT USE PVC	12	15	18	24	30	36	42	48	12	15	18	24	30	36	42	48
		0902	0904		972.4	972.3																									36					
L 76+04	40 RT	0903		976.8																																	
		0903	0904		973.1	972.9																								48						
L 76+04	6 LT	0904		977.4																																	
		0904	0911		972.3	968.6	0.3																							120					
L 73+76	40 LT	0905		967.7																																	
		0905	0906		963.9	963.7																								40						
L 73+65	3 LT	0906		968.8																																	
		0906	0907		962.9	962.5	0.6																80													
L 78+66	40 RT	0908		985.4																																	
		0908	0909		981.6	981.2																								92						
L 78+66	39 LT	0909		985.4																																	
		0909	0901		981.2	980.8	0.4																							36						
L 79+00	40 RT	0910		986.0																																	
		0910	0908		982.2	981.6																								36						
L 74+85	3 LT	0911		972.6																																	
		0911	0906		968.6	964.8	0.4																								124					
L 85+00	56 RT	0912																																			
L 86+50	40 RT	1001		986.1																																	
		1001	1002		982.4	981.9																								92						
		1002	1003		981.9	981.7																								48						
L 87+39	40 RT	1002		985.7																																	
L 87+39	7 LT	1003		986.7																																	
		1003	1004		981.7	981.4																								52						
L 87+39	56 LT	1004		985.4																																	
		1004	1005		981.4	981.1																									64					
		1005	1008		981.1	980.6	0.3																								104					
L 88+00	73 LT	1005		985.2																																	
L 89+86	10 RT	1006		988.7																																	
		1006	1007		983.1	982.8																								48						
L 89+38	10 RT	1007		988.2																																	
		1007	1019		982.8	982.6																								52						
L 89+03	66 LT	1008		986.2																																	
		1008	1009		980.6	980.5					28																									
L 95+00	9 RT	1010		988.9																																	
		1010	1013		984.1	983.5																120													
L 96+00	39 LT	1011		988.6																																	
		1011	1012		984.9	984.6																								52						
L 96+00	9 RT	1012		990.9																																	
		1012	1010		984.6	984.1																104													
L 93+82	10 RT	1013		988.6																																	
		1013	1014		983.5	982.5																64													
L 91+32	116 LT	1015		981.4																																	
		1015	1016		977.3	976.0			56																										
L 97+70	1 LT	1017		989.3																																	
		1017	1018		985.5	984.9																								100						
L 98+70	2 RT	1018		988.6																																	
		1018	1101		984.9	984.5																								52						
L 89+25	40 LT	1019		986.9																																	
		1019	1008		982.6	982.4	0.4																							36						
SHEET TOTALS										56		28													288	80							784	448					

STRUCTURE NUMBER FROM	STRUCTURE NUMBER TO	15" SIDE DRAIN PIPE	18" SIDE DRAIN PIPE	ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CY	REINFORCED ENDWALLS CY	DRAINAGE STRUCTURE MASONRY CY	QUANTITIES FOR DRAINAGE STRUCTURES NOTE: TOTAL LIN. FT. FOR PAY QUANTITY SHALL BE A + (1.3 X B)			C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STD. 840.03 GRATE TYPE				CONCRETE TRANSITIONAL SECTION		OPEN THROAT C.B. STD. 840.04 OR STD. 840.05	CONCRETE BRIDGE APPROACH D.I. STD. 840.13	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATES STD. 840.16	G.D.I. TYPE "A", STD. 840.17 OR STD. 840.26	G.D.I. TYPE "B" STD. 840.18 OR STD. 840.27	G.D.I. TYPE "D" STD. 840.19 OR STD. 840.28	G.D.I. (W.S. FLAT) FRAME WITH GRATE STD. 840.20	G.D.I. (W.S. FLAT) FRAME W/ 2 GRATES STD. 840.20	G.D.I. (W.S. SAG) FRAME W/ GRATE STD. 840.22	G.D.I. (W.S. SAG) FRAME W/ 2 GRATES STD. 840.22	G.D.I. (N.S. SAG) FRAME W/ GRATE STD. 840.24	G.D.I. (N.S. SAG) FRAME W/ 2 GRATES STD. 840.24	G.D.I. (N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29
							0' THRU 5' EACH	A 5' THRU 10' LIN. FT.	B 10' AND ABOVE LIN. FT.		E	F	G		D.I. STD. 852.04 OR STD. 852.06	SEE DETAIL 2C-5													
0902	0904																													
0903							1			1			1																			
0903	0904																													
0904							1	0.1							1				1	1										
0904	0911																													
0905							1			1		1																		
0905	0906																													
0906							1	0.9							1				1	1										
0906	0907																													
0908							1			1			1																			
0908	0909																													
0909							1			1		1																		
0909	0901																													
0910							1			1			1																			
0910	0908																													
0911							1								1				1	1										
0911	0906																													
0912		32																											
1001							1			1		1																		
1001	1002																													
1002	1003																													
1002							1			1	1																			
1003							1								1				1	1										
1003	1004																													
1004							1			1			1																			
1004	1005																													
1005	1008																													
1005							1			1	1																			
1006							1	0.6							1				1	1										
1006	1007																													
1007							1	0.3							1				1	1										
1007	1019																													
1008							1	0.6		1		1																		
1008	1009																													
1010							1								1				1	1										
1010	1013																													
1011							1			1			1																			
1011	1012																													
1012							1	1.3							1				1	1										
1012	1010																													
1013							1	0.1							1				1	1										
1013	1014																													
1015							1																							
1015	1016																													
1017							1								1				1	1										
1017	1018																													
1018							1								1				1	1										
1018	1101																													
1019							1			1		1																		
1019	1008																													
SHEET TOTALS		32					24	3.9		12	2	5	5		11				11	11										

STRUCTURE NUMBER FROM	STRUCTURE NUMBER TO	J.B. STD. 840.31 OR STD. 840.32	ANGLED VANE GRATES AND FRAMES STD. 840.33	T.B.J.B. STD. 840.34	T.B.D.I. STD. 840.35	T.B.D.I. FOR STEEL GRATES STD. 840.36	STEEL FRAME WITH TWO GRATES STD. 840.37	TEMP STEEL PLATE COVER MASONRY DRAINAGE	M.H. STD. 840.51, STD. 840.52, OR STD. 840.53	M.H. FRAME AND COVER STD. 840.54	CONVERT EXISTING C.B. TO J.B.	CONVERT EXISTING D.I. TO C.B., SEE DETAIL 2C-4	CONVERT EXISTING D.I. TO J.B.	CONVERT EXISTING J.B. TO D.I.	ADJUST C.B.	ADJUST D.I.	15" DRAINAGE PIPE ELBOW	18" DRAINAGE PIPE ELBOW	24" DRAINAGE PIPE ELBOW	DRY DET. BASIN OUTLET STR, DETAIL 2D-1 TO 2D-5	8" SLUICE GATE, SEE DETAIL 2D-2 & 2D-5	PREFORMED SCOUR HOLE (PER EACH)	CONCRETE COLLARS CL. "B" STD. 840.72 CY	PIPE REMOVAL LIN. FT.	REMARKS
0902	0904																								
0903																									
0903	0904																							29	Remove Exist. 15" RCP, RT
0904																									
0904	0911																								
0905																									
0905	0906																								
0906																									
0906	0907																							52	Remove Exist. 18" RCP
0908																									
0908	0909																								
0909																									
0909	0901																								
0910																									
0910	0908																								
0911																									
0911	0906																								
0912																									22	Remove Exist. 12" RCP
1001																									
1001	1002																								
1002	1003																								
1002																									
1003																									
1003	1004																								
1004																									
1004	1005																								
1005	1008																								
1005																									
1006																									
1006	1007																								
1007																									
1007	1019																								
1008																									
1008	1009																								
1010																									
1010	1013																								
1011																									
1011	1012																								
1012																									
1012	1010																								
1013																									
1013	1014																								
1015																				1	1				Outlet Structure For Pond
1015	1016																							52	Remove Exist. 18" RCP
1017																									
1017	1018																								
1018																									
1018	1101																								
1019																									
1019	1008																								
SHEET TOTALS																					1	1				155	

ABBREVIATIONS

C.A.A.	CORRUGATED ALUMINIUM ALLOY
C.B.	CATCH BASIN
C.S.	CORRUGATED STEEL
D.I.	DROP INLET
G.D.I.	GRATED DROP INLET
H.D.P.E.	HIGH DENSITY POLYETHYLENE
J.B.	JUNCTION BOX
M.H.	MANHOLE
N.S.	NARROW SLOT
P.V.C.	POLYVINYL CHLORIDE
R.C.	REINFORCED CONCRETE
T.B.D.I.	TRAFFIC BEARING DROP INLET
T.B.J.B.	TRAFFIC BEARING JUNCTION BOX
W.S.	WIDE SLOT

RAL-PF12KCT9

COMPUTED BY: SHB DATE: 12/9/2016
CHECKED BY: YM DATE: 12/12/2016

PROJECT NO.	SHEET NO.
U-4734	3D-6

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

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

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

LINE & STATION / SIZE / THICKNESS OR GAUGE	OFFSET	STRUCTURE NUMBER FROM	STRUCTURE NUMBER TO	TOP ELEVATION FT.	INVERT ELEVATION FT.	INVERT ELEVATION FT.	MINIMUM REQUIRED SLOPE %	Drainage Pipe (RCP, CSP, CAAP, HDPE, or PVC) 12	15	18	24	30	36	42	48	DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE	DO NOT USE PVC	R. C. PIPE CLASS III 12	15	18	24	30	36	42	48	R. C. PIPE CLASS IV 12	15	18	24	30	36	42	48
L 92+00	40 LT	1020		988.4																																
		1020	1024		984.4	984.2																								52						
L 90+58	10 RT	1021		989.4																																
		1021	1006		983.4	983.1																								72						
L 92+82	9 RT	1023		988.3																																
		1023	1024		984.6	984.2																								84						
L 92+00	9 RT	1024		991.1																																
		1024	1021		984.2	983.4																								144						
L 99+20	2 RT	1101		988.3																																
		1101	1102		984.5	984.2																								44						
L 99+62	2 RT	1102		987.9																																
		1102	1103		984.2	983.0																								44						
L 99+62	43 LT	1103		986.8																																
		1103	1104		983.0	982.6	0.4																							96						
L 100+57	43 LT	1104		986.3																																
		1104	1106		982.6	982.0	0.5																							108						
L 101+60	78 LT	1105		984.1																																
		1105	1106		981.6	981.4						28																								
L 101+64	53 LT	1106		986.6																																
		1106	1107		980.8	980.6	0.4																										40			
L 101+64	14 LT	1107		986.6																																
		1107	1118		980.6	980.2	0.4																										76			
L 101+94	92 RT	1108		983.7																																
		1108	1109		981.7	980.7					24																									
		1109	1111		979.4	979.1	0.3																											68		
L 102+09	75 RT	1109		985.2																																
Y13 22+50	11 RT	1110		987.7																																
		1110	1116		983.6	982.5																								116						
Y13 20+53	13 RT	1111		985.5																																
		1111	1115		974.9	974.5	0.3																											76		
Y13 20+20	13 RT	1112		985.4																																
		1112	1111		981.7	981.5																								36						
Y13 21+38	13 RT	1116		986.3																																
		1116	1111		981.5	980.7																								88						
L 101+64	61 RT	1118		985.5																																
		1118	1109		980.2	979.9	0.4																										48			
Y13 14+00	56 RT	1201		992.6																																
		1201	1202		990.6	990.2																										80				
Y13 12+30	23 LT	1203																																		
Y13 13+60	38 LT	1204																																		
Y13 14+95	43 LT	1205																																		
Y13 16+00	46 LT	1206																																		
Y13 23+60	38 RT	1301		988.1																																
		1301	1302		984.3	984.2																								28						
Y13 23+60	8 RT	1302		988.6																																
		1302	1110		984.2	983.6																								108						
Y13 23+96	7 RT	1303		988.8																																
		1303	1302		985.1	984.9																								36						
Y13 25+90	53 RT	1304		988.0																																
		1304	1306		986.0	984.6																										20				
						SHEET TOTALS					24	28																		1056		100	164	144		

LINE & STATION	OFFSET	FROM	TO	15" SIDE DRAIN PIPE	18" SIDE DRAIN PIPE	ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CY	REINFORCED ENDWALLS CY	DRAINAGE STRUCTURE MASONRY CY	QUANTITIES FOR DRAINAGE STRUCTURES (NOTE: TOTAL LIN. FT. FOR PAY QUANTITY SHALL BE A + (1.3 X B)) 0' THRU 5' EACH	A 5' THRU 10' LIN. FT.	B 10' AND ABOVE LIN. FT.	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STD. 840.03 GRATE TYPE E	F	G		CONCRETE TRANSITIONAL SECTION D.I. STD. 852.04 OR STD. 852.06	SEE DETAIL 2C-5
L 92+00	40 LT	1020							1			1		1				
		1020	1024															
L 90+58	10 RT	1021							1	1.0							1	
		1021	1006															
L 92+82	9 RT	1023							1								1	
		1023	1024															
L 92+00	9 RT	1024							1	1.9							1	
		1024	1021															
L 99+20	2 RT	1101							1								1	
		1101	1102															
L 99+62	2 RT	1102							1								1	
		1102	1103															
L 99+62	43 LT	1103							1			1			1			
		1103	1104															
L 100+57	43 LT	1104							1			1			1			
		1104	1106															
L 101+60	78 LT	1105																
		1105	1106															
L 101+64	53 LT	1106							1	0.8		1			1			
		1106	1107															
L 101+64	14 LT	1107							1	1.0							1	
		1107	1118															
L 101+94	92 RT	1108																
		1108	1109															
		1109	1111															
L 102+09	75 RT	1109							1	0.7		1		1				
Y13 22+50	11 RT	1110							1								1	
		1110	1116															
Y13 20+53	13 RT	1111							1	5.0	0.6							1
		1111	1115															
Y13 20+20	13 RT	1112							1								1	
		1112	1111															
Y13 21+38	13 RT	1116							1								1	
		1116	1111															
L 101+64	61 RT	1118							1	0.3		1		1				
		1118	1109															
Y13 14+00	56 RT	1201																
		1201	1202															
Y13 12+30	23 LT	1203		32														
Y13 13+60	38 LT	1204		24														
Y13 14+95	43 LT	1205		36														
Y13 16+00	46 LT	1206		32														
Y13 23+60	38 RT	1301							1			1			1			
		1301	1302															
Y13 23+60	8 RT	1302							1								1	
		1302	1110															
Y13 23+96	7 RT	1303							1								1	
		1303	1302															
Y13 25+90	53 RT	1304																
		1304	1306															
SHEET TOTALS				124					19	10.7	0.6	7		3	4		11	1

LINE & STATION	OFFSET	FROM	TO	OPEN THROAT C.B. STD. 840.04 OR STD. 840.05	CONCRETE BRIDGE APPROACH D.I. STD. 840.13	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATES STD. 840.16	G.D.I. TYPE "A", STD. 840.17 OR STD. 840.26	G.D.I. TYPE "B" STD. 840.18 OR STD. 840.27	G.D.I. TYPE "D" STD. 840.19 OR STD. 840.28	G.D.I. (W.S. FLAT) FRAME WITH GRATE STD. 840.20	G.D.I. (W.S. FLAT) FRAME W/ 2 GRATES STD. 840.20	G.D.I. (W.S. SAG) FRAME W/ GRATE STD. 840.22	G.D.I. (W.S. SAG) FRAME W/ 2 GRATES STD. 840.22	G.D.I. (N.S. SAG) FRAME W/ GRATE STD. 840.24	G.D.I. (N.S. SAG) FRAME W/ 2 GRATES STD. 840.24	G.D.I. (N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29	J.B. STD. 840.31 OR STD. 840.32	ANGLED VANE GRATES AND FRAMES STD. 840.33	T.B.J.B. STD. 840.34	T.B.D.I. STD. 840.35	T.B.D.I. FOR STEEL GRATES STD. 840.36	STEEL FRAME WITH TWO GRATES STD. 840.37	TEMP STEEL PLATE COVER MASONRY DRAINAGE	M.H. STD. 840.51, STD. 840.52, OR STD. 840.53	M.H. FRAME AND COVER STD. 840.54	CONVERT EXISTING C.B. TO J.B.	CONVERT EXISTING D.I. TO C.B., SEE DETAIL 2C-4	CONVERT EXISTING D.I. TO J.B.	CONVERT EXISTING J.B. TO D.I.	ADJUST C.B.	ADJUST D.I.	15" DRAINAGE PIPE ELBOW	18" DRAINAGE PIPE ELBOW	24" DRAINAGE PIPE ELBOW	DRY DET. BASIN OUTLET STR, DETAIL 2D-1 TO 2D-5	8" SLUICE GATE, SEE DETAIL 2D-2 & 2D-5	PREFORMED SCOUR HOLE (PER EACH)	CONCRETE COLLARS CL. "B" STD. 840.72 CY	PIPE REMOVAL LIN. FT.	REMARKS
L 92+00	40 LT	1020																																							
		1020	1024																																						
L 90+58	10 RT	1021				1	1																																		
		1021	1006																																						
L 92+82	9 RT	1023				1	1																																		
		1023	1024																																						
L 92+00	9 RT	1024				1	1																																		
		1024	1021																																						
L 99+20	2 RT	1101				1	1																																		
		1101	1102																																						
L 99+62	2 RT	1102				1	1																																		
		1102	1103																																						
L 99+62	43 LT	1103																																							
		1103	1104																																						
L 100+57	43 LT	1104																																							
		1104	1106																																						
L 101+60	78 LT	1105																																							
		1105	1106																																						
L 101+64	53 LT	1106																																							
		1106	1107																																						
L 101+64	14 LT	1107				1	1																																		
		1107	1118																																						
L 101+94	92 RT	1108																																							
		1108	1109																																						
		1109	1111																																						
L 102+09	75 RT	1109																																							
Y13 22+50	11 RT	1110				1	1																																		
		1110	1116																																						
Y13 20+53	13 RT	1111						1									1																								Special Detail
		1111	1115																																					49	Remove Existing 24" Clay/RCP
Y13 20+20	13 RT	1112				1	1																																		
		1112	1111																																						
Y13 21+38	13 RT	1116				1	1																																		
		1116	1111																																						
L 101+64	61 RT	1118																																							
		1118	1109																																						
Y13 14+00	56 RT	1201																																							
		1201	1202																																					60	Remove Exist. 18" RCP
Y13 12+30	23 LT	1203																																						20	Remove Exist. 12" RCP
Y13 13+60	38 LT	1204																																						32	Remove Two Exist. 15" RCP
Y13 14+95	43 LT	1205																																						26	Remove Exist. 12" RCP
Y13 16+00	46 LT	1206																																						40	Remove Two Exist. 12" RCP
Y13 23+60	38 RT	1301																																							
		1301	1302																																						
Y13 23+60	8 RT	1302				1	1																																		
		1302	1110																																						
Y13 23+96	7 RT	1303				1	1																																		
		1303	1302																																						
Y13 25+90	53 RT	1304																																							
		1304	1306																																						
SHEET TOTALS						11	11	1									1																							227	

ABBREVIATIONS

C.A.A.	CORRUGATED ALUMINIUM ALLOY
C.B.	CATCH BASIN
C.S.	CORRUGATED STEEL
D.I.	DROP INLET
G.D.I.	GRATED DROP INLET
H.D.P.E.	HIGH DENSITY POLYETHYLENE
J.B.	JUNCTION BOX
M.H.	MANHOLE
N.S.	NARROW SLOT
P.V.C.	POLYVINYL CHLORIDE
R.C.	REINFORCED CONCRETE
T.B.D.I.	TRAFFIC BEARING DROP INLET
T.B.J.B.	TRAFFIC BEARING JUNCTION BOX
W.S.	WIDE SLOT

RAL-PF12KCT9

COMPUTED BY:	SHB	**DATE:**	12/9/2016
CHECKED BY:	YM	**DATE:**	12/12/2016

PROJECT NO.	SHEET NO.
U-4734	3D-7

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

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

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

LINE & STATION	OFFSET	STRUCTURE NUMBER		TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	MINIMUM REQUIRED SLOPE	Drainage Pipe (RCP, CSP, CAAP, HDPE, or PVC)													R. C. PIPE CLASS III								R. C. PIPE CLASS IV							
SIZE THICKNESS OR GAUGE		FROM	TO	FT.	FT.	FT.	%	12	15	18	24	30	36	42	48	DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE	DO NOT USE PVC	12	15	18	24	30	36	42	48	12	15	18	24	30	36	42	48
		1305	1306		984.7	984.5																								48						
Y13 25+45	33 RT	1305		988.0																																
Y13 25+91	34 RT	1306		988.0																																
		1306	1307		984.1	983.8																											76			
Y14 10+80	61 LT	1309		988.4																																
		1309	1306		986.9	984.5	0.3																								128					
Y13 20+55	64 LT	1115		979.9																																
		1114	1115		979.5	976.0																									208					
		1115	1113		974.5	974.5	0.3																											20		
SHEET TOTALS																														48	336		76	20		
PROJECT TOTALS									764	84	348	28										656	488			36				6080	1556	416	240	264		

LINE & STATION	FROM	TO	15" SIDE DRAIN PIPE	18" SIDE DRAIN PIPE	ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE)	REINFORCED ENDWALLS	DRAINAGE STRUCTURE	QUANTITIES FOR DRAINAGE STRUCTURES NOTE: TOTAL LIN. FT. FOR PAY QUANTITY SHALL BE A + (1.3 X B)			C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STD. 840.03 GRATE TYPE				CONCRETE TRANSITIONAL SECTION		OPEN THROAT C.B. STD. 840.04 OR STD. 840.05	CONCRETE BRIDGE APPROACH D.I. STD. 840.13	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATES STD. 840.16	G.D.I. TYPE "A", STD. 840.17 OR STD. 840.26	G.D.I. TYPE "B" STD. 840.18 OR STD. 840.27	G.D.I. TYPE "D" STD. 840.19 OR STD. 840.28
					CY	CY	MASONRY CY	0' THRU 5' EACH	A 5' THRU 10' LIN. FT.	B 10' AND ABOVE LIN. FT.		E	F	G		D.I. STD. 852.04 OR STD. 852.06	SEE DETAIL 2C-5							
	1305	1306																						
Y13 25+45	1305							1			1	1												
Y13 25+91	1306							1			1	1												
	1306	1307																						
Y14 10+80	1309																							
	1309	1306																						
Y13 20+55	1115																							
	1114	1115																						
	1115	1113																						
SHEET TOTALS								2			2	2												
PROJECT TOTALS			156		3.400			141	65.8		70	7	38	26		55	2			55	55	2	8	1

LINE & STATION	FROM	TO	G.D.I. (W.S. FLAT) FRAME WITH GRATE STD. 840.20	G.D.I. (W.S. FLAT) FRAME W/ 2 GRATES STD. 840.20	G.D.I. (W.S. SAG) FRAME W/ GRATE STD. 840.22	G.D.I. (W.S. SAG) FRAME W/ 2 GRATES STD. 840.22	G.D.I. (N.S. SAG) FRAME W/ GRATE STD. 840.24	G.D.I. (N.S. SAG) FRAME W/ 2 GRATES STD. 840.24	G.D.I. (N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29	J.B. STD. 840.31 OR STD. 840.32	ANGLED VANE GRATES AND FRAMES STD. 840.33	T.B.J.B. STD. 840.34	T.B.D.I. STD. 840.35	T.B.D.I. FOR STEEL GRATES STD. 840.36	STEEL FRAME WITH TWO GRATES STD. 840.37	TEMP STEEL PLATE COVER MASONRY DRAINAGE	M.H. STD. 840.51, STD. 840.52, OR STD. 840.53	M.H. FRAME AND COVER STD. 840.54	CONVERT EXISTING C.B. TO J.B.	CONVERT EXISTING D.I. TO C.B., SEE DETAIL 2C-4	CONVERT EXISTING D.I. TO J.B.	CONVERT EXISTING J.B. TO D.I.	ADJUST C.B.	ADJUST D.I.	15" DRAINAGE PIPE ELBOW	18" DRAINAGE PIPE ELBOW	24" DRAINAGE PIPE ELBOW	DRY DET. BASIN OUTLET STR. DETAIL 2D-1 TO 2D-5	8" SLUICE GATE, SEE DETAIL 2D-2 & 2D-5	PREFORMED SCOUR HOLE (PER EACH)	CONCRETE COLLARS CL. "B" STD. 840.72 CY	PIPE REMOVAL LIN. FT.	REMARKS
	1305	1306																														20	Remove Exist. 15" RCP, LT
Y13 25+45	1305																																
Y13 25+91	1306																																Remove Exist. JB
	1306	1307																															Remove Exist.30" CMP
Y14 10+80	1309																																Remove Exist. Blind JB
	1309	1306																														124	Remove Three Exist. 15" RCP
Y13 20+55	1115									1								1															
	1114	1115																															
	1115	1113																															
SHEET TOTALS										1								1														144	
PROJECT TOTALS						3		6	2	4								4		1					4	2	4	2	2	1	1.1970	1049	

ABBREVIATIONS

C.A.A.	CORRUGATED ALUMINIUM ALLOY
C.B.	CATCH BASIN
C.S.	CORRUGATED STEEL
D.I.	DROP INLET
G.D.I.	GRATED DROP INLET
H.D.P.E.	HIGH DENSITY POLYETHYLENE
J.B.	JUNCTION BOX
M.H.	MANHOLE
N.S.	NARROW SLOT
P.V.C.	POLYVINYL CHLORIDE
R.C.	REINFORCED CONCRETE
T.B.D.I.	TRAFFIC BEARING DROP INLET
T.B.J.B.	TRAFFIC BEARING JUNCTION BOX
W.S.	WIDE SLOT

COMPUTED BY: _NRM_____ DATE: _3/27/18____
CHECKED BY: _KRB_____ DATE: _3/27/18_____

(1-16-18)

PROJECT NO.	SHEET NO.
U-4734	3G-1

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SUMMARY OF SUBSURFACE DRAINAGE

LINE	Station	Station	Location LT/RT/CL	Drain Type* UD/BD/SD	LF
CONTINGENCY				SD	200
				TOTAL LF:	200

*UD = Underdrain
*BD = Blind Drain
*SD = Subsurface Drain

SUMMARY OF GEOTEXTILE FOR PAVEMENT STABILIZATION

LINE	Station	Station	Geotextile for Pavement Stabilization SY	Class IV Subgrade Stabilization TONS
CONTINGENCY			7146	
		TOTAL SY/TONS:	7146	0*

*Total tons of "Class IV Subgrade Stabilization" is only the estimated quantity for pavement stabilization and may only represent a portion of the subgrade stabilization quantity shown in the Item Sheets of the Proposal.

SUMMARY OF AGGREGATE SUBGRADE/STABILIZATION

LINE	Station	Station	Aggregate Type* ASU/AST	Aggregate Thickness INCHES	Shallow Undercut CY	Class IV Subgrade Stabilization TONS	Geotextile for Soil Stabilization SY	Stabilizer Aggregate TONS	Class IV Aggregate Stabilization TONS
L	52+50	54+95					3300		
Y12	10+50	11+57.73					525		
CONTINGENCY			ASU		250	500	700		
CONTINGENCY			AST		500	1000	1500	500	
			TOTAL CY/TONS/SY:		750	1500**	6025**	500	0

*ASU = Aggregate Subgrade
*AST = Aggregate Stabilization
**Total tons of "Class IV Subgrade Stabilization" and total square yards of "Geotextile for Soil Stabilization" are only the estimated quantities for ASU/AST and may only represent a portion of the subgrade stabilization and geotextile quantities shown in the Item Sheets of the Proposal.

SUMMARY OF EMBANKMENT WAITING PERIODS

LINE	Station	Station	MONTHS
L	36+40	37+85	2
L	38+60	39+50	2

SUMMARY OF GEOTEXTILE FOR EMBANKMENT STABILIZATION

LINE	Station	Station	Geotextile for Embankment Stabilization SY	Class IV Subgrade Stabilization TONS
L	36+40	37+85	3100	
L	38+60	39+50	3210	
CONTINGENCY				
		TOTAL SY/TONS:	6310	0*

*Total tons of "Class IV Subgrade Stabilization" is only the estimated quantity for pavement stabilization and may only represent a portion of the subgrade stabilization quantity shown in the Item Sheets of the Proposal.

SUMMARY OF SETTLEMENT GAUGES

Gauge No.	LINE and Station	Offset	
		Distance FT	Direction LT/RT
1	L 36+25	55	LT
2	L 36+25	55	RT
3	L 37+19	55	LT
4	L 37+19	55	RT
5	L 39+52	55	RT
	TOTAL GAUGES (EACH):		5

SUMMARY OF BRIDGE WAITING PERIODS

Bridge Description	End Bent/ Bent No.	MONTHS
Bridge No. 709 on SR 2601 (Macy Grove Road) over Reedy Fork Cree	End Bent No. 1	4
Bridge No. 709 on SR 2601 (Macy Grove Road) over Reedy Fork Cree	End Bent No. 2	4

PROJ. REFERENCE NO.	SHEET NO.
U-4734	3P-1

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PARCEL INDEX SHEET

PARCEL No.	SHEET No.	PROPERTY OWNER NAME
1	4	NCDOT
2	4, 5	NCDOT
3	5	JOHN WOLFE FAMILY LTD PARTNERS
4	5, 6	LYN IRVING
5	6	RAYMOND R & PHYLLIS L HAUCK
6	6,7,8	TRIAD PARK (FORSYTH COUNTY & GUILFORD COUNTY)
7	6, 7	MARJORIE P BEESON TRUST
8	7	BETTY B & MICHAEL A HOLLIFIELD
9	7	BILLY JOE BROADSTREET & ANN H SPRINKLE
10	7	SONJA B BULLINS
11	7,8	DELETED
12	8	WINDELL B SMITH
13	8	ERNEST V HODGES & WILLIAM V LINVILLE
14	8	BRADLEY M & MELISSA J ADER
15	8	AARON M & HEATHER ROTHROCK
16	8	STANLEY W & JODIE D GRAVELY
17	8	JONATHAN C. AND TAMMY L. BOUSMAN
18	8	BERTHA F SMITH HEIRS
19	8	PHILLIP R SMITH & JEANNETTE S DEVEAU
20	8	PHILLIP R SMITH
21	8	JEANNETTE S DEVEAU
22	8, 9	PHILIP RAY SMITH SR
23	8, 9	PHILIP R SMITH SR
24	9	JOSEPH P & JAYNE M ZAMZES
25	9	RICHARD B EDWARDS
26	9	THOMAS L & LORETTA TRAVIS
27	9	TERESA J PAIGE
28	9	TIM0THY B & TORI B OSBORNE
29	9	JOHN H & STEPHANIE D LEE
30	9	ROY H & JOYCE L COOK
31	9	DONALD B & SANDRA S McKINNEY
32	9	EDWARD A & HAO T PARRISH
33	9, 10	NORMA F EDWARDS
34	9, 10	RICHARD L & CLAUDIA W CARTER
35	9, 10, 12	RICHARD B & BETTY P EDWARDS
36	10, 11, 12	HAYWORTH-MILLER FUNERAL HOME
37	10, 11	DANNY L DILLON
38	10, 11	SIMON S & CASEY D EDWARDS
39	11, 13	DANNY L & WILLIAM B DILLON
40	10,11, 12	WILLIAM C EDWARDS JR
41	11	SIMON S EDWARDS
42	11, 13	NANCY E. AND RICHARD BLAKEMORE
43	12	JAMES R RAGLAND SR, HEIRS
44	12	MITCHELL B EASTER
45	12	MITCHELL B EASTER
46	12	MITCH EASTER
47	13	JEFFREY P & PAULA F SWISHER
48	13	RICHARD T JOYCE & PAULA JOYCE TURNER
49	13	COMBS FREEMONT HOLDINGS LLC
50	13	JEFFREY P & PAULA F SWISHER

PARCEL No.	SHEET No.	PROPERTY OWNER NAME

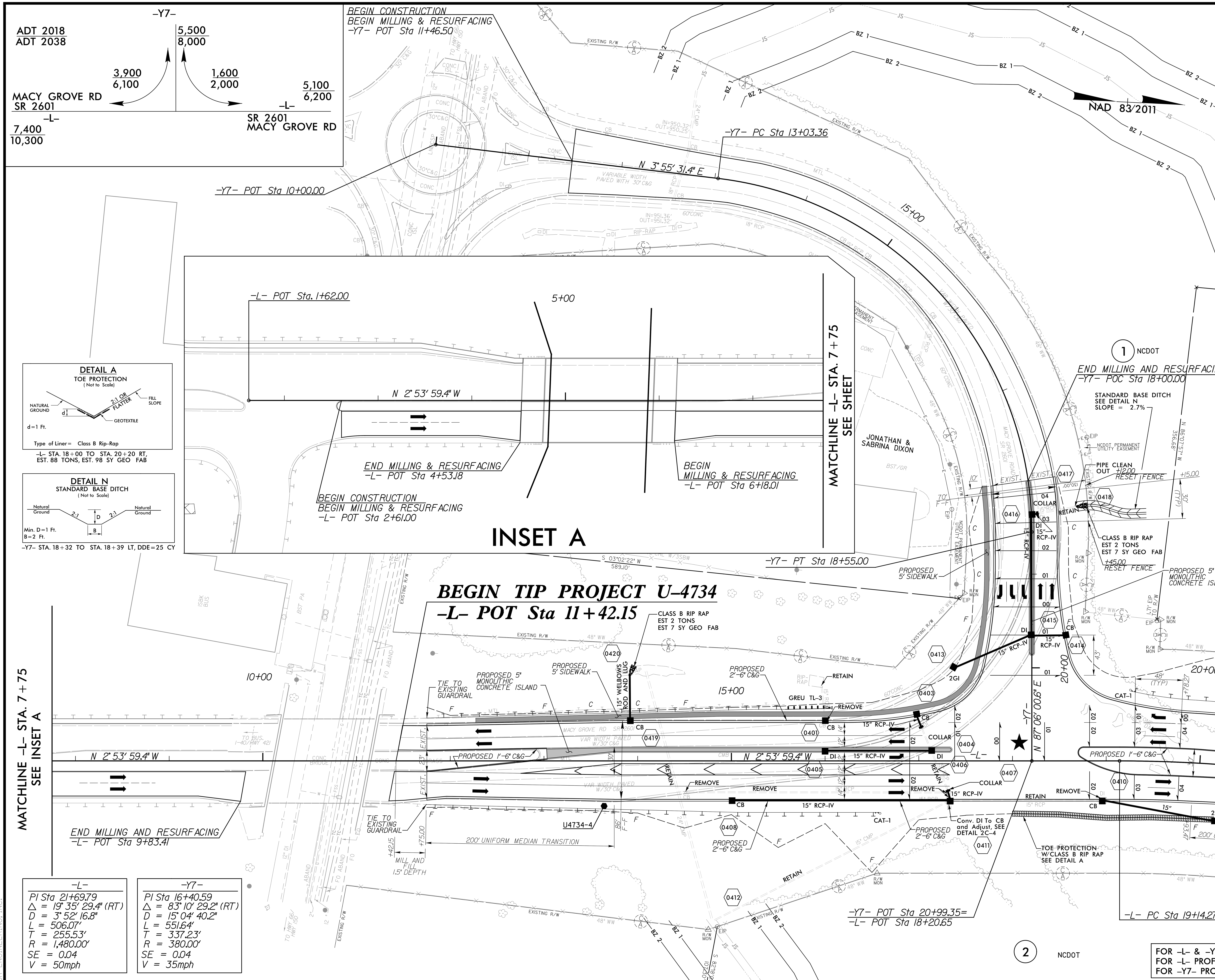
PROJECT REFERENCE NO.	SHEET NO.
U-4734	4
RW SHEET NO.	

ROADWAY DESIGN ENGINEER — SEAL 032074, NORTH CAROLINA PROFESSIONAL ENGINEER, DENA C. SNEAD — DocuSigned by: Dena C. Snead 4/25/2018

HYDRAULICS ENGINEER — SEAL 034364, NORTH CAROLINA PROFESSIONAL ENGINEER, TRENTON J. CORMIER — DocuSigned by: Trenton J. Cormier 4/26/2018

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

HDR Engineering, Inc. of the Carolinas
555 Fayetteville St, Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116



-Y7-
ADT 2018 5,500
ADT 2038 8,000
3,900 / 6,100
1,600 / 2,000
5,100 / 6,200
7,400 / 10,300
MACY GROVE RD SR 2601 -L-
SR 2601 MACY GROVE RD -L-
BEGIN CONSTRUCTION
BEGIN MILLING & RESURFACING
-Y7- POT Sta 11+46.50
-Y7- PC Sta 13+03.36
-Y7- POT Sta 10+00.00
N 3° 55' 31.4" E
NAD 83/2011
15+00
INSET A
-L- POT Sta. 1+62.00
5+00
N 2° 53' 59.4" W
END MILLING & RESURFACING
-L- POT Sta 4+53.18
BEGIN CONSTRUCTION
BEGIN MILLING & RESURFACING
-L- POT Sta 2+61.00
BEGIN
MILLING & RESURFACING
-L- POT Sta 6+18.01
MATCHLINE -L- STA. 7+75 SEE SHEET
DETAIL A
TOE PROTECTION
(Not to Scale)
NATURAL GROUND
2:1 OR FLATTER
FILL SLOPE
GEOTEXTILE
d=1 Ft.
Type of Liner= Class B Rip-Rap
-L- STA. 18+00 TO STA. 20+20 RT, EST. 88 TONS, EST. 98 SY GEO FAB
DETAIL N
STANDARD BASE DITCH
(Not to Scale)
Natural Ground
Min. D=1 Ft.
B=2 Ft.
-Y7- STA. 18+32 TO STA. 18+39 LT, DDE=25 CY
JONATHAN & SABRINA DIXON
END MILLING AND RESURFACING
-Y7- POC Sta 18+00.00
STANDARD BASE DITCH SEE DETAIL N SLOPE = 2.7%
PIPE CLEAN OUT +12.00
RESET FENCE
CLASS B RIP RAP EST 2 TONS EST 7 SY GEO FAB
+45.00 RESET FENCE
PROPOSED 5' MONOLITHIC CONCRETE ISLAND
+10.00 RESET FENCE
-Y7- PT Sta 18+55.00
PROPOSED 5' SIDEWALK
1 NCDOT
2 NCDOT
BEGIN TIP PROJECT U-4734
-L- POT Sta 11+42.15
CLASS B RIP RAP EST 2 TONS EST 7 SY GEO FAB
10+00
15+00
20+00
TIE TO EXISTING GUARDRAIL
PROPOSED 5' MONOLITHIC CONCRETE ISLAND
PROPOSED 5' SIDEWALK
15" W/ELBOWS ROD AND LUG
PROPOSED 2'-6" C&G
GREU TL-3
REMOVE
RETAIN
15" RCP-IV
COLLAR
PROPOSED 1'-6" C&G
N 87° 06' 00.6" E
-Y7-
CAT-1
PROPOSED 2'-6" C&G
MATCHLINE -L- STA. 7+75 SEE INSET A
MATCHLINE -L- STA. 21+00 SEE SHEET 5
END MILLING AND RESURFACING
-L- POT Sta 9+83.41
U4734-4
200' UNIFORM MEDIAN TRANSITION
MILL AND FILL 1.5" DEPTH
Conv. DI To CB and Adjust, SEE DETAIL 2C-4
TOE PROTECTION W/CLASS B RIP RAP SEE DETAIL A
-Y7- POT Sta 20+99.35=
-L- POT Sta 18+20.65
-L- PC Sta 19+14.27
2 NCDOT

-L-
PI Sta 21+69.79
Δ = 19° 35' 29.4" (RT)
D = 3° 52' 16.8"
L = 506.07'
T = 255.53'
R = 1,480.00'
SE = 0.04
V = 50mph

-Y7-
PI Sta 16+40.59
Δ = 83° 10' 29.2" (RT)
D = 15° 04' 40.2"
L = 551.64'
T = 337.23'
R = 380.00'
SE = 0.04
V = 35mph

★ PROPOSED SIGNAL
PROP PAINT STRIPING
PROP CONC SIDEWALK

FOR -L- & -Y7- INTERSECTION DETAIL, SEE SHEET 2B-3
FOR -L- PROFILE, SEE SHEET 14
FOR -Y7- PROFILE, SEE SHEET 18

4/25/2018
U4734_RDY_PSH_04.dgn
HDR ENGINEERING, INC.

PROJECT REFERENCE NO.	SHEET NO.
U-4734	5
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 032074 ENGINEER DENA C. SNEAD
DocuSigned by: Dena C. Snead 2A8B... 7/25/2018

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 034364 ENGINEER TRENTON J. CORMIER
DocuSigned by: Trenton J. Cormier 7/26/2018

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

HDR Engineering, Inc. of the Carolinas
555 Fayetteville St, Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116

–L–
PI Sta 21+69.79
△ = 19° 35' 29.4" (RT)
D = 3° 52' 16.8"
L = 506.07'
T = 255.53'
R = 1,480.00'
SE = 0.04
V = 50mph

INLET CHANNEL (LOOKING DOWNSTREAM) NOT TO SCALE
EXCAVATION = 279 CY

NOTE: FOR CUT CONDITION, USE CLASS II RIP RAP FLOOD BENCH BORDER WITH NATURAL GROUND COVERED WITH COIR FIBER MAT INSIDE BORDER IN FILL CONDITION, USE CLASS II RIP RAP FILL THROUGHOUT WITH NATIVE BED MATERIAL FILLING THE VOIDS ON TOP.

OUTLET CHANNEL (LOOKING DOWNSTREAM) NOT TO SCALE
EXCAVATION = 30 CY

PLAN VIEW

SECTION A-A

SECTION B-B

CHANNEL BLOCK
DETAIL C
NOT TO SCALE

EST. 25 TONS CLASS I RIP RAP
EST. 2 TONS #57 STONE
EST. 115 CY COMPACTED FILL
EST. 75 CY UNCOMPACTED FILL

NOTES:
1) CHANNEL BLOCK SHALL BE INSTALLED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS.
2) BLOCK SHOULD BE INSTALLED AT THE INTERFACE BETWEEN EXISTING CHANNEL AND PROPOSED CHANNEL.
3) BOTTOM OF BLOCK SHOULD BE A MINIMUM OF 1.0' BELOW THE INVERT OF THE EXISTING CHANNEL.
4) BLOCK SHOULD EXTEND A MINIMUM OF 1.0' BEYOND THE LIMITS OF THE EXISTING STREAM CHANNEL.
5) INSTALL EROSION CONTROL MATTING AND SEED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS IMMEDIATELY AFTER GRADING.
6) COMPACT BACKFILL TO EXTENT POSSIBLE OR AT THE DIRECTION OF THE ENGINEER.

–DRI–
PI Sta 12+09.94
△ = 16° 05' 40.9" (RT)
D = 114° 35' 29.6"
L = 14.05'
T = 7.07'
R = 50.00'

–L– STA. 26+98 TO STA. 27+54 LT

2 NCDOT

3 JOHN WOLFE FAMILY LTD PARTNERS

4 LYN IRVING

NAD 83/2011

–DRI– POT Sta. 10+00.00

BEGIN CONSTRUCTION –DRI– POT Sta. 10+54.00

–DRI– PC Sta. 12+02.88
–DRI– PT Sta. 12+16.92
–DRI– POT Sta. 12+69.85 = –L– POT Sta. 32+24.96

–DR2– POT Sta. 10+00.00 = –L– POT Sta. 32+41.76

–DR2– PC Sta. 12+34.42

–DR2– PT Sta. 13+07.48

–DR2–
PI Sta 12+81.86
△ = 93° 01' 09.6" (LT)
D = 127° 19' 26.2"
L = 73.06'
T = 47.44'
R = 45.00'

MATCHLINE –L– STA. 21+00 SEE SHEET 4

MATCHLINE –L– STA. 34+00 SEE SHEET 6

FOR DETAIL OF U-TURN BULB, SEE SHEET 2B-4
FOR –L– PROFILE, SEE SHEET 14
FOR –DR1– PROFILE, SEE SHEET 21
FOR –DR2– PROFILE, SEE SHEET 21
FOR CULVERT, SEE SHEET CU-1 THRU CU-5

DETAIL B
PREFORMED SCOUR HOLE
*NOT TO SCALE
B=4.0 Ft.
D=1.0 Ft.
W=4.0 Ft.

DETAIL A
TOE PROTECTION
(Not to Scale)
Type of Liner= Class B Rip-Rap

DETAIL D
LATERAL BASE DITCH
(Not to Scale)
Min. D= 1 Ft.
Max. d= 1 Ft.
B= 2 Ft.
b= 5 Ft.
*When B is < 6.0'
Type of Liner= Class B Rip-Rap

–L– STA. 28+80 RT
–L– STA. 25+39 TO STA. 27+84 RT, EST. 86 TONS, EST. 109 SY GEO FAB
–L– STA. 27+85 TO STA. 29+50 LT, EST. 58 TONS, EST. 73 SY GEO FAB
–L– STA. 24+50 TO STA. 25+39 RT, EST. 27 TONS, EST. 59 SY GEO FAB, DDE= 59 CY

4/25/2018
U-4734_RDY_PSH_05.dgn
HDR ENGINEERING, INC.

PROJECT REFERENCE NO.	SHEET NO.
U-4734	6
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 032074 ENGINEER DENA C. SNEAD
DocuSigned by: Dena C. Snead 4/25/2018

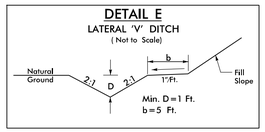
HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 034364 ENGINEER TRENTON J. CORMIER
DocuSigned by: Trenton J. Cormier 4/26/2018

2A6B5[illegible]

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

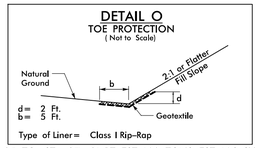
HDR Engineering, Inc. of the Carolinas
555 Fayetteville St, Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116

DETAIL E
LATERAL "V" DITCH
(Not to Scale)



–L– STA. 46+75 TO STA. 47+00 RT, DDE=13 CY

DETAIL O
TOE PROTECTION
(Not to Scale)



Type of Liner= Class I Rip-Rap

–L– STA. 37+25 TO STA. 37+31 RT, EST. 109 TONS, EST. 106 SY GEO FAB

–L–
PI Sta 49+71.87
△ = 5° 1' 30.0" (LT)
D = 3° 52' 16.8"
L = 1,318.02'
T = 706.32'
R = 1,480.00'
SE= 0.04
V= 50mph

NAD 83/2011

4 LYN IRVING

6 TRIAD PARK
FORSYTH COUNTY & GUILFORD COUNTY

7 MARJORIE P BEESON TRUST

5 RAYMOND R & PHYLLIS L HAUCK

MATCHLINE –L– STA. 34+00 SEE SHEET 5

MATCHLINE –L– STA. 47+00 SEE SHEET 7

FUTURE GREENWAY (BY OTHERS)

BEGIN CONSTRUCTION –GW– POT Sta. 10+00.00

BEGIN BIKE/PED SAFETY RAIL SEE DETAIL 2C-1 –GW– STA 10+30 RT

–GW– PC Sta. 10+56.11

–GW– PT Sta. 10+78.59

BEGIN BRIDGE –L– POT Sta 37+42.50

END BRIDGE –L– POT Sta 39+27.50

–Y8– POT Sta 10+00.00

–L– POC Sta 44+85.00= –Y8– POT Sta 11+50.00

–L– PC Sta 42+65.55

–L– PI Sta 40+58.58

–L– PT Sta 39+01.63 = –GW– POT Sta. 11+47.04

–GW– PC Sta. 12+23.64

GREENWAY TO BE COORDINATED WITH TRIAD PARK

–GW– PT Sta. 12+87.97

–GW– PC Sta. 13+60.69

END BIKE/PED SAFETY RAIL SEE DETAIL 2C-1 –GW– STA 13+50 RT

END CONSTRUCTION –GW– PT Sta. 14+13.18

–DR2– POT Sta. 14+74.59

END CONSTRUCTION –DR2– POT Sta. 13+65.00

–Y8– POT Sta 13+00.00

N 12° 47' 56.1" E

N 16° 41' 30.0" E

N 0° 50' 04.5" W

S 40°22'50" E 512.00'

S 84°46'55" E 160.60'

S 81° 48' 14.3" E

N 03°32'11" E 144.81'

S 01°38'16" E 604.32'

BM#2 ELEV.=924.01' EIP

BM#3 ELEV.=891.20'

CLASS I RIP RAP EST 24 TONS EST 58 SY GEO FAB

CLASS II RIP RAP EST. 530 TONS EST. 540 SY GEO FAB

CL II RIP RAP UP TO ELEV. 886.0 (TYP.) STRUCTURE PAY ITEM

CLASS B RIP RAP EST 2 TONS EST 7 SY GEO FAB

CLASS B RIP RAP EST 5 TONS EST 14 SY GEO FAB

TOE PROTECTION W/CLASS I RIP RAP SEE DETAIL O

PROPOSED GUARDRAIL

PROPOSED 5' MONOLITHIC CONCRETE ISLAND

385' TRANSITION LEFT TURN LANE

267' TRANSITION LEFT TURN LANE

150' TAPER LEFT TURN LANE

PROP 48" WW FENCE

BEGIN FENCE

END FENCE

PROPOSED 2'-6" C&G

LATERAL 'V' DITCH SEE DETAIL E

NOTE: BRIDGE APPROACH EMBANKMENT AND SPILL THROUGH SLOPES SHALL BE CONSTRUCTED IN THE DRY. (SEE EC-06)

–GW–		
PI Sta 10+67.37	PI Sta 12+62.69	PI Sta 13+93.29
△ = 8° 35' 16.1" (LT)	△ = 81° 53' 48.1" (LT)	△ = 85° 55' 36.7" (RT)
D = 38° 11' 49.9"	D = 127° 19' 26.2"	D = 163° 42' 08.0"
L = 22.48'	L = 64.32'	L = 52.49'
T = 11.26'	T = 39.05'	T = 32.60'
R = 150.00'	R = 45.00'	R = 35.00'
SE= 0.02	SE= 0.02	SE= 0.02

FOR PAVEMENT–BRIDGE RELATIONSHIP, SEE SHEET 2B–2
FOR –L– & –Y8– INTERSECTION DETAIL, SEE SHEET 2B–4
FOR –L– PROFILE, SEE SHEET 15
FOR –GW– PROFILE, SEE SHEET 21
FOR BRIDGE PLANS, SEE SHEET S–1 THRU S–42

4/25/2018
4734_SHEET_BY_PSH_06.dgn
HDR ENGINEERING, INC.

PROJECT REFERENCE NO.	SHEET NO.
U-4734	7
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 032074 ENGINEER DENA C. SNEAD
DocuSigned by: Dena C. Snead 2A6B5... 7/25/2018

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 034364 ENGINEER TRENTON J. CORMIER
DocuSigned by: Trenton J. Cormier 7/26/2018

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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555 Fayetteville St, Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116

–L–
PI Sta 49+71.87
△ = 51° 01' 30.0" (LT)
D = 3° 52' 16.8"
L = 1,318.02'
T = 706.32'
R = 1,480.00'
SE = 0.04
V = 50mph

–Y9–
PI Sta 11+69.90
△ = 55° 54' 12.9" (RT)
D = 22° 55' 05.9"
L = 243.93'
T = 132.66'
R = 250.00'
SE = 0.04
V = 15mph

–DR3–
PI Sta 10+14.74
△ = 52° 19' 24.1" (RT)
D = 190° 59' 09.4"
L = 27.40'
T = 14.74'
R = 30.00'

NAD 83/2011

MARJORIE P BEESON TRUST (7)

MATCHLINE –L– STA. 47+00 SEE SHEET 6

365' TRANSITION LEFT TURN LANE

100' TAPER

+10.00 105' & 130' LT

+10.00 75' & 90' LT

TOE PROTECTION W/PSRM SEE DETAIL F

+45.00 130' LT

+95.00 100' LT

+20.00 75' LT END FENCE

+50.00 75' LT

+80.00 75' LT BEGIN FENCE

+70.00 75' LT END FENCE

+30.00 75' LT BEGIN FENCE

PROPOSED 2'-6" C&G

PROP 48" WW FENCE

75' ROW

100' ROW

18" RCP-IV

15" RCP-IV

24" RCP-III

36" RCP-IV

ACCESS POINT

20'

LATERAL 'V' DITCH SEE DETAIL E

+85.00 115' RT

LATERAL BASE DITCH W/CLASS B RIP RAP SEE DETAIL G

+35.00 120' RT

+50.00 100' RT

+00.00 105' RT

+00.00 110' RT

NOTE: DRAIN POND BEFORE FILLING (SEE EC-07)

50+00

55+00

–L– PT Sta. 55+83.57

–DR3– POT Sta. 11+15.90=
–L– POT Sta. 56+50.00

–Y9– POT Sta 14+15.05

–Y9– PC Sta 10+37.25

–Y9– PT Sta 12+81.17

END CONSTRUCTION
–Y9– Sta 13+00.00

BEGIN CONSTRUCTION
–DR3– PC Sta. 10+00.00

–DR3–
PT Sta. 10+27.40

230' LANE TRANSITION

+83.57 75' LT

+25.00 75' & 125' LT END FENCE

+80.00 170' LT

+70.00 125' LT

BEGIN FENCE +85.00 75' LT

+00.00 135' LT

+25.00 190' LT

CLASS I RIP RAP EST 3 TONS
EST 7 SY GEO FAB

+50.00 135' LT

+00.00 115' LT

+40.00 75' LT

+50.00 75' & 115' LT

END FENCE END C/A +80.00 75' LT

PROPOSED 5" MONOLITHIC CONCRETE ISLAND

N 34°20'00.0" W
M 1,200.00

N 70° 40' 00.0" E

MATCHLINE –L– STA. 60+00 SEE SHEET 8

–Y9– POT Sta 10+00.00=
–L– POT Sta 59+20.00

6 TRIAD PARK FORSYTH COUNTY & GUILFORD COUNTY

9 BILLY JOE BROADSTREET & ANN H SPRINKLE

LATERAL 'V' DITCH SEE DETAIL E

+10.00 100' RT EX. PL & 100' RT

+83.57 100' RT

END C/A END FENCE –Y9– +32.34 EX. R/W

PROP 48" WW FENCE

N 10°22'18" W 53.25'

10 SONJA B BULLINS

8 BETTY B & MICHAEL A HOLLIFIELD

LINDA S PEGRAM

JANICE H TAYLOR

U4734-I

SR 2036 SMITH EDWARDS RD

DEAD END

S 53° 25' 47.1" E

RETAIN

PIPE CLEAN OUT

DAVID L JR & CAROL B MEREDITH

TERRY L & KIM M CARDWELL

ABAND BARN

ABAND ISFD

AXLE (BENT)

EXISTING R/W

PROP PAINT STRIPING

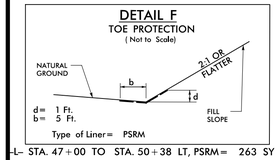
PAVEMENT REMOVAL

FOR DETAIL OF U-TURN BULB, SEE SHEET 2B-5
FOR –L– PROFILE, SEE SHEET 15
FOR –Y9– PROFILE, SEE SHEET 18
FOR –DR3– PROFILE, SEE SHEET 21

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

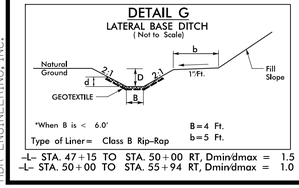
–L– STA. 47+00 TO STA. 47+15 RT, DDE=15 CY
–Y9– STA. 11+33 TO STA. 12+44 LT, DDE=32 CY
–Y9– STA. 11+40 TO STA. 12+35 RT, DDE=8 CY

DETAIL F
TOE PROTECTION
(Not to Scale)



–L– STA. 47+00 TO STA. 50+38 LT, PSRM= 263 SY

DETAIL G
LATERAL BASE DITCH
(Not to Scale)



–L– STA. 47+15 TO STA. 50+00 RT, Dmin/dmax = 1.5 Ft., EST. 143 TONS, EST. 317 SY GEO FAB, DDE= 474 CY
–L– STA. 50+00 TO STA. 55+94 RT, Dmin/dmax = 1.0 Ft., EST. 238 TONS, EST. 528 SY GEO FAB, DDE= 942 CY

4/25/2018
U-4734-DSY_PSH_07.dgn
HDR ENGINEERING, INC.

PROJECT REFERENCE NO.	SHEET NO.
U-4734	8
RW SHEET NO.	

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 032074 DENA C. SNEAD — 4/25/2018

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 034364 TRENTON J. CORMIER — 4/26/2018

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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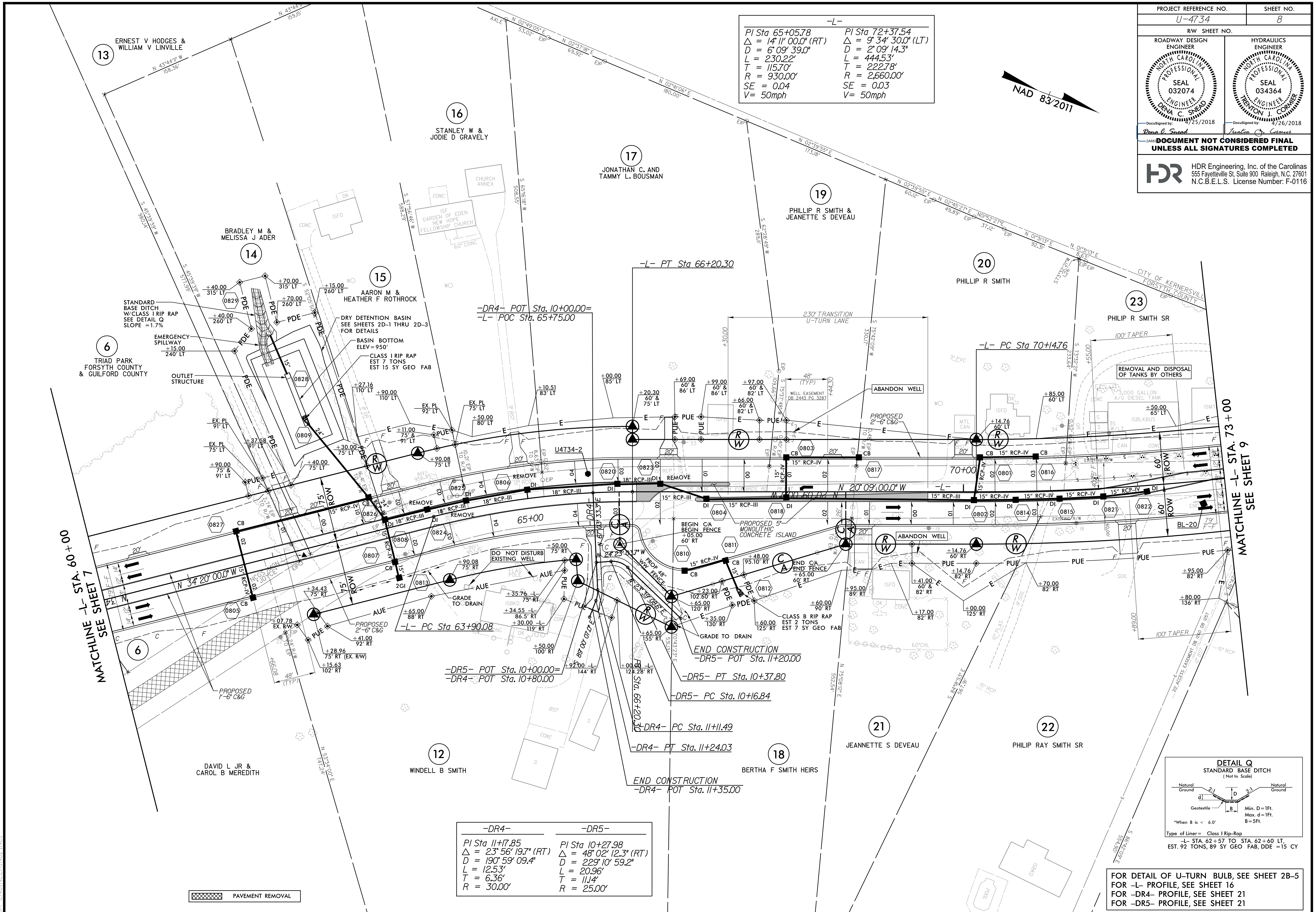
N.C.B.E.L.S. License Number: F-0116



NAD 83/2011
MATCHLINE -L- STA. 60+00 SEE SHEET 7
MATCHLINE -L- STA. 73+00 SEE SHEET 9
ERNEST V HODGES & WILLIAM V LINVILLE
STANLEY W & JODIE D GRAVELY
JONATHAN C. AND TAMMY L. BOUSMAN
PHILLIP R SMITH & JEANETTE S DEVEAU
PHILLIP R SMITH
PHILIP R SMITH SR
BRADLEY M & MELISSA J ADER
AARON M & HEATHER F ROTHROCK
TRIAD PARK FORSYTH COUNTY & GUILFORD COUNTY
DAVID L JR & CAROL B MEREDITH
WINDELL B SMITH
BERTHA F SMITH HEIRS
JEANNETTE S DEVEAU
PHILIP RAY SMITH SR
CITY OF KERNERSVILLE FORSYTH COUNTY
STANDARD BASE DITCH W/CLASS I RIP RAP SEE DETAIL Q SLOPE =1.7%
EMERGENCY SPILLWAY
OUTLET STRUCTURE
DRY DETENTION BASIN SEE SHEETS 2D-1 THRU 2D-3 FOR DETAILS
BASIN BOTTOM ELEV=950'
CLASS I RIP RAP EST 7 TONS EST 15 SY GEO FAB
-DR4- POT Sta. 10+00.00= -L- POC Sta. 65+75.00
-L- PT Sta 66+20.30
-L- PC Sta 70+14.76
-L- PC Sta 63+90.08
230' TRANSITION U-TURN LANE
100' TAPER
REMOVAL AND DISPOSAL OF TANKS BY OTHERS
ABANDON WELL
WELL EASEMENT DB 2443 PG 3287
PROPOSED 2'-6" C&G
PROPOSED 5" MONOLITHIC CONCRETE ISLAND
BEGIN C/A BEGIN FENCE
END C/A END FENCE
N 20°09'00.0" W
N 34°20'00.0" W
DO NOT DISTURB EXISTING WELL
GRADE TO DRAIN
CLASS B RIP RAP EST 2 TONS EST 7 SY GEO FAB
END CONSTRUCTION -DR5- POT Sta. 11+20.00
-DR5- PT Sta. 10+37.80
-DR5- PC Sta. 10+16.84
-DR5- POT Sta. 10+00.00= -DR4- POT Sta. 10+80.00
-DR4- PC Sta. 11+11.49
-DR4- PT Sta. 11+24.03
END CONSTRUCTION -DR4- POT Sta. 11+35.00
PROPOSED 1'-6" C&G
U4734-2

-L-	
PI Sta 65+05.78	PI Sta 72+37.54
△ = 14° 11' 00.0" (RT)	△ = 9° 34' 30.0" (LT)
D = 6° 09' 39.0"	D = 2° 09' 14.3"
L = 230.22'	L = 444.53'
T = 115.70'	T = 222.78'
R = 930.00'	R = 2,660.00'
SE = 0.04	SE = 0.03
V= 50mph	V= 50mph

-DR4-	-DR5-
PI Sta 11+17.85	PI Sta 10+27.98
△ = 23° 56' 19.7" (RT)	△ = 48° 02' 12.3" (RT)
D = 190° 59' 09.4"	D = 229° 10' 59.2"
L = 12.53'	L = 20.96'
T = 6.36'	T = 11.14'
R = 30.00'	R = 25.00'

PAVEMENT REMOVAL

DETAIL Q
STANDARD BASE DITCH
(Not to Scale)

Natural Ground — Geotextile — Min. D=1Ft. Max. d=1Ft. B=5Ft.
*When B is < 6.0'
Type of Liner= Class I Rip-Rap
-L- STA. 62+57 TO STA. 62+60 LT,
EST. 92 TONS, 89 SY GEO FAB, DDE =15 CY

FOR DETAIL OF U-TURN BULB, SEE SHEET 2B-5
FOR -L- PROFILE, SEE SHEET 16
FOR -DR4- PROFILE, SEE SHEET 21
FOR -DR5- PROFILE, SEE SHEET 21

4/25/2018
U4734_Rdy_psh_08.dgn
HDR ENGINEERING, INC.

PROJECT REFERENCE NO.	SHEET NO.
U-4734	9
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 032074 ENGINEER PENA C. SNEAD
DocuSigned by: Pena C. Snead 2A85... 4/25/2018

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 034364 ENGINEER TRENTON J. CORMIER
DocuSigned by: Trenton J. Cormier 4/26/2018

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HDR Engineering, Inc. of the Carolinas
555 Fayetteville St, Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116

-L-
PI Sta 72+37.54
△ = 9° 34' 30.0" (LT)
D = 2° 09' 14.3"
L = 444.53'
T = 222.78'
R = 2,660.00'
SE = 0.03
V = 50mph

-Y10-
PI Sta 12+53.16
△ = 35° 32' 36.3" (RT)
D = 14° 08' 49.6"
L = 251.24'
T = 129.81'
R = 405.00'
SE = 0.02
V = 15mph

NAD 83/2011

-Y10- POT Sta 10+00.00
-Y10- PC Sta 11+23.35
BEGIN CONSTRUCTION
-Y10- POC Sta 13+00.00
-Y10- PT Sta 13+74.59
-Y10- POT Sta 14+42.26=
-Y11- POT Sta 10+00.00=
-L- POT Sta 77+94.35
-L- PT Sta 74+59.29
END CONSTRUCTION
-Y11- POT Sta 11+30.00
-Y11- POT Sta 13+28.55

MATCHLINE -L- STA. 73+00
SEE SHEET 8

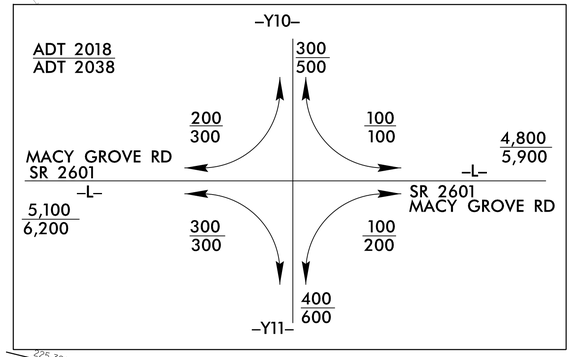
MATCHLINE -L- STA. 86+00
SEE SHEET 10

PHILIP R SMITH SR (23)
RICHARD B EDWARDS (25)
TERESA J PAIGE (27)
AMY L & DOUGLAS R MASSEY
JOHN H & STEPHANIE D LEE (29)
TIMOTHY B & TORI B OSBORNE (28)
ROY H & JOYCE L COOK (30)
EDWARD A & HAO T PARRISH (32)
RICHARD L & CLAUDIA W CARTER (34A)
RICHARD L & CLAUDIA W CARTER (34)
RICHARD B & BETTY P EDWARDS (35)
THOMAS L & LORETTA TRAVIS (26)
DONALD B & SANDRA S MCKINNEY (31)
JOSEPH P & JAYNE M ZAMZES (24)
AARON G & LISA N TURNER
JOHN G IV & ERIN M WOLFE
NORMA F EDWARDS (33)

FORSYTH COUNTY
CITY OF KERNERSVILLE

SR 2036 SMITH EDWARDS RD 19' BST

230' TRANSITION LEFT TURN LANE
100' TAPER
PROPOSED 2'-6" C&G
PROPOSED 5' MONOLITHIC CONCRETE ISLAND
PROPOSED 2'-6" C&G
PROPOSED 5' MONOLITHIC CONCRETE ISLAND
CLASS I RIP RAP EST 4 TONS EST 10 SY GEO FAB
DO NOT DISTURB EXISTING WELL
GRADE TO DRAIN
REMOVE
BY-21
BY-22
BY-23
BY-24



PROP PAINT STRIPING

FOR -L- & -Y10- INTERSECTION DETAIL, SEE SHEET 2B-6
FOR -L- PROFILE, SEE SHEET 16
FOR -Y10- PROFILE, SEE SHEET 19
FOR -Y11- PROFILE, SEE SHEET 19

4/25/2018
U-4734_RDY_PSH_09.dgn
HDR ENGINEERING, INC.

PROJECT REFERENCE NO.	SHEET NO.
U-4734	10
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 032074 ENGINEER DENA C. SNEAD
DocuSigned by: Dena C. Snead 2A85... 4/25/2018

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 034364 ENGINEER TRENTON J. CORMIER
DocuSigned by: Trenton J. Cormier 4/26/2018

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

HDR Engineering, Inc. of the Carolinas
555 Fayetteville St, Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116

NAD 83/2011

MATCHLINE –L– STA. 86+00
SEE SHEET 9

MATCHLINE –L– STA. 99+00
SEE SHEET 11

-L-
PI Sta 94+75.19
△ = 34° 20' 58.0" (LT)
D = 3° 52' 16.8"
L = 887.28'
T = 457.42'
R = 1,480.00'
SE = 0.04
V = 50mph

-Y12-
PI Sta 11+65.32
△ = 20° 49' 00.0" (LT)
D = 6° 21' 58.3"
L = 326.99'
T = 165.32'
R = 900.00'

DETAIL P
STANDARD BASE DITCH
(Not to Scale)

Natural Ground, 2:1, D, d, B, 2:1, Natural Ground, Geotextile
Min. D=1 Ft.
Max. d=1 Ft.
B=3 Ft.
*When B is < 6.0'
Type of Liner= Class B Rip-Rap

-Y12- STA. 10+18 TO STA. 10+35 LT, EST. 26 TONS, EST. 65 SY GEO FAB, DDE =60 CY

DETAIL J
SPECIAL CUT BASE DITCH
(Not to Scale)

Natural Ground, 2:1, D, B, 4:1 or Flatter, Front Ditch Slope
Min. D=1Ft.
B=2 Ft.

-Y12- STA. 12+20 TO STA. 13+26 RT

34 RICHARD L & CLAUDIA W CARTER

35 RICHARD B & BETTY P EDWARDS

36 HAYWORTH-MILLER FUNERAL HOME

38 SIMON S &CASEY D EDWARDS

37 DANNY L DILLON

33 NORMA F EDWARDS

N 01°38' 45" W 422.36'

230' TRANSITION LEFT TURN LANE

-Y12- PT Sta. 13+26.99

END CONSTRUCTION
-Y12- PT Sta. 13+26.00

CENTER CUL-DE-SAC
-Y12- Sta 12+50.00, 25.5' RT

BEGIN CONSTRUCTION
-Y12- POC Sta. 12+15.00

EMERGENCY SPILLWAY
CLASS I RIP RAP
EST. 100 TONS
EST. 96 SY GEO FAB

10' BERM ELEV=985'

STANDARD BASE DITCH W/CLASS B RIP RAP SEE DETAIL P SLOPE=4.7%

CLASS B RIP RAP EST 5 TONS EST 14 SY GEO FAB

STANDARD BASE DITCH SEE DETAIL N SLOPE=0.47%

CLASS I RIP RAP EST 3 TONS EST 7 SY GEO FAB

STANDARD BASE DITCH SEE DETAIL M SLOPE=2.8%

CLASS I RIP RAP EST 3 TONS EST 7 SY GEO FAB

SPECIAL BASE CUT DITCH SEE DETAIL J

BERM 'V' DITCH SEE DETAIL H

SPECIAL LATERAL 'V' DITCH SEE DETAIL L

STANDARD BASE DITCH SEE DETAIL N SLOPE=2.36%

DRY DETENTION BASIN SEE SHEETS 2D-3 THRU 2D-5 FOR DETAILS

OUTLET STRUCTURE

BASIN BOTTOM ELEV=980'

PROPOSED 5' MONOLITHIC CONCRETE ISLAND

PROPOSED 1'-6" C&G

PROPOSED 2'-6" C&G

RETAIN

PROP 48" WW FENCE

PROP 48" WVV FENCE

UNIFORM MEDIAN TRANSITION 175'

100' TAPER

ACCESS POINT

N 29° 43' 30.0" W

S 10°25'58" E 300.47'

N 70°25'58" W 230.47'

N 17°10'30" E 368.75'

-L- PC Sta 90+17.77

FOR U-TURN BULB DETAIL, SEE SHEET 2B-6
FOR -L- PROFILE, SEE SHEET 17
FOR -Y12- PROFILE, SEE SHEET 19

DETAIL H
BERM 'V' DITCH
(Not to Scale)

Natural Ground, 2:1, D, 2:1, b, 2:1, RDWY
Min. D=1 Ft.
b=5 Ft.

-L- STA. 96+25 TO STA. 99+00 LT, DDE= 87 CY

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

Natural Ground, 2:1, D, 4:1 or Flatter, Fill Slope
Min. D=1 Ft.

-L- STA. 98+00 TO STA. 99+00 RT

DETAIL M
STANDARD BASE DITCH
(Not to Scale)

Natural Ground, 2:1, D, 2:1, Natural Ground, B
Min. D=1 Ft.
B=3 Ft.

-L- STA. 93+39 TO STA. 93+80 RT, DDE=32 CY

DETAIL N
STANDARD BASE DITCH
(Not to Scale)

Natural Ground, 2:1, D, 2:1, Natural Ground, B
Min. D=1.5 Ft.
B=2 Ft.

-L- STA. 89+28 TO STA. 90+23 LT, DDE=80 CY
-Y12- STA. 11+21 TO STA. 12+20 RT, DDE=75 CY

PROP PAINT STRIPING
PAVEMENT REMOVAL

4/25/2018
U-4734-10-DY_PSH_10.dgn
HDR ENGINEERING, INC.

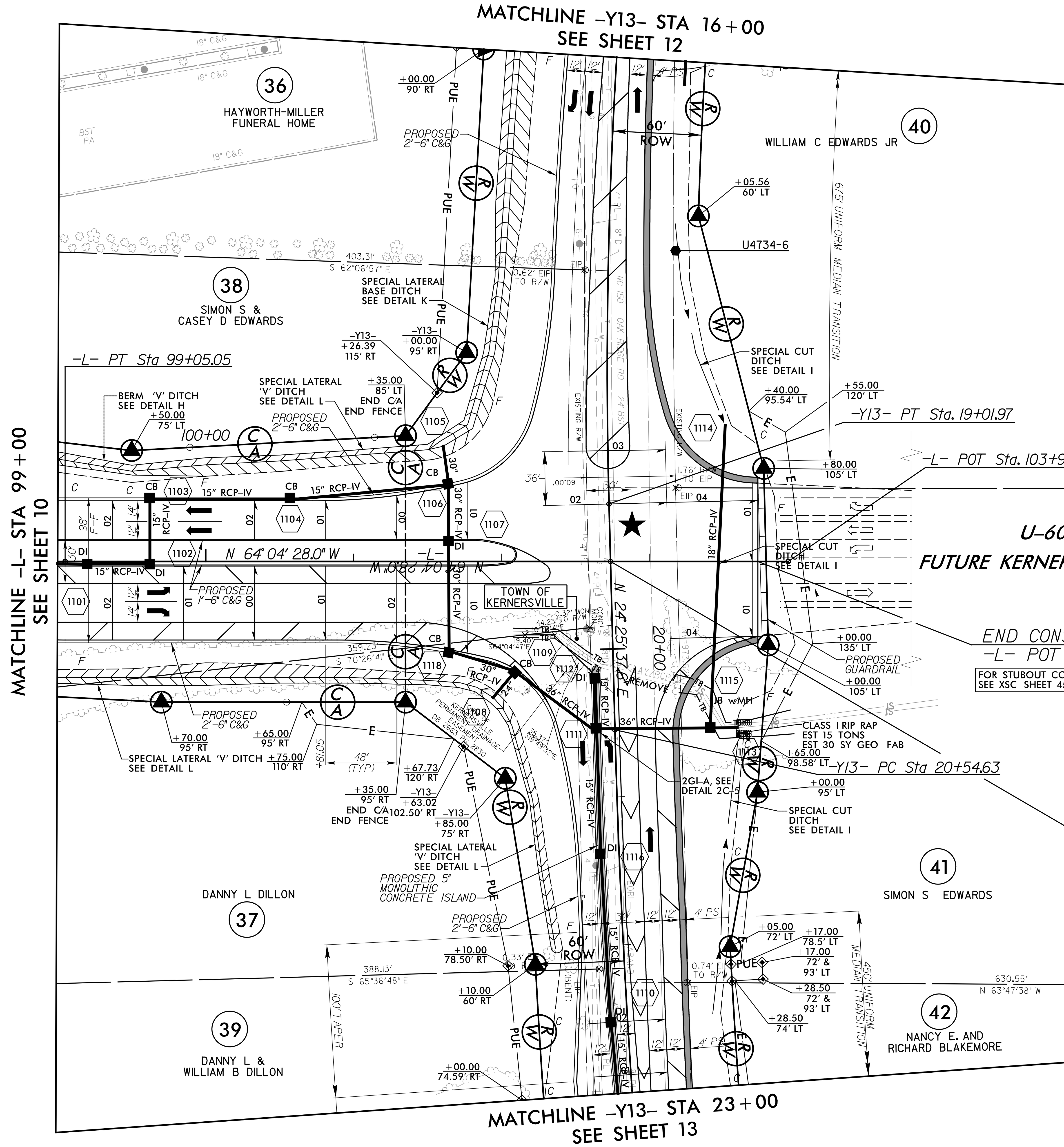
PROJECT REFERENCE NO.	SHEET NO.
U-4734	11
RW SHEET NO.	

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 032074 DENA C. SNEAD 4/25/2018	NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 034364 TRENTON J. CORMIER 4/26/2018

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

HDR Engineering, Inc. of the Carolinas
555 Fayetteville St, Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116

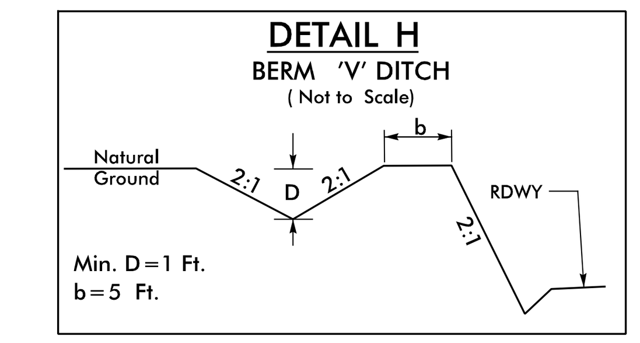
NAD 83/2011



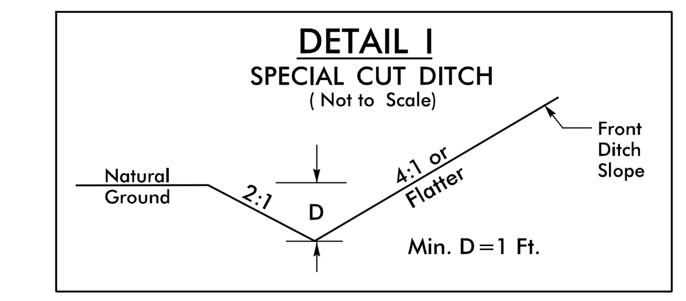
END TIP PROJECT U-4734
-L- POT Sta 102+73.45 =
-Y13- POT Sta 19+40.88

-L-
PI Sta 94+75.19
Δ = 34° 20' 58.0" (LT)
D = 3° 52' 16.8"
L = 887.28'
T = 457.42'
R = 1,480.00'
SE = 0.04
V = 50mph

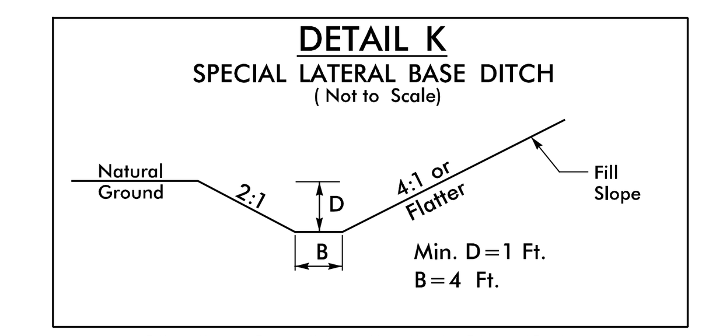
-Y13-	
PI Sta 15+93.87	PI Sta 21+89.22
Δ = 10° 10' 19.2" (LT)	Δ = 2° 42' 18.3" (LT)
D = 1° 38' 47.1"	D = 1° 00' 18.7"
L = 617.82'	L = 269.11'
T = 309.72'	T = 134.58'
R = 3,480.00'	R = 5,700.00'
SE = 0.03	SE = 0.02
V = 50mph	V = 50mph



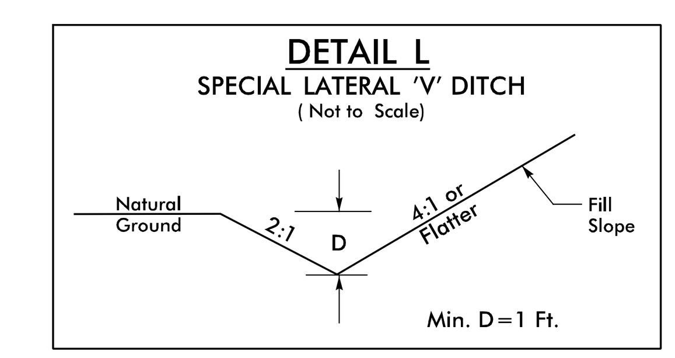
-L- STA. 99+00 TO STA. 99+50 LT, DDE=18 CY



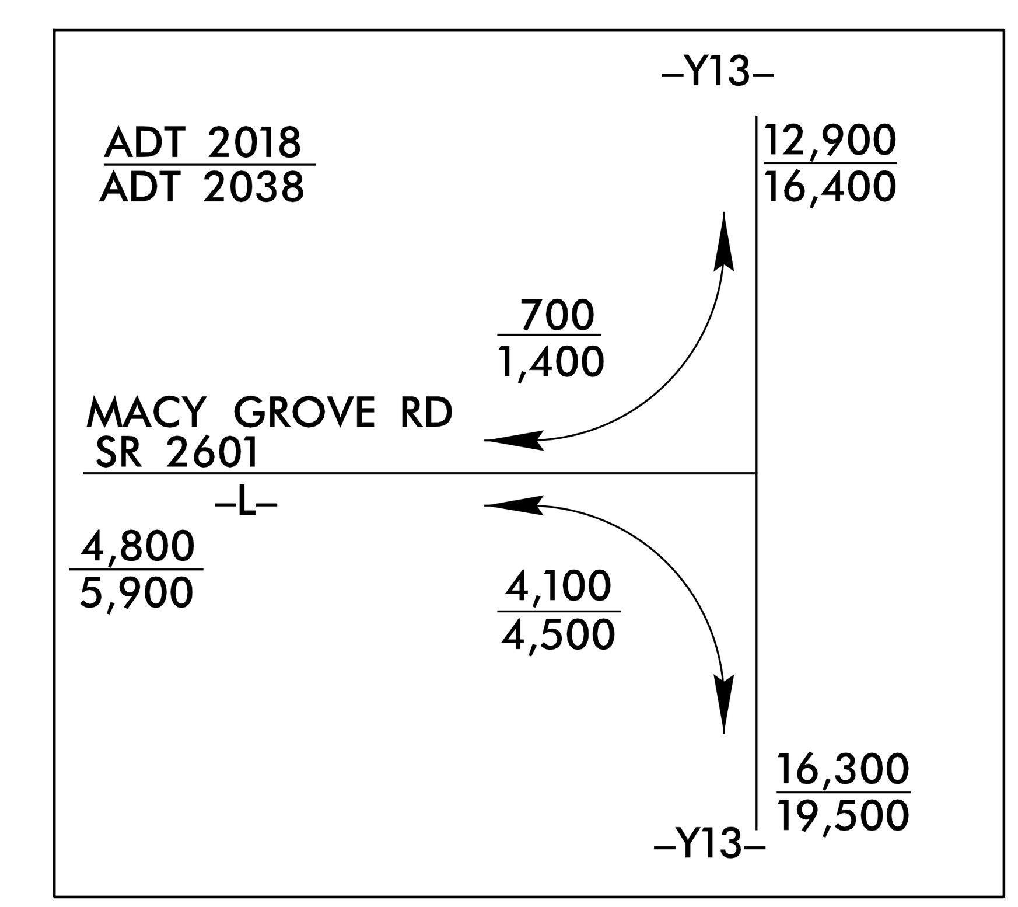
-Y13- STA. 17+00 TO STA. 18+50 LT
-Y13- STA. 20+55 TO STA. 22+50 LT



-Y13- STA. 16+00 TO STA. 18+61 RT



-L- STA. 99+50 TO STA. 101+60 LT
-L- STA. 99+00 TO STA. 101+95 RT
-Y13- STA. 20+30 TO STA. 22+00 RT



★	PROPOSED SIGNAL
⪢⪢⪢	PROP PAINT STRIPING

FOR -L- & -Y13- INTERSECTION DETAIL, SEE SHEET 2B-7
FOR -L- PROFILE, SEE SHEET 17
FOR -Y13- PROFILE, SEE SHEET 20

4/25/2018
U4734_Rdy_PSH_11.dgn
HDR ENGINEERING, INC.

PROJECT REFERENCE NO.	SHEET NO.
U-4734	12
RW SHEET NO.	

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 032074 DENA C. SNEAD — DocuSigned by: Dena C. Snead 4/25/2018

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 034364 TRENTON J. CORMIER — DocuSigned by: Trenton J. Cormier 4/26/2018

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555 Fayetteville St, Suite 900 Raleigh, N.C. 27601
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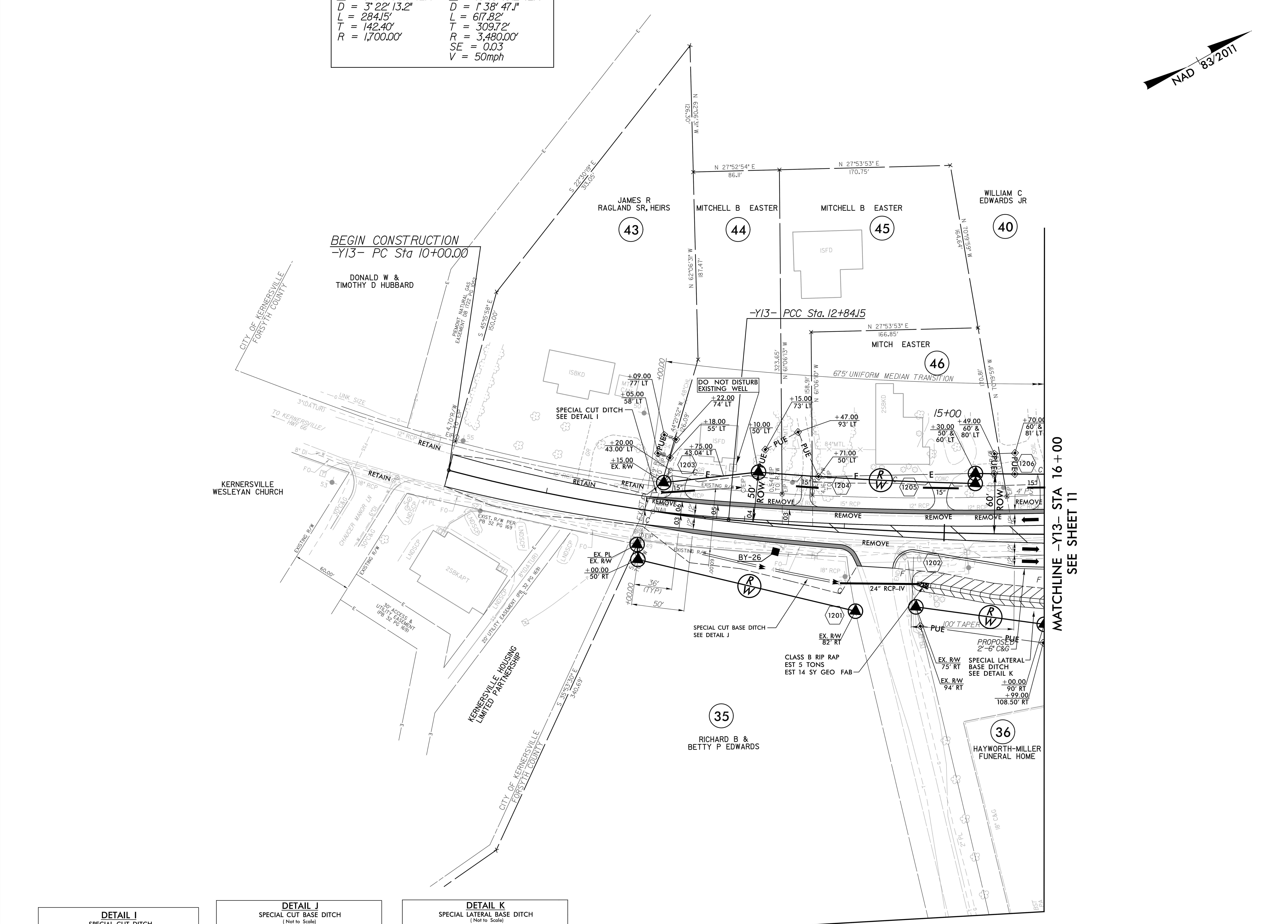
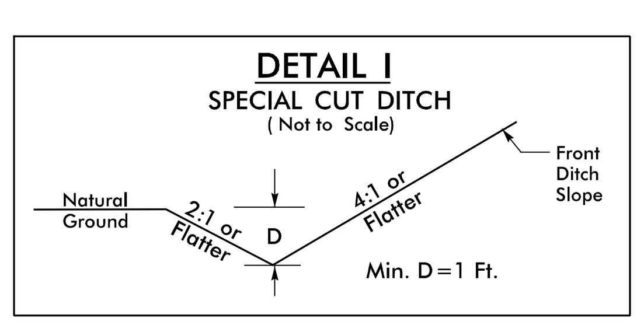
-Y13-

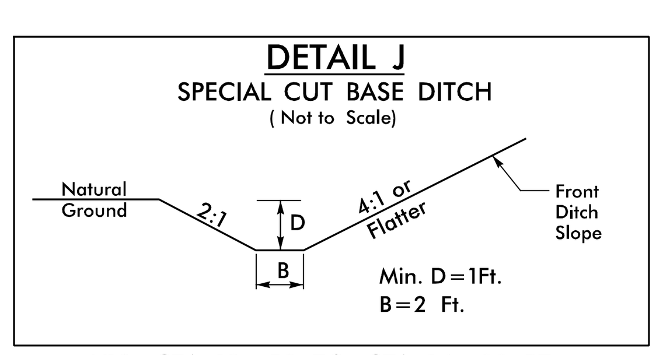
PI Sta 11+42.40	PI Sta 15+93.87
△ = 9° 34' 36.0" (LT)	△ = 10° 10' 19.2" (LT)
D = 3° 22' 13.2"	D = 1° 38' 47.1"
L = 284.15'	L = 617.82'
T = 142.40'	T = 309.72'
R = 1,700.00'	R = 3,480.00'
	SE = 0.03
	V = 50mph



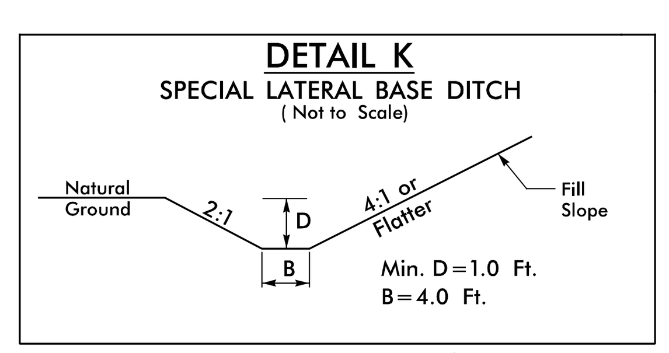
NAD 83/2011
BEGIN CONSTRUCTION
-Y13- PC Sta 10+00.00
DONALD W & TIMOTHY D HUBBARD
JAMES R RAGLAND SR, HEIRS
43
MITCHELL B EASTER
44
MITCHELL B EASTER
45
WILLIAM C EDWARDS JR
40
-Y13- PCC Sta. 12+84.15
MITCH EASTER
46
675' UNIFORM MEDIAN TRANSITION
DO NOT DISTURB EXISTING WELL
SPECIAL CUT DITCH SEE DETAIL I
15+00
KERNERSVILLE WESLEYAN CHURCH
CITY OF KERNERSVILLE FORSYTH COUNTY
KERNERSVILLE HOUSING LIMITED PARTNERSHIP
RETAIN
REMOVE
BY-26
24" RCP-IV
SPECIAL CUT BASE DITCH SEE DETAIL J
CLASS B RIP RAP EST 5 TONS EST 14 SY GEO FAB
100' TAPER
PROPOSED 2'-6" C&G
SPECIAL LATERAL BASE DITCH SEE DETAIL K
35
RICHARD B & BETTY P EDWARDS
36
HAYWORTH-MILLER FUNERAL HOME
MATCHLINE -Y13- STA 16+00 SEE SHEET 11



-Y13- STA. 12+00 TO STA. 13+00 LT



-Y13- STA. 12+50 TO STA. 14+00 RT



-Y13- STA. 14+75 TO STA. 16+00 RT

PROP PAINT STRIPING

FOR -Y13- PROFILE, SEE SHEET 20

PROJECT REFERENCE NO.	SHEET NO.
U-4734	13
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 032074 ENGINEER DENA C. SNEAD
DocuSigned by: Dena C. Snead 4/25/2018

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 034364 ENGINEER TRENTON J. CORMIER
DocuSigned by: Trenton J. Cormier 4/26/2018

2A85B

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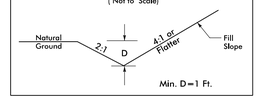
16,300 / 19,500	14,400 / 15,900
–Y13–	–Y13–
2,100 / 4,100	200 / 500
ADT 2018 / ADT 2038	–Y14– 2,300 / 4,600

–Y13–		
PI Sta 21+89.22	PI Sta 24+80.94	PI Sta 28+13.60
△ = 2° 42' 18.3" (LT)	△ = 3° 09' 33.6" (RT)	△ = 0° 26' 14.1" (LT)
D = 1° 00' 18.7"	D = 1° 00' 18.7"	D = 0° 42' 58.3"
L = 269.11'	L = 314.30'	L = 61.05'
T = 134.58'	T = 157.19'	T = 30.53'
R = 5,700.00'	R = 5,700.00'	R = 8,000.00'
SE = 0.02	SE = 0.02	
V = 50mph	V = 50mph	

–Y14–	
PI Sta 11+28.59	PI Sta 12+94.01
△ = 10° 52' 56.6" (LT)	△ = 7° 30' 27.5" (LT)
D = 7° 22' 26.3"	D = 4° 05' 33.2"
L = 147.58'	L = 183.45'
T = 74.01'	T = 91.85'
R = 777.00'	R = 1,400.00'
SE = 0.02	SE = 0.02
V = 50mph	V = 50mph

NAD 83/2011

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

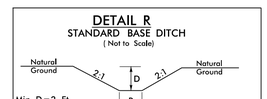


–Y13– STA. 25+00 TO STA. 26+19 RT

DETAIL I
SPECIAL CUT DITCH
(Not to Scale)

–Y14– STA. 10+80 TO STA. 11+00 LT

DETAIL R
STANDARD BASE DITCH
(Not to Scale)



–Y13– STA. 25+91 TO STA. 25+93 LT, DDE=6 CY

MATCHLINE –Y13– STA 23+00
SEE SHEET 11

42 NANCY E. AND RICHARD BLAKEMORE

BEGIN RESURFACING
–Y13– POC Sta 26+35.00

450' UNIFORM MEDIAN TRANSITION

–Y13– PRC Sta 23+23.75

STANDARD BASE DITCH
SEE DETAIL R

CLASS I RIP RAP
EST 11 TONS
EST 22 SY GEO. FAB.

20' X 10' PSRM
EST 25 SY

PROPOSED 5' MONOLITHIC CONCRETE ISLAND

SPECIAL LATERAL 'V' DITCH
SEE DETAIL L

PROPOSED 2'-6" C&G

–Y14– POT Sta 10+00.00
–Y13– POC Sta 26+30.00

300' TURN LANE

–Y14–
PC Sta.10+54.75

–Y13– PT Sta 26+38.05

REMOVAL AND DISPOSAL OF TANKS BY OTHERS

–Y13–
PC Sta.27+83.07

–Y13–
PT Sta 28+44.12

48 RICHARD T JOYCE & PAULA JOYCE TURNER

END CONSTRUCTION
–Y13– POC Sta 30+00.00

–Y13–
POT Sta 30+36.34

RICHARD T. JOYCE & PAULA JOYCE TURNER

SPECIAL CUT DITCH
SEE DETAIL I

COORDINATE SIGNAL AND DITCH CONSTRUCTION SO THAT SIGNAL POLE IS NOT PLACED IN THE CENTER OF THE DITCH

–Y14– PCC Sta. 12+02.16

49 COMBS FREEMONT HOLDINGS LLC

–Y14– PT Sta. 13+85.60

END CONSTRUCTION
–Y14– POT Sta 14+03.00

49 COMBS FREEMONT HOLDINGS LLC

39 DANNY L & WILLIAM B DILLON

47 JEFFREY P & PAULA F SWISHER

50 JEFFREY P & PAULA F SWISHER

TOD W & JENNIFER S SHIELDS

FORSYTH COUNTY
CITY OF KERNERSVILLE

TO OAK RIDGE/HWY 68

★ PROPOSED SIGNAL

PROP PAINT STRIPING

FOR –L– & –Y13– INTERSECTION DETAIL, SEE SHEET 2B-7
FOR –Y13– PROFILE, SEE SHEET 20
FOR –Y14– PROFILE, SEE SHEET 20

4/25/2018
U-4734 RDY_PSH_13.dgn
HDR ENGINEERING, INC.

HDR Engineering, Inc. of the Carolinas
555 Fayetteville St, Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116

PROJECT REFERENCE NO.	SHEET NO.
U-4734	14

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 032074 DENA C. SNEAD — DocuSigned by: Dena C. Snead 4/25/2018

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 034364 TRENTON J. CORMIER — DocuSigned by: Trenton J. Cormier 4/26/2018

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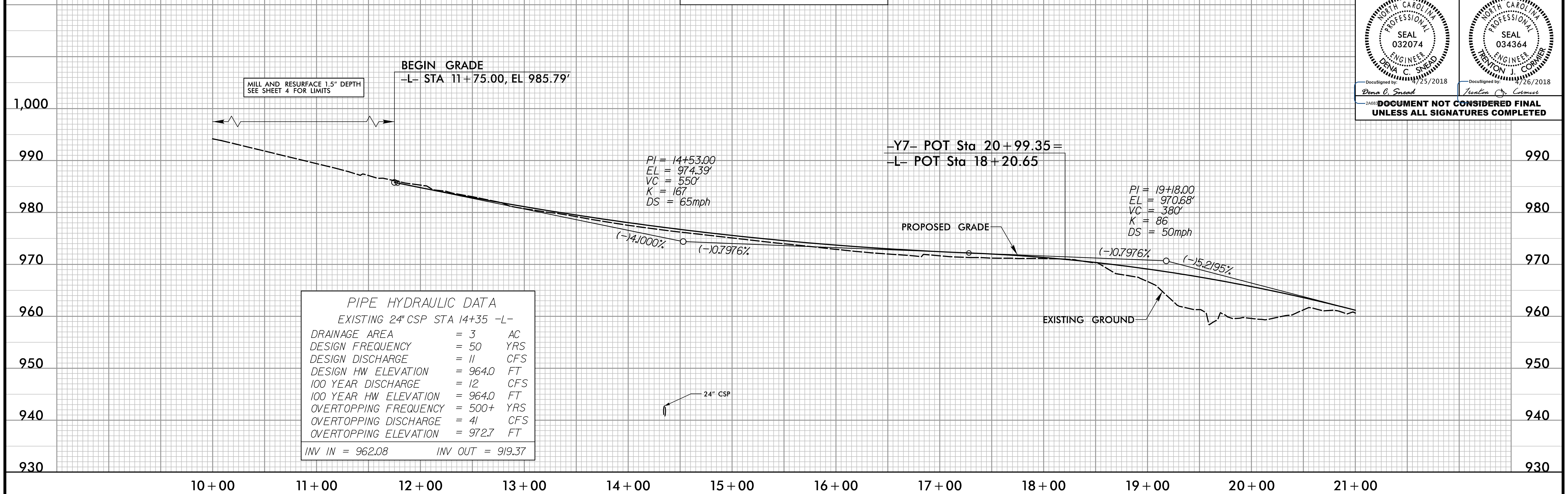
–L–



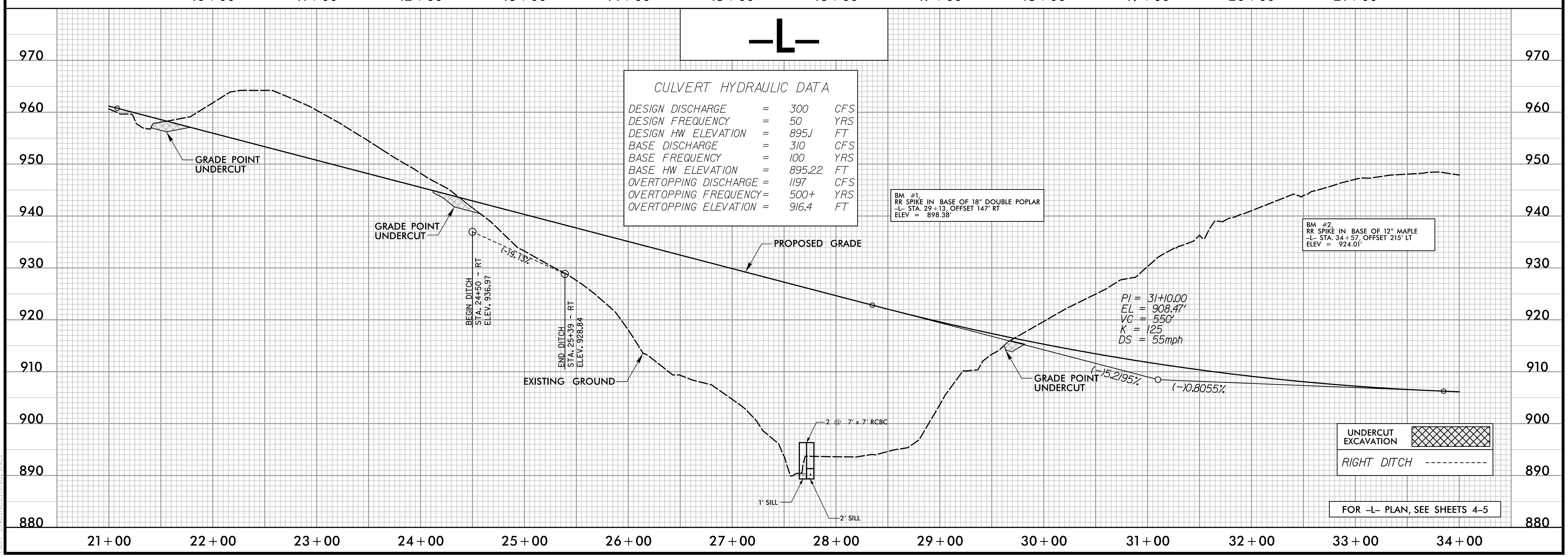
PIPE HYDRAULIC DATA

EXISTING 24" CSP STA 14+35 -L-

DRAINAGE AREA	= 3	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 11	CFS
DESIGN HW ELEVATION	= 964.0	FT
100 YEAR DISCHARGE	= 12	CFS
100 YEAR HW ELEVATION	= 964.0	FT
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING DISCHARGE	= 41	CFS
OVERTOPPING ELEVATION	= 972.7	FT

INV IN = 962.08 INV OUT = 919.37

–L–



CULVERT HYDRAULIC DATA

DESIGN DISCHARGE	=	300	CFS
DESIGN FREQUENCY	=	50	YRS
DESIGN HW ELEVATION	=	895.1	FT
BASE DISCHARGE	=	310	CFS
BASE FREQUENCY	=	100	YRS
BASE HW ELEVATION	=	895.22	FT
OVERTOPPING DISCHARGE	=	1197	CFS
OVERTOPPING FREQUENCY	=	500+	YRS
OVERTOPPING ELEVATION	=	916.4	FT

FOR –L– PLAN, SEE SHEETS 4–5

HDR Engineering, Inc. of the Carolinas
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N.C.B.E.L.S. License Number: F-0116

PROJECT REFERENCE NO.	SHEET NO.
U-4734	15

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 032074 ENGINEER DENA C. SNEAD — 4/25/2018

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 034364 ENGINEER TRENTON J. CORMIER — 4/26/2018

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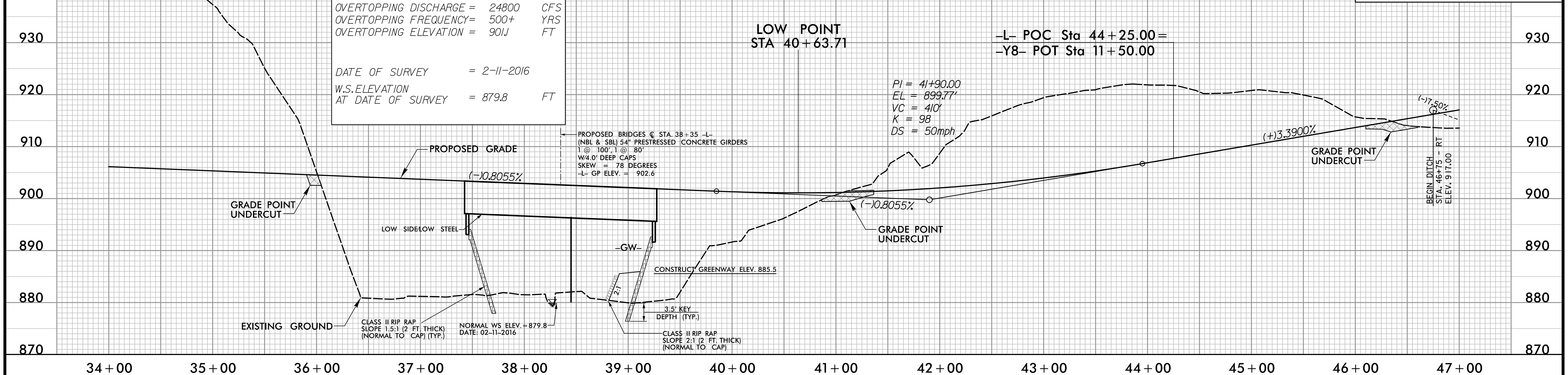
-L-

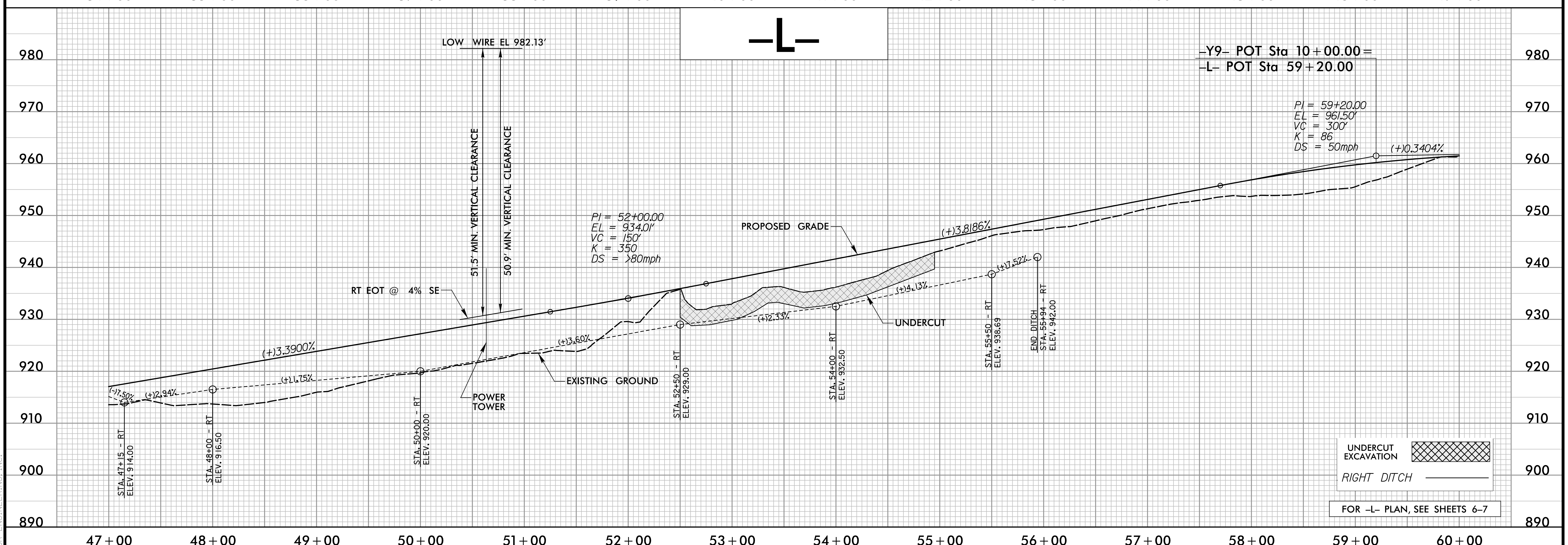
BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE	=	1000	CFS
DESIGN FREQUENCY	=	50	YRS
DESIGN HW ELEVATION	=	885.6	FT
BASE DISCHARGE	=	1100	CFS
BASE FREQUENCY	=	100	YRS
BASE HW ELEVATION	=	885.77	FT
OVERTOPPING DISCHARGE	=	24800	CFS
OVERTOPPING FREQUENCY	=	500+	YRS
OVERTOPPING ELEVATION	=	901.1	FT
DATE OF SURVEY	=	2-11-2016	
W.S. ELEVATION AT DATE OF SURVEY	=	879.8	FT



BM #3, RR SPIKE IN BASE OF 12" POPLAR -L- STA. 41+04, OFFSET 150' RT ELEV = 891.20'
LOW POINT STA 40+63.71
-L- POC Sta 44+25.00 = -Y8- POT Sta 11+50.00
PI = 41+90.00
EL = 899.77'
VC = 410'
K = 98
DS = 50mph
(-)17.50%
(+)3.3900%
GRADE POINT UNDERCUT
BEGIN DITCH STA. 46+75 - RT ELEV. 917.00
PROPOSED BRIDGES ℄ STA. 38+35 -L- (NBL & SBL) 54" PRESTRESSED CONCRETE GIRDERS 1 @ 100', 1 @ 80' W/4.0' DEEP CAPS SKEW = 78 DEGREES -L- GP ELEV. = 902.6
PROPOSED GRADE
(-)0.8055%
GRADE POINT UNDERCUT
(-)0.8055%
GRADE POINT UNDERCUT
LOW SIDE LOW STEEL
-GW-
CONSTRUCT GREENWAY ELEV. 885.5
2:1
3.5' KEY DEPTH (TYP.)
EXISTING GROUND
CLASS II RIP RAP SLOPE 1.5:1 (2 FT. THICK) (NORMAL TO CAP) (TYP.)
NORMAL WS ELEV. = 879.8 DATE: 02-11-2016
CLASS II RIP RAP SLOPE 2:1 (2 FT. THICK) (NORMAL TO CAP)
960
950
940
930
920
910
900
890
880
870
34+00
35+00
36+00
37+00
38+00
39+00
40+00
41+00
42+00
43+00
44+00
45+00
46+00
47+00

-L-



LOW WIRE EL 982.13'
51.5' MIN. VERTICAL CLEARANCE
50.9' MIN. VERTICAL CLEARANCE
-Y9- POT Sta 10+00.00 = -L- POT Sta 59+20.00
PI = 59+20.00
EL = 961.50'
VC = 300'
K = 86
DS = 50mph
(+)0.3404%
PI = 52+00.00
EL = 934.01'
VC = 150'
K = 350
DS = >80mph
PROPOSED GRADE
(+)3.8186%
(+)17.52%
(+)4.13%
(+)12.33%
UNDERCUT
RT EOT @ 4% SE
(+)3.60%
(+)3.3900%
(+)1.75%
(-)17.50%
(+)2.94%
EXISTING GROUND
POWER TOWER
STA. 47+15 - RT ELEV. 914.00
STA. 48+00 - RT ELEV. 916.50
STA. 50+00 - RT ELEV. 920.00
STA. 52+50 - RT ELEV. 929.00
STA. 54+00 - RT ELEV. 932.50
STA. 55+50 - RT ELEV. 938.69
END DITCH STA. 55+94 - RT ELEV. 942.00
UNDERCUT EXCAVATION
RIGHT DITCH
980
970
960
950
940
930
920
910
900
890
47+00
48+00
49+00
50+00
51+00
52+00
53+00
54+00
55+00
56+00
57+00
58+00
59+00
60+00

FOR -L- PLAN, SEE SHEETS 6-7

HDR Engineering, Inc. of the Carolinas
555 Fayetteville St. Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116

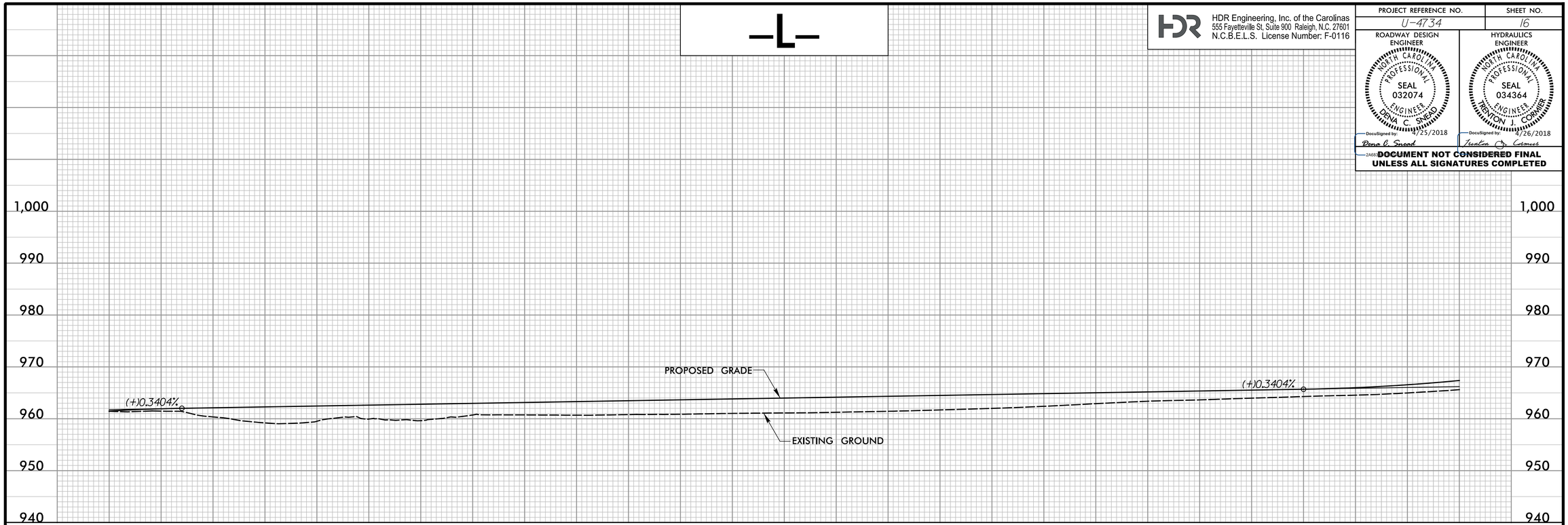
PROJECT REFERENCE NO.	SHEET NO.
U-4734	16

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 032074 ENGINEER DENA C SNEAD
DocuSigned by: 4/25/2018
Dena C. Snead

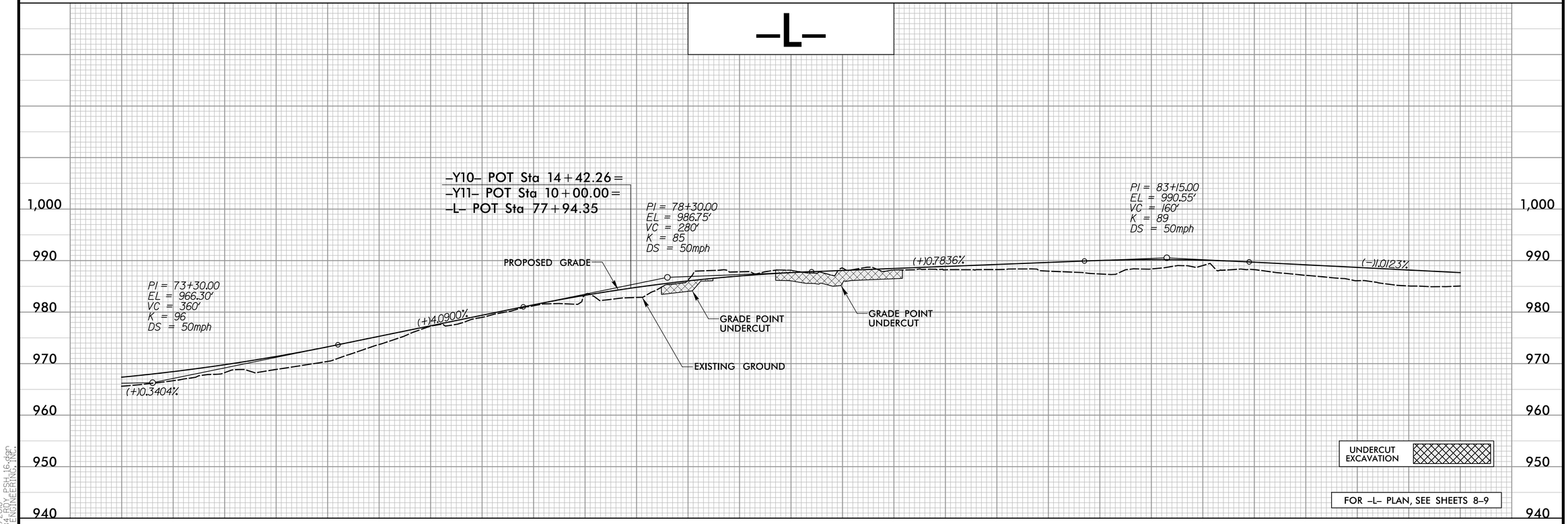
HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 034364 ENGINEER TRENTON J CORMIER
DocuSigned by: 4/26/2018
Trenton J. Cormier

2ARMS **DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED**

–L–



–L–



FOR –L– PLAN, SEE SHEETS 8–9

HDR Engineering, Inc. of the Carolinas
555 Fayetteville St. Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116

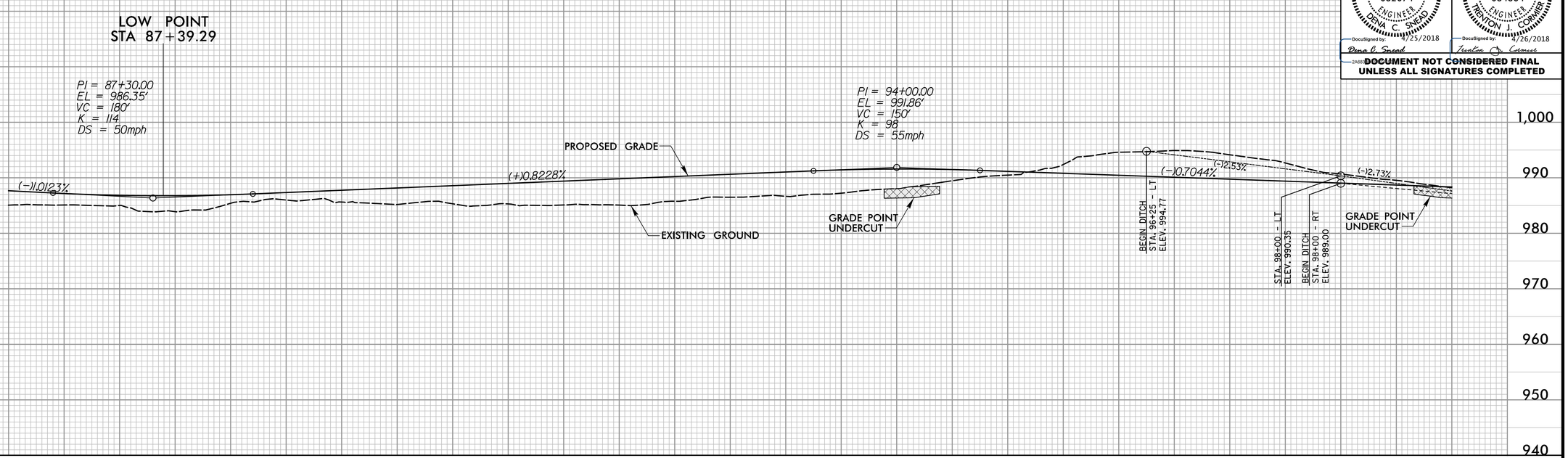
PROJECT REFERENCE NO.	SHEET NO.
U-4734	17

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 032074 ENGINEER DENA C SNEAD
DocuSigned by: 4/25/2018
Dena C. Snead

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 034364 ENGINEER TRENTON J CORMIER
DocuSigned by: 4/26/2018
Trenton J. Cormier

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

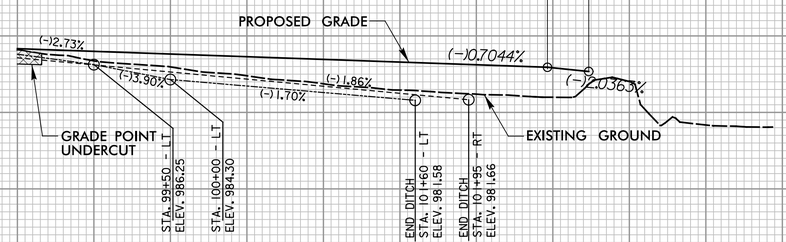
–L–



–L–

END GRADE –L– STA 102+46.44, EL 985.90' =
EOT –Y13– STA 19+40.17 27' RT

–L– POT Sta 102+73.45 =
–Y13– POT Sta 19+40.88



UNDERCUT EXCAVATION
LEFT DITCH ----------
RIGHT DITCH ----------

FOR –L– PLAN, SEE SHEETS 10–11

4/25/2018
U4734_PLOT_PSH_17.dgn
HDR ENGINEERING, INC.

HDR Engineering, Inc. of the Carolinas
555 Fayetteville St, Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116

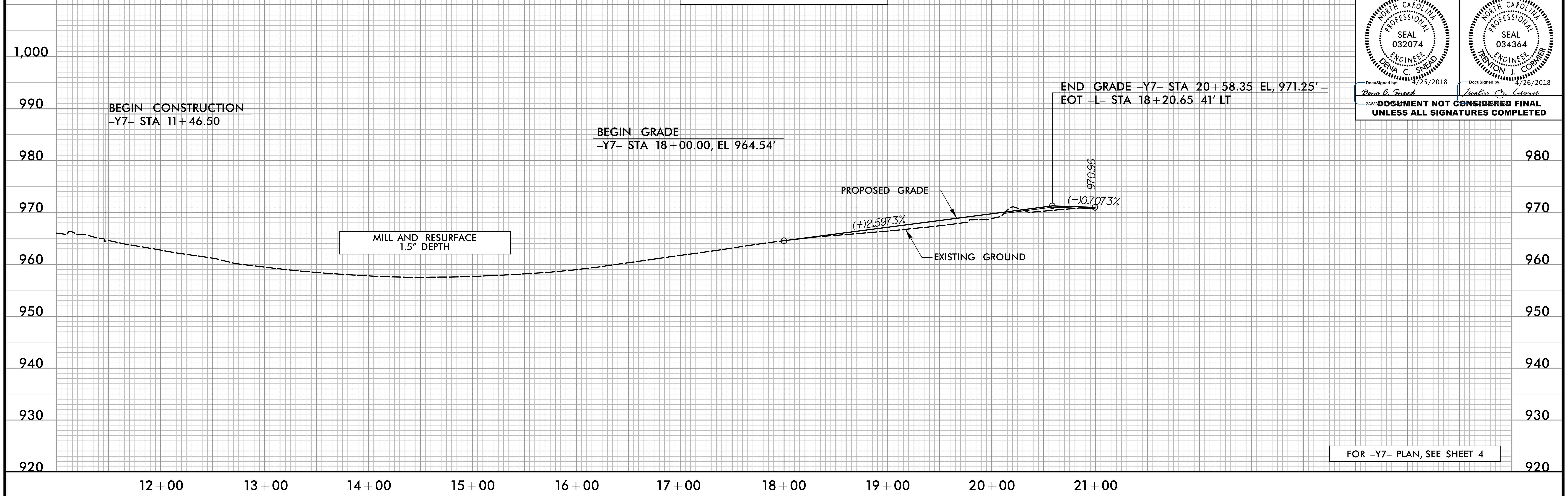
PROJECT REFERENCE NO.	SHEET NO.
U-4734	18

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 032074 DENA C. SNEAD — DocuSigned by: Dena C. Snead 4/25/2018

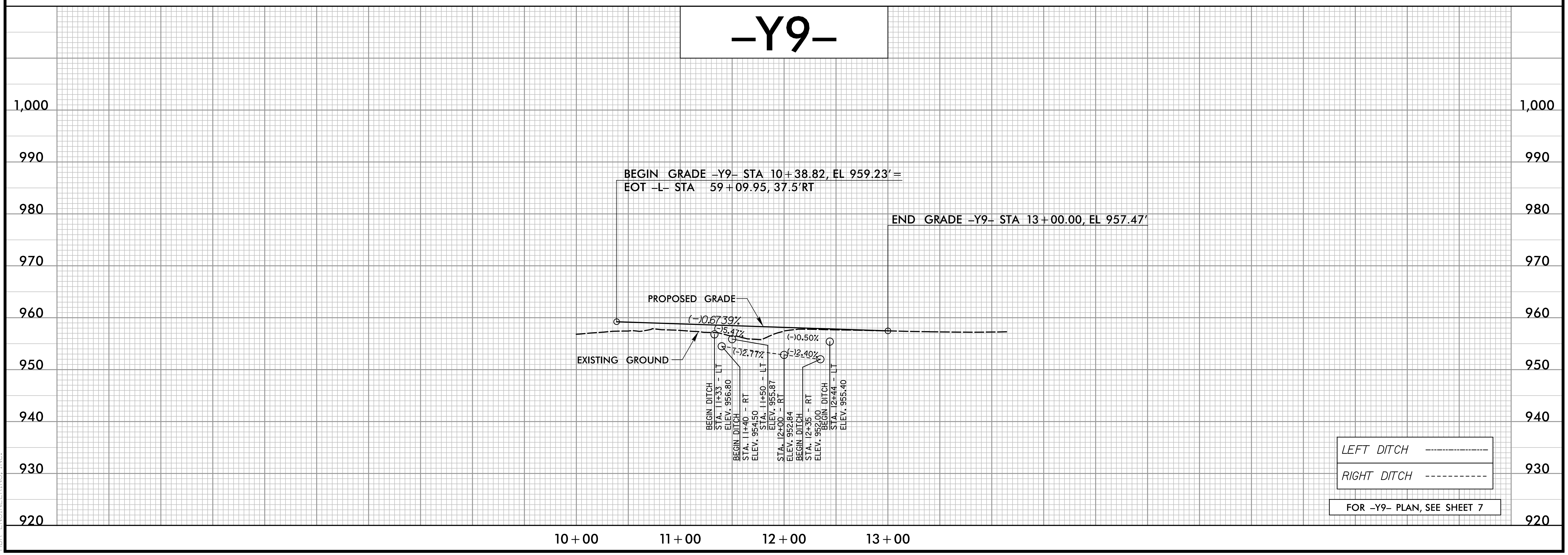
HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 034364 TRENTON J. CORMIER — DocuSigned by: Trenton J. Cormier 4/26/2018

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

-Y7-



-Y9-



–Y10–

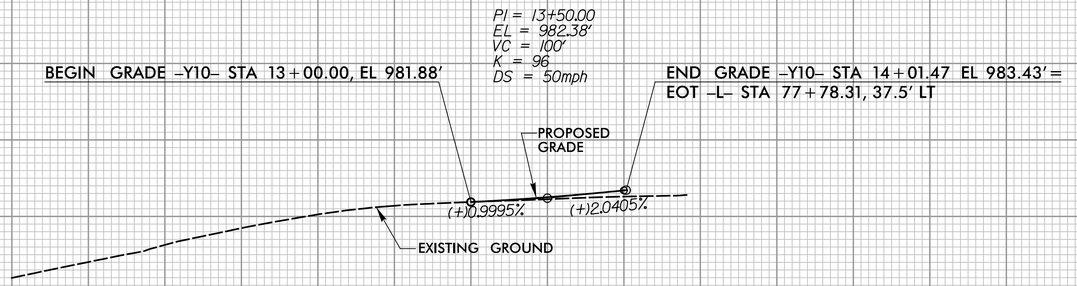
HDR Engineering, Inc. of the Carolinas
555 Fayetteville St. Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116

PROJECT REFERENCE NO.	SHEET NO.
U-4734	19

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 032074 ENGINEER DENA C SNEAD
DocuSigned by: 4/25/2018
Dena C. Snead

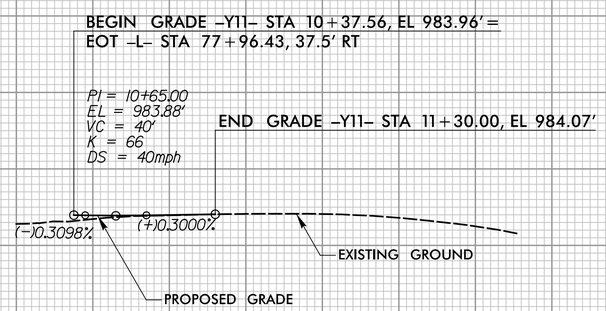
HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 034364 ENGINEER TRENTON J CORMIER
DocuSigned by: 4/26/2018
Trenton J. Cormier

2ARMS DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



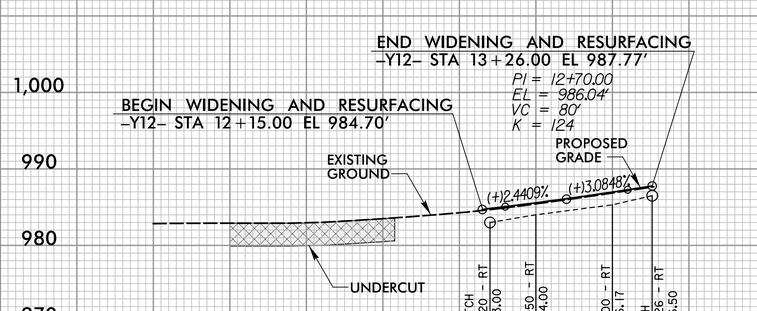
FOR –Y10– PLAN, SEE SHEET 9

–Y11–



FOR –Y11– PLAN, SEE SHEET 9

–Y12–



FOR –Y12– PLAN, SEE SHEET 10

DocuSign Envelope ID: 1886D118-4061-4119-9158-D4EA5DE90B7F

HDR Engineering, Inc. of the Carolinas
555 Fayetteville St, Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116
PROJECT REFERENCE NO. U-4734
SHEET NO. 20
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 032074 ENGINEER DENA C. SNEAD
NORTH CAROLINA PROFESSIONAL SEAL 034364 ENGINEER TRENTON J. CORMIER
4/25/2018
4/26/2018
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
-Y13-
BEGIN RESURFACING
-Y13- STA 10+00.00
RESURFACE 1.5"
END RESURFACING
BEGIN GRADE
-Y13- STA 12+00.00, EL 999.21'
PI = 12+65.00
EL = 997.79'
VC = 130'
K = 665
DS = >80mph
PI = 14+80.00
EL = 993.52'
VC = 300'
K = 603
DS = >80mph
PROPOSED GRADE
-L- STA 102+73.45 =
-Y13- STA 19+40.88
PI = 17+65.00
EL = 986.45'
VC = 200'
K = 108
DS = 50mph
PI = 20+40.00
EL = 984.73'
VC = 185'
K = 96
DS = 50mph
PI = 23+91.00
EL = 989.28'
VC = 188'
K = 118
DS = 50mph
EXISTING GROUND
BEGIN DITCH STA. 17+00 - LT ELEV. 984.99
(-)2.1796%
(-)1.9841%
(-)1.9841%
(-)2.4816%
(-)2.4816%
(-)0.6243%
(-)0.6243%
(+)1.2960%
(+)1.2960%
BEGIN DITCH STA. 12+00 - LT ELEV. 998.05
BEGIN DITCH STA. 12+50 - RT ELEV. 996.42
END DITCH STA. 13+00 - LT ELEV. 994.00
END DITCH STA. 14+00 - RT ELEV. 990.6
BEGIN DITCH STA. 14+75 - RT ELEV. 990.20
STA. 17+50 - RT ELEV. 983.46
END DITCH STA. 18+50 - LT ELEV. 979.50
END DITCH STA. 18+61 - RT ELEV. 981.58
BEGIN DITCH STA. 20+30 - RT ELEV. 981.66
STA. 20+55 - LT ELEV. 974.45
STA. 21+50 - RT ELEV. 984.00
END DITCH STA. 22+00 - RT ELEV. 986.50
END DITCH STA. 22+50 - LT ELEV. 984.30
10+00 11+00 12+00 13+00 14+00 15+00 16+00 17+00 18+00 19+00 20+00 21+00 22+00 23+00 24+00
1,000 990 980 970 960 950 940
-Y13-
-Y13- STA 26+30.01 =
-Y14- STA 10+00.00
END GRADE
-Y13- STA 26+35.00, EL 989.12'
BEGIN RESURFACING
END RESURFACING
-Y13- STA 30+00.00
PI = 25+60.00
EL = 988.77'
VC = 150'
K = 199
DS = 75mph
PROPOSED GRADE
RESURFACE 1.5"
EXISTING GROUND
(-)0.3000%
(+)0.4533%
BEGIN DITCH STA. 25+00 - RT ELEV. 987.00
STA. 25+90 - RT ELEV. 986.00
END DITCH STA. 26+16 - RT ELEV. 986.36
24+00 25+00 26+00 27+00 28+00 29+00 30+00
-Y14-
BEGIN GRADE -Y14- STA 10+32.40, EL 989.02 =
EOT -Y13- STA 26+37.49, 18.35' RT
PI = 12+25.00
EL = 992.59'
VC = 240'
K = 448
DS = >80mph
PI = 10+60.00
EL = 988.93'
VC = 45'
K = 18
DS = 20mph
PROPOSED GRADE
(-)0.3182%
(+)2.2144%
(+)2.7500%
EXISTING GROUND
BEGIN DITCH STA. 10+80 - LT ELEV. 986.90
END DITCH STA. 11+00 - LT ELEV. 987.50
END GRADE
-Y14- STA 14+03.00, EL 997.48
LEFT DITCH
RIGHT DITCH
FOR -Y13- PLAN, SEE SHEETS 11-13
FOR -Y14- PLAN, SEE SHEET 13
10+00 11+00 12+00 13+00 14+00 15+00
4/25/2018
U4734_RDY_PSH_20.dgn
HDR ENGINEERING, INC.

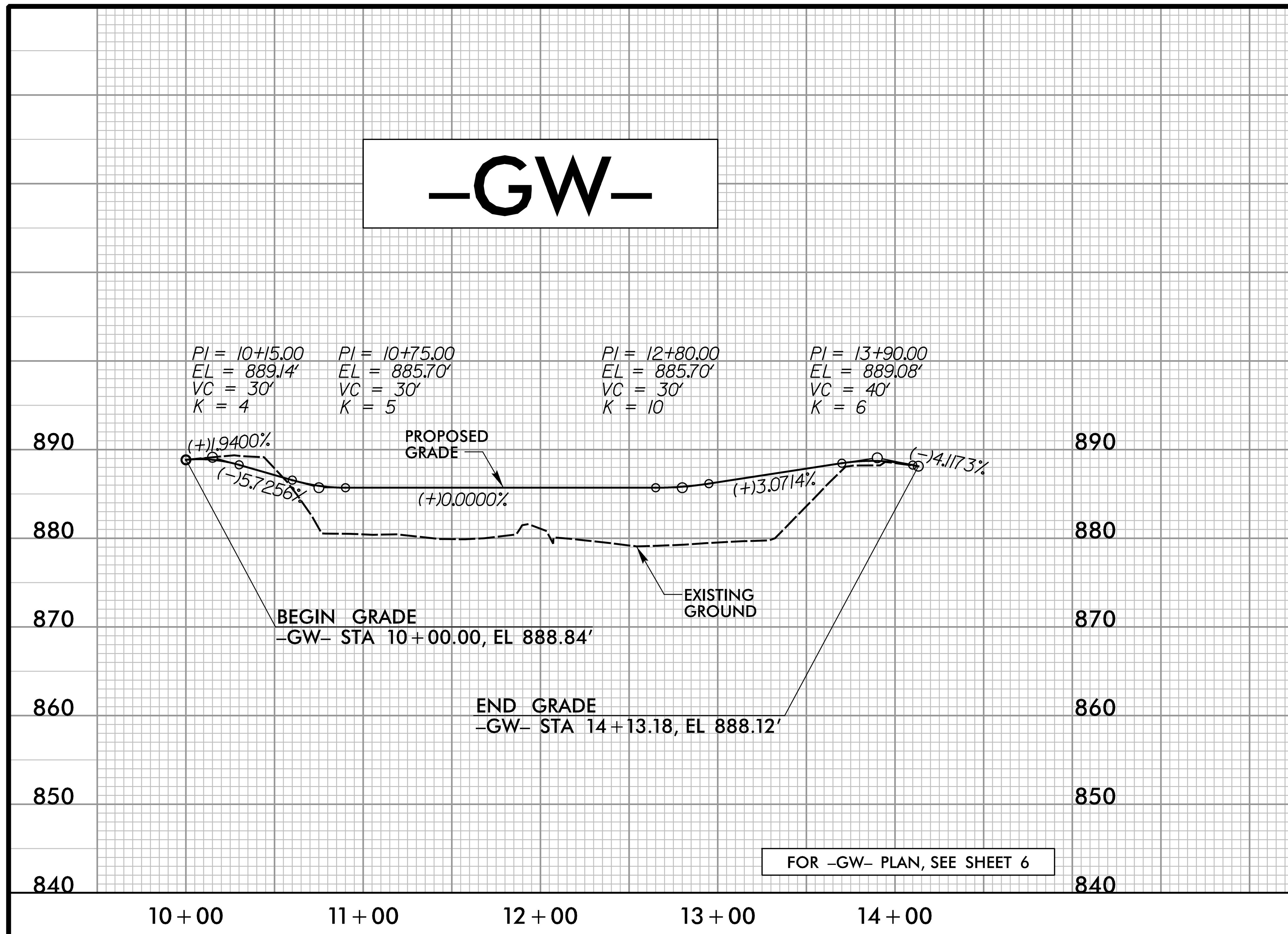
HDR Engineering, Inc. of the Carolinas
555 Fayetteville St, Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116

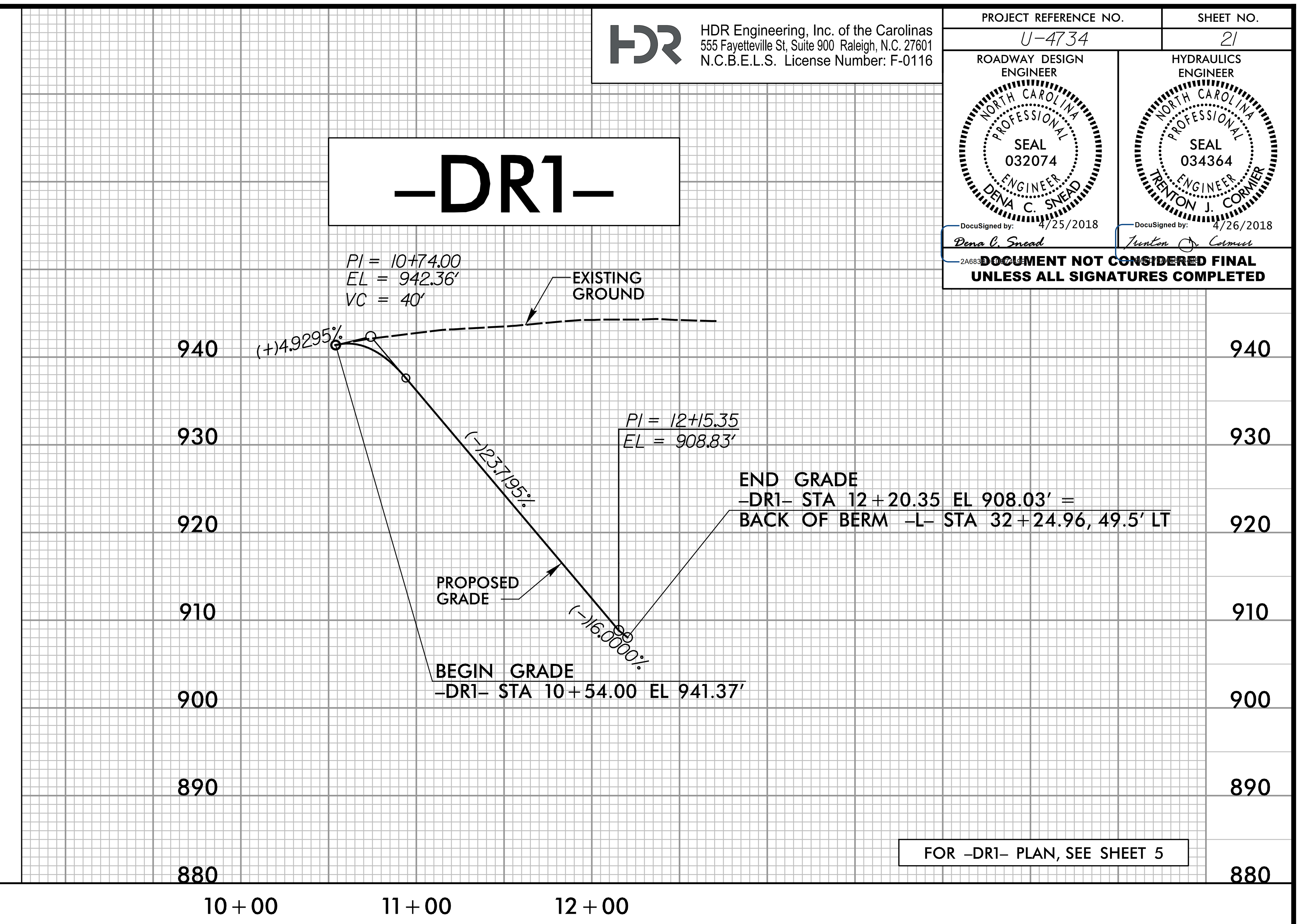
PROJECT REFERENCE NO.	SHEET NO.
U-4734	21

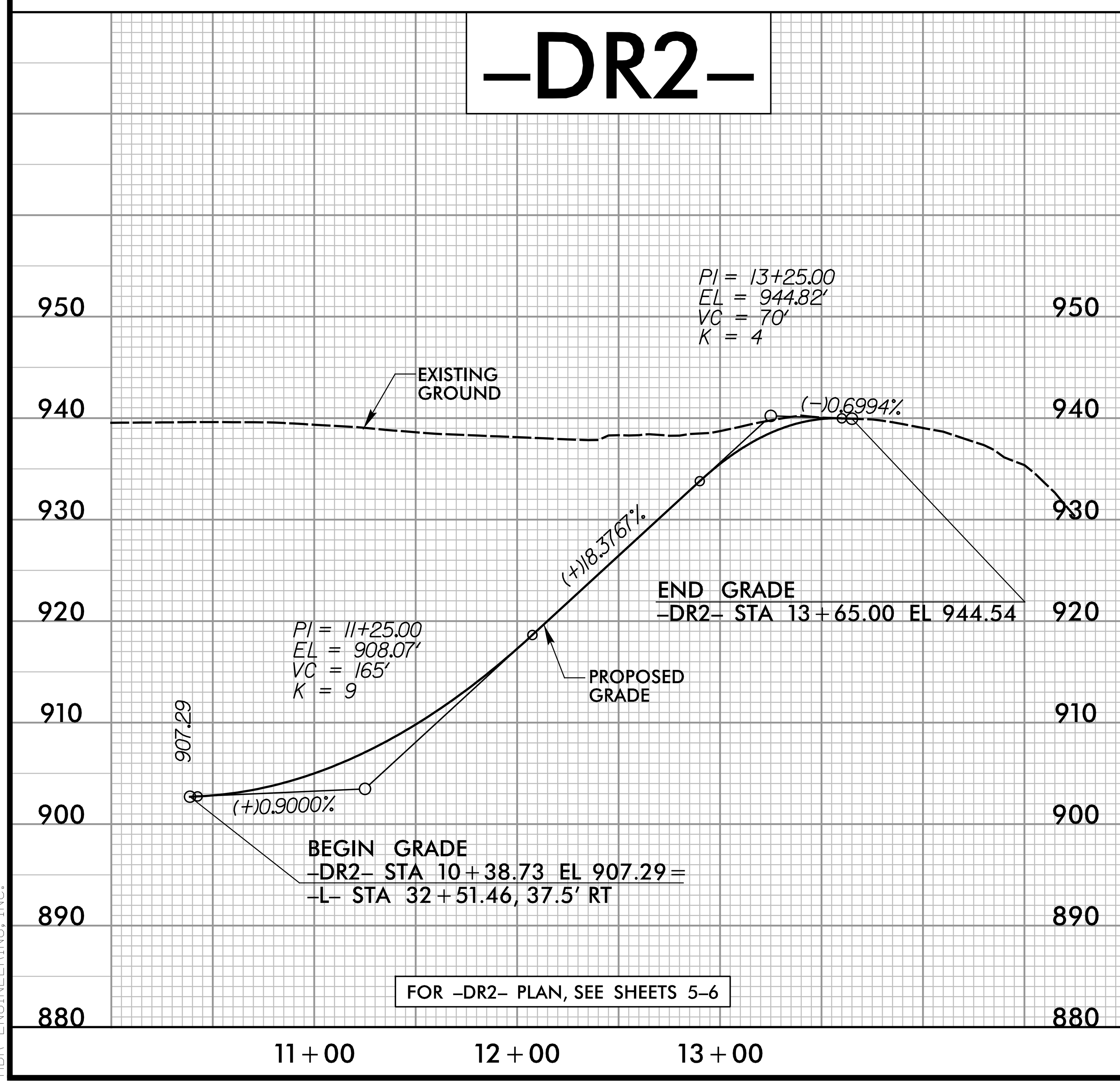
ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 032074 ENGINEER DENA C. SNEAD — DocuSigned by: Dena C. Snead 4/25/2018

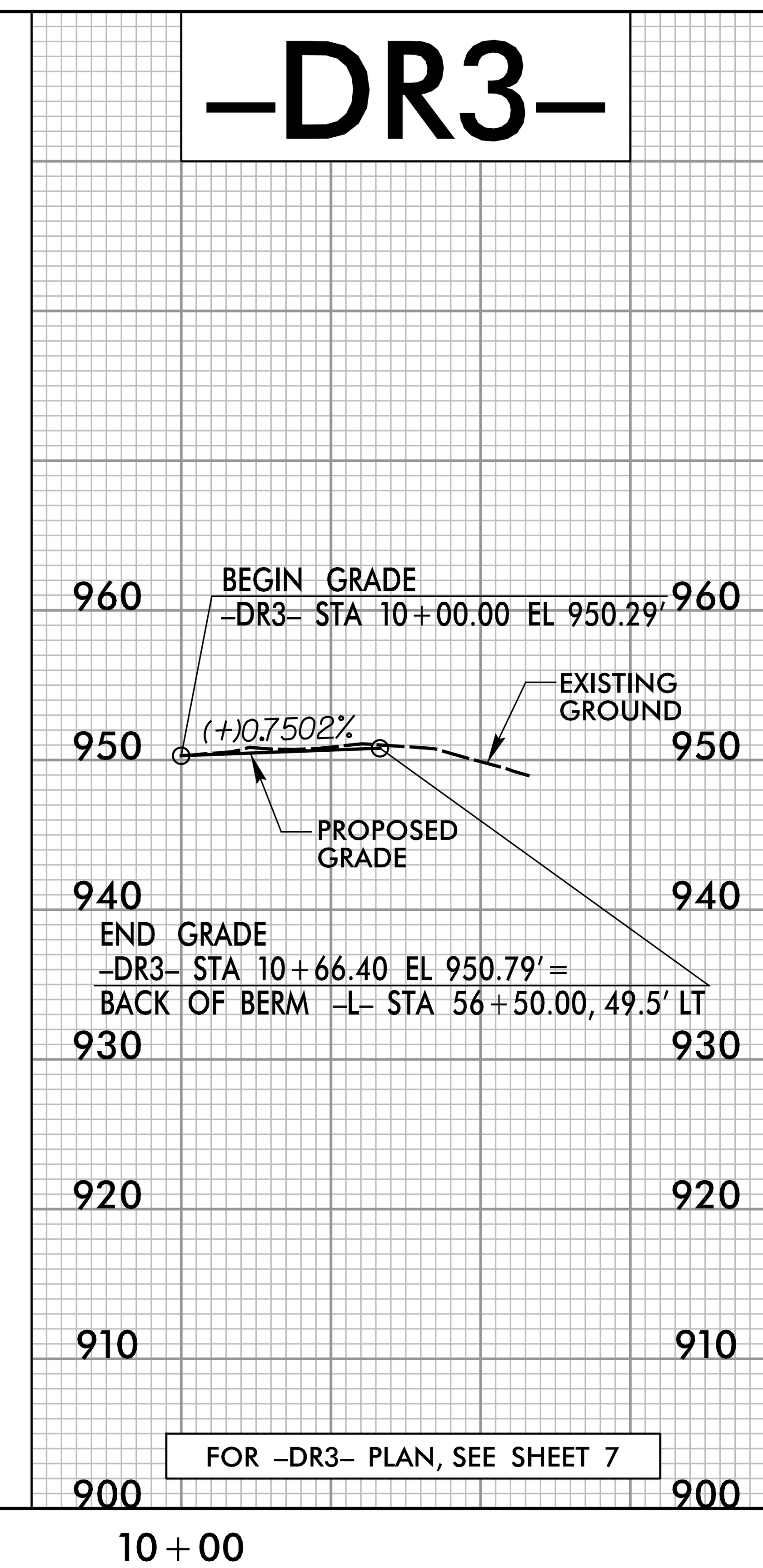
HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 034364 ENGINEER TRENTON J. CORMIER — DocuSigned by: Trenton J. Cormier 4/26/2018

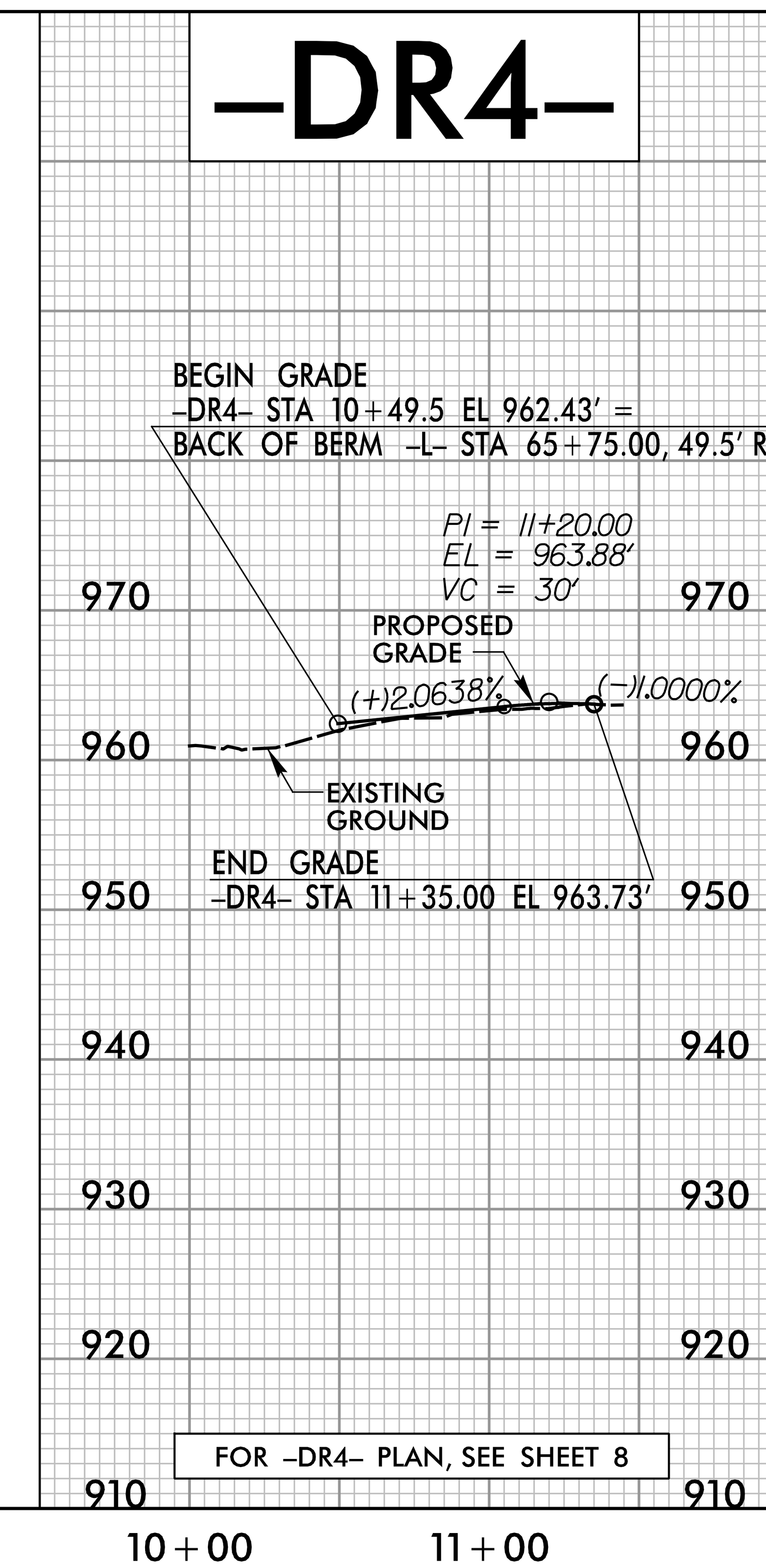
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

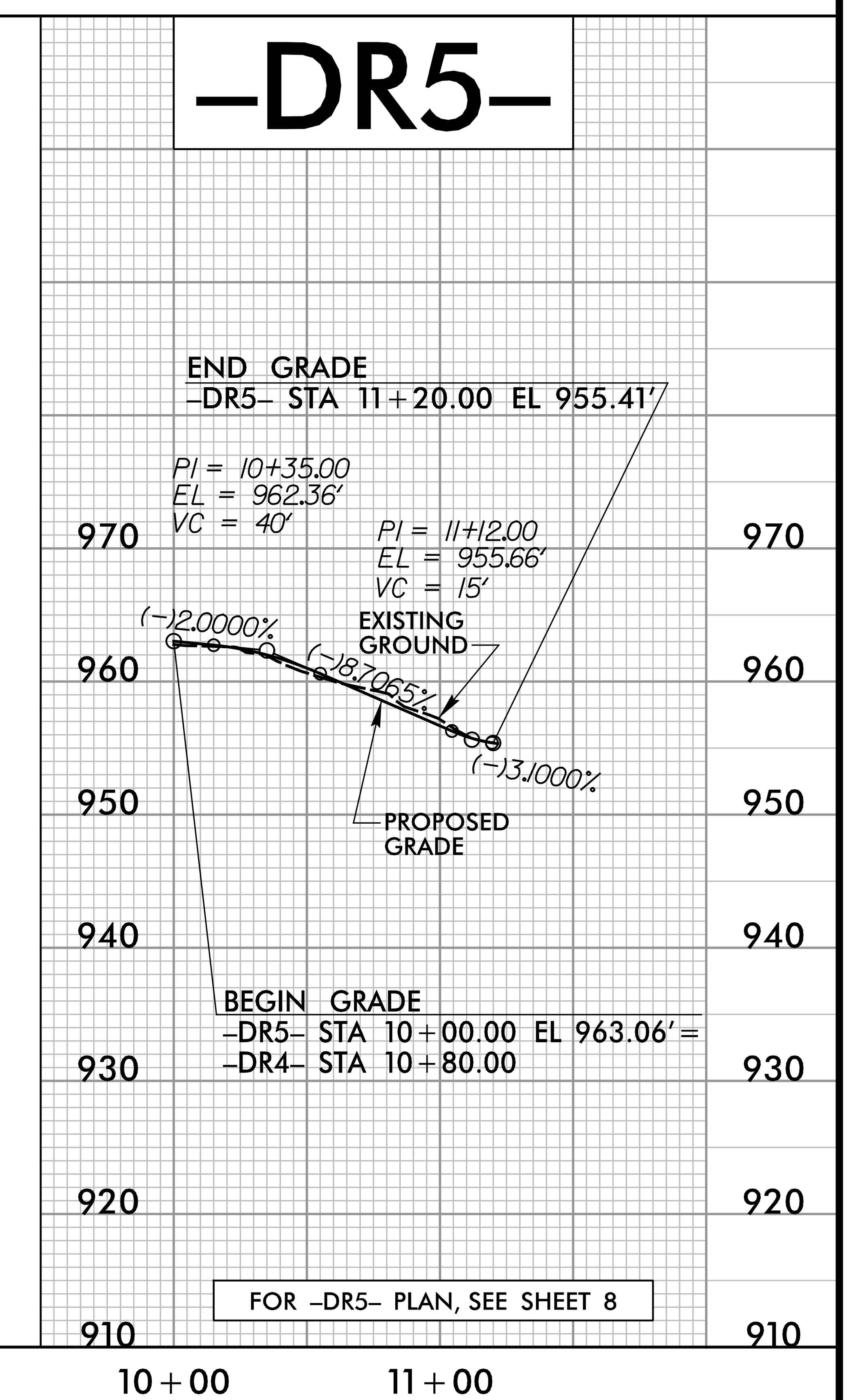












PROJECT REFERENCE NO.	SHEET NO.
U-4734	RW-4

Location and Surveys

PROJECT SURVEYOR

SEAL L-3877 NORTH CAROLINA PROFESSIONAL LAND SURVEYOR MICHAEL L. MOTSINGER

6/2/99

I, Michael L. Motsinger, a Professional Land Surveyor in the state of North Carolina hereby certify to the best of my knowledge and belief that the following work item(s) (R/W Staking) performed under my responsible charge meet NCDOT Survey Standards as directed in the NCDOT Location & Surveys guidelines and procedures.

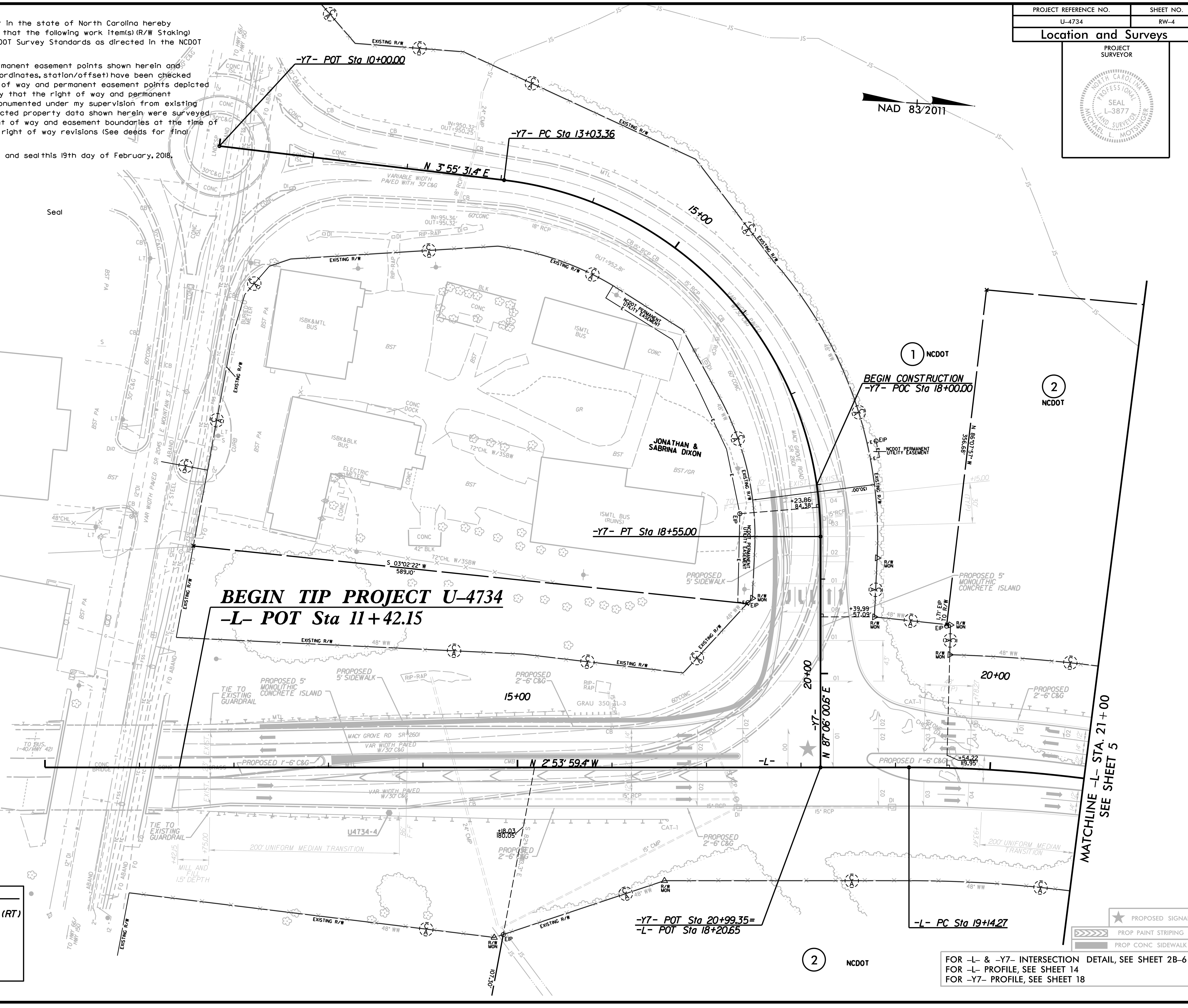
I further certify that the right of way and permanent easement points shown herein and outlined in the tables shown hereon (localized coordinates, station/offset) have been checked and are accurate representations of the right of way and permanent easement points depicted on the corresponding highway plans. I also certify that the right of way and permanent easement points shown herein have been field monumented under my supervision from existing survey control provided by others; that the depicted property data shown herein were surveyed by others; and these monuments denote the right of way and easement boundaries at the time of staking which may be subject to change due to right of way revisions (See deeds for final determination).

Witness my original signature, registration number and seal this 19th day of February, 2018.

DocuSigned by:
Michael L. Motsinger
FDB0FE70E23C40E...

Professional Land Surveyor PLS # L-3877 Seal

REVISIONS



-L-
PI Sta 21+69.79
Δ = 19° 35' 29.4" (RT)
D = 3° 52' 16.8"
L = 506.07'
T = 255.53'
R = 1,480.00'
SE = 0.04
V = 50mph

-Y7-
PI Sta 16+40.59
Δ = 83° 10' 29.2" (RT)
D = 15° 04' 40.2"
L = 551.64'
T = 337.23'
R = 380.00'
SE = 0.04
V = 35mph

FOR -L- & -Y7- INTERSECTION DETAIL, SEE SHEET 2B-6
FOR -L- PROFILE, SEE SHEET 14
FOR -Y7- PROFILE, SEE SHEET 18

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PROJECT REFERENCE NO.	SHEET NO.
U-4734	RW-5

Location and Surveys

PROJECT SURVEYOR

SEAL: NORTH CAROLINA PROFESSIONAL SEAL L-3877 LAND SURVEYOR MICHAEL L. MOTSINGER

-L-
PI Sta 21+69.79
Δ = 19° 35' 29.4" (RT)
D = 3° 52' 16.8"
L = 506.07'
T = 255.53'
R = 1,480.00'
SE = 0.04
V = 50mph

I, Michael L. Motsinger, a Professional Land Surveyor in the state of North Carolina hereby certify to the best of my knowledge and belief that the following work item(s) (R/W Staking) performed under my responsible charge meet NCDOT Survey Standards as directed in the NCDOT Location & Surveys guidelines and procedures.

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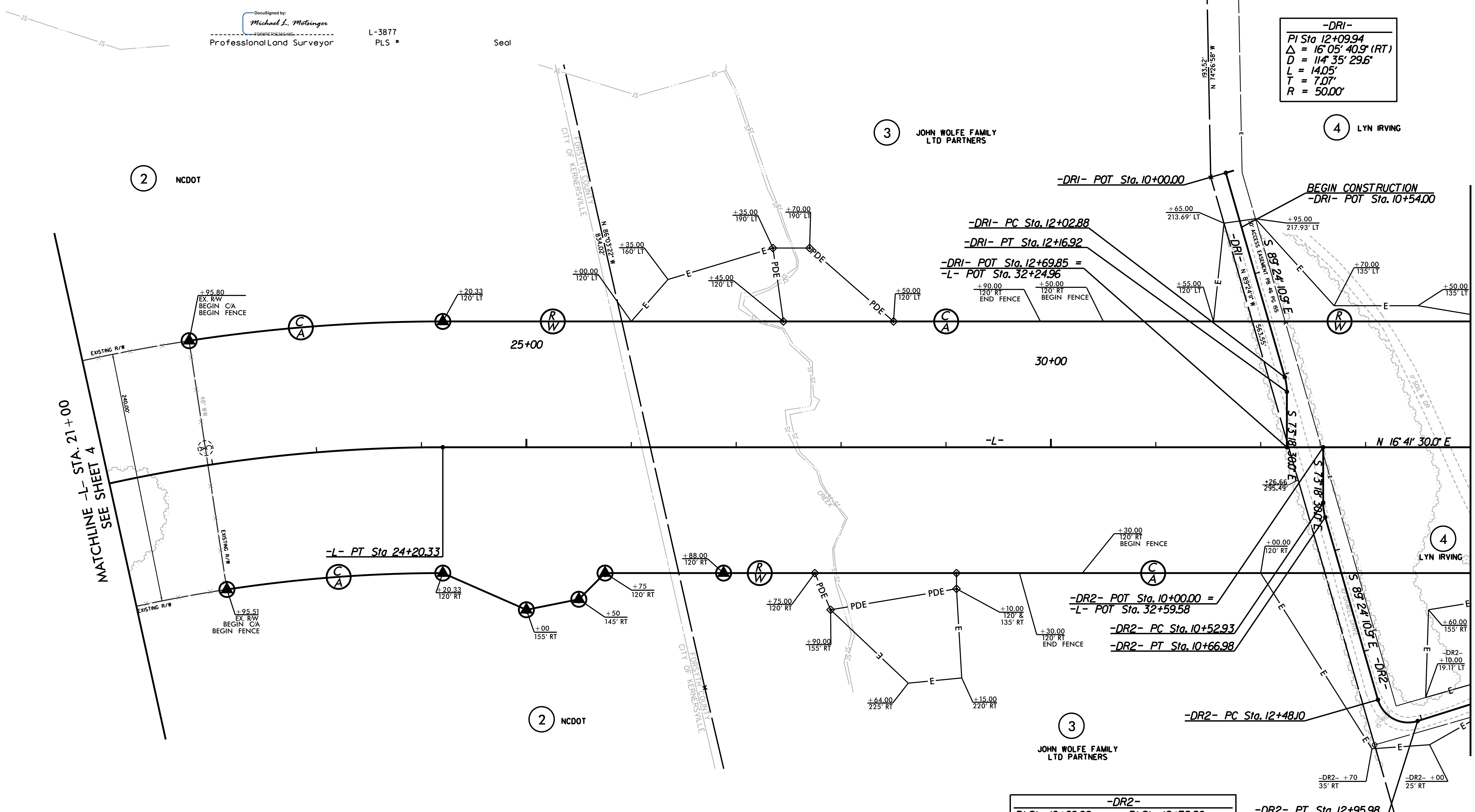
Witness my original signature, registration number and seal this 19th day of February, 2018.

DocuSigned by: Michael L. Motsinger

Professional Land Surveyor PLS # L-3877 Seal



-DRI-
PI Sta 12+09.94
Δ = 16° 05' 40.9" (RT)
D = 114° 35' 29.6"
L = 14.05'
T = 7.07'
R = 50.00'

-DR2-	
PI Sta 10+60.00	PI Sta 12+78.86
Δ = 16° 05' 40.9" (LT)	Δ = 91° 25' 53.6" (LT)
D = 114° 35' 29.6"	D = 190° 59' 09.4"
L = 14.05'	L = 47.87'
T = 7.07'	T = 30.76'
R = 50.00'	R = 30.00'

REVISIONS

6/2/99

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PROJECT REFERENCE NO.	SHEET NO.
U-4734	RW-6

Location and Surveys

I, Michael L. Motsinger, a Professional Land Surveyor in the state of North Carolina hereby certify to the best of my knowledge and belief that the following work item(s) (R/W Staking) performed under my responsible charge meet NCDOT Survey Standards as directed in the NCDOT Location & Surveys guidelines and procedures.

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Witness my original signature, registration number and seal this 19th day of February, 2018.

DocuSigned by: Michael L. Motsinger

Professional Land Surveyor — PLS L-3877 — Seal

PROJECT SURVEYOR

NORTH CAROLINA PROFESSIONAL SEAL L-3877 LAND SURVEYOR MICHAEL L. MOTSINGER

-L-
PI Sta 49+71.87
Δ = 51° 01' 30.0" (LT)
D = 3° 52' 16.8"
L = 1,318.02'
T = 706.32'
R = 1,480.00'
SE = 0.04
V = 50mph

NAD 83/2011

6 TRIAD PARK — FORSYTH COUNTY & GUILFORD COUNTY

4 LYN IRVING

6 TRIAD PARK — FORSYTH COUNTY & GUILFORD COUNTY

7 MARJORIE P BEESON TRUST

5 RAYMOND R & PHYLLIS L HAUCK

FUTURE GREENWAY (BY OTHERS)

BEGIN CONSTRUCTION -GW- POT Sta. 10+00.00

-GW- PC Sta. 10+56.11

-GW- PT Sta. 10+78.59

BEGIN BRIDGE -L- POT Sta 37+45+/-

END BRIDGE -L- POT Sta 39+25+/-

-Y8- POT Sta 10+00.00

-L- POC Sta 44+85.00= -Y8- POT Sta 11+50.00

-L- PC Sta 42+65.55

-Y8- POT Sta 13+00.00

-GW- PC Sta. 12+23.64

-GW- PT Sta. 12+87.97

-GW- PC Sta. 13+60.69

END CONSTRUCTION -GW- PT Sta. 14+13.18

-DR2- POT Sta. 14+71.46

END CONSTRUCTION -DR2- POT Sta. 13+50.00

MATCHLINE -L- STA. 34+00 SEE SHEET 5

MATCHLINE -L- STA. 47+00 SEE SHEET 7

-GW-		
PI Sta 10+67.37	PI Sta 12+62.69	PI Sta 13+93.29
Δ = 8° 35' 16.1" (LT)	Δ = 81° 53' 48.1" (LT)	Δ = 85° 55' 36.7" (RT)
D = 38° 11' 49.9"	D = 127° 19' 26.2"	D = 163° 42' 08.0"
L = 22.48'	L = 64.32'	L = 52.49'
T = 11.26'	T = 39.05'	T = 32.60'
R = 150.00'	R = 45.00'	R = 35.00'
SE = 0.02	SE = 0.02	SE = 0.02

FOR –L– & –Y8– INTERSECTION DETAIL, SEE SHEET 2B–7
FOR –L– PROFILE, SEE SHEET 15
FOR –GW– PROFILE, SEE SHEET 21

REVISIONS

6/2/99

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dwinebrenner

PROJECT REFERENCE NO.	SHEET NO.
U-4734	RW-7

Location and Surveys

PROJECT SURVEYOR

NORTH CAROLINA PROFESSIONAL SEAL L-3877 LAND SURVEYOR MICHAEL L. MOTSINGER

REVISIONS

6/2/99

-L-
PI Sta 49+71.87
Δ = 51° 01' 30.0" (LT)
D = 3° 52' 16.8"
L = 1,318.02'
T = 706.32'
R = 1,480.00'
SE = 0.04
V = 50mph

-Y9-
PI Sta 11+69.90
Δ = 55° 54' 12.9" (RT)
D = 22° 55' 05.9"
L = 243.93'
T = 132.66'
R = 250.00'
SE = 0.04
V = 15mph

-DR3-
PI Sta 10+14.74
Δ = 52° 19' 24.1" (RT)
D = 190° 59' 09.4"
L = 27.40'
T = 14.74'
R = 30.00'

NAD 83/2011

MATCHLINE -L- STA. 47+00
SEE SHEET 6

MARJORIE P BEESON TRUST (7)

BILLY JOE BROADSTREET & ANN H SPRINKLE (9)

TRIAD PARK FORSYTH COUNTY & GUILFORD COUNTY (6)

-Y9- POT Sta 10+00.00=
-L- POT Sta 59+20.00

BEGIN CONSTRUCTION
-DR3- PC Sta. 10+00.00
-DR3-
PT Sta. 10+27.40

50+00

55+00

60+00

-L-

N 55°40'00.0" E

N 34°20'00.0" W

N 70°40'00.0" E

-Y9- PC Sta 10+37.25

-L- PT Sta. 55+83.57

-DR3- POT Sta. 11+15.90=
-L- POT Sta.56+50.00

-Y9- PT Sta 12+81.17

END CONSTRUCTION
-Y9- Sta 13+00.00

-Y9- POT Sta 14+15.05

MARJORIE P BEESON TRUST (7)

BETTY B & MICHAEL A HOLLIFIELD (8)

LINDA S PEGRAM

JANICE H TAYLOR

SONJA B BULLINS (10)

TERRY L & KIM M CARDWELL

DAVID L JR & CAROL B MEREDITH

MATCHLINE -L- STA. 60+00
SEE SHEET 8

I, Michael L. Motsinger, a Professional Land Surveyor in the state of North Carolina hereby certify to the best of my knowledge and belief that the following work item(s) (R/W Staking) performed under my responsible charge meet NCDOT Survey Standards as directed in the NCDOT Location & Surveys guidelines and procedures.

I further certify that the right of way and permanent easement points shown herein and outlined in the tables shown hereon (localized coordinates, station/offset) have been checked and are accurate representations of the right of way and permanent easement points depicted on the corresponding highway plans. I also certify that the right of way and permanent easement points shown herein have been field monumented under my supervision from existing survey control provided by others; that the depicted property data shown herein were surveyed by others; and these monuments denote the right of way and easement boundaries at the time of staking which may be subject to change due to right of way revisions (See deeds for final determination).

Witness my original signature, registration number and seal this 19th day of February, 2018.

DocuSigned by:
Michael L. Motsinger
Professional Land Surveyor

L-3877
PLS

Seal

PROP PAINT STRIPING
PAVEMENT REMOVAL

FOR DETAIL OF U-TURN BULB, SEE SHEET 2B-8
FOR -L- PROFILE, SEE SHEET 15
FOR -Y9- PROFILE, SEE SHEET 18
FOR -DR3- PROFILE, SEE SHEET 21

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PROJECT REFERENCE NO.	SHEET NO.
U-4734	RW-8

Location and Surveys

PROJECT SURVEYOR

NORTH CAROLINA PROFESSIONAL SEAL L-3877 LAND SURVEYOR MICHAEL L. MOTSINGER

13 ERNEST V HODGES & WILLIAM V LINVILLE

I, Michael L. Motsinger, a Professional Land Surveyor in the state of North Carolina hereby certify to the best of my knowledge and belief that the following work item(s) (R/W Staking) performed under my responsible charge meet NCDOT Survey Standards as directed in the NCDOT Location & Surveys guidelines and procedures.

I further certify that the right of way and permanent easement points shown herein and outlined in the tables shown hereon (localized coordinates, station/offset) have been checked and are accurate representations of the right of way and permanent easement points depicted on the corresponding highway plans. I also certify that the right of way and permanent easement points shown herein have been field monumented under my supervision from existing survey control provided by others; that the depicted property data shown herein were surveyed by others; and these monuments denote the right of way and easement boundaries at the time of staking which may be subject to change due to right of way revisions (See deeds for final determination).

Witness my original signature, registration number and seal this 19th day of February, 2018.

DocuSigned by: Michael L. Motsinger

Professional Land Surveyor PLS L-3877 Seal

-L-

PI Sta 65+05.78	PI Sta 72+37.54
Δ = 14° 11' 00.0" (RT)	Δ = 9° 34' 30.0" (LT)
D = 6° 09' 39.0"	D = 2° 09' 14.3"
L = 230.22'	L = 444.53'
T = 115.70'	T = 222.78'
R = 930.00'	R = 2,660.00'
SE = 0.04	SE = 0.03
V = 50mph	V = 50mph

NAD 83/2011

16 STANLEY W & JODIE D GRAVELY

17 JONATHAN C. AND TAMMY L. BOUSMAN

19 PHILLIP R SMITH & JEANETTE S DEVEAU

20 PHILLIP R SMITH

23 PHILIP R SMITH SR

14 BRADLEY M & MELISSA J ADER

15 AARON M & HEATHER F ROTHROCK

6 TRIAD PARK FORSYTH COUNTY & GUILFORD COUNTY

12 WINDELL B SMITH

18 BERTHA F SMITH HEIRS

21 JEANETTE S DEVEAU

22 PHILIP RAY SMITH SR

DAVID L JR & CAROL B MEREDITH

-L- PT Sta 66+20.30

-DR4- POT Sta. 10+00.00= -L- POC Sta. 65+75.00

-L- PC Sta 70+14.76

-L- PC Sta 63+90.08

-DR5- POT Sta. 10+00.00= -DR4- POT Sta. 10+80.00

END CONSTRUCTION -DR5- POT Sta. 11+20.00

-DR5- PT Sta. 10+37.80

-DR5- PC Sta. 10+16.84

-DR4- PC Sta. 11+11.49

-DR4- PT Sta. 11+24.03

END CONSTRUCTION -DR4- POT Sta. 11+35.00

WELL EASEMENT DB 2443 PG 3287

3,000 GALLON A/G DIESEL TANK

ISBLKBUS

EXISTING R/W

MATCHLINE -L- STA. 60+00 SEE SHEET 7

MATCHLINE -L- STA. 73+00 SEE SHEET 9

-DR4-	
PI Sta 11+17.85	
Δ = 23° 56' 19.7" (RT)	
D = 190° 59' 09.4"	
L = 12.53'	
T = 6.36'	
R = 30.00'	

-DR5-	
PI Sta 10+27.98	
Δ = 48° 02' 12.3" (RT)	
D = 229° 10' 59.2"	
L = 20.96'	
T = 11.14'	
R = 25.00'	

PAVEMENT REMOVAL

FOR DETAIL OF U-TURN BULB, SEE SHEET 2B-8
FOR -L- PROFILE, SEE SHEET 16
FOR -DR4- PROFILE, SEE SHEET 21
FOR -DR5- PROFILE, SEE SHEET 21

REVISIONS

6/2/99

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PROJECT REFERENCE NO.	SHEET NO.
U-4734	RW-9

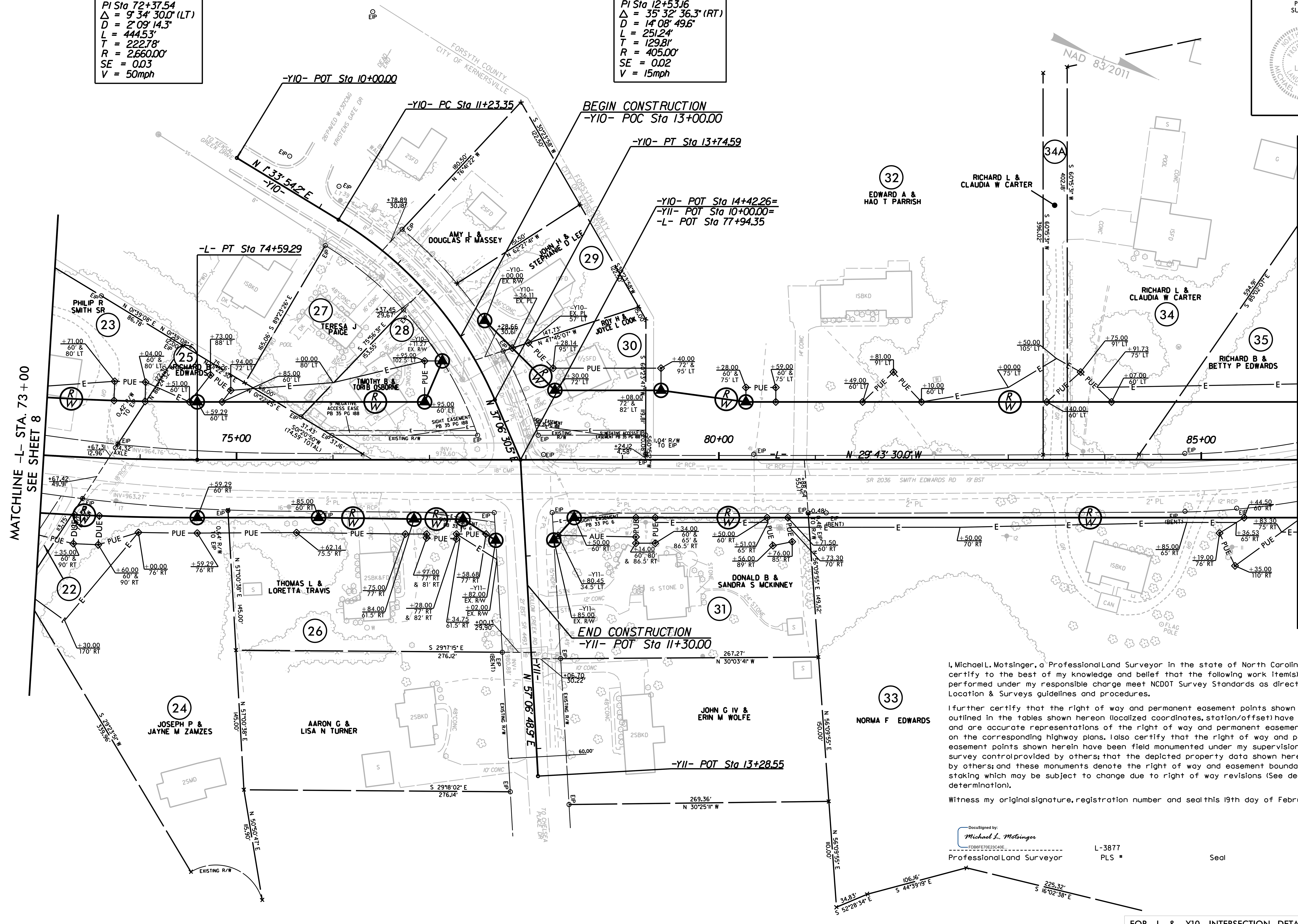
Location and Surveys

PROJECT SURVEYOR

SEAL L-3877 NORTH CAROLINA PROFESSIONAL LAND SURVEYOR MICHAEL L. MOTSINGER

-L-
PI Sta 72+37.54
Δ = 9° 34′ 30.0″ (LT)
D = 2° 09′ 14.3″
L = 444.53′
T = 222.78′
R = 2,660.00′
SE = 0.03
V = 50mph

-Y10-
PI Sta 12+53.16
Δ = 35° 32′ 36.3″ (RT)
D = 14° 08′ 49.6″
L = 251.24′
T = 129.81′
R = 405.00′
SE = 0.02
V = 15mph



I, Michael L. Motsinger, a Professional Land Surveyor in the state of North Carolina hereby certify to the best of my knowledge and belief that the following work item(s) (R/W Staking) performed under my responsible charge meet NCDOT Survey Standards as directed in the NCDOT Location & Surveys guidelines and procedures.

I further certify that the right of way and permanent easement points shown herein and outlined in the tables shown hereon (localized coordinates, station/offset) have been checked and are accurate representations of the right of way and permanent easement points depicted on the corresponding highway plans. I also certify that the right of way and permanent easement points shown herein have been field monumented under my supervision from existing survey control provided by others; that the depicted property data shown herein were surveyed by others; and these monuments denote the right of way and easement boundaries at the time of staking which may be subject to change due to right of way revisions (See deeds for final determination).

Witness my original signature, registration number and seal this 19th day of February, 2018.

DocuSigned by: Michael L. Motsinger
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Professional Land Surveyor — PLS # L-3877 — Seal

FOR -L- & -Y10- INTERSECTION DETAIL, SEE SHEET 2B-9
FOR -L- PROFILE, SEE SHEET 16
FOR -Y10- PROFILE, SEE SHEET 19
FOR -Y11- PROFILE, SEE SHEET 19

REVISIONS

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PROJECT REFERENCE NO.	SHEET NO.
U-4734	RW-10

Location and Surveys

PROJECT SURVEYOR

SEAL L-3877 NORTH CAROLINA PROFESSIONAL LAND SURVEYOR MICHAEL L. MOTSINGER

I, Michael L. Motsinger, a Professional Land Surveyor in the state of North Carolina hereby certify to the best of my knowledge and belief that the following work item(s) (R/W Staking) performed under my responsible charge meet NCDOT Survey Standards as directed in the NCDOT Location & Surveys guidelines and procedures.

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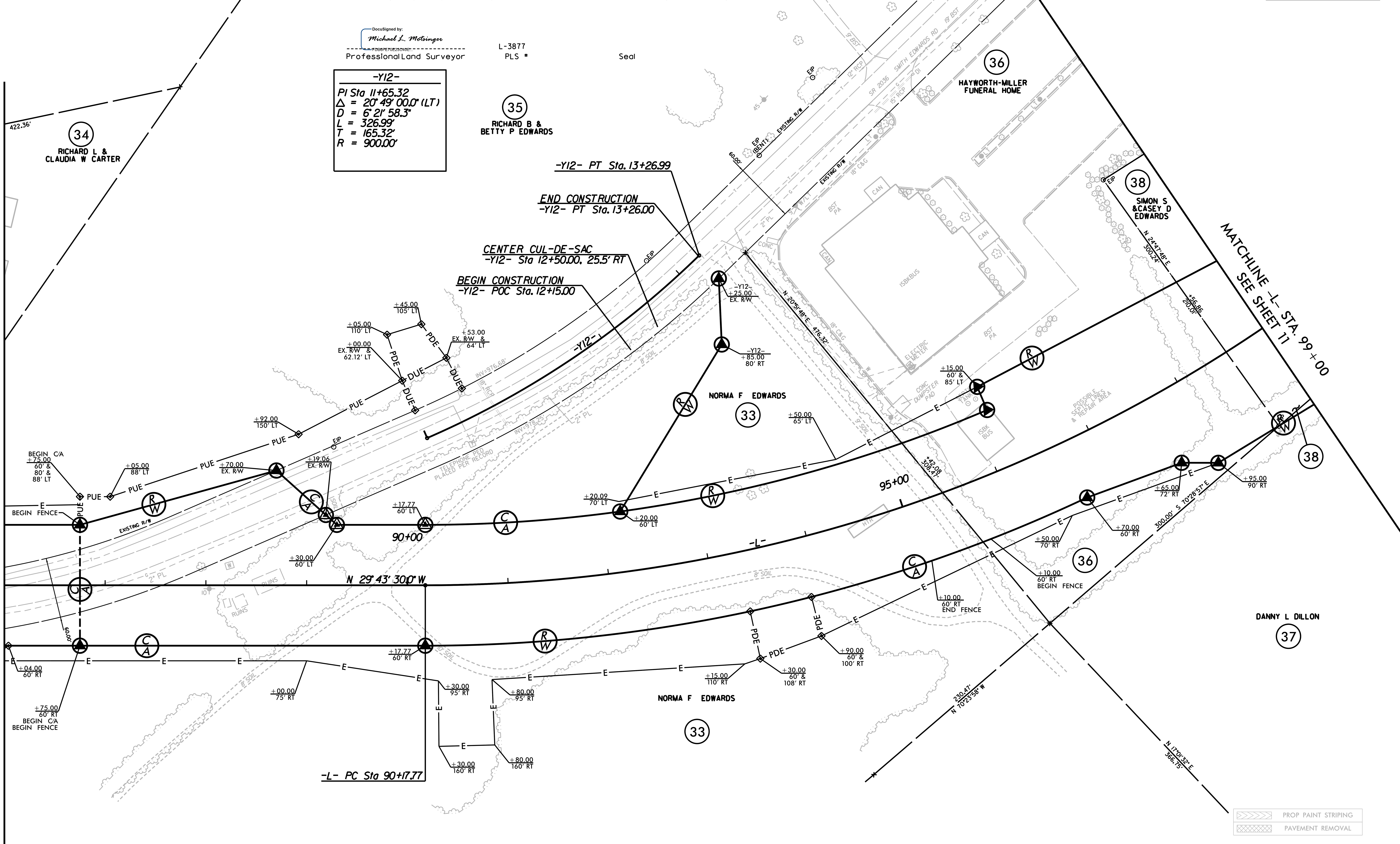
Witness my original signature, registration number and seal this 19th day of February, 2018.

DocuSigned by:
Michael L. Motsinger
FDB6FE70E23C40E...

Professional Land Surveyor — L-3877 PLS # — Seal

-L-
PI Sta 94+75.19
Δ = 34° 20' 58.0" (LT)
D = 3° 52' 16.8"
L = 887.28'
T = 457.42'
R = 1,480.00'
SE = 0.04
V = 50mph

-Y12-
PI Sta 11+65.32
Δ = 20° 49' 00.0" (LT)
D = 6° 21' 58.3"
L = 326.99'
T = 165.32'
R = 900.00'



PROP PAINT STRIPING
PAVEMENT REMOVAL

FOR U-TURN BULB DETAIL, SEE SHEET 2B-9
FOR -L- PROFILE, SEE SHEET 17
FOR -Y12- PROFILE, SEE SHEET 19

REVISIONS

6/2/99

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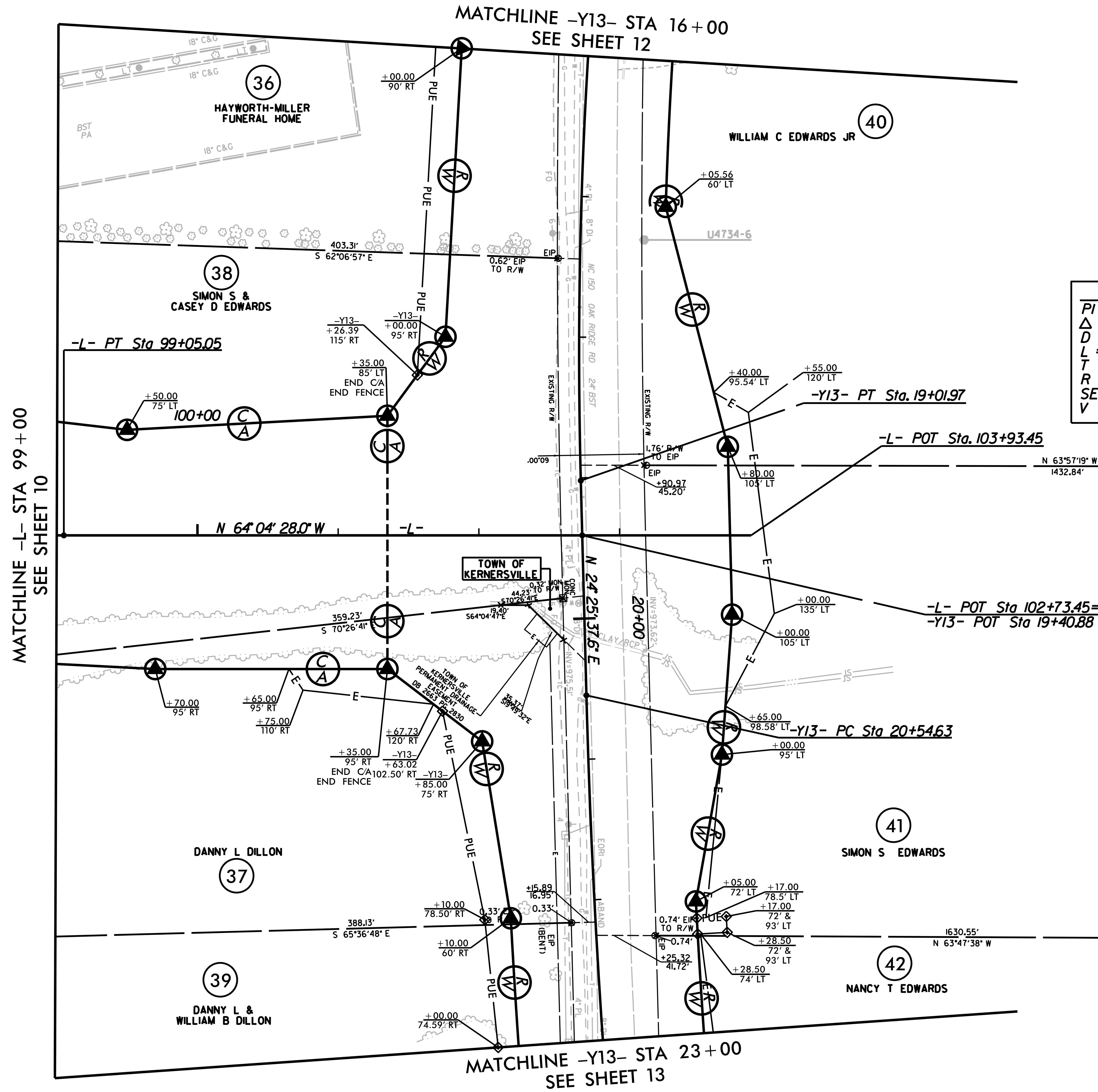
PROJECT REFERENCE NO.	SHEET NO.
U-4734	RW-11

Location and Surveys

PROJECT SURVEYOR

NORTH CAROLINA PROFESSIONAL SEAL L-3877 LAND SURVEYOR MICHAEL L. MOTSINGER

NAD 83/2011



-L-
PI Sta 94+75.19
Δ = 34° 20' 58.0" (LT)
D = 3° 52' 16.8"
L = 887.28'
T = 457.42'
R = 1,480.00'
SE = 0.04
V = 50mph

-Y13-	
PI Sta 15+93.87	PI Sta 21+89.22
Δ = 10° 10' 19.2" (LT)	Δ = 2° 42' 18.3" (LT)
D = 1° 38' 47.5"	D = 1° 00' 18.7"
L = 617.82'	L = 269.11'
T = 309.72'	T = 134.58'
R = 3,480.00'	R = 5,700.00'
SE = 0.03	SE = 0.02
V = 50mph	V = 50mph

I, Michael L. Motsinger, a Professional Land Surveyor in the state of North Carolina hereby certify to the best of my knowledge and belief that the following work item(s) (R/W Staking) performed under my responsible charge meet NCDOT Survey Standards as directed in the NCDOT Location & Surveys guidelines and procedures.

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Witness my original signature, registration number and seal this 19th day of February, 2018.

DocuSigned by: Michael L. Motsinger
FDB0FE70E23C40E...
Professional Land Surveyor — L-3877 PLS # — Seal

PROPOSED SIGNAL
PROP PAINT STRIPING

FOR -L- & -Y13- INTERSECTION DETAIL, SEE SHEET 2B-10
FOR -L- PROFILE, SEE SHEET 17
FOR -Y13- PROFILE, SEE SHEET 20

REVISIONS

6/2/99

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-Y13-	
PI Sta 11+42.40	PI Sta 15+93.87
Δ = 9° 34' 36.0" (LT)	Δ = 10° 10' 19.2" (LT)
D = 3° 22' 13.2"	D = 1° 38' 47.1"
L = 284.15'	L = 617.82'
T = 142.40'	T = 309.72'
R = 1,700.00'	R = 3,480.00'
	SE = 0.03
	V = 50mph

I, Michael L. Motsinger, a Professional Land Surveyor in the state of North Carolina hereby certify to the best of my knowledge and belief that the following work item(s) (R/W Staking) performed under my responsible charge meet NCDOT Survey Standards as directed in the NCDOT Location & Surveys guidelines and procedures.

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DocuSigned by: Michael L. Motsinger
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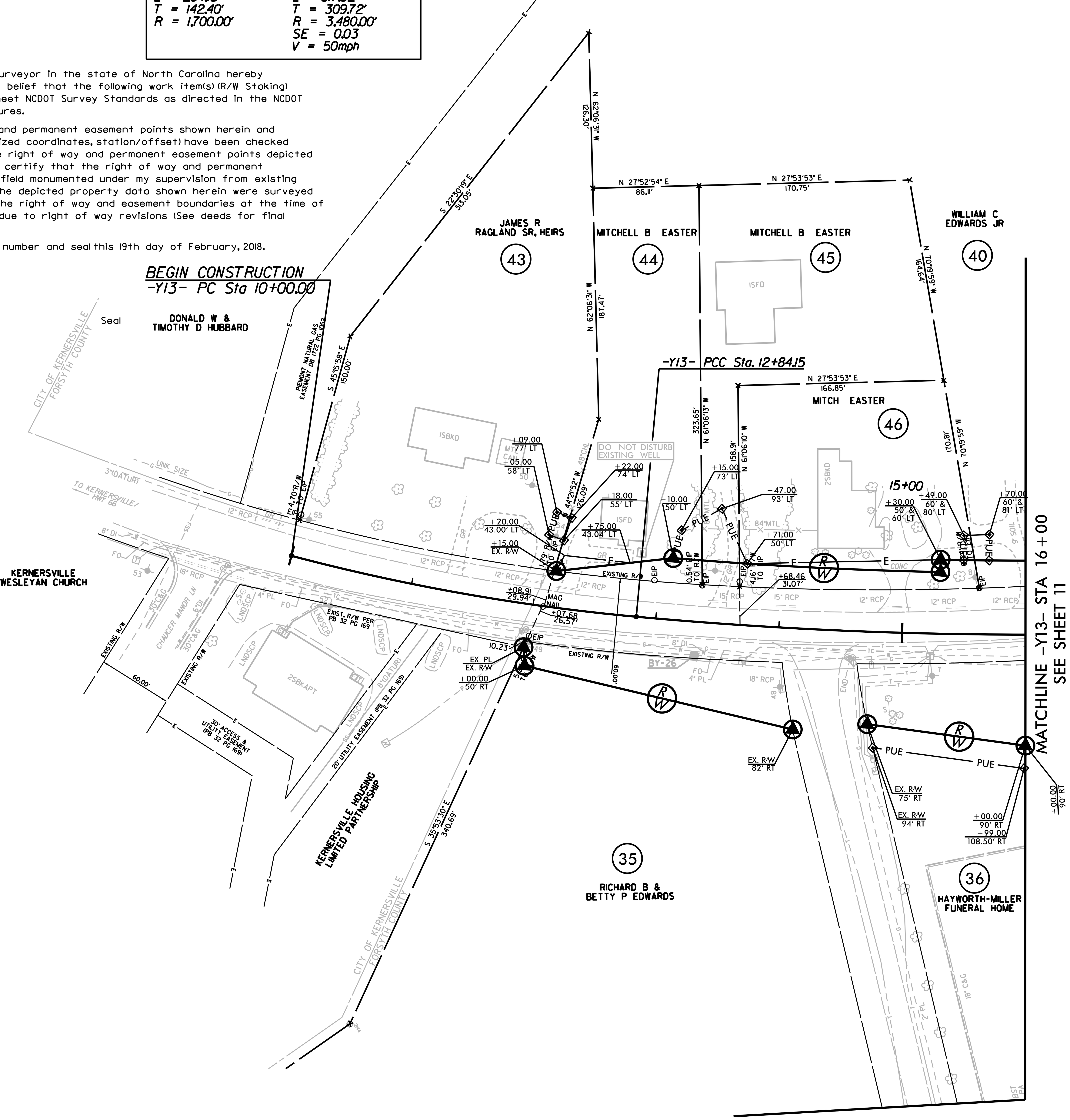
Professional Land Surveyor — PLS # L-3877 — Seal



PROJECT REFERENCE NO.	SHEET NO.
U-4734	RW-12

Location and Surveys

PROJECT SURVEYOR

SEAL L-3877 NORTH CAROLINA PROFESSIONAL LAND SURVEYOR MICHAEL L. MOTSINGER

PROP PAINT STRIPING

FOR -Y13- PROFILE, SEE SHEET 20

REVISIONS

6/2/99

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PROJECT REFERENCE NO.	SHEET NO.
U-4734	RW-13

Location and Surveys

PROJECT SURVEYOR

NORTH CAROLINA PROFESSIONAL SEAL L-3877 LAND SURVEYOR MICHAEL L MOTSINGER

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DocuSigned by: Michael L. Motsinger

Professional Land Surveyor PLS # L-3877 Seal

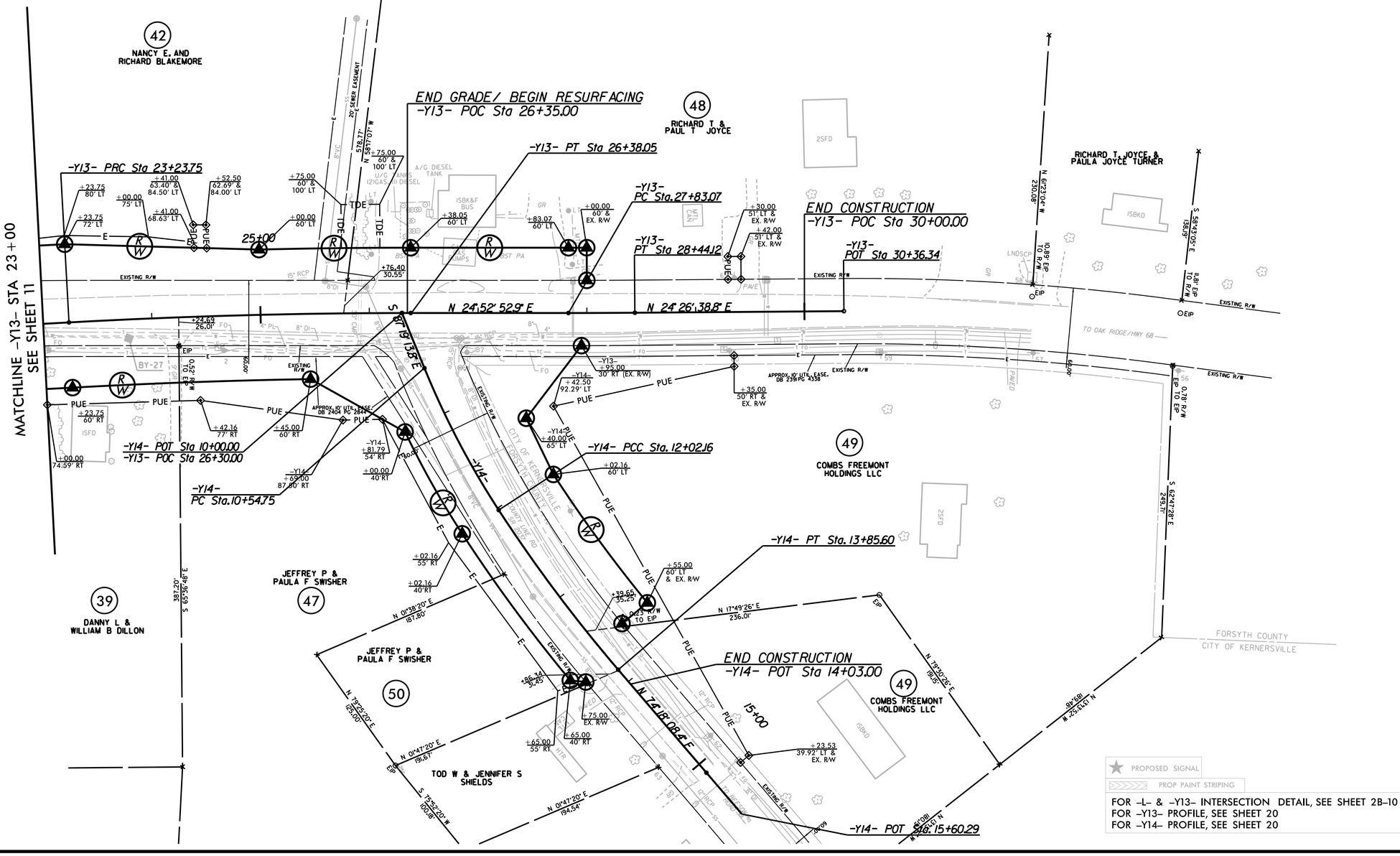
-Y13-

PI Sta 21+89.22	PI Sta 24+80.94	PI Sta 28+13.60
Δ = 2° 42' 18.3" (LT)	Δ = 3° 09' 33.6" (RT)	Δ = 0° 26' 14.1" (LT)
D = 1° 00' 18.7"	D = 1° 00' 18.7"	D = 0° 42' 58.3"
L = 269.11'	L = 314.30'	L = 61.05'
T = 134.58'	T = 157.19'	T = 30.53'
R = 5,700.00'	R = 5,700.00'	R = 8,000.00'
SE = 0.02	SE = 0.02	
V = 50mph	V = 50mph	

-Y14-

PI Sta 11+28.59	PI Sta 12+94.01
Δ = 10° 52' 56.6" (LT)	Δ = 7° 30' 27.5" (LT)
D = 7° 22' 26.3"	D = 4° 05' 33.2"
L = 147.58'	L = 183.45'
T = 74.01'	T = 91.85'
R = 777.00'	R = 1,400.00'
SE = 0.02	SE = 0.02
V = 50mph	V = 50mph

NAD 83/2011



FOR –L– & –Y13– INTERSECTION DETAIL, SEE SHEET 2B-10
FOR –Y13– PROFILE, SEE SHEET 20
FOR –Y14– PROFILE, SEE SHEET 20

REVISIONS

6/2/99

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