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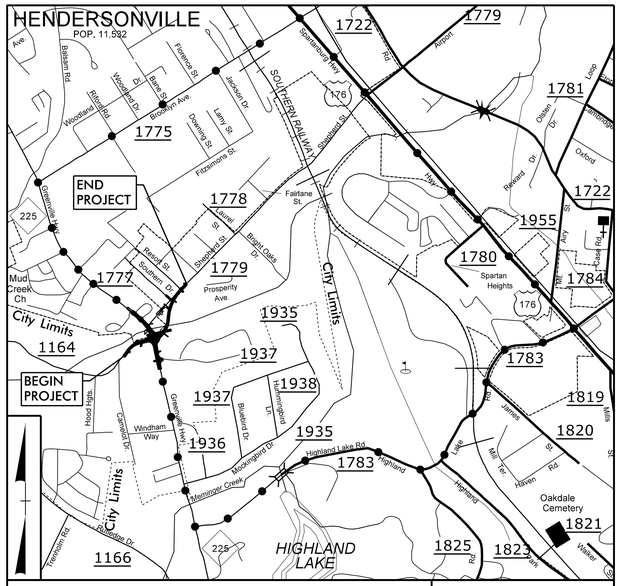
09/08/99

TIP PROJECT: U-5105

CONTRACT: DN00565

See Sheet 1-A For Index of Sheets



VICINITY MAP

OFFSITE DETOUR

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

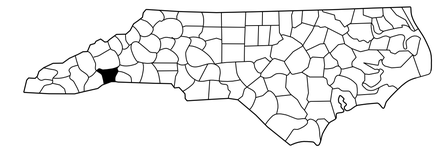
HENDERSON COUNTY

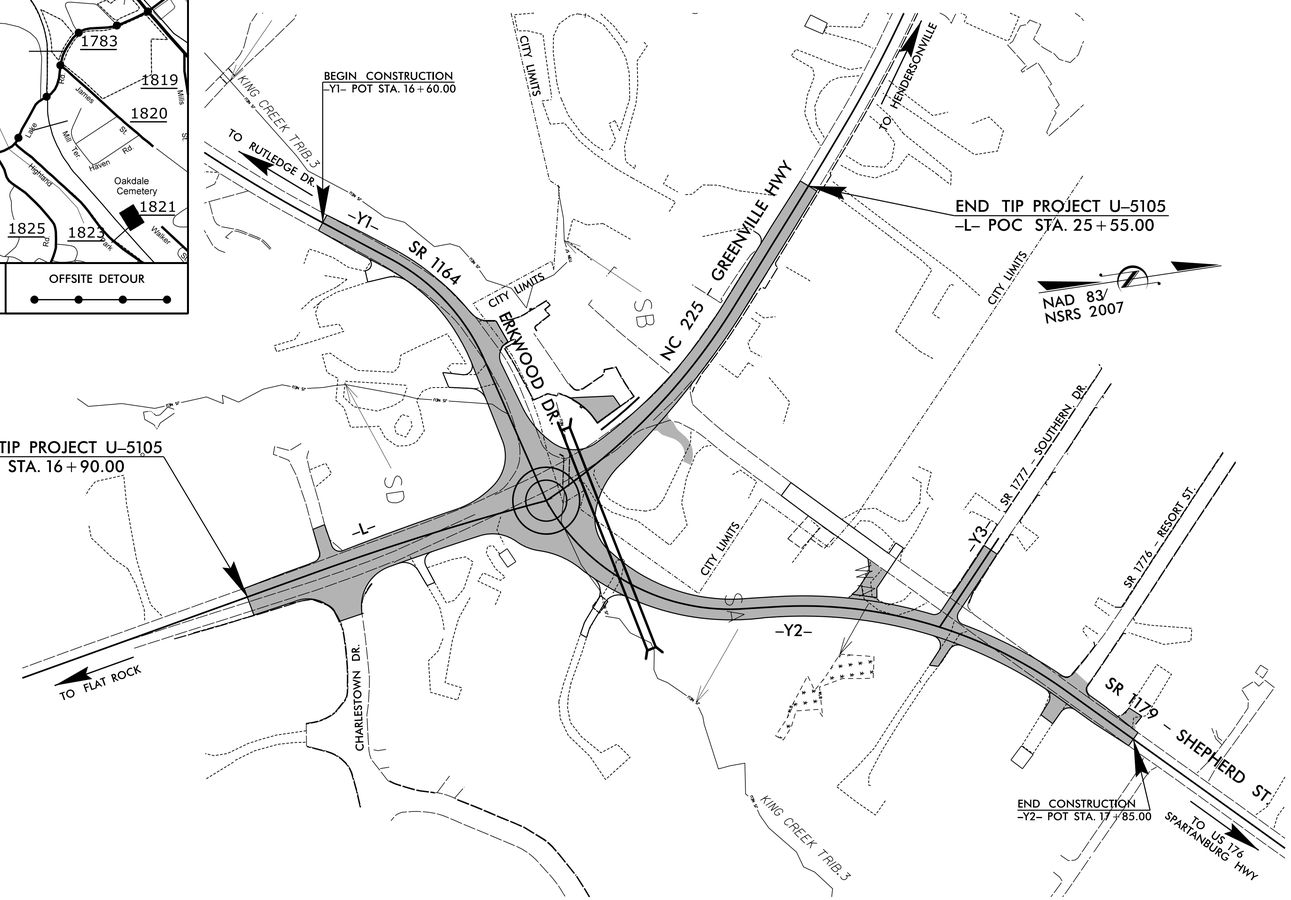
LOCATION: HENDERSONVILLE – NC 225/SR 1164 (ERKWOOD DRIVE) /SR 1779 (SHEPHERD STREET) – INTERSECTION IMPROVEMENTS

TYPE OF WORK: GRADING, PAVING, DRAINAGE, CULVERT, & LIGHTING

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U-5105	1	

STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION
41903.1.1		P.E.
41903.2.2		R/W, UTL.
41903.3.3		CONST





THERE IS NO CONTROL OF ACCESS ON THIS PROJECT.

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

GRAPHIC SCALES

50 25 0 50 100
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

DESIGN DATA

ADT 2018 = 9,800
ADT 2035 = 11,600
K = 55 %
D = 9 %
T = 5 % *
V = 40 MPH
* TTST =1% + DUAL 4%
FUNC CLASS = URBAN COLLECTOR
REGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT U-5105 = 0.164 MILES
LENGTH TIP PROJECT U-5105 = 0.164 MILES

Prepared for:
HIGHWAY DIVISION 14
253 Webster Rd.
Sylva, NC 28779

2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
NOVEMBER 21, 2016

LETTING DATE:
MARCH 20, 2018

Prepared by:
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Formerly Walkup Engineers & Consultants
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JOHNNY BANKS
PROJECT MANAGER

STEPHEN C. BROWDE, PE
ROADWAY PROJECT DESIGN ENGINEER

STEVE WILLIAMS
NCDOT CONTACT
DIVISION 14 DESIGN CONSTRUCTION ENGINEER

HYDRAULICS ENGINEER

DocuSigned by:
David P. Booker
SIGNATURE: 2/22/2018 P.E.

NORTH CAROLINA PROFESSIONAL SEAL 029984 ENGINEER DAVID P. BOOKER

ROADWAY DESIGN ENGINEER

DocuSigned by:
Stephen C. Browde
SIGNATURE: 2/22/2018 P.E.

NORTH CAROLINA PROFESSIONAL SEAL 15759 ENGINEER STEPHEN C. BROWDE

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

2/19/2018
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8/17/99

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PROJECT REFERENCE NO.	SHEET NO.
U-5105	1-A

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NC License # F-1333

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 045759 ENGINEER STEPHEN C. BROWN
DocuSigned by: Stephen C. Brown
C27971E...
2/22/2018

INDEX OF SHEETS

SHEET #	DESCRIPTION
1	TITLE SHEET
1-A	INDEX OF SHEETS, GENERAL NOTES, & LIST OF STANDARD DRAWINGS
1-B	CONVENTIONAL PLAN SHEET SYMBOLS
1C-1 THRU 1C-2	SURVEY CONTROL SHEET
2A-1 THRU 2A-4	PAVEMENT SCHEDULE & TYPICAL SECTIONS
2B-1 TRHU 2B-2	INTERSECTION DETAILS
3B-1	ROADWAY SUMMARIES
3D-1	DRAINAGE SUMMARIES
3G-1	GEOTECHNICAL SUMMARY TABLES
4	PLAN SHEETS
5 THRU 6	PROFILE SHEETS
TMP-1 THRU TMP-5	TRANSPORTATION MANAGEMENT PLANS
PMP-1 THRU PMP-2	PAVEMENT MARKING PLANS
LIGHT-1 THRU LIGHT-2	LIGHTING PLANS
EC-1 THRU EC-04	EROSION CONTROL PLANS
SIGN-1 THRU SIGN-4	SIGNING PLANS
UC-1 THRU UC-7	UTILITY CONSTRUCTION PLANS
UO-1 THRU UO-2	UTILITIES BY OTHERS PLANS
X-0A	CROSS SECTION SUMMARY
X-0	CROSS-SECTION SHEET INDEX
X-1 THRU X-13	CROSS-SECTIONS
C1 THRU C7	CULVERT PLANS
W-1 THRU W-2	WALL PLANS

GENERAL NOTES

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 AS SHOWN, THE PROFILES SHOWN DENOTE THE TOP ELEVATION OF THE EXISTING PAVEMENT ALONG THE CENTER LINE OF SURVEY ON WHICH THE PROPOSED RESURFACING WILL BE PLACED. GRADE LINES MAY BE ADJUSTED BY THE ENGINEER IN ORDER TO SECURE A PROPER TIE-IN.

CLEARING:

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

SHOULDER CONSTRUCTION:

ASPHALT, EARTH, AND CONCRETE SHOULDER CONSTRUCTION ON THE HIGH SIDE OF SUPERELEVATED CURVES SHALL BE IN ACCORDANCE WITH STD. NO. 560.02

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.

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:

NO SUBSURFACE PLANS ARE AVAILABLE ON THIS PROJECT. THE CONTRACTOR SHOULD MAKE HIS OWN INVESTIGATION AS TO THE SUBSURFACE CONDITIONS.

UTILITIES:

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

RIGHT-OF-WAY MARKERS:

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

CURB RAMPS

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

STANDARD SPECIFICATIONS

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 II
225.02	Guide for Grading Subgrade - Secondary and Local
225.04	Method of Obtaining Superelevation - Two Lane Pavement
DIVISION 3 - PIPE CULVERTS	
300.01	Method of Pipe Installation
310.10	Driveway Pipe Construction
DIVISION 5 - SUBGRADE, BASES AND SHOULDERS	
560.02	Method of Shoulder Construction - High Side of Superelevated Curve - Method II (Sheet 2 of 3 is no longer applicable)
DIVISION 6 - ASPHALT BASES AND PAVEMENTS	
654.01	Pavement Repairs
DIVISION 8 - INCIDENTALS	
815.02	Subsurface Drain
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
840.16	Drop Inlet Frame and Grates - for use with Std. Dwg 840.14 and 840.15
840.24	Frames and Narrow Slot Sag Grates
840.31	Concrete Junction Box - 12" thru 66" Pipe
840.34	Traffic Bearing Junction Box - for Use with Pipes 42" and Under
840.54	Manhole Frame and Cover
852.06	Method for Placement of Drop Inlets in Concrete Islands
862.01	Guardrail Placement
862.02	Guardrail Installation
876.01	Rip Rap in Channels
876.02	Guide for Rip Rap at Pipe Outlets
876.03	Drainage Ditches with Class 'A' Rip Rap
876.04	Drainage Ditches with Class 'B' Rip Rap

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12/2/2016

PROJECT REFERENCE NO.	SHEET NO.
U-5105	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
- Computed 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 — S
- Potential Contamination Area: Soil — S
- Known Contamination Area: Water — W
- Potential Contamination Area: Water — W
- 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 & PROJECT CONTROL:

- Secondary Horiz and Vert Control Point
- Primary Horiz Control Point
- Primary Horiz and Vert Control Point
- Exist Permanent Easment Pin and Cap
- New Permanent Easement Pin and Cap
- Vertical Benchmark
- Existing Right of Way Marker
- Existing Right of Way Line
- New Right of Way Line — RW
- New Right of Way Line with Pin and Cap — RW
- New Right of Way Line with Concrete or Granite R/W Marker — RW
- New Control of Access Line with Concrete C/A Marker — CA
- Existing Control of Access — CA
- New Control of Access — CA
- Existing Easement Line — E
- New Temporary Construction Easement — E
- New Temporary Drainage Easement — TDE
- New Permanent Drainage Easement — PDE
- New Permanent Drainage / Utility Easement — DUE
- New Permanent Utility Easement — PUE
- New Temporary Utility Easement — TUE
- New Aerial Utility Easement — AUE

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
- 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.

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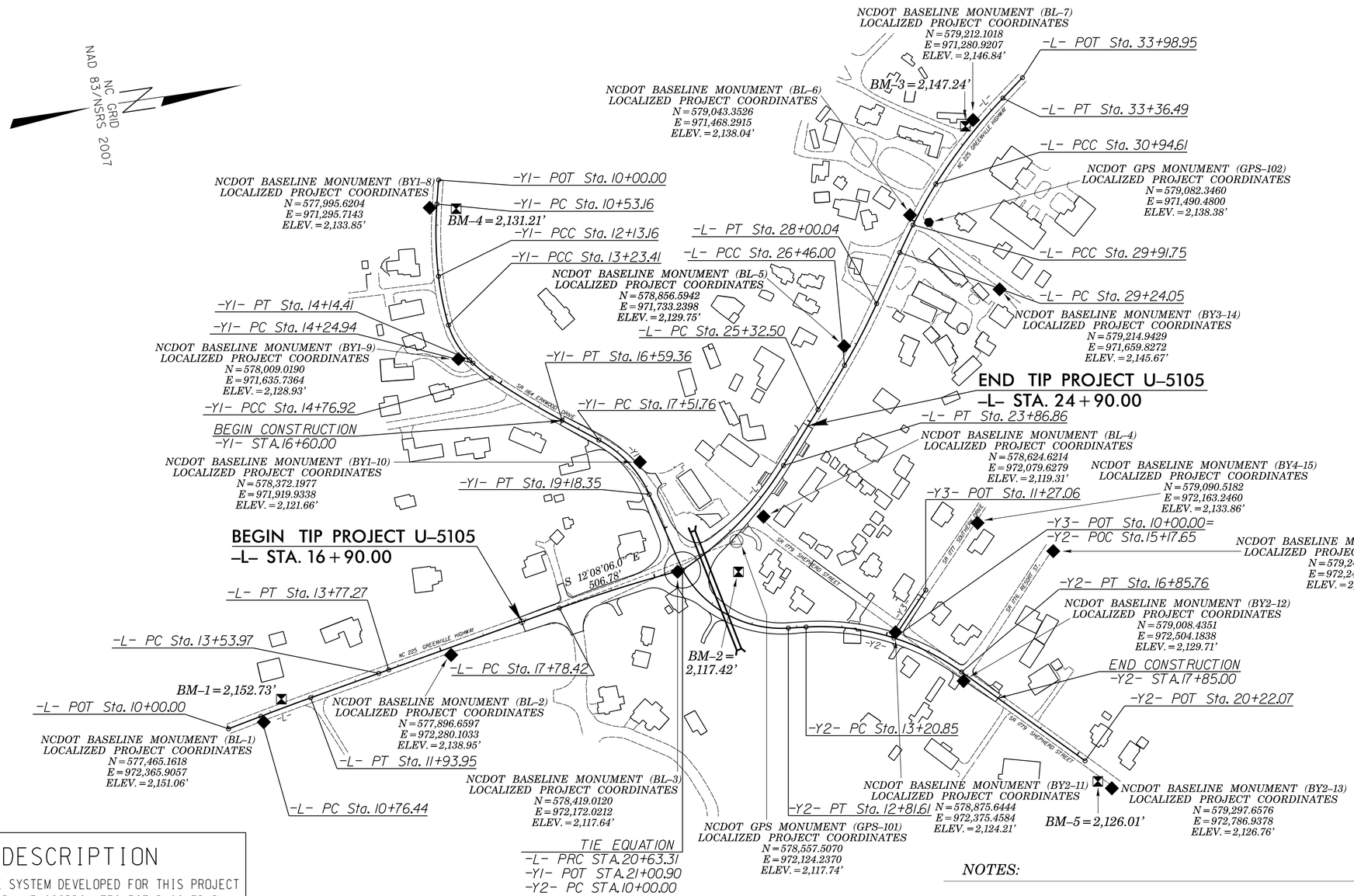
PROJECT REFERENCE NO.	SHEET NO.
U-5105	1C-1
Location and Surveys	

SURVEY CONTROL SHEET U-5105
-FINAL-



DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCGS FOR MONUMENT "GPS-101"
WITH NAD 83/NSRS 2007 STATE PLANE GRID COORDINATES OF
NORTHING: 578,557.507(ft) EASTING: 972,124.237(ft)
ELEVATION: 2,117.74(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99977589
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "GPS-101" TO -L- STATION 16+90.00 IS
S 12°08'06.0" E 506.78'
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

NOTE: DRAWING NOT TO SCALE

NOTES:

1. THE CONTROL DATA FOR THIS PROJECT CAN BE FOUND ELECTRONICALLY BY SELECTING PROJECT CONTROL DATA AT:
HTTPS://CONNECT.NCDOT.GOV/RESOURCES/LOCATION/

THE FILES TO BE FOUND ARE AS FOLLOWS:
U-5105_LS_CONTROL.TXT

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

△ INDICATES GEODETIC CONTROL MONUMENTS USED OR SET FOR HORIZONTAL PROJECT CONTROL BY THE NCDOT LOCATION AND SURVEYS UNIT.
PROJECT CONTROL ESTABLISHED USING GLOBAL POSITIONING SYSTEM.

6/2/99

2/14/2018
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PROJECT REFERENCE NO.	SHEET NO.
U-5105	1C-2
Location and Surveys	

SURVEY CONTROL SHEET U-5105
-FINAL-

BL

POINT	DESC.	NORTH	EAST	ELEVATION
1	BL-1	577465.1618	972365.9057	2151.06
2	BL-2	577896.6597	972280.1033	2138.95
3	BL-3	578419.0120	972172.0212	2117.64
4	BL-4	578624.6214	972079.6279	2119.31
5	BL-5	578856.5942	971733.2398	2129.75
6	BL-6	579043.3526	971468.2915	2138.04
7	BL-7	579212.1018	971280.9207	2146.84

BY1

POINT	DESC.	NORTH	EAST	ELEVATION
8	BY1-8	577995.6204	971295.7143	2133.85
9	BY1-9	578009.0190	971635.7364	2128.93
10	BY1-10	578372.1977	971919.9338	2121.66
33	BL-3	578419.0120	972172.0212	2117.64

BY2

POINT	DESC.	NORTH	EAST	ELEVATION
44	BL-4	578624.6214	972079.6279	2119.31
11	BY2-11	578875.6444	972375.4584	2124.21
12	BY2-12	579008.4351	972504.1838	2129.71
13	BY2-13	579297.6576	972786.9378	2126.76

BY3

POINT	DESC.	NORTH	EAST	ELEVATION
66	BL-6	579043.3526	971468.2915	2138.04
14	BY3-14	579214.9429	971659.8272	2145.67

BY4

POINT	DESC.	NORTH	EAST	ELEVATION
15	BY4-15	579090.5182	972163.2460	2133.86
111	BY2-11	578875.6444	972375.4584	2124.21

BY5

POINT	DESC.	NORTH	EAST	ELEVATION
16	BY5-16	579246.8762	972249.5308	2127.63
112	BY2-12	579008.4351	972504.1838	2129.71

L

TYPE	STATION	NORTH	EAST
POT	10+00.00	577386.0828	972369.0873
PC	10+76.44	577460.6704	972352.3793
PT	11+93.95	577575.6323	972328.0423
PC	13+53.97	577732.5660	972296.7421
PT	13+77.27	577755.4092	972292.1769
PC	17+78.42	578148.7530	972213.4075
PRC	20+63.31	578430.2081	972169.8893
PT	23+86.86	578684.9996	971974.5664
PC	25+32.50	578778.9413	971863.2740
PCC	26+46.00	578851.1576	971775.7226
PT	28+00.04	578941.4974	971651.0382
PC	29+24.05	579009.0080	971547.0143
PCC	29+91.75	579046.7313	971490.8015
PCC	30+94.61	579109.5983	971409.4410
PT	33+36.49	579284.5867	971242.9624
POT	33+98.95	579333.8531	971204.6702

Y1

TYPE	STATION	NORTH	EAST
POT	10+00.00	578024.1641	971238.0153
PC	10+53.16	578012.5721	971289.8955
PCC	12+13.16	577992.5414	971448.3987
PCC	13+23.41	577998.3983	971558.3569
PT	14+14.41	578033.2732	971641.3016
PC	14+24.94	578039.7130	971649.6332
PCC	14+76.92	578074.9018	971687.8122
PT	16+59.36	578215.6858	971803.7248
PC	17+51.76	578289.9040	971858.7683
PT	19+18.35	578382.1674	971993.7782
POT	21+00.90	578430.2081	972169.8893

Y2

TYPE	STATION	NORTH	EAST
PC	10+00.00	578430.2081	972169.8893
PT	12+81.61	578642.6855	972331.5067
PC	13+20.85	578681.7778	972334.9181
PT	16+85.76	579007.1192	972483.8736
POT	20+22.07	579248.1666	972718.3915

BM1 ELEVATION = 2152.73
N 577511 E 972321
8" SPIKE SET IN ROOT OF 24" PINE TREE

BM2 ELEVATION = 2117.42
N 578552 E 972192
8" SPIKE SET IN ROOT OF 20" POPLAR TREE

BM3 ELEVATION = 2147.24
N 579193 E 971292
8" SPIKE SET IN ROOT OF 15" DOUBLEMAPLE TREE

BM4 ELEVATION = 2131.21
N 578053 E 971306
8" SPIKE SET IN ROOT OF 20" SYCAMORETREE

BM5 ELEVATION = 2126.01
N 579269 E 972768
8" SPIKE SET IN BASE OF 24" RED OAK TREE

ROW MARKER IRON PIN AND CAP-E

ALIGN	STATION	OFFSET	NORTH	EAST
L	16+77.67	-12.00	578047.6078	972221.4241
L	16+80.19	-24.51	578047.6176	972208.6615
L	16+87.32	-60.00	578047.6454	972172.4636
L	17+78.42	-60.00	578136.9715	972154.5755
L	18+50.00	-70.00	578206.8727	972131.2078
L	19+50.00	-70.00	578307.7394	972114.9420
L	21+70.00	-30.00	578506.8117	972092.8170
L	23+86.86	-30.00	578662.0748	971955.2156
L	25+32.50	-30.00	578756.0165	971843.9232
L	25+83.92	-12.00	578802.6536	971816.1693
L	25+91.62	25.00	578836.1000	971833.7718
L	25+00.00	30.00	578780.9016	971907.4613
L	23+86.86	30.00	578707.9244	971993.9171
L	22+68.89	40.00	578628.2901	972088.6387
L	22+46.56	63.76	578625.2542	972122.1892
L	21+66.00	70.00	578558.0004	972178.8200
L	19+70.00	70.00	578347.2495	972250.7314
L	17+78.42	75.00	578163.4798	972286.9474
L	17+45.00	45.00	578124.8184	972264.0939
L	16+80.00	45.00	578061.0838	972276.8572
L	16+80.00	12.00	578054.6040	972244.4996

ROW MARKER IRON PIN AND CAP-E

ALIGN	STATION	OFFSET	NORTH	EAST
Y1	19+90.00	60.00	578343.1375	972078.6886
Y1	19+18.35	60.00	578324.2824	972009.5684
Y1	17+50.00	60.00	578252.7447	971905.9096
Y1	17+25.00	30.00	578250.5353	971866.9209
Y1	16+59.36	30.00	578197.8149	971827.8211
Y1	16+50.00	30.00	578190.1840	971822.1309
Y1	16+50.00	12.00	578200.9816	971807.7291
Y1	16+50.00	-12.00	578215.3784	971788.5267
Y1	16+59.36	-38.00	578238.3222	971773.2028
Y1	17+51.76	-38.00	578312.5405	971828.2463
Y1	18+00.00	-42.00	578356.6672	971862.7383
Y1	18+50.00	-46.00	578394.9038	971907.4566
Y1	19+14.00	-39.00	578418.4257	971978.6702
Y1	19+14.00	-27.00	578406.9855	971982.0294
Y1	19+86.00	-34.00	578432.7713	972050.0916

ROW MARKER IRON PIN AND CAP-E

ALIGN	STATION	OFFSET	NORTH	EAST
Y2	11+29.00	-70.00	578548.8051	972220.4145
Y2	12+10.00	-55.00	578593.2689	972264.0092
Y2	12+47.32	-60.25	578622.2336	972267.4507
Y2	13+20.70	-142.86	578694.0398	972192.5853
Y2	15+54.16	-50.00	578927.5336	972361.3499
Y2	16+13.77	-50.00	578982.0140	972397.0972
Y2	16+71.35	-30.00	579016.9875	972451.9259
Y2	17+15.55	-35.00	579052.8818	972479.5649
Y2	17+95.00	-35.00	579109.8247	972534.9653
Y2	17+95.00	-15.00	579095.8781	972549.3002
Y2	17+95.00	10.00	579078.4447	972567.2189
Y2	17+95.00	35.00	579061.0114	972585.1376
Y2	16+85.76	50.00	578972.2526	972519.7110
Y2	16+00.00	50.00	578912.4415	972470.2238
Y2	15+07.29	60.00	578835.5496	972437.3146
Y2	13+20.85	60.00	578676.5616	972394.6909
Y2	12+81.61	60.00	578637.4693	972391.2795
Y2	12+28.00	60.00	578572.3647	972378.4699
Y2	12+00.00	95.00	578525.7933	972398.3769
Y2	10+69.28	99.52	578382.9150	972289.6219

PUE
ROW MARKER PERMANENT EASEMENT-E

ALIGN	STATION	OFFSET	NORTH	EAST
L	19+58.00	-76.27	578314.9426	972107.5648
L	19+53.50	-80.08	578309.8387	972104.4480
L	19+60.00	-88.00	578315.3191	972095.6699
L	19+66.05	-82.63	578322.2152	972100.1164
L	22+58.40	-49.50	578562.3263	972027.2646
L	22+57.00	-61.00	578553.9456	972019.2836
L	22+68.50	-61.50	578561.6702	972012.0648
L	22+69.20	-49.00	578570.3315	972021.1010
L	24+67.00	-46.94	578700.8184	971883.0479
L	25+10.00	-30.00	578741.5022	971861.1181
L	18+67.72	157.48	578263.1710	972352.2985
L	18+63.00	165.54	578260.1252	972361.0099
L	18+53.50	160.42	578250.3592	972357.5139
L	18+69.00	133.75	578260.3709	972328.7080
L	18+60.00	129.27	578251.1020	972325.7598
L	18+85.87	84.26	578268.2254	972277.1986
L	17+65.60	63.49	578148.6523	972278.1826
L	16+21.00	50.00	578004.2142	972293.3449
L	14+99.00	33.00	577881.2512	972300.6315

PUE
ROW MARKER PERMANENT EASEMENT-E

ALIGN	STATION	OFFSET	NORTH	EAST
Y1	19+98.00	73.62	578332.1013	972089.9915
Y1	19+75.00	60.00	578339.1899	972064.2174
Y1	14+18.44	-12.00	578045.2334	971637.1531
Y1	14+11.00	-39.00	578062.5321	971615.3414
Y1	16+48.50	-50.43	578237.2679	971756.9024
Y1	16+57.90	-57.16	578248.5971	971756.9710
Y1	16+63.50	-49.84	578248.6958	971766.1607
Y1	18+51.70	-65.69	578412.8883	971899.1802
Y1	18+46.70	-73.53	578416.3039	971889.6610
Y1	18+53.00	-80.27	578426.3218	971893.2554
Y1	18+66.40	-60.00	578416.7849	971918.0374
Y1	18+85.25	-71.50	578437.2607	971934.7507
Y1	18+89.00	-62.70	578430.9395	971942.5033
Y1	18+80.50	-57.17	578421.7345	971934.9592
Y1	18+97.50	-38.90	578412.3907	971960.5831
Y1	20+05.09	-52.93	578456.0604	972063.5387

PDE
ROW MARKER PERMANENT EASEMENT-E

ALIGN	STATION	OFFSET	NORTH	EAST
Y1	19+93.00	-40.94	578441.3090	972055.0184
Y1	19+93.00	-64.00	578463.5559	972048.9497
Y1	20+03.50	-78.38	578480.1895	972055.2960

TDE
ROW MARKER PERMANENT EASEMENT-E

ALIGN	STATION	OFFSET	NORTH	EAST
Y2	11+40.00	85.35	578460.5387	972348.7069
Y2	11+40.00	100.00	578451.6309	972360.3399
Y2	12+05.00	120.00	578522.5535	972424.1754

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCGS FOR MONUMENT "GPS-101"
WITH NAD 83/NSRS 2007 STATE PLANE GRID COORDINATES OF
NORTHING: 578,557.507(ft) EASTING: 972,124.237(ft)
ELEVATION: 2,117.74(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99977589
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "GPS-101" TO -L- STATION 16+90.00 IS
S 12°08'06.0" E 506.78'
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

NOTE: DRAWING NOT TO SCALE

NOTES:

1. *THE CONTROL DATA FOR THIS PROJECT CAN BE FOUND ELECTRONICALLY BY SELECTING PROJECT CONTROL DATA AT:*
HTTPS://CONNECT.NCDOT.GOV/RESOURCES/LOCATION/

THE FILES TO BE FOUND ARE AS FOLLOWS:
U-5105_LS_CONTROL.TXT

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

△ *INDICATES GEODETIC CONTROL MONUMENTS USED OR SET FOR HORIZONTAL PROJECT CONTROL BY THE NCDOT LOCATION AND SURVEYS UNIT.*
PROJECT CONTROL ESTABLISHED USING GLOBAL POSITIONING SYSTEM.

2/14/2018
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eallison

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6/2/99

PROJECT REFERENCE NO.	SHEET NO.
U-5105	2A-1

CALYX ENGINEERS + CONSULTANTS

PAVEMENT DESIGN ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 39779 ENGINEER JEREMY R. HAMM — Signature: Jeremy R. Hamm — 2/22/2018

ROADWAY DESIGN ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 15759 ENGINEER STEPHEN C. BRONDE — Signature: Stephen C. Bronde — 2/22/2018

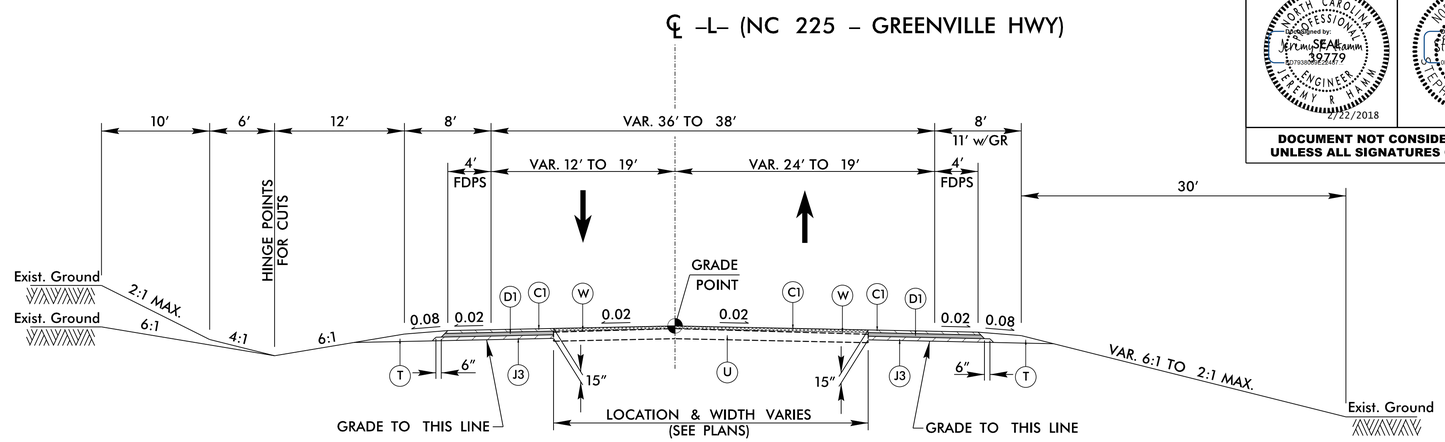
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PAVEMENT SCHEDULE

(FINAL PAVEMENT DESIGN 11/27/2017)

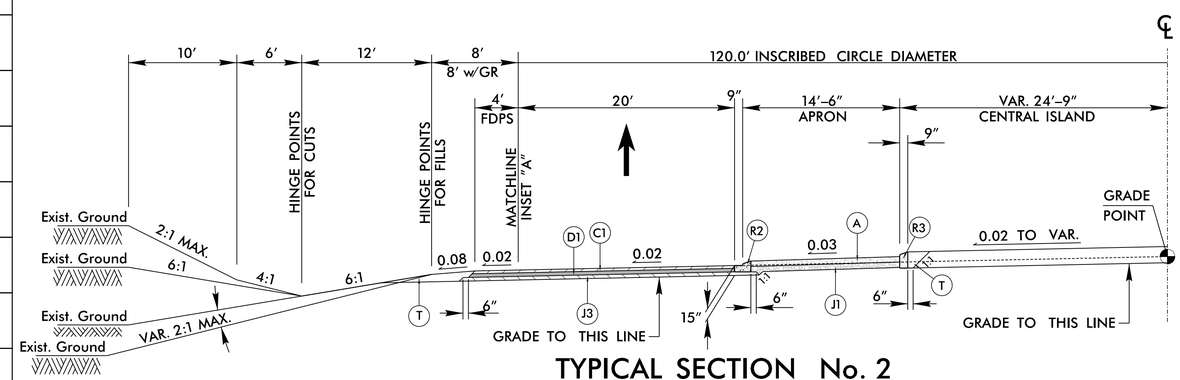
A	7" PORTLAND CEMENT CONCRETE PAVEMENT. (TINTED AS DIRECTED BY ENGINEER)
C1	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
C2	VAR. DEPTH OF ASPHALT CONCRETE SURFACE COURSE TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
D1	PROP. APPROX. 4" ASPHALT CONCRETE INTERMEDIATE COURSE TYPE I19.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
D2	VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE TYPE I19.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
E1	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 GREATHER THAN 5½" IN DEPTH.
J1	4" AGGREGATE BASE COURSE.
J2	6" AGGREGATE BASE COURSE.
J3	8" AGGREGATE BASE COURSE.
R1	2'-6" CONCRETE CURB AND GUTTER.
R2	1'-6" CONCRETE CURB AND GUTTER (MOUNTABLE).
R3	9" X 18" CONCRETE CURB.
R4	8" X 12" CONCRETE CURB.
R5	EXPRESSWAY GUTTER
S	4" CONCRETE SIDEWALK
T	EARTH MATERIAL.
U	EXISTING PAVEMENT.
V	INCIDENTAL MILLING (0"-3" IN DEPTH)
W	WEDGING

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



TYPICAL SECTION No. 1

USE TYPICAL SECTION NO. 1 AS FOLLOWS:
–L– STA. 16+90.00 TO 20+00.00

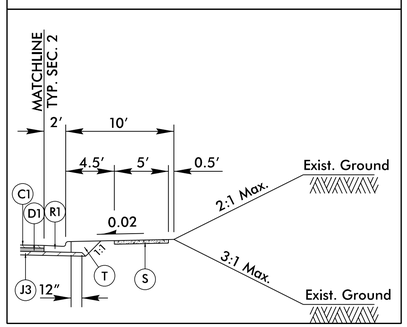


TYPICAL SECTION No. 2

NOTE:
THE ROUNDABOUT IS DESIGNED ON A CONSTANT-SLOPE PLANE

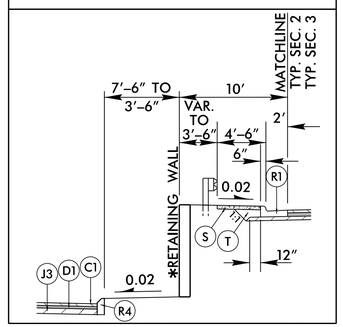
USE TYPICAL SECTION NO. 2 AS FOLLOWS:
–L– STA. 20+03.31 TO 21+23.33
NOTE:
SEE INSET 'A'

INSET "A"



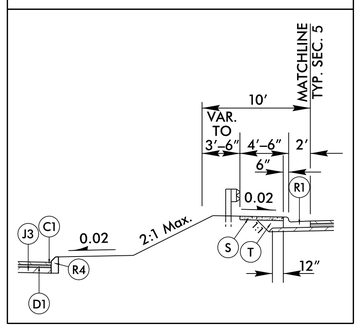
USE INSET "A" W/TYPICAL NO. 1 & 2 AS FOLLOWS:
TYPICAL 1 –L– STA. 16+90.00 TO 18+72.86
TYPICAL 2 –L– STA. 20+63.31 TO 21+23.33

INSET "B"

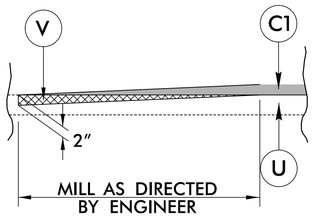


USE INSET "B" W/TYPICAL NO. 2 & 3 AS FOLLOWS:
TYPICAL 2 –L– STA. 20+74.46 TO 21+23.33 LT
TYPICAL 3 –L– STA. 21+50.00 TO 22+55.22 LT
TYPICAL 4 –L– STA. 21+23.33 TO 21+50.00 LT
*RETAINING WALL STA. 21+68.00 TO 22+30.00

INSET "C"

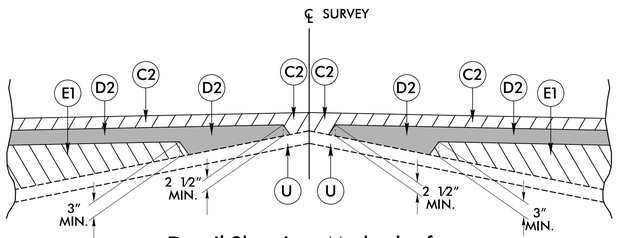


USE INSET "C" W/TYPICAL NO. 4 AS FOLLOWS:
TYPICAL 5 –Y1– STA. 20+07.01 TO 20+40.90 RT



MILLING DETAIL

MILL EXISTING PAVEMENT AT THE FOLLOWING END ALIGNMENTS:
–L– STA. 16+90.00 & 24+90.00
–Y1– STA. 16+60.00
–Y2– STA. 17+85.00
–Y3– STA. 11+10.00



Detail Showing Method of Symetrical Wedging for –L–, –Y1– & –Y2–

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mwilliams

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PAVEMENT SCHEDULE (FINAL PAVEMENT DESIGN)	
C1	3.0″ S9.5B
D1	4.0″ I19.0C
J2	6″ ABC
J3	8″ ABC
R1	2′-6″ C&G
R4	8″ X 12″ C&G
R5	EXPRESSWAY GUTTER
S	4″ SIDEWALK
T	EARTH MATERIAL
U	EXISTING PAVEMENT
V	MILLING
W	WEDGING

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

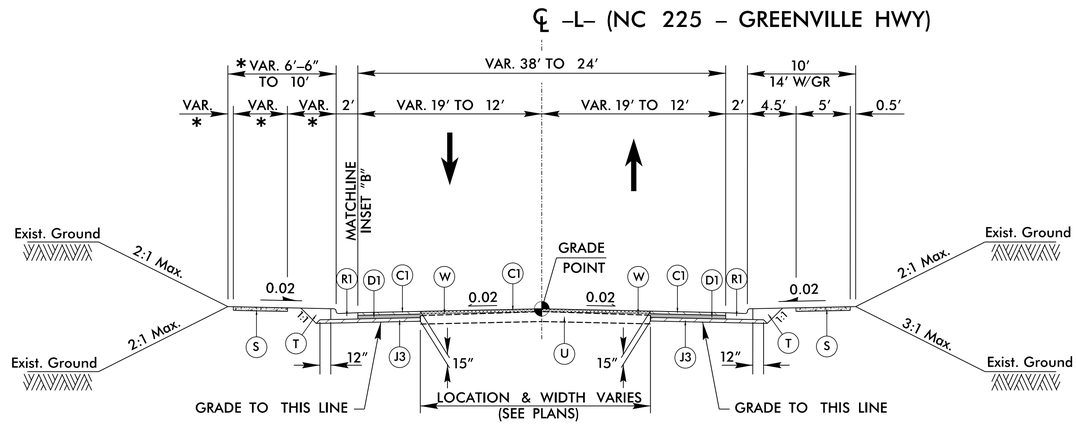
CALYX ENGINEERS + CONSULTANTS

PROJECT REFERENCE NO.	SHEET NO.
U-5105	2A-2

PAVEMENT DESIGN ENGINEER: NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 39779 JEREMY R. HAMM — Signature: Jeremy R. Hamm — 2/22/2018

ROADWAY DESIGN ENGINEER: NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 15759 STEPHEN C. BRONDE — Signature: Stephen C. Bronde — 2/22/2018

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



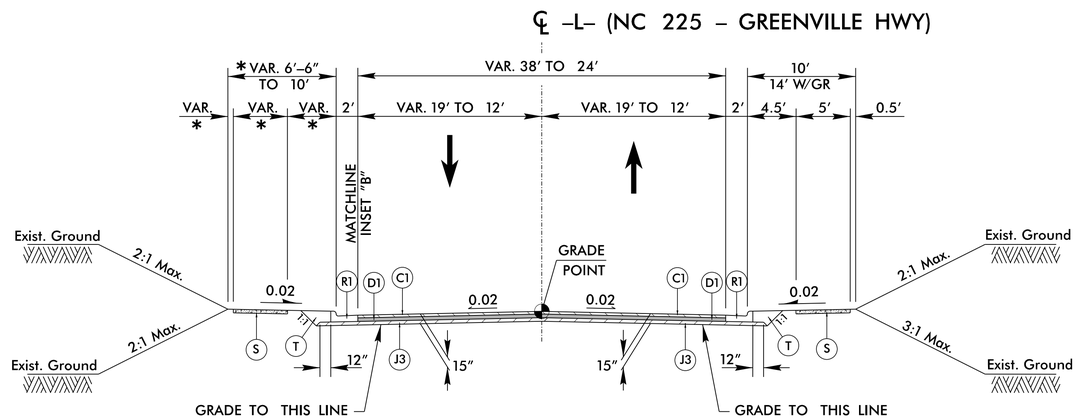
TYPICAL SECTION No. 3

USE TYPICAL SECTION NO. 3 AS FOLLOWS:

–L– STA. 21+50.00 TO 25+55.00

NOTE:

*SIDEWALK LOCATION & BERM WIDTH VARIES. SEE PLANS AND X–SECTIONS. SEE INSET 'B'



TYPICAL SECTION No. 4

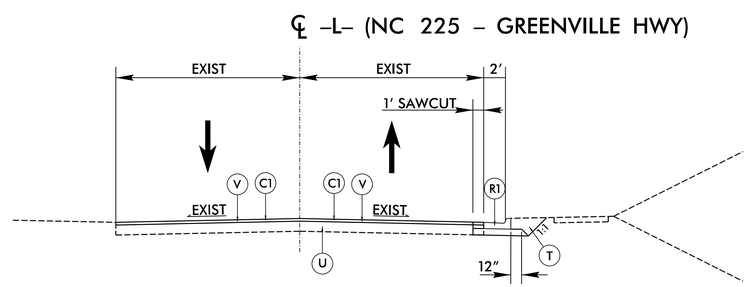
USE TYPICAL SECTION NO. 4 AS FOLLOWS:

–L– STA. 20+00.00 TO 20+03.31

–L– STA. 21+23.33 TO 21+50.00

NOTE:

*SIDEWALK LOCATION & BERM WIDTH VARIES. SEE PLANS AND X–SECTIONS. SEE INSET 'B'



TYPICAL SECTION No. 5

USE TYPICAL SECTION NO. 5 AS FOLLOWS:

–L– STA. 24+90.00 TO 25+55.00

NOTE:

EXISTING SIDEWALK TO BE RETAINED.

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PAVEMENT SCHEDULE	
C1	3.0″ S9.5B
D1	4.0″ I19.0C
J2	6″ ABC
R1	2′-6″ C&G
T	EARTH MATERIAL
U	EXISTING PAVEMENT
W	WEDGING

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

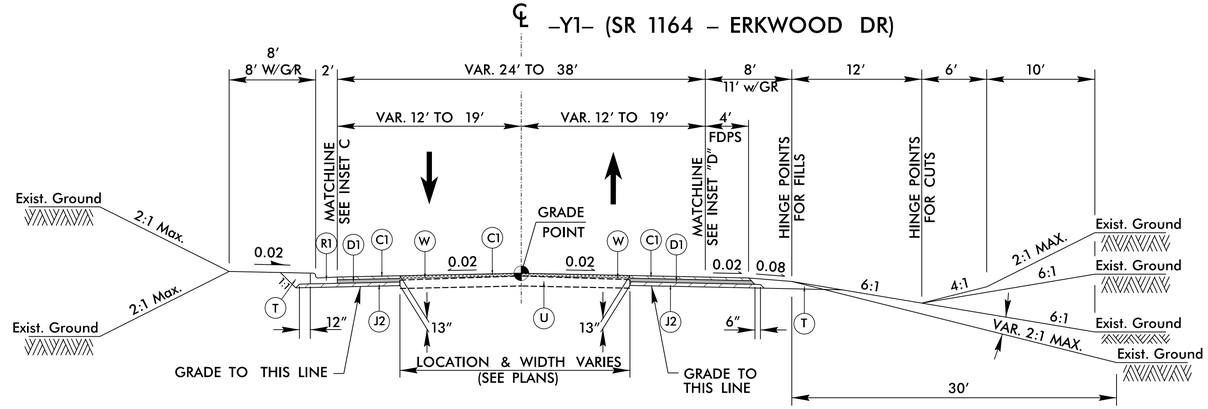
CALYX ENGINEERS + CONSULTANTS

PROJECT REFERENCE NO.	SHEET NO.
U-5105	2A-3

PAVEMENT DESIGN ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 39779 ENGINEER JEREMY R. HAMM — Designed by: 2/22/2018

ROADWAY DESIGN ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 15759 ENGINEER STEPHEN C. BRONDE — Designed by: 2/22/2018

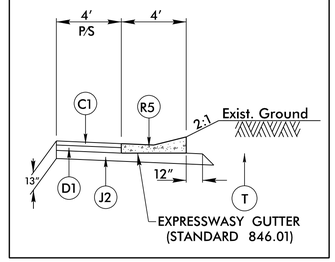
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



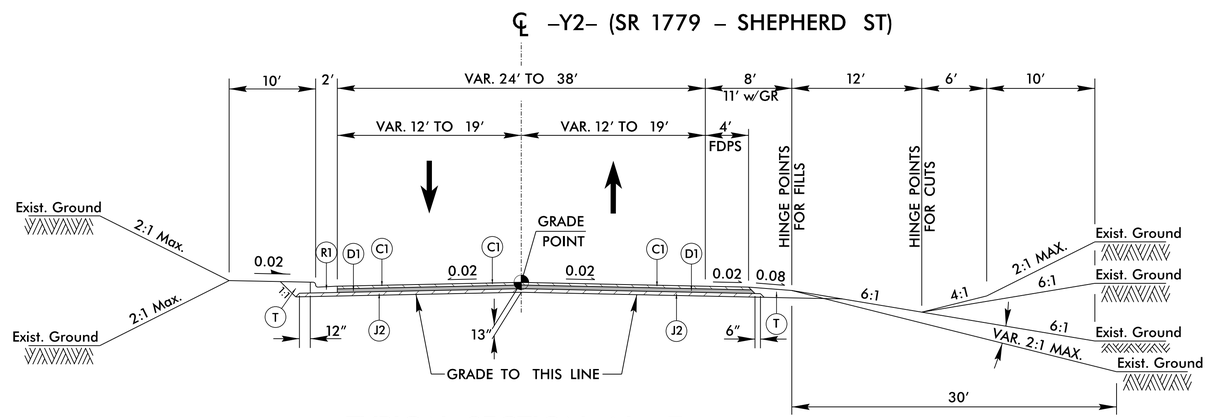
TYPICAL SECTION No. 6

USE TYPICAL SECTION NO. 6 AS FOLLOWS:
–Y1– STA. 16+60.00 TO 20+40.90
NOTE:
SEE INSET 'D'

INSET "D"

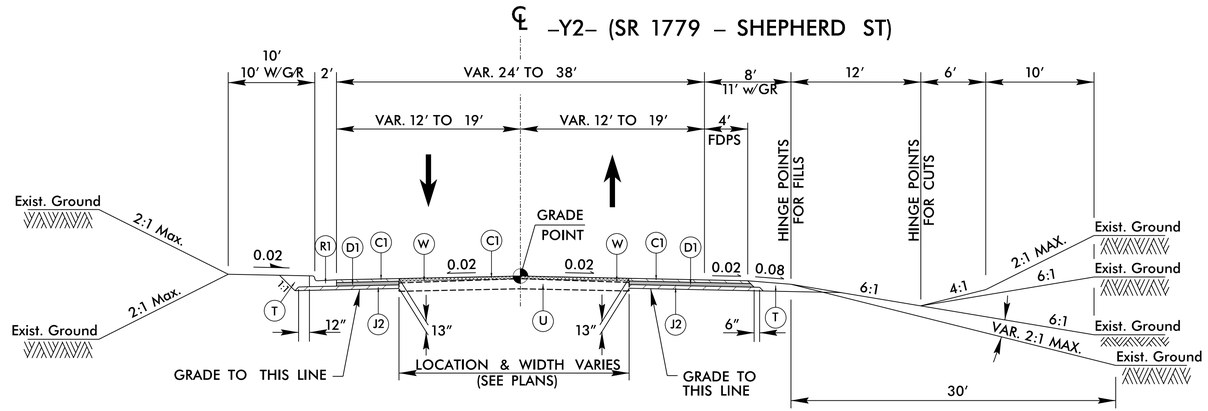


USE INSET "D" W/TYPICAL NO. 6 AS FOLLOWS:
–Y1– STA. 16+60.00 TO 17+30.00 RT



TYPICAL SECTION No. 7

USE TYPICAL SECTION NO. 7 AS FOLLOWS:
–Y2– STA. 10+60.14 TO 15+85.00



TYPICAL SECTION No. 8

USE TYPICAL SECTION NO. 8 AS FOLLOWS:
–Y2– STA. 15+85.00 TO 17+85.00

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(William Lamson)

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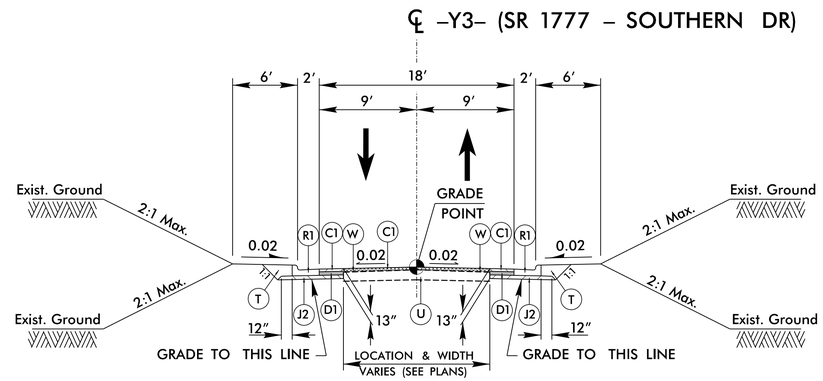
PAVEMENT SCHEDULE	
C1	3.0″ S9.5B
D1	4.0″ I19.0C
J2	6″ ABC
R1	2′-6″ C&G
T	EARTH MATERIAL
U	EXISTING PAVEMENT
W	WEDGING

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



TYPICAL SECTION No. 9

USE TYPICAL SECTION NO. 9 AS FOLLOWS:
–Y3– STA. 10+12.47 to 11+10.00

CALYX ENGINEERS + CONSULTANTS

PROJECT REFERENCE NO.	SHEET NO.
U-5105	2A-4

PAVEMENT DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 29779 JEREMY R. HAMM
Digitally signed by: 5D7935C2-2797-1E0-A7E2-0C0000000000
5/22/2018

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 15759 STEPHEN C. BRONDE
Digitally signed by: 4F2F7F1D-0000-0000-0000-000000000000
5/22/2018

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

6/2/99

5/21/2018
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(williams)

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INTERSECTION DETAIL FOR
–L– (NC 225 GREENVILLE HIGHWAY)
–Y1– (SR 1164 ERKWOOD DRIVE) AND
–Y2– (SR 1779 SHEPHERD STREET)

CALYX ENGINEERS + CONSULTANTS

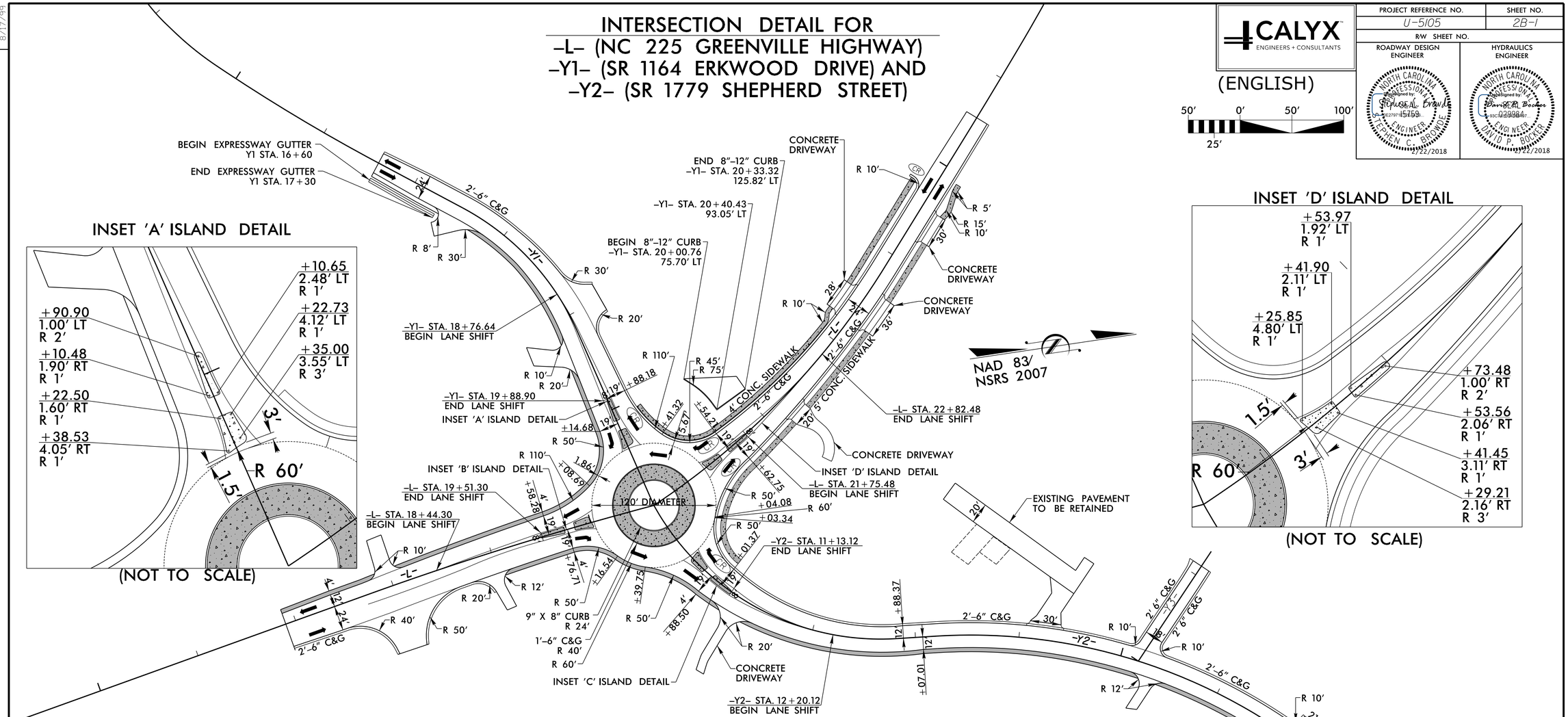
PROJECT REFERENCE NO.	SHEET NO.
U-5105	2B-1
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 15759 ENGINEER STEPHEN C. BRONCE 2/22/2018

NORTH CAROLINA PROFESSIONAL SEAL 029984 ENGINEER DAVID P. BOCKER 2/22/2018

(ENGLISH)

50' 0' 50' 100'
25'



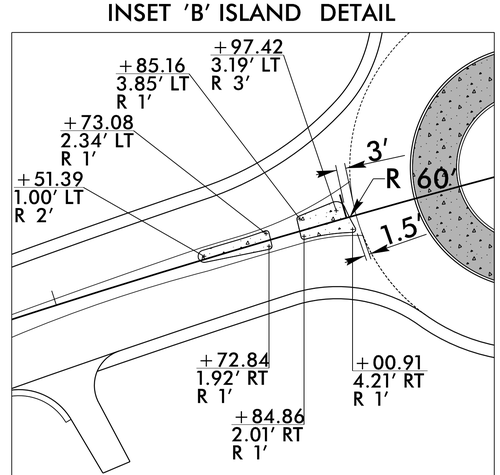
INSET 'A' ISLAND DETAIL

(NOT TO SCALE)

INSET 'D' ISLAND DETAIL

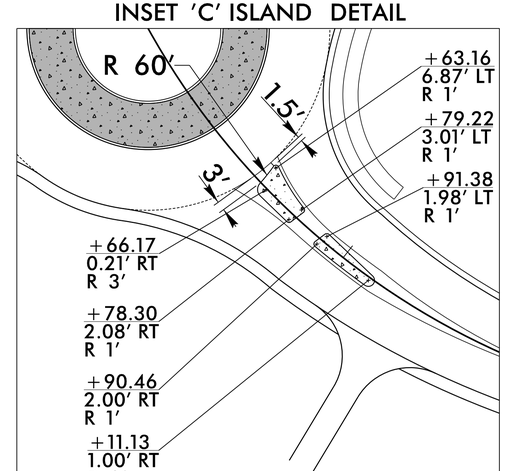
(NOT TO SCALE)

INSET 'B' ISLAND DETAIL



(NOT TO SCALE)

INSET 'C' ISLAND DETAIL



(NOT TO SCALE)

NOTES:
SEE SHEET 4
CONCRETE ISLANDS & SIDEWALK
(CR) CURB RAMPS

REVISIONS

8/17/99

2/21/2018
R:\Roadway\Proj\U5105_rdy_detail.dgn
mwilliamson

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8/17/99

REVISIONS

PROPOSED RETAINING WALL

-WALL- LENGTH = 59.95'

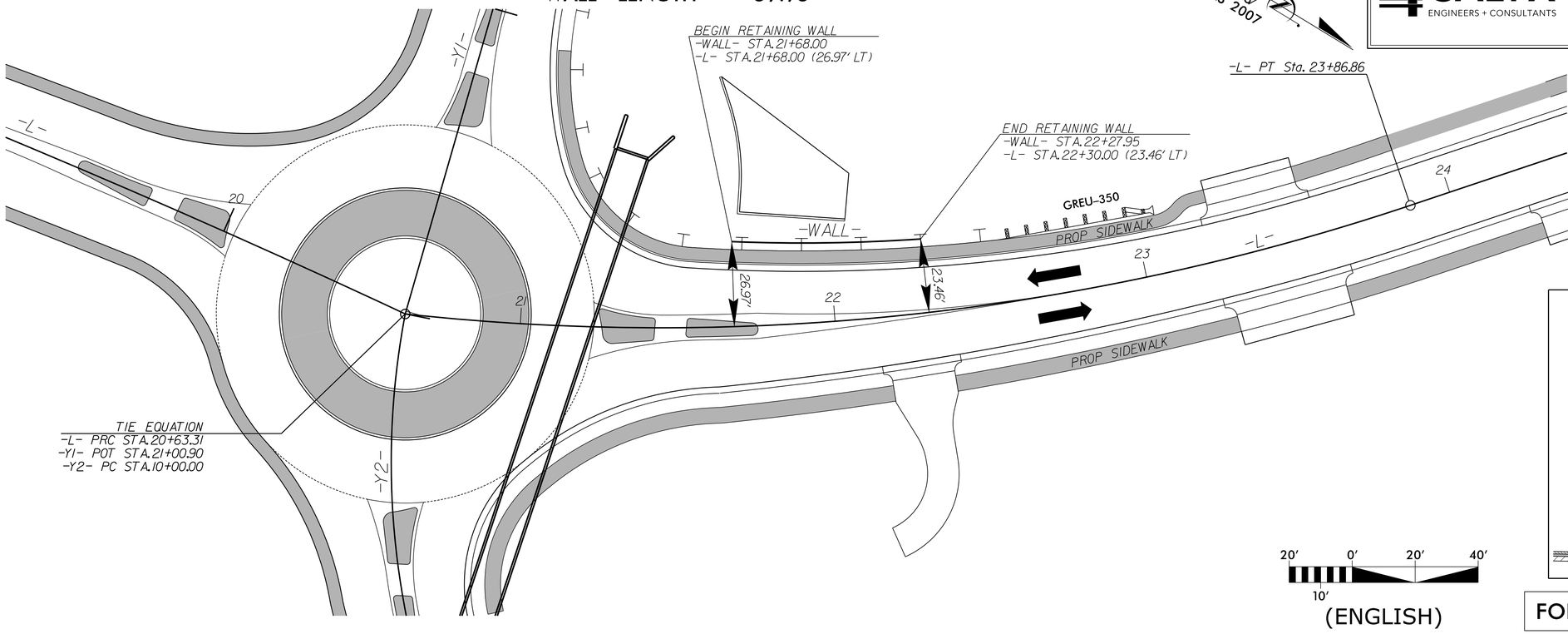
PROJECT REFERENCE NO.	SHEET NO.
U-5105	2B-2
R/W SHEET NO.	

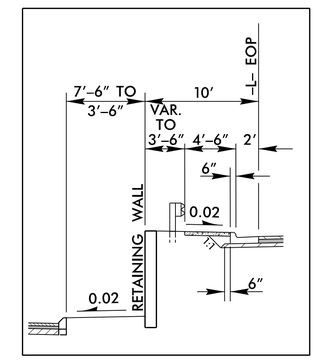
ROADWAY DESIGN ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL ENGINEER STEPHEN C. BROME — Digitally signed by: Stephen C. Brome — 2/22/2018

HYDRAULICS ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL ENGINEER DAVID P. BOCKER — Digitally signed by: David P. Bocker — 2/22/2018

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

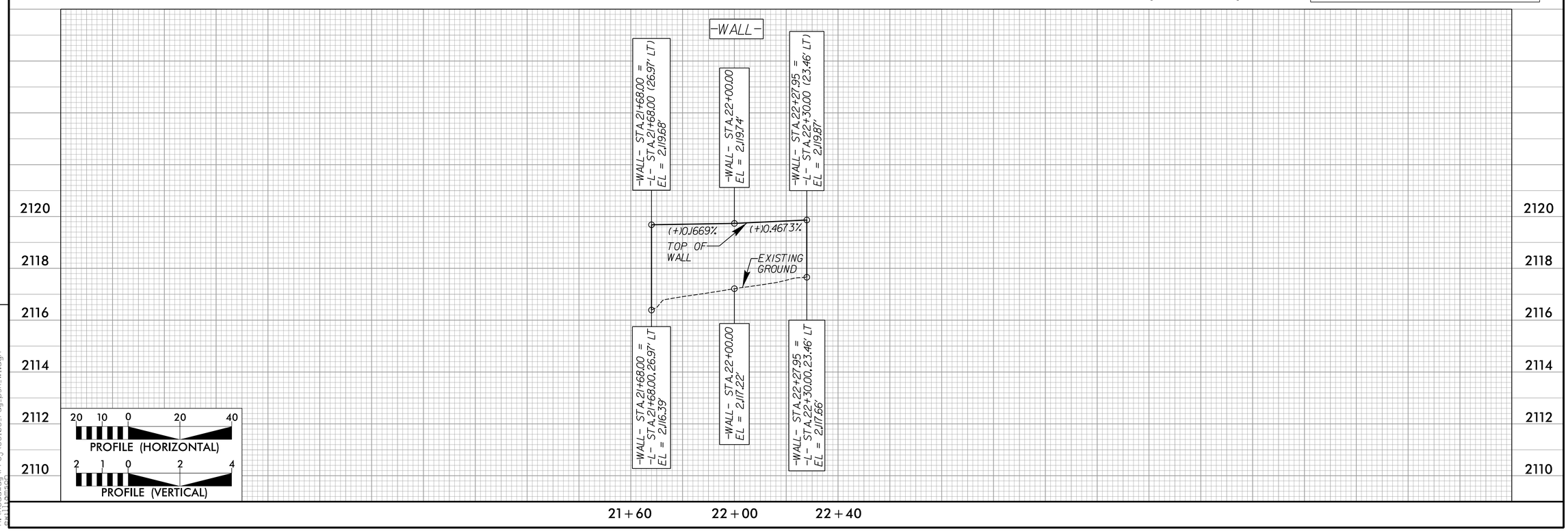
CALYX ENGINEERS + CONSULTANTS





20' 0' 20' 40'
10'
(ENGLISH)

FOR PLANS SEE SHEET 4



2/19/2018
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COMPUTED BY: E.Stewart DATE: 2/14/2018
CHECKED BY: J. Banks DATE: 2/14/2018

PROJECT NO.	SHEET NO.
U-5105	3B-1

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PAVEMENT REMOVAL & BREAKING SUMMARY

IN SQUARE YARDS

SURVEY LINE	STATION	STATION	LOCATION LT/RT/CL	ASPHALT REMOVAL (SY)	ASPHALT BREAKUP (SY)
-L-	18+04.92	18+15.00	LT	7.50 SY	
-Y1-	19+19.01	20+07.12	RT	43.78 SY	
-L-	21+37.97	22+15.37	LT	10.34 SY	
-Y2-	10+00.00	13+41.64	RT	326.32 SY	
-Y2-	14+44.99	15+17.01	RT	161.36 SY	
-Y2-	15+35.06	16+18.97	RT	77.78 SY	
-L-	20+03.31	21+23.33	CL		438.49 SY
			TOTAL:	627.09	438.49 SY
			SAY:	630	440 SY

EXPRESSWAY GUTTER SUMMARY

LINE	STATION	STATION	LENGTH
-Y1-	16+60.00	17+30.62	71
		TOTAL:	71
		SAY:	75

SUMMARY OF EARTHWORK

STATION	STATION	UNCL. EXCAV. (CY)	EMBANK. +% (CY)	BORROW (CY)	WASTE (CY)
-L- STA. 16+90.00	-L- STA. 25+55.00	1,890	2,666	776	0
SUBTOTALS:		1,890	2,666	776	0
-Y1- STA. 16+60.00	-Y1- STA. 20+40.90	1,303	278	0	1,025
SUBTOTALS:		1,303	278	0	1,025
-Y2- STA. 10+60.14	-Y2- STA. 17+85.00	135	7,651	7,516	0
SUBTOTALS:		135	7,651	7,516	0
-Y3- STA. 10+12.47	-Y3- STA. 11+10.00	26	83	57	0
SUBTOTALS:		26	83	57	0
PROJECT TOTALS:		3,354	10,678	8,348	1,025
LOSS DUE TO CLEARING & GRUBBING				500	
WASTE IN LIEU OF BORROW				-1,025	-1,025
PROJECT TOTALS:		3,354		7,823	
EST. 5% TO REPLACE TOP SOIL ON BORROW PIT				391	
GRAND TOTALS:		3,354		8,214	
SAY:		3,360		8,220	

COMPUTED BY: E. Stewart DATE: 12/08/2017
CHECKED BY: A. Vogt DATE: 12/14/2017

PROJECT REFERENCE NO.	SHEET NO.
U-5105	3B-1

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

GUARDRAIL SUMMARY

"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 350	M-350	XIII	CAT-1	VI MOD	TERMINAL END SECTION	G	NG				
Y1 / L	Y1 19+81.50	L 20+04.00	LT	206.25	50		-L- 22+30.00		6.5		50	6.25	1	0.125			1			1								
Y1	16+61.00	17+73.50	LT	112.5			-L- 17+25.00		2.5		50	6.25	1	0.125			1			1								
L	22+51.06	22+75.38	RT	25																		2						
			SUBTOTALS:	343.75	50												2			2		2						
	LESS ACHOR DEDUCTIONS:																											
	GREU, TL-3		2 @ 50 ft	100																								
	AT-1		2 @ 6.25 ft	12.5																								
	ANCHOR TOTALS:			112.5																								
	GUARDRAIL TOTALS:			231.25	50																							
	SAY:			237.5	50																							
	ADDITIONAL GUARDRAIL POSTS = 5 EA																											

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COMPUTED BY: E. STEWART DATE: 12/11/2017

CHECKED BY: A. VOGT DATE: 12/15/2017

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
U-5105	3D-1

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

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

STATION	LOCATION (LT, RT, OR CL)'	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	SIDE DRAIN PIPE (RCP, CSP, CAAP, HDPE, or PVC) 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
THICKNESS OR GAUGE																			
-L- 17+97	LT	0438							24										
-L- 17+35	RT	0401																	
-L- 18+22	RT	0402		2126.9															
	RT	0402	0405		2120.7	2119.3													
-L- 18+68	RT	0405		2121.5															
	RT	0405	0406		2119.3	2118.7													
-Y2- 11+25	RT	0440											24						
-Y2- 11+20	LT	0426		2115.7															
	LT	0426	0425		2110.4	2110.0						80							
-Y2- 12+00	LT	0425		2120.3															
	LT	0425	0424		2110.0	2107.9													
	LT	0427	0425		2115.4	2114.8				60									
-Y2- 12+63	LT	0427		2120.3															
	LT	0437	0427	2117.0	2115.7	2115.5				36									
-Y2- 14+33	LT	0441							32										
-Y2- 15+20	LT	0429		2126.5															
	LT	0429	0428		2123.0	2122.5			20										
-Y2- 15+40	LT	0430		2126.5															
	LT	0430	0429		2123.3	2123.0													
	LT	0431	0430	2125.7	2124.4	2123.3			24										
-L- 21+60	RT	0436		2117.1															
	RT	0436	0426		2112.4	2110.9					48								
-L- 22+13	RT	0415		2117.8															
	RT	0415	0436		2113.1	2112.4					56								
-L- 22+40	RT	0416		2118.5															
	RT	0416	0415		2113.2	2113.1					28								
-L- 22+85	RT	0417		2120.6															
	RT	0417	0416		2115.7	2113.2					56								
-L- 24+64	RT	0419		2123.2															
	RT	0419	0417		2119.5	2115.7													
-L- 24+86	RT	0434		2123.7															
	RT	0434	0419		2119.9	2119.5													
-L- 25+55	RT	0418		2125.9															
	RT	0418	0434		2122.2	2119.9													
	LT	0414	0412	2124.6	2123.4	2118.0													
-L- 23+82	LT	0413		2120.8															
	LT	0413	0412		2118.1	2118.0			16										
-L- 23+82	LT	0412		2121.1															
	LT	0412	0411		2118.0	2116.5													
-L- 22+85	LT	0411		2119.5															
	CL	0411	0417		2116.3	2116.2													
-L- 21+92	LT	0410		2119.0															
		0410	0408		2116.0	2113.9													
-L- 21+70	CL	0409		2119.8															
		0409	0408		2116.6	2115.8													
-L- 21+60	LT	0408		2119.1															
		0408	0407		2113.9	2112.5													
-Y1- 19+88	LT	0422		2118.4															
	LT	0422	0423		2112.4	2112.3						40							
	CL	0421	0422	2118.6	2116.1	2113.0													
-Y1- 19+30	RT	0439								28									
-Y1- 17+27	RT	0432		2122.9															
	RT	0432	0433		2120.1	2120.0													
SHEET TOTALS								0	116	124	188	120	24	0	0	0	0	0	0

STATION	C.S. PIPE SIZE 12"	15"	18"	24"	30"	36"	42"	48"	R.C. PIPE CLASS III SIZE 12"	15"	18"	24"	30"	36"	42"	48"	R.C. PIPE CLASS IV SIZE 12"	15"	18"	24"	30"	36"	42"	48"
THICKNESS OR GAUGE	.064	.064	.064	.064	.079	.079	.109	.109																
-L- 17+97																								
-L- 17+35																								
-L- 18+22																								
																						44		
-L- 18+68																								
																						56		
-Y2- 11+25																								
-Y2- 11+20																								
-Y2- 12+00																								
																					72			
-Y2- 12+63																								
-Y2- 14+33																								
-Y2- 15+20																								
'-Y2- 15+40																								
																		20						
-L- 21+60																								
'-L- 22+13																								
-L- 22+40																								
-L- 22+85																								
-L- 24+64																								
																				180				
-L- 24+86																								
																				20				
-L- 25+55																								
																				68				
																	160							
-L- 23+82																								
-L- 23+82																								
																	96							
-L- 22+85																								
																		28						
-L- 21+92																								
																	28							
-L- 21+70																								
																	24							
-L- 21+60																								
																	28							
-Y1- 19+88																								
-Y1- 19+30																								
-Y1- 17+27																								
																	32							
SHEET TOTALS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	388	28	268	72	100	0	0

STATION	30" R.C. PIPE (CLASS V)	***** RC PIPE CULVERTS, CONTRACTOR DESIGN	***** RC PIPE CULVERTS, CONTRACTOR DESIGN	15" SIDE DRAIN PIPE	18" SIDE DRAIN PIPE	ENDWALLS STD. 838.01 838.11 OR STD. 838.80 (UNLESS NOTED OTHERWISE) CU. YARDS R.C.P.	C.S.P.	QUANTITIES FOR DRAINAGE STRUCTURES PER EACH (0' THRU 5.0')	5.0' THRU 10.0'	10.0' AND ABOVE	*TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL.'B') LIN. FT. A	B	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STANDARD 840.03 TYPE OF GRATE E	F	G	CONCRETE TRANSITIONAL SECTION DROP INLET STD. 852.04 OR STD. 852.06	CATCH BASIN STD. 852.05	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME WITH TWO GRATES STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR 840.26	G.D.I. TYPE "B" STD. 840.18 OR 840.27	G.D.I. TYPE "D" STD. 840.19 OR 840.28	G.D.I. FRAME WITH GRATE STD. 840.20	G.D.I. FRAME WITH TWO GRATES STD. 840.22	G.D.I. (N.S.) FRAME WITH GRATE STD. 840.24	G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.24	J.B. STD. 840.31 OR 840.32	TBJB STD. 840.34	M.H. FRAME & COVER STD. 840.54			SIDE DRAIN PIPE ELBOWS NO. & SIZE	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	CONC. COLLARS CL. "B" C.Y. STD. 840.72	PIPE REMOVAL LIN. FT.	REMARKS
-L- 17+97																																								
-L- 17+35																																							40.14	CONVERT DI TO CB
-L- 18+22								1	1.19																			1	1									250.58	
-L- 18+68								1				1			1																									
-Y2- 11+25																																								
-Y2- 11+20								1	0.25															1						1										
-Y2- 12+00								1	5	0.23	1			1																										
-Y2- 12+63								1			1	1																												
-Y2- 14+33																																								
-Y2- 15+20								1			1			1																								40.28	
'-Y2- 15+40								1			1				1																									
																																						32.08	
-L- 21+60								1																1						1										
'-L- 22+13								1																1						1										
-L- 22+40								1	0.26															1						1										
-L- 22+85								1			1			1																										
																																						34.45	
-L- 24+64								1			1			1																										
																																						131.7	
-L- 24+86								1			1			1																										
-L- 25+55								1			1			1																										
-L- 23+82								1																1						1									158.48	
-L- 23+82								1			1		1																											
-L- 22+85								1			1		1																									108.92	
-L- 21+92								1			1	1																												
-L- 21+70								1									1		1	1																		141.93	
-L- 21+60								1	0.19		1			1																								40.34	
-Y1- 19+88								1	0.98		1	1																										55.01	
																																						30.07	
-Y1- 19+30	64																																							
-Y1- 17+27								1																1						1										
SHEET TOTALS	64	0	0	0	0	0	0	22	7.87	0.23	14	3	4	7	1	0	2	6	0	0	0	0	0	1	5	0	1	1	0	0	0	0	0	0	0	0	1063.98	

ABBREVIATIONS

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

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COMPUTED BY: ESTEWART DATE: 12-19-2017
CHECKED BY: JBANKS DATE: 12-19-2017

(2-16-16)

PROJECT NO.	SHEET NO.
U-5105	3G-1

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

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
CONTINGENCY							5450		
					150	250	250		
							200		
			TOTAL CY/TONS/SY:		150	250	5900**	0	0

*ASU = Aggregate Subgrade
*AST = Aggregate Stabilization
**Total square yards of "Geotextile for Soil Stabilization" is only the estimated quantity for ASU/AST and may only represent a portion of the geotextile quantity shown in the Item Sheets of the Proposal.

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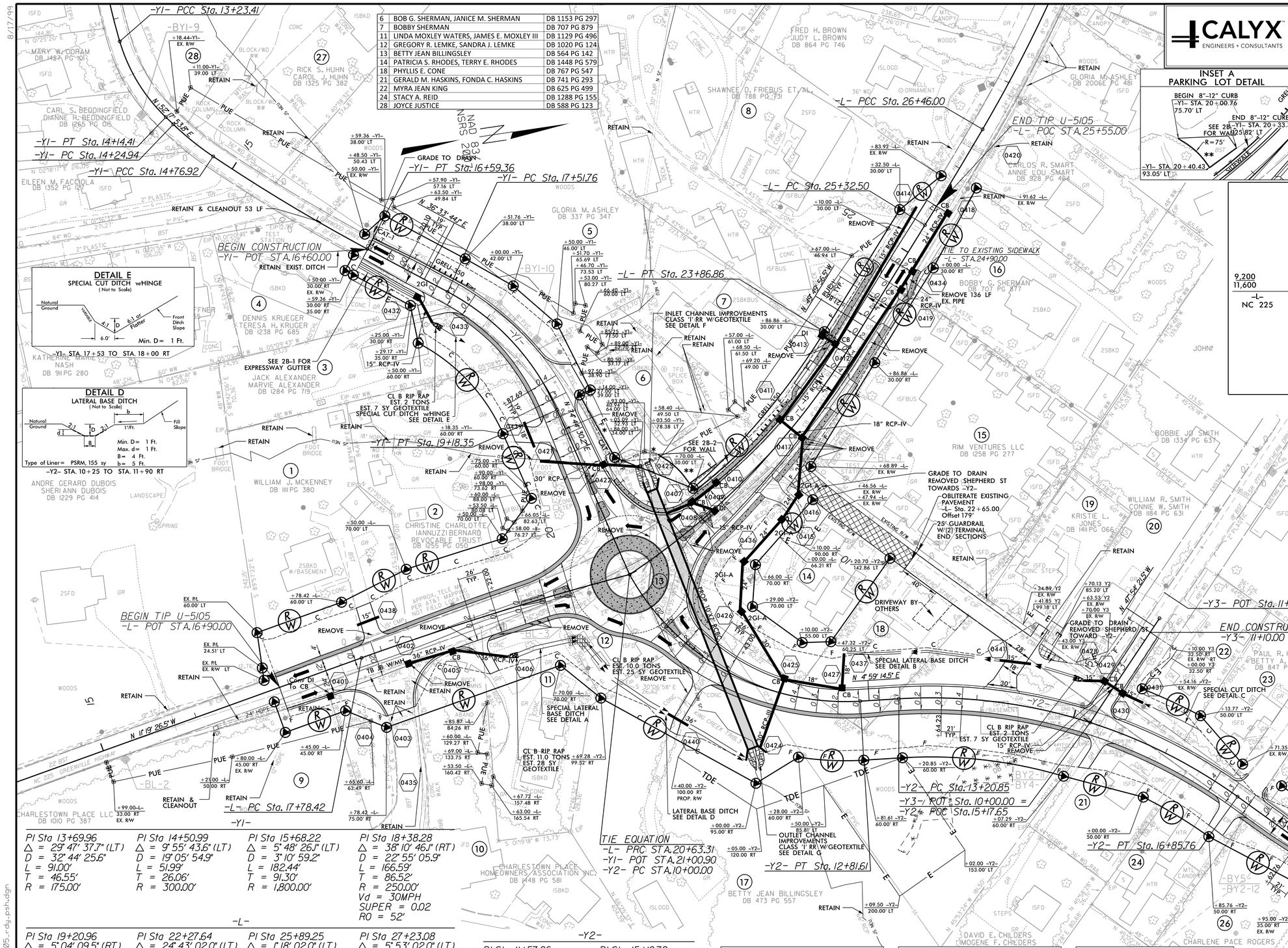
6	BOB G. SHERMAN, JANICE M. SHERMAN	DB 1153 PG 297
7	BOBBY SHERMAN	DB 707 PG 879
11	LINDA MOXLEY WATERS, JAMES E. MOXLEY III	DB 1129 PG 496
12	GREGORY R. LEMKE, SANDRA J. LEMKE	DB 1020 PG 124
13	BETTY JEAN BILLINGSLEY	DB 564 PG 142
14	PATRICIA S. RHODES, TERRY E. RHODES	DB 1448 PG 579
18	PHYLLIS E. CONE	DB 767 PG 547
21	GERALD M. HASKINS, FONDA C. HASKINS	DB 741 PG 293
22	MYRA JEAN KING	DB 625 PG 499
24	STACY A. REID	DB 1288 PG 155
28	JOYCE JUSTICE	DB 588 PG 123


-Y1- PCC Sta. 13+23.41
-Y1- PT Sta. 14+14.41
-Y1- PC Sta. 14+24.94
-Y1- PCC Sta. 14+76.92
GRADE TO DRAIN
-Y1- PT Sta. 16+59.36
-Y1- PC Sta. 17+51.76
-L- PCC Sta. 26+46.00
-L- PC Sta. 25+32.50
-L- PT Sta. 23+86.86
-Y1- PT Sta. 19+18.35
BEGIN CONSTRUCTION
-Y1- POT STA.16+60.00
RETAIN & CLEANOUT 53 LF
RETAIN EXIST. DITCH
SEE 2B-1 FOR EXPRESSWAY GUTTER
CL B RIP RAP
EST. 2 TONS
EST. 7 SY GEOTEXTILE
SPECIAL CUT DITCH wHINGE
SEE DETAIL E
INLET CHANNEL IMPROVEMENTS
CLASS "I" RR W/GEOTEXTILE
SEE DETAIL F
SEE 2B-2 FOR WALL
GRADE TO DRAIN
REMOVED SHEPHERD ST
TOWARDS -Y2-
OBLITERATE EXISTING PAVEMENT
-L- Sta. 22+65.00
Offset 179'
25' GUARDRAIL W/(2) TERMINAL END SECTIONS
DRIVEWAY BY OTHERS
SPECIAL LATERAL BASE DITCH
SEE DETAIL B
N 4°59'14.5" E
-Y3- POT Sta. 11+27.06
END CONSTRUCTION
-Y3- 11+10.00
BEGIN TIP U-5105
-L- POT STA.16+90.00
END TIP U-5105
-L- POC STA.25+55.00
TIE TO EXISTING SIDEWALK
-L- STA.24+90.00
-L- PC Sta. 17+78.42
-Y2- PC Sta. 13+20.85
-Y3- POT Sta. 10+00.00 =
-Y2- POC Sta. 15+17.65
-Y2- PT Sta. 16+85.76
END CONSTRUCTION
-Y2- POT STA.17+85.00
-Y2- PT Sta. 12+81.61
CL B RIP RAP
EST. 2 TONS
EST. 7 SY GEOTEXTILE
15" RCP-IV
REMOVE
LATERAL BASE DITCH
SEE DETAIL D
OUTLET CHANNEL IMPROVEMENTS
CLASS "I" RR W/GEOTEXTILE
SEE DETAIL G
CL B RIP RAP
EST. 10.0 TONS
EST. 25 SY GEOTEXTILE
SPECIAL LATERAL BASE DITCH
SEE DETAIL A
CL B RIP RAP
EST. 11.0 TONS
EST. 28 SY GEOTEXTILE
N 11°19'26.5" W
N 42°12'48.2" E
N 36°33'44.4" E
N 52°12'53.8" E
N 46°49'56.5" W
N 47°54'21.5" W
N 46°53'24" W
N 45°53'28" W
N 43°56'28" W
N 43°56'16" E
N 44°43'16" E
N 45°25'16" W
N 45°25'16" W
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5/28/99

PROJECT REFERENCE NO.	SHEET NO.
U-5105	5

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL ENGINEER STEPHEN C. BROWDE 15759 — DocuSigned by: Stephen C. Browde — 5/22/2018

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL ENGINEER DAVID P. BOCKS 16229384 — DocuSigned by: David P. Bocks — 5/22/2018

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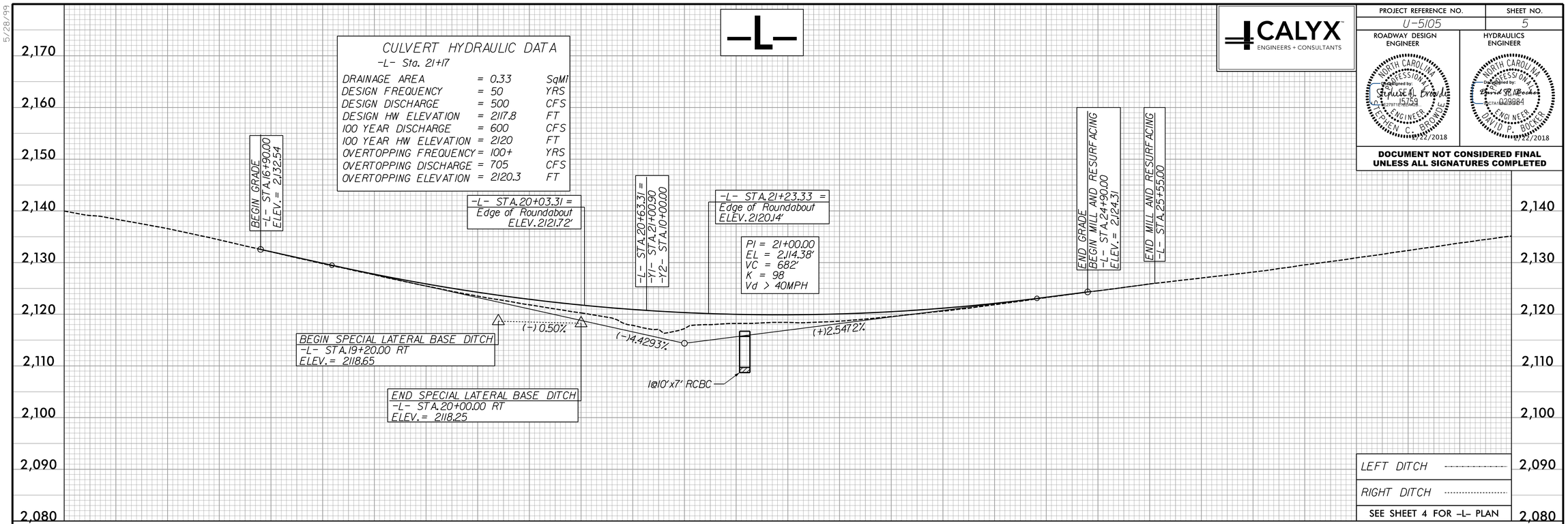
CALYX ENGINEERS + CONSULTANTS

-L-

CULVERT HYDRAULIC DATA

-L- Sta. 21+17

DRAINAGE AREA	=	0.33	SqMi
DESIGN FREQUENCY	=	50	YRS
DESIGN DISCHARGE	=	500	CFS
DESIGN HW ELEVATION	=	2117.8	FT
100 YEAR DISCHARGE	=	600	CFS
100 YEAR HW ELEVATION	=	2120	FT
OVERTOPPING FREQUENCY	=	100+	YRS
OVERTOPPING DISCHARGE	=	705	CFS
OVERTOPPING ELEVATION	=	2120.3	FT



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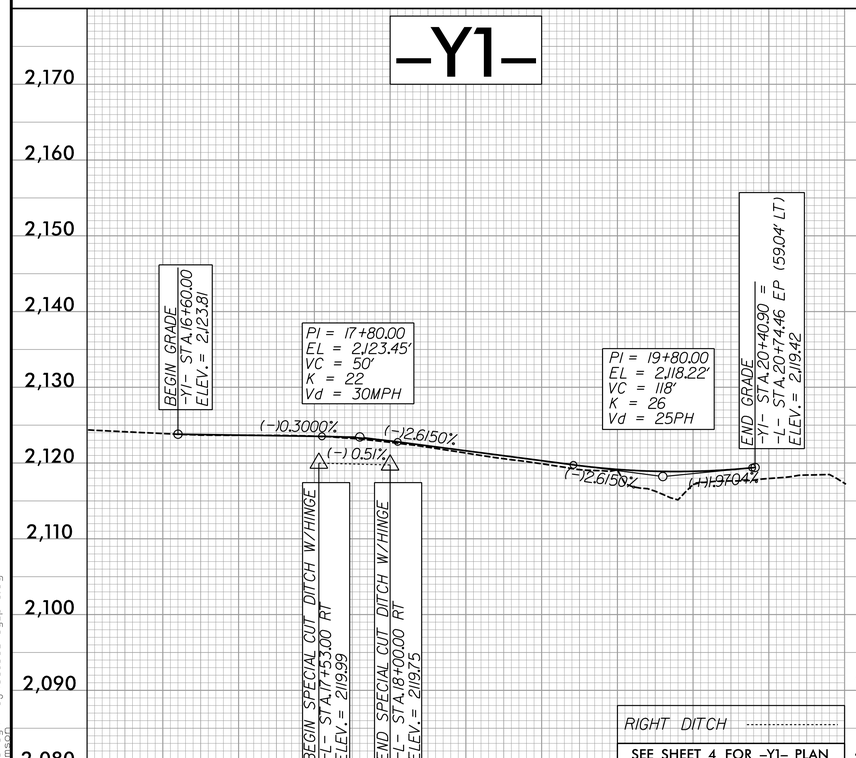

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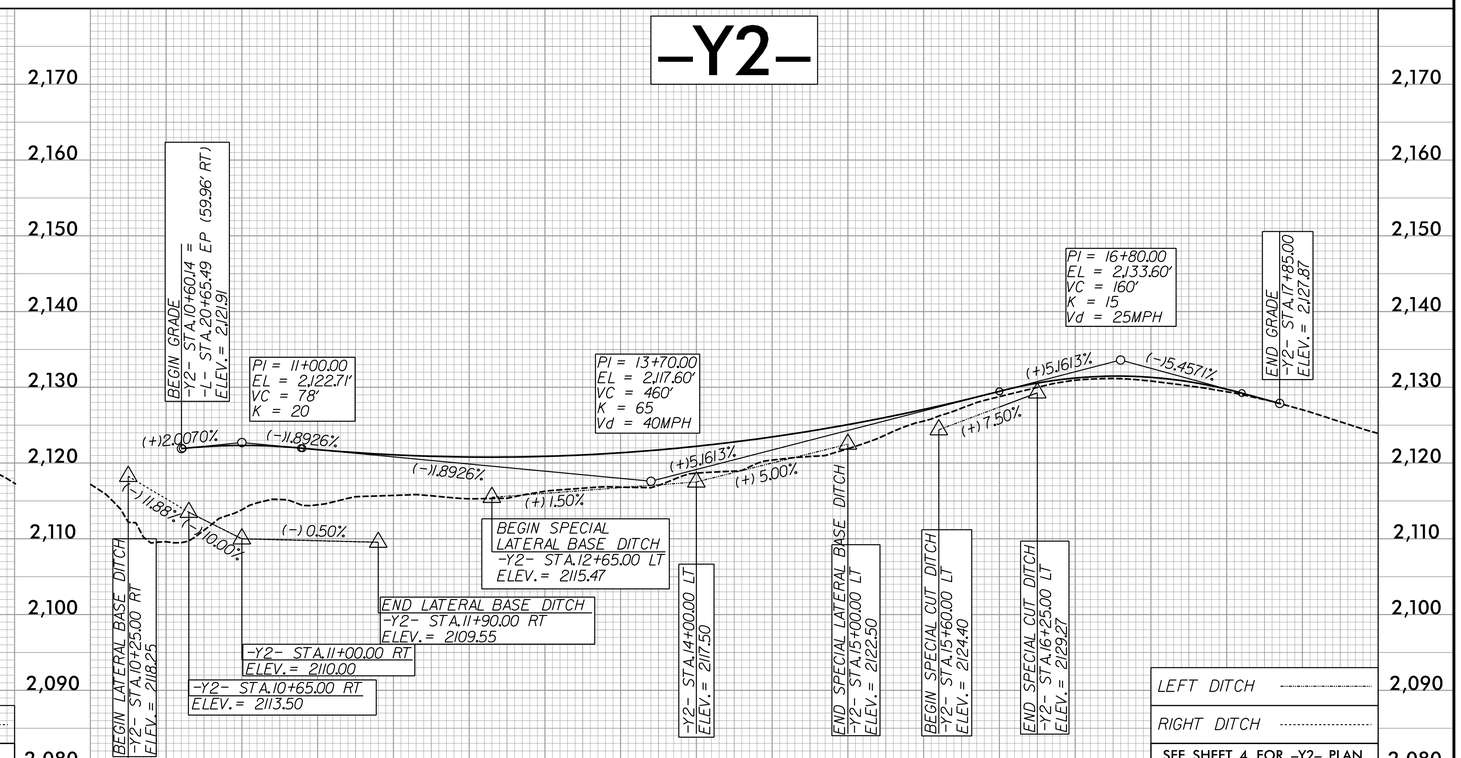

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mwilkinson

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CALYX ENGINEERS + CONSULTANTS

PROJECT REFERENCE NO.	SHEET NO.
U-5105	6

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 15750 ENGINEER STEPHEN C. BROWDE
Signed by: Stephen C. Browde
DocuSigned by: 5/22/2018
2/22/2018

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 024864 ENGINEER DAVID P. BOCKER
Signed by: David P. Bocker
DocuSigned by: 5/22/2018
2/22/2018

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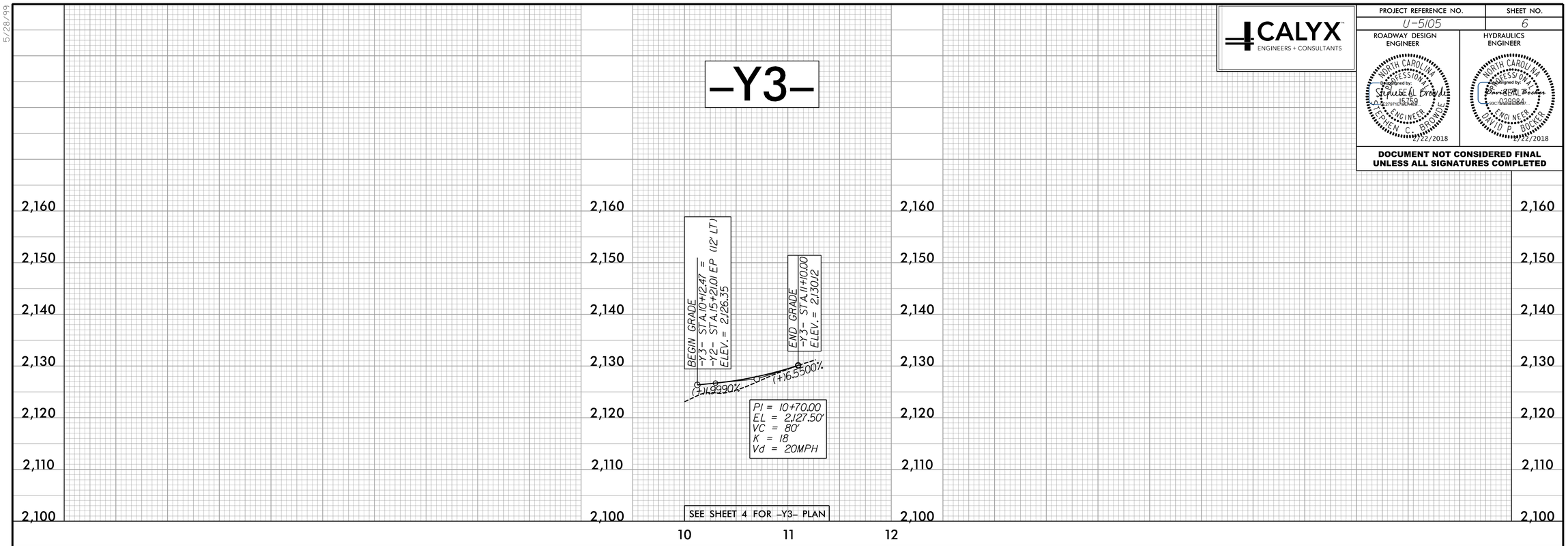

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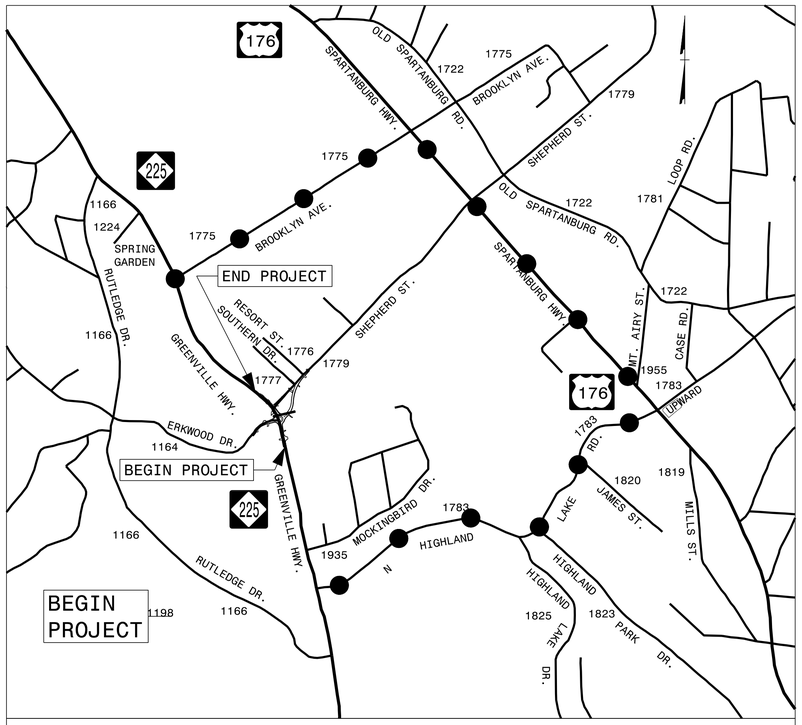
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

TRANSPORTATION MANAGEMENT PLAN

HENDERSON COUNTY



VICINITY MAP (NOT TO SCALE)

DETOUR ROUTE

LOCATION: NC 225 (GREENVILLE HWY) INTERSECTION IMPROVEMENTS FROM SR 1164 (ERKWOOD DR) TO SR 1770 (SHEPHERD ST)

TYPE OF WORK: GRADING, DRAINAGE, CULVERT, & ROUNDABOUT

INDEX OF SHEETS

SHEET NO.	TITLE
TMP-1	TITLE SHEET, VICINITY MAP, AND INDEX OF SHEETS
TMP-1A	LIST OF APPLICABLE ROADWAY STANDARD DRAWINGS AND LEGEND
TMP-1B THRU 1C	TRANSPORTATION OPERATIONS PLAN: (MANAGEMENT STRATEGIES AND GENERAL NOTES)
TMP-2 THRU 2A	OFF-SITE DETOUR ROUTE AND GUIDE SIGNS
TMP-3	TEMPORARY TRAFFIC CONTROL PHASING
TMP-4	TEMPORARY TRAFFIC CONTROL PHASE I DETAIL
TMP-5	TEMPORARY TRAFFIC CONTROL PHASE II DETAIL

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SEAL

NORTH CAROLINA PROFESSIONAL SEAL 030864 ENGINEER DAVID W. BISSETTE

SHEET NO.
TMP-1

TIP PROJECT: U-5105

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U-5105	TMP-1A

ROADWAY STANDARD DRAWINGS

THE FOLLOWING ROADWAY STANDARDS AS SHOWN IN "ROADWAY STANDARD DRAWINGS" - PROJECT SERVICES UNIT - 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
1101.01	WORK ZONE ADVANCE WARNING SIGNS
1101.02	TEMPORARY LANE CLOSURES
1101.03	TEMPORARY ROAD CLOSURES
1101.04	TEMPORARY SHOULDER CLOSURES
1101.11	TRAFFIC CONTROL DESIGN TABLES
1110.01	STATIONARY WORK ZONE SIGNS
1110.02	PORTABLE WORK ZONE SIGNS
1130.01	DRUM
1145.01	BARRICADES
1150.01	FLAGGERS

LEGEND

GENERAL

- DIRECTION OF TRAFFIC FLOW
- DIRECTION OF PEDESTRIAN TRAFFIC FLOW
- EXIST. PVMT.
- NORTH ARROW
- PROPOSED PVMT.
- TEMP. SHORING (LOCATION PURPOSES ONLY)
- WORK AREA
- REMOVAL
- ON GOING CONSTRUCTION

SIGNALS

- EXISTING
- PROPOSED
- TEMPORARY

PAVEMENT MARKINGS

- EXISTING LINES
- TEMPORARY LINES

TRAFFIC CONTROL DEVICES

- BARRICADE (TYPE III)
- CONE
- DRUM
- SKINNY DRUM
- TUBULAR MARKER
- TEMPORARY CRASH CUSHION
- FLASHING ARROW BOARD
- FLAGGER
- LAW ENFORCEMENT
- TRUCK MOUNTED ATTENUATOR (TMA)
- CHANGEABLE MESSAGE SIGN

TEMPORARY SIGNING

- PORTABLE SIGN
- STATIONARY SIGN
- STATIONARY OR PORTABLE SIGN

PAVEMENT MARKERS

- CRYSTAL/CRYSTAL
- CRYSTAL/RED
- YELLOW/YELLOW

PAVEMENT MARKING SYMBOLS

- PAVEMENT MARKING SYMBOLS

TEMPORARY PAVEMENT MARKING

ITEM	SYMBOL	DESCRIPTION
PAINT (4")	PA	WHITE
	PI	YELLOW DOUBLE CENTER
PAINT (24")	P2	WHITE STOPBAR
TEMPORARY RAISED PAVEMENT MARKERS	MH	YELLOW & YELLOW

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SEAL

NORTH CAROLINA PROFESSIONAL SEAL 030864 ENGINEER DAVID W. BISSETTE

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DIVISION OF HIGHWAYS · STATE OF NORTH CAROLINA · DEPARTMENT OF TRANSPORTATION · WORK ZONE TRAFFIC CONTROL

ROADWAY STANDARD DRAWINGS & LEGEND

5/30/2018
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MANAGEMENT STRATEGIES

WORKING AWAY FROM TRAFFIC, BEHIND SHOULDER CLOSURES, AND WITHIN LANE CLOSURES:
- INSTALL WORK ZONE ADVANCE WARNING SIGNS
- CLOSE THE ROADWAY SHOULDERS WITHIN THE WORK ZONE
- BEGIN CONSTRUCTION OF THE PROPOSED ROADWAY SECTIONS
- CONSTRUCT 196′ OF THE PROPOSED 10′ X 7′ RCBC

TRAFFIC WILL BE RETUREN TO THE EXISTING TWO-LANE, TWO-WAY PATTERN AT THE END OF EACH WORK DAY.

WORKING WITHIN A ROAD CLOSURE, THRU TRAFFIC WILL BE DETOURED OFF SITE, LOCAL TRAFFIC WILL BE MAINTAINED:
- CONSTRUCT THE REMAINING 74′ OF THE PROPOSED 10′ X 7′ RCBC
- CONSTRUCT THE PROPOSED RETAINING WALL
- COMPLETE CONSTRUCTION OF THE PROPOSED ROADWAY SECTIONS UP TO, BUT NOT INCLUDING THE FINAL LAYER OF SURFACE COURSE.
- PLACE TEMPORARY PAVEMENT MARKINGS AND MARKERS IN THE FINAL PATTERN
- OPEN ALL ROADS TO TRAFFIC IN THE FINAL PATTERN

WORKING AWAY FROM TRAFFIC, BEHIND SHOULDER CLOSURES, AND WITHIN LANE CLOSURES:
- REMOVE THE EXISITING SHEPHERD ST ALIGNMENT
- CONSTRUCT THE PROPOSED MONOLITHIC CONCRETE ISLANDS
- CONSTRUCT THE PROPOSED SIDEWALK
- PLACE THE FINAL LAYER OF SURFACE COURSE AND THE FINAL PAVEMENT MARKINGS
- REMOVE ALL REMAINING WORK ZONE TRAFFIC CONTROL DEVICES

GENERAL NOTES

CHANGES MAY BE REQUIRED WHEN PHYSICAL DIMENSIONS IN THE DETAIL DRAWINGS, STANDARD DETAILS, AND ROADWAY DETAILS ARE NOT ATTAINABLE TO MEET FIELD CONDITIONS OR RESULT IN DUPLICATE OR UNDESIRED OVERLAPPING OF DEVICES. MODIFICATION MAY INCLUDE: MOVING, SUPPLEMENTING, COVERING, OR REMOVAL OF DEVICES AS DIRECTED BY THE ENGINEER.

THE FOLLOWING GENERAL NOTES APPLY AT ALL TIMES FOR THE DURATION OF THE CONSTRUCTION PROJECT EXCEPT WHEN OTHERWISE NOTED IN THE PLAN OR DIRECTED BY THE ENGINEER.

TIME RESTRICTIONS

A) DO NOT CLOSE OR NARROW TRAVEL LANES AS FOLLOWS:

ROAD NAME	DAY AND TIME RESTRICTIONS
NC 225 (GREENVILLE HWY)	MONDAY THRU FRIDAY 6:00 AM TO 9:00 AM AND 4:00 PM TO 7:00 PM
SR 1164 (ERKWOOD DRIVE)	MONDAY THRU FRIDAY 6:00 AM TO 9:00 AM AND 4:00 PM TO 7:00 PM
SR 1779 (SHEPHERD STREET)	MONDAY THRU FRIDAY 6:00 AM TO 9:00 AM AND 4:00 PM TO 7:00 PM

B) DO NOT CLOSE OR NARROW TRAVEL LANES DURING HOLIDAYS AND SPECIAL EVENTS AS FOLLOWS:

ROAD NAME

NC 225 (GREENVILLE HWY)
SR 1164 (ERKWOOD DRIVE)
SR 1779 (SHEPHERD STREET)

HOLIDAY

1. FOR ANY UNEXPECTED OCCURRENCE THAT CREATES UNUSUALLY HIGH TRAFFIC VOLUMES, AS DIRECTED BY THE ENGINEER.

2. FOR NEW YEAR'S, BETWEEN THE HOURS OF 6:00 AM DECEMBER 31st AND 7:00 PM JANUARY 2ND. IF NEW YEAR'S DAY IS ON A FRIDAY, SATURDAY, SUNDAY, OR MONDAY THEN UNTIL 7:00 PM THE FOLLOWING TUESDAY.

3. FOR EASTER, BETWEEN THE HOURS OF 6:00AM THURSDAY AND 7:00 PM MONDAY.

4. FOR MEMORIAL DAY, BETWEEN THE HOURS OF 6:00 AM FRIDAY AND 7:00 PM TUESDAY.

5. FOR INDEPENDENCE DAY, BETWEEN THE HOURS OF 6:00 AM THE DAY BEFORE INDEPENDENCE DAY AND 7:00 PM THE DAY AFTER INDEPENDENCE DAY.

   IF INDEPENDENCE DAY IS ON A FRIDAY, SATURDAY, SUNDAY OR MONDAY THEN BETWEEN THE HOURS OF 6:00 AM THE THURSDAY BEFORE INDEPENDENCE DAY AND 7:00 PM THE TUESDAY AFTER INDEPENDENCE DAY.

6. FOR LABOR DAY, BETWEEN THE HOURS OF 6:00 AM FRIDAY AND 7:00 PM TUESDAY.

7. FOR THANKSGIVING DAY, BETWEEN THE HOURS OF 6:00 AM TUESDAY TO 7:00 PM MONDAY.

8. FOR CHRISTMAS, BETWEEN THE HOURS OF 6:00 AM THE FRIDAY BEFORE THE WEEK OF CHRISTMAS DAY AND 7:00 PM THE FOLLOWING TUESDAY AFTER THE WEEK OF CHRISTMAS.

LANE AND SHOULDER CLOSURE REQUIREMENTS

C) REMOVE LANE CLOSURE DEVICES FROM THE LANE WHEN WORK IS NOT BEING PERFORMED BEHIND THE LANE CLOSURE OR WHEN A LANE CLOSURE IS NO LONGER NEEDED OR AS DIRECTED BY THE ENGINEER.

D) WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING WITHIN 15 FEET OF AN OPEN TRAVEL LANE, CLOSE THE NEAREST OPEN SHOULDER USING ROADWAY STANDARD DRAWING NO. 1101.04 UNLESS THE WORK AREA IS PROTECTED BY BARRIER OR GUARDRAIL OR A LANE CLOSURE IS INSTALLED.

E) WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING ON THE SHOULDER ADJACENT TO AN UNDIVIDED FACILITY AND WITHIN 5 FEET OF AN OPEN TRAVEL LANE, CLOSE THE NEAREST OPEN TRAVEL LANE USING ROADWAY STANDARD DRAWING NO. 1101.02 UNLESS THE WORK AREA IS PROTECTED BY BARRIER OR GUARDRAIL.

F) WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING WITHIN A LANE OF TRAVEL OF AN UNDIVIDED OR DIVIDED FACILITY, CLOSE THE LANE ACCORDING TO THE TRAFFIC CONTROL PLANS, ROADWAY STANDARD DRAWINGS, OR AS DIRECTED BY THE ENGINEER. CONDUCT THE WORK SO THAT ALL PERSONNEL AND/OR EQUIPMENT REMAIN WITHIN THE CLOSED TRAVEL LANE.

G) DO NOT WORK SIMULTANEOUSLY WITHIN 15 FEET ON BOTH SIDES OF AN OPEN TRAVELWAY, RAMP, OR LOOP WITHIN THE SAME LOCATION UNLESS PROTECTED WITH GUARDRAIL OR BARRIER.

H) DO NOT INSTALL MORE THAN ONE LANE CLOSURE IN ANY DIRECTION ON ANY ROAD.

PAVEMENT EDGE DROP OFF REQUIREMENTS

I) BACKFILL AT A 6:1 SLOPE UP TO THE EDGE AND ELEVATION OF EXISTING PAVEMENT IN AREAS ADJACENT TO AN OPENED TRAVEL LANE THAT HAS AN EDGE OF PAVEMENT DROP-OFF AS FOLLOWS:

   BACKFILL DROP-OFFS THAT EXCEED 2 INCHES ON ROADWAYS WITH POSTED SPEED LIMITS OF 45 MPH OR GREATER.

   BACKFILL DROP-OFFS THAT EXCEED 3 INCHES ON ROADWAYS WITH POSTED SPEED LIMITS LESS THAN 45 MPH.

   BACKFILL WITH SUITABLE COMPACTED MATERIAL, AS APPROVED BY THE ENGINEER, AT NO EXPENSE TO THE DEPARTMENT.

J) DO NOT EXCEED A DIFFERENCE OF 2 INCHES IN ELEVATION BETWEEN OPEN LANES OF TRAFFIC FOR NOMINAL LIFTS OF 1.5 INCHES. INSTALL ADVANCE WARNING "UNEVEN LANES" SIGNS (W8-11) 200 FEET IN ADVANCE AND A MINIMUM OF EVERY HALF MILE THROUGHOUT THE UNEVEN AREA.

TRAFFIC PATTERN ALTERATIONS

K) NOTIFY THE ENGINEER TWENTY-ONE (30) CALENDAR DAYS PRIOR TO ANY TRAFFIC PATTERN ALTERATION.

SIGNING

L) INSTALL ADVANCE WORK ZONE WARNING SIGNS WHEN WORK IS WITHIN 40 FEET FROM THE EDGE OF TRAVEL LANE AND NO MORE THAN THREE (3) DAYS PRIOR TO THE BEGINNING OF CONSTRUCTION.

M) PROVIDE SIGNING AND DEVICES REQUIRED TO CLOSE THE ROAD ACCORDING TO THE ROADWAY STANDARD DRAWINGS AND TRAFFIC MANAGEMENT PLANS.

   PROVIDE SIGNING REQUIRED FOR THE OFF-SITE DETOUR ROUTE AS SHOWN IN THE TRAFFIC MANAGEMENT PLANS.

N) COVER OR REMOVE ALL SIGNS AND DEVICES REQUIRED TO CLOSE THE ROAD WHEN ROAD CLOSURE IS NOT IN OPERATION.

   COVER OR REMOVE ALL SIGNS REQUIRED FOR THE OFF-SITE DETOUR WHEN THE DETOUR IS NOT IN OPERATION.

O) ENSURE ALL NECESSARY SIGNING IS IN PLACE PRIOR TO ALTERING ANY TRAFFIC PATTERN.

P) INSTALL BLACK ON ORANGE "DIP" SIGNS (W8-2) AND/OR "BUMP" SIGNS (W8-1) 200 FEET IN ADVANCE OF THE UNEVEN AREA, OR AS DIRECTED BY THE ENGINEER.

TRAFFIC CONTROL DEVICES

Q) WHEN LANE CLOSURES ARE NOT IN EFFECT SPACE CHANNELIZING DEVICES IN WORK AREAS NO GREATER IN FEET THAN TWICE THE POSTED SPEED LIMIT (MPH) EXCEPT, 10 FEET ON-CENTER IN RADII, AND 3 FEET OFF THE EDGE OF AN OPEN TRAVELWAY. REFER TO STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES SECTIONS 1130 (DRUMS), 1135 (CONES), AND 1180 (SKINNY DRUMS) FOR ADDITIONAL REQUIREMENTS.

R) PLACE TYPE III BARRICADES, WITH "ROAD CLOSED" SIGN R11-2 ATTACHED, OF SUFFICIENT LENGTH TO CLOSE ENTIRE ROADWAY.

S) PLACE ADDITIONAL SETS OF THREE CHANNELIZING DEVICES PERPENDICULAR TO THE EDGE OF TRAVELWAY ON 500 FEET CENTERS WHEN UNOPENED LANES ARE CLOSED TO TRAFFIC.

PAVEMENT MARKINGS AND MARKERS

T) INSTALL TEMPORARY PAVEMENT MARKINGS AND TEMPORARY PAVEMENT MARKERS ON INTERIM LAYERS OF PAVEMENT AS FOLLOWS:

ROAD NAME	MARKING	MARKER
NC 225 (GREENVILLE HWY)	PAINT	TEMPORARY RAISED
SR 1164 (ERKWOOD DRIVE)	PAINT	TEMPORARY RAISED
SR 1779 (SHEPHERD STREET)	PAINT	TEMPORARY RAISED

U) PLACE ONE APPLICATION OF PAINT FOR TEMPORARY TRAFFIC PATTERNS. PLACE A SECOND APPLICATION OF PAINT SIX (6) MONTHS AFTER THE INITIAL APPLICATION AND EVERY SIX MONTHS AS DIRECTED BY THE ENGINEER.

V) TIE PROPOSED PAVEMENT MARKING LINES TO EXISTING PAVEMENT MARKING LINES.

W) REMOVE/REPLACE ANY CONFLICTING/DAMAGED PAVEMENT MARKINGS AND MARKERS BY THE END OF EACH DAY'S OPERATION.

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NORTH CAROLINA PROFESSIONAL SEAL 030864 ENGINEER DAVID W. BISSETTE

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DIVISION OF HIGHWAYS · STATE OF NORTH CAROLINA · DEPARTMENT OF TRANSPORTATION · WORK ZONE TRAFFIC CONTROL

TRANSPORTATION OPERATIONS PLAN

5/30/2018
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GENERAL NOTES

X) TRACE THE PROPOSED MONOLITHIC ISLAND LOCATIONS WITH PROPER COLOR PAVEMENT MARKINGS PRIOR TO INSTALLATION. PLACE DRUMS TO DELINEATE ANY MONOLITHIC ISLANDS BEFORE INSTALLATION.

MISCELLANEOUS

Y) LAW ENFORCEMENT MAY BE USED TO MAINTAIN TRAFFIC THROUGH THE WORK AREA AND/OR INTERSECTIONS AS DIRECTED BY THE ENGINEER.

Z) IN THE EVENT A TIE-IN CANNOT BE MADE IN ONE DAY'S TIME, BRING THE TIE-IN AREA TO AN APPROPRIATE ROADWAY ELEVATION AS DETERMINED BY THE ENGINEER. PLACE BLACK ON ORANGE "LOOSE GRAVEL" SIGNS (W8-7) AND BLACK ON ORANGE "PAVEMENT ENDS" SIGNS (W8-3) 200 FEET AND 400 FEET RESPECTIVELY IN ADVANCE OF THE UNEVEN AREAS. USE DRUMS TO DELINEATE THE EDGE OF ROADWAY ALONG UNPAVED AREAS.

AA) ALL CURB RAMP LOCATIONS SHALL BE DERIVED FROM STATIONING SHOWN ON PAVEMENT MARKING PLANS OR AS DIRECTED BY THE ENGINEER IN COORDINATION WITH THE SIGNING AND DELINEATION UNIT.

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DIVISION OF HIGHWAYS · STATE OF NORTH CAROLINA · DEPARTMENT OF TRANSPORTATION · WORK ZONE TRAFFIC CONTROL

TRANSPORTATION OPERATIONS PLAN

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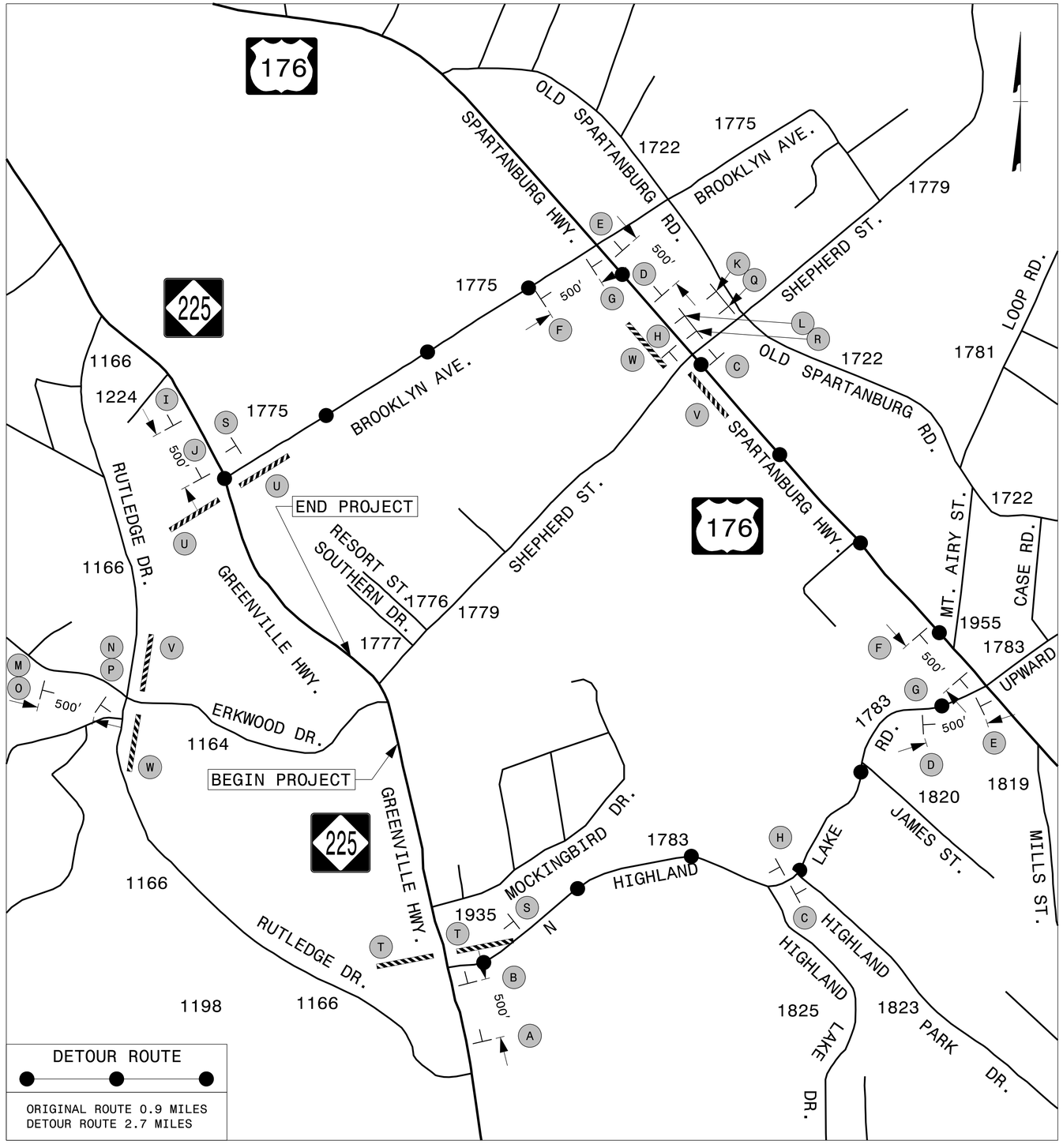
PROJ. REFERENCE NO.	SHEET NO.
U-5105	TMP-2



DETOUR M4-8 24" X 12"	DETOUR M4-8 24" X 12"	DETOUR M4-8 24" X 12"	DETOUR M4-8 24" X 12"
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A	B	C	D
DETOUR M4-8 24" X 12"	DETOUR M4-8 24" X 12"	DETOUR M4-8 24" X 12"	DETOUR M4-8 24" X 12"
NORTH M3-1 24" x 12"	SOUTH M3-3 24" x 12"	SOUTH M3-3 24" x 12"	SOUTH M3-3 24" x 12"
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E	F	G	H
DETOUR M4-8 24" X 12"	DETOUR M4-8 24" X 12"	TO M4-5 24" X 12"	TO M4-5 24" X 12"
SOUTH M3-3 24" x 12"	SOUTH M3-3 24" x 12"	NORTH M3-1 24" x 12"	NORTH M3-1 24" x 12"
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TO M4-5 24" X 12"	TO M4-5 24" X 12"	TO M4-5 24" X 12"	TO M4-5 24" X 12"
NORTH M3-1 24" x 12"	NORTH M3-1 24" x 12"	SOUTH M3-3 24" x 12"	SOUTH M3-3 24" x 12"
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TEMPORARY TRAFFIC CONTROL OFF SITE DETOUR ROUTE AND GUIDE SIGNS

5/30/2018
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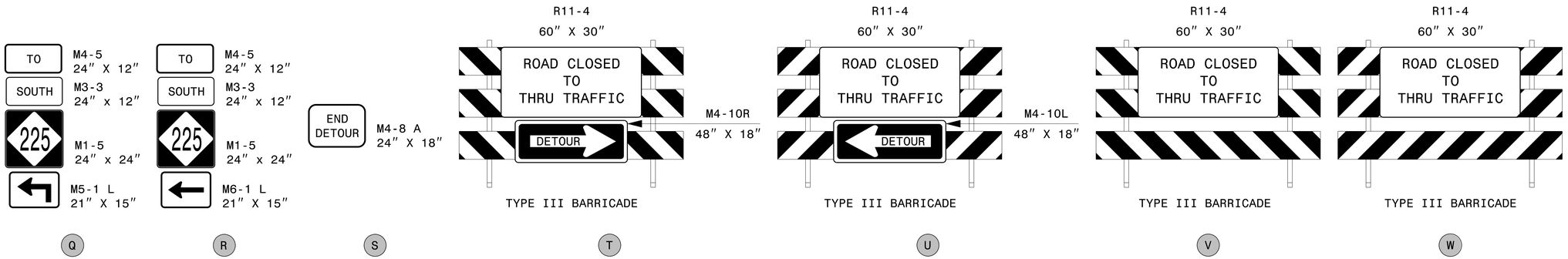
PROJ. REFERENCE NO.	SHEET NO.
U-5105	TMP-2A



NOTES
- USING ROADWAY STANDARD DRAWING 1101.03 SHEET 1 OF 9 CLOSE GREENVILLE HWY (NC 225), ERKWOOD DR (SR 1164), AND SHEPHERD ST (SR 1779) TO THRU TRAFFIC AND PLACE TRAFFIC ON THE OFF SITE DETOUR SHOWN.
- INSTALL W20-3 "ROAD CLOSED AHEAD" AND W20-2 "DETOUR AHEAD" 2000′ AND 1500′ RESPECTIVELY FROM THE TYPE III BARRICADES WITH R11-4 "ROAD CLOSED TO THRU TRAFFIC" SIGNS SHOWN ON GREENVILLE HWY (NC 225), ERKWOOD DR (SR 1164), AND SHEPHERD ST (SR 1779). (SEE RSD 1101.03, 1 OF 9)
- PLACE WING BARRICADES WITH A R11-4 SIGN AT THROUGH SIDE ROADS BETWEEN THE DETOUR POINT AND THE POINT OF CLOSURE ON GREENVILLE HWY (NC 225), ERKWOOD DR (SR 1164), AND SHEPHERD ST (SR 1779). (SEE RSD 1101.03, 1 OF 9)
- SEE SHEET TMP-5 FOR ADDITIONAL ROAD CLOSURE SIGNING.

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NORTH CAROLINA PROFESSIONAL SEAL 030864 ENGINEER DAVID W. BISSETTE

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DIVISION OF HIGHWAYS · STATE OF NORTH CAROLINA · DEPARTMENT OF TRANSPORTATION · WORK ZONE TRAFFIC CONTROL

TEMPORARY TRAFFIC CONTROL
OFF SITE DETOUR ROUTE
AND GUIDE SIGNS

5/30/2018
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PROJ. REFERENCE NO.	SHEET NO.
U-5105	TMP-3

PHASING

PHASE I

WORK WILL BE PERFORMED AWAY FROM TRAFFIC, BEHIND SHOULDER CLOSURES, AND WITHIN LANE CLOSURES. TRAFFIC WILL BE RETUREN TO THE EXISTING TWO-LANE, TWO-WAY PATTERN AT THE END OF EACH WORK DAY.

STEP 1. INSTALL WORK ZONE ADVANCE WARNING SIGNS IN ACCORDANCE WITH ROADWAY STANDARD DRAWING 1101.01.

STEP 2. USING ROADWAY STANDARD DRAWING 1101.04 CLOSE THE SHOULDERS AS SHOWN ON TMP-4.

STEP 3. WORKING AWAY FROM TRAFFIC AND USING ROADWAY STANDARD DRAWING 1101.02 SHEETS 1 AND 2 OF 14 AS NEEDED, BEGIN CONSTRUCTION OF THE FOLLOWING PROPOSED ROADWAY SECTIONS AS SHOWN ON SHEET TMP-4 UP TO, BUT NOT INCLUDING THE FINAL LAYER OF SURFACE:
-L- STATION 16+90+/- TO STATION 22+14+/-
-Y1- STATION 16+60+/- TO STATION 21+00+/-
-Y2- STATION 10+00+/- TO STATION 17+85+/-

STEP 4. USING ROADWAY STANDARD DRAWING 1101.02 SHEETS 1 AND 2 OF 14 AS NEEDED, CONSTRUCT 196′ OF THE PROPOSED 10′ X 7′ RCBC AS SHOWN ON SHEET TMP-4.

PHASE II

TRAFFIC WILL BE MAINTAINED ON AN OFF-SITE DETOUR

INTERMEDIATE CONTRACT TIME: THE CONTRACTOR SHALL COMPLETE THE WORK REQUIRED OF PHASE II STEPS 1 THRU 3 IN 90 CONSECUTIVE CALANDER DAYS.

STEP 1. USING ROADWAY STANDARD DRAWING 1101.03 SHEETS 1 AND 2 OF 9 CLOSE GREENVILLE HWY (NC 225), ERKWOOD DR (SR 1164), AND SHEPHERD ST (SR 1779) TO THRU TRAFFIC AND DETOUR TRAFFIC OFF-SITE AS SHOWN ON TMP-2. MAINTAIN ACCESS TO ALL RESIDENCES AND BUSINESSES BETWEEN THE CLOSURE POINTS.

STEP 2. WORKING AWAY FROM TRAFFIC COMPLETE THE FOLLOWING:
- CONSTRUCT THE REMAINING 84.0′ OF THE PROPOSED 10′ X 7′ RCBC AS SHOWN ON TMP-5.
- CONSTRUCT THE PROPOSED RETAINING WALL LEFT OF -L- STATION 21+68+/- TO STATION 22+30+/-.
- COMPLETE CONSTRUCTION OF THE FOLLOWING PROPOSED ROADWAY SECTIONS AS SHOWN ON ON TMP-5 UP TO, BUT NOT INCLUDING THE FINAL LAYER OF SURFACE COURSE:
  -L- STATION 16+90+/- TO STATION 25+55+/-
  -Y1- STATION 16+60+/- TO STATION 21+00+/-
  -Y2- STATION 10+00+/- TO STATION 17+85+/-
  -Y3- STATION 10+00+/- TO STATION 11+10+/-

STEP 3. WORKING AWAY FROM TRAFFIC PLACE TEMPORARY PAVEMENT MARKINGS AND TEMPORARY PAVEMENT MARKERS IN THE PROPOSED FINAL LOCATION. (SEE PAVEMENT MARKING PLANS)

STEP 4. OPEN GREENVILLE HWY (NC 225), ERKWOOD DR (SR 1164), AND SHEPHERD ST (SR 1779) TO TRAFFIC IN THE FINAL PATTERN.

PHASE III

WORK WILL BE PERFORMED AWAY FROM TRAFFIC, BEHIND SHOULDER CLOSURES, AND WITHIN LANE CLOSURES. TRAFFIC WILL BE RETUREN TO THE CURRENT TWO-LANE, TWO-WAY PATTERN AT THE END OF EACH WORK DAY.

STEP 1. WORKING AWAY FROM TRAFFIC AND USING ROADWAY STANDARD DRAWING 1101.02 SHEETS 1 AND 2 OF 14 AS NEEDED, COMPLETE THE FOLLOWING:
- REMOVE THE EXISTING SHEPHERD ST ALIGNMENT AND GRADE TO DRAIN TOWARDS -Y2-. (SEE ROADWAY PLANS)
- CONSTRUCT THE PROPOSED MONOLITHIC CONCRETE ISLANDS.
- CONSTRUCT THE PROPOSED CONCRETE SIDEWALK.

STEP 2. USING ROADWAY STANDARD DRAWING 1101.02 SHEETS 1 AND 2 OF 14 AS NEEDED, COMPLETE THE FOLLOWING:
- PLACE THE FINAL LAYER OF SURFACE COURSE.
- PLACE THE FINAL PAVEMENT MARKINGS AND PAVEMENT MARKERS. (SEE PAVEMENT MARKING PLANS)

STEP 3. OPEN GREENVILLE HWY (NC 225), ERKWOOD DR (SR 1164), AND SHEPHERD ST (SR 1779) TO TRAFFIC.

STEP 4. REMOVE THE WORK ZONE ADVANCE WARNING SIGNS.

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SEAL

NORTH CAROLINA PROFESSIONAL SEAL 030864 ENGINEER DAVID W. BISSETTE

DIVISION OF HIGHWAYS STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION WORK ZONE TRAFFIC CONTROL

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TEMPORARY TRAFFIC CONTROL PHASING

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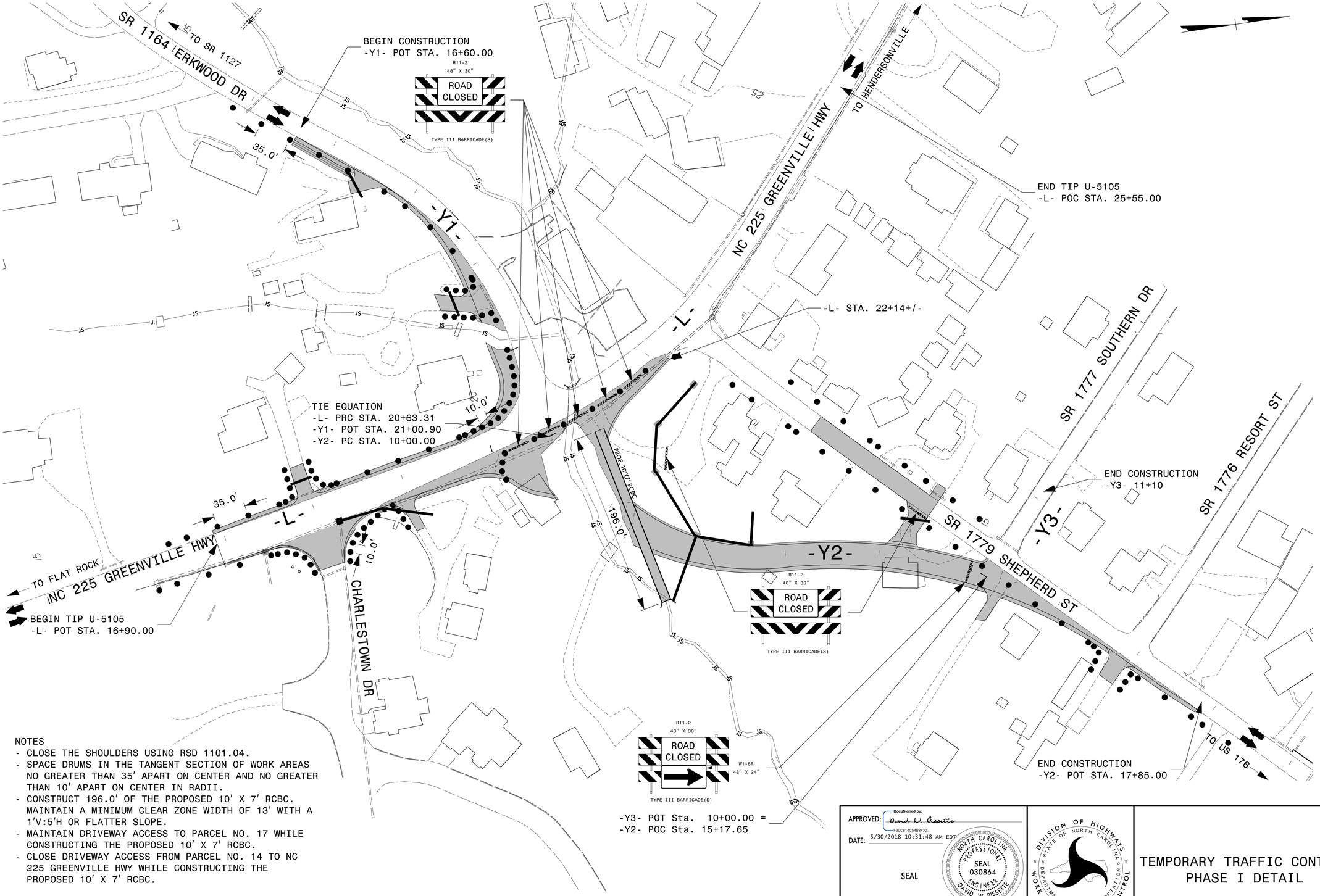
PROJ. REFERENCE NO.	SHEET NO.
U-5105	TMP-4



NOTES
- CLOSE THE SHOULDERS USING RSD 1101.04.
- SPACE DRUMS IN THE TANGENT SECTION OF WORK AREAS NO GREATER THAN 35′ APART ON CENTER AND NO GREATER THAN 10′ APART ON CENTER IN RADII.
- CONSTRUCT 196.0′ OF THE PROPOSED 10′ X 7′ RCBC. MAINTAIN A MINIMUM CLEAR ZONE WIDTH OF 13′ WITH A 1′V:5′H OR FLATTER SLOPE.
- MAINTAIN DRIVEWAY ACCESS TO PARCEL NO. 17 WHILE CONSTRUCTING THE PROPOSED 10′ X 7′ RCBC.
- CLOSE DRIVEWAY ACCESS FROM PARCEL NO. 14 TO NC 225 GREENVILLE HWY WHILE CONSTRUCTING THE PROPOSED 10′ X 7′ RCBC.

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DIVISION OF HIGHWAYS · STATE OF NORTH CAROLINA · DEPARTMENT OF TRANSPORTATION · WORK ZONE TRAFFIC CONTROL

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TEMPORARY TRAFFIC CONTROL PHASE I DETAIL

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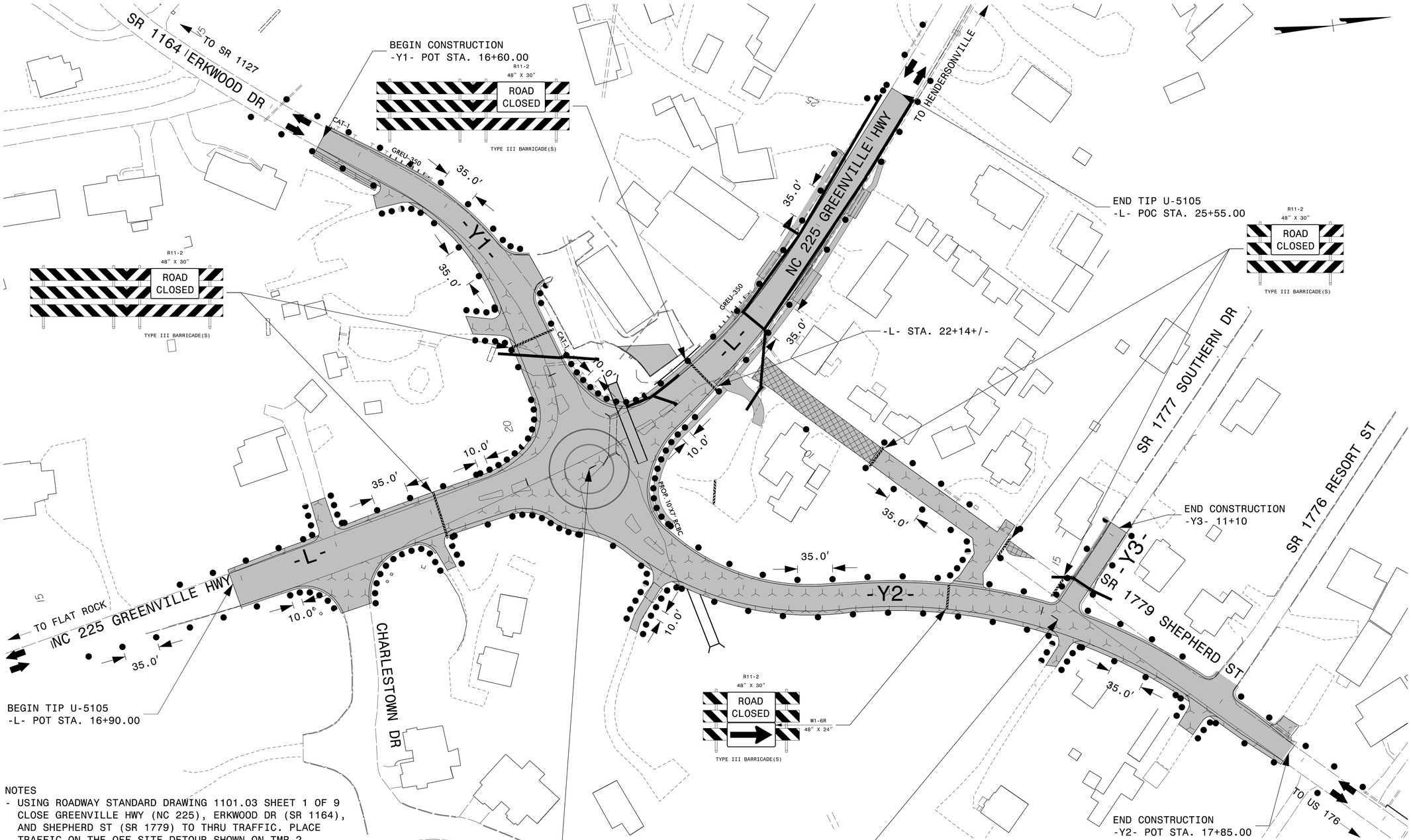
PROJ. REFERENCE NO.	SHEET NO.
U-5105	TMP-5



NOTES
- USING ROADWAY STANDARD DRAWING 1101.03 SHEET 1 OF 9 CLOSE GREENVILLE HWY (NC 225), ERKWOOD DR (SR 1164), AND SHEPHERD ST (SR 1779) TO THRU TRAFFIC. PLACE TRAFFIC ON THE OFF SITE DETOUR SHOWN ON TMP-2.
- PLACE WING BARRICADES WITH R11-4 SIGN AT THROUGH SIDE ROADS BETWEEN THE DETOUR POINT AND THE POINT OF CLOSURE. (SEE RSD 1101.03, 1 OF 9)
- INSTALL W20-3 "ROAD CLOSED 1000 FT" AND W20-3 "ROAD CLOSED 500 FT" 1000' AND 500' RESPECTIVELY FROM THE TYPE III BARRICADES SHOWN ON TMP-5. (SEE RSD 1101.03,. 1 OF 9)
- CONSTRUCT THE REMAINING 84.0' OF THE PROPOSED 10' X 7' RCBC USING A ROAD CLOSURE AND OFF SITE DETOUR.

TIE EQUATION
-L- PRC STA. 20+63.31
-Y1- POT STA. 21+00.90
-Y2- PC STA. 10+00.00

-Y3- POT Sta. 10+00.00 =
-Y2- POC Sta. 15+17.65

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DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
WORK ZONE TRAFFIC CONTROL

TEMPORARY TRAFFIC CONTROL PHASE II DETAIL

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U-5105

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

TIP NO.	SHEET NO.
U-5105	PMP-1

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DATE: 3/1/2018

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SEAL
NORTH CAROLINA PROFESSIONAL SEAL 045256 ENGINEER BRENDAN A. LEHAN

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PAVEMENT MARKING PLAN
HENDERSON COUNTY
LOCATION: NC 225 (GREENVILLE HIGHWAY) AT SR 1164 (ERKWOOD DR.) AND SR 1779 (SHEPHERD ST)

ROADWAY STANDARD DRAWING

THE FOLLOWING ROADWAY STANDARDS AS APPEAR IN "ROADWAY STANDARD DRAWINGS" - PROJECT SERVICES UNIT - 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
1205.01	PAVEMENT MARKINGS - LINE TYPES AND OFFSETS
1205.02	PAVEMENT MARKINGS - TWO-LANE AND MULTILANE ROADWAYS
1205.04	PAVEMENT MARKINGS - INTERSECTIONS
1205.09	PAVEMENT MARKINGS - PAINTED ISLANDS
1205.14	PAVEMENT MARKINGS - ROUNDABOUTS

SUMMARY OF QUANTITIES

ITEM NO. DESC. NO.	ITEM NO. SECT. NO.	ITEM DESCRIPTION	QUANTITY	UNIT
4702000000	1205	THERMOPLASTIC(12", 120 MILS)	70	L.F.
4710000000	1205	THERMOPLASTIC(24", 120 MILS)	15	L.F.
4686000000	1205	THERMOPLASTIC(4", 120 MILS)	4870	L.F.
4650000000	1205	THERMOPLASTIC(4", 90 MILS)	1810	L.F.
4695000000	1205	THERMOPLASTIC(8", 90 MILS)	120	L.F.
4725000000	1205	THERMOPLASTICPAVEMENT MARKING SYMBOLS (90 MILS)	24	EA.
4900000000	1250	SNOW PLOWABLE PAVEMENT MARKERS	42	EA.

GENERAL NOTES

THE FOLLOWING GENERAL NOTES APPLY AT ALL TIMES FOR THE DURATION OF THE CONSTRUCTION PROJECT, EXCEPT WHEN OTHERWISE NOTED IN THE PLAN, OR DIRECTED BY THE ENGINEER.

A) INSTALL PAVEMENT MARKINGS AND PAVEMENT MARKERS ON THE FINAL SURFACE AS FOLLOWS:

ROAD NAME	MARKING	MARKER
SR 1164	Thermoplastic	Snow Plowable Y/Y
SR 1779	Thermoplastic	Snow Plowable Y/Y

B) TIE PROPOSED PAVEMENT MARKING LINES TO EXISTING PAVEMENT MARKING LINES.

C) REMOVE/REPLACE ANY CONFLICTING/DAMAGED PAVEMENT MARKINGS AND MARKERS.

D) UNLESS OTHERWISE SPECIFIED, HEATED-IN-PLACE THERMOPLASTIC MAY BE USED IN LIEU OF EXTRUDED THERMOPLASTIC FOR STOP BARS, SYMBOLS, CHARACTERS AND DIAGONALS. IF HEATED-IN-PLACE IS USED, IT SHALL BE PAID FOR USING THE EXTRUDED THERMOPLASTIC PAY ITEM.

E) UNLESS OTHERWISE SPECIFIED, HEATED-IN-PLACE THERMOPLASTIC MAY BE USED IN LIEU OF COLD APPLIED PLASTIC FOR STOP BARS, SYMBOLS, CHARACTERS AND DIAGONALS ON ASPHALT OR CONCRETE ROADWAYS. IF HEATED-IN-PLACE IS USED, IT SHALL BE PAID FOR USING THE COLD APPLIED PAY ITEM.

F) SEE ROADWAY PLANS FOR ALTERNATE CURB RAMP DESIGNS WHEN INDICATED ON PAVEMENT MARKING DETAIL SHEETS.

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INDEX

SHEET NO.	DESCRIPTION
PMP-1	PAVEMENT MARKING PLAN TITLE AND SCHEDULE SHEET
PMP-2	CROSSWALK PAVEMENT MARKING GUIDANCE DETAIL

$$$$$$$SYSTIME$$$$$$$
$$$$$$$

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5/14/99

PROJECT REFERENCE NO.	SHEET NO.
U-5105	PMP-2
R/W SHEET NO.	

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PAVEMENT MARKING DESIGN ENGINEER

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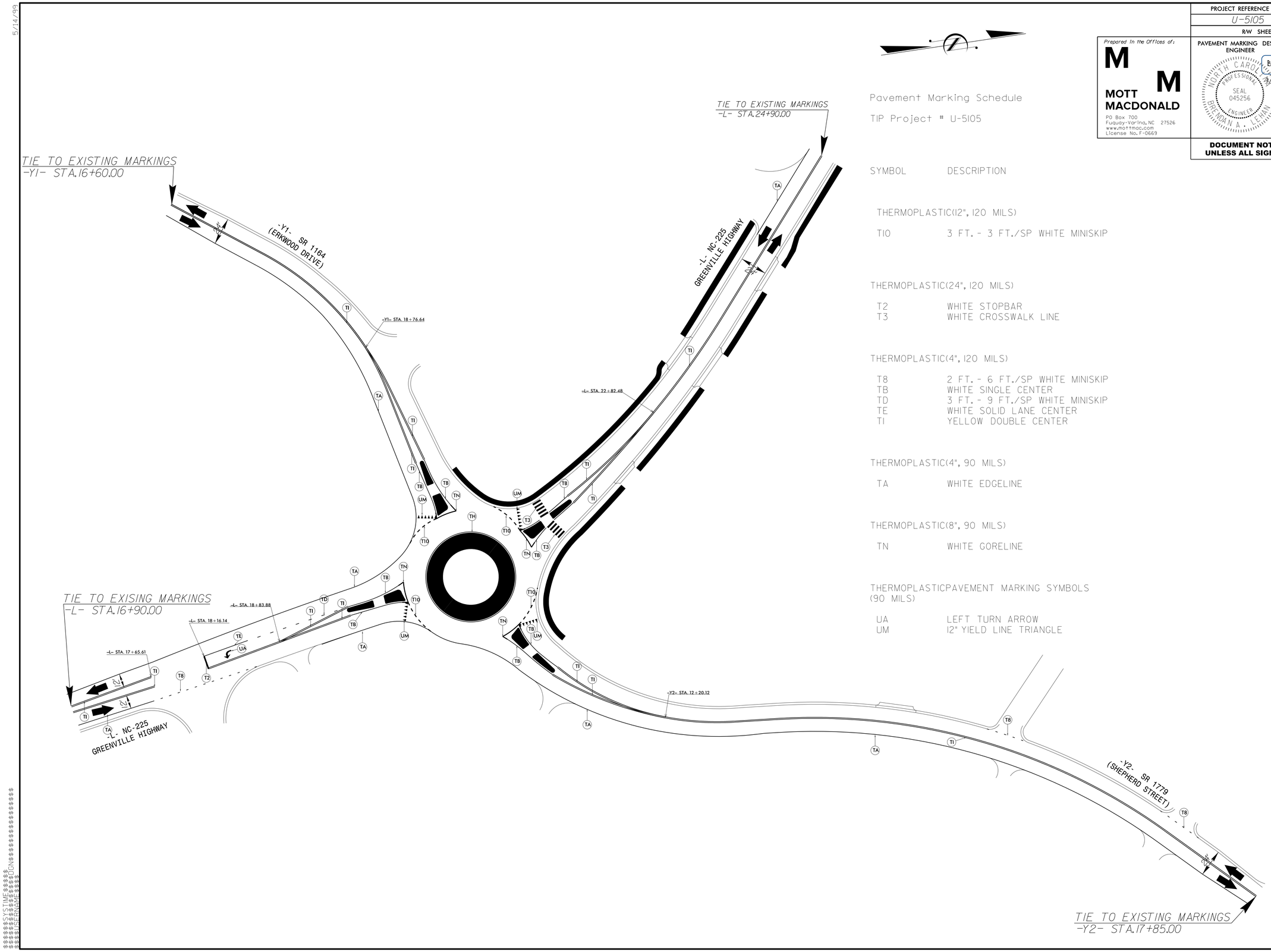

Pavement Marking Schedule

TIP Project # U-5105

SYMBOL	DESCRIPTION
THERMOPLASTIC(12", 120 MILS)	
TI0	3 FT. - 3 FT./SP WHITE MINISKIP
THERMOPLASTIC(24", 120 MILS)	
T2	WHITE STOPBAR
T3	WHITE CROSSWALK LINE
THERMOPLASTIC(4", 120 MILS)	
T8	2 FT. - 6 FT./SP WHITE MINISKIP
TB	WHITE SINGLE CENTER
TD	3 FT. - 9 FT./SP WHITE MINISKIP
TE	WHITE SOLID LANE CENTER
TI	YELLOW DOUBLE CENTER
THERMOPLASTIC(4", 90 MILS)	
TA	WHITE EDGELINE
THERMOPLASTIC(8", 90 MILS)	
TN	WHITE GORELINE
THERMOPLASTICPAVEMENT MARKING SYMBOLS (90 MILS)	
UA	LEFT TURN ARROW
UM	12" YIELD LINE TRIANGLE

SYFILE$ LEFILE$ LDMS$ LDUS$ $$$$

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PROJ. REFERENCE NO.	SHEET NO.
U-5105	LIGHT-1

PLANS AND DETAILS FOR PROPOSED LIGHTING/ELECTRICAL CONSTRUCTION

NOTES

1. TYPE PC18 JUNCTION BOXES ARE 18″ L X 12″ W X 18″ D.
2. LOCATE ALL JUNCTION BOXES OUTSIDE CLEAR ZONE AND IN AN AREA UNLIKELY TO BE USED BY TRAFFIC.
3. LOCATE PROPOSED CONTROL SYSTEM IN AN AREA ACCESSIBLE FOR MAINTENANCE VEHICLES AND OUTSIDE OF CLEAR ZONE AS DEFINED BY THE 2011 AASHTO ROADSIDE DESIGN GUIDE.

SCOPE OF WORK

PLACE ROADWAY LIGHTING SYSTEM INTO SERVICE BY PROVIDING AND INSTALLING 40 FT. LIGHT STANDARDS WITH LED LUMINAIRES ON 10-15 FT. ARMS, UNDERGROUND CIRCUITRY, CONTROL SYSTEM AND JUNCTION BOXES.

DESIGN CRITERIA

2008 IES DESIGN GUIDE FOR ROUNDABOUT LIGHTING

2005 AASHTO ROADWAY LIGHTING DESIGN GUIDE

2013 AASHTO STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES, AND TRAFFIC SIGNALS, AND LATEST INTERIM SPECIFICATIONS VALID AT THE TIME OF LETTING

DESIGN LIGHT STANDARDS FOR BASIC WINDSPEED OF 70 MPH SHOWN IN AASHTO.

FATIGUE CATEGORY II SHALL BE USED IN DESIGN

2017 NATIONAL ELECTRIC CODE

2011 AASHTO ROADSIDE DESIGN GUIDE

ROADWAY STANDARDS

THE FOLLOWING ROADWAY STANDARDS AS APPEAR IN ″NCDOT ROADWAY STANDARD DRAWINGS″, ROADWAY DESIGN UNIT-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
1404.01	LIGHT STANDARDS
1405.01	STANDARD FOUNDATION
1406.01	LIGHT STANDARD LUMINAIRES
1407.01	ELECTRIC SERVICE POLE AND LATERAL
1408.01	LIGHT CONTROL SYSTEM
1409.01	ELECTRICAL DUCT
1410.01	FEEDER CIRCUITS
1411.01	ELECTRICAL JUNCTION BOXES

ALL WORK SHALL BE IN CONFORMANCE WITH DIVISION 14 OF THE STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES, DATED JANUARY 2018.

LEGEND

PROPOSED LIGHT STANDARD TYPE MTLT 40 FT WITH SINGLE ARM (ARM LENGTH SHOWN). INCLUDES STANDARD FOUNDATION TYPE R1 (UNLESS OTHERWISE NOTED) & 13,000-14,000 LUMENS LED ROADWAY LUMINAIRE. IES DISTRIBUTION: MEDIUM, TYPE II

PROPOSED CONTROL SYSTEM
BREAKER SIZE SHOWN IN LOAD SCHEDULE, SHEET E2.

JB1
PROPOSED ELECTRICAL JUNCTION BOX SEE DETAILS & TABLE ″B″, THIS SHEET

1
REFERENCE TO CORRESPONDING NOTE AS NUMBERED

A1
8
PROPOSED FEEDER CIRCUIT CONTROL SYSTEM (A), CIRCUIT (1) PLAN SYMBOL (8) SEE TABLE A, THIS SHEET

3#1/0 USE
2″
PROPOSED SERVICE POLE AND LATERAL 30 FT. CLASS 4
3#1/0 USE CONDUCTORS
2″ CONDUIT

2″, 3″ OR 4″ ELEC. DUCT JA/BD
PROPOSED ELECTRICAL DUCT SIZE 2″, 3″ OR 4″
TYPE (JA) OR (BD) LOCATION: SEE TABLE C, THIS SHEET

TABLE ″A″
CIRCUITRY CONDUCTOR CONDUIT TYPE & SIZE

PLAN SYMBOL	DESCRIPTION		CONTRACT ITEM
8	2-#8 AWG 1-#10 AWG 1.5″ P	2 AWG SIZE 8 CONDUCTOR (BK & RD) 1 AWG SIZE 10 GROUNDING CONDUCTOR 1.5″ PVC CONDUIT	2 - 8 W/G FEEDER CIRCUIT IN 1.5″ CONDUIT

TABLE ″B″
JUNCTION BOX SUMMARY

NUMBER	LOCATION	TYPE		SHEET
JB1	19+18 -L-, 30′ LT	PC18		E2
JB2	19+61 -Y1-, 25′ LT	PC18		E2
JB3	11+43 -Y2-, 26′ RT	PC18		E2
JB4	22+45 -L-, 30′ RT	PC18		E2
JB5	22+41 -L-, 25′ LT	PC18		E2
		5		

TABLE ″C″
ELECTRICAL DUCT SUMMARY
(ESTIMATED LENGTH IN FEET)

		TYPE					
		JACKED (JA) FEET			BURIED (BD) FEET		
LOCATION	SHEET	SIZE 2″	SIZE 3″	SIZE 4″	SIZE 2″	SIZE 3″	SIZE 4″
19+18 -L-, 30′ LT	E2					50	
19+61 -Y1-, 25′ LT	E2					45	
11+43 -Y2-, 26′ RT	E2					42	
22+45 -L-, 30′ RT	E2					40	
TOTALS						177	

TABLE ″D″
CONVENTIONAL LED LUMINAIRES

MANUFACTURER	PART NUMBER
GENERAL ELECTRIC	ERLH-14-B140-XX-XXXX-XX
AMERICAN ELECTRIC LIGHTING	ATBM-E-XXXXX-R2-XXXX

ABBREVIATIONS

BD	BURIED	PVC	PVC SCHEDULE 40 CONDUIT
LT	LIGHT	RGC	RIGID GALVANIZED STEEL CONDUIT
JA	JACKED	C	CONDUIT
MH	MOUNTING HEIGHT	CKT	CIRCUIT
∅	PHASE	N	NEUTRAL
SER LAT	SERVICE LATERAL	G	GROUND

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DIVISION OF HIGHWAYS STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

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LIGHTING PLAN

2/21/2018
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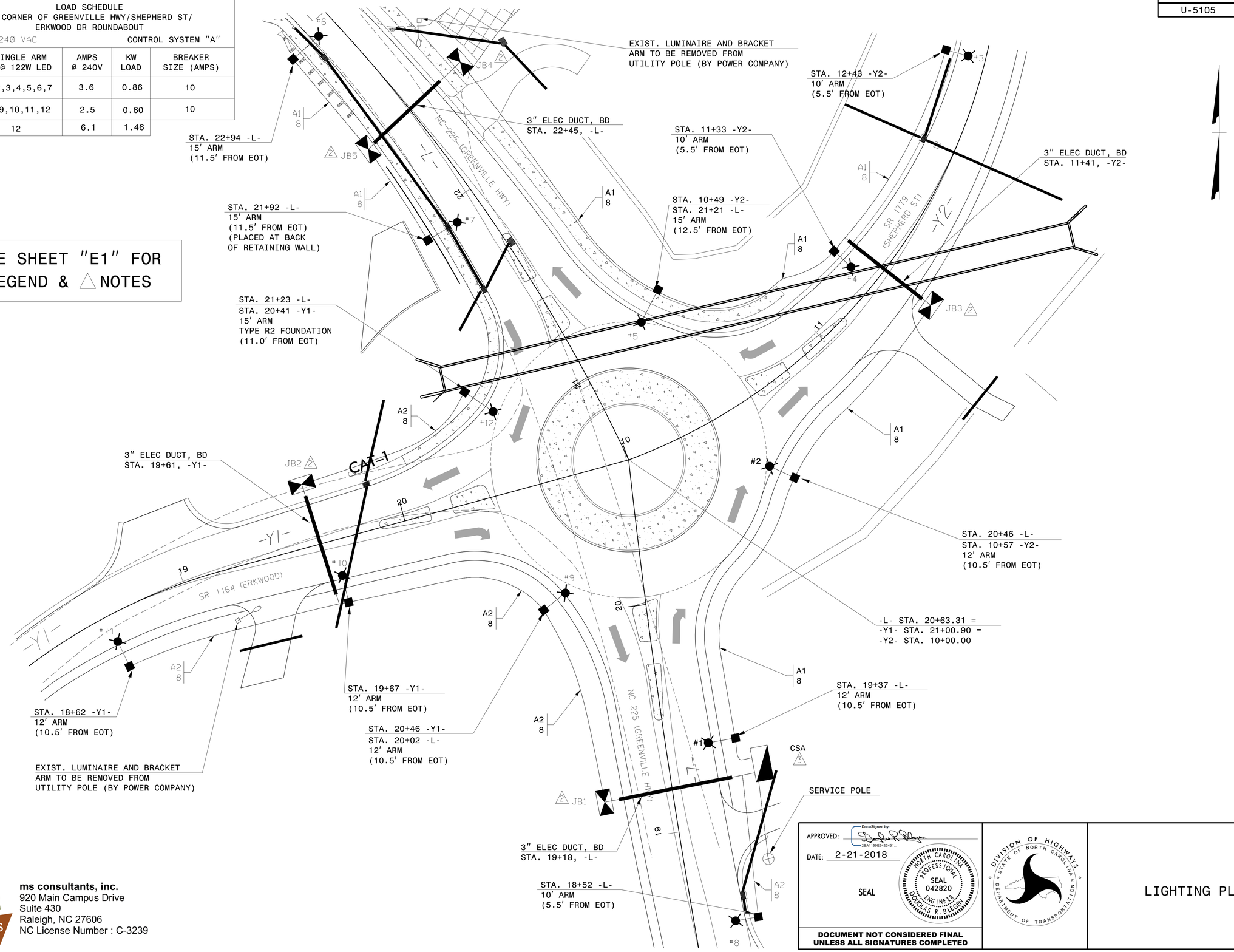
PROJ. REFERENCE NO.	SHEET NO.
U-5105	LIGHT-2

LOAD SCHEDULE
SE CORNER OF GREENVILLE HWY/SHEPHERD ST/
ERKWOOD DR ROUNDABOUT

10/3W,120/240 VAC — CONTROL SYSTEM "A"

CKT	SINGLE ARM 1 @ 122W LED	AMPS @ 240V	KW LOAD	BREAKER SIZE (AMPS)
A1	1,2,3,4,5,6,7	3.6	0.86	10
A2	8,9,10,11,12	2.5	0.60	10
TOTAL	12	6.1	1.46	

SEE SHEET "E1" FOR LEGEND & △ NOTES



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LIGHTING PLAN

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2/21/2018
N:\DOT\60\10645-0@ CALYX U-5105 Hendersonville Roadway Lighting Plan\LightingElectrical\Lighting Design\U5105 Lighting Plan.dgn
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