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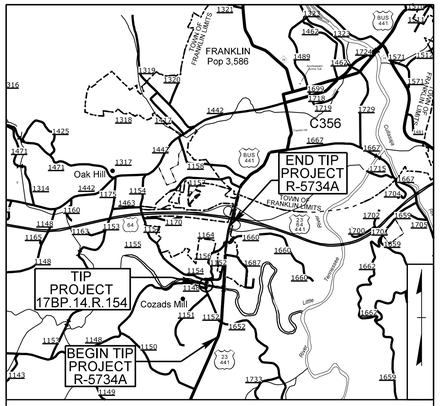
This file or an individual page shall not be considered a certified document.

09/08/99

CONTRACT: C204130 TIP PROJECT: R-5734A/17BP.14.R.154

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



VICINITY MAP

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

MACON COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-5734A /17BP.14.R.154	1	

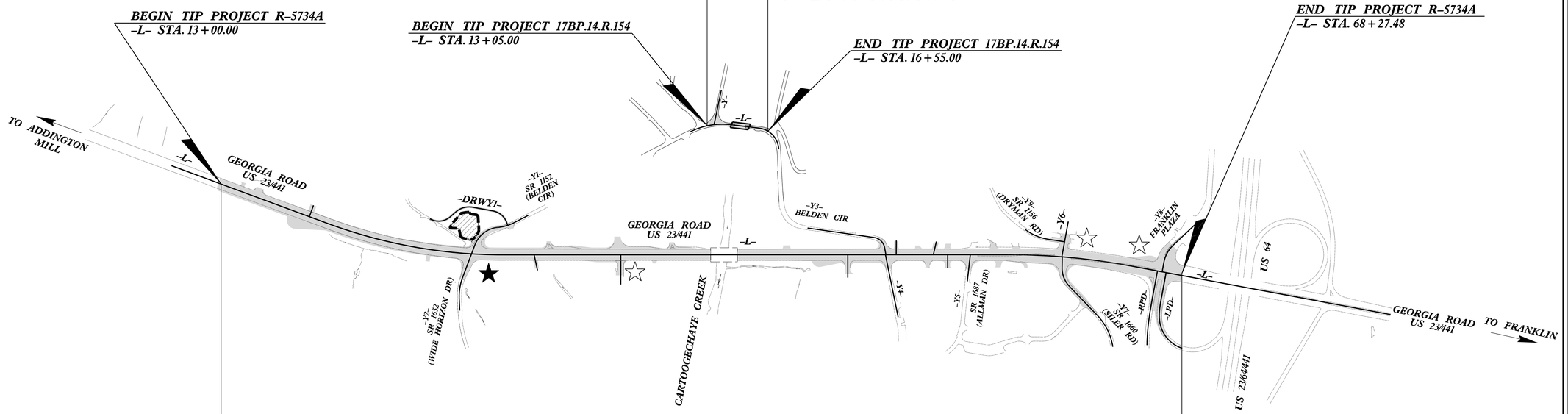
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
50192.1.1	N/A	P.E. (R-5734A)
17BP.14.R.154	N/A	P.E. (17BP.14.R.154)
50192.2.1	N/A	R/W, UTIL. (R-5734A)
17BP.14.R.154	N/A	R/W, UTIL. (17BP.14.R.154)
50192.3.1	N/A	CONST.

LOCATION: *US 23/441 (GEORGIA ROAD) FROM SR 1652 (WIDE HORIZON DR.)/SR 1152 (BELDEN CIRCLE) TO US 64 AND BRIDGE #314 OVER CARTOOGECHAYE CREEK ON SR 1152 (BELDEN CIRCLE)*

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

NAD 83/2011

PART 2
17BP.14.R.154



PART 1
R-5734A

★ PROPOSED SIGNAL
☆ UPGRADED SIGNAL

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT R-5734A	= 1.047 MILES
TOTAL LENGTH TIP PROJECT R-5734A	= 1.047 MILES
LENGTH OF ROADWAY TIP PROJECT 17BP.14.R.154	= 0.047 MILES
LENGTH OF STRUCTURE TIP PROJECT 17BP.14.R.154	= 0.019 MILES
TOTAL LENGTH TIP PROJECT 17BP.14.R.154	= 0.066 MILES
TOTAL LENGTH OF TIP PROJECTS R-5734A /17BP.14.R.154	= 1.113 MILES

Prepared In The Offices of:

Stantec
Stantec Consulting Services Inc.
801 Jones Franklin Road
Suite 300
Raleigh, NC 27606
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License No. F-0672
www.stantec.com

STV 100 Years
STV Engineers, Inc.
900 West Trade St., Suite 715
Charlotte, NC 28202
NC License Number F-0991
for the North Carolina Department of Transportation

2018 STANDARD SPECIFICATIONS	
RIGHT OF WAY DATE:	(R-5734A) AUGUST 25, 2017
RIGHT OF WAY DATE:	(17BP.14.R.154) MAY 4, 2017
LETTING DATE:	NOVEMBER 20, 2018

STATE OF NORTH CAROLINA · DEPARTMENT OF TRANSPORTATION ·

9/13/2018
U:\Roadway\Proj\R5734A_Rdy_tsh_combined.dgn
cmozingo

PROJECT REFERENCE NO.	SHEET NO.
R-5734A / 17BP.14.R.154	1A

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 022037 STEPHEN SMALLWOOD
DocuSigned by: Stephen Smallwood
6F6326A161614C7...
8/17/2018

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 039234 NIKKI HONEYCUTT
DocuSigned by: Nikki T. Honeycutt
E8E3E4EA9F44473...
8/17/2018

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

INDEX OF SHEETS

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	
200.02	Method of Clearing - Method II
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
275.01	Rock Plating
DIVISION 3 - PIPE CULVERTS	
300.01	Method of Pipe Installation
310.10	Driveway Pipe Construction
DIVISION 4 - MAJOR STRUCTURES	
422.02	Bridge Approach Fills - Type II Modiefied Approach Fill
DIVISION 5 - SUBGRADE, BASES AND SHOULDERS	
560.01	Method of Shoulder Construction - High Side of Superelevated Curve - Method I
560.02	Method of Shoulder Construction - High Side of Superelevated Curve - Method II
DIVISION 6 - ASPHALT BASES AND PAVEMENTS	
654.01	Pavement Repairs
DIVISION 8 - INCIDENTALS	
815.02	Subsurface Drain
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
840.24	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
840.29	Frames and Narrow Slot Flat Grates
840.31	Concrete Junction Box - 12" thru 66" Pipe
840.32	Brick Junction Box - 12" thru 66" Pipe
840.34	Traffic Bearing Junction Box - for Use with Pipes 42" and Under
840.35	Traffic Bearing Grated Drop Inlet - for Cast Iron Double Frame and Grates
840.45	Precast Drainage Structure
840.46	Traffic Bearing Precast Drainage Structure
840.51	Brick Manhole - 12" thru 36" Pipe
840.52	Precast Manhole - 4', 5' and 6' Diameter
840.53	Precast Manhole with Masonry Base - 12" thru 42" Pipe
840.54	Manhole Frame and Cover
840.66	Drainage Structure Steps
840.71	Concrete and Brick Pipe Plug
840.72	Pipe Collar
846.01	Concrete Curb, Gutter and Curb & Gutter
846.04	Drop Inlet Installation in Shoulder Berm Gutter
848.01	Concrete Sidewalk
848.02	Driveway Turnout - Radius Type
848.04	Street Turnout
848.05	Curb Ramp - Proposed Curb & Gutter
850.01	Concrete Paved Ditches
852.01	Concrete Islands
852.06	Method for Placement of Drop Inlets in Concrete Islands
862.01	Guardrail Placement
862.02	Guardrail Installation
862.03	Structure Anchor Units
866.01	Chain Link Fence - 4', 5' and 6' High Fence
866.02	Woven Wire Fence - with Wood Post
876.01	Rip Rap in Channels
876.02	Guide for Rip Rap at Pipe Outlets
876.04	Drainage Ditches with Class 'B' Rip Rap

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 II.

SUPERELEVATION:

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

SHOULDER CONSTRUCTION:

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

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 NOT SHOWN ON THE PLANS WILL BE PAID FOR AT THE CONTRACT PRICE FOR "TEMPORARY SHORING". (R-5734A)

SHORING REQUIRED FOR THE MAINTENANCE OF TRAFFIC WILL BE PAID FOR AS "EXTRA WORK" IN ACCORDANCE WITH SECTION 104-7. (17BP.14.R.154)

SUBSURFACE PLANS:

NO SUBSURFACE PLANS ARE AVAILABLE ON THIS PROJECT. THE CONTRACTOR SHOULD MAKE HIS OWN INVESTIGATION AS TO THE SUBSURFACE CONDITIONS. (17BP.14.R.154)

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 Balsam West Fibernet, LLC,

Frontier Communications, Morris Broadband, Town of Franklin, Duke Energy,

Toccoa Natural Gas

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.

12/2/2016

PROJECT REFERENCE NO.	SHEET NO.
R-5734A / 17BPJ4,RJ54	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)
- Existing Archaeological Boundary (AB)
- 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 Easement 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 (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)

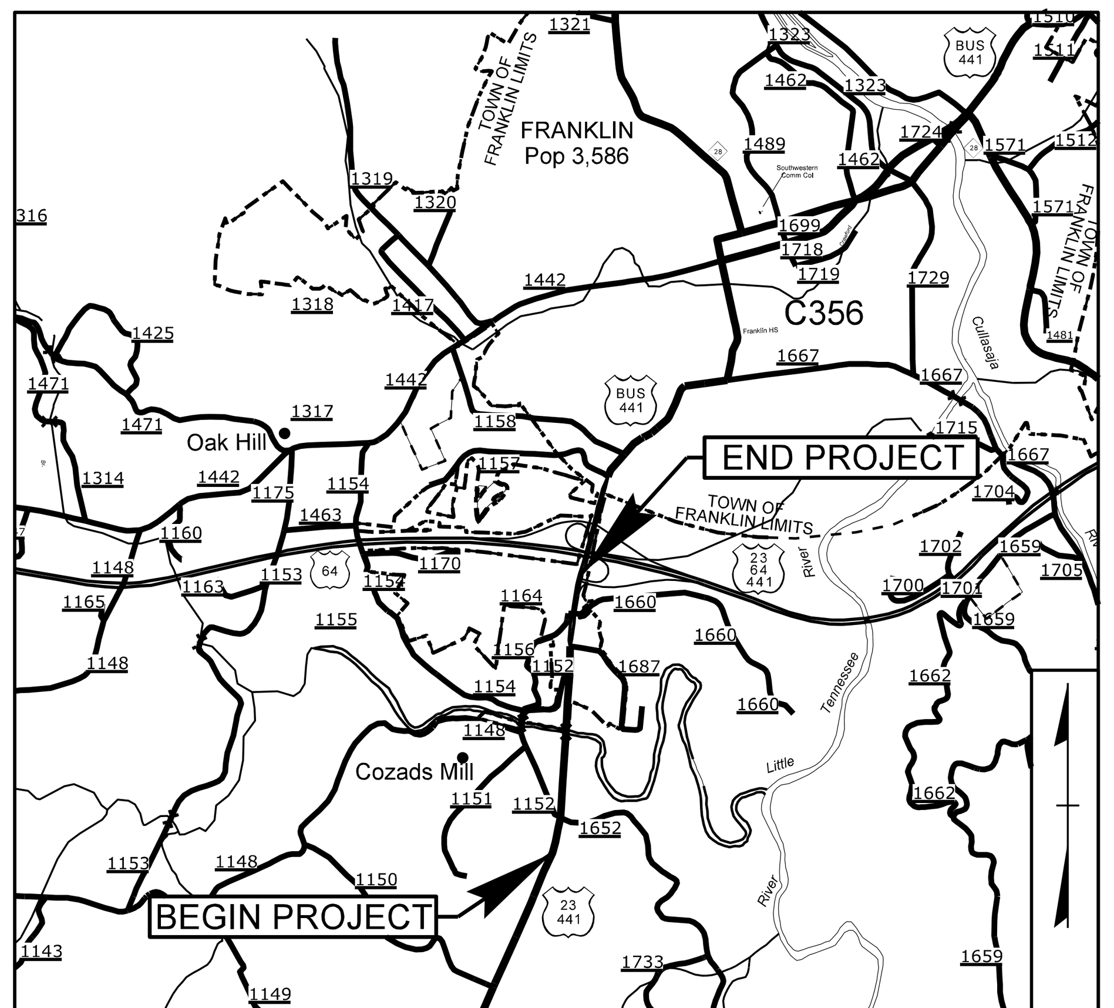
MISCELLANEOUS:

- 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.)

TIP PROJECT: R-5734A

CONTRACT: C204130

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



VICINITY MAP

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

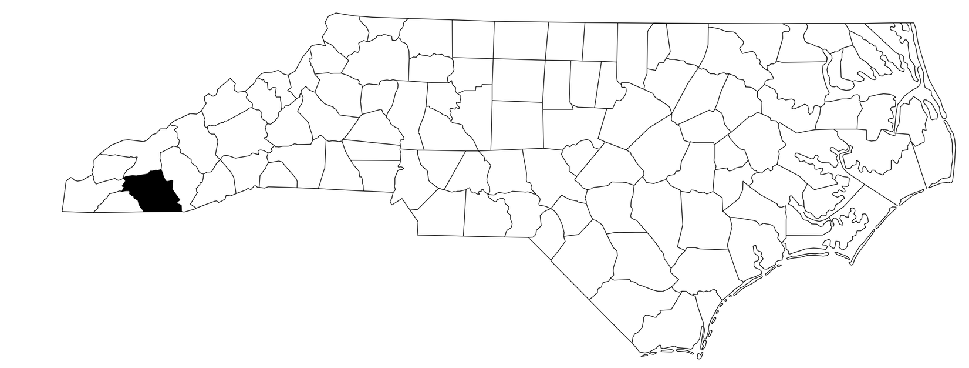
MACON COUNTY

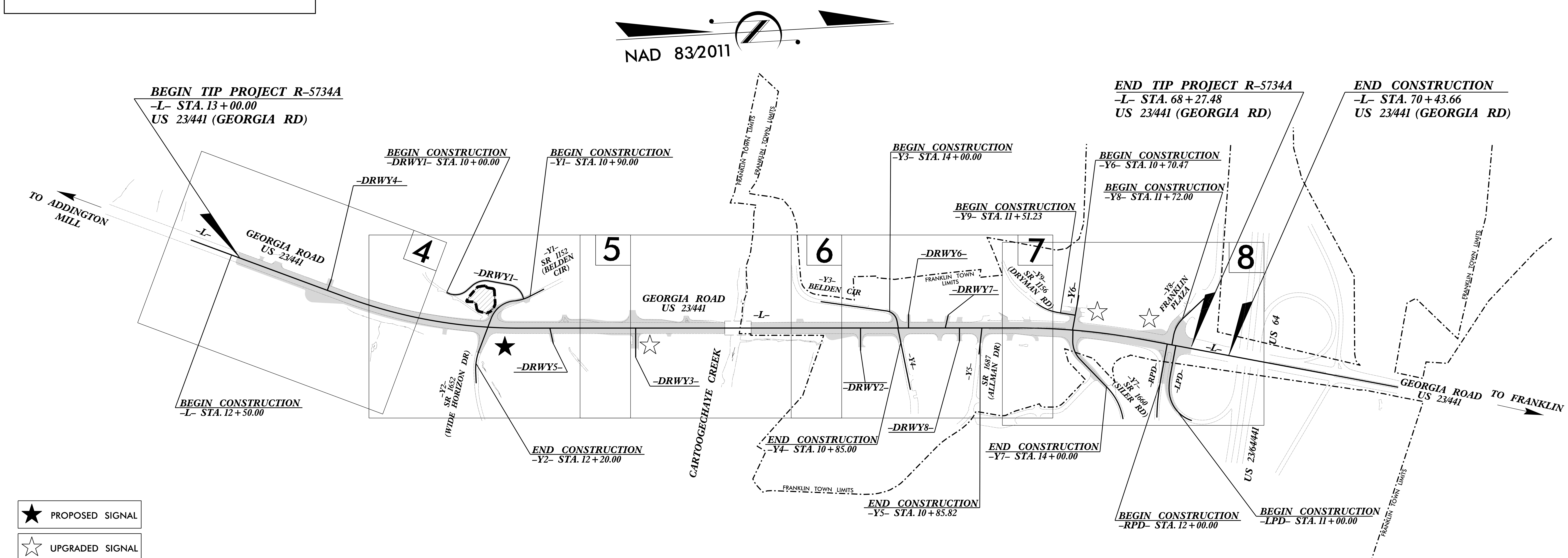
LOCATION: US 23/441 (GEORGIA ROAD) FROM SR 1652 (WIDE HORIZON DR.)/SR 1152 (BELDEN CIRCLE) TO US 64

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

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-5734A	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
50192.1.1	N/A	P.E.
50192.2.1	N/A	R/W, UTIL.
50192.3.1	N/A	CONST.





THIS IS A NO CONTROL OF ACCESS PROJECT WITH FULL CONTROLLED ACCESS BEING LIMITED TO POINTS AS SHOWN ON THE PLANS.

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 2020 = 26,600
ADT 2040 = 34,200
K = 8 %
D = 55 %
T = 7 % *
V = 50 MPH
* (TTST = 3% + DUALS 4%)
FUNC CLASS = ARTERIAL
REGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT R-5734A = 1.047 MILES
TOTAL LENGTH TIP PROJECT R-5734A = 1.047 MILES

Prepared In The Offices of:
Stantec
Stantec Consulting Services Inc.
801 Jones Franklin Road
Suite 300
Raleigh, NC 27606
Tel. (919) 851-6866 Fax. (919) 851-7024
www.stantec.com License No. F-0672

SUNGATE DESIGN GROUP, P.A.
905 JONES FRANKLIN ROAD
RALEIGH, NORTH CAROLINA 27606
TEL (919) 859-2243
ENG FIRM LICENSE NO. C-890

for the North Carolina Department of Transportation

2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
AUGUST 25, 2017

LETTING DATE:
NOVEMBER 20, 2018

STANTEC CONTACT
STEVE SMALLWOOD, P.E.
PROJECT ENGINEER

NCDOT DIVISION 14 CONTACT:
KENNETH MCDOWELL

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 26971 ENGINEER JOSHUA G. DALTON
DocuSigned by: Joshua G. Dalton
1089A0C14984... P.E. 9/13/2018
SIGNATURE:

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 022037 ENGINEER
DocuSigned by: Stephen Smallwood
8F6326A16161AC... P.E. 9/13/2018
SIGNATURE:

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

12/2/2016

PROJECT REFERENCE NO.	SHEET NO.
R-5734A	1B

STATE OF NORTH CAROLINA, DIVISION OF HIGHWAYS

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- RR Signal Milepost (MILEPOST 35)
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- Existing Curb
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- Proposed Curb Ramp (CR)
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- 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)
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- 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.)

09/08/99

TIP PROJECT: R–5734A

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R–5734A	RW01	

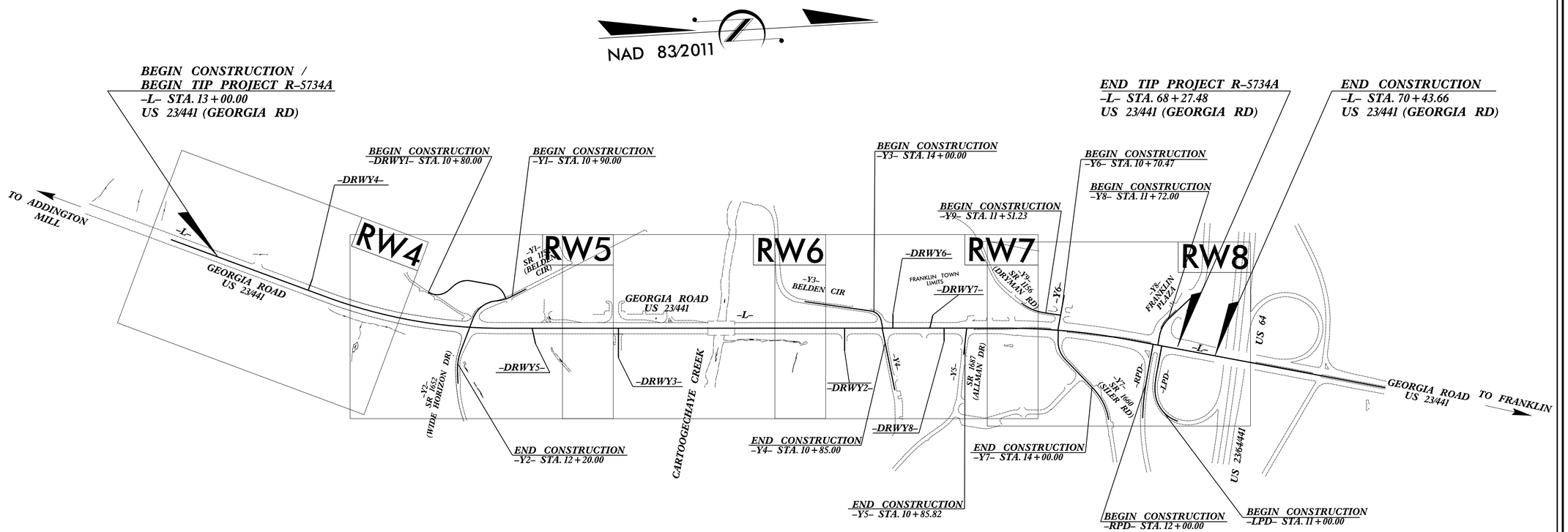
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SURVEY CONTROL, EXISTING CENTERLINES,
RIGHT OF WAY, EASEMENTS AND PROPERTY TIES

MACON COUNTY

LOCATION: US 23/441 (GEORGIA ROAD) FROM SR 1652 (WIDE HORIZON DR.)/SR 1152 (BELDEN CIRCLE) TO US 64
TYPE OF WORK: DRAINAGE, PAVING, GRADING, CULVERT, AND SIGNALS

NAD 83/2011



GRAPHIC SCALE

50 25 0 50 100
PLANS

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "U-102" WITH NAD 83/NA 2011 STATE PLANE GRID COORDINATES OF NORTHING: 546,326.359(ft) EASTING: 688,880.503(ft) ELEVATION: 2,161.20(ft) THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99977912167 THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "U-102" TO -L- STATION 13+00.00 IS S 12° 13' 45.0" W 7,701.78'(ft) ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES VERTICAL DATUM USED IS NAVD 88

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

2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
AUGUST 25, 2017

LETTING DATE:
NOVEMBER 20, 2018

PROFESSIONAL LAND SURVEYOR

NORTH CAROLINA PROFESSIONAL SEAL L-4269 LAND SURVEYOR F. REX COOPER

F. Rex Cooper 9/17/2018
SIGNATURE: *DATE:*

STATE OF NORTH CAROLINA • DEPARTMENT OF TRANSPORTATION •

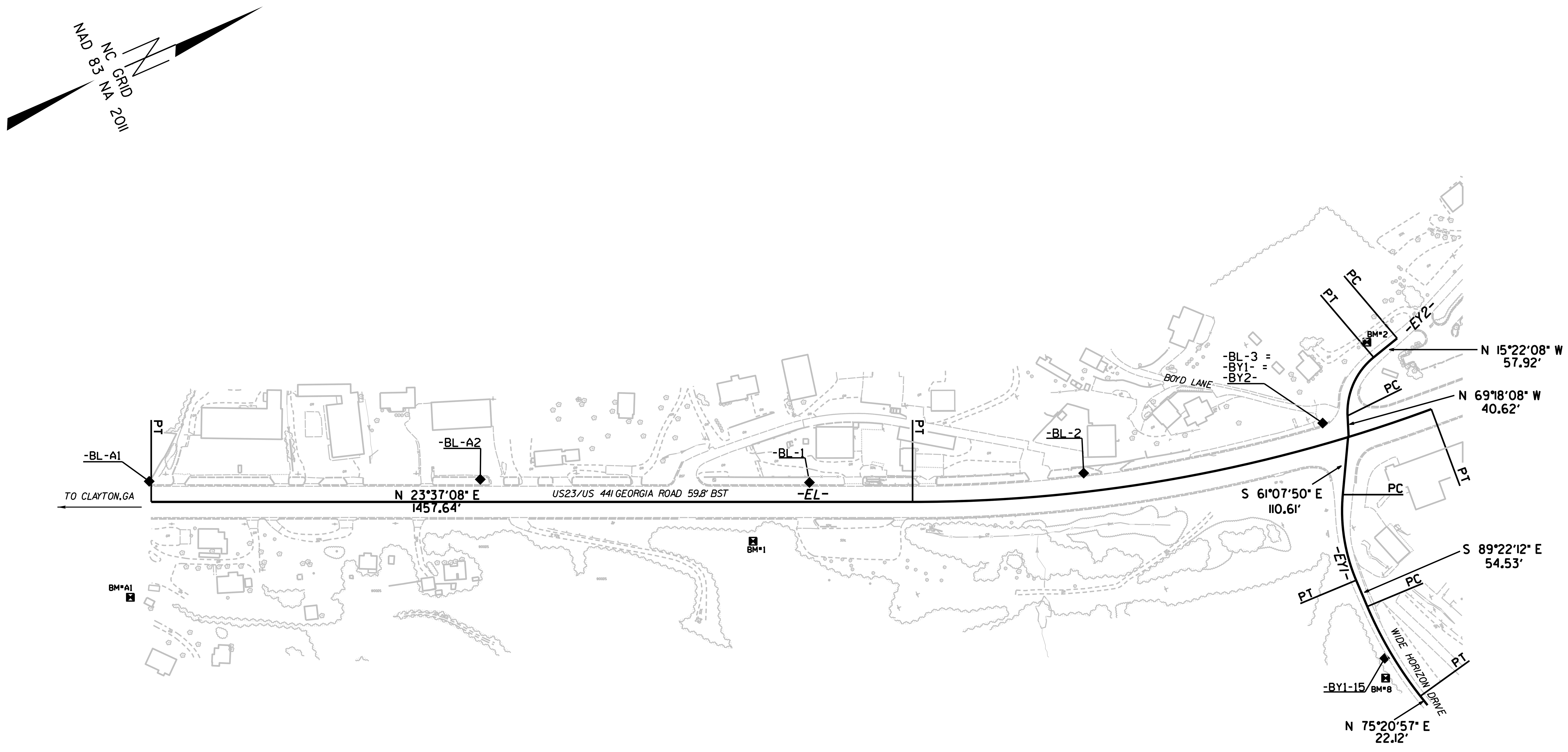
9/17/2018
U:\Roadway\Proj\r5734a_ls_rw01.dgn
cmozingo

PROJECT REFERENCE NO.	SHEET NO.
R-5734A	RW02C-1
Location and Surveys	

SURVEY CONTROL SHEET

W/ EXISTING CENTERLINE ALIGNMENTS PRIOR TO CONSTRUCTION

SEE SHEETS RW02C-5 AND RW02C-6 FOR FURTHER ALIGNMENT DETAILS



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.

REVISIONS

6/2/99

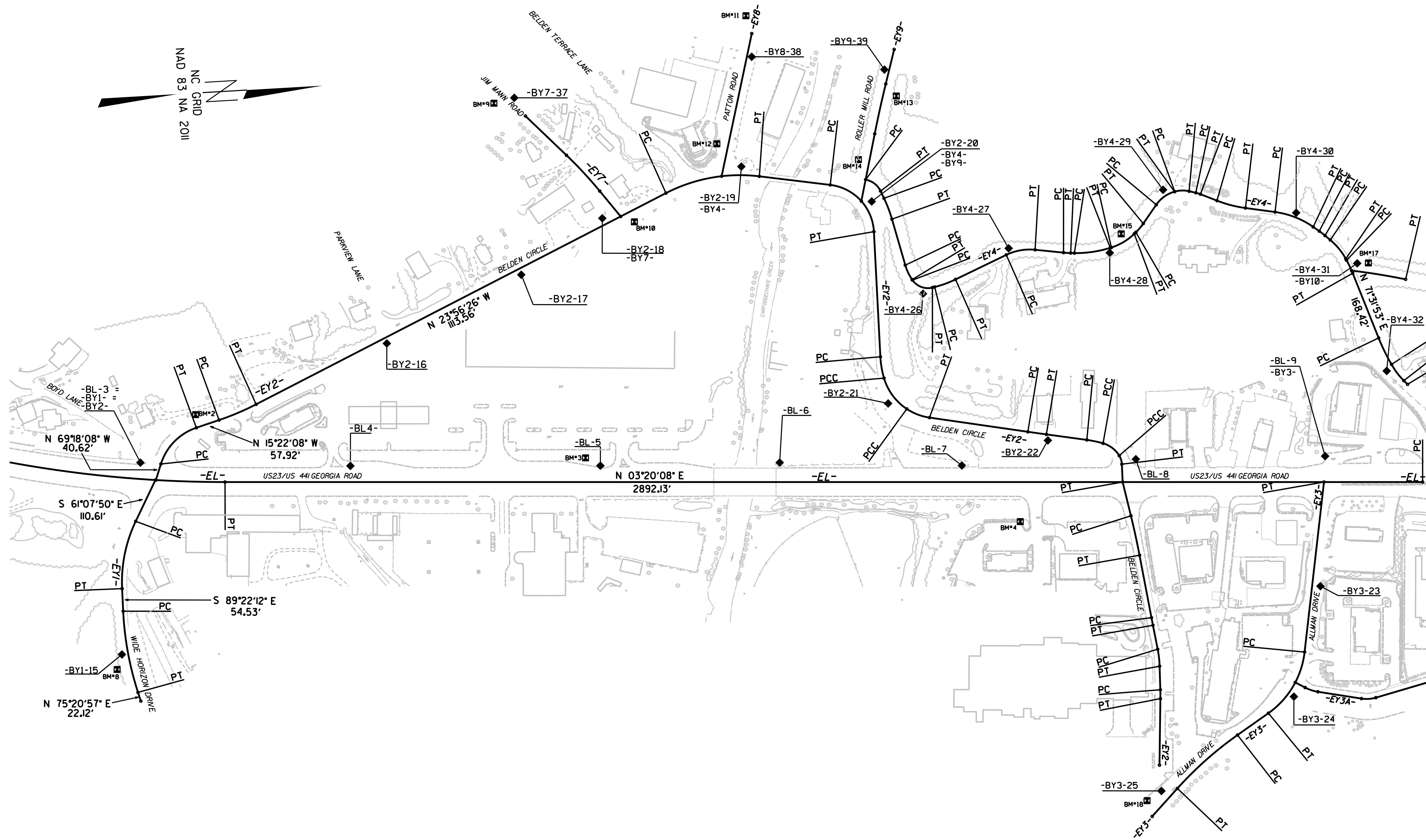
$$$$SYSTIME$$$$
$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$
$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
R-5734A	RW02C-2
Location and Surveys	

SURVEY CONTROL SHEET

W/ EXISTING CENTERLINE ALIGNMENTS PRIOR TO CONSTRUCTION

SEE SHEETS RW02C-5 AND RW02C-6 FOR FURTHER ALIGNMENT DETAILS



NOTES:

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REVISIONS

6/2/99

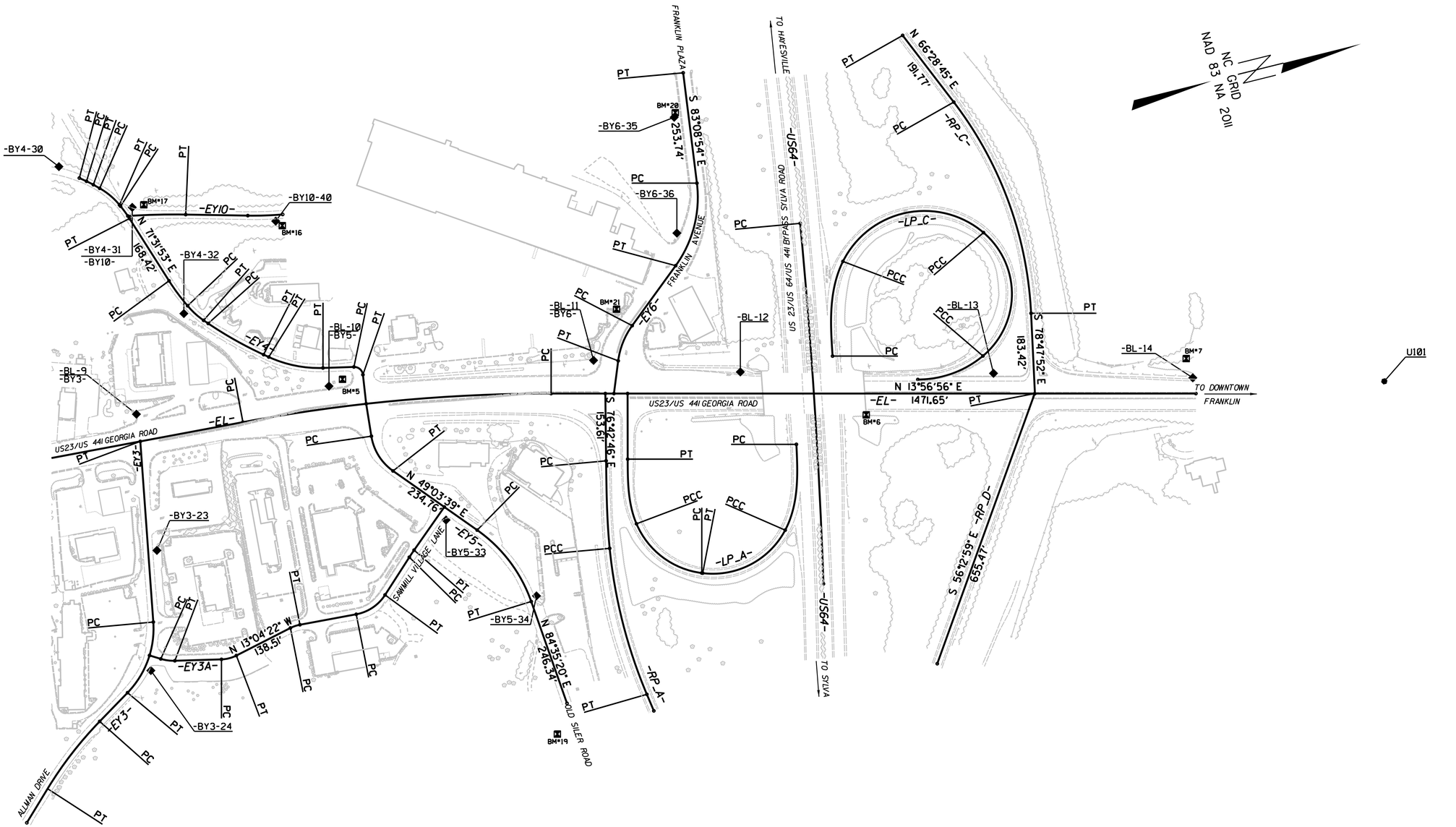
$$$$SYSTIME$$$$
$$$$$$$$$DGN$$$$$$$$$
$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
R-5734A	RW02C-3
Location and Surveys	

SURVEY CONTROL SHEET

W/ EXISTING CENTERLINE ALIGNMENTS PRIOR TO CONSTRUCTION

SEE SHEETS RW02C-5 AND RW02C-6 FOR FURTHER ALIGNMENT DETAILS



NOTES:

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6/2/99

REVISIONS

SYSTEMS SECTION

6/2/99

REVISIONS

SURVEY CONTROL SHEET

W/ EXISTING CENTERLINE ALIGNMENTS PRIOR TO CONSTRUCTION

BL

POINT	DESC.	NORTH	EAST	ELEVATION
1	BL-1	539226.6760	687395.3730	2049.58
2	BL-2	539714.8850	687589.2390	2040.63
3	BL-3	540172.5470	687684.8020	2034.67
4	BL-4	540678.2950	687722.2510	2035.53
5	BL-5	541281.0000	687756.8520	2035.87
6	BL-6	541713.6900	687774.5670	2034.61
7	BL-7	542152.4430	687807.2270	2055.80
8	BL-8	542572.7430	687816.4630	2081.09
9	BL-9	543029.5110	687835.6290	2111.10
10	BL-10	543471.5030	687879.4640	2137.24
11	BL-11	544071.7820	687967.9150	2155.95
12	BL-12	544390.5900	688074.2820	2160.20
13	BL-13	544950.6210	688216.7220	2167.39
14	BL-14	545389.5550	688336.2390	2174.07

BY1

POINT	DESC.	NORTH	EAST	ELEVATION
A3	BY1	540172.5470	687684.8020	2034.67
15	BY1-15	540100.9900	688144.9610	2035.65

BY2

POINT	DESC.	NORTH	EAST	ELEVATION
B3	BY2	540172.5470	687684.8020	2034.67
16	BY2-16	540783.3440	687431.9960	2051.31
17	BY2-17	541117.1280	687285.2370	2053.75
18	BY2-18	541320.3910	687160.4110	2045.18
19	BY2-19	541662.9190	687055.2200	2035.37
20	BY2-20	541972.2680	687157.7880	2041.81
21	BY2-21	541983.4910	687647.2170	2069.01
22	BY2-22	542363.3020	687758.8050	2080.78

BY3

POINT	DESC.	NORTH	EAST	ELEVATION
A9	BY3	543029.5110	687835.6290	2111.10
23	BY3-23	542999.9460	688148.6570	2123.14
24	BY3-24	542920.4440	688411.3740	2118.62
25	BY3-25	542587.8960	688620.2170	2096.17

BY4

POINT	DESC.	NORTH	EAST	ELEVATION
B20	BY4	541972.2680	687157.7880	2041.81
26	BY4-26	542082.9010	687387.5600	2086.72
27	BY4-27	542295.8200	687290.0380	2117.14
28	BY4-28	542538.9230	687315.0510	2131.96
29	BY4-29	542676.2800	687170.5660	2147.61
30	BY4-30	542994.0230	687244.6180	2152.13
31	BY4-31	543134.0360	687375.2110	2141.83
32	BY4-32	543189.9840	687638.8450	2143.84

BY5

POINT	DESC.	NORTH	EAST	ELEVATION
A10	BY5	543471.5030	687879.4640	2137.24
33	BY5-33	543657.1080	688240.4180	2145.49
34	BY5-34	543815.7650	688458.2060	2149.28

BY6

POINT	DESC.	NORTH	EAST	ELEVATION
35	BY6-35	544384.0590	687473.8810	2136.09
36	BY6-36	544326.3720	687731.8550	2153.07
A11	BY6	544071.7820	687967.9150	2155.95

BY7

POINT	DESC.	NORTH	EAST	ELEVATION
37	BY7-37	541125.0720	686857.5540	2055.48
A18	BY7	541320.3910	687160.4110	2045.18

BY8

POINT	DESC.	NORTH	EAST	ELEVATION
38	BY8-38	541703.3110	686791.9590	2040.99
A19	BY8	541662.9190	687055.2200	2035.37

BY9

POINT	DESC.	NORTH	EAST	ELEVATION
39	BY9-39	542021.4820	686841.4850	2045.86
A20	BY9	541972.2680	687157.7880	2041.81

BY10

POINT	DESC.	NORTH	EAST	ELEVATION
40	BY10-40	543444.3820	687484.6130	2121.32
A31	BY10	543134.0360	687375.2110	2141.83

BM1 ELEVATION - 2071.27
N 539083 E 687455
8" SPIKE IN BASE OF 8" VIRGINIA PINE

BM2 ELEVATION - 2043.29
N 540312 E 687577
8" SPIKE IN BASE OF 17" BLACK WALNUT

BM3 ELEVATION - 2036.23
N 541246 E 687736
PUNCH HOLE IN CONCRETE SLAB

BM4 ELEVATION - 2070.88
N 542285 E 687951
PUNCH HOLE IN CURB CORNER

BM5 ELEVATION - 2140.52
N 543505 E 687872
PUNCH HOLE IN CONCRETE SLAB

BM6 ELEVATION - 2164.22
N 544646 E 688239
NGS VERTICAL CONTROL MARK "N257"

BM7 ELEVATION - 2156.80
N 545386 E 688290
8" SPIKE IN BASE OF 27" YELLOW POPLAR

BM8 ELEVATION - 2042.54
N 540087 E 688181
8" SPIKE IN BASE OF 13" YELLOW POPLAR

BM9 ELEVATION - 2060.55
N 541075 E 686868
8" SPIKE IN BASE OF 15" BRADFORD PEARSTUMP

BM10 ELEVATION - 2042.90
N 541397 E 687174
PUNCH HOLE IN CONCRETE SLAB

BM11 ELEVATION - 2046.43
N 541695 E 686692
8" SPIKE IN BASE OF 24" RED MAPLE

BM12 ELEVATION - 2042.42
N 541607 E 686997
ANCHOR SCREW ON DUKE ENERGY POLE

BM13 ELEVATION - 2051.71
N 542046 E 686907
8" SPIKE IN BASE OF 27" RED MAPLE

BM14 ELEVATION - 2038.77
N 541946 E 687055
8" SPIKE IN BASE OF 16" SYCAMORE

BM15 ELEVATION - 2131.10
N 542569 E 687271
8" SPIKE IN BASE OF 18" YELLOW POPLAR

BM16 ELEVATION - 2121.72
N 543456 E 687498
8" SPIKE IN BASE OF 13" YELLOW POPLAR

BM17 ELEVATION - 2139.75
N 543161 E 687376
8" SPIKE IN BASE OF 20" YELLOW POPLAR

BM18 ELEVATION - 2094.55
N 542552 E 688642
8" SPIKE IN ROOT OF 20" BOX ELDER

BM19 ELEVATION - 2146.61
N 543786 E 688776
8" SPIKE IN BASE OF 18" WHITE PINE

BM20 ELEVATION - 2135.70
N 544389 E 687464
PUNCH HOLE IN CONCRETE SLAB

BM21 ELEVATION - 2154.36
N 544151 E 687867
PUNCH HOLE IN CONCRETE SLAB

NOTES:

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PROJECT REFERENCE NO.	SHEET NO.
R-5734A	RW02C-5
Location and Surveys	

6/2/99

REVISIONS

SURVEY CONTROL SHEET

W/ EXISTING CENTERLINE ALIGNMENTS PRIOR TO CONSTRUCTION

EL

POINT	N	E	BEARING	DIST	DELTA	D	L	T	R
POT	538636.857	687178.041							
LINE			N 23°37'08.2" E	824.92					
PC	539392.676	687508.548							
CURVE			N 13°28'38.1" E	1008.88	20°17'00.1"(LT)	02°00'00.0"	1014.17	512.45	2864.79
PT	540373.774	687743.677							
LINE			N 03°20'08.1" E	2892.13					
PC	543261.009	687911.952							
CURVE			N 08°38'31.8" E	706.54	10°36'47.6"(RT)	01°30'00.0"	707.55	354.79	3819.72
PT	543959.524	688018.119							
LINE			N 13°56'55.6" E	1471.65					
POT	545387.774	688372.866							

EY1

POINT	N	E	BEARING	DIST	DELTA	D	L	T	R
POT	540206.326	687728.978							
LINE			S 61°07'50.0" E	110.61					
PC	540152.920	687825.844							
CURVE			S 75°15'01.1" E	165.89	28°14'22.2"(LT)	16°51'06.1"	167.58	85.53	340.00
PT	540110.686	687986.263							
LINE			S 89°22'12.2" E	54.53					
PC	540110.086	688040.793							
CURVE			N 82°59'22.5" E	199.43	15°16'50.8"(LT)	07°38'22.0"	200.02	100.61	750.00
PT	540134.427	688238.735							
LINE			N 75°20'57.1" E	22.12					
POT	540140.022	688260.136							

EY2

POINT	N	E	BEARING	DIST	DELTA	D	L	T	R
POT	540207.422	687729.106							
LINE			N 69°18'08.0" W	40.62					
PC	540221.778	687691.108							
CURVE			N 42°20'08.0" W	122.44	53°56'00.0"(RT)	42°26'28.7"	127.08	68.69	135.00
PT	540312.286	687608.649							
LINE			N 15°22'08.0" W	57.92					
PC	540368.130	687593.300							
CURVE			N 19°39'17.1" W	97.15	08°34'18.1"(LT)	08°48'53.0"	97.24	48.71	650.00
PT	540459.622	687560.623							
LINE			N 23°56'26.1" W	1113.56					
PC	541477.383	687108.750							
CURVE			N 06°51'14.0" W	229.18	34°10'24.3"(RT)	14°41'28.4"	232.61	119.88	390.00
PT	541704.924	687081.400							
LINE			N 10°13'58.1" E	172.47					
PC	541874.651	687112.039							
CURVE			N 50°18'23.4" E	154.51	80°08'50.4"(RT)	47°44'47.3"	167.86	100.96	120.00
PT	541973.331	687230.927							
LINE			S 89°37'11.4" E	302.63					
PC	541971.323	687533.551							
CURVE			N 83°39'42.2" E	52.34	13°26'12.8"(LT)	25°36'51.3"	52.46	26.35	223.69
PCC	541977.101	687585.569							
CURVE			N 56°53'34.2" E	92.57	40°06'03.2"(LT)	42°26'28.7"	94.49	49.27	135.00
PCC	542027.663	687663.109							
CURVE			N 24°11'49.2" E	58.79	25°17'26.8"(LT)	42°40'04.1"	59.27	30.13	134.28
PT	542081.291	687687.207							
LINE			N 11°33'05.8" E	239.87					
PC	542316.301	687735.241							
CURVE			N 11°19'32.3" E	45.20	00°27'07.0"(LT)	01°00'00.0"	45.20	22.60	5729.58
PT	542360.616	687744.117							
LINE			N 11°05'58.8" E	98.59					
PC	542457.364	687763.098							
CURVE			N 15°15'58.3" E	40.07	08°19'59.0"(RT)	20°46'44.5"	40.10	20.09	275.74
PCC	542496.018	687773.648							
CURVE			N 40°34'47.9" E	49.06	42°17'40.2"(RT)	84°15'30.6"	50.20	26.30	68.00
PCC	542533.282	687805.564							
CURVE			N 76°15'40.5" E	21.60	29°04'05.0"(RT)	133°08'06.6"	21.83	11.16	43.04
PT	542538.412	687826.546							
LINE			S 89°12'17.0" E	43.26					
POT	542537.811	687869.802							
LINE			N 79°34'51.9" E	83.99					
PC	542553.000	687952.407							
CURVE			N 81°02'36.7" E	97.49	02°55'29.6"(RT)	03°00'00.0"	97.50	48.76	1909.86
PT	542568.177	688048.704							
LINE			N 82°30'21.4" E	153.48					
PC	542588.195	688200.874							
CURVE			N 82°19'04.6" E	18.80	00°22'33.7"(LT)	02°00'00.0"	18.80	9.40	2864.79
PT	542590.708	688219.507							
LINE			N 82°07'47.7" E	58.87					
PC	542598.769	688277.822							
CURVE			N 86°53'06.9" E	41.45	09°30'38.4"(RT)	22°55'05.9"	41.50	20.80	250.00
PT	542601.021	688319.211							
LINE			S 88°21'33.9" E	56.85					
PC	542599.394	688376.040							
CURVE			S 87°07'55.0" E	21.42	02°27'17.9"(RT)	11°27'33.0"	21.42	10.71	500.00
PT	542598.322	688397.435							
LINE			S 85°54'16.0" E	160.73					
POT	542586.843	688557.751							

EY3

POINT	N	E	BEARING	DIST	DELTA	D	L	T	R
POT	543023.143	687898.089							
LINE			S 80°09'58.4" E	413.34					
PC	542952.548	688305.360							
CURVE			S 56°02'32.7" E	171.66	48°14'51.4"(RT)	27°17'01.3"	176.84	94.04	210.00
PT	542856.663	688447.742							
LINE			S 31°55'07.0" E	91.31					
PC	542779.157	688496.020							
CURVE			S 38°17'33.2" E	194.28	12°44'52.4"(LT)	06°32'53.1"	194.68	97.74	875.00
PT	542626.675	688616.411							
LINE			S 44°39'59.4" E	90.96					
POT	542561.981	688680.357							

NOTES:

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EY3A

POINT	N	E	BEARING	DIST	DELTA	D	L	T	R
POT	542925.840	688377.315							
LINE			N 30°53'34.0" E	26.85					
PC	542948.881	688391.101							
CURVE			N 21°33'55.1" E	32.42	18°39'17.9"(LT)	57°17'44.8"	32.56	16.42	100.00
PT	542979.027	688403.015							
LINE			N 12°14'16.1" E	106.42					
PC	543083.032	688425.574							
CURVE			N 00°25'03.2" W	35.05	25°18'38.6"(LT)	71°37'11.0"	35.34	17.96	80.00
PT	543118.084	688425.318							
LINE			N 13°04'22.5" W	138.51					
PC	543253.005	688393.988							
CURVE			N 04°49'38.7" W	22.95	16°29'27.5"(RT)	71°37'11.0"	23.03	11.59	80.00
PT	543275.870	688392.057							
LINE			N 03°25'05.1" E	130.72					
PC	543406.358	688399.851							
CURVE			N 19°55'42.4" W	79.26	46°41'35.0"(LT)	57°17'44.8"	81.49	43.16	100.00
PT	543480.870	688372.836							
LINE			N 43°16'29.9" W	102.29					
PC	543555.347	688302.714							
CURVE			N 42°09'27.0" W	19.50	02°14'05.9"(RT)	11°27'33.0"	19.50	9.75	500.00
PT	543569.804	688289.624							
LINE			N 41°02'24.0" W	120.27					
POT	543660.516	688210.658							

EY4

POINT	N	E	BEARING	DIST	DELTA	D	L	T	R
PC	541960.667	687104.305							
CURVE			N 40°45'41.4" E	45.45	54°04'04.8"(RT)	114°35'29.6"	47.18	25.51	50.00
PT	541995.094	687133.982							
LINE			N 67°47'43.8" E	19.29					
PC	542002.383	687151.840							
CURVE			N 72°29'10.0" E	53.97	09°22'52.5"(RT)	17°21'44.5"	54.03	27.08	330.00
PT	542018.625	687203.310							
LINE			N 77°10'36.3" E	115.73					
PC	542044.312	687316.156							
CURVE			N 67°56'19.3" E	38.53	18°28'34.0"(LT)	47°44'47.3"	38.70	19.52	120.00
PT	542058.783	687351.864							
LINE			N 58°42'02.3" E	1.58					
PC	542059.605	687353.215							
CURVE			N 23°54'43.4" E	51.35	69°34'37.7"(LT)	127°19'26.2"	54.65	31.26	45.00
PT	542106.547	687374.029							
LINE			N 10°52'35.4" W	5.61					
PC	542112.056	687372.970							
CURVE			N 16°40'34.9" W	53.56	11°35'59.0"(LT)	21°37'15.8"	53.65	26.92	265.00
PT	542163.362	687357.601							
LINE			N 22°28'34.4" W	136.17					
PC	542289.187	687305.544							
CURVE			N 06°42'25.5" W	70.66	31°32'17.8"(RT)	44°04'25.2"	71.56	36.71	130.00
PT	542359.361	687297.291							
LINE			N 09°03'43.4" E	68.99					
PC	542427.495	687308.158							
CURVE			N 06°35'02.1" E	17.30	04°57'22.6"(LT)	28°38'52.4"	17.30	8.66	200.00
PT	542444.676	687310.141							
LINE			N 04°06'20.8" E	9.02					
PC	542453.672	687310.787							
CURVE			N 05°01'11.8" W	87.53	18°15'05.2"(LT)	20°45'46.4"	87.90	44.33	275.95
PT	542540.869	687303.128							
LINE			N 14°08'44.5" W	2.80					
PC	542543.584	687302.443							
CURVE			N 27°25'45.1" W	64.34	26°34'01.3"(LT)	40°55'32.0"	64.92	33.05	140.00
PT	542600.687	687272.807							
LINE			N 40°42'45.7" W	5.37					
PC	542604.755	687269.307							
CURVE			N 46°22'49.2" W	27.65	11°20'06.9"(LT)	40°55'32.0"	27.70	13.89	140.00
PT	542623.831	687249.289							
LINE			N 52°02'52.6" W	55.37					
PC	542657.882	687205.630							
CURVE			N 32°16'45.8" W	54.12	39°32'13.6"(RT)	71°37'11.0"	55.20	28.75	80.00
PT	542703.634	687176.730							
LINE			N 12°30'39.0" W	0.60					
PC	542704.222	687176.599							
CURVE			N 01°51'09.9" E	34.73	28°43'37.8"(RT)	81°51'04.0"	35.10	17.93	70.00
PT	542738.934	687177.722							
LINE			N 16°12'58.8" E	16.55					
PC	542754.830	687182.345							
CURVE			N 20°26'40.3" E	11.80	08°27'23.2"(RT)	71°37'11.0"	11.81	5.91	80.00
PT	542765.883	687186.466							
LINE			N 24°40'21.9" E	42.70					
PC	542804.689	687204.292							
CURVE			N 17°51'29.3" E	71.19	13°37'45.2"(LT)	19°05'54.9"	71.36	35.85	300.00
PT	542872.453	687226.125							
LINE			N 11°02'36.7" E	72.06					
PC	542943.176	687239.928							
CURVE			N 24°39'39.6" E	98.88	27°14'05.7"(RT)	27°17'01.3"	99.82	50.87	210.00
PT	543033.041	687281.187							
LINE			N 38°16'42.4" E	17.88					
PC	543047.076	687292.262							
CURVE			N 40°47'25.7" E	17.53	05°01'26.6"(RT)	28°38'52.4"	17.54	8.77	200.00
PT	543060.349	687303.715							
LINE			N 43°18'09.0" E	16.57					
PC	543072.407	687315.079							
CURVE			N 53°55'22.0" E	58.98	21°14'25.9"(RT)	35°48'35.5"	59.31	30.00	160.00
PT	543107.136	687362.745							
LINE			N 64°32'34.9" E	3.91					
PC	543108.816	687366.274							
CURVE			N 68°02'14.2" E	34.74	06°59'18.4"(RT)	20°06'13.6"	34.76	17.40	285.00
PT	543121.809	687398.493							
LINE			N 71°31'53.4" E	168.42					
PC	543175.163	687558.242							
CURVE			N 67°17'35.2" E	70.95	08°28'36.3"(LT)	11°56'11.8"	71.01	35.57	480.00
PT	543202.551	687623.693							
LINE			N 63°03'17.0" E	4.94					
PC	543204.791	687628.100							
CURVE			N 55°32'14.4" E	44.48	15°02'05.3"(LT)	33°42'12.2"	44.61	22.43	170.00
PT	543229.962	687664.775							
LINE			N 48°01'11.7" E	12.64					
PC	543238.418	687674.173							
CURVE			N 43°19'21.1" E	145.15	09°23'41.2"(LT)	06°27'55.3"	145.31	72.82	886.20
PT	543344.013	687773.759							
LINE			N 38°37'30.5" E	12.98					
PC	543354.150	687781.859							
CURVE			N 25°21'19.0" E	126.25	26°32'23.1"(LT)	20°50'05.4"	127.38	64.85	275.00
PT	543468.235	687835.921							
LINE			N 12°05'07.4" E	70.65					
PC	543537.317	687850.712							
CURVE			N 54°48'55.8" E	27.14	85°27'36.7"(RT)	286°28'44.0"	29.83	18.47	20.00
PT	543552.957	687872.895							
LINE			S 82°27'15.9" E	66.75					
POT	543544.191	687939.068							

6/2/99

REVISIONS

SURVEY CONTROL SHEET

W/ EXISTING CENTERLINE ALIGNMENTS PRIOR TO CONSTRUCTION

EY5

POINT	N	E	BEARING	DIST	DELTA	D	L	T	R
POT	543544.191	687939.068							
LINE			S 85°07'37.9" E	74.93					
PC	543537.826	688013.729							
CURVE			N 71°58'00.7" E	93.41	45°48'42.8"(LT)	47°44'47.3"	95.95	50.70	120.00
PT	543566.744	688102.553							
LINE			N 49°03'39.3" E	234.76					
PC	543720.573	688279.894							
CURVE			N 66°49'29.9" E	204.42	35°31'41.0"(RT)	17°06'11.6"	207.73	107.32	335.00
PT	543801.019	688467.815							
LINE			N 84°35'20.4" E	246.34					
POT	543824.249	688713.062							

EY6

POINT	N	E	BEARING	DIST	DELTA	D	L	T	R
POT	544428.487	687380.372							
LINE			S 83°08'53.7" E	253.74					
PC	544398.215	687632.302							
CURVE			S 61°37'12.7" E	194.49	43°03'22.0"(RT)	21°37'15.8"	199.14	104.54	265.00
PT	544305.772	687803.415							
LINE			S 40°05'31.7" E	169.13					
PC	544176.385	687912.339							
CURVE			S 54°22'25.5" E	86.34	28°33'47.5"(LT)	32°44'25.6"	87.24	44.55	175.00
PT	544126.092	687982.519							
LINE			S 68°39'19.2" E	75.33					
POT	544098.674	688052.681							

EY7

POINT	N	E	BEARING	DIST	DELTA	D	L	T	R
POT	541149.474	686902.996							
LINE			N 47°05'00.4" E	137.35					
PC	541243.002	687003.586							
CURVE			N 50°27'38.7" E	117.82	06°45'16.6"(RT)	05°43'46.5"	117.89	59.01	1000.00
PT	541318.009	687094.449							
LINE			N 53°50'17.0" E	79.55					
POT	541364.946	687158.671							

EY8

POINT	N	E	BEARING	DIST
POT	541706.730	686735.916		
LINE			S 74°44'36.0" E	352.30
POT	541614.025	687075.796		

EY9

POINT	N	E	BEARING	DIST	DELTA	D	L	T	R
POT	542047.829	686794.221							
LINE			S 72°57'41.5" E	85.91					
PC	542022.656	686876.359							
CURVE			S 74°11'49.7" E	123.55	02°28'16.5"(LT)	02°00'00.0"	123.56	61.79	2864.79
PT	541989.009	686995.243							
LINE			S 75°25'58.0" E	165.64					
POT	541947.348	687155.557							

EY10

POINT	N	E	BEARING	DIST	DELTA	D	L	T	R
PC	543463.343	687473.728							
CURVE			S 12°03'11.3" W	79.62	05°42'16.7"(RT)	07°09'43.1"	79.65	39.86	800.00
PT	543385.479	687457.102							
LINE			S 14°54'19.7" W	141.75					
PC	543248.501	687420.641							
CURVE			S 12°32'21.5" W	132.11	04°43'56.4"(LT)	03°34'51.6"	132.15	66.11	1600.00
PT	543248.501	687420.641							

LP_A

POINT	N	E	BEARING	DIST	DELTA	D	L	T	R	DELTA S	Ls	LT	ST
TS	0.000	0.000											
SPIRAL			S 68°36'46.2" E	197.47						30°38'22.0"(RT)	200.00	135.39	68.54
SC	544402.853	688449.489											
CURVE			S 13°34'11.6" E	212.33	69°11'00.6"(RT)	30°38'22.0"	225.80	128.96	187.00				
CS	544196.451	688499.308											
SPIRAL			S 00°00'00.0" E	0.00						00°00'00.0"(RT)	0.00	0.00	0.00
ST	544196.451	688499.308											
LINE			S 21°01'18.7" W	2.10									
TS	544194.489	688498.554											
SPIRAL			S 00°00'00.0" E	0.00						00°00'00.0"(RT)	0.00	0.00	0.00
SC	544194.489	688498.554											
CURVE			S 50°57'02.1" W	186.60	59°51'26.7"(RT)	30°38'22.0"	195.36	107.65	187.00				
CS	544076.935	688353.642											
SPIRAL			N 83°47'25.8" W	148.93						22°58'46.5"(RT)	150.00	100.86	50.78
ST	544093.044	688205.586											
LINE			N 76°08'28.0" W	149.75									
POT	544128.914	688060.192											

LP_C

POINT	N	E	BEARING	DIST	DELTA	D	L	T	R	DELTA S	Ls	LT	ST
TS	0.000	0.000											
SPIRAL			N 69°47'55.8" W	217.28						30°18'02.3"(RT)	220.00	148.87	75.34
SC	544678.639	687886.046											
CURVE			N 02°21'23.3" E	327.50	103°51'41.7"(RT)	27°32'45.8"	377.05	265.57	208.00				
CS	545005.865	687899.512											
SPIRAL			N 45°00'00.0" E	0.00						00°00'00.0"(RT)	0.00	0.00	0.00
SC	545005.865	687899.512											
CURVE			S 75°46'58.1" E	281.54	99°51'35.6"(RT)	31°08'48.3"	320.61	218.68	183.95				
PT	544936.718	688172.433											
LINE			S 25°51'10.3" E	0.00									
PC	544936.718	688172.433											
CURVE			S 05°57'07.3" E	158.03	39°48'05.9"(RT)	24°40'57.1"	161.25	84.03	232.13				
PT	544936.718	688172.433											

RP_A

POINT	N	E	BEARING	DIST	DELTA	D	L	T	R	DELTA S	Ls	LT	ST
POT	544079.618	688047.947											
LINE			S 76°42'46.0" E	153.61									
TS	544044.312	688197.450											
SPIRAL			S 78°22'45.6" E	199.93						05°00'00.0"(LT)	200.00	133.39	66.72
SC	544004.040	688393.284											
CURVE			N 89°39'36.0" E	343.79	17°15'16.0"(LT)	05°00'00.0"	345.09	173.86	1145.92				
CS	544006.080	688737.064											
SPIRAL			N 90°00'00.0" E	0.00						00°00'00.0"(RT)	0.00	0.00	0.00
ST	544006.080	688737.064											
LINE			N 81°01'58.0" E	40.87									
POT	544012.451	688777.439											

RP_C

POINT	N	E	BEARING	DIST	DELTA	D	L	T	R
POT	544935.253	687418.262							
LINE			N 66°28'45.0" E	191.77					
PC	545011.784	687594.097							
CURVE			N 83°50'26.5" E	513.25	34°43'23.0"(RT)	06°39'44.3"	521.19	268.87	860.00
PT	545066.852	688104.382							
LINE			S 78°47'52.0" E	183.42					
POT	545031.219	688284.305							

RP_D

POINT	N	E	BEARING	DIST
POT	545030.714	688284.180		
LINE			S 56°12'59.0" E	655.47
POT	544666.235	688828.969		

US64

POINT	N	E	BEARING	DIST	DELTA	D	L	T	R
PC	544604.853	687778.197							
CURVE			S 79°44'35.3" E	824.45	03°26'08.7"(RT)	00°25'00.0"	824.58	412.41	13750.99
PT	544604.853	687778.197							

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.

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

PROPOSED ALIGNMENT CONTROL SHEET

PROJECT REFERENCE NO.	SHEET NO.
R-5734A	RW02D-1
Location and Surveys	

6/2/99

REVISIONS

L

TYPE	STATION	NORTH	EAST
POT	10·00.00	538524.4813	687128.9013
PC	19·47.57	539392.6756	687508.5477
PT	29·61.74	540373.7740	687743.6767
PC	58·32.16	543239.3279	687910.6885
PT	65·39.70	543937.8424	688016.8550
POT	80·32.70	545386.8100	688376.7478

LPD

TYPE	STATION	NORTH	EAST
PC	10·00.00	544194.4891	688498.5542
CS	11·95.36	544076.9348	688353.6425
ST	13·45.36	544093.0437	688205.5859
POT	14·91.11	544127.9563	688064.0752

RPD

TYPE	STATION	NORTH	EAST
PC	10·00.00	543995.5040	688469.3183
CS	10·97.73	544006.4214	688372.2250
ST	12·97.73	544048.6459	688176.8023
POT	14·26.26	544079.4308	688052.0225

WL1

TYPE	STATION	NORTH	EAST
POT	10·00.00	540192.0346	687653.7661
PC	10·18.40	540203.3735	687639.2720
PCC	10·49.59	540222.4726	687614.6663
PCC	11·09.30	540275.1720	687587.1868
PT	11·64.52	540326.9411	687568.6425
POT	11·81.93	540337.3032	687554.6511

Y1

TYPE	STATION	NORTH	EAST
POT	10·00.00	540530.4104	687528.7242
PC	10·90.24	540447.9273	687565.3294
PRC	11·86.73	540354.4513	687586.6951
PT	13·58.86	540218.8049	687677.6390
POT	14·13.81	540196.3320	687727.7861

Y2

TYPE	STATION	NORTH	EAST
POT	10·00.00	540196.3320	687727.7861
PC	11·39.22	540139.3969	687854.8338
PT	12·69.16	540111.4520	687980.8213
POT	13·33.82	540110.4665	688045.4760

Y3

TYPE	STATION	NORTH	EAST
POT	10·00.00	542109.8618	687693.0006
PC	13·81.97	542484.2839	687768.5563
PT	14·68.59	542539.8075	687827.8028
POT	15·11.42	542545.5416	687870.2529

Y4

TYPE	STATION	NORTH	EAST
POT	10·00.00	542542.5833	687870.0805
POT	13·61.73	542593.9385	688228.1467

Y5

TYPE	STATION	NORTH	EAST
POT	10·00.00	543023.8257	687898.1285
POT	11·52.53	542997.6849	688048.4024

Y6

TYPE	STATION	NORTH	EAST
POT	10·00.00	543589.8459	687742.2401
POT	12·03.90	543542.1025	687940.4716

Y7

TYPE	STATION	NORTH	EAST
POT	10·00.00	543544.0501	687940.7423
PC	10·61.19	543539.5824	688001.7706
PT	11·78.42	543575.2764	688110.3212
PC	14·04.40	543722.3148	688281.9267
PT	16·08.87	543800.9605	688467.1942

Y8

TYPE	STATION	NORTH	EAST
POT	10·00.00	544305.7724	687803.4149
PC	11·69.13	544176.3853	687912.3387
PT	12·78.96	544119.2491	688004.0308
POT	13·35.14	544105.7079	688058.5492

Y9

TYPE	STATION	NORTH	EAST
POT	10·00.00	543344.0130	687773.7591
PC	10·12.98	543354.1500	687781.8586
PT	11·40.36	543468.2346	687835.9208
POT	12·36.68	543562.4259	687856.0886

DRWY1

TYPE	STATION	NORTH	EAST
POT	10·00.00	540053.6126	687572.1342
PC	10·80.45	540100.0008	687506.4106
PT	11·95.51	540201.0205	687465.9590
PC	13·26.15	540329.1984	687491.1985
PT	14·37.92	540406.5522	687563.7378
POT	14·53.19	540410.4593	687578.5057

DRWY2

TYPE	STATION	NORTH	EAST
POT	10·00.00	542329.1619	687857.6417
POT	11·29.97	542321.5996	687987.3950

DRWY3

TYPE	STATION	NORTH	EAST
POT	10·00.00	541041.9132	687782.6175
POT	11·68.50	541032.1089	687950.8364

DRWY4

TYPE	STATION	NORTH	EAST
POT	10·00.00	539316.2620	687400.5567
POT	10·68.33	539289.3997	687463.3870

DRWY5

TYPE	STATION	NORTH	EAST
POT	10·00.00	540550.7031	687753.9886
POT	10·90.68	540564.7091	687843.5784

DRWY6

TYPE	STATION	NORTH	EAST
POT	10·00.00	542608.9962	687792.7018
POT	10·81.11	542603.7732	687873.6468

DRWY7

TYPE	STATION	NORTH	EAST
POT	10·00.00	542835.7595	687811.9698
POT	10·76.99	542814.3486	687885.9196

DRWY8

TYPE	STATION	NORTH	EAST
POT	10·00.00	542895.1410	687890.6284
POT	10·75.52	542890.7471	687966.0176

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.

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

6/2/99

REVISIONS

RIGHT OF WAY CONTROL SHEET

PROJECT REFERENCE NO.	SHEET NO.
R5734A	RW03E-1

Location and Surveys

PROJECT SURVEYOR

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

I, _____, 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) (Base map Compilation, 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 data compiled came from available surveys/mapping performed by others and provided to me by NCDOT and do not certify to the accuracy or quality of the individual data sources.

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 _th day of _____, 2018.

_____ L-_____

Professional Land Surveyor PLS # Seal

ROW MARKER IRON PIN AND CAP-E

ALIGN	STATION	OFFSET	NORTH	EAST
L	29+19.23	-75.00	540336.8328	687666.0886
L	65+00.00	-79.54	543917.6310	687930.0901
L	65+65.00	-84.68	543982.8037	687940.7731
L	66+32.00	-105.00	544052.7271	687937.1995
L	66+69.00	-93.12	544085.7715	687957.6515
L	48+78.00	90.00	542281.5511	687945.0194
L	27+00.00	75.00	540102.3592	687790.7028
L	24+82.00	75.00	539882.6313	687748.9846
L	23+35.00	137.00	539719.5836	687771.1103
L	20+02.00	135.00	539391.0199	687654.5757
L	19+47.57	85.00	539358.6183	687586.4265
L	17+45.00	135.00	539152.9849	687551.0780
L	16+90.00	95.00	539118.6183	687492.3929
L	15+15.00	175.00	538926.2259	687495.5773
L	14+50.00	190.00	538860.6611	687483.2784
L	13+00.00	150.00	538739.2526	687386.5314
L	11+86.31	150.00	538635.0868	687340.9815
L	11+77.45	50.00	538667.0344	687245.8082

ROW MARKER IRON PIN AND CAP-E

ALIGN	STATION	OFFSET	NORTH	EAST
Y1	13+49.86	40.00	540187.2375	687651.0784
Y1	11+86.73	40.00	540353.1819	687546.7153
Y1	10+86.22	29.62	540439.5868	687536.6295
Y1	12+27.00	-44.25	540327.6110	687635.5499

ROW MARKER IRON PIN AND CAP-E

ALIGN	STATION	OFFSET	NORTH	EAST
Y2	11+50.00	30.54	540106.8855	687853.1998
Y2	11+50.00	-29.47	540162.4367	687875.8802
Y2	10+77.54	-36.77	540198.1779	687813.5781

ROW MARKER IRON PIN AND CAP-E

ALIGN	STATION	OFFSET	NORTH	EAST
DRWY1	13+87.57	25.00	540327.6205	687516.4432
DRWY1	12+69.28	20.00	540213.8780	687483.5978
DRWY1	11+65.28	20.00	540132.7413	687501.1729
DRWY1	11+24.79	20.00	540100.8902	687526.1751
DRWY1	10+72.54	24.81	540044.5806	687555.3176
DRWY1	10+00.00	-10.17	539977.3863	687506.8093
DRWY1	11+24.79	-25.00	540073.1045	687490.7780
DRWY1	11+65.28	-25.00	540104.9557	687465.7758
DRWY1	12+69.28	-25.00	540224.5255	687439.8756
DRWY1	13+87.57	-40.00	540343.0002	687453.2889

DUE

ROW MARKER PERMANENT EASEMENT-E

ALIGN	STATION	OFFSET	NORTH	EAST
L	26+15.00	-75.00	540043.0574	687628.8299
L	26+47.00	-75.00	540073.7508	687634.2146

PDE

ROW MARKER PERMANENT EASEMENT-E

ALIGN	STATION	OFFSET	NORTH	EAST
L	26+95.95	-75.00	540120.8099	687641.7867
L	47+28.99	90.00	542132.7974	687936.3497
L	47+28.99	110.00	542131.6298	687956.3157
L	46+85.00	110.00	542087.7144	687953.7562
L	46+85.00	80.00	542089.4599	687923.8069

PDE

ROW MARKER PERMANENT EASEMENT-E

ALIGN	STATION	OFFSET	NORTH	EAST
Y2	12+00.00	-50.00	540168.6097	687923.7835
Y2	12+20.00	-29.70	540145.2469	687936.9076

PDE

ROW MARKER PERMANENT EASEMENT-E

ALIGN	STATION	OFFSET	NORTH	EAST
Y3	14+13.00	-29.25	542529.9031	687757.7059
Y3	14+30.00	-40.00	542555.5870	687767.5344

PDE

ROW MARKER PERMANENT EASEMENT-E

ALIGN	STATION	OFFSET	NORTH	EAST
DRWY1	10+94.46	34.66	540074.5166	687557.7053

PUE

ROW MARKER PERMANENT EASEMENT-E

ALIGN	STATION	OFFSET	NORTH	EAST
L	14+86.84	-50.00	538990.5758	687278.1444
L	15+06.89	-65.00	539014.9490	687272.4315
L	18+70.00	-65.00	539347.6441	687417.9134
L	20+00.00	-50.00	539460.0923	687482.9415
L	39+67.00	-75.00	541381.6947	687727.2935
L	40+65.00	-87.00	541480.2269	687721.0160
L	40+65.00	-75.00	541479.5287	687732.9955
L	51+68.00	-75.26	542580.6754	687796.9094
L	51+68.00	-91.00	542581.5911	687781.1995
L	51+88.00	-91.00	542601.5572	687782.3632
L	51+88.00	-75.25	542600.6409	687798.0839
L	62+86.00	-90.03	543705.6252	687875.2949
L	65+96.00	-107.00	544018.2708	687926.5805
L	66+05.00	-121.00	544030.3802	687915.1629
L	52+14.00	75.00	542617.8543	687949.5996
L	52+16.00	86.00	542619.2112	687960.6925
L	51+85.35	90.00	542588.3847	687962.9025
L	26+68.00	75.00	540069.9161	687785.6279
L	26+38.00	75.00	540039.5540	687780.5414

PUE

ROW MARKER PERMANENT EASEMENT-E

ALIGN	STATION	OFFSET	NORTH	EAST
Y2	12+15.00	81.00	540037.2205	687912.1336
Y2	12+11.00	51.00	540067.5905	687913.0838

PUE

ROW MARKER PERMANENT EASEMENT-E

ALIGN	STATION	OFFSET	NORTH	EAST
DRWY1	11+00.00	18.10	540074.6965	687539.7314
DRWY1	10+84.24	-33.87	540043.7986	687495.6863
DRWY1	11+13.00	-60.00	540047.6220	687465.9330
DRWY1	11+45.00	-43.00	540077.8899	687464.1384
DRWY1	11+35.00	-25.00	540081.1381	687484.4719

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.

5/23/2018
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mpeters

6/2/99

REVISIONS

RIGHT OF WAY CONTROL SHEET

PROJECT REFERENCE NO.	SHEET NO.
R5734A	RW03E-1

Location and Surveys

PROJECT SURVEYOR

NORTH CAROLINA PROFESSIONAL SEAL L-4269 LAND SURVEYOR F. REX COOPER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

I, F. Rex Cooper, 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) (Base map Compilation, 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 data compiled came from available surveys/mapping performed by others and provided to me by NCDOT and do not certify to the accuracy or quality of the individual data sources.

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Witness my original signature, registration number and seal this 17th day of Sept., 2018.

F. Rex Cooper — Professional Land Surveyor — L-4269 PLS # — Seal

ROW MARKER IRON PIN AND CAP-E

ALIGN	STATION	OFFSET	NORTH	EAST
L	29+19.23	-75.00	540336.8328	687666.0886
L	65+00.00	-79.54	543917.6310	687930.0901
L	65+65.00	-84.68	543982.8037	687940.7731
L	66+32.00	-105.00	544052.7271	687937.1995
L	66+69.00	-93.12	544085.7715	687957.6515
L	48+78.00	90.00	542281.5511	687945.0194
L	27+00.00	75.00	540102.3592	687790.7028
L	24+82.00	75.00	539882.6313	687748.9846
L	23+35.00	137.00	539719.5836	687771.1103
L	20+02.00	135.00	539391.0199	687654.5757
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L	17+45.00	135.00	539152.9849	687551.0780
L	16+90.00	95.00	539118.6183	687492.3929
L	15+15.00	175.00	538926.2259	687495.5773
L	14+50.00	190.00	538860.6611	687483.2784
L	13+00.00	150.00	538739.2526	687386.5314
L	11+86.31	150.00	538635.0868	687340.9815
L	11+77.45	50.00	538667.0344	687245.8082

ROW MARKER IRON PIN AND CAP-E

ALIGN	STATION	OFFSET	NORTH	EAST
Y1	13+49.86	40.00	540187.2375	687651.0784
Y1	11+86.73	40.00	540353.1819	687546.7153
Y1	10+86.22	29.62	540439.5868	687536.6295
Y1	12+27.00	-44.25	540327.6110	687635.5499

ROW MARKER IRON PIN AND CAP-E

ALIGN	STATION	OFFSET	NORTH	EAST
Y2	11+50.00	30.54	540106.8855	687853.1998
Y2	11+50.00	-29.47	540162.4367	687875.8802
Y2	10+77.54	-36.77	540198.1779	687813.5781

ROW MARKER IRON PIN AND CAP-E

ALIGN	STATION	OFFSET	NORTH	EAST
DRWY1	13+87.57	25.00	540327.6205	687516.4432
DRWY1	12+69.28	20.00	540213.8780	687483.5978
DRWY1	11+65.28	20.00	540132.7413	687501.1729
DRWY1	11+24.79	20.00	540100.8902	687526.1751
DRWY1	10+72.54	24.81	540044.5806	687555.3176
DRWY1	10+00.00	-10.17	539977.3863	687506.8093
DRWY1	11+24.79	-25.00	540073.1045	687490.7780
DRWY1	11+65.28	-25.00	540104.9557	687465.7758
DRWY1	12+69.28	-25.00	540224.5255	687439.8756
DRWY1	13+87.57	-40.00	540343.0002	687453.2889

DUE

ROW MARKER PERMANENT EASEMENT-E

ALIGN	STATION	OFFSET	NORTH	EAST
L	26+15.00	-75.00	540043.0574	687628.8299
L	26+47.00	-75.00	540073.7508	687634.2146

PDE

ROW MARKER PERMANENT EASEMENT-E

ALIGN	STATION	OFFSET	NORTH	EAST
L	26+95.95	-75.00	540120.8099	687641.7867
L	47+28.99	90.00	542132.7974	687936.3497
L	47+28.99	110.00	542131.6298	687956.3157
L	46+85.00	110.00	542087.7144	687953.7562
L	46+85.00	80.00	542089.4599	687923.8069

PDE

ROW MARKER PERMANENT EASEMENT-E

ALIGN	STATION	OFFSET	NORTH	EAST
Y2	12+00.00	-50.00	540168.6097	687923.7835
Y2	12+20.00	-29.70	540145.2469	687936.9076

PDE

ROW MARKER PERMANENT EASEMENT-E

ALIGN	STATION	OFFSET	NORTH	EAST
Y3	14+13.00	-29.25	542529.9031	687757.7059
Y3	14+30.00	-40.00	542555.5870	687767.5344

PDE

ROW MARKER PERMANENT EASEMENT-E

ALIGN	STATION	OFFSET	NORTH	EAST
DRWY1	10+94.46	34.66	540074.5166	687557.7053

PUE

ROW MARKER PERMANENT EASEMENT-E

ALIGN	STATION	OFFSET	NORTH	EAST
L	14+86.84	-50.00	538990.5758	687278.1444
L	15+06.89	-65.00	539014.9490	687272.4315
L	18+70.00	-65.00	539347.6441	687417.9134
L	20+00.00	-50.00	539460.0923	687482.9415
L	39+67.00	-75.00	541381.6947	687727.2935
L	40+65.00	-87.00	541480.2269	687721.0160
L	40+65.00	-75.00	541479.5287	687732.9955
L	51+68.00	-75.26	542580.6754	687796.9094
L	51+68.00	-91.00	542581.5911	687781.1995
L	51+88.00	-91.00	542601.5572	687782.3632
L	51+88.00	-75.25	542600.6409	687798.0839
L	62+86.00	-90.03	543705.6252	687875.2949
L	65+96.00	-107.00	544018.2708	687926.5805
L	66+05.00	-121.00	544030.3802	687915.1629
L	52+14.00	75.00	542617.8543	687949.5996
L	52+16.00	86.00	542619.2112	687960.6925
L	51+85.35	90.00	542588.3847	687962.9025
L	26+68.00	75.00	540069.9161	687785.6279
L	26+38.00	75.00	540039.5540	687780.5414

PUE

ROW MARKER PERMANENT EASEMENT-E

ALIGN	STATION	OFFSET	NORTH	EAST
Y2	12+15.00	81.00	540037.2205	687912.1336
Y2	12+11.00	51.00	540067.5905	687913.0838

PUE

ROW MARKER PERMANENT EASEMENT-E

ALIGN	STATION	OFFSET	NORTH	EAST
DRWY1	11+00.00	18.10	540074.6965	687539.7314
DRWY1	10+84.24	-33.87	540043.7986	687495.6863
DRWY1	11+13.00	-60.00	540047.6220	687465.9330
DRWY1	11+45.00	-43.00	540077.8899	687464.1384
DRWY1	11+35.00	-25.00	540081.1381	687484.4719

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.

9/18/2018
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REVISIONS

I, F. Rex Cooper, 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) (Base map Compilation, 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 17th day of Sept., 2018.

F. Rex Cooper L- 4269
Professional Land Surveyor PLS # Seal

PROJECT REFERENCE NO.	SHEET NO.
R-5734A	RW04

Location and Surveys

PROJECT SURVEYOR

NORTH CAROLINA PROFESSIONAL SEAL L-4269 LAND SURVEYOR F. REX COOPER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

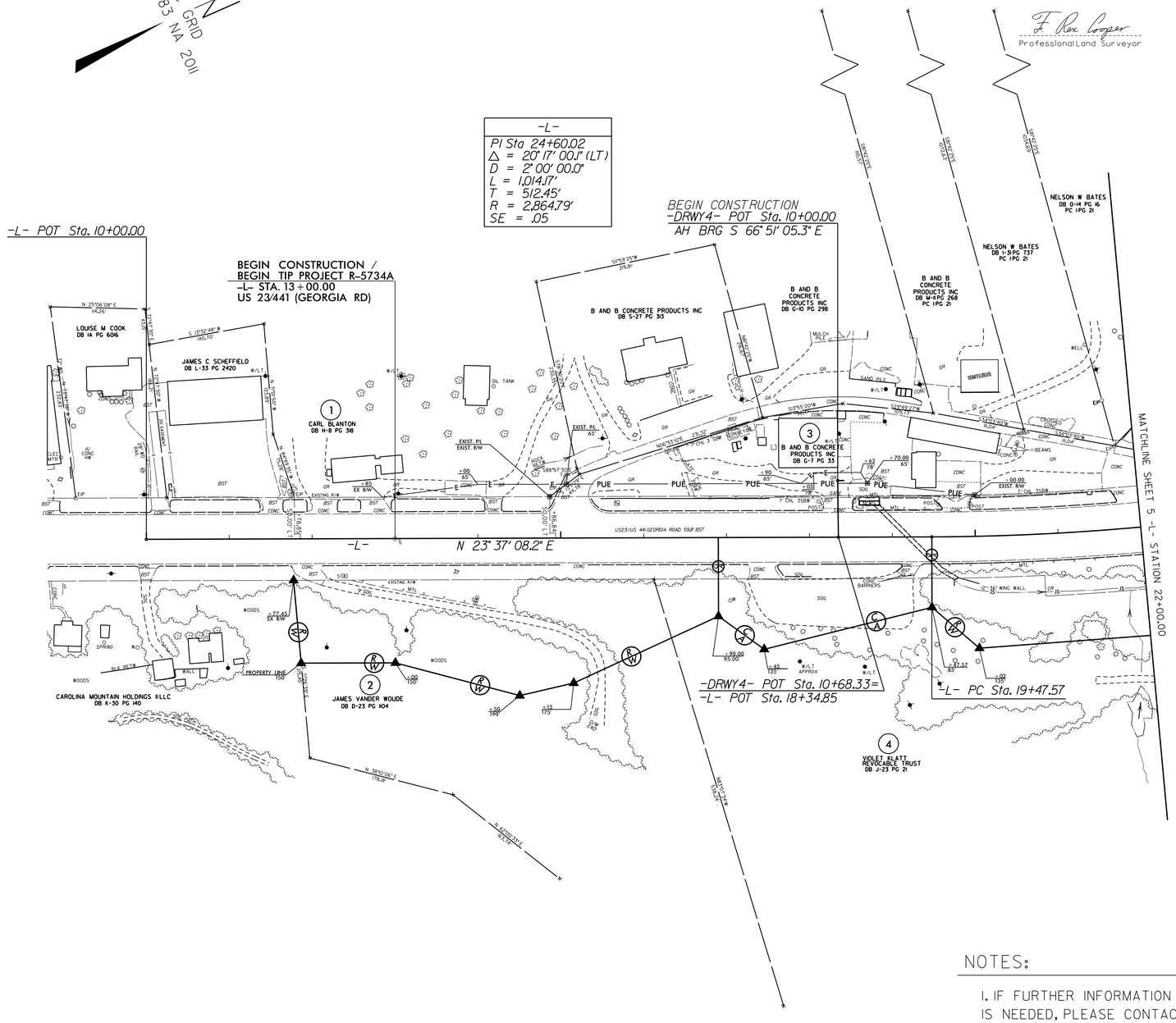
NC GRID NAD 83 NA 2011

-L-
PI Sta 24+60.02
△ = 20° 17' 00.1" (LT)
D = 2° 00' 00.0"
L = 1,014.17'
T = 512.45'
R = 2,864.79'
SE = .05

-L- POT Sta. 10+00.00

BEGIN CONSTRUCTION / BEGIN TIP PROJECT R-5734A
-L- STA. 13+00.00
US 23/441 (GEORGIA RD)

BEGIN CONSTRUCTION
-DRWY4- POT Sta. 10+00.00
AH BRG S 66° 51' 05.3" E



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.

5/23/2018
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mhazlett

PROJECT REFERENCE NO.	SHEET NO.
R-5734A	RW05

Location and Surveys

PROJECT SURVEYOR

NORTH CAROLINA PROFESSIONAL SEAL L-4269 LAND SURVEYOR F. REX COOPER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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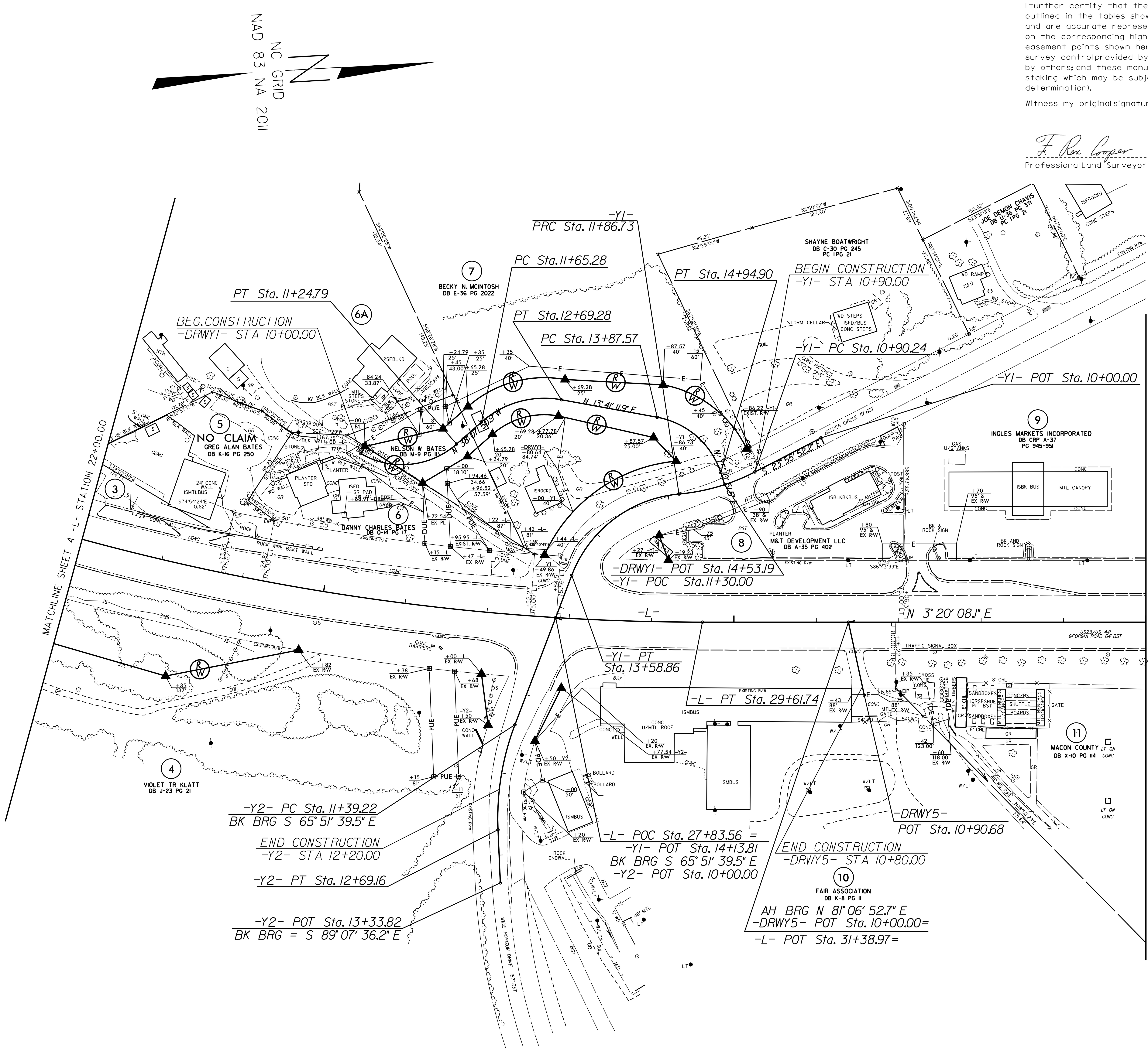
F. Rex Cooper
Professional Land Surveyor

L-4269
PLS #

Seal

REVISIONS



-L-	-DRWY1-			-Y1-		-Y2-
PI Sta 24+60.02	PI Sta 10+71.99	PI Sta 12+21.14	PI Sta 14+47.06	PI Sta 11+39.09	PI Sta 12+83.03	PI Sta 12+05.10
Δ = 20° 17' 00.1" (LT)	Δ = 71° 29' 51.8" (LT)	Δ = 51° 49' 02.8" (RT)	Δ = 61° 29' 39.7" (RT)	Δ = 22° 06' 45.3" (RT)	Δ = 64° 02' 32.6" (LT)	Δ = 23° 15' 56.6" (LT)
D = 2° 00' 00.0"	D = 57° 17' 44.8"	D = 49° 49' 20.7"	D = 57° 17' 44.8"	D = 22° 55' 05.9"	D = 37° 12' 18.2"	D = 17° 54' 17.8"
L = 1,014.17'	L = 124.79'	L = 104.00'	L = 107.33'	L = 96.48'	L = 172.13'	L = 129.94'
T = 512.45'	T = 71.99'	T = 55.86'	T = 59.49'	T = 48.85'	T = 96.31'	T = 65.88'
R = 2,864.79'	R = 100.00'	R = 115.00'	R = 100.00'	R = 250.00'	R = 154.00'	R = 320.00'
SE = .05	SE = NC	SE = NC	SE = NC	SE = NC	SE = .03	SE = EXIST.

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.

6/2/99

5/23/2018
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cmozingo

PROJECT REFERENCE NO.	SHEET NO.
R-5734A	RW06

Location and Surveys

PROJECT SURVEYOR

NORTH CAROLINA PROFESSIONAL SEAL L-4269 LAND SURVEYOR F. REX COOPER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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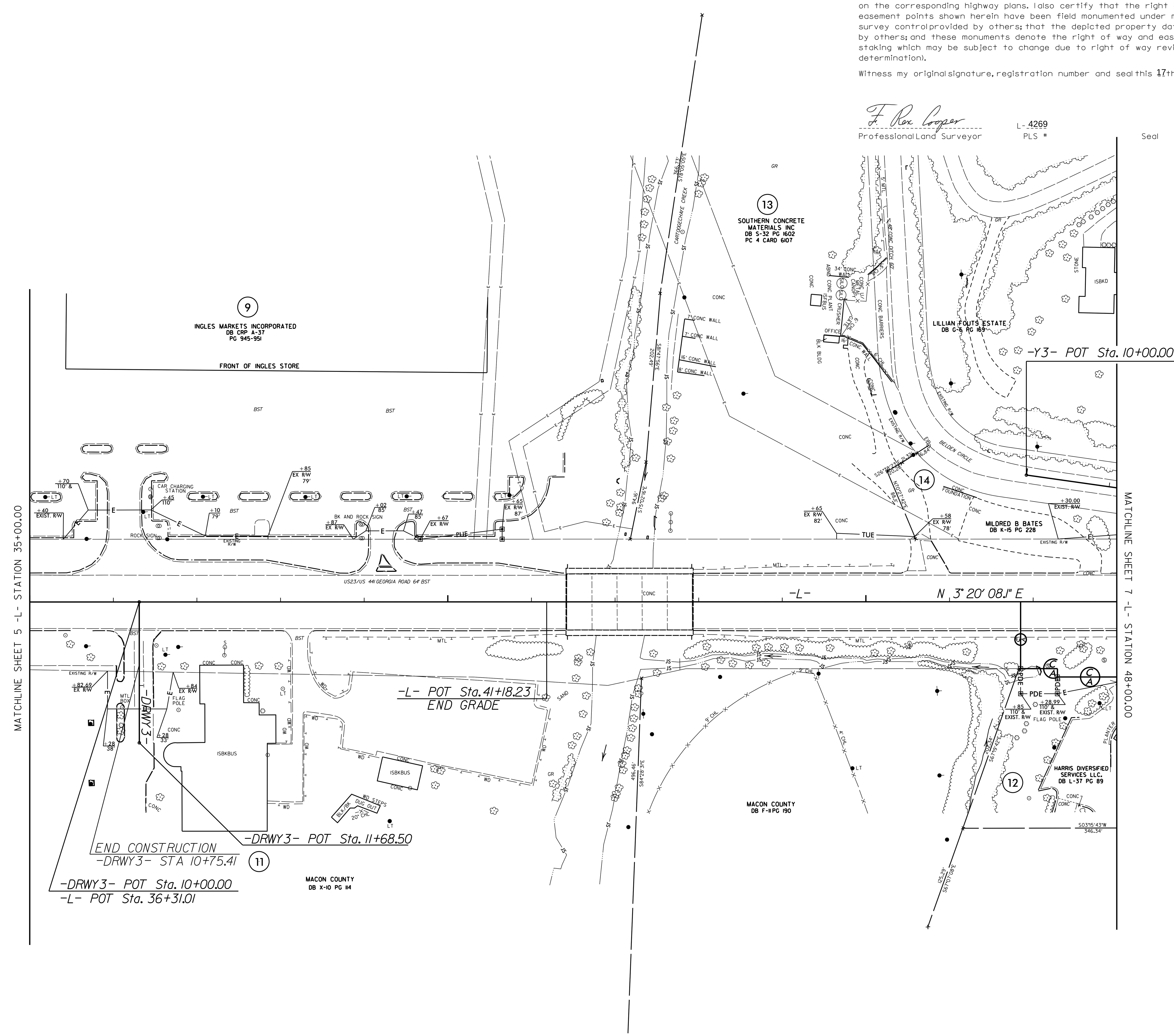
F. Rex Cooper
Professional Land Surveyor

L-4269
PLS #

Seal

REVISIONS



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.

6/2/99

5/23/2018
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PROJECT REFERENCE NO.	SHEET NO.
R-5734A	RW07

Location and Surveys

PROJECT SURVEYOR

SEAL L-4269 — NORTH CAROLINA PROFESSIONAL LAND SURVEYOR — F. REX COOPER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

I, F. Rex Cooper, 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) (Base map Compilation, 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 data compiled came from available surveys/mapping performed by others and provided to me by NCDOT and do not certify to the accuracy or quality of the individual data sources.

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).

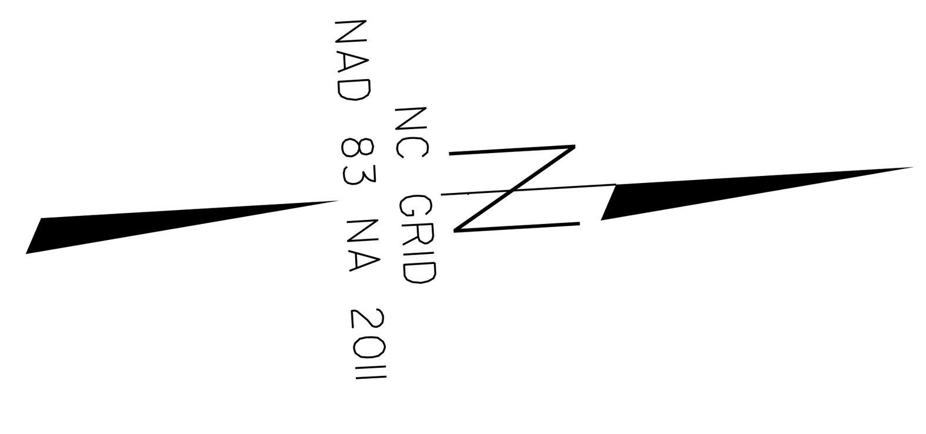
Witness my original signature, registration number and seal this 17th day of Sept., 2018.

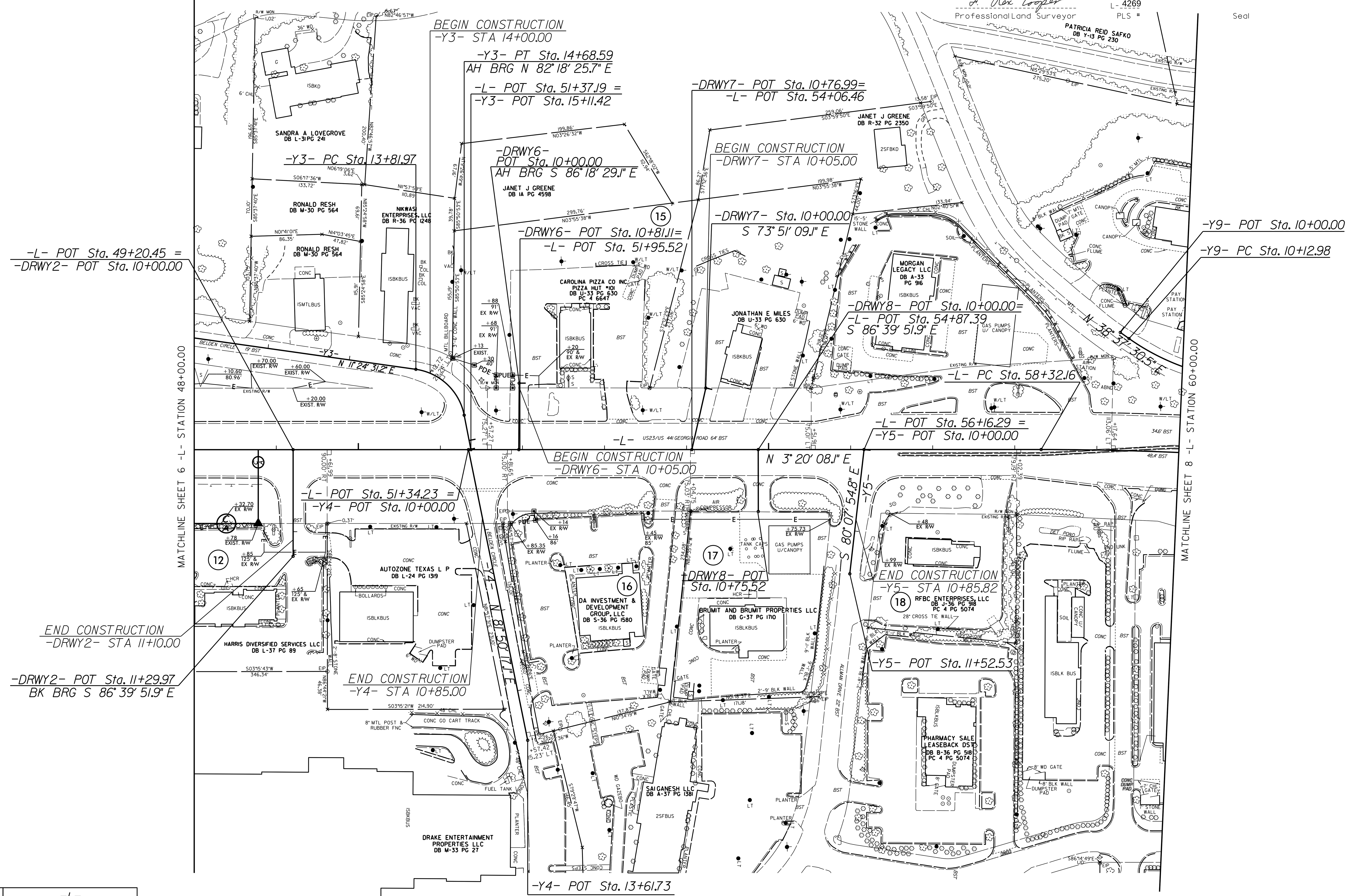
F. Rex Cooper
Professional Land Surveyor

L- 4269
PLS #

Seal

REVISIONS





-Y3-	-L-
PI Sta 14+31.81	PI Sta 61+86.95
Δ = 70° 53' 54.5" (RT)	Δ = 10° 36' 47.6" (RT)
D = 81° 51' 04.0"	D = 1° 30' 00.0"
L = 86.62'	L = 707.55'
T = 49.84'	T = 354.79'
R = 70.00'	R = 3,819.72'
SE = TRANSIT.	SE = EXIST.

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.

6/2/99

5/23/2018
R:\Roadway\Proj\r5734a_ls_rw07.dgn

PROJECT REFERENCE NO.	SHEET NO.
R-5734A	RW08

Location and Surveys

PROJECT SURVEYOR

NORTH CAROLINA PROFESSIONAL SEAL L-4269 LAND SURVEYOR F. REX COOPER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

I, F. Rex Cooper, 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) (Base map Compilation, 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 data compiled came from available surveys/mapping performed by others and provided to me by NCDOT and do not certify to the accuracy or quality of the individual data sources.

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 17th day of Sept., 2018.

F. Rex Cooper
Professional Land Surveyor

L-4269
PLS #

Seal

REVISIONS

NC GRID NAD 83 NA 2011

-L-
PI Sta 61+86.95
Δ = 10° 36′ 47.6″ (RT)
D = 1° 30′ 00.0″
L = 707.55′
T = 354.79′
R = 3,819.72′
SE = EXIST.

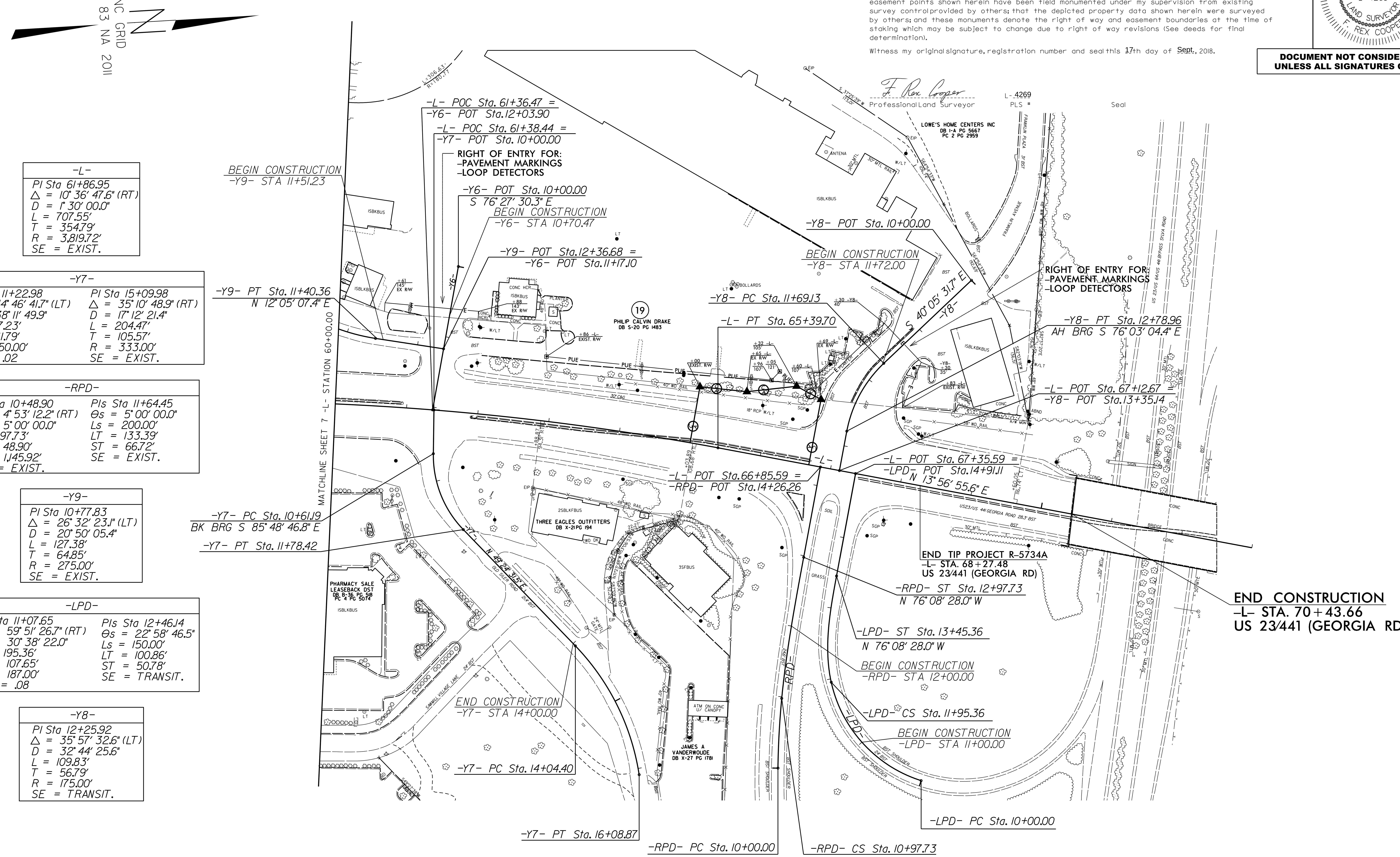
-Y7-	
PI Sta 11+22.98	PI Sta 15+09.98
Δ = 44° 46′ 41.7″ (LT)	Δ = 35° 10′ 48.9″ (RT)
D = 38° 11′ 49.9″	D = 17° 12′ 21.4″
L = 117.23′	L = 204.47′
T = 61.79′	T = 105.57′
R = 150.00′	R = 333.00′
SE = .02	SE = EXIST.

-RPD-	
PI Sta 10+48.90	PIs Sta 11+64.45
Δ = 4° 53′ 12.2″ (RT)	Θs = 5° 00′ 00.0″
D = 5° 00′ 00.0″	Ls = 200.00′
L = 97.73′	LT = 133.39′
T = 48.90′	ST = 66.72′
R = 1,145.92′	SE = EXIST.
SE = EXIST.	

-Y9-
PI Sta 10+77.83
Δ = 26° 32′ 23.1″ (LT)
D = 20° 50′ 05.4″
L = 127.38′
T = 64.85′
R = 275.00′
SE = EXIST.

-LPD-	
PI Sta 11+07.65	PIs Sta 12+46.14
Δ = 59° 51′ 26.7″ (RT)	Θs = 22° 58′ 46.5″
D = 30° 38′ 22.0″	Ls = 150.00′
L = 195.36′	LT = 100.86′
T = 107.65′	ST = 50.78′
R = 187.00′	SE = TRANSIT.
SE = .08	

-Y8-
PI Sta 12+25.92
Δ = 35° 57′ 32.6″ (LT)
D = 32° 44′ 25.6″
L = 109.83′
T = 56.79′
R = 175.00′
SE = TRANSIT.



NOTES:

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

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License No. F-0672

PROJECT REFERENCE NO.	SHEET NO.
R-5734A	2A-1
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 022037 ENGINEER STEPHEN T. SMALLWOOD — 6/8/2018	

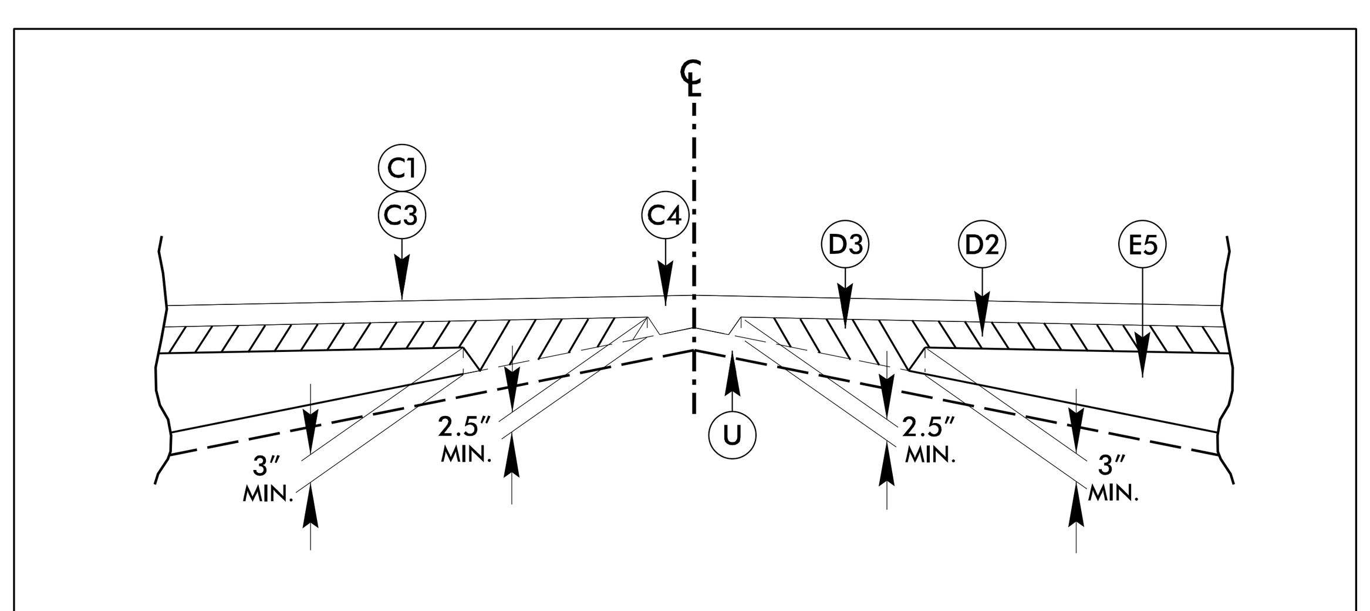
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

P A V E M E N T   S C H E D U L E

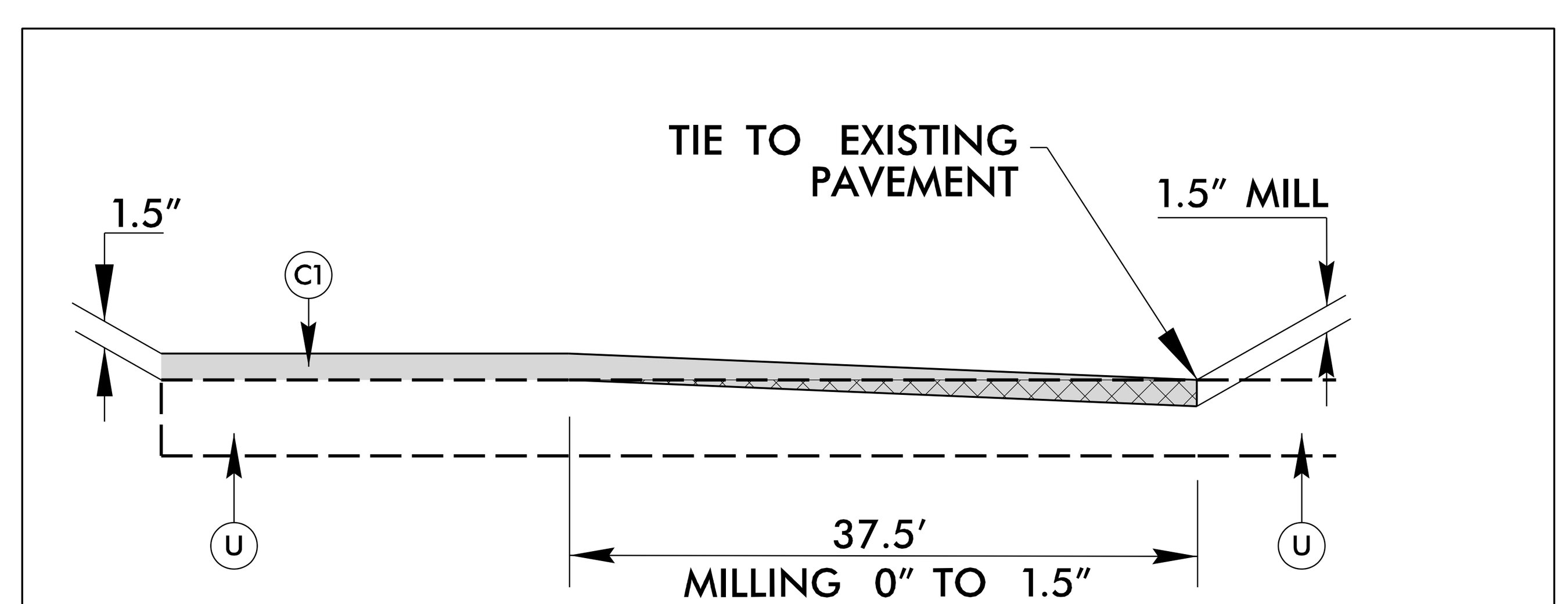
(FINAL PAVEMENT DESIGN)

A	JOINTED CONCRETE WITH WIRE MESH	E1	PROP. APPROX. 3" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, TYPE B25.0C, AT AN AVERAGE RATE OF 342 LBS. PER SQ. YD.	R2	2'-6" CONCRETE CURB AND GUTTER.
C1	PROP. APPROX. 1.5" ASPHALT CONCRETE SURFACE COURSE TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.	E2	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, TYPE B25.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.	R3	MONOLITHIC CONCRETE ISLAND (KEYED-IN).
C2	PROP. APPROX. 2" ASPHALT CONCRETE SURFACE COURSE TYPE S9.5C, AT AN AVERAGE RATE OF 224 LBS. PER SQ. YD.	E3	PROP. APPROX. 6" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 342 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.	R4	2'-9" CONCRETE CURB AND GUTTER
C3	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.	E4	PROP. APPROX. 7" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 399 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.	S	4" CONCRETE SIDEWALK.
C4	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT TO EXCEED 2" IN DEPTH.	E5	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.	T	EARTH MATERIAL.
D1	PROP. APPROX. 3" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 342 LBS. PER SQ. YD.	J1	PROP. 8" AGGREGATE BASE COURSE	U	EXISTING PAVEMENT.
D2	PROP. APPROX. 4" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.	P	PRIME COAT.	V	1.5" MILLING
D3	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	1'-6" CONCRETE CURB AND GUTTER.	W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE STANDARD WEDGING DETAILS).

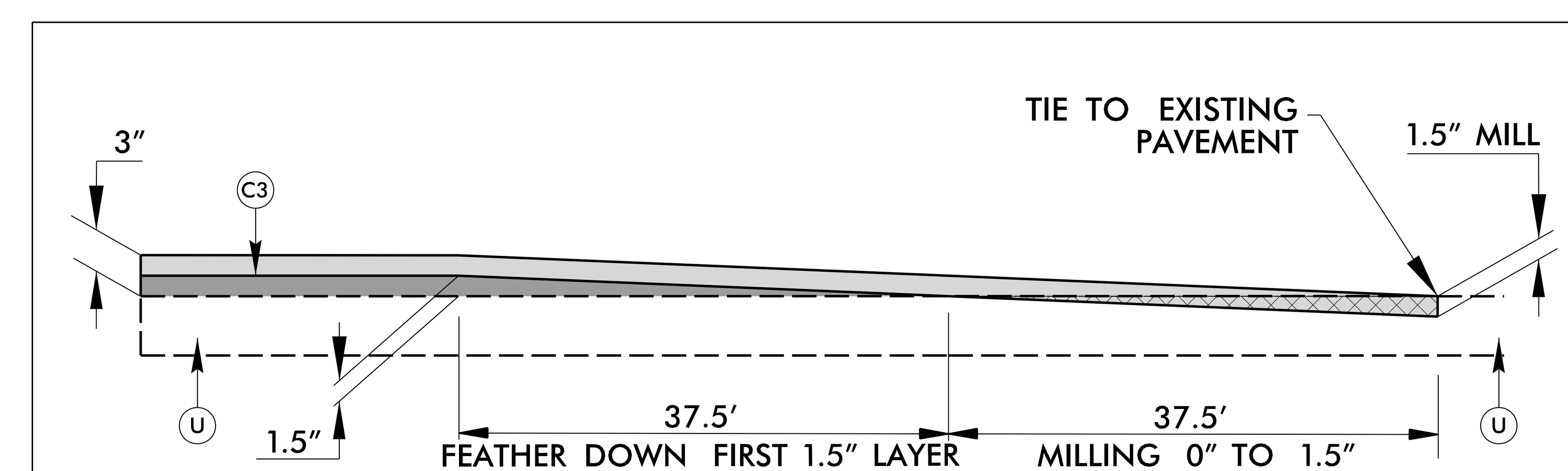
NOTE: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.



W: WEDGING DETAIL FOR WEDGING



TIE-IN MILLING DETAIL FOR 1.5" OVERLAY (PROFILE VIEW)



TIE-IN MILLING DETAIL FOR 3" OVERLAY (PROFILE VIEW)

6/2/99
6/8/2018
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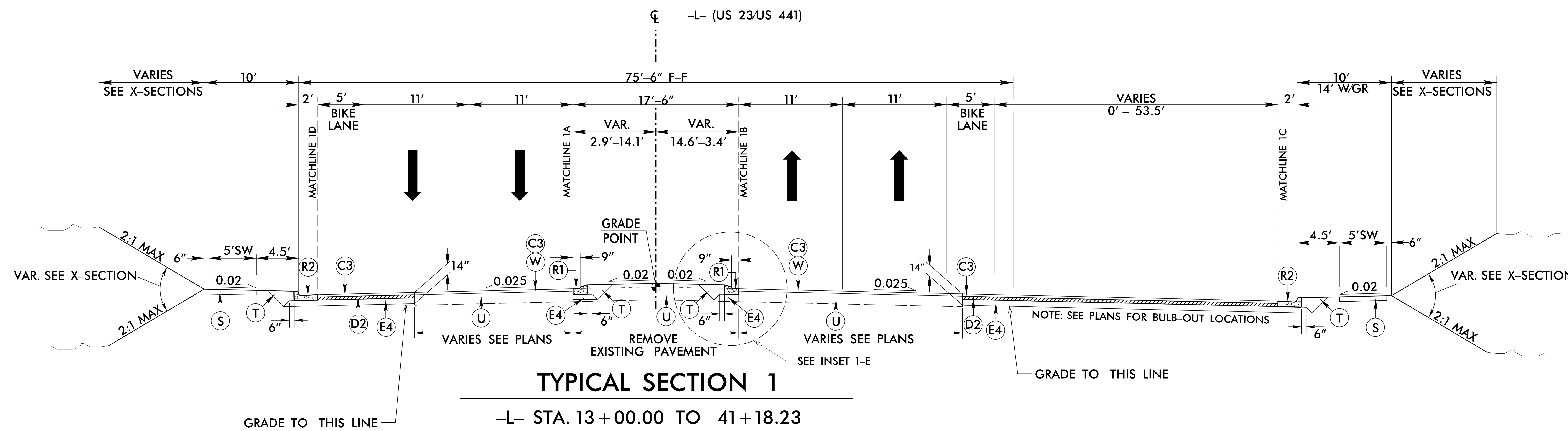
www.stantec.com
License No. F-0672

PROJECT REFERENCE NO.	SHEET NO.
R-5734A	2A-2

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 022037 STEPHEN T. SMALLWOOD — 6/8/2018

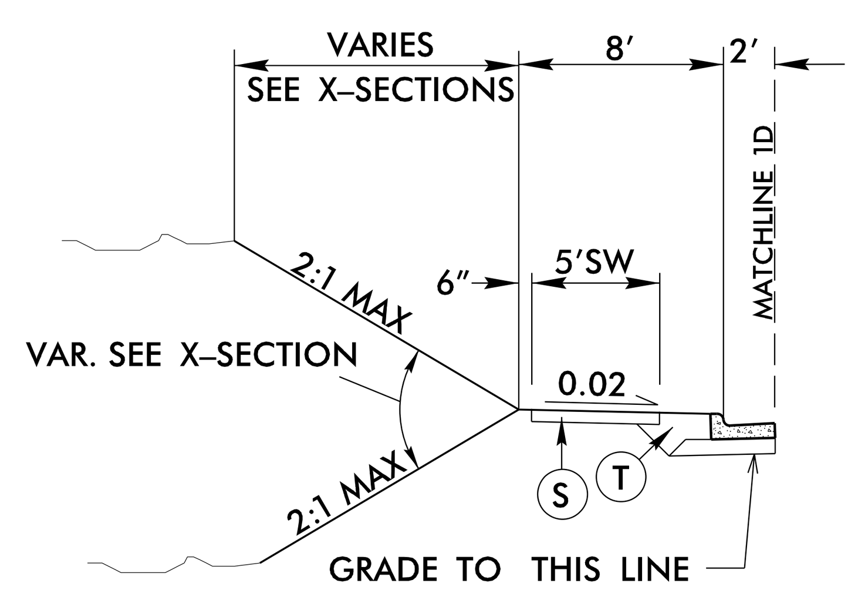
PAVEMENT DESIGN ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



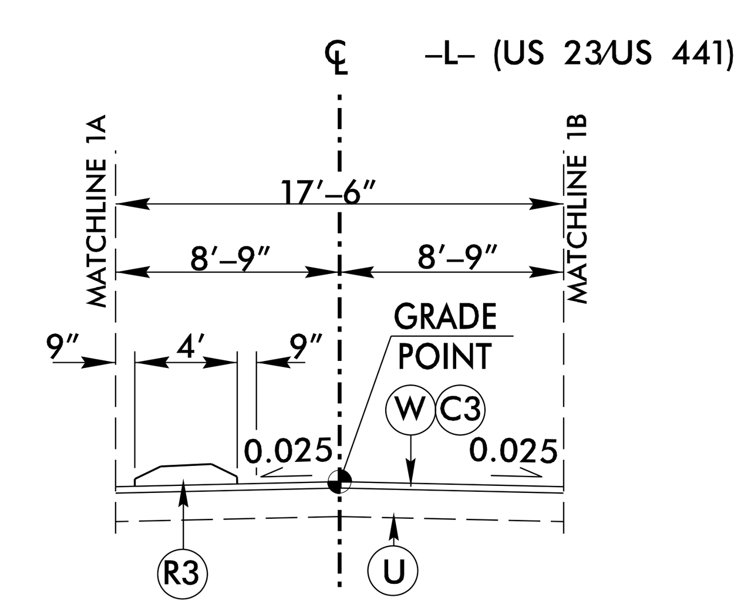
TYPICAL SECTION 1

-L- STA. 13+00.00 TO 41+18.23



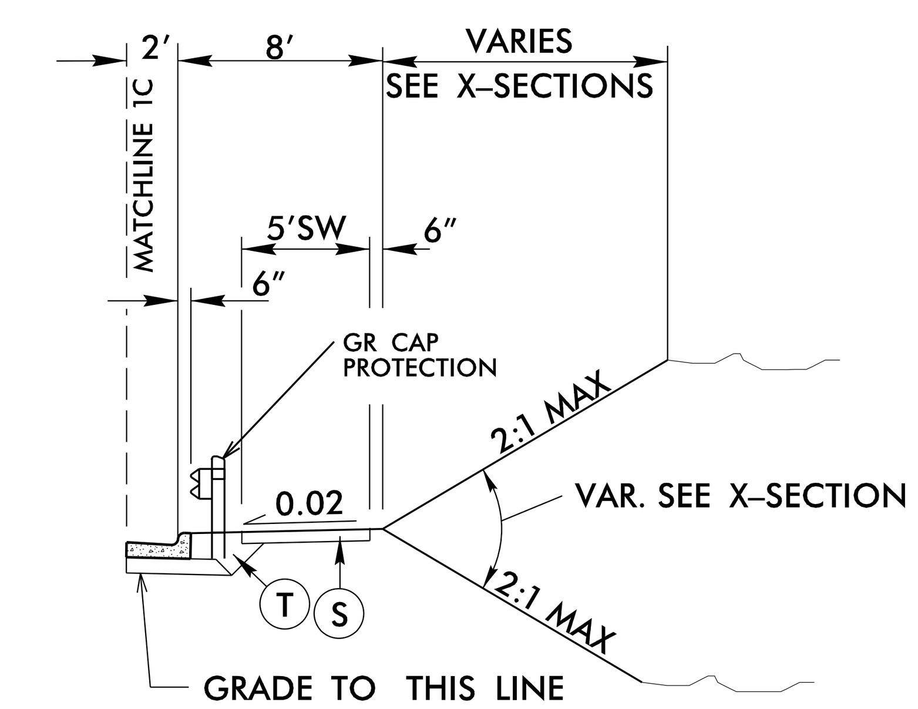
TYPICAL SECTION 1-D
USE IN CONJUCTION WITH TYPICAL SECTION 1

-L- STA. 23+00.00 TO 27+00.00



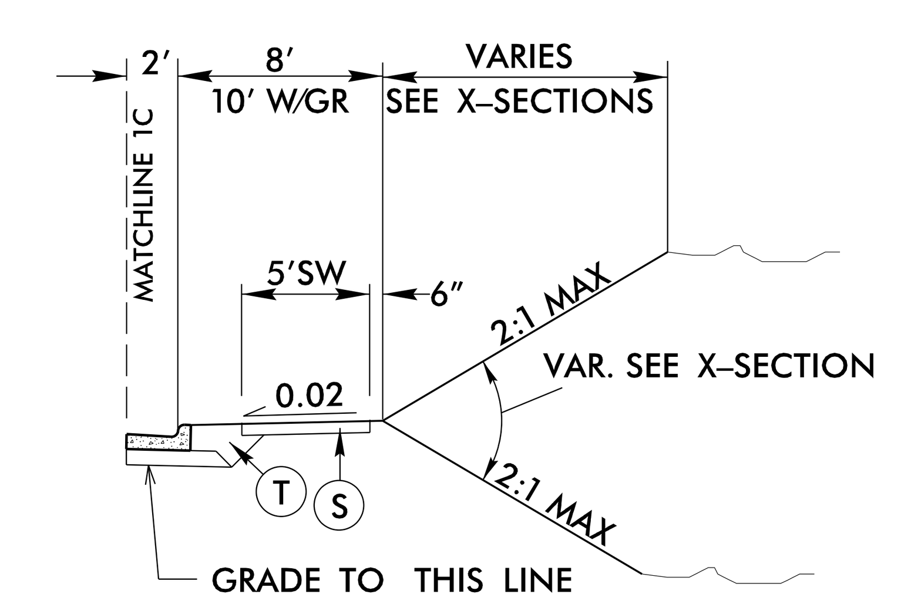
TYPICAL SECTION 1-A
USE IN CONJUCTION WITH TYPICAL SECTION 1

-L- STA. 18+01.60 TO 20+31.77 (MIRROR)
-L- STA. 24+84.74 TO 27+20.92
-L- STA. 28+62.05 TO 30+95.43 (MIRROR)
-L- STA. 33+47.68 TO 35+76.76
-L- STA. 36+64.70 TO 38+34.55 (MIRROR)



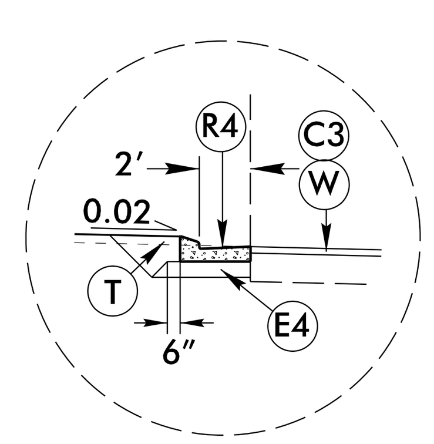
TYPICAL SECTION 1-C1
USE IN CONJUCTION WITH TYPICAL SECTION 1

-L- STA. 28+37.00 TO 35+94.00



TYPICAL SECTION 1-C2
USE IN CONJUCTION WITH TYPICAL SECTION 1

-L- STA. 38+40.00 TO 41+41.34 (BRIDGE)



INSET 1-E

-L- STA. 20+41.73 TO 24+74.58

	PAVEMENT DESIGN
A	JOINTED CONCRETE WITH WIRE MESH
C1	PROP. APPROX. 1.5", TYPE S9.5C
C2	PROP. APPROX. 2", TYPE S9.5C
C3	PROP. APPROX. 3", TYPE S9.5C
C4	PROP. VAR. DEPTH, TYPE S9.5C
D1	PROP. APPROX. 3", I19.0C
D2	PROP. APPROX. 4", I19.0C
D3	PROP. VAR. DEPTH, TYPE I19.0C
E1	PROP. APPROX. 3", TYPE B25.0C
E2	PROP. APPROX. 4", TYPE B25.0C
E3	PROP. APPROX. 6", TYPE B25.0C
E4	PROP. APPROX. 7", TYPE B25.0C
E5	PROP. VAR. DEPTH, TYPE B25.0C
J1	PROP. 8" AGGREGATE BASE COURSE
P	PRIME COAT
R1	1'-6" CONCRETE CURB AND GUTTER
R2	2'-6" CONCRETE CURB AND GUTTER
R3	MONOLITHIC CONCRETE ISLAND
R4	2'-9" CONCRETE CURB AND GUTTER
S	4" CONCRETE SIDEWALK
T	EARTH MATERIAL
U	EXISTING PAVEMENT
V	1.5" MILLING
W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE STANDARD WEDGING DETAILS SHEET NO.2A-1)

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

6/8/2018
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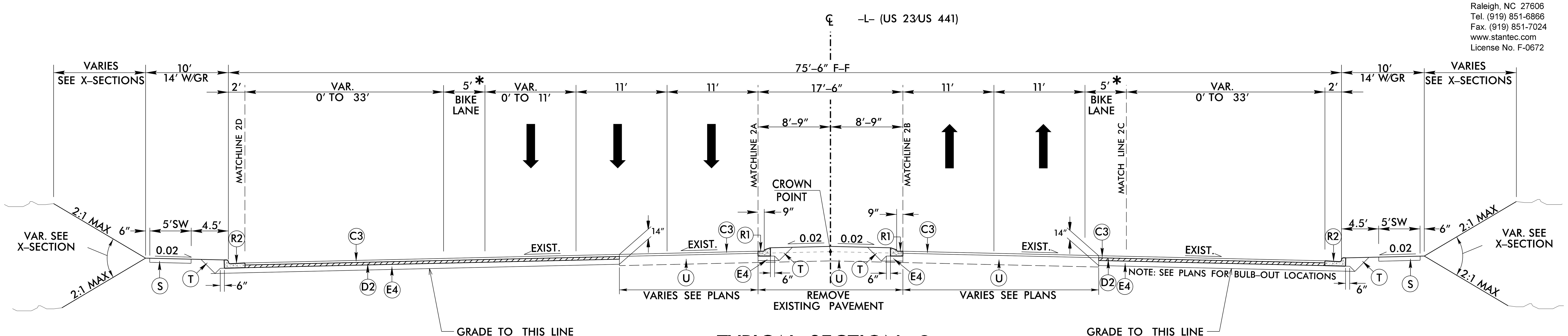
PROJECT REFERENCE NO.	SHEET NO.
R-5734A	2A-3
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 022037 ENGINEER STEPHEN T. SMALLWOOD
6/8/2018

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

	PAVEMENT DESIGN
A	JOINTED CONCRETE WITH WIRE MESH
C1	PROP. APPROX. 1.5", TYPE S9.5C
C2	PROP. APPROX. 2", TYPE S9.5C
C3	PROP. APPROX. 3", TYPE S9.5C
C4	PROP. VAR. DEPTH, TYPE S9.5C
D1	PROP. APPROX. 3", TYPE I19.0C
D2	PROP. APPROX. 4", TYPE I19.0C
D3	PROP. VAR. DEPTH, TYPE I19.0C
E1	PROP. APPROX. 3", TYPE B25.0C
E2	PROP. APPROX. 4", TYPE B25.0C
E3	PROP. APPROX. 6", TYPE B25.0C
E4	PROP. APPROX. 7", TYPE B25.0C
E5	PROP. VAR. DEPTH, TYPE B25.0C
J1	PROP. 8" AGGREGATE BASE COURSE
P	PRIME COAT
R1	1'-6" CONCRETE CURB AND GUTTER
R2	2'-6" CONCRETE CURB AND GUTTER
R3	MONOLITHIC CONCRETE ISLAND
R4	2'-9" CONCRETE CURB AND GUTTER
S	4" CONCRETE SIDEWALK
T	EARTH MATERIAL
U	EXISTING PAVEMENT
V	1.5" MILLING
W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE STANDARD WEDGING DETAILS SHEET NO.2A-1)

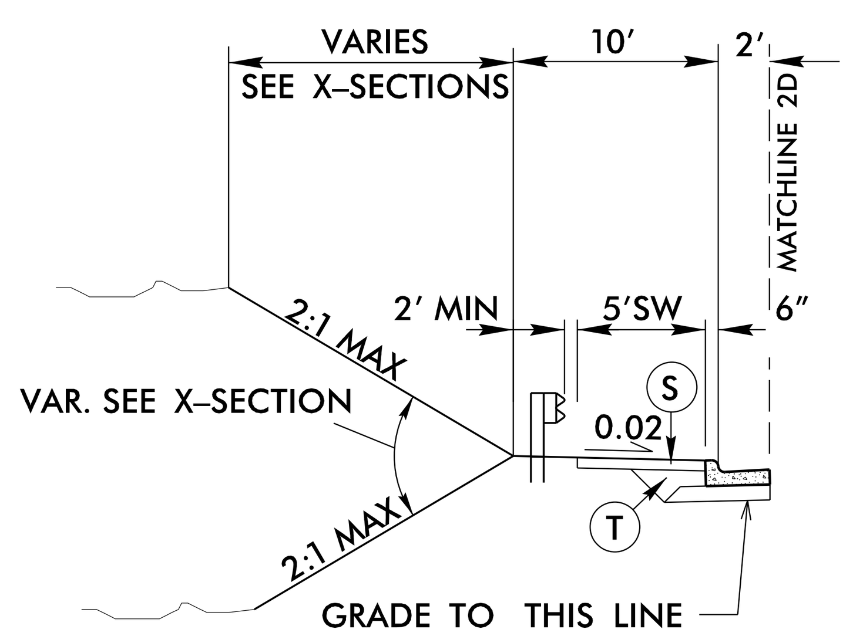
NOTE: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.



TYPICAL SECTION 2

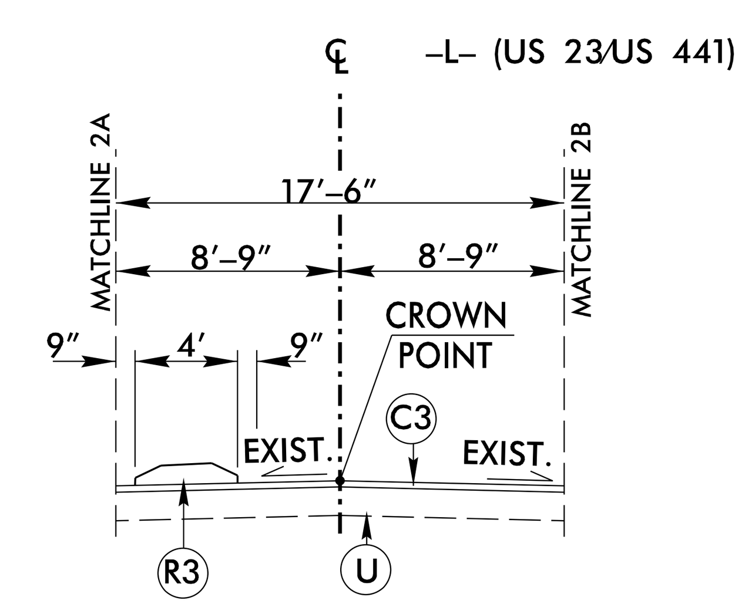
-L- STA. 41+18.23 to 41+41.34 (BRIDGE)
-L- STA. 42+93.47 (BRIDGE) TO 68+27.48

* BIKE LANE ENDS AT:
  -L- STA. 56+84.72 RT
  -L- STA. 60+75.00 LT



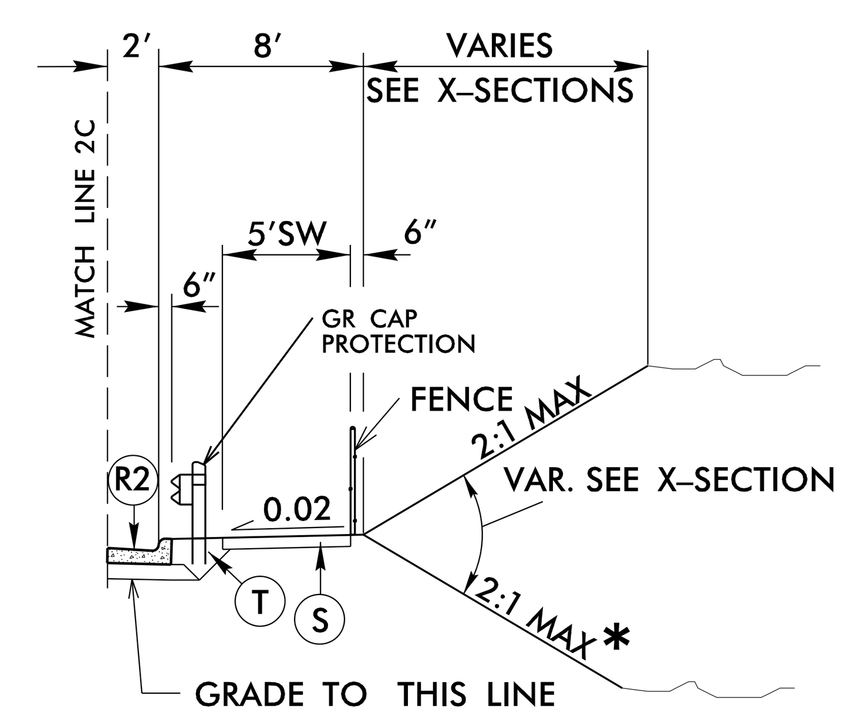
TYPICAL SECTION 2-D
USE IN CONJUCTION WITH
TYPICAL SECTION 2

-L- STA. 42+93.47 (BRIDGE) TO 45+19.00



USE TYPICAL SECTION 2-A IN
CONJUCTION WITH TYPICAL SECTION 2

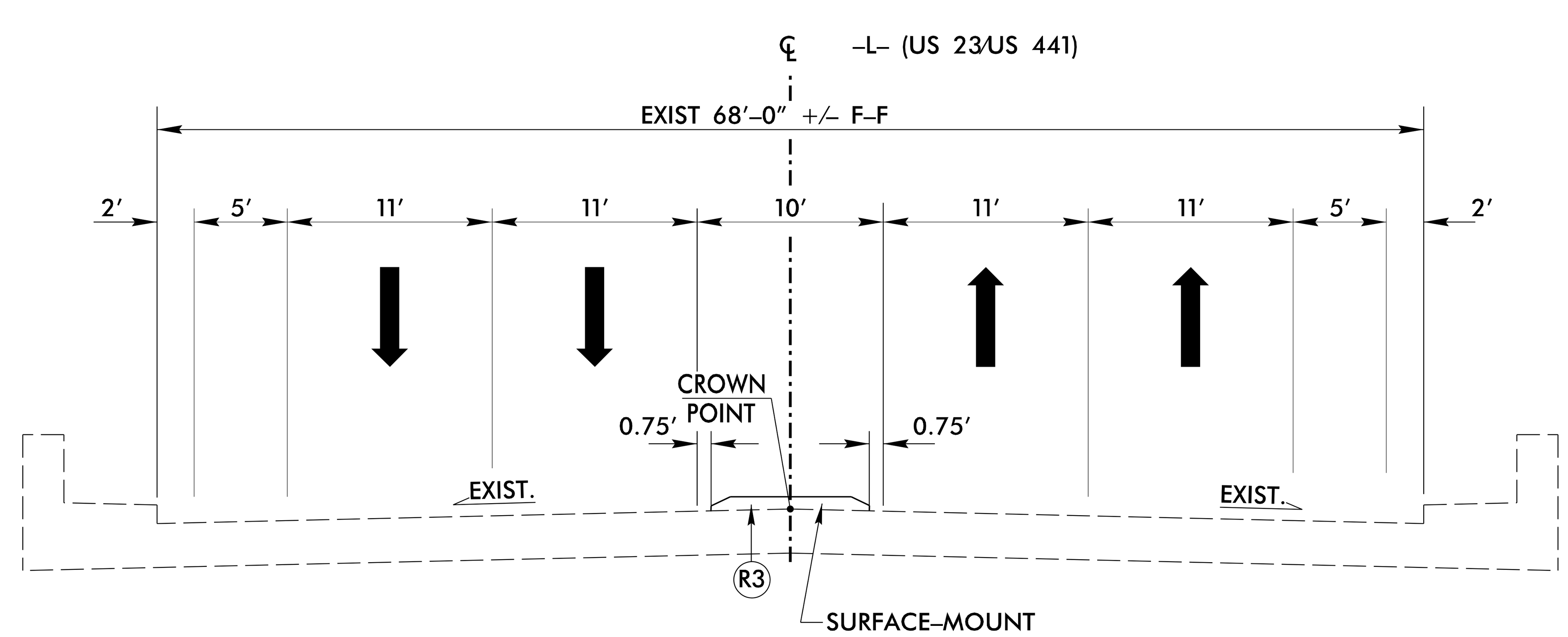
-L- STA. 47+62.56 TO 50+00.00 (MIRROR)
-L- STA. 51+68.77 TO 52+17.26
-L- STA. 51+77.60 TO 54+50.54 (MIRROR)
-L- STA. 57+89.45 TO 60+75.00
-L- STA. 62+05.00 TO 66+29.00 (MIRROR)
-L- STA. 67+80.00 TO 68+00.00 (MIRROR)



TYPICAL SECTION 2-C1
USE IN CONJUCTION WITH
TYPICAL SECTION 2

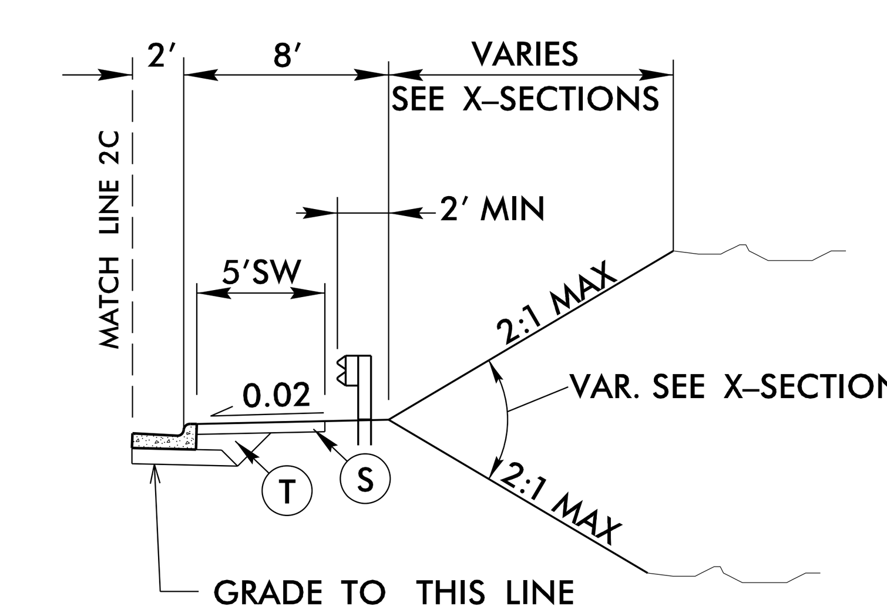
-L- STA. 44+68.00 TO 47+09.00

* STEEPER SLOPES THAN 2:1 AT
  -L- STA. 46+00 TO 47+25



TYPICAL SECTION 3

-L- STA. 41+41.34 (BRIDGE) TO 42+93.47 (BRIDGE)



TYPICAL SECTION 2-C2
USE IN CONJUCTION WITH
TYPICAL SECTION 2

-L- STA. 42+93.47 (BRIDGE) TO 44+75.00

6/8/2018
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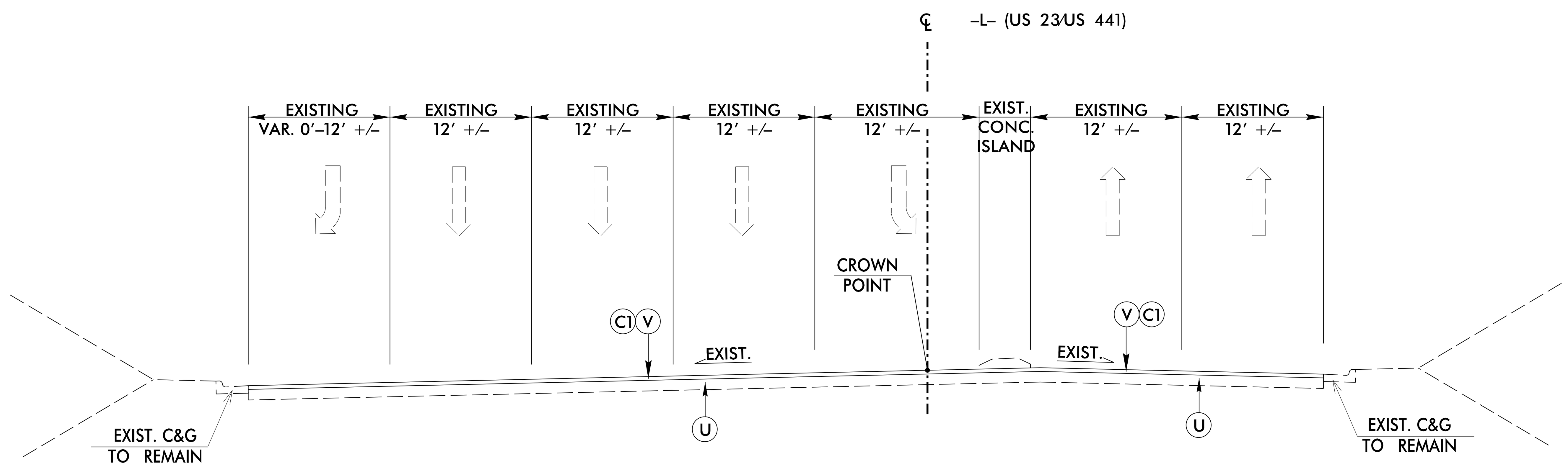
PROJECT REFERENCE NO.	SHEET NO.
R-5734A	2A-4
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

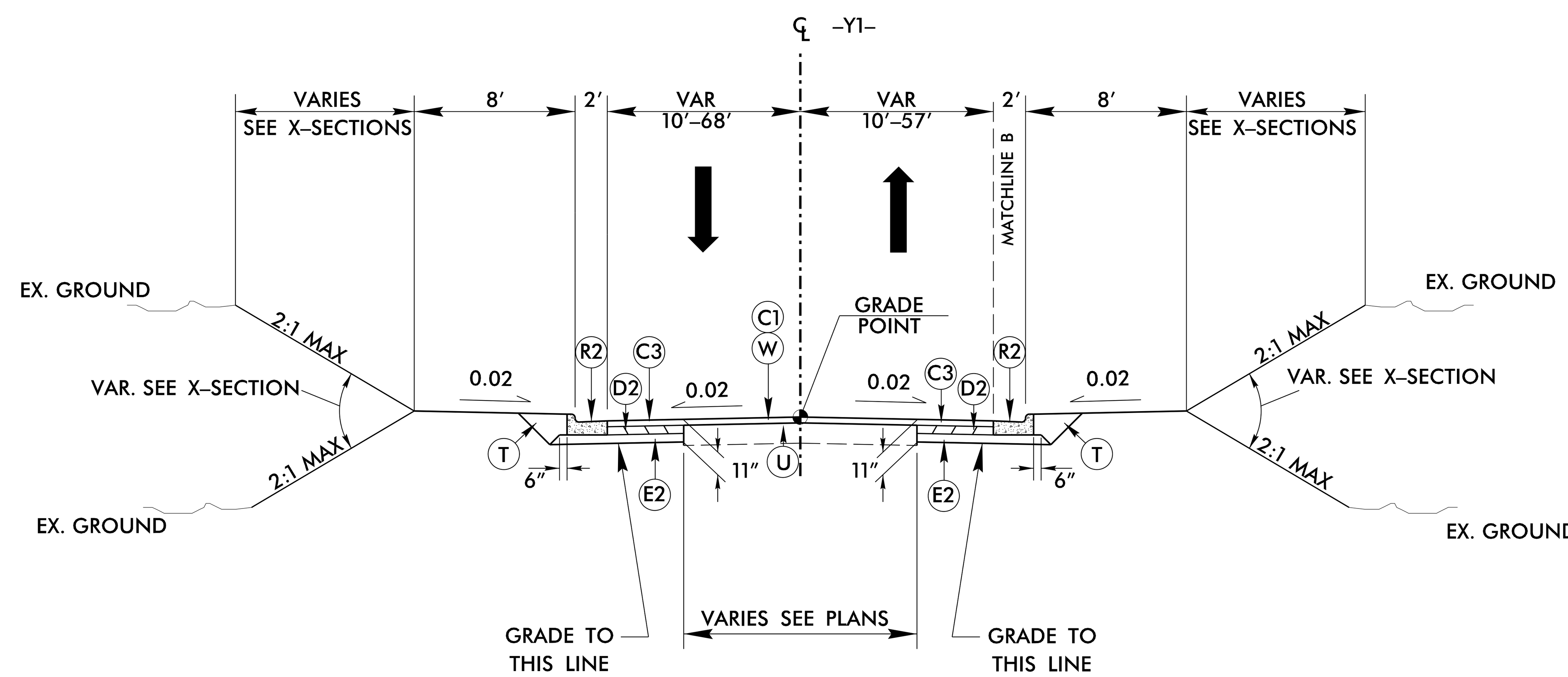
NORTH CAROLINA PROFESSIONAL SEAL 022037 ENGINEER STEPHEN T. SMALLWOOD
6/8/2018

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



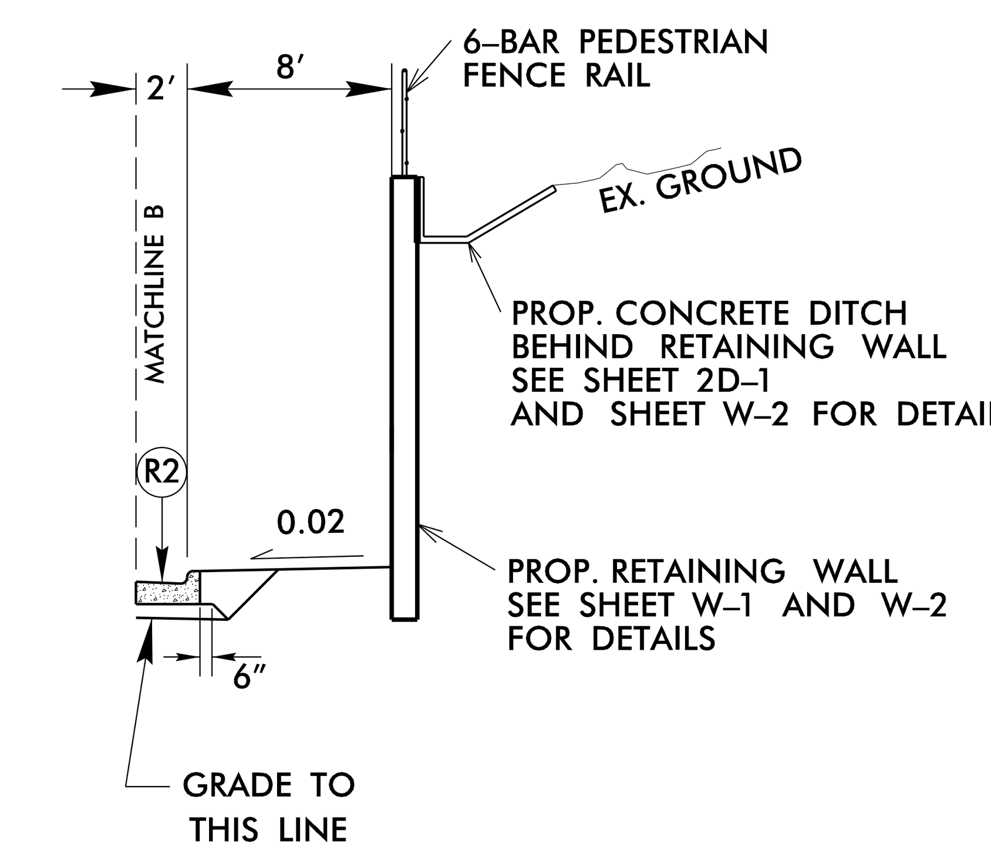
TYPICAL SECTION 4

-L- STA. 68+27.48 TO 70+43.66



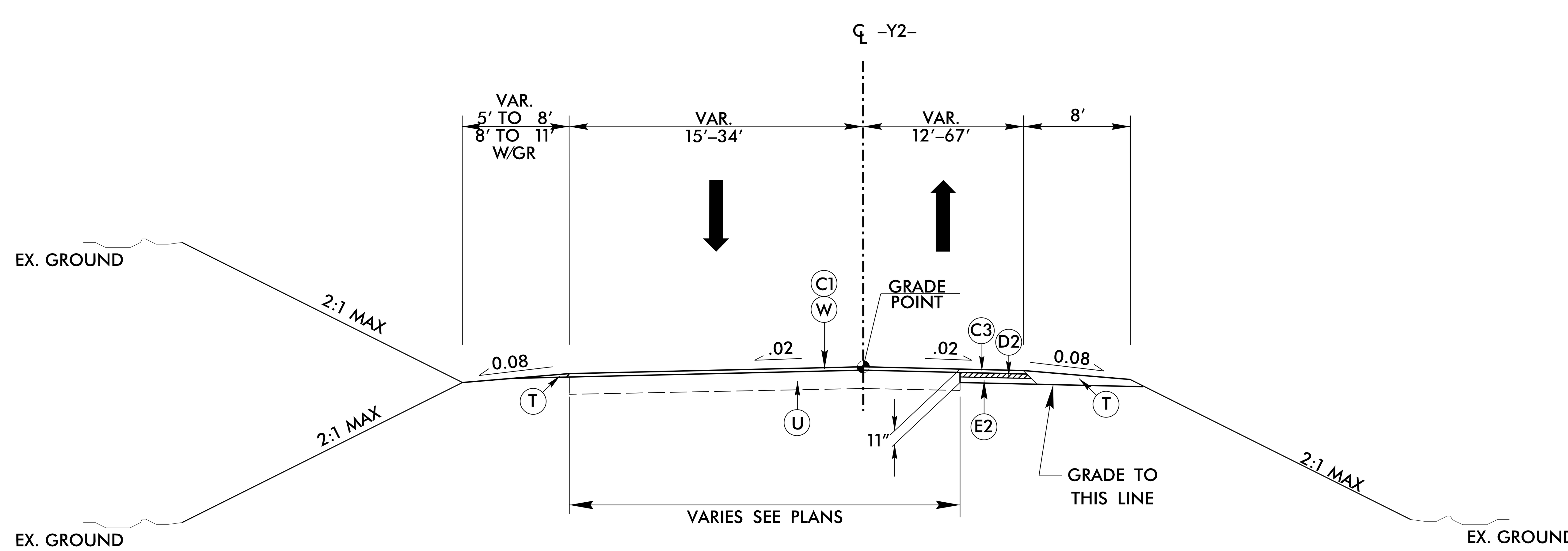
TYPICAL SECTION 5

-Y1- STA. 10+90.00 TO 13+71.99



USE TYPICAL SECTION 5-A IN CONJUCTION WITH TYPICAL SECTION 5

-Y1- STA. 12+00.00 TO 13+70.00 RT



TYPICAL SECTION 6

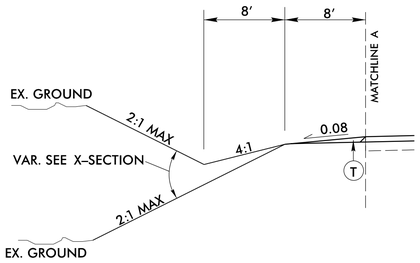
-Y2- STA. 10+33.52 TO 11+55.00

	PAVEMENT DESIGN
A	JOINTED CONCRETE WITH WIRE MESH
C1	PROP. APPROX. 1.5", TYPE S9.5C
C2	PROP. APPROX. 2", TYPE S9.5C
C3	PROP. APPROX. 3", TYPE S9.5C
C4	PROP. VAR. DEPTH, TYPE S9.5C
D1	PROP. APPROX. 3", I19.0C
D2	PROP. APPROX. 4", I19.0C
D3	PROP. VAR. DEPTH, TYPE I19.0C
E1	PROP. APPROX. 3", TYPE B25.0C
E2	PROP. APPROX. 4", TYPE B25.0C
E3	PROP. APPROX. 6", TYPE B25.0C
E4	PROP. APPROX. 7", TYPE B25.0C
E5	PROP. VAR. DEPTH, TYPE B25.0C
J1	PROP. 8" AGGREGATE BASE COURSE
P	PRIME COAT
R1	1'-6" CONCRETE CURB AND GUTTER
R2	2'-6" CONCRETE CURB AND GUTTER
R3	MONOLITHIC CONCRETE ISLAND
R4	2'-9" CONCRETE CURB AND GUTTER
S	4" CONCRETE SIDEWALK
T	EARTH MATERIAL
U	EXISTING PAVEMENT
V	1.5" MILLING
W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE STANDARD WEDGING DETAILS SHEET NO.2A-1)

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

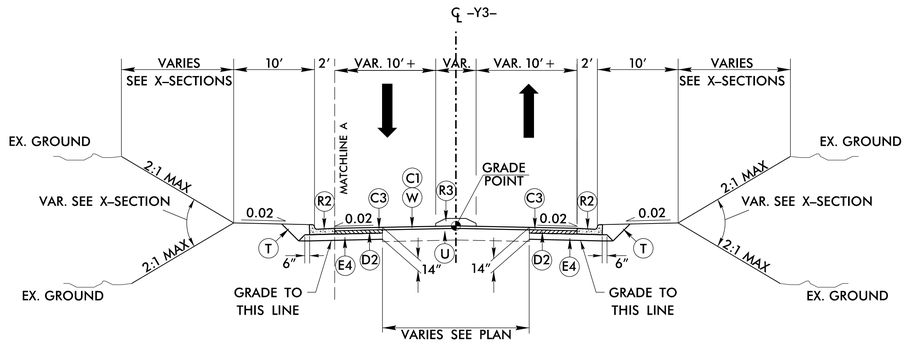
6/8/2018
U:\Roadway\Proj\R5734A_Rdy_typ.dgn

6/2/99



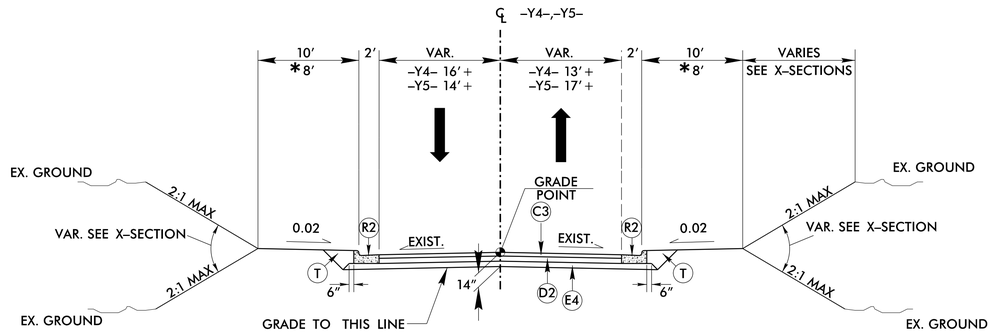
USE TYPICAL SECTION 7–A IN CONJUCTION WITH TYPICAL SECTION 7

–Y3– STA. 14+00.00 TO 14+54.48



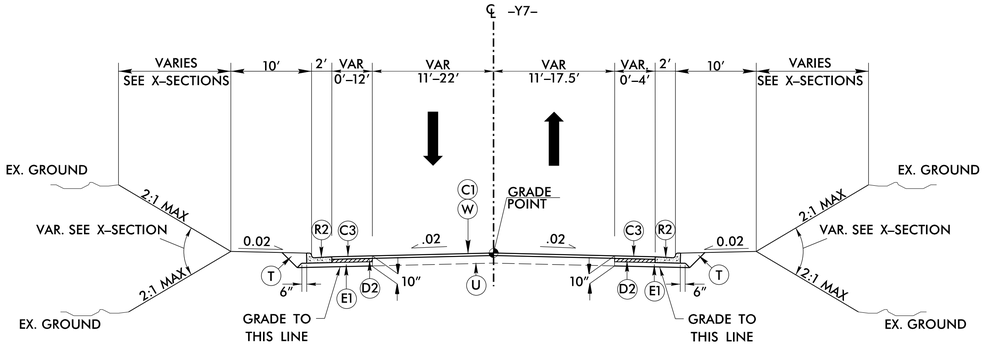
TYPICAL SECTION 7

–Y3– STA. 14+00.00 TO 14+74.49



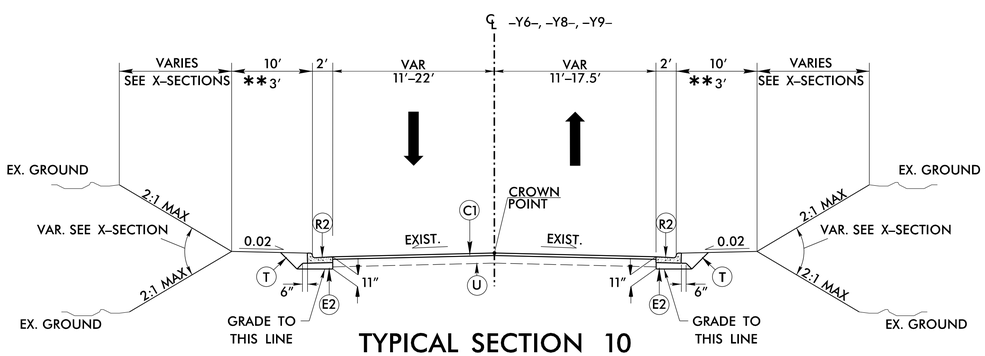
TYPICAL SECTION 8

–Y4– STA. 10+48.22 TO 10+85.00*
–Y5– STA. 10+35.98 TO 10+85.82



TYPICAL SECTION 9

–Y7– STA. 10+46.85 TO 14+00.0



TYPICAL SECTION 10

–Y6– STA. 10+70.47 TO 11+61.95
–Y8– STA. 11+72.00 TO 12+62.27**
–Y9– STA. 11+51.23 TO 12+13.23

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PROJECT REFERENCE NO.	SHEET NO.
R–5734A	2A–5

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 022037 ENGINEER STEPHEN T. SMALLWOOD

Docusigned by: Stephen T. Smallwood 0F6326A1616147C7... 6/8/2018

PAVEMENT DESIGN ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

	PAVEMENT DESIGN
A	JOINTED CONCRETE WITH WIRE MESH
C1	PROP. APPROX. 1.5″, TYPE S9.5C
C2	PROP. APPROX. 2″, TYPE S9.5C
C3	PROP. APPROX. 3″, TYPE S9.5C
C4	PROP. VAR. DEPTH, TYPE S9.5C
D1	PROP. APPROX. 3″, I19.0C
D2	PROP. APPROX. 4″, I19.0C
D3	PROP. VAR. DEPTH, TYPE I19.0C
E1	PROP. APPROX. 3″, TYPE B25.0C
E2	PROP. APPROX. 4″, TYPE B25.0C
E3	PROP. APPROX. 6″, TYPE B25.0C
E4	PROP. APPROX. 7″, TYPE B25.0C
E5	PROP. VAR. DEPTH, TYPE B25.0C
J1	PROP. 8″ AGGREGATE BASE COURSE
P	PRIME COAT
R1	1′-6″ CONCRETE CURB AND GUTTER
R2	2′-6″ CONCRETE CURB AND GUTTER
R3	MONOLITHIC CONCRETE ISLAND
R4	2′-9″ CONCRETE CURB AND GUTTER
S	4″ CONCRETE SIDEWALK
T	EARTH MATERIAL
U	EXISTING PAVEMENT
V	1.5″ MILLING
W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE STANDARD WEDGING DETAILS SHEET NO.2A-1)

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

6/8/2018
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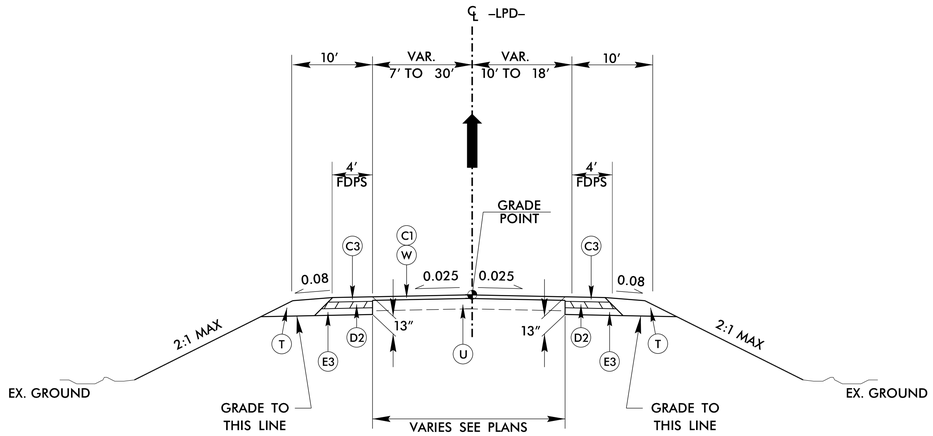
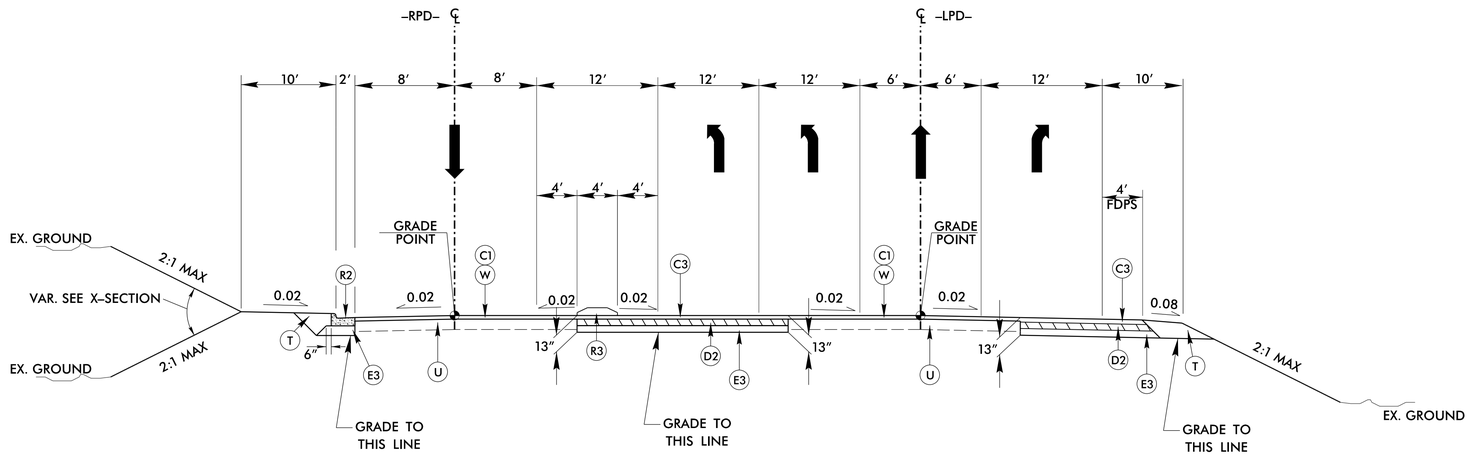
cmp2109



TYPICAL SECTION 11

–LPD– STA. 11+00.00 TO 12+65.95



TYPICAL SECTION 12

–LPD– STA. 12+65.95 TO 14+49.36
–RPD– STA. 12+00.00 TO 13+84.51

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PROJECT REFERENCE NO.	SHEET NO.
R–5734A	2A–6

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 022037 ENGINEER STEPHEN T. SMALLWOOD

DocuSigned by: Stephen T. Smallwood
0F6326A1616147C7... 6/8/2018

PAVEMENT DESIGN ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

	PAVEMENT DESIGN
A	JOINTED CONCRETE WITH WIRE MESH
C1	PROP. APPROX. 1.5″, TYPE S9.5C
C2	PROP. APPROX. 2″, TYPE S9.5C
C3	PROP. APPROX. 3″, TYPE S9.5C
C4	PROP. VAR. DEPTH, TYPE S9.5C
D1	PROP. APPROX. 3″, I19.0C
D2	PROP. APPROX. 4″, I19.0C
D3	PROP. VAR. DEPTH, TYPE I19.0C
E1	PROP. APPROX. 3″, TYPE B25.0C
E2	PROP. APPROX. 4″, TYPE B25.0C
E3	PROP. APPROX. 6″, TYPE B25.0C
E4	PROP. APPROX. 7″, TYPE B25.0C
E5	PROP. VAR. DEPTH, TYPE B25.0C
J1	PROP. 8″ AGGREGATE BASE COURSE
P	PRIME COAT
R1	1′-6″ CONCRETE CURB AND GUTTER
R2	2′-6″ CONCRETE CURB AND GUTTER
R3	MONOLITHIC CONCRETE ISLAND
R4	2′-9″ CONCRETE CURB AND GUTTER
S	4″ CONCRETE SIDEWALK
T	EARTH MATERIAL
U	EXISTING PAVEMENT
V	1.5″ MILLING
W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE STANDARD WEDGING DETAILS SHEET NO.2A-1)

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

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PROJECT REFERENCE NO.	SHEET NO.
R-5734A	2A-7
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 022037 STEPHEN T. SMALLWOOD

DocuSigned by: Stephen T. Smallwood
6F6326A161614C7... 6/8/2018

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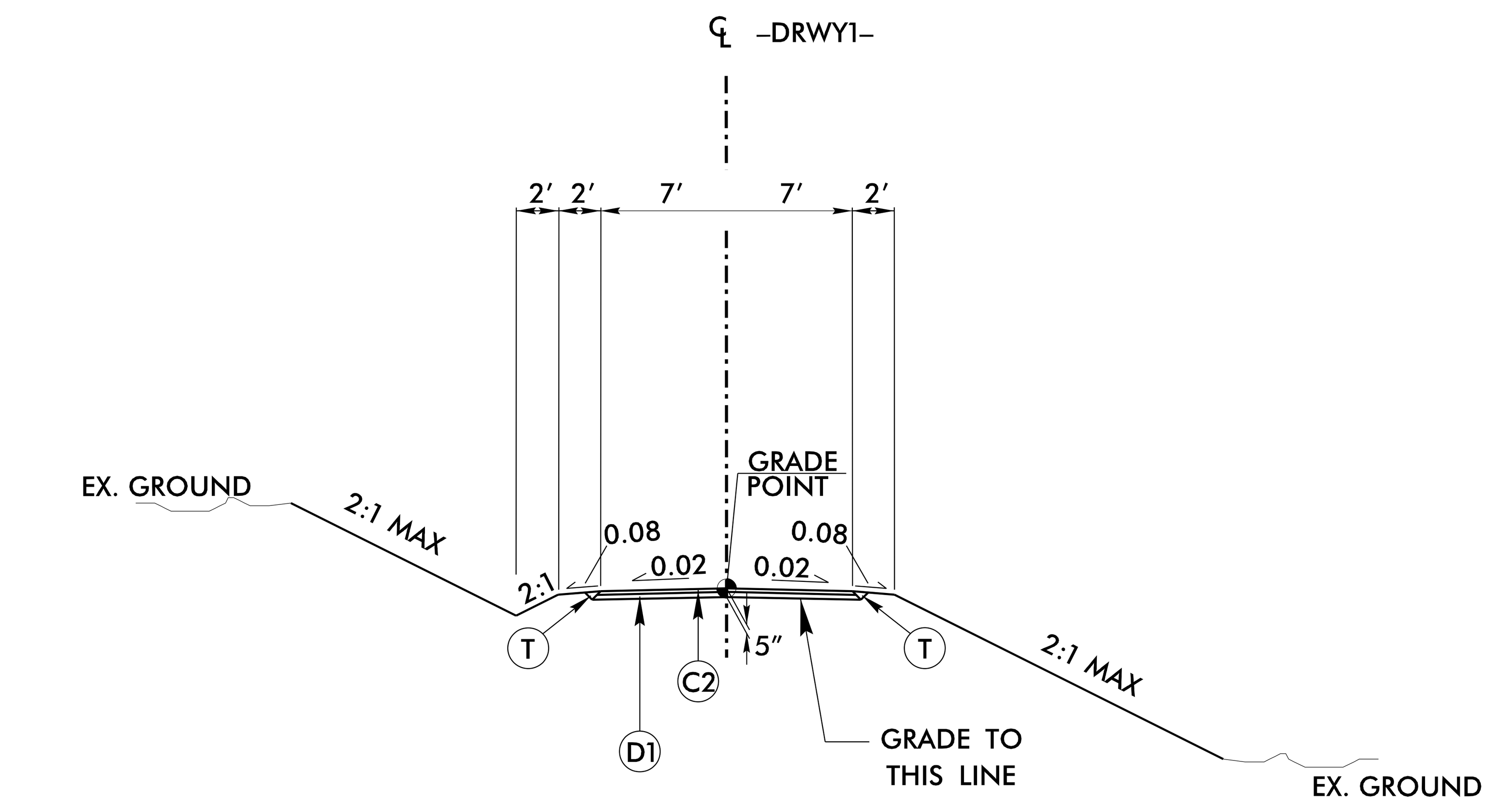
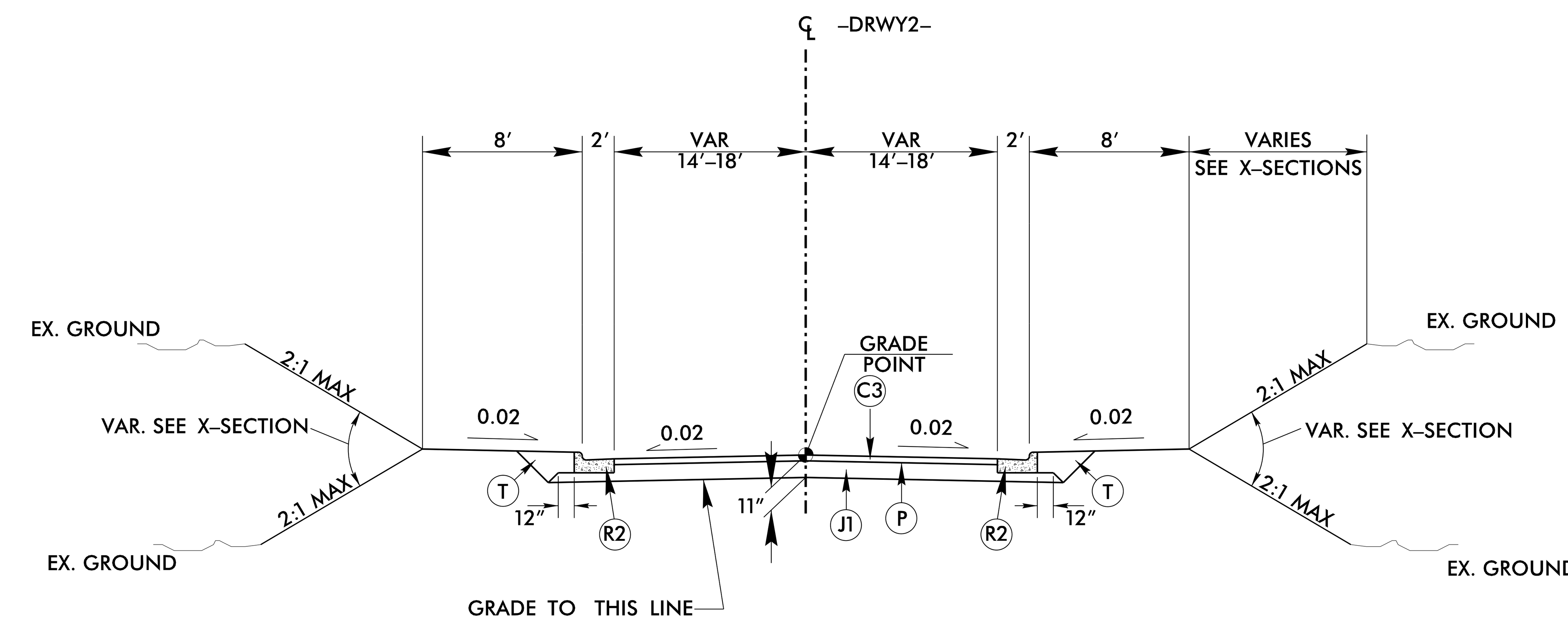


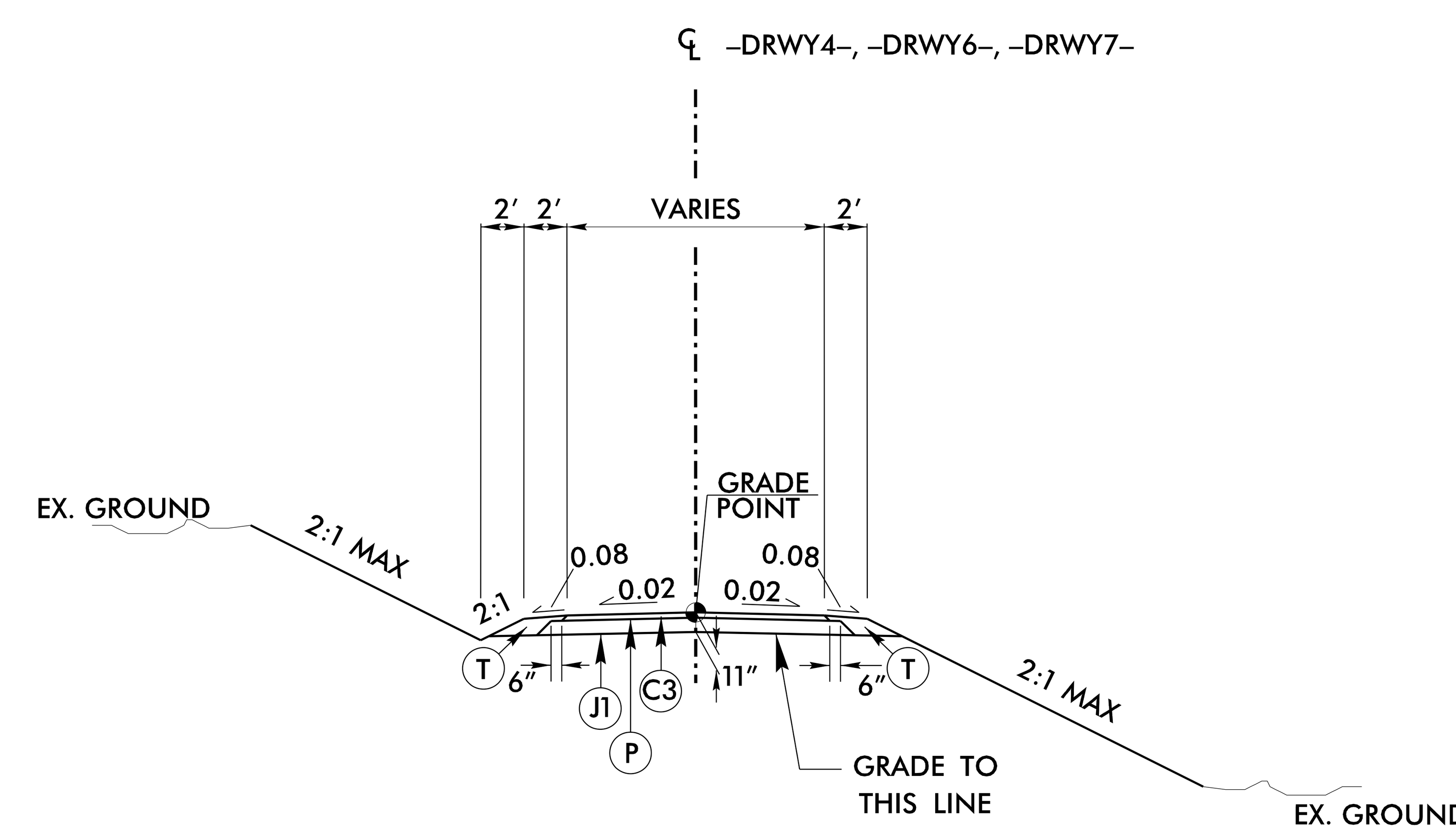
TYPICAL SECTION 13

-DRWY1- STA. 10+00.00 TO 14+99.46



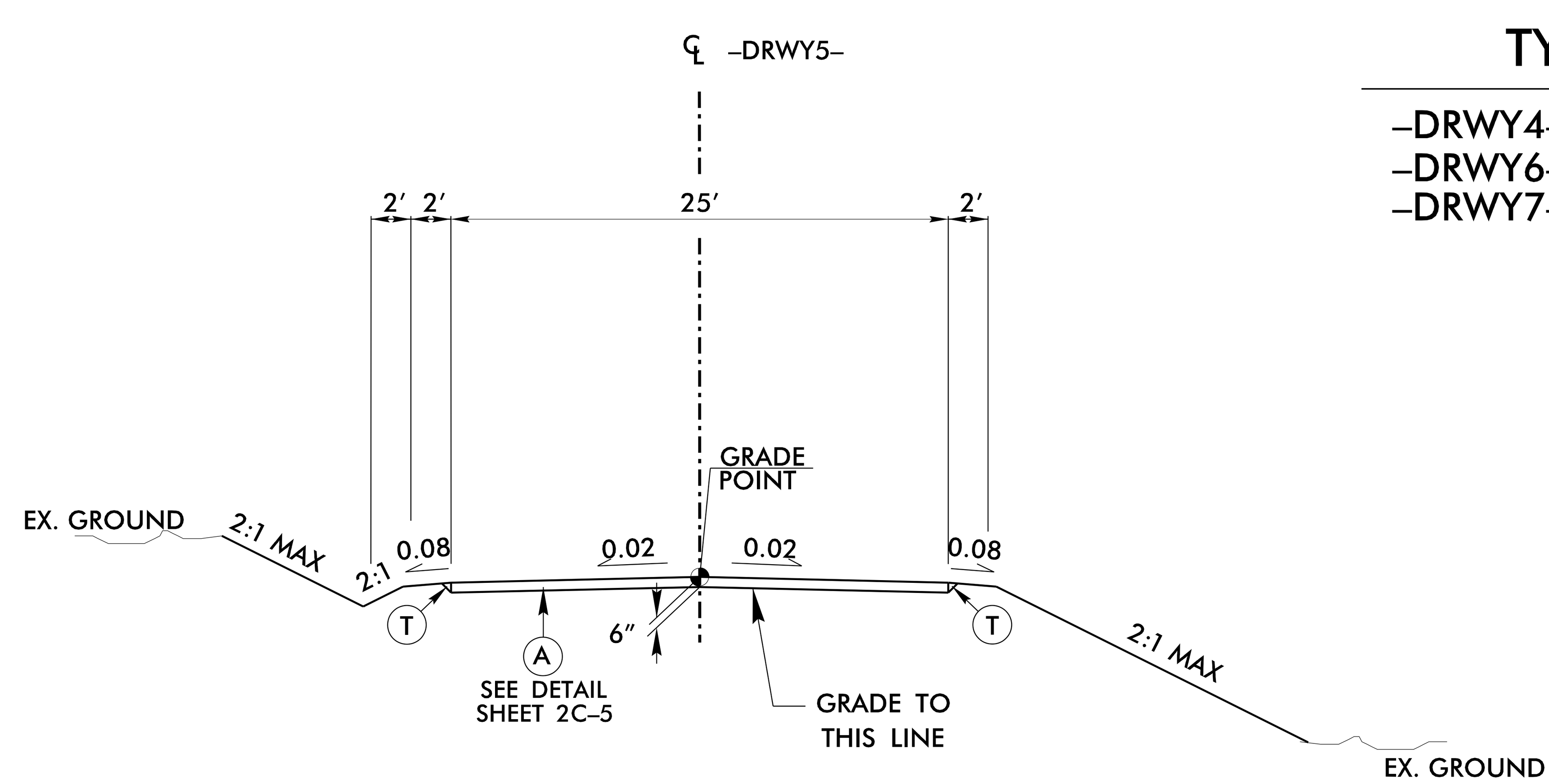
TYPICAL SECTION 14

-DRWY2- STA. 10+46.75 TO 11+10.00



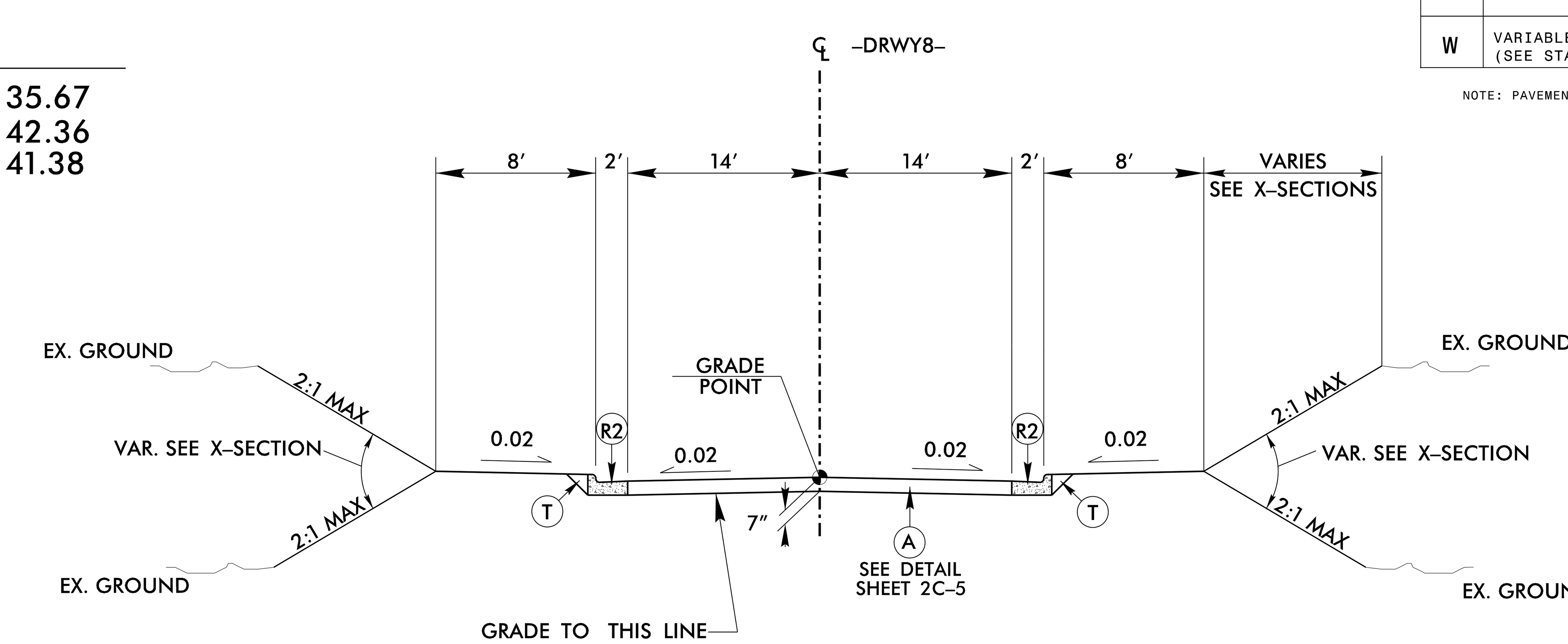
TYPICAL SECTION 15

-DRWY4- STA. 10+00.00 TO 10+35.67
-DRWY6- STA. 10+05.00 TO 10+42.36
-DRWY7- STA. 10+05.00 TO 10+41.38



TYPICAL SECTION 16

-DRWY5- STA. 10+33.62 TO 10+80.00



TYPICAL SECTION 17

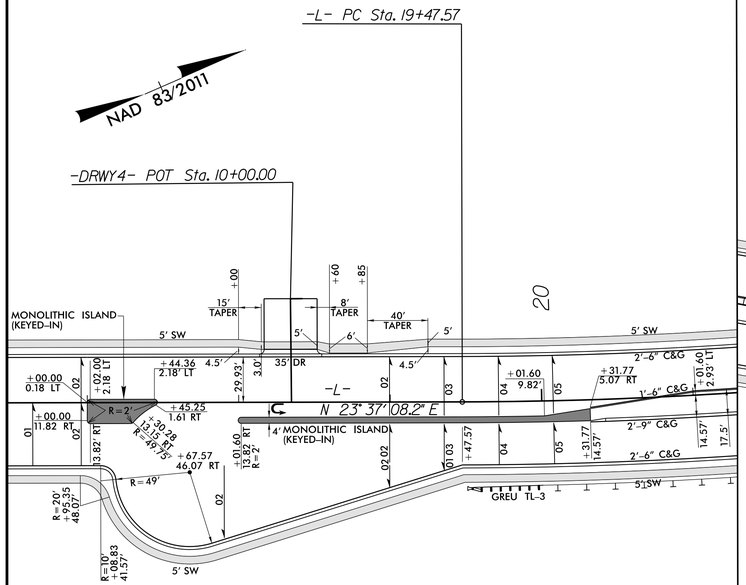
-DRWY8- STA. 10+35.75 TO 10+75.00

	PAVEMENT DESIGN
A	JOINTED CONCRETE WITH WIRE MESH
C1	PROP. APPROX. 1.5″, TYPE S9.5C
C2	PROP. APPROX. 2″, TYPE S9.5C
C3	PROP. APPROX. 3″, TYPE S9.5C
C4	PROP. VAR. DEPTH, TYPE S9.5C
D1	PROP. APPROX. 3″, I19.0C
D2	PROP. APPROX. 4″, I19.0C
D3	PROP. VAR. DEPTH, TYPE I19.0C
E1	PROP. APPROX. 3″, TYPE B25.0C
E2	PROP. APPROX. 4″, TYPE B25.0C
E3	PROP. APPROX. 6″, TYPE B25.0C
E4	PROP. APPROX. 7″, TYPE B25.0C
E5	PROP. VAR. DEPTH, TYPE B25.0C
J1	PROP. 8″ AGGREGATE BASE COURSE
P	PRIME COAT
R1	1′-6″ CONCRETE CURB AND GUTTER
R2	2′-6″ CONCRETE CURB AND GUTTER
R3	MONOLITHIC CONCRETE ISLAND
R4	2′-9″ CONCRETE CURB AND GUTTER
S	4″ CONCRETE SIDEWALK
T	EARTH MATERIAL
U	EXISTING PAVEMENT
V	1.5″ MILLING
W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE STANDARD WEDGING DETAILS SHEET NO.2A-1)

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

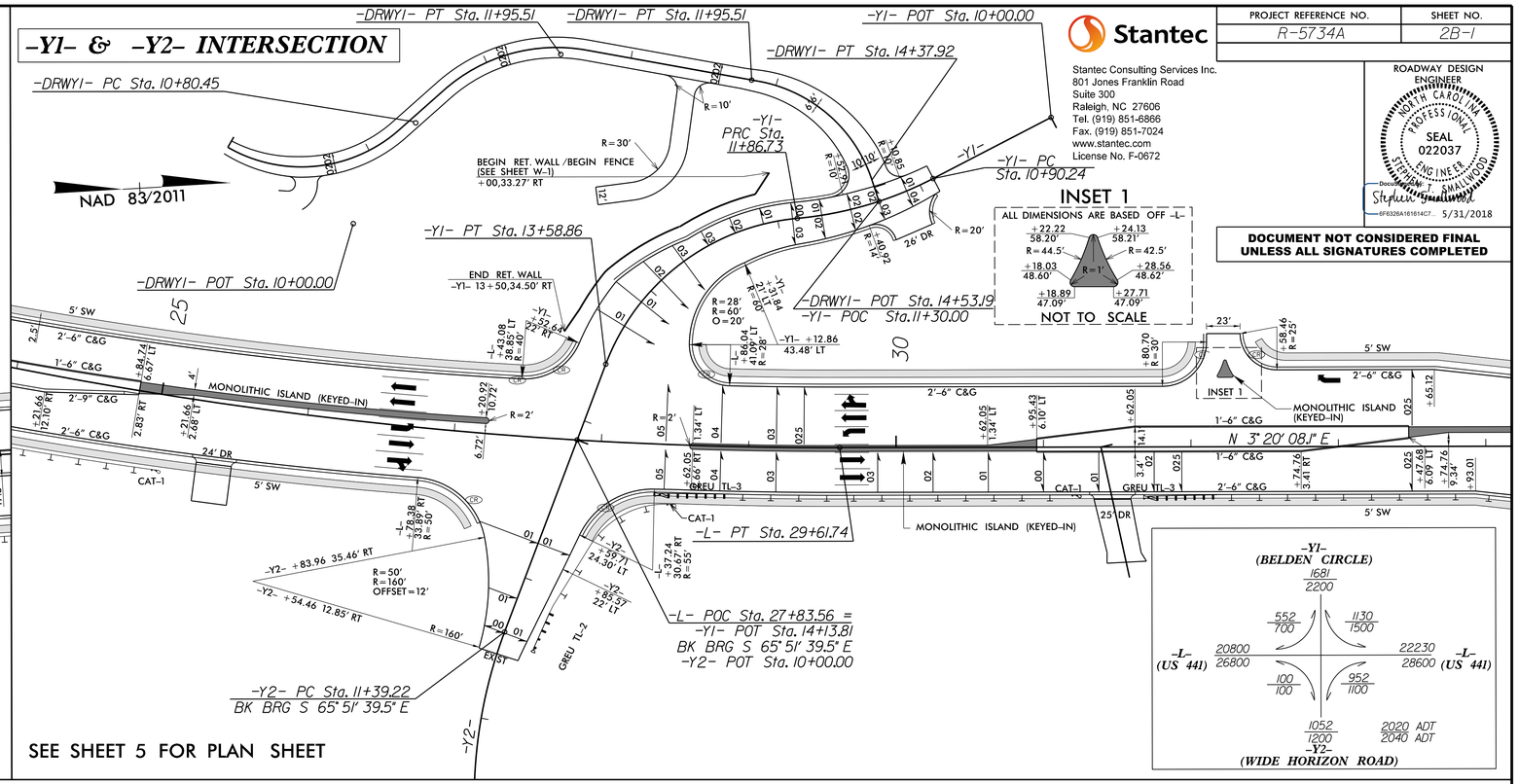
8/17/99

U-TURN BULB



SEE SHEET 4 FOR PLAN SHEET

-Y1- & -Y2- INTERSECTION



SEE SHEET 5 FOR PLAN SHEET

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PROJECT REFERENCE NO.	SHEET NO.
R-5734A	2B-1

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 022037 ENGINEER STEPHEN SMALLWOOD
DocuSigned by: Stephen Smallwood 6F6526A161614C7... 5/31/2018

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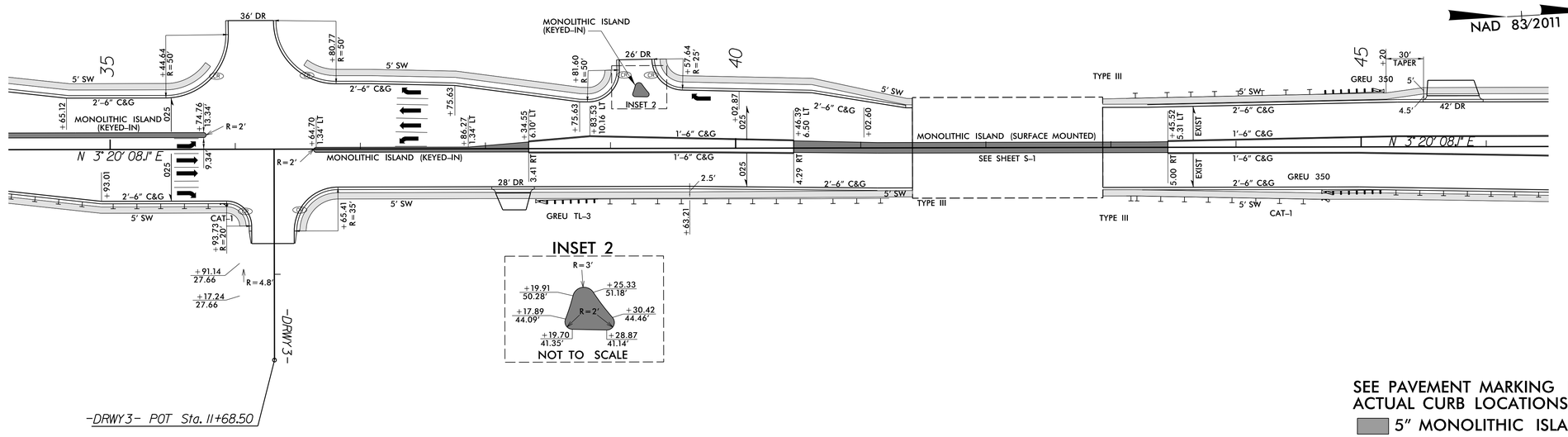
-DRWY3- INTERSECTION



INSET 2

SEE PAVEMENT MARKING PLANS FOR ACTUAL CURB LOCATIONS.

- 5" MONOLITHIC ISLAND (KEYED-IN)
- SIDEWALK
- CURB CUT RAMPS

50' 0' 50' 100'

SEE SHEET 6 FOR PLAN SHEET

5/30/2018
D:\Projects\Proj\R5734A_Rdy_psh2B-1.dgn
smcclain

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
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ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 022037 ENGINEER STEPHEN T. SMALLWOOD

5/31/2018

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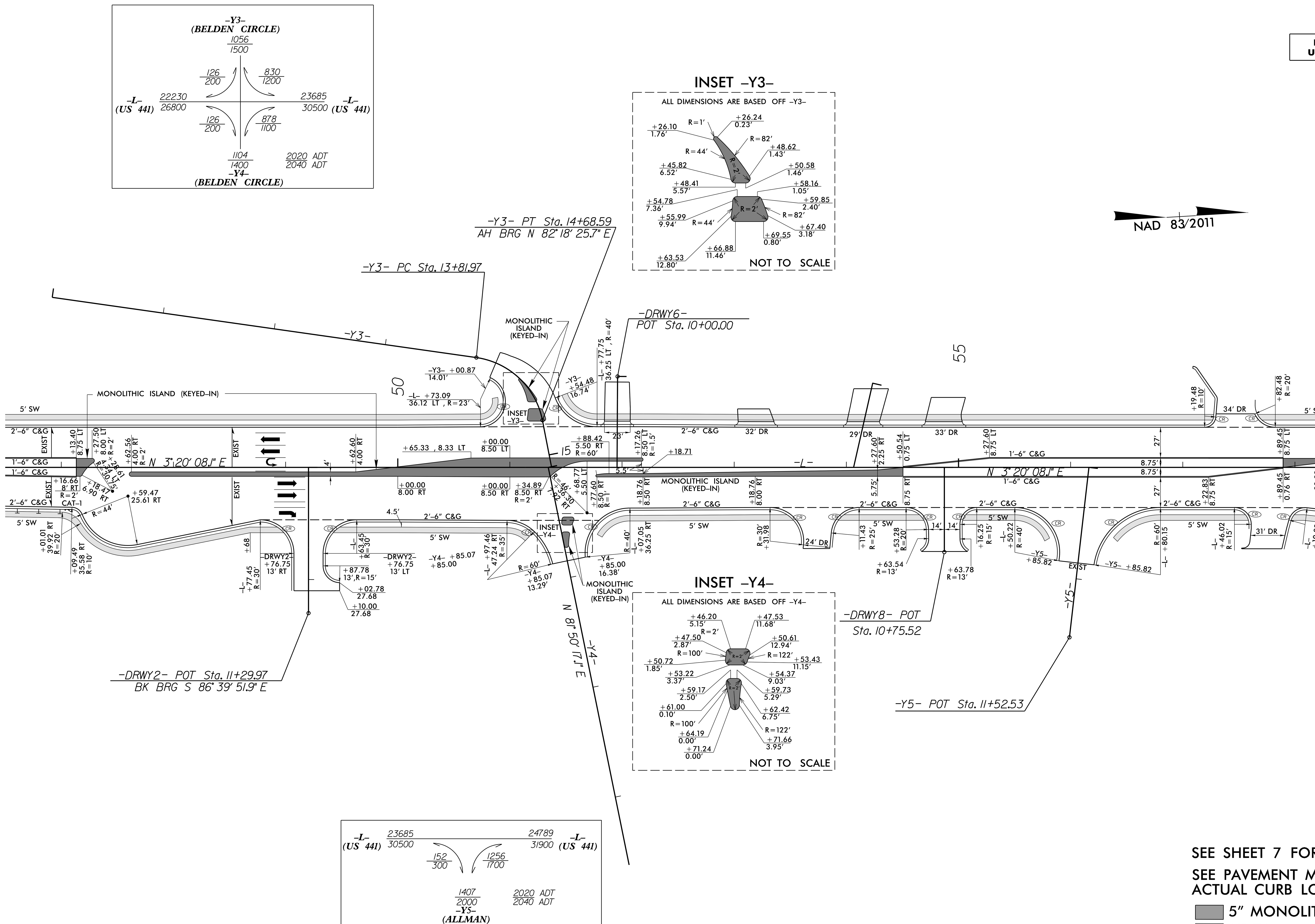

SEE SHEET 7 FOR PLAN SHEET

SEE PAVEMENT MARKING PLANS FOR ACTUAL CURB LOCATIONS.

5" MONOLITHIC ISLAND (KEYED-IN)

SIDEWALK

CURB CUT RAMPS

50' 0' 50' 100'

5/30/2018
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PROJECT REFERENCE NO.	SHEET NO.
R-5734A	2B-3

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Stephen Smallwood
6F6326A161614C7... 5/31/2018

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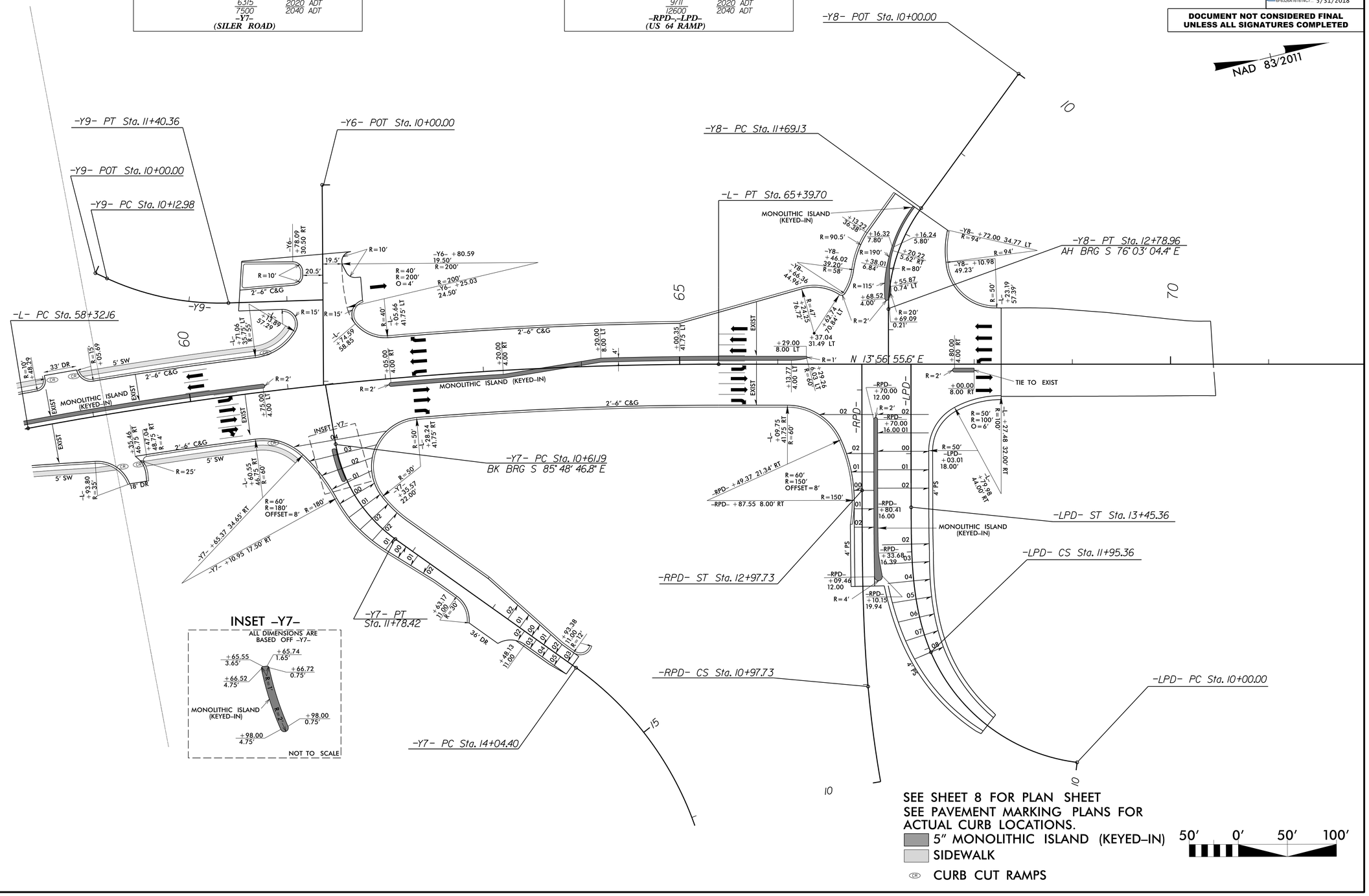
NAD 83/2011

–Y6– (RETAIL)
5037 / 6000
1704 / 2000 | 2481 / 3000
–L– (US 441) 24789 / 31900 | 26570 / 34200 –L– (US 441)
2230 / 2600 | 3233 / 3900
6315 / 7500 ADT | 2020 / 2040 ADT
–Y7– (SILER ROAD)

–Y8– (FRANKLIN PLAZA)
9096 / 10800
2704 / 3000 | 4889 / 6000
–L– (US 441) 26570 / 34200 | 24267 / 31600 –L– (US 441)
6348 / 8200 | 1859 / 2600
9711 / 12600 ADT | 2020 / 2040 ADT
–RPD–,–LPD– (US 64 RAMP)



SEE SHEET 8 FOR PLAN SHEET
SEE PAVEMENT MARKING PLANS FOR ACTUAL CURB LOCATIONS.

5" MONOLITHIC ISLAND (KEYED–IN)
SIDEWALK
CR CURB CUT RAMPS

50' 0' 50' 100'

5/30/2018
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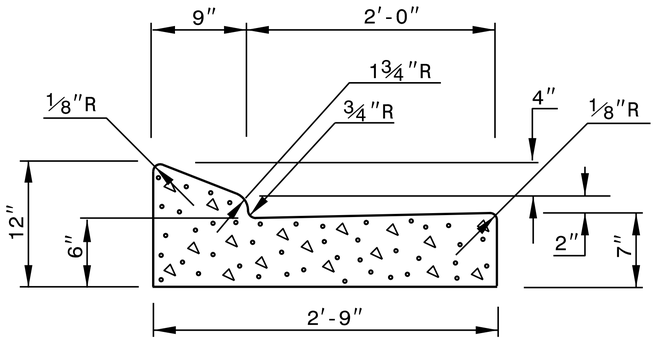
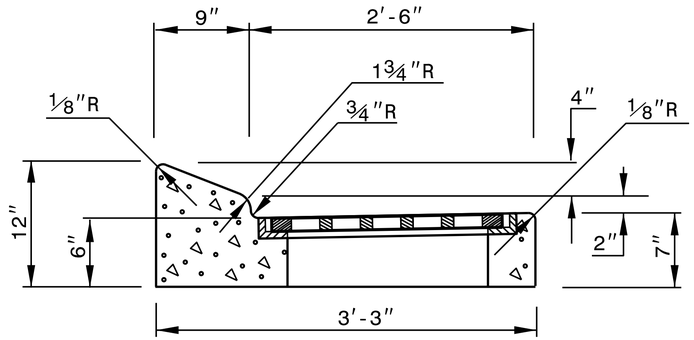
cmoz1099

5/14/99

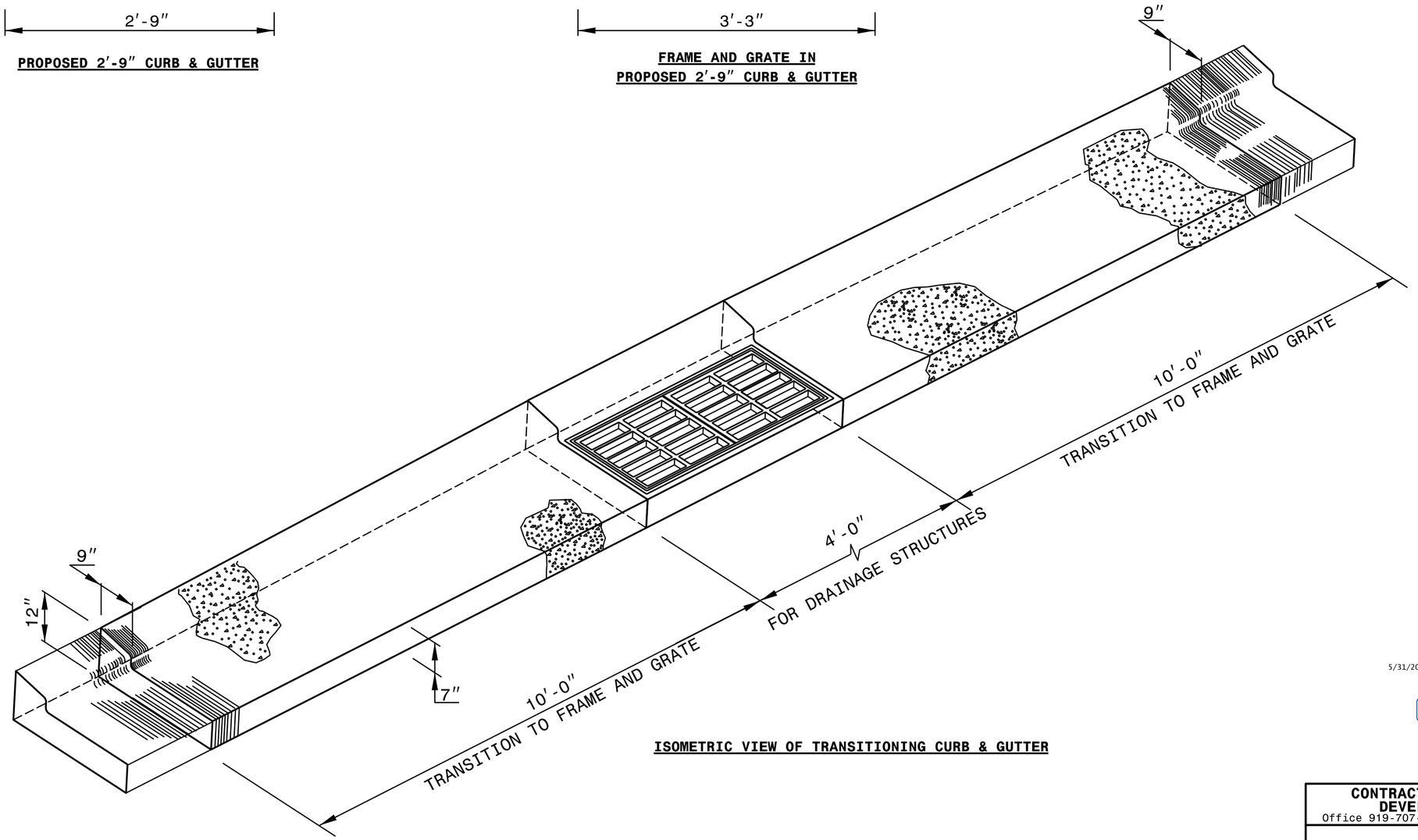
PROJECT REFERENCE NO.	SHEET NO.
R-5734A	2C-1



PROPOSED 2′-9″ CURB & GUTTER



FRAME AND GRATE IN PROPOSED 2′-9″ CURB & GUTTER



ISOMETRIC VIEW OF TRANSITIONING CURB & GUTTER

5/31/2018

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 022966 JOEL S. HOWERTON

DocuSigned by: Joel S. Howerton B73F3D17DCDC45F...

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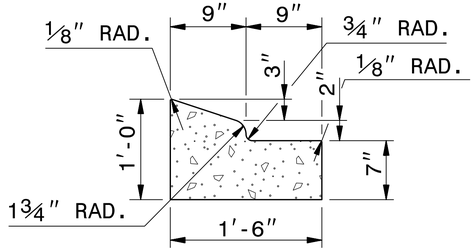
CONTRACT STANDARDS AND DEVELOPMENT UNIT
Office 919-707-6950 FAX 919-250-4119

DETAIL OF 2′-9″ TO FRAME AND GRATE

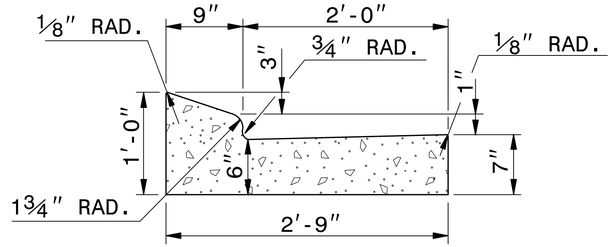
ORIGINAL BY: _____ DATE: _____
MODIFIED BY: _____ DATE: _____
CHECKED BY: _____ DATE: _____
FILE SPEC.: kkempf/english/curb gutter transition.dgn

5/14/99

PROJECT REFERENCE NO.	SHEET NO.
R-5734A	2C-2



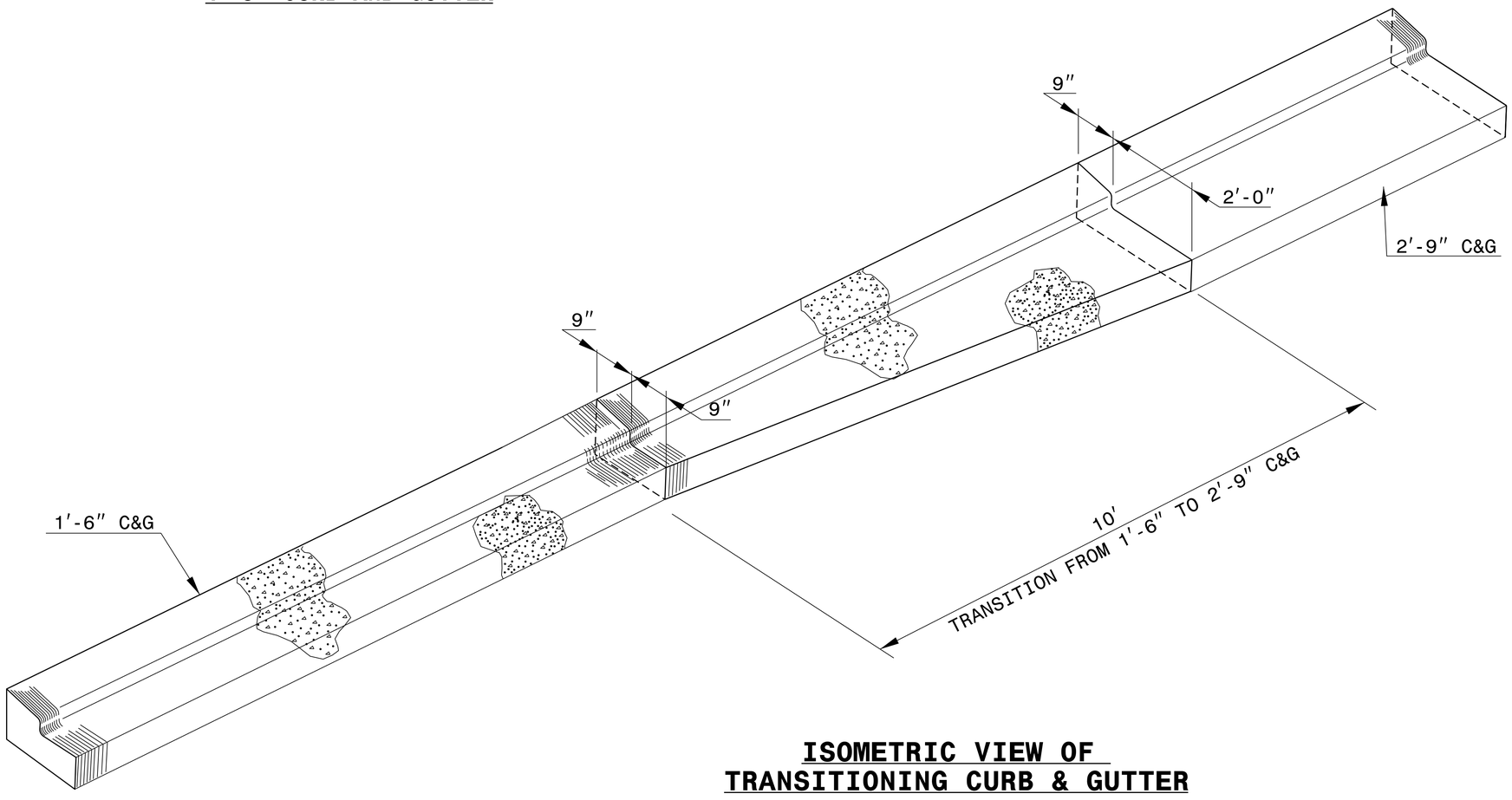
1'-6" CURB AND GUTTER



2'-9" CURB AND GUTTER

NOTE: SEE STD. DWG. 846.01 FOR ADDITIONAL CURB AND GUTTER INFORMATION.

SEE ROADWAY PLANS FOR LOCATION OF CURB TRANSITION.



ISOMETRIC VIEW OF TRANSITIONING CURB & GUTTER

5/31/2018

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 022966 Joel S. Howerton

DocuSigned by: Joel S. Howerton 873F3D17DCDC45F...

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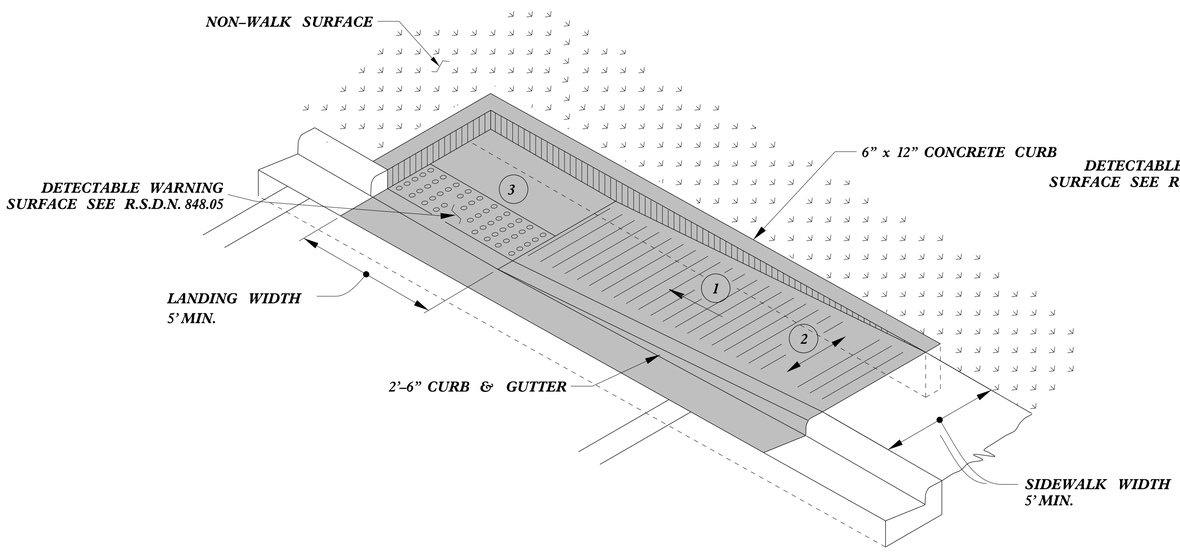
CONTRACT STANDARDS AND DEVELOPMENT UNIT
Office 919-707-6950 FAX 919-250-4119

DETAIL OF 1'-6" TO 2'-9" CURB & GUTTER TRANSITION SECTION

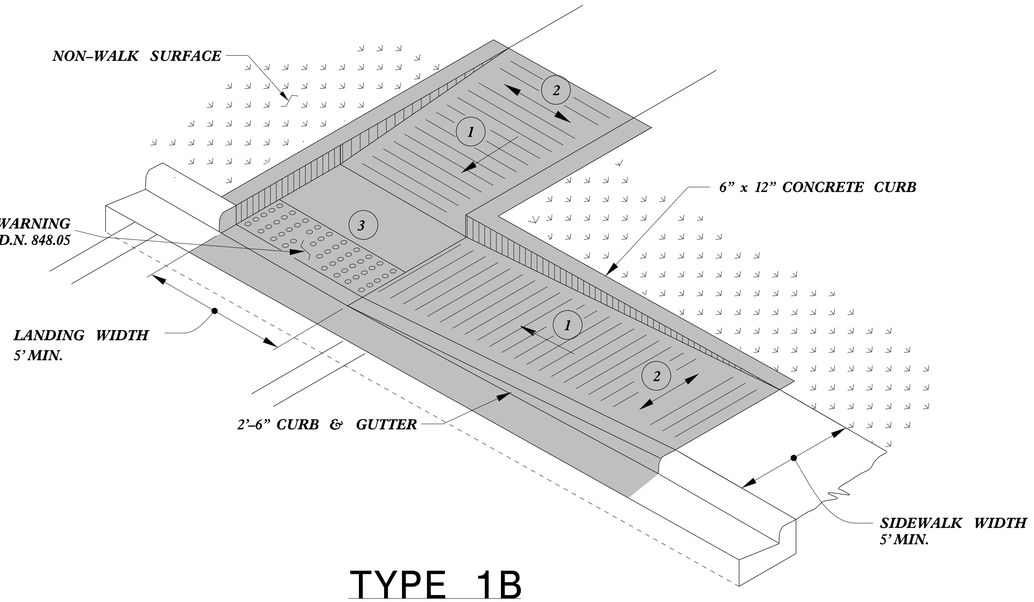
ORIGINAL BY: T.S.SPELL DATE: NOV. 26, 2001
MODIFIED BY: T.S.SPELL DATE: JAN. 23, 2007
CHECKED BY: DATE:
FILE SPEC.: DS174:/usr/details/stand/cgtransit.dgn

5/14/99

PROJECT REFERENCE NO.	SHEET NO.
R-5734A	2C-3



TYPE 1A



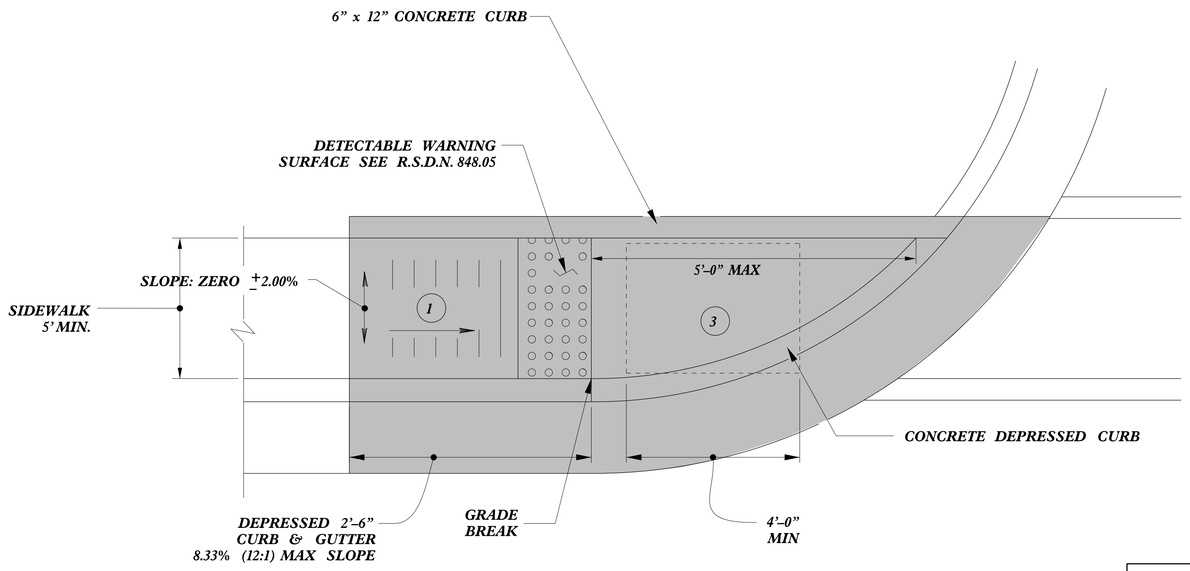
TYPE 1B

PAY LIMITS FOR 1 CURB RAMP

(1) *8.33% (12:1) MAX RAMP SLOPE*

(2) *CROSS SLOPE: 2.00%*

(3) *CURB RAMPS REQUIRE A (4'–0") MINIMUM LANDING WITH A MAXIMUM CROSS SLOPE AND LONGITUDINAL SLOPE OF 2.00% WHERE PEDESTRIANS PERFORM TURNING MANEUVERS. SLOPE TO DRAIN TO CURB.*



TYPE 1

REFER TO ROADWAY STANDARD DRAWING NUMBER 848.05 SHEET 3 OF 3 FOR ALL RAMP NOTES

5/31/2018

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 022966 Joel S. Howerton

DocuSigned by: Joel S. Howerton B73F3D17DCDC45F...

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Office 919-707-6950 FAX 919-250-4119

CURB RAMPS

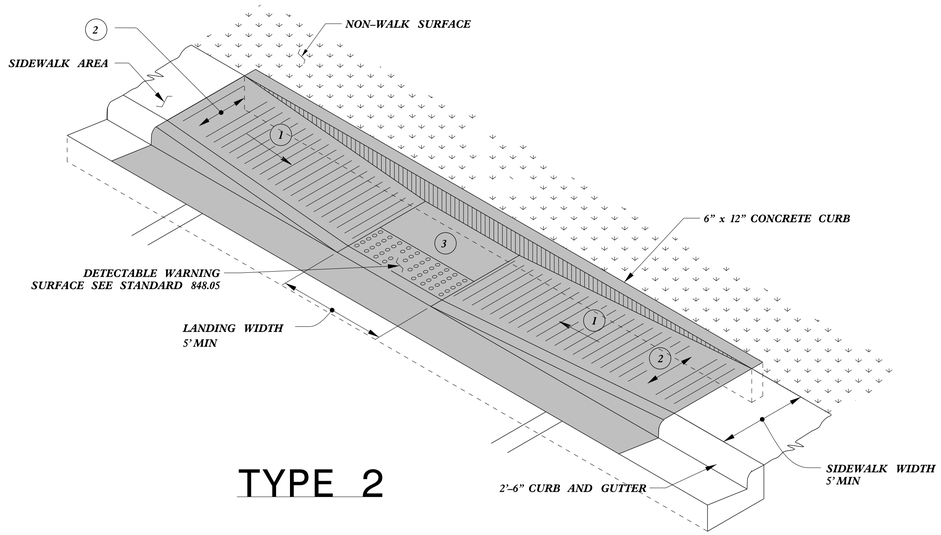
Directional Ramps

ORIGINAL BY: J.S. HOWERTON DATE: 7/7/11
MODIFIED BY: _____ DATE: _____
CHECKED BY: _____ DATE: _____
FILE SPEC.: stds/2012CurbRamp/CurbRampDetails.dgn

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

5/14/99

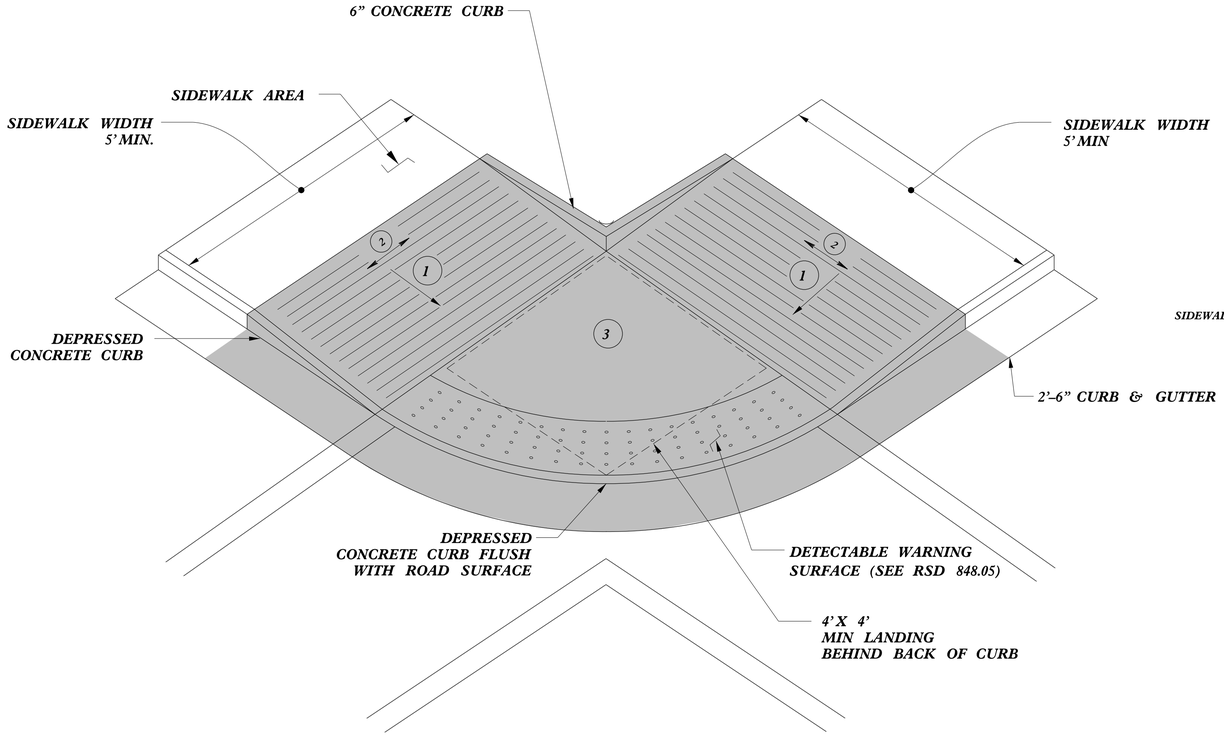
PROJECT REFERENCE NO.	SHEET NO.
R-5734A	2C-4



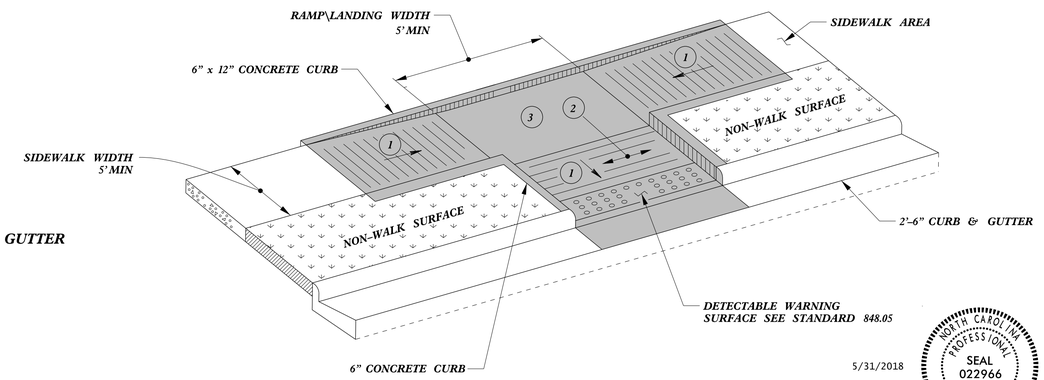
TYPE 2

PAY LIMITS FOR 1 CURB RAMP

1. 8.33% (12:1) MAX RAMP SLOPE
2. CROSS SLOPE: 2.00%
3. CURB RAMPS REQUIRE A (4'-0") MINIMUM LANDING WITH A MAXIMUM CROSS SLOPE AND LONGITUDINAL SLOPE OF 2.00% WHERE PEDESTRIANS PERFORM TURNING MANEUVERS. SLOPE TO DRAIN TO CURB.



TYPE 2A



TYPE 3

5/31/2018

NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER Joel S Howerton

DocuSigned by: Joel S. Howerton 873F3D17DCDC45F...

REFER TO ROADWAY STANDARD DRAWING NUMBER 848.05 SHEET 3 OF 3 FOR ALL RAMP NOTES

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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Office 919-707-6950 FAX 919-250-4119

CURB RAMPS

Parallel Ramps

ORIGINAL BY: J.S. HOWERTON DATE: 7/7/11
MODIFIED BY: _____ DATE: _____
CHECKED BY: _____ DATE: _____
FILE SPEC.: stds/2012CurbRamp/CurbRampDetails.dgn

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

5/14/99

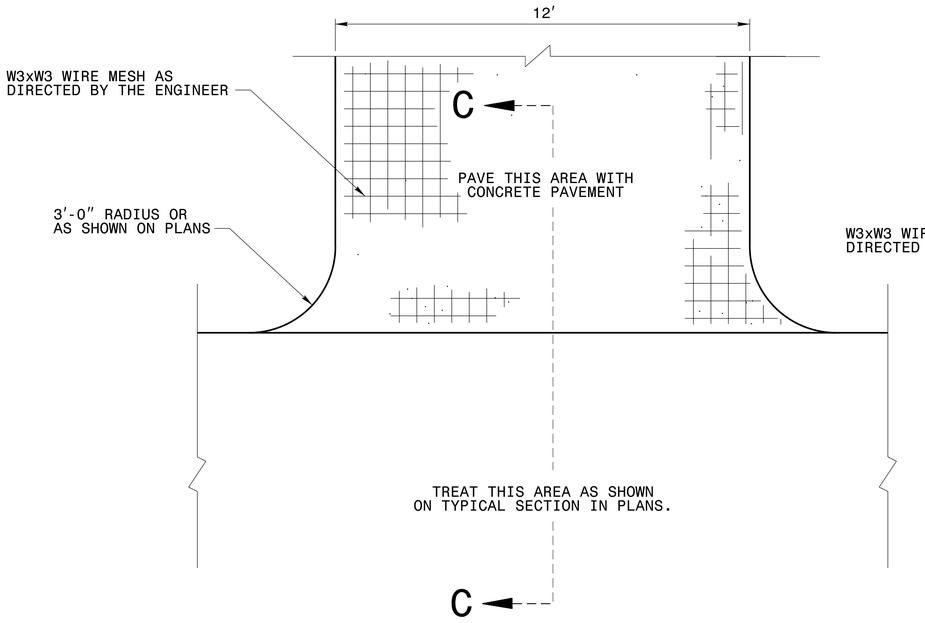
PROJECT REFERENCE NO.	SHEET NO.
R-5734A	2C-5

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

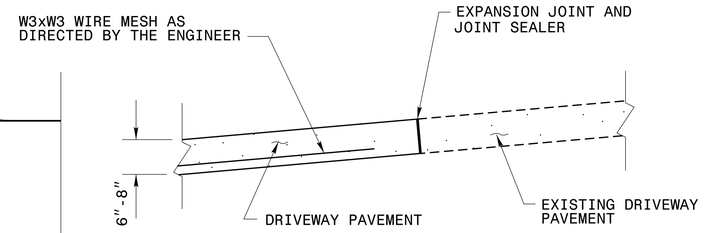
ENGLISH DETAIL DRAWING FOR
DRIVEWAY TURNOUT
RADIUS TYPE

SHEET 1 OF 1

848D02



PARTIAL PLAN OF PAVED DRIVEWAY TURNOUT



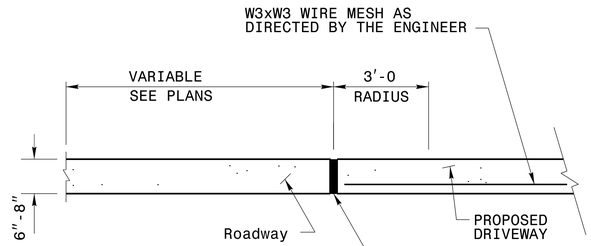
METHOD OF TIE IN

WHEN EXISTING DRIVEWAY PAVEMENT IS CONCRETE, SAW CUT A 2″ DEEP JOINT AT THE POINT OF TIE IN WITH EXISTING DRIVEWAY GRADE.

SAW JOINT PERPENDICULAR TO EDGE OF EXISTING DRIVEWAY PAVEMENT.

NOTES:

- CONSTRUCT STANDARD DRIVEWAY THE WIDTH OF EXISTING DRIVE. CONSTRUCT DRIVE 6″-8″ THICK UNLESS OTHERWISE NOTED ON PLANS.
- PLACE ½″ EXPANSION JOINT BETWEEN DRIVEWAY AND ROADWAY AND AT LOCATIONS AS DIRECTED BY THE ENGINEER. SEAL JOINT WITH JOINT SEALER (SEE STD.SECTION 1028)
- PLACE WIRE MESH IN BOTTOM THIRD OF CONCRETE DRIVEWAY.
- SAW CUT OR FORM CONTRACTION JOINTS IN DRIVEWAY @ 10′ INTERVALS. AT EVERY THIRD JOINT, PLACE EXPANSION MATERIAL AS SHOWN IN SECTION C-C.



SECTION C-C

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

ENGLISH DETAIL DRAWING FOR
DRIVEWAY TURNOUT
RADIUS TYPE

SHEET 1 OF 1

848D02

5/31/2018

NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER

DocuSigned by: Joel S. Howerton
B73F3D17DCDC45F...

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

REINFORCED CONCRETE DRIVEWAY

ORIGINAL BY: _____ DATE: _____
MODIFIED BY: rnbritt DATE: 03-20-08
CHECKED BY: _____ DATE: _____
FILE SPEC.: details/english/misc/concdrive.dgn

09-MAY-2018 14:45
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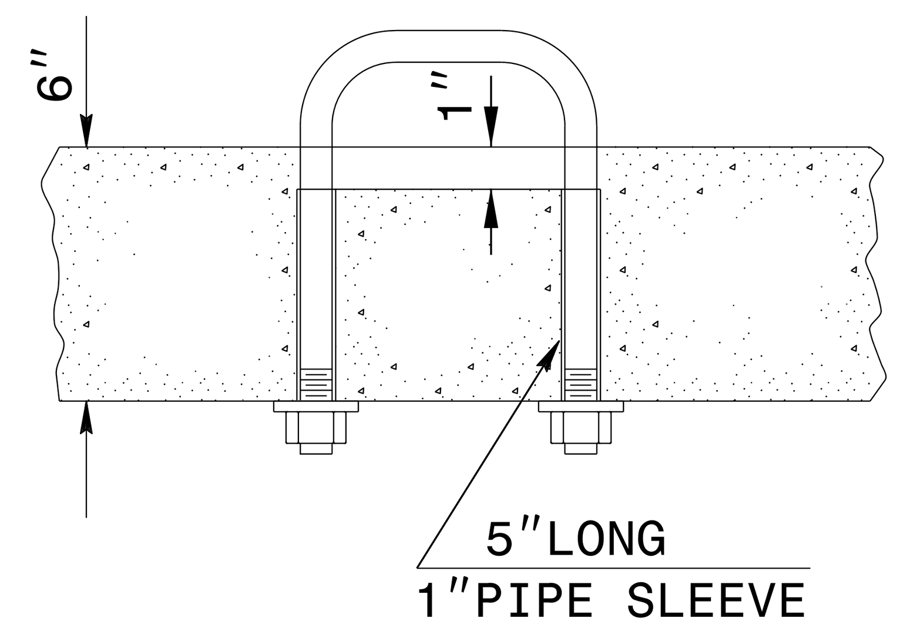
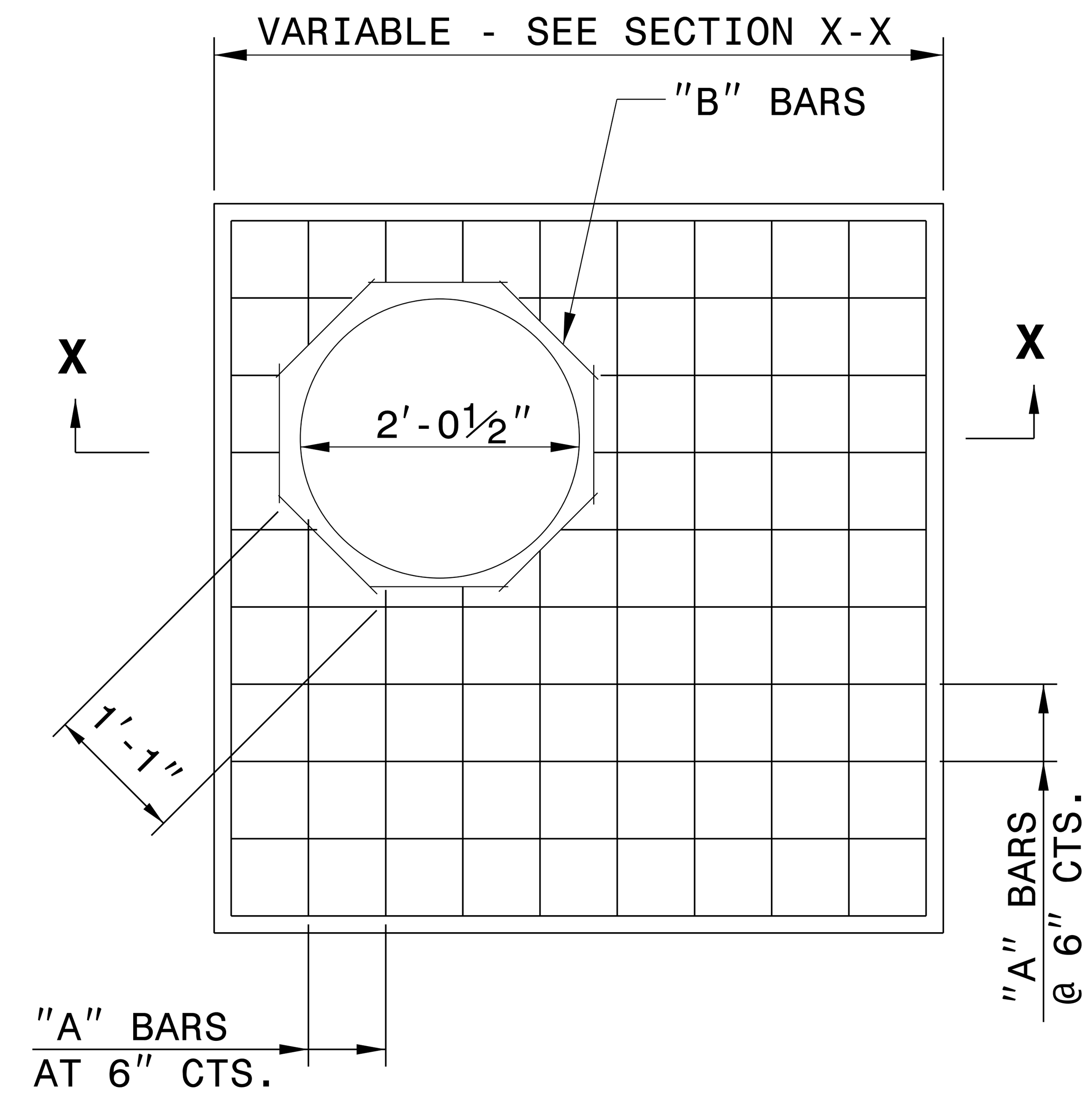
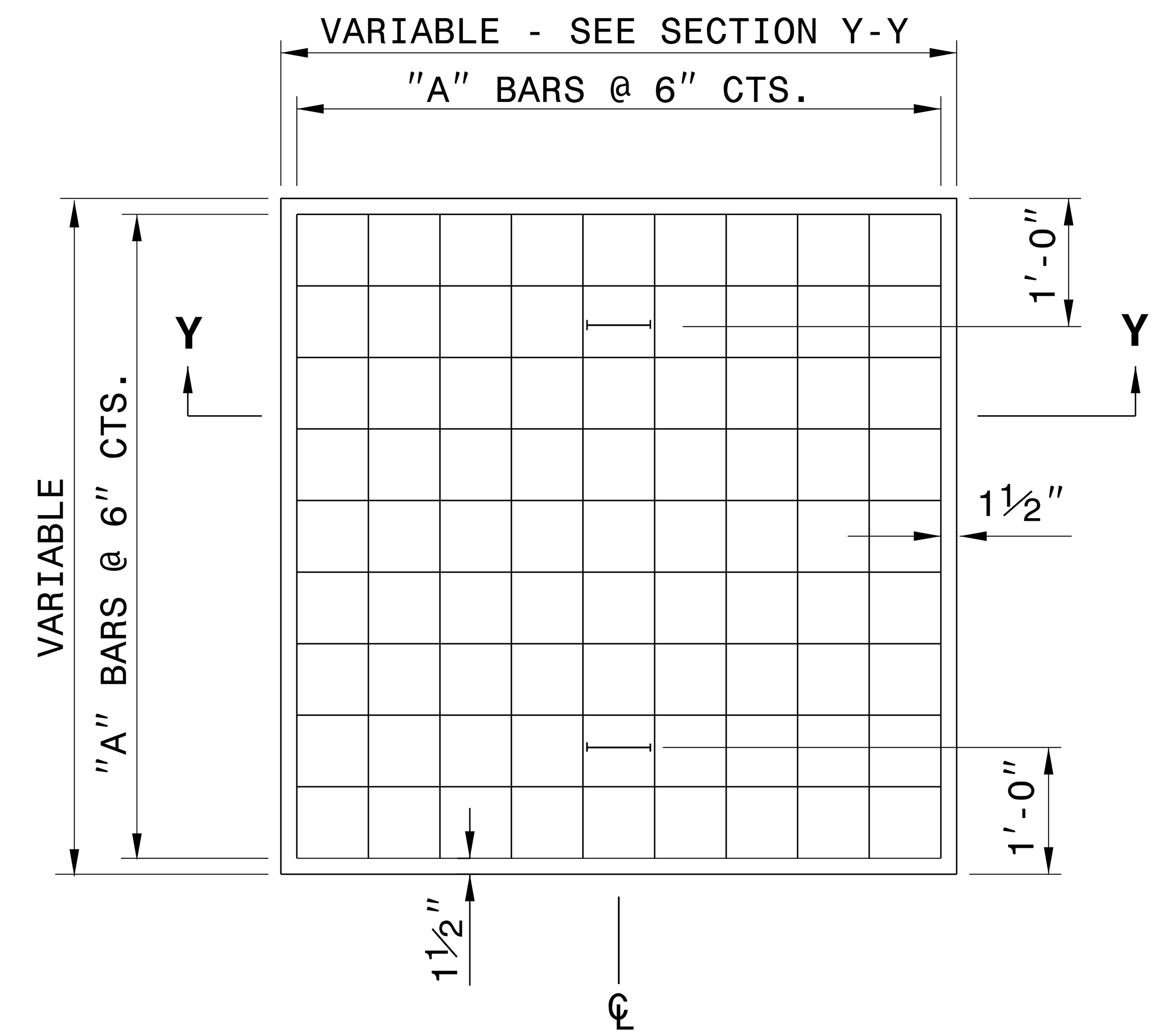
jhowerton AT CSD-292595



PARTIAL SECTION



PLAN



PLAN

GENERAL NOTES:

CONSTRUCT IN ACCORDANCE WITH SECTION 859 OF THE STANDARD SPECIFICATIONS.

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

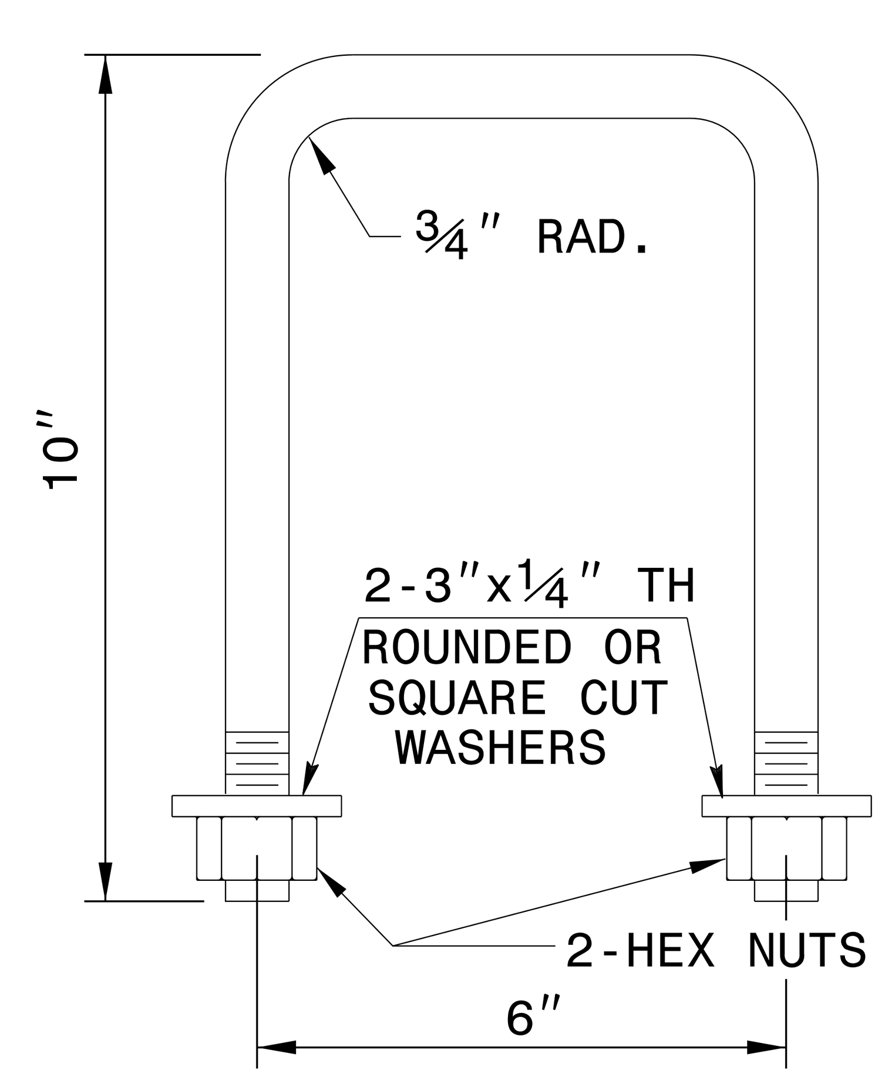
DETAIL INTENDED FOR NON-TRAFFIC BEARING DRAINAGE STRUCTURES.

BILL OF MATERIALS

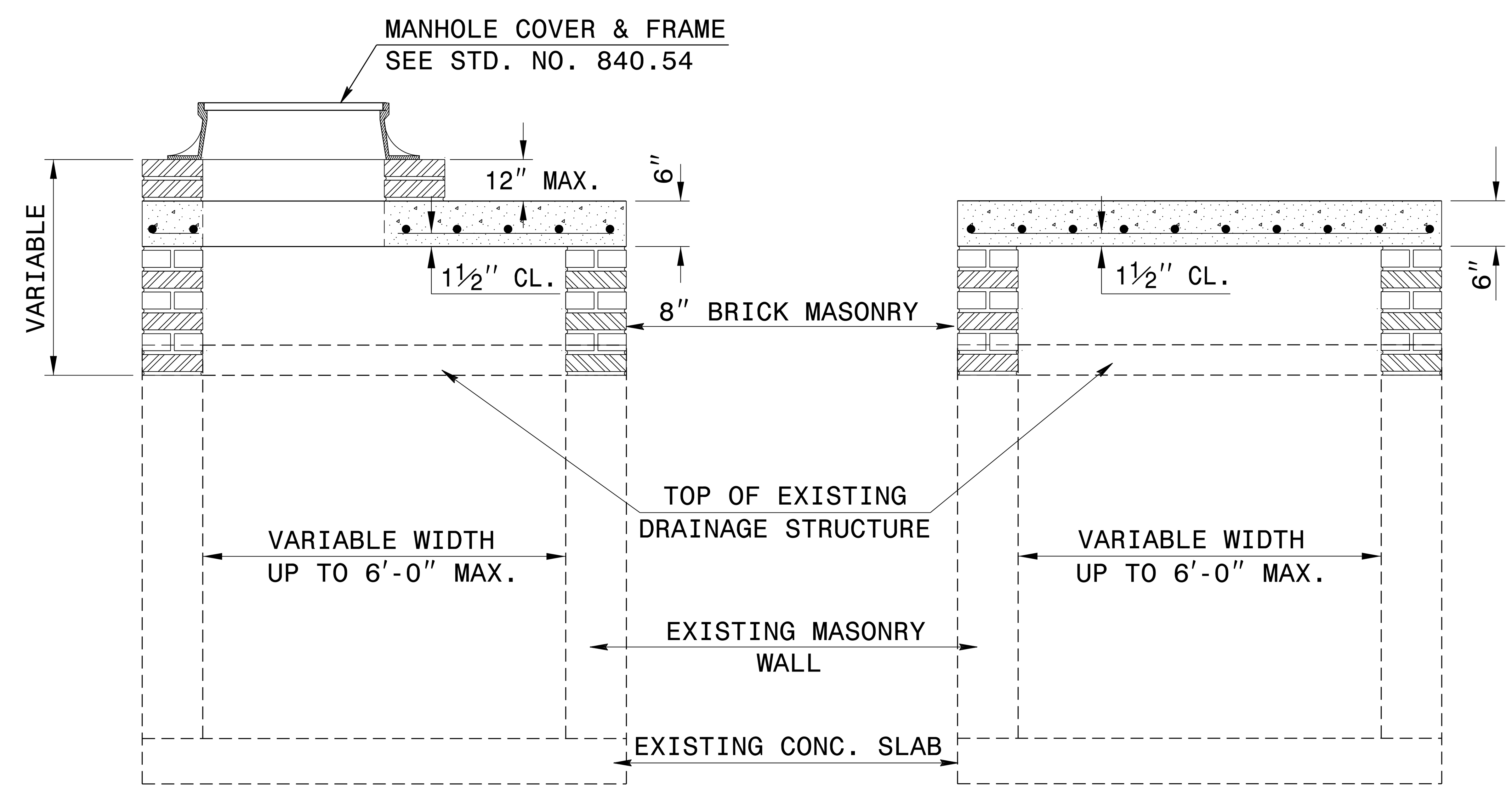
REINFORCING STEEL				
CODE	SIZE	QTY.	LENGTH	REINF. STEEL LBS.
A	#4	20	4'-6"	60.12
B	#4	8	1'-1"	5.79
TOTAL				65.91 *

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

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



DETAIL OF HANDLE



SECTION X-X **SECTION Y-Y**

5/31/2018

NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER Joel S. Howerton

DocuSigned by: Joel S. Howerton

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

DETAIL TO CONVERT EXISTING DI, CB, OTCB or GI TO JUNCTION BOX (MANHOLE OPTIONAL)

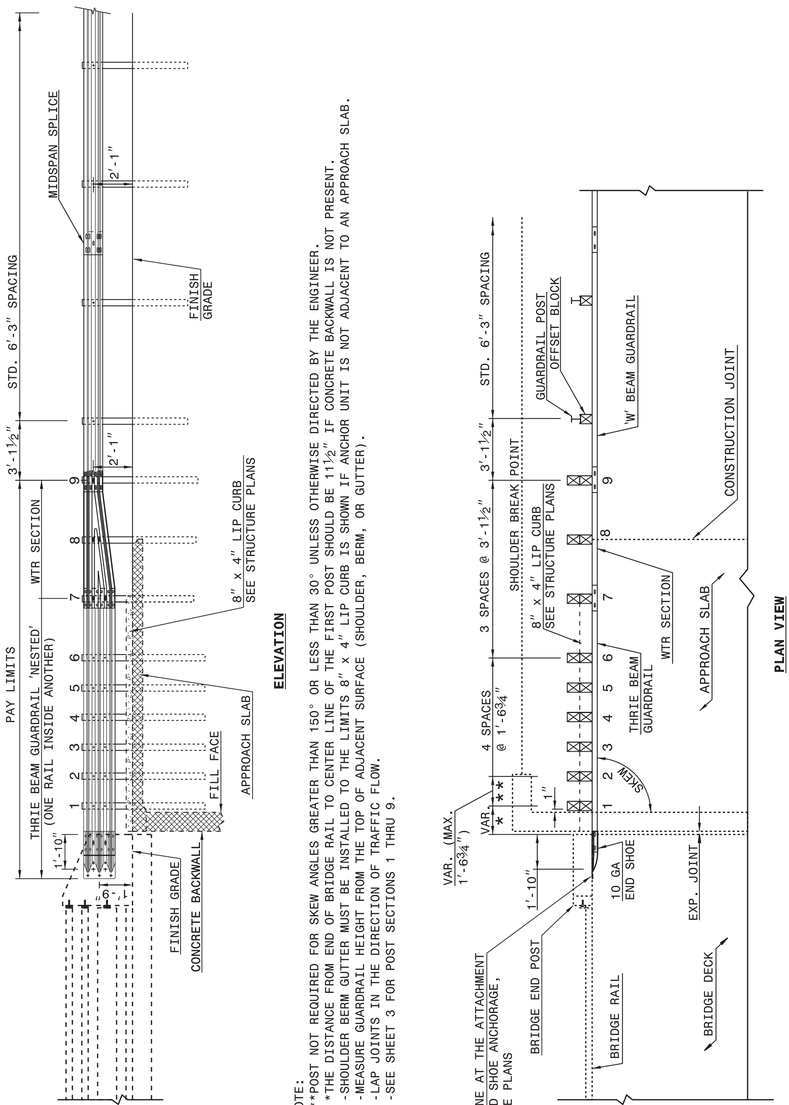
ORIGINAL BY: T.S.S. DATE: NOV.1997
MODIFIED BY: T.S.S. DATE: FEB.2000
CHECKED BY: DATE:
FILE SPEC.: ds174:/usr/details/stand/boxtojbe.dgn

PROJECT REFERENCE NO.	SHEET NO.
R-5734A	2C-7

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.

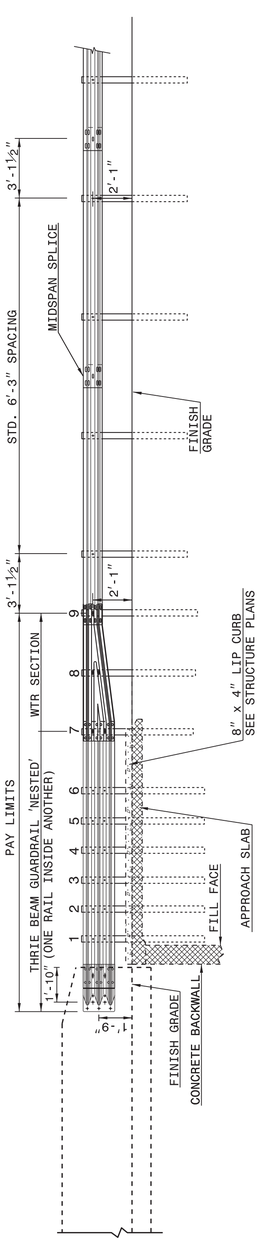
PLAN VIEW

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

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

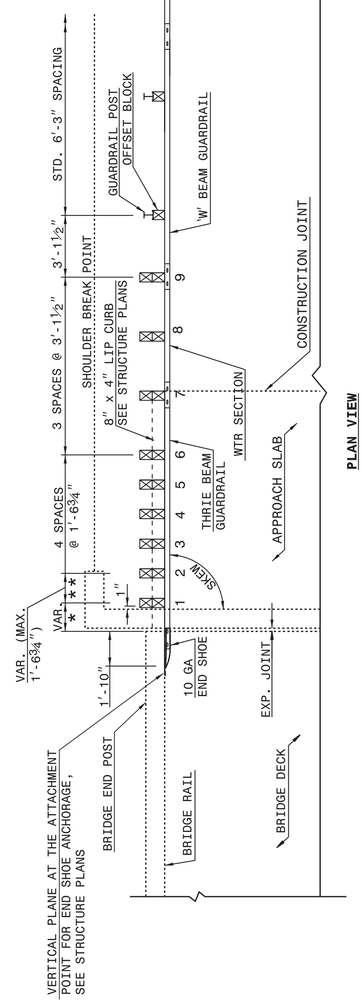
ROADWAY DETAIL DRAWING FOR
STRUCTURE ANCHOR UNITS
GUARDRAIL ANCHOR UNIT, TYPE III FOR ATTACHMENT TO
RAIL ON BRIDGE - SUB REGIONAL TIER

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

5/31/2018

NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER Joel S. Howerton

DocuSigned by: Joel S. Howerton
873F3D17DCDC45F...

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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

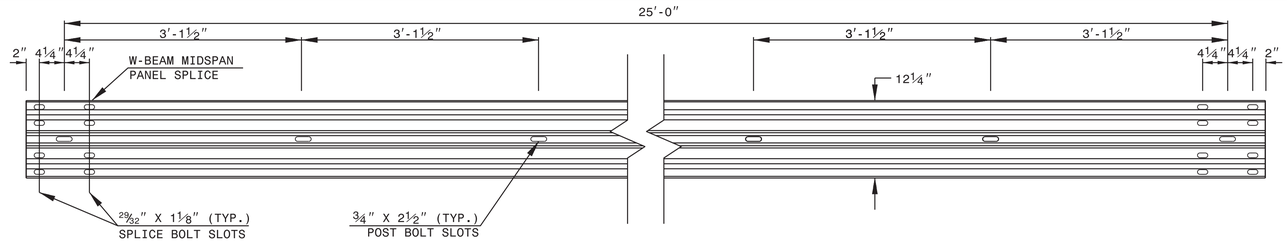
PROJECT REFERENCE NO.	SHEET NO.
R-5734A	2C-8

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

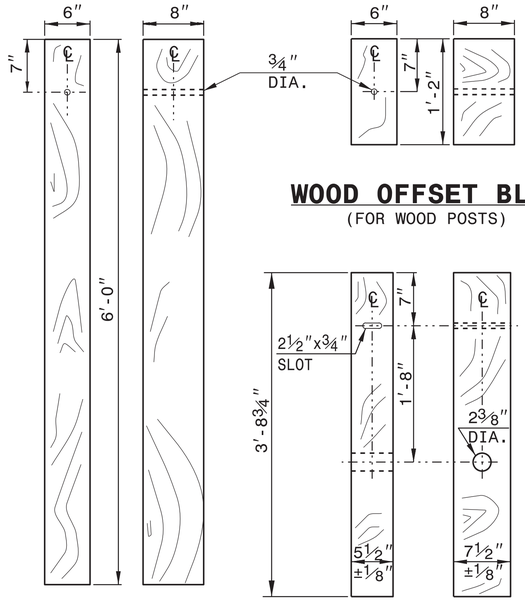
STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

SHEET 6 OF 8
862D02



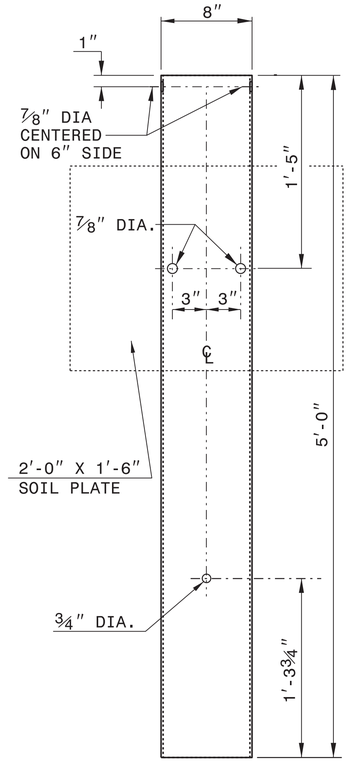
STANDARD W-BEAM GUARDRAIL



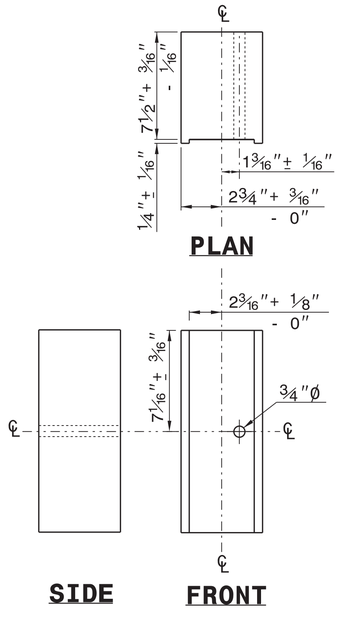
WOOD OFFSET BLOCK
(FOR WOOD POSTS)

STANDARD LINE POST

SHORT WOOD BREAKAWAY POST



STEEL TUBE
TS 6"x8"x0.1875"



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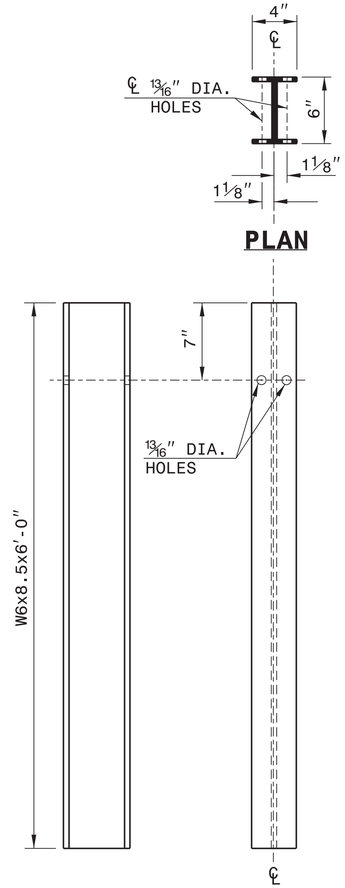


"W6" STEEL POST

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

5/31/2018

NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER JOEL S. HOWERTON

DocuSigned by: Joel S. Howerton
873F3D17DCDC45F...

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-5734A	2C-9

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

ENGLISH DETAIL DRAWING FOR

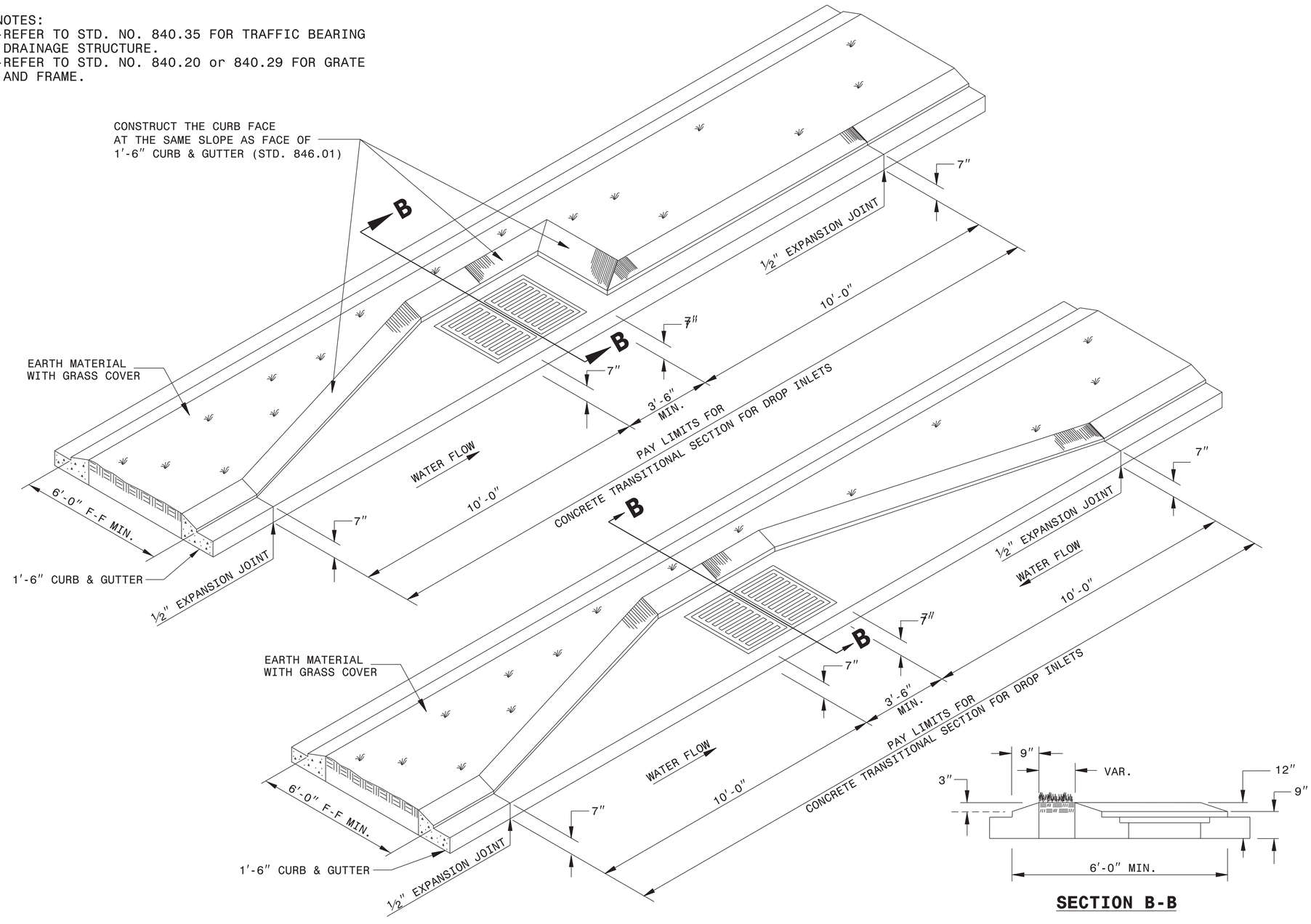
METHOD FOR PLACEMENT OF TRAFFIC BEARING 2GI IN GRASSED MEDIAN

(USING 1′-6″ CURB & GUTTER)

SHEET 1 OF 1

852D04

NOTES:
- REFER TO STD. NO. 840.35 FOR TRAFFIC BEARING DRAINAGE STRUCTURE.
- REFER TO STD. NO. 840.20 or 840.29 FOR GRATE AND FRAME.



SECTION B-B

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

ENGLISH DETAIL DRAWING FOR

METHOD FOR PLACEMENT OF TRAFFIC BEARING 2GI IN GRASSED MEDIAN

(USING 1′-6″ CURB & GUTTER)

SHEET 1 OF 1

852D04

5/31/2018

NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER Joel S. Howerton

DocuSigned by: Joel S. Howerton B73F3D17DCDC45F...

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

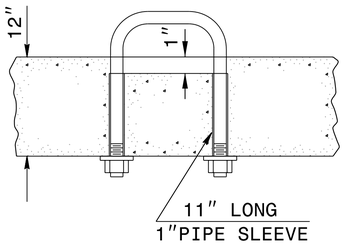
SEE TITLE PLATE

ORIGINAL BY: KKEMPF DATE: 8/2/10
MODIFIED BY: _____ DATE: _____
CHECKED BY: _____ DATE: _____
FILE SPEC.: jhowerton\852d04 Traffic Bearing DI in Island.dgn

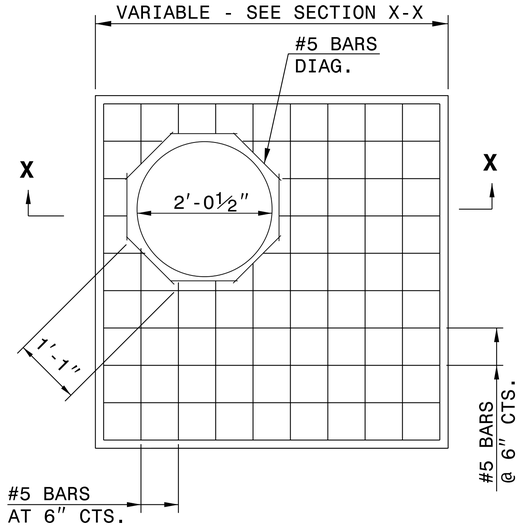
24-APR-2018 14:52
S:\Contracts\Contracts\Special Details\jhowerton\852d04 Traffic Bearing DI in Island.dgn
jhowerton
AT CSD-292695

5/14/99

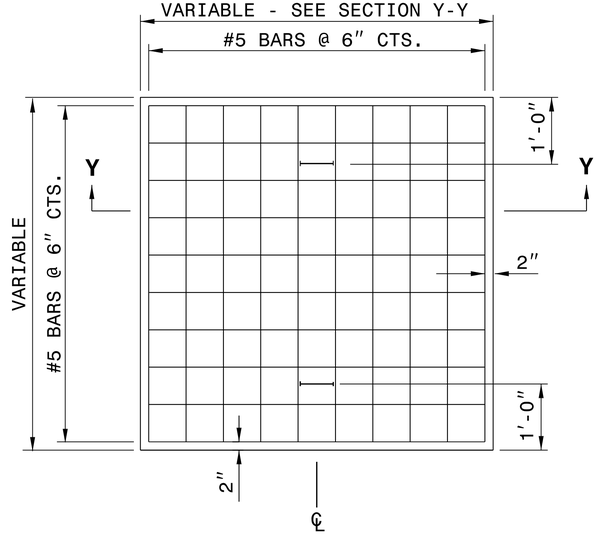
PROJECT REFERENCE NO.	SHEET NO.
R-5734A	2C-10



PARTIAL SECTION



PLAN



PLAN

GENERAL NOTES:

CONSTRUCT IN ACCORDANCE WITH SECTION 859 OF THE STANDARD SPECIFICATIONS.

FIELD VERIFY THE DIMENSIONS FOR THE EXISTING BOXES.

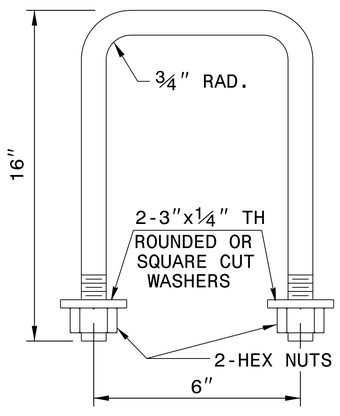
BILL OF MATERIALS

MASONRY	
TOP SLAB CONCRETE CLASS "A"	.037YDS^3 PER FT^2
BRICK MASONRY	.025YDS^3 PER FT^2
REINFORCING STEEL	7.64LBS PER FT^2

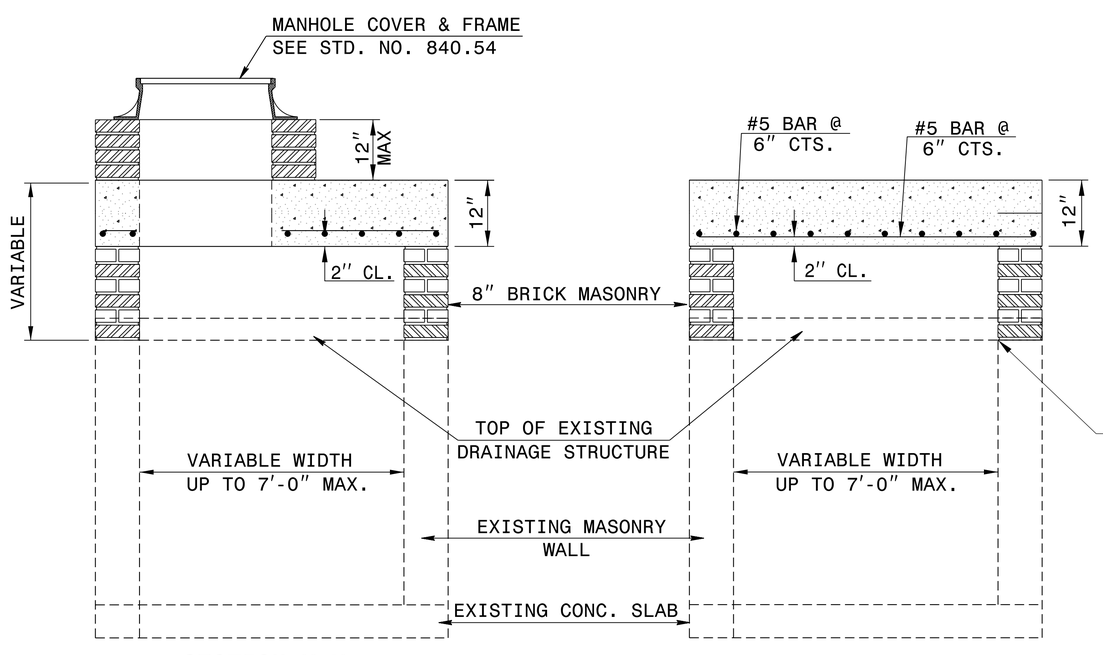
MANHOLE OPTION QUANTITIES			
SIZE	QTY.	LENGTH	REINF. STEEL LBS.
#5 DIAG.	8	1'-1"	9.04

NOTE:
CONCRETE AND REINFORCING STEEL QUANTITIES BASED ON SQUARE FOOT AREA OF THE PROPOSED TOP SLAB FOR THE EXISTING DRAINAGE STRUCTURE.

BRICK MASONRY QUANTITY IS BASED ON THE TOTAL SQUARE FOOTAGE OF EXTERIOR WALL SURFACE AREA TO BE CONSTRUCTED.



DETAIL OF HANDLE



SECTION X-X **SECTION Y-Y**

5/31/2018

NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER Joel S. Howerton

DocuSigned by: Joel S. Howerton B73F3D17DCDC45F...

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

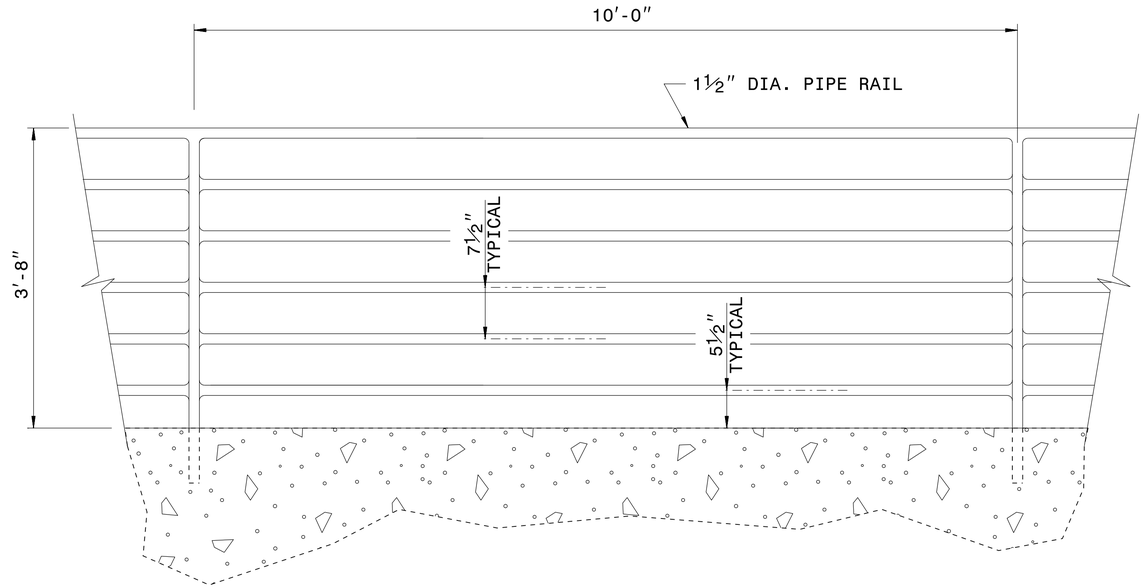
DETAIL TO CONVERT EXISTING TRAFFIC BEARING DROP INLET OR CATCH BASIN TO TRAFFIC BEARING JUNCTION BOX (MANHOLE OPTIONAL)

ORIGINAL BY: T.S.S. DATE: FEB.2000
MODIFIED BY: E.E.W. DATE: NOV.2001
CHECKED BY: DATE:
FILE SPEC.: w:ericward/usr/details/stand/boxtotbjbe.dgn

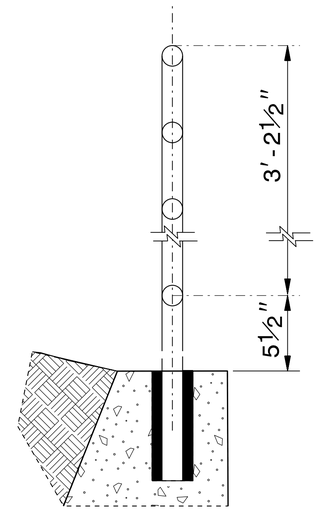
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

05-MAR-2018 08:W
S:\Contracts\Contracts\Special Details\ericward\usr\details\stand\boxtotbjbe.dgn
jhowerton AT CSD-292595

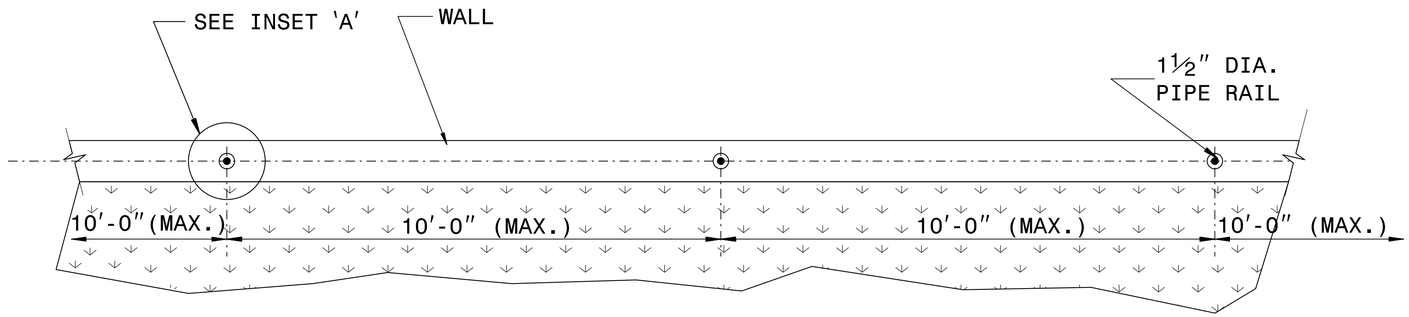
PROJECT REFERENCE NO.	SHEET NO.
R-5734A	2C-11



ELEVATION OF HANDRAIL



INSET 'A'



PLAN VIEW

NOTES:

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

EMBED PIPE RAIL INTO PROPOSED WALL WITH CHEMICAL OR CONCRETE GROUT ANCHORING SYSTEM PER THE WALL MANUFACTURER'S RECOMMENDATIONS.

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.

CENTER THE PROPOSED RAILING ON TOP OF THE WALL WITH POST SPACING SYMMETRICAL ABOUT THE CENTER-LINE OF THE WALL.

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

SUBMIT THE ATTACHMENT OF THE HANDRAIL TO THE RETAINING WALL TO THE CONTRACTS AND STANDARDS OFFICE FOR APPROVAL.

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

5/31/2018

NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER Joel S. Howerton

DocuSigned by: Joel S. Howerton 873F3D17DCDC45F...

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

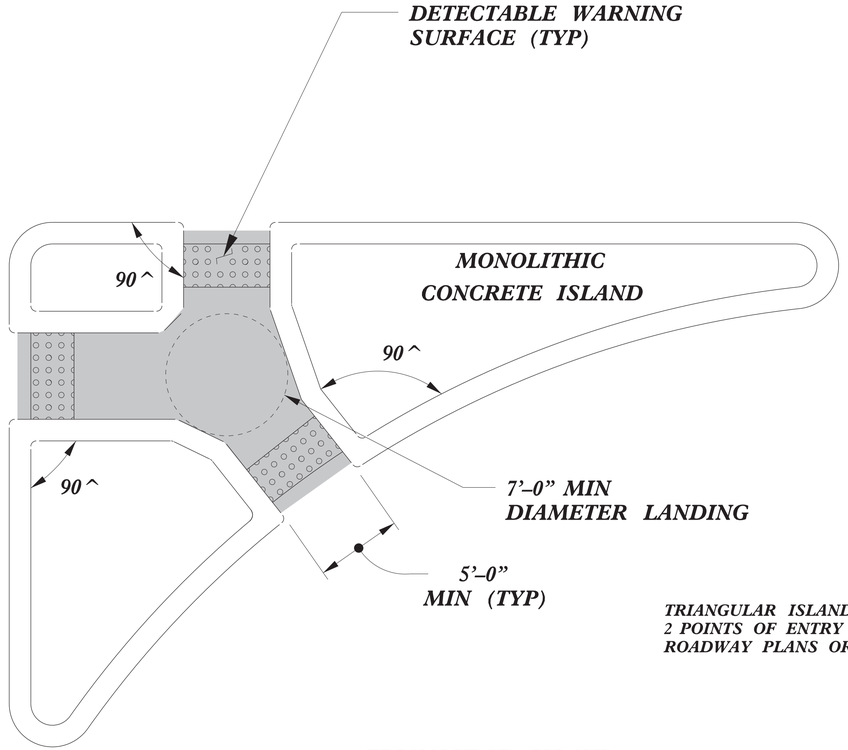
DETAIL OF PIPE HANDRAIL MOUNTED ON A WALL

ORIGINAL BY: E.E. WARD DATE: 12-99
MODIFIED BY: DATE:
CHECKED BY: DATE:
FILE SPEC.: jhowerton/handrail on retaining wall.dgn

24-MAY-2018 14:10
S:\Contracts\Contracts\Special Details\jhowerton\Handrail on Retaining Wall.dgn
jhowerton AT CSD-292595

5/14/99

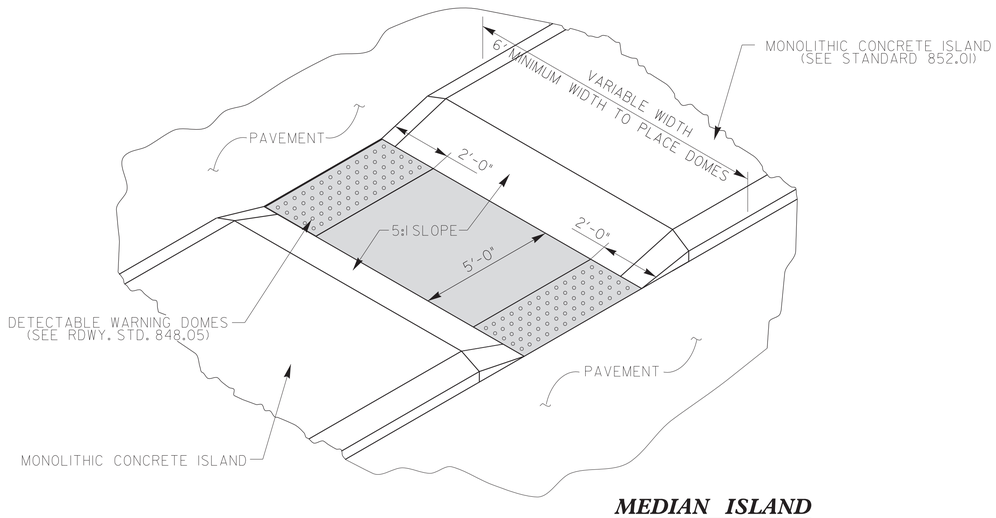
PROJECT REFERENCE NO.	SHEET NO.
R-5734A	2C-12



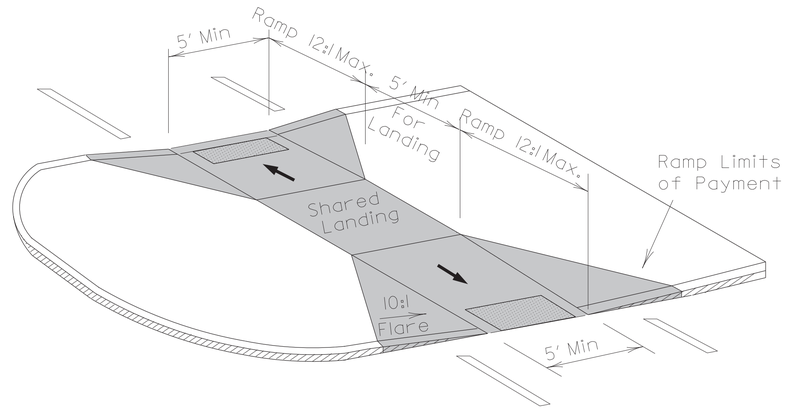
PAY LIMITS FOR 2 OR 3 CURB RAMPS (CALCULATE BASED ON NUMBER OF SETS OF TRUNCATED DOMES)

TRIANGULAR ISLANDS MAY BE CONSTRUCTED WITH ONLY 2 POINTS OF ENTRY AND EXIT AS SHOWN IN THE ROADWAY PLANS OR AS DIRECTED BY THE ENGINEER.

TRIANGULAR ISLAND WITH CUT THROUGH



MEDIAN ISLAND WITH CUT THROUGH



MEDIAN ISLAND CURB RAMPS

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER Joel S. Howerton

DocuSigned by: Joel S. Howerton 873F3D17DCDC... 6/6/2018

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

CURB RAMPS

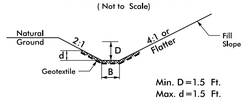
Median or Turn Lane Islands

ORIGINAL BY: J.S. HOWERTON DATE: 7/7/11
MODIFIED BY: _____ DATE: _____
CHECKED BY: _____ DATE: _____
FILE SPEC.: stds/2012CurbRamp/CurbRampDetails.dgn

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

5/14/99

DETAIL #1
SPECIAL LATERAL BASE DITCH
(Not to Scale)

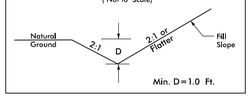


Min. D = 1.5 Ft.
Max. d = 1.5 Ft.
B = 2.0 Ft.

Type of Liner = Class 'B' Rip-Rap

FROM STA. 17 + 00 TO STA. 19 + 00 –L– RT

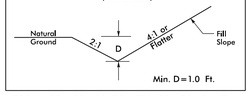
DETAIL #2
SPECIAL LATERAL 'V' DITCH
(Not to Scale)



Min. D = 1.0 Ft.

FROM STA. 30 + 00 TO STA. 31 + 75 –L– LT

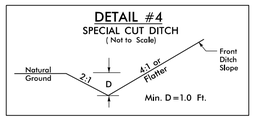
DETAIL #3
SPECIAL LATERAL 'V' DITCH
(Not to Scale)



Min. D = 1.0 Ft.

FROM STA. 50 + 00 TO STA. 50 + 50 –L– LT
FROM STA. 62 + 50 TO STA. 64 + 50 –L– RT
FROM STA. 65 + 00 TO STA. 66 + 50 –L– RT
FROM STA. 11 + 50 TO STA. 12 + 00 –LPD– LT

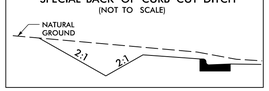
DETAIL #4
SPECIAL CUT DITCH
(Not to Scale)



Min. D = 1.0 Ft.

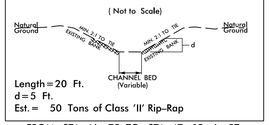
FROM STA. 14 + 20 TO STA. 14 + 50 –Y3– LT

DETAIL #5
SPECIAL BACK OF CURB CUT DITCH
(NOT TO SCALE)



FROM STA. 15 + 50 TO STA. 17 + 00 –L– RT
FROM STA. 27 + 00 TO STA. 27 + 50 –L– LT

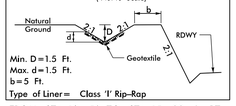
DETAIL #6
PIPE OUTLET CHANNEL
(Not to Scale)



Length = 20 Ft.
d = 5 Ft.
Est. = 50 Tons of Class 'II' Rip-Rap

FROM STA. 46 + 75 TO STA. 47 + 15 –L– RT

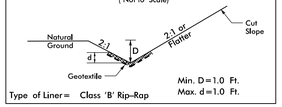
DETAIL #7
BERM 'V' DITCH
(Not to Scale)



Min. D = 1.5 Ft.
Max. d = 1.5 Ft.
b = 5 Ft.
Type of Liner = Class 'I' Rip-Rap

FROM STA. 12 + 50 TO STA. 15 + 00 –L– RT

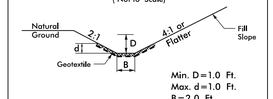
DETAIL #8
ROADWAY DITCH
(Not to Scale)



Min. D = 1.0 Ft.
Max. d = 1.0 Ft.
Type of Liner = Class 'B' Rip-Rap

FROM STA. 10 + 00 TO STA. 12 + 50 –DRWY1– LT

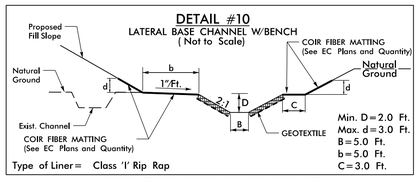
DETAIL #9
SPECIAL LATERAL BASE DITCH
(Not to Scale)



Min. D = 1.0 Ft.
Max. d = 1.0 Ft.
B = 2.0 Ft.
Type of Liner = Class 'B' Rip-Rap

FROM STA. 12 + 50 TO STA. 14 + 85 –DRWY1– LT

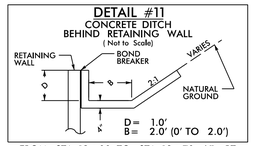
DETAIL #10
LATERAL BASE CHANNEL W/BENCH
(Not to Scale)



Min. D = 2.0 Ft.
Max. d = 3.0 Ft.
B = 5.0 Ft.
b = 5.0 Ft.
C = 3.0 Ft.
Type of Liner = Class 'I' Rip Rap

FROM STA. 20 + 10 TO STA. 24 + 00 –L– RT

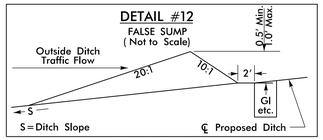
DETAIL #11
CONCRETE DITCH
BEHIND RETAINING WALL
(Not to Scale)



D = 1.0'
B = 2.0' (0' TO 2.0')

FROM STA. 12 + 00 TO STA. 13 + 70 –Y1– RT

DETAIL #12
FALSE SUMP
(Not to Scale)



S = Ditch Slope

STA. 64 + 88 –L– RT

PROJECT REFERENCE NO.	SHEET NO.
R-5734	2D-1
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 26971 ENGINEER JOSHUA GRAHAM

DocuSigned by: Joshua Graham 1089ADBC14994C3... 6/11/2018

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6/11/2018
U:\Roadway\R5734_Detail_Drainage_2D-1.dgn
Roadway Design

PROJECT REFERENCE NO.	SHEET NO.
R-5734A	2G-1

ENGINEER

SIGNATURE DATE

GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 39779 ENGINEER JEREMY R. HAAN

DocuSigned by: Jeremy R. Haan ED7938089E22487...

5/31/2018

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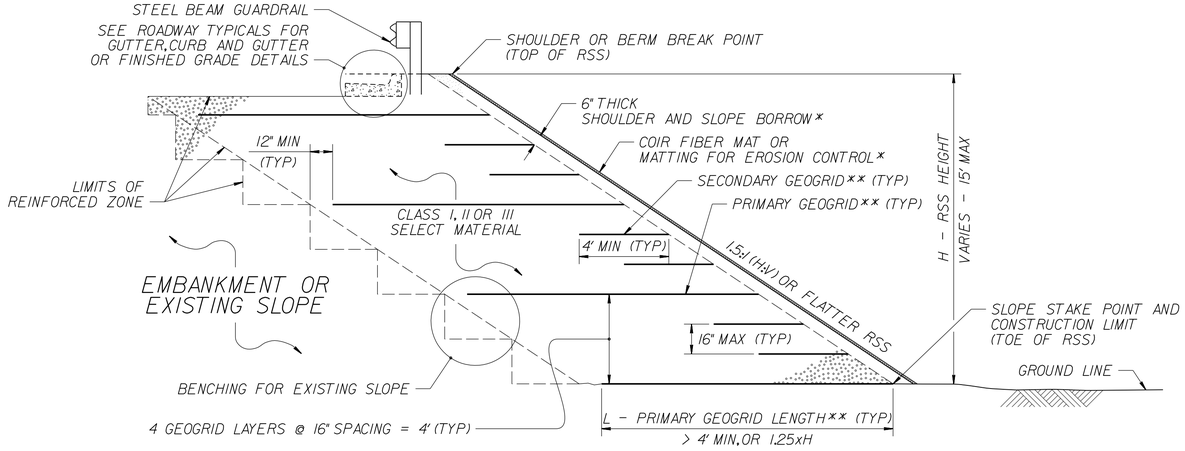
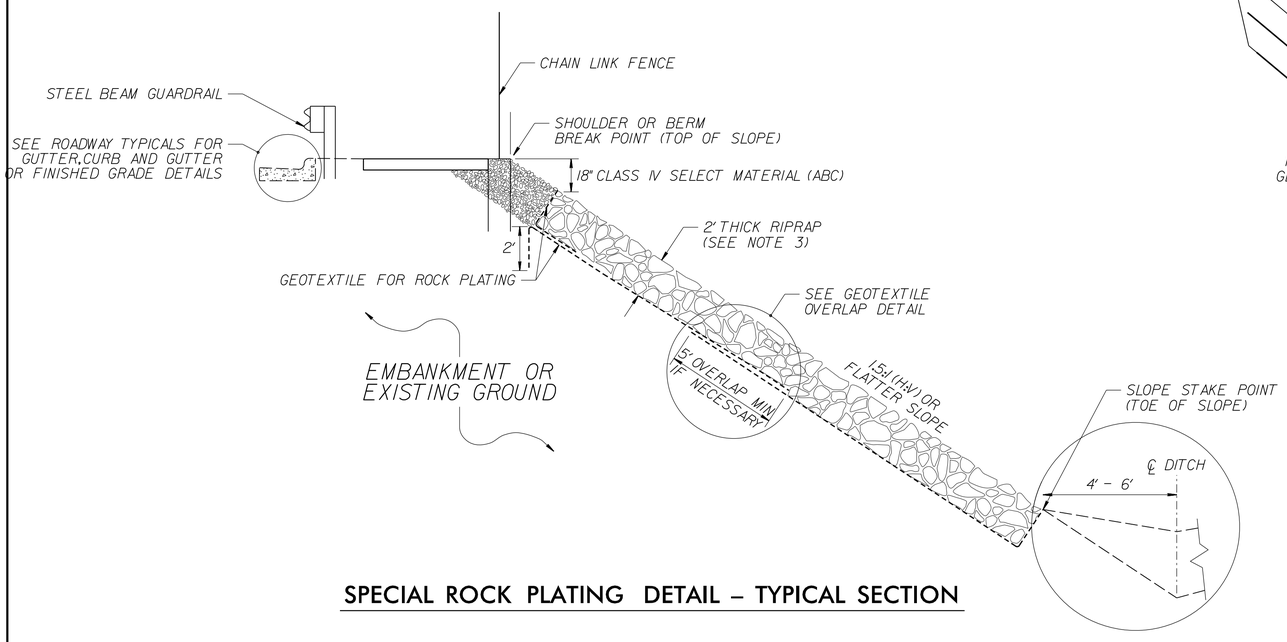
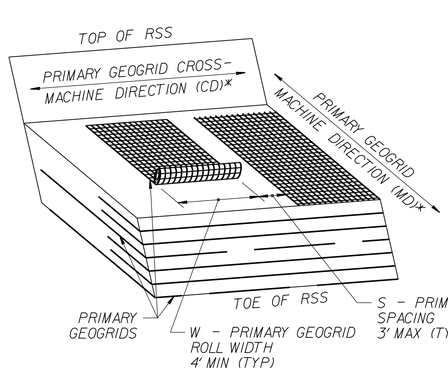


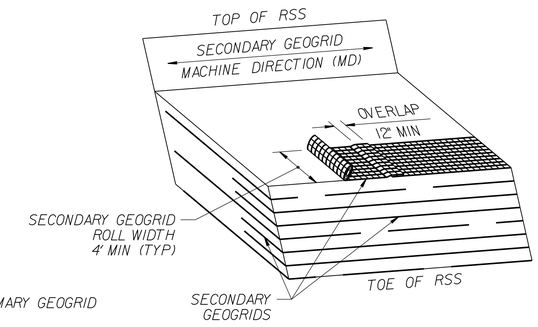
REINFORCED SOIL SLOPE (RSS)

*SEE NOTES 3 AND 11 ON SHEET 2
**SEE GEOGRID PLACEMENT DETAILS



SPECIAL ROCK PLATING DETAIL – TYPICAL SECTION





GEOGRID PLACEMENT DETAILS

(% COVERAGE = $\frac{W}{W+S}$ x 100 $\geq$ 75%)

*SEE NOTES 8 AND 9 ON SHEET 2

FALCON ENGINEERING

FALCON ENGINEERING, INC.
1210 TRINITY ROAD, SUITE 110
CARY, NC 27513

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NORTH CAROLINA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS

GEOTECHNICAL ENGINEERING UNIT

GEOTECHNICAL DETAILS

REINFORCED SOIL SLOPE (RSS) AND ROCK PLATING DETAILS
SHEET 1 OF 2

3/15/2018

PROJECT REFERENCE NO.	SHEET NO.
R-5734A	2G-2

GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 39779 ENGINEER JEREMY R. HAMM

DocuSigned by: Jeremy R. Hamm
ED7938689E22487...

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5/31/2018

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NOTES FOR ROCK PLATING:

1. SEE ROADWAY PLANS AND SUMMARY SHEETS FOR ROCK PLATING LOCATIONS.
2. FOR STANDARD ROCK PLATING, SEE SECTION 275 OF THE STANDARD SPECIFICATIONS.
3. USE CLASS 1, 2 OR B RIPRAP UNLESS REQUIRED OTHERWISE IN THE ROADWAY SUMMARY SHEETS.

NOTES FOR REINFORCED SOIL SLOPES (RSS):

1. SEE EROSION CONTROL AND ROADWAY PLANS AND SUMMARY SHEETS FOR REINFORCED SOIL SLOPE (RSS) AND SLOPE EROSION CONTROL LOCATIONS.
2. FOR REINFORCED SOIL SLOPES, SEE REINFORCED SOIL SLOPES PROVISION. FOR STEEL BEAM GUARDRAIL, SEE SECTION 862 OF THE STANDARD SPECIFICATIONS.
3. FOR SHOULDER AND SLOPE BORROW, SEE ARTICLE 1019-2 OF THE STANDARD SPECIFICATIONS. FOR GEOCELLS, SEE CELLULAR CONFINEMENT SYSTEMS PROVISION. FOR COIR FIBER MAT, MATTING FOR EROSION CONTROL AND COMPOST BLANKET, SEE EROSION CONTROL PROVISIONS, SECTION 1631 OF THE STANDARD SPECIFICATIONS AND ROADWAY STANDARD DRAWING NO. 1633.01.
4. RSS ARE BASED ON THE FOLLOWING IN-SITU ASSUMED SOIL PARAMETERS:
   UNIT WEIGHT, γ = 110 PCF
   FRICTION ANGLE, ϕ = 28 DEGREES
   COHESION, c = 0 PSF
5. DO NOT USE STANDARD RSS IF ASSUMED SOIL PARAMETERS ARE NOT APPLICABLE. ABOVE TOE OF RSS.
6. UNDERCUT AND REPLACE VERY LOOSE OR SOFT SOIL OR MUCK BELOW RSS AT THE DIRECTION OF THE ENGINEER.
7. GEOGRIDS ARE TYPICALLY APPROVED FOR ULTIMATE TENSILE STRENGTHS IN THE MACHINE DIRECTION (MD) AND CROSS-MACHINE DIRECTION (CD) OR LONG-TERM DESIGN STRENGTHS FOR A 75-YEAR DESIGN LIFE IN THE MD BASED ON MATERIAL TYPE. THE LIST OF APPROVED GEOGRIDS WITH DESIGN STRENGTHS IS AVAILABLE FROM:
   connect.ncdot.gov/resources/Materials/Pages/SoilsLaboratory.aspx
   DEFINE MATERIAL TYPE FROM THE WEBSITE ABOVE FOR SELECT MATERIAL AS FOLLOWS:

MATERIAL TYPE	SELECT MATERIAL
FINE AGGREGATE	CLASS II OR III SELECT MATERIAL

   IF THE WEBSITE DOES NOT LIST A LONG-TERM DESIGN STRENGTH FOR AN APPROVED GEOGRID IN THE MD, DO NOT USE THE GEOGRID FOR PRIMARY GEOGRID. IF THE WEBSITE DOES NOT LIST A LONG-TERM DESIGN STRENGTH FOR AN APPROVED GEOGRID IN THE CD, USE A LONG-TERM DESIGN STRENGTH EQUAL TO THE ULTIMATE TENSILE STRENGTH DIVIDED BY 7 FOR THE SECONDARY GEOGRID.
8. DO NOT OVERLAP PRIMARY GEOGRIDS IN THE MD SO OVERLAPS ARE PARALLEL TO THE TOE OF RSS. POLYOLEFIN (e.g., HDPE OR PP) GEOGRIDS MAY BE SPLICED ONCE PER PRIMARY GEOGRID LENGTH IN ACCORDANCE WITH THE GEOGRID MANUFACTURER'S INSTRUCTIONS. USE POLYOLEFIN GEOGRID PIECES AT LEAST 4' LONG. DO NOT SPLICE POLYESTER TYPE (PET) GEOGRIDS.
9. FOR PRIMARY GEOGRIDS WITH 100% COVERAGE, PLACE PRIMARY GEOGRIDS SO GEOGRIDS ARE ADJACENT TO EACH OTHER IN THE CD. FOR PRIMARY GEOGRIDS WITH 75% TO LESS THAN 100% COVERAGE,

   MINIMUM REQUIRED LONG-TERM DESIGN STRENGTH = LTDS BASED ON 100% COVERAGE x (W + S) / W

   SEE TABLE FOR LTDS BASED ON 100% COVERAGE AND GEOGRID PLACEMENT DETAILS FOR PRIMARY GEOGRID ROLL WIDTH (W) AND SPACING (S). FOR PRIMARY GEOGRIDS WITH LESS THAN 100% COVERAGE, STAGGER PRIMARY GEOGRIDS SO GEOGRIDS ARE CENTERED OVER GAPS IN THE PRIMARY GEOGRID LAYER BELOW. DO NOT USE LESS THAN 75% COVERAGE FOR PRIMARY GEOGRIDS.
10. DO NOT PLACE ANY GEOGRIDS UNTIL EXCAVATION DIMENSIONS AND IN-SITU MATERIAL ARE APPROVED.
11. FOR SLOPE EROSION CONTROL, USE MATTING ON SLOPE FACES OF RSS.

RSS ANGLE	SLOPE EROSION CONTROL
1.5:1 OR FLATTER	COIR FIBER MAT WITH SHOULDER AND SLOPE BORROW*

*SEE REINFORCED SOIL SLOPES AND SLOPE EROSION CONTROL SUMMARY TABLE IN THE ROADWAY SUMMARY SHEETS FOR SLOPE EROSION CONTROL ON SLOPE FACES OF RSS 1.5:1 (H:V) TO STEEPER THAN 2:1.

GEOGRID TYPE, DIRECTION	H (FT)	UP TO 15 FEET
	SELECT MATERIAL CLASS	II OR III
PRIMARY GEOGRID, MD (SUBSTITUTE SECONDARY GEOGRID FOR PRIMARY GEOGRID FOR 2:1 (H:V) OR FLATTER RSS)	1.5:1 (H:V) OR FLATTER RSS	1100
SECONDARY GEOGRID, CD	1.5:1 (H:V) OR FLATTER RSS	185

LTDS – MINIMUM REQUIRED LONG-TERM DESIGN STRENGTH (LB/FT)

(LTDS IS BASED ON 100% COVERAGE FOR PRIMARY GEOGRID. SEE NOTE 9 FOR LESS THAN 100% COVERAGE.)

H (FT)	UP TO 15 FEET
SELECT MATERIAL CLASS	II OR III
1.5:1 OR FLATTER	1.25

L/H RATIO (L > 4' MIN)

(IF L ≤ 4', USE SECONDARY GEOGRID INSTEAD OF PRIMARY GEOGRID.)

FALCON ENGINEERING

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1210 TRINITY ROAD, SUITE 110
CARY, NC 27513

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NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS

GEOTECHNICAL ENGINEERING UNIT

GEOTECHNICAL DETAILS

REINFORCED SOIL SLOPE (RSS) AND ROCK PLATING DETAILS
SHEET 2 OF 2

3/15/2018

PROJECT REFERENCE NO.	SHEET NO.
R-5734A	2G-3

GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 039779 ENGINEER JEREMY R. HAMM

DocuSigned by: Jeremy R. Hamm EDF938089E22487...

6/6/2018

SIGNATURE DATE

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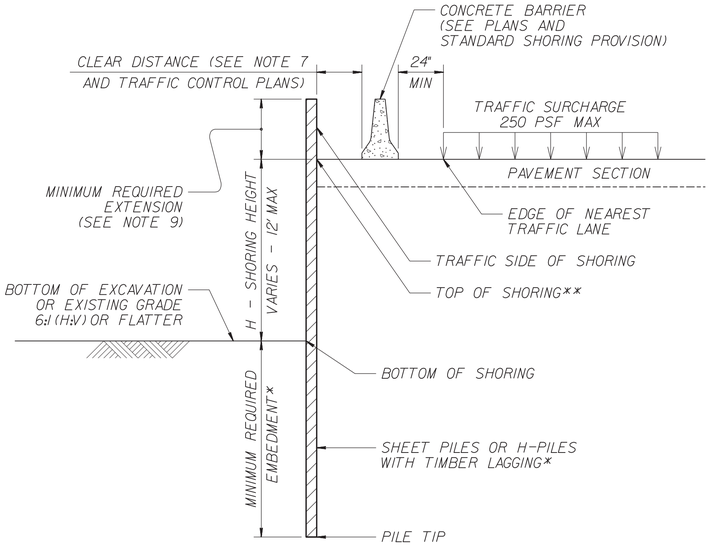
GROUNDWATER CONDITION (SEE NOTE 6)	H SHORING HEIGHT (FT)	SLOPE OR SURCHARGE CASE WITH NO TRAFFIC IMPACT					SURCHARGE CASE WITH TRAFFIC IMPACT				
		SHEET PILES		H-PILES WITH TIMBER LAGGING			SHEET PILES		H-PILES WITH TIMBER LAGGING		
		MINIMUM REQUIRED EMBEDMENT (FT)	MINIMUM REQUIRED SECTION MODULUS (IN^3/FT)	MINIMUM REQUIRED EMBEDMENT* (FT) (SEE NOTE 10)			MINIMUM REQUIRED EMBEDMENT (FT)	MINIMUM REQUIRED SECTION MODULUS (IN^3/FT)	MINIMUM REQUIRED EMBEDMENT* (FT) (SEE NOTE 10)		
				HP 10x42	HP 12x53	HP 14x73			HP 10x42	HP 12x53	HP 14x73
GROUNDWATER ELEVATION BEWTEEN BOTTOM OF SHORING AND PILE TIP	< 6	11.5	4.5	11.5	11.5	11.5	16.0	12.0	13.0	13.0	13.0
	7	13.0	7.0	13.0	13.0	13.0	17.0	14.5	14.5	14.5	14.5
	8	15.0	10.0	--	15.0	15.0	18.0	17.0	--	15.5	15.5
	9	17.0	14.0	--	17.0	17.0	19.0	20.0	--	17.0	17.0
	10	18.5	19.5	--	--	18.5	20.0	23.5	--	--	18.5
	11	20.5	26.0	--	--	--	21.0	28.0	--	--	20.0
	12	22.5	33.0	--	--	--	22.0	33.0	--	--	21.5
GROUNDWATER ELEVATION BELOW PILE TIP	< 6	7.5	3.0	8.0	8.0	8.0	11.0	10.0	9.5	9.5	9.5
	7	8.5	4.5	9.5	9.5	9.5	12.0	12.0	10.5	10.5	10.5
	8	10.0	6.5	10.5	10.5	10.5	12.5	14.0	11.5	11.5	11.5
	9	11.0	9.5	--	12.0	12.0	13.5	16.5	--	12.5	12.5
	10	12.5	13.0	--	--	13.5	14.0	19.5	--	13.5	13.5
	11	13.5	17.0	--	--	14.5	15.0	22.5	--	--	14.5
	12	15.0	21.5	--	--	16.0	16.0	25.5	--	--	15.5

MINIMUM REQUIRED EMBEDMENT AND SECTION MODULUS

*DO NOT USE H-PILES WITH TIMBER LAGGING FOR GROUNDWATER CONDITION, SHORING HEIGHT AND H-PILE SIZE SHOWN IF MINIMUM REQUIRED EMBEDMENT IS "--".

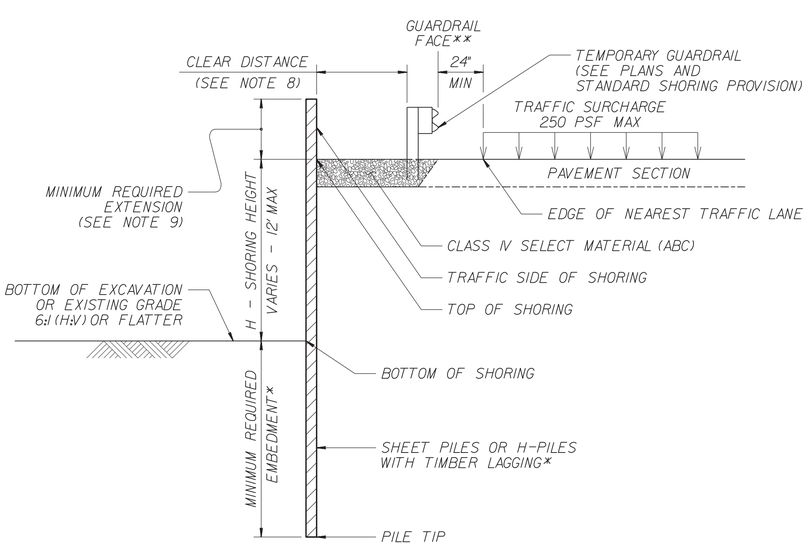
NOTES:

1. AT THE CONTRACTOR'S OPTION, USE STANDARD TEMPORARY SHORING AS NOTED IN THE PLANS.
2. FOR STANDARD TEMPORARY SHORING, SEE STANDARD SHORING PROVISION.
3. STANDARD TEMPORARY SHORING IS BASED ON THE FOLLOWING IN-SITU ASSUMED SOIL PARAMETERS:
   UNIT WEIGHT, γ = 120 PCF
   FRICTION ANGLE, ϕ = 30 DEGREES
   COHESION, c = 0 PSF
4. DO NOT USE STANDARD TEMPORARY SHORING IF ASSUMED SOIL PARAMETERS ARE NOT APPLICABLE.
5. DO NOT USE STANDARD TEMPORARY SHORING WHEN VERY LOOSE OR SOFT SOIL OR MUCK IS WITHIN THE EMBEDMENT DEPTH.
6. USE GROUNDWATER ELEVATION NOTED IN THE PLANS. IF NO GROUNDWATER ELEVATION IS SHOWN IN THE PLANS, USE "GROUNDWATER ELEVATION BETWEEN BOTTOM OF SHORING AND PILE TIP" FOR GROUNDWATER CONDITION. DO NOT USE STANDARD TEMPORARY SHORING IF GROUNDWATER IS ABOVE BOTTOM OF SHORING.
7. AT THE CONTRACTOR'S OPTION OR IF AVAILABLE CLEAR DISTANCE IS LESS THAN THE MINIMUM REQUIRED FOR CONCRETE BARRIER, SET BARRIER NEXT TO AND UP AGAINST TRAFFIC SIDE OF PILES AND USE "SURCHARGE CASE WITH TRAFFIC IMPACT".
8. AT THE CONTRACTOR'S OPTION OR IF AVAILABLE CLEAR DISTANCE IS LESS THAN 4' FOR TEMPORARY GUARDRAIL, ATTACH GUARDRAIL TO TRAFFIC SIDE OF PILES AS SHOWN IN THE PLANS AND USE "SURCHARGE CASE WITH TRAFFIC IMPACT".
9. MINIMUM REQUIRED EXTENSION IS 6" FOR "SLOPE OR SURCHARGE CASE WITH NO TRAFFIC IMPACT" AND 32" FOR "SURCHARGE CASE WITH TRAFFIC IMPACT".
10. MINIMUM REQUIRED EMBEDMENT FOR H-PILES WITH TIMBER LAGGING IS BASED ON DRIVEN H-PILES AT MAXIMUM 6' SPACING. AT THE CONTRACTOR'S OPTION, EMBEDMENT DEPTHS MAY BE REDUCED BY 25% FOR DRILLED-IN H-PILES.
11. SUBMIT A "STANDARD TEMPORARY SHORING SELECTION FORM" AT LEAST 7 DAYS BEFORE STARTING TEMPORARY SHORING CONSTRUCTION. UP TO 3 SHORING LOCATIONS MAY BE INCLUDED ON EACH FORM. STANDARD SHORING SELECTION FORMS ARE AVAILABLE FROM: connect.ncdot.gov/resources/Geological/Pages/Geotech_Forms_Details.aspx
12. CONTACT THE ENGINEER IF PILES DO NOT ATTAIN THE MINIMUM REQUIRED EMBEDMENT.



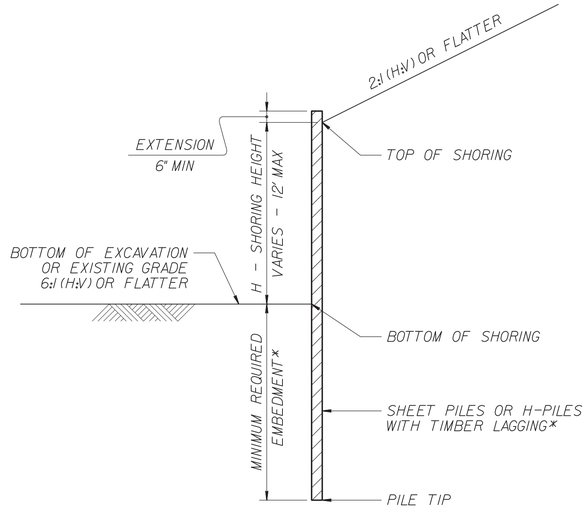
CONCRETE BARRIER

**TOP OF SHORING = EDGE OF PAVEMENT



TEMPORARY GUARDRAIL

**GUARDRAIL FACE = EDGE OF PAVEMENT



STANDARD TEMPORARY SHORING

(SLOPE CASE)

*SEE TABLE ABOVE.

STANDARD TEMPORARY SHORING

(SURCHARGE CASE)

*SEE TABLE ABOVE.

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

GEOTECHNICAL ENGINEERING UNIT

STANDARD DETAIL NO. 1801.01

STANDARD TEMPORARY SHORING

DATE: 11-19-13

COMPUTED BY: _____ DATE:_____
CHECKED BY:_____ DATE:_____

PROJECT NO.	SHEET NO.
R-5734A	3B-1

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

Earthwork Balance Sheet
(IN CUBIC YARDS)

STATION	STATION	UNCLASS. EXCAV.	EMBANK. +%	BORROW	WASTE
PHASE I (LEFT & RIGHT OF -L-, ALL -Y- LINES)					
LEFT SIDE OF -L-					
-L- LT 12+85.00	41+42.17 (BRIDGE)	756	536		220
-L- LT 42+93.47 (BRIDGE)	68+27.48	1,229	558		671
-Y1- 10+90.00	13+50.00	693	90		603
-DRWY1- 10+00.00	14+99.46	2,441	55		2,386
-Y3- 14+00.00	14+74.49	62			62
-Y6- 11+00.00	11+61.59	48	22		26
-Y8- 11+72.0	12+62.27	22			22
RIGHT SIDE OF -L-					
-L- RT 12+85.00	41+42.17 (BRIDGE)	11,247	4,199		7,048
-L- RT 42+93.47 (BRIDGE)	68+27.48	1,880	864		1,016
-Y2- 10+33.52	11+55.00	37	54	17	
-DRWY2- 10+50.00	11+10.00	234			234
-Y4- 10+50.00	11+11.19	66			66
-Y5- 10+50.00	10+75.00	110	1		109
-Y7- 10+50.00	14+00.00	503	206		297
-LPD- & -RPD-		157	229	72	
	SUBTOTAL	19,485	6,813	89	12,761
PHASE II (MEDIAN)					
-L- 12+85.00	41+42.17 (BRIDGE)	126	331	205	
-L- 42+93.47 (BRIDGE)	68+27.48	136	160	24	
	SUBTOTAL	262	491	229	
TOTAL		19,747	7,304	318	12,761
LOSS DUE TO CLEARING & GRUBBING		-200			-200
WASTE IN LIEU OF BORROW				-318	-318
PROJECT TOTAL		19,547	7,303		12,243
EST. 5% TO REPLACE TOP SOIL ON BORROW PIT				0	
R-5734A TOTALS		19,547	7,303		12,243
R-5734A SAY		19,600			
17BP.14.R.154 SAY		35		270	
GRAND TOTAL		**19,635**		**270**	

PAVEMENT STRUCTURE VOLUME = 10,090 CY
EST. DDE = 3630 CUBIC YARDS
EST. SHOULDER BORROW = 180 CUBIC YARDS
EST. SHALLOW UNDERCUT = 150 CY
EST. UNDERCUT = 1000 CY

NOTE: APPROXIMATE QUANTITIES ONLY. UNCLASSIFIED EXCAVATION, BORROW EXCAVATION, SHOULDER BORROW, FINE GRADING, CLEARING AND GRUBBING, AND REMOVAL OF ASPHALT PAVEMENT WILL BE PAID FOR AT THE LUMP SUM PRICE FOR "GRADING".

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

PAVEMENT REMOVAL SUMMARY

LINE	STATION	STATION	LOCATION	LENGTH OR AREA (sq. ft)	WIDTH	SQUARE YARDS
-Y1-	14+14	12+46	LT	3,470		386
-L-	27+79	36+13	RT	706		79
-L-	36+40	41+41	RT	570		64
-L-	57+70	58+56	LT	610		68
-L-	58+95	60+95	LT	1,442		161
-L-	61+93	65+04	LT	1,103		123
-RPD-	13+83	12+66	LT	3,821		425
-L-	20+32	24+85	CL	7,411		824
-L-	30+95	34+22	CL	5,189		577
-L-	38+35	40+46	CL	2,513		280
-L-	43+46	47+13	CL	5,135		571
-L-	54+50	57+89	CL	5,357		596
-DRWY6-	10+05	10+42	CL	875		98
-DRWY7-	10+05	10+41	CL	975		109
-DRWY2-	10+46	11+10	CL	1,959		218
-DRWY8-	10+35	10+75	CL	1,233		137
				R-5734A TOTALS		4,716.00
				R-5734A SAY		4,720
				17BP.14.R.154 TOTALS		150
				GRAND TOTAL		**4,870**

MILLING ASPHALT PAVEMENT, 1.5" SUMMARY

LINE	STATION	STATION	LOCATION	LENGTH OR AREA	WIDTH	SQUARE YARDS
-L-	41+16	41+41	CL	1679		186.56
-L-	42+93	43+28	CL	2213		245.89
-L-	68+27	70+44	CL	19371		2152.33
					TOTAL	2,584.78
					SAY	**2,590**

SHOULDER BERM GUTTER SUMMARY

LINE	SIDE	STATION	STATION	LENGTH (LF)
17BP.14.R.154			**GRAND TOTAL**	**48**

CHAIN LINK FENCE SUMMARY

STATION TO STATION	LT. OR RT.	A FABRIC L.F.	B END BRACE	C CORNER BRACE	D LINE BRACE	E LINE POSTS	F TERMINAL POSTS
-L- 44+72 TO 46+98	RT.	226.00	2			18.50	2
-Y7- 12+00 TO 13+54	LT.	156.00	2			12.67	2
TOTAL		382.00				31.17	4
SAY		**382.00**				**32.00**	**4.00**

6-BAR PEDESTRIAN FENCE RAIL SUMMARY
(BLACK PAINTED OR POWDER COATED)

STATION TO STATION	LT. OR RT.	LENGTH (FT)					LENGTH (FT)
-Y1- 12+00 TO 13+50	RT.	182					182
						TOTAL	182
						SAY	**182**

COMPUTED BY: _____ DATE:_____
CHECKED BY:_____ DATE:_____

PROJECT NO.	SHEET NO.
R-5734A	3B-2

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

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

GUARDRAIL SUMMARY

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

SURVEY LINE	BEG. STA.	END STA.	LOCATION	LENGTH			WARRANT POINT		"N" DIST. FROM E.O.L.	TOTAL SHOUL WIDTH	FLARE LENGTH		W		ANCHORS									IMPACT ATTENUATOR TYPE 350		REMOVE EXISTING GUARDRAIL	REMARKS
				STRAIGHT	SHOP CURVED	DOUBLE FACED	APPROACH END	TRAILING END			APPROACH END	TRAILING END	APPROACH END	TRAILING END	XI MOD	TEMP GREU TL-3	GREU TL-3	GREU TL-2	TYPE III	CAT-1	B-77	AT-1	TES	G	NG		
-L-	12+48	14+21	RT																							177'	
-L-	18+56	19+61	LT																							113'	
-L-	19+50	25+07	RT	568.75'			20+05	25+07	12'	14'	50'		1'				1			1						194' , -L- RT 19+67 TO 21+55	
-Y2-	10+17	11+46	LT	93.75'	62.50'		10+50		5'-8'	8'-11'		25'		0.5				1		1							
-L-	28+37	31+25	RT	293.75'			28+50		2.5'	8'	50'		1'				1			1							
-L-	31+68	35+94	RT	431.25'				35+88	2.5'	8'	50'		1'				1			1							
-L-	38+40	41+41.33	RT	310.38'			39+00	41+41.33	10'	12'	50'		1'				1		1							296' , -L- RT 38+50 TO BRIDGE	
-L-	42+93.46	45+18	LT	235.38'				42+93.46	6.8'-7.5'	10'		50'		1'			1		1							245' , -L- LT BRIDGE TO 45+34	
-L-	42+93.47	44+75	RT	191.63'				42+93.47	6.8'-9.8'	8'									1	1						590' , -L- RT BRIDGE TO 48+83	
-L-	44+68	47+09	RT	243.75'			45+68	47+09	2.5'	8'	50'		1'				1			1							
			SUBTOTAL	2368.63'	62.50'												6	1	3	6							
	LESS DEDUCTIONS FOR ANCHORS																										
			GREU TL-3 @50' EA=	300.00'																							
			GREU TL-2 @25' EA=	25.00'																							
			TYPE III @18.75' EA=	56.25'																							
			CAT-1 @6.25' EA=	37.50'																							
			R-5734A TOTALS =	1949.88'	62.50'		ADDITIONAL POSTS = 10																				
			R-5734A SAY =	1950.00'	62.50'												6	1	3	6						1555.00'	
			17BP.14.R.154 TOTALS =	50.00'	50.00'		ADDITIONAL POSTS = 5											3	4				1				
			GRAND TOTAL =	**2000.00'**	**112.50'**		**ADDITIONAL POSTS = 15**										**6**	**4**	**7**	**6**		**1**				**1555.00'**	

TEMPORARY GUARDRAIL SUMMARY

-L-	16+50	19+67	RT	325.00'											1											FOR TRAFFIC CONTROL, SEE SHEET TMP-4	
	LESS DEDUCTIONS FOR ANCHORS																										
			GREU TL-3 @50' EA=	50.00'																							
			R-5734A TOTALS =	275.00'																							
			R-5734A SAY =	287.5'																							
			GRAND TOTAL =	**287.5'**											**1**												

BELAM-NEW

COMPUTED BY:	BNE	DATE:	5/25/2018
CHECKED BY:	JGD	DATE:	4/2/2018

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
R-5734A	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)

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 %
L 13+80	32 LT	0401		2055.1			
		0401	0402		2052.1	2050.4	
L 14+74	32 LT	0402		2053.7			
L 14+74	31 RT	0403A		2054.2			
		0403A	0403		2046.5	2046.4	
L 14+74	44 RT	0403		2053.4			
		0403	0404		2046.4	2046.0	0.3
L 15+75	43 RT	0404		2052.1			
		0404	0406		2046.0	2045.3	0.4
L 17+22	13 RT	0405		2050.9			
		0405	0406		2047.7	2047.1	
L 17+05	44 RT	0406		2051.6			
		0406	0410		2045.3	2042.6	0.4
L 18+50	13 RT	0407		2048.9			
		0407	0408		2045.7	2044.5	
L 19+25	13 RT	0408		2047.7			
		0408	0410		2044.5	2044.3	
L 19+00	80 RT	0409		2046.5			
		0409	0410		2046.5	2043.6	
L 19+25	51 RT	0410		2047.8			
		0410	0411		2042.6	2035.5	0.5
L 18+00	32 LT	0412		2048.6			
		0412	0413		2045.6	2044.1	
L 18+75	32 LT	0413		2047.4			
L 22+48	15 RT	0414		2043.1			
		0414	0415				
L 22+43	60 RT	0415		2033.5			
		0415	0416		2033.5	2032.5	
L 22+52	32 LT	0417		2040.5			
		0417	0501		2036.3	2033.2	
L 13+30	45 LT	0418		2056.5			
		0418	E0402		2050.0	2039.0	
L 23+99	34 LT	0501		2038.1			
L 23+98	13 RT	0502		2040.6			
L 23+97	53 RT	0503		2032.6			
		0503	0504		2032.6	2030.5	
Y1 11+05	23 RT	0505		2038.0			
		0505	0506		2038.0	2033.8	8.1
Y1 11+48	28 RT	0506		2039.0			
		0506	0507		2033.8	2033.5	
Y1 11+70	18 LT	0507		2038.7			
		0507	0508		2033.5	2032.2	
Y1 12+50	24 LT	0508		2036.4			
		0508	0510		2032.2	2030.3	
L 28+90	43 LT	0509		2034.8			
		0509	0510		2031.8	2031.6	
Y1 13+00	39 LT	0510		2034.6			
		0510	0511		2025.6	2025.2	
L 27+50	55 LT	0511		2032.7			
		0511	0512		2025.2	2025.1	0.4

FROM	TO	Drainage Pipe (RCP, CSP, CAAP, HDPE, or PVC)										C. S. PIPE						R. C. PIPE CLASS III								R. C. PIPE CLASS IV								
		15	18	24	30							15	18	24		30		15	18	24	30	36	42	48		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	.064	.064	.064		.079																		
0401																																		
0401	0402																									92								
0402																																		
0403A																																		
0403A	0403																												12					
0403																																		
0403	0404																													100				
0404																																		
0404	0406																													128				
0405																																		
0405	0406																									36								
0406																																		
0406	0410																													220				
0407																																		
0407	0408																									72								
0408																																		
0408	0410																									36								
0409																																		
0409	0410																			40														
0410																																		
0410	0411																					88												
0412																																		
0412	0413																									76								
0413																																		
0414																																		
0414	0415																																	
0415																																		
0415	0416	32							X																									
0417																																		
0417	0501																										144							
0418																																		
0418	E0402																							532										
0501																																		
0502																																		
0503																																		
0503	0504			28				X	X																									
0505																																		
0505	0506																									40								
0506																																		
0506	0507																												52					
0507																																		
0507	0508																												72					
0508																																		
0508	0510																												44					
0509																																		
0509	0510																									48								
0510																																		
0510	0511																												108					
0511																																		
0511	0512																												36					
SHEET TOTALS		32		28																40		88		532		400	144		324	448				

FROM	TO	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		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. (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/ GRATE STD. 840.29	G.D.I. (N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29	J.B. STD. 840.31 OR STD. 840.32	T.B.J.B. STD. 840.34	T.B.D.I. STD. 840.35	
		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	C.B. STD. 852.05														
0401			1			1			1																	
0401	0402																									
0402																										
0403A																										
0403A	0403																									
0403			1	2.0		1		1																		
0403	0404																									
0404			1	1.1		1		1																		
0404	0406																									
0405			1								1			1	1											
0405	0406																									
0406			1	1.3		1		1																		
0406	0410																									
0407			1								1			1	1											
0407	0408																									
0408			1								1			1	1											
0408	0410																									
0409																										
0409	0410																									
0410			1	0.2		1		1																		
0410	0411																									
0412			1			1			1																	
0412	0413																									
0413																										
0414			1	3.4																		1			1	
0414	0415																									
0415																										
0415	0416																									
0417			1			1			1																	
0417	0501																									
0418																										
0418	E0402																									
0501			1			1			1																	
0502			1	2.7																		1			1	
0503																										
0503	0504																									
0505																										
0505	0506																									
0506			1	0.3												1				1						
0506	0507																									
0507			1	0.1		1			1																	
0507	0508																									
0508			1			1			1																	
0508	0510																									
0509			1			1	1																			
0509	0510																									
0510			1	4.0		1			1																	
0510	0511																									
0511			1	2.5												1				1						
0511	0512																									
SHEET TOTALS			19	17.6		12	1	4	7		3			3	3	2				2		2			2	

FROM	TO	M.H. FRAME AND COVER STD. 840.54		CONVERT EXISTING C.B. TO T.B.J.B.	CONVERT EXISTING C.B. TO J.B.	CONVERT EXISTING D.I. TO J.B.	ADJUST C.B.	ADJUST M.H.		15" CURED-IN-PLACE PIPE	18" CURED-IN-PLACE PIPE	24" CURED-IN PLACE PIPE	30" CURED-IN-PLACE PIPE	15" DRAINAGE PIPE ELBOW	18" C.S. ELBOW		FLOWABLE FILL CY	CONCRETE COLLARS CL. "B" STD. 840.72 CY	CONCRETE AND BRICK PIPE PLUG STD. 840.71 CY	PIPE REMOVAL LIN. FT.	REMARKS
0401																					
0401	0402																				
0402							1														
0403A		1		1																	SEE DETAIL SHEET 2C-10
0403A	0403																				
0403																					
0403	0404																				
0404																					
0404	0406																				
0405																					
0405	0406																				
0406																					
0406	0410																				
0407																					
0407	0408																				
0408																					
0408	0410																				
0409																					
0409	0410																				
0410																					
0410	0411																				
0412																					
0412	0413																				
0413							1														
0414																					SEE DETAIL SHEET 2C-1 & 2C-9
0414	0415									48											
0415																		0.3990			
0415	0416																				
0417																					
0417	0501																				
0418																					
0418	E0402																				
0501																					
0502																					SEE DETAIL SHEET 2C-1 & 2C-9
0503																		0.5526			
0503	0504																				
0505																					
0505	0506																				
0506																					
0506	0507																				
0507																					
0507	0508																				
0508																					
0508	0510																				
0509																					
0509	0510																				
0510																					
0510	0511																				
0511																					
0511	0512																				
SHEET TOTALS		1		1			2			48								0.9516			

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

BELAM-NEW

COMPUTED BY: BNE DATE: 5/25/2018

CHECKED BY: JGD DATE: 4/2/2018

PROJECT NO.	SHEET NO.
R-5734A	3D-2

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)										C. S. PIPE						R. C. PIPE CLASS III								R. C. PIPE CLASS IV									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		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. (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/ GRATE STD. 840.29	G.D.I. (N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29	J.B. STD. 840.31 OR STD. 840.32	T.B.J.B. STD. 840.34	T.B.D.I. STD. 840.35		M.H. FRAME AND COVER STD. 840.54		CONVERT EXISTING C.B. TO T.B.J.B.	CONVERT EXISTING C.B. TO J.B.	CONVERT EXISTING D.I. TO J.B.	ADJUST C.B.	ADJUST M.H.		15" CURED-IN-PLACE PIPE	18" CURED-IN-PLACE PIPE	24" CURED-IN PLACE PIPE	30" CURED-IN-PLACE PIPE	15" DRAINAGE PIPE ELBOW	18" C.S. ELBOW		FLOWABLE FILL	CONCRETE COLLARS CL. "B" STD. 840.72	CONCRETE AND BRICK PIPE PLUG STD. 840.71	PIPE REMOVAL	REMARKS
SIZE THICKNESS OR GAUGE		FROM	TO	FT.	FT.	FT.	%	15	18	24	30		DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE	DO NOT USE PVC	15 .064	18 .064	24 .064		30 .079		15	18	24	30	36	42	48		15	18	24	30	36	42	48			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	C.B. STD. 852.05																															CY	CY	CY	LIN. FT.	
L 27+15	40 LT	0512		2034.9																																						1	4.9		1			1																																							
		0512	0514		2025.1	2024.9	0.5																												32																																																			
L 26+50	6 LT	0513		2037.0																																						1								1			1	1																																	
		0513	0514		2033.8	2028.3																										64																																																							
L 27+15	8 LT	0514		2036.8																																						1	5.0	1.9						1			1	1																																	
		0514	0515		2024.9	2023.9	0.5																												188																																																			
Y2 11+84	15 LT	0515		2033.0																																						1	4.1																				1				1																					
		0515	0516		2023.9	2023.5	0.5				28			X	X																																																																								
L 30+25	1 RT	0519		2036.7																																						1								1			1	1																																	
		0519	0521		2033.5	2033.3																										12																																																						
L 29+40	1 RT	0520		2036.8																																						1								1			1	1																																	
		0520	0521		2033.6	2033.3																										68																																																						
L 30+11	1 RT	0521		2036.7																																						1								1			1	1																																	
		0521	0522		2033.3	2032.3																										44																																																						
L 30+11	43 LT	0522		2035.4																																						1			1	1																																									
		0522	0523		2032.3	2031.5																										164																																																						
L 31+75	43 LT	0523		2035.8																																						1			1	1																																									
		0523	0524		2031.3	2028.6																											20																																																				
L 31+75	64 LT	0524		2032.0																																						1											1	1																																	
		0524	0525		2028.6	2028.4																			36																																																														
L 32+09	73 LT	0525		2034.8																																						1	1.4		1	1																																									
		0525	0526		2028.4	2028.3	0.3																		24																																																														
L 32+36	73 LT	0526		2034.8																																						1	1.5		1	1																																									
		0526	0527		2028.3	2027.3	0.5																		12																																																														
L 32+37	61 LT	0527		2035.5																																						1	3.3																					1			1																				
L 34+60	40 RT	0528		2035.4																																						1			1			1																																							
		0528	0534		2032.3	2030.6																										60																																																						
L 34+45	59 LT	0529		2034.5																																						1											1	1																																	
		0529	0530		2030.8	2030.5																												12																																																				Remove +/- 28' Extg. 24" RCP
L 34+45	45 LT	0530		2035.2																																						1			1		1																																								
		0530	0532		2030.5	2030.3																												44																																																					
L 33+50	54 LT	0531		2035.0																																						1			1			1																																							
		0531	0532		2031.9	2031.0																										52																																																							
L 34+01	50 LT	0532		2035.0																																						1			1	1																																									
		0532	0533		2030.3	2030.1	0.3																											40																																																					
L 34+01	11 LT	0533		2036.2																																						1	1.1							1			1	1																																	
		0533	0534		2030.1	2029.9	0.3																											44																																																					
L 34+01	33 RT	0534		2035.6																																						1	0.7		1	1																																									
		0534	0535		2029.9	2029.0	0.4																											164																																																					
L 32+37	33 RT	0535		2036.0																																						1	5.0	2.0	1		1																																							
		0535	0536		2024.0	2020.6	1.5				36		X																																																																										
L 32+50	64 RT	0536		2025.0																																						1											1	1																																	
		0536	0537		2020.6	2020.3	0.4				48			X	X																																																																								
DRWY1 11+17	11 LT	0538		2062.2																																						1														1			1																										
		0538	0539		2059.4	2059.0																										44																																																							
DRWY1 10+80	15 RT	0539		2063.0																																						1																					1				1																					
		0539	0512		2059.0	2031.9	0.6	160					X		X																																																												2							
DRWY1 13+40	12 RT	0540						24																																																																														
L 37+73	53 LT	0603		2035.1																																						1			1	1																																									
		0603	0605		2032.1	2030.7																										80																																																							
SHEET TOTALS								184			112														72							588	20	304	220							25	27.0	3.9	12	7	2	3		6			9	9		1			1			2	1			3												2							

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

BELAM-NEW

COMPUTED BY:	BNE	DATE:	5/25/2018
CHECKED BY:	JGD	DATE:	4/2/2018

PROJECT NO.	SHEET NO.
R-5734A	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)										C. S. PIPE						R. C. PIPE CLASS III								R. C. PIPE CLASS IV									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		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. (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/ GRATE STD. 840.29	G.D.I. (N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29	J.B. STD. 840.31 OR STD. 840.32	T.B.J.B. STD. 840.34	T.B.D.I. STD. 840.35		M.H. FRAME AND COVER STD. 840.54		CONVERT EXISTING C.B. TO T.B.J.B.	CONVERT EXISTING C.B. TO J.B.	CONVERT EXISTING D.I. TO J.B.	ADJUST C.B.	ADJUST M.H.		15" CURED-IN-PLACE PIPE	18" CURED-IN-PLACE PIPE	24" CURED-IN PLACE PIPE	30" CURED-IN-PLACE PIPE	15" DRAINAGE PIPE ELBOW	18" C.S. ELBOW		FLOWABLE FILL	CONCRETE COLLARS CL. "B" STD. 840.72	CONCRETE AND BRICK PIPE PLUG STD. 840.71	PIPE REMOVAL	REMARKS
SIZE		FROM	TO					15	18	24	30		DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE	DO NOT USE PVC	15	18	24		30		15	18	24	30	36	42	48		15	18	24	30	36	42	48			MASONRY	0' THRU 5'	A 5' THRU 10'	B 10' AND ABOVE		GRATE TYPE E	F	G		D.I. STD. 852.04 OR STD. 852.06	C.B. STD. 852.05																																			
THICKNESS OR GAUGE				FT.	FT.	FT.	%											.064	.064	.064		.079																			CY	EACH	LIN. FT.	LIN. FT.																																					CY	CY	CY	LIN. FT.	
L 35+74	53 LT	0604		2035.4																																						1			1	1																																						
		0604	0605		2032.4	2030.7																										116																																																				
L 36+92	54 LT	0605		2035.2																																						1			1			1																																				
		0605	0606		2030.4	2030.2																											8																																																		Remove +/- 6' Extg. 18" RCP
L 36+92	48 LT	0606		2030.2																																																																													0.4465			
L 37+75	33 RT	0607		2035.6																																						1			1	1																																						
		0607	0608		2032.6	2031.9																										84																																																			
L 36+91	33 RT	0608		2035.8																																						1	3.9		1		1																																					
L 41+20	37 LT	0609		2034.8																																						1			1			1																																				
		0609	0610		2031.8	2030.2		32						X	X																																																																						
L 39+47	50 LT	0611		2035.2																																																																			1														
L 40+55	45 LT	0612		2035.0																																																																			1														
L 48+10	38 LT	0701		2058.9																																						1			1		1																																					
		0701	0702		2055.9	2055.1																										12																																																			
L 47+97	38 LT	0702		2058.1																																						1			1		1																																					
		0702	0702A		2053.9	2053.8																		4																																																												0.3990			
L 47+65	5 RT	0703		2057.3																																						1								1			1	1																																
		0703	0704		2054.1	2054.0																										24																																																			
L 47+91	6 RT	0704		2057.3																																						1																					1				1																					
L 47+87	33 RT	0705		2056.0																																																																	1																SEE DETAIL SHEET 2C-6
		0705	0708		2052.1	2051.0																										36																																																			
L 47+35	65 RT	0706		2053.6																																						1			1			1																																				
		0706	0707		2050.6	2050.6																										16																																																			
L 47+50	71 RT	0707		2054.5																																						1			1			1																																				
		0707	0708		2050.5	2050.0																										32																																																			
L 47+85	70 RT	0708		2057.5																																																																				1													
L 50+50	63 LT	0709		2070.2																																						1														1			1																											
		0709	0710		2067.5	2067.0																		16																																																														
L 50+59	50 LT	0710		2074.0																																																														1				1																SEE DETAIL SHEET 2C-6
		0710	0735																																																																								111											
L 58+85	7 LT	0711		2124.5																																						1	0.2							1			1	1																																
		0711	0712		2119.3	2116.3																										84																																																				
L 58+00	7 LT	0712		2119.5																																						1								1			1	1																																
		0712	0714		2116.3	2099.3																										248																																																				
L 55+54	38 LT	0713		2103.8																																						1			1		1																																					
		0713	0713A		2100.1	2100.0	1.0																									4																																																		0.3990			
L 55+50	0 CL	0714		2105.1																																						1	0.8																				1				1																					
L 56+80	38 RT	0715		2111.3																																						1			1			1																																				
		0715	0718		2106.6	2097.6	0.5																													132																																																
Y5 10+79	17 LT	0716		2110.0																																																																			1														
Y5 10+77	19 RT	0717		2109.3																																																																			1														
L 55+47	33 RT	0718		2103.5																																																										1			1																					
		0718	0719		2097.1	2096.3	0.4																														28																																																		Remove +/- 9' Extg. 24" CMP
L 55+20	38 RT	0719		2101.5																																						1	0.3		1			1																																				
		0719	0720		2096.3	2085.0	0.4																														188																																																		
L 53+30	38 RT	0720		2090.3																																						1	0.3		1			1																																				
		0720	0721		2085.0	2078.6	0.4																														104																																																		
L 52+25	38 RT	0721		2084.4																																						1	0.8		1			1																																				
		0721	0726		2078.6	2076.5	0.4																														16																																																		
0722 OMITTED																																																																																						
SHEET TOTALS								32																20								656	8			132	336					20	6.3		14	2	4	8		3			3	3		1			1			2	1			4			1	1	4	1			111								1.2445			

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

BELAM-NEW

COMPUTED BY: BNE **DATE:** 5/25/2018
CHECKED BY: JGD **DATE:** 4/2/2018

PROJECT NO.	SHEET NO.
R-5734A	3D-4

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

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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)										C. S. PIPE						R. C. PIPE CLASS III								R. C. PIPE CLASS IV									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		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. (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/ GRATE STD. 840.29	G.D.I. (N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29	J.B. STD. 840.31 OR STD. 840.32	T.B.J.B. STD. 840.34	T.B.D.I. STD. 840.35		M.H. FRAME AND COVER STD. 840.54		CONVERT EXISTING C.B. TO T.B.J.B.	CONVERT EXISTING C.B. TO J.B.	CONVERT EXISTING D.I. TO J.B.	ADJUST C.B.	ADJUST M.H.		15" CURED-IN-PLACE PIPE	18" CURED-IN-PLACE PIPE	24" CURED-IN PLACE PIPE	30" CURED-IN-PLACE PIPE	15" DRAINAGE PIPE ELBOW	18" C.S. ELBOW		FLOWABLE FILL	CONCRETE COLLARS CL. "B" STD. 840.72	CONCRETE AND BRICK PIPE PLUG STD. 840.71	PIPE REMOVAL	REMARKS
SIZE								15	18	24	30		DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE	DO NOT USE PVC	15	18	24		30		15	18	24	30	36	42	48		15	18	24	30	36	42	48			MASONRY	0' THRU 5'	A 5' THRU 10'	B 10' AND ABOVE		GRATE TYPE				D.I. STD. 852.04 OR STD. 852.06	C.B. STD. 852.05																																				
THICKNESS OR GAUGE		FROM	TO															.064	.064	.064		.079																																																																
				FT.	FT.	FT.	%																																		CY	EACH	LIN. FT.	LIN. FT.		E	F	G																																		CY	CY	CY	LIN. FT.	
L 53+05	52 LT	0723		2089.0																																						1																			1			1																								
		0723	0724		2086.3	2085.0	0.8																									16																																																								
L 52+95	38 LT	0724		2088.0																																						1			1		1																																									
		0724	0725		2085.0	2079.5	1.4																									80																																																								
L 52+14	38 LT	0725		2083.1																																						1			1		1																																									
		0725	0725A		2079.5	2079.4																										4																																																					0.3990			
L 52+08	33 RT	0726		2082.9																																						1	1.4																					1			1																				
		0726	0729		2076.5	2072.7	0.6																														52																																																		
Y4 10+84	15 RT	0727		2079.8																																																																				1															
Y4 10+85	19 LT	0728		2079.8																																																																				1															
L 51+58	42 RT	0729		2079.9																																						1	2.6																					1			1																				
		0729	0730		2072.3	2068.0	0.4																															92																																																
L 50+65	49 RT	0730		2073.9																																						1	0.9		1			1																																									
		0730	0731		2068.0	2066.0	0.4																							76																																																											
L 49+89	67 RT	0731		2073.0																																																																1				1																		SEE DETAIL SHEET 2C-6
DRWY2 10+66	17 RT	0732		2063.9																																																																				1															
L 51+90	7 RT	0733		2082.8																																						1								1			1	1																																				
		0733	0734		2079.6	2077.8																										32																																																								
L 51+58	6 LT	0734		2081.0																																						1								1			1	1																																				
		0734	0729		2077.8	2075.0																										48																																																								
L 49+90	41 RT	0735		2069.6																																																																					1														
RPD 12+12	13 RT	0801		2151.8																																						1								1			1	1																																				
		0801	0802		2148.6	2146.6																										92																																																								
L 65+01	61 LT	0803		2154.2																																						1																				1				1																				
		0803	0804		2149.2	2138.0																			304																																																															
L 62+00	61 LT	0804		2141.0																																						1														1			1																													
		0804	0805		2138.0	2137.7																			24																																																															
L 61+76	64 LT	0805		2142.3																																						1	0.1																			1				1																				
		0805	0806		2137.2	2136.8	3.7													12																																																																		
L 61+73	54 LT	0806		2136.8																																																																																		0.5526			
		0806	0826																																																																											102										
L 64+25	7 LT	0807		2149.9																																						1								1			1	1																																				
		0807	0808		2146.7	2142.3																										108																																																									
L 63+15	5 RT	0808		2145.5																																						1								1			1	1																																				
		0808	0809		2142.3	2138.0																										104																																																									
L 62+10	5 RT	0809		2141.2																																						1								1			1	1																																				
		0809	0810		2138.0	2136.4																										16																																																								
L 61+95	5 RT	0810		2140.5																																						1																					1			1																				
		0810	0839																																																																										58												
L 65+00	44 RT	0811		2150.7																																						1			1			1																																									
		0811	0812		2147.7	2146.8																		20																																																																
L 65+00	63 RT	0812		2149.5																																						1														1			1																													
		0812	0814		2146.8	2138.3																		244																																																																
L 62+50	44 RT	0813		2140.4																																						1			1			1																																									
		0813	0814		2138.3	2138.3																		16																																																																
L 62+50	59 RT	0814		2141.0																																						1														1			1																													
		0814	0818		2138.3	2133.6	0.6																	64																																																																
Y7 12+15	14 RT	0815		2140.3																																						1			1			1																																									
		0815	0816		2137.3	2137.0																										36																																																								
Y7 12+15	24 LT	0816		2140.0																																						1			1		1																																									
SHEET TOTALS																				12				344	328					76		536					52	92				22	5.0		7		3	4		6			6	6		3			3		1	2	3	1		6				1	3	1		58		102						0.9516			

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

BELAM-NEW

COMPUTED BY:	BNE	DATE:	5/25/2018
CHECKED BY:	JGD	DATE:	4/2/2018

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
R-5734A	3D-5

**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	TO	TOP ELEVATION FT.	INVERT ELEVATION FT.	INVERT ELEVATION FT.	MINIMUM REQUIRED SLOPE %	Drainage Pipe (RCP, CSP, CAAP, HDPE, or PVC) 15	18	24	30	DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE	DO NOT USE PVC	C. S. PIPE 15 .064	18 .064	24 .064	30 .079	R. C. PIPE CLASS III 15	18	24	30	36	42	48	R. C. PIPE CLASS IV 15	18	24	30	36	42	48
		0816	0817		2137.0	2133.8																						68						
Y7 11+40	24 LT	0817		2136.8																														
		0817	0818		2133.8	2133.6																						52						
Y7 10+75	41 LT	0818		2137.3																														
		0818	0839		2133.6	2133.5	0.5																						16					
Y7 10+76	2 RT	0819		2136.3																														
		0819	0820		2132.6	2132.0																							28					
Y7 10+75	30 RT	0820		2135.4																														
		0820	0826		2132.0	2131.1																							44					
L 65+50	7 LT	0821		2153.6																														
		0821	0822		2150.4	2148.6																						60						
L 64+88	7 LT	0822		2151.8																														
		0822	0807		2148.6	2146.7																						60						
0823-0824 OMITTED																																		
Y6 10+92	23 RT	0825		2141.3																														
L 61+24	35 RT	0826		2136.2																														
		0826	0830																															
L 59+18	63 RT	0827		2124.1																														
L 59+50	49 RT	0828		2126.1																														
		0828	0829		2123.1	2121.7																						12						
L 59+36	44 RT	0829		2125.8																														
L 59+37	34 RT	0830		2126.1																														
		0830	0715		2120.1	2106.6	0.5																									256		
L 59+70	7 LT	0831		2129.5																														
		0831	0711		2126.3	2121.3																						84						
RPD 13+25	15 LT	0835		2154.2																														
		0835	0836		2151.2	2151.0															32													
Y9 10+78	0 CL	0837			2137.1	2136.5												36																
		0837	0838																															
L 59+42	26 LT	0838		2128.9																														
		0838	0830																															
L 61+71	60 RT	0839		2137.6																														
		0839	0826																															
L 36+18	56 LT																																	
L 36+54	63 LT																																	
L 56+05	33 RT																																	
L 57+99	34 RT																																	
L 53+78	33 RT																																	
L 33+43	34 LT																																	
L 17+22	40 RT																																	
L 27+04	40 LT																																	
Y1 12+99	1 RT																																	
L 27+37	34 LT																																	
L 27+89	52 LT																																	
L 15+97	32 RT																																	
L 18+49	44 RT																																	
L 50+77	42 RT																																	
Y7 12+33	18 LT																																	
L 22+50	9 LT																																	
SHEET TOTALS																		36			32							336	88			256		

LINE & STATION	FROM	TO	DRAINAGE STRUCTURE MASONRY CY	QUANTITIES FOR DRAINAGE STRUCTURES (NOTE: TOTAL LIN. FT. FOR PAY QUANTITY SHALL BE A + (1.3 X B)) A 0' THRU 5' EACH	B 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	C.B. STD. 852.05	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. (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/ GRATE STD. 840.29	G.D.I. (N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29	J.B. STD. 840.31 OR STD. 840.32	T.B.J.B. STD. 840.34	T.B.D.I. STD. 840.35	M.H. FRAME AND COVER STD. 840.54	CONVERT EXISTING C.B. TO T.B.J.B.	CONVERT EXISTING C.B. TO J.B.	CONVERT EXISTING D.I. TO J.B.	ADJUST C.B.	ADJUST M.H.	15" CURED-IN-PLACE PIPE	18" CURED-IN-PLACE PIPE	24" CURED-IN PLACE PIPE	30" CURED-IN-PLACE PIPE	15" DRAINAGE PIPE ELBOW	18" C.S. ELBOW	FLOWABLE FILL CY	CONCRETE COLLARS CL. "B" STD. 840.72 CY	CONCRETE AND BRICK PIPE PLUG STD. 840.71 CY	PIPE REMOVAL LIN. FT.	REMARKS
	0816	0817																																								
Y7 11+40	0817			1			1		1																																	
	0817	0818																																								
Y7 10+75	0818			1			1			1																																
	0818	0839																																								
Y7 10+76	0819			1							1			1	1																											
	0819	0820																																								
Y7 10+75	0820			1			1			1																																
	0820	0826																																								
L 65+50	0821			1							1			1	1																											
	0821	0822																																								
L 64+88	0822			1							1			1	1																											
	0822	0807																																								
0823-0824 OMITTED																																										
Y6 10+92	0825			1			1		1																																	
L 61+24	0826																														1											
	0826	0830																																	185							
L 59+18	0827																													1												
L 59+50	0828			1			1			1																																
	0828	0829																																								
L 59+36	0829																										1	1															SEE DETAIL SHEET 2C-10
L 59+37	0830																														1											
	0830	0715																																								
L 59+70	0831			1							1			1	1																											
	0831	0711																																								
RPD 13+25	0835			1			1		1																																	
	0835	0836																																								
Y9 10+78	0837																																				1					Remove +/- 33' Extg. 18" CSP
	0837	0838																															84									
L 59+42	0838			1																				1		1																
	0838	0830																															60									
L 61+71	0839			1																				1		1																
	0839	0826																																53								
L 36+18																																									68	
L 36+54																																								0.065		
L 56+05																																									114	
L 57+99																																									271	
L 53+78																																									337	
L 33+43																																						9				
L 17+22																																									16	
L 27+04																																									12	
Y1 12+99																																									99	
L 27+37																																									62	
L 27+89																																									28	
L 15+97																																									245	
L 18+49																																									254	
L 50+77																																									162	
Y7 12+33																																									61	
L 22+50																																						2				
SHEET TOTALS				12			6		3	3	4			4	4									2		3	1			1	2		144	53	185		1	11		0.065	1729	

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

BELAM-NEW

COMPUTED BY:	BNE	DATE:	5/25/2018
CHECKED BY:	JGD	DATE:	4/2/2018

PROJECT NO.	SHEET NO.
R-5734A	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) 15	Drainage Pipe 18	Drainage Pipe 24	Drainage Pipe 30	Drainage Pipe	DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE	DO NOT USE PVC
Y7 13+05	23	RT																
L 32+17	58	LT																
L 33+10	42	LT																
Y2 11+84	35	LT																
SHEET TOTALS																		
PROJECT TOTALS									248		28	112						

LINE & STATION	C. S. PIPE 15 .064	C. S. PIPE 18 .064	C. S. PIPE 24 .064	C. S. PIPE	C. S. PIPE 30 .079	C. S. PIPE	R. C. PIPE CLASS III 15	R. C. PIPE CLASS III 18	R. C. PIPE CLASS III 24	R. C. PIPE CLASS III 30	R. C. PIPE CLASS III 36	R. C. PIPE CLASS III 42	R. C. PIPE CLASS III 48	R. C. PIPE CLASS III	R. C. PIPE CLASS IV 15	R. C. PIPE CLASS IV 18	R. C. PIPE CLASS IV 24	R. C. PIPE CLASS IV 30	R. C. PIPE CLASS IV 36	R. C. PIPE CLASS IV 42	R. C. PIPE CLASS IV 48	R. C. PIPE CLASS IV
Y7 13+05																						
L 32+17																						
L 33+10																						
Y2 11+84																						
SHEET TOTALS																						
PROJECT TOTALS		36	12				396	400	40		88		608		2516	260	304	544	836	388	92	

LINE & STATION		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	CONCRETE TRANSITIONAL SECTION C.B. STD. 852.05
Y7 13+05												
L 32+17												
L 33+10												
Y2 11+84												
SHEET TOTALS												
PROJECT TOTALS			98	61.0		51	10	16	25		22	

LINE & STATION	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. (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/ GRATE STD. 840.29	G.D.I. (N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29	J.B. STD. 840.31 OR STD. 840.32	T.B.J.B. STD. 840.34	T.B.D.I. STD. 840.35		M.H. FRAME AND COVER STD. 840.54		CONVERT EXISTING C.B. TO T.B.J.B.	CONVERT EXISTING C.B. TO J.B.	CONVERT EXISTING D.I. TO J.B.	ADJUST C.B.	ADJUST M.H.		15" CURED-IN-PLACE PIPE	18" CURED-IN-PLACE PIPE	24" CURED-IN PLACE PIPE	30" CURED-IN-PLACE PIPE	15" DRAINAGE PIPE ELBOW	18" C.S. ELBOW		FLOWABLE FILL CY	CONCRETE COLLARS CL. "B" STD. 840.72 CY	CONCRETE AND BRICK PIPE PLUG STD. 840.71 CY	PIPE REMOVAL LIN. FT.	REMARKS
Y7 13+05																													3				
L 32+17																													38				
L 33+10																																17	
Y2 11+84																															0.065		
SHEET TOTALS																													41		0.065	17	
PROJECT TOTALS		25	25	2	5			7		3	6	7	3		17		2	1	2	10	4		106	255	155	185	2	1		52	3.1477	0.130	1746	

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:	DATE:
CHECKED BY:	DATE:

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
R-5734 A	3D-7

Note: Invert Elevations indicated are for Bid Purposes only and shall not be used for project construction stakeout.

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

STATION	LOCATION (LT, RT, OR CL)'	STRUCTURE NO.		TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	DRAINAGE PIPE (RCP, CSP, CAAP, HDPE, or PVC)											C.S. PIPE							R.C. PIPE CLASS III							R.C. PIPE CLASS IV							ENDWALLS STD. 838.01 838.11 OR STD. 838.80 (UNLESS NOTED OTHERWISE)		QUANTITIES FOR DRAINAGE STRUCTURES	*TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL.'B')		C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STANDARD 840.03			CONCRETE TRANSITIONAL SECTION		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 W/ GRATE STD. 840.20	G.D.I. FRAME W/2 GRATES STD. 840.22	G.D.I. (N.S.) 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 840.32	T.B.J.B STD 840.34	T.B.D.I. STD. 840.35	PRECAST M.H. STD. 840.52	M.H. FRAME AND COVER STD. 840.54		CONVERT EXISTING C.B. TO T.B.J.B.	CONVERT EXISTING C.B. TO J.B.	CONVERT EXISTING D.I. TO J.B.	ADJUST C.B.	ADJUST M.H.		15" CURED-IN-PLACE PIPE	18" CURED-IN-PLACE PIPE	24" CURED-IN-PLACE PIPE	30" CURED-IN-PLACE PIPE	15" DRAINAGE PIPE ELBOW	18" C.S. ELBOW	FLOWABLE FILL	CONCRETE COLLARS CL. "B" C.Y. STD. 840.72	CONCRETE AND BRICK PIPE PLUGS STD. 840.71	PIPE REMOVAL	ABBREVIATIONS
SIZE								15"	18"	24"	30"	36"	42"	48"	DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE	15"	18"	24"	30"	36"	42"	48"	15"	18"	24"	30"	36"	42"	48"	15"	18"	24"	30"	36"	42"	48"	CU. YARDS		PER EACH (0' THRU 5.0')	LIN. FT.																																								
THICKNESS OR GAUGE		FROM	TO																.064	.064	.064	.064	.079	.079	.109															R.C.P.	C.S.P.		A	B		TYPE OF GRATE			D.I. STD 852.04 OR 852.06	C.B. STD. 852.05																																				
																																											5.0' THRU 10.0'	10.0' AND ABOVE		E	F	G																															CY	CY	CY	LIN. FT.	REMARKS
R-5734B TOTAL								248		28	112									36	12					396	400	40		88		608	2516	260	304	544	836	388	92			98	61.0		51	10	16	25	22		25	25	2	5					7	3	6	7	3		17		2	1	2	10	4		106	255	155	185	2	1	52	3.1477	0.130	1746	
17BP.14.R.154 TOTAL																																	12	116								3	0.1											1					1	1			1	1	1																		
COMBINED TOTAL								248		28	112									36	12					396	400	40		88		608	2528	376	304	544	836	388	92			101		61.1	51	10	16	25	22		25	25	2	6					8	4	6	7	4	1	18		2	1	2	10	4		106	255	155	185	2	1	52	3.1477	0.13	1746	

ABBREVIATIONS

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

COMPUTED BY: Jeremy Hamm DATE: 3/15/2018
CHECKED BY: Scott Hunsberger DATE: 3/15/2018

PROJECT NO.	SHEET NO.
R-5734A	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 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			ASU	18	150	250	250		
			TOTAL CY/TONS/SY:		150	250**	250**	0	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 ROCK PLATING

LINE	Beginning Slope (H:V)	Approx. Station	Ending Slope (H:V)	Approx. Station	Location LT/RT	Rock Plating Detail No. 1/2/3/4	Riprap Class* 1/2/B	Rock Plating SY
-L-	1.5:1	46+00	1.75:1	47+25	RT	Special	-	200
							TOTAL SY:	200

*Use Class 1, 2 or B riprap if riprap class is not shown for rock plating location.

SUMMARY OF REINFORCED SOIL SLOPES AND SLOPE EROSION CONTROL

LINE	Beginning Slope/ RSS (H:V)	Approx. Station	Ending Slope/ RSS (H:V)	Approx. Station	Location LT/RT	Reinforced Soil Slope (RSS) SY	Geocells SY	Coir Fiber Mat SY	Matting for Erosion Control SY
-L-	1.5:1	23+75	1.5:1	24+25	RT	130		130	
					TOTAL SY:	130	0	130*	0**

*Total square yards of "Coir Fiber Mat" is only the estimated quantity for slopes steeper than 2:1 (H:V) and may only represent a portion of the coir fiber mat quantity shown in the Item Sheets of the Proposal.
**Total square yards of "Matting for Erosion Control" is only the estimated quantity for RSS and may only represent a portion of the matting quantity shown in the Item Sheets of the Proposal.

PROJ. REFERENCE NO.	SHEET NO.
R-5734A	3P-1

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PARCEL INDEX SHEET

PARCEL No.	SHEET No.	PROPERTY OWNER NAME
1	4	CARL BLANTON
2	4	JAMES VANDER WOUDE
3	4	B AND B CONCRETE PRODUCTS INC
4	4,5	VIOLET KLATT REVOCABLE TRUST
6	5	DANNY CHARLES BATES
6A	5	NELSON BATES
7	5	BECKY MCINTOSH
8	5	M&T DEVELOPMENT LLC
9	5,6	INGLE'S MARKET INCORPORATED
10	5	FAIR ASSOCIATION
11	5,6	MACON COUNTY
12	6,7	HARRIS DIVERSIFIED SERVICES LLC
13	6	SOUTHERN CONCRETE MATERIALS INC
14	6,7	MILDRED B BATES
15	7	CAROLINA PIZZA CO INC PIZZA HUT #101
16	7	DA INVESTMENT & DEVELOPMENT GROUP, LLC
17	7	BRUMIT AND BRUMIT PROPERTIES LLC
18	7	RFBC ENTERPRISES, LLC
19	8	PHILIP CALVIN DRAKE

PARCEL No.	SHEET No.	PROPERTY OWNER NAME

PROJECT REFERENCE NO.	SHEET NO.
R-5734A	4
R/W SHEET NO.	

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RALEIGH, NORTH CAROLINA 27606
NC COA No. C-0890

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 022037 ENGINEER
STEPHEN E. SMALLWOOD
6/7/2018

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 26971 ENGINEER
JOSHUA G. DALTON
6/7/2018

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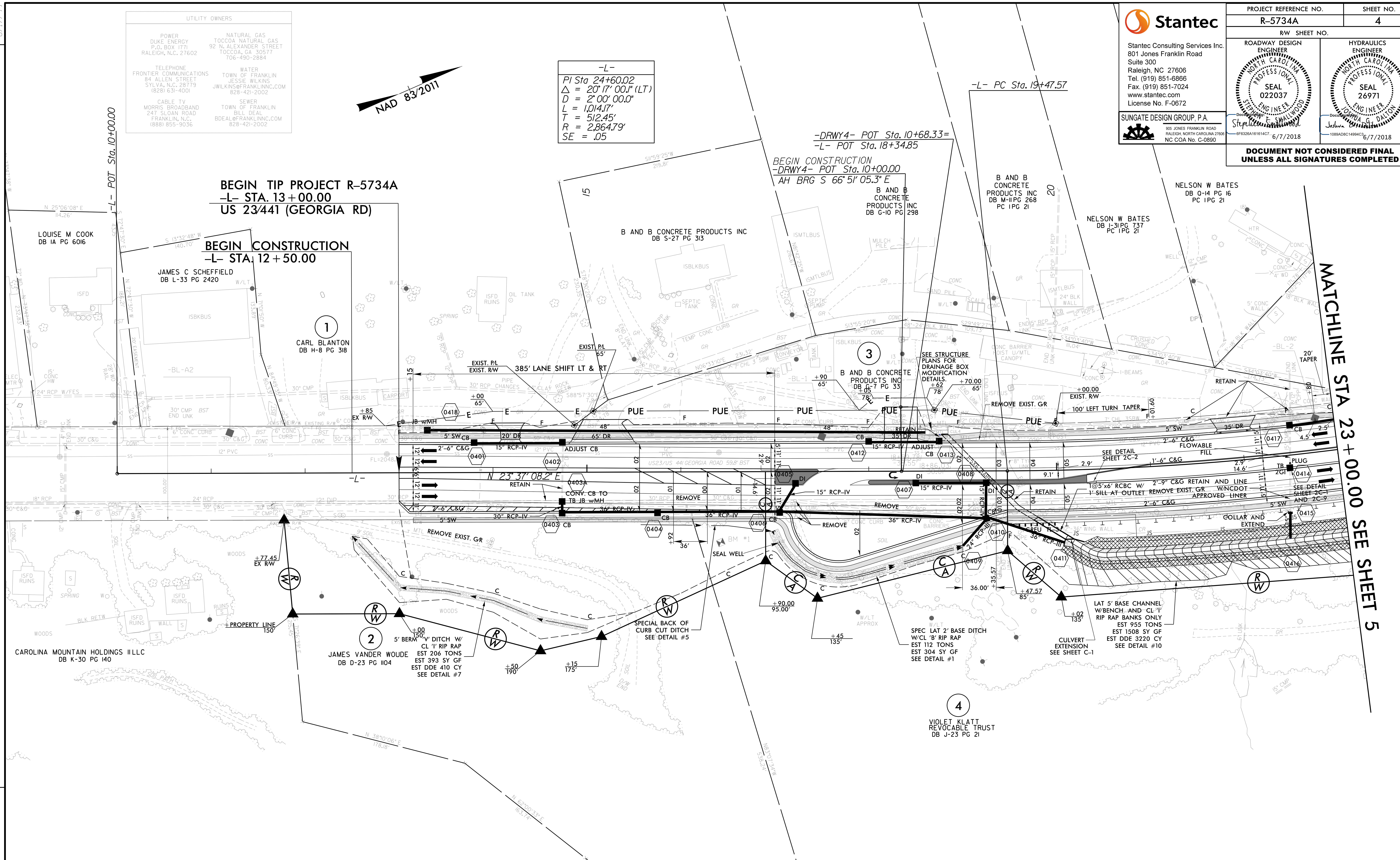
REVISIONS


UTILITY OWNERS
POWER
DUKE ENERGY
P.O. BOX 1771
RALEIGH, N.C. 27602
NATURAL GAS
TOCCOA NATURAL GAS
92 N. ALEXANDER STREET
TOCCOA, GA 30577
706-490-2884
TELEPHONE
FRONTIER COMMUNICATIONS
84 ALLEN STREET
SYLVA, N.C. 28779
(828) 631-4001
WATER
TOWN OF FRANKLIN
JESSIE WILKINS
JWILKINS@FRANKLINNC.COM
828-421-2002
CABLE TV
MORRIS BROADBAND
247 SLOAN ROAD
FRANKLIN, N.C.
(888) 855-9036
SEWER
TOWN OF FRANKLIN
BILL DEAL
BDEAL@FRANKLINNC.COM
828-421-2002
NAD 83/2011
-L-
PI Sta 24+60.02
Δ = 20° 17' 00.1" (LT)
D = 2° 00' 00.0"
L = 1,014.17'
T = 512.45'
R = 2,864.79'
SE = .05
-L- PC Sta. 19+47.57
-DRWY4- POT Sta. 10+68.33=
-L- POT Sta. 18+34.85
BEGIN CONSTRUCTION
-DRWY4- POT Sta. 10+00.00
AH BRG S 66° 51' 05.3" E
BEGIN TIP PROJECT R-5734A
-L- STA. 13+00.00
US 23/441 (GEORGIA RD)
BEGIN CONSTRUCTION
-L- STA. 12+50.00
-L- POT Sta. 10+00.00
LOUISE M COOK
DB 1A PG 6016
JAMES C SCHEFFIELD
DB L-33 PG 2420
CARL BLANTON
DB H-8 PG 318
B AND B CONCRETE PRODUCTS INC
DB S-27 PG 313
B AND B CONCRETE PRODUCTS INC
DB G-10 PG 298
B AND B CONCRETE PRODUCTS INC
DB M-11 PG 268
PC 1 PG 21
NELSON W BATES
DB O-14 PG 16
PC 1 PG 21
NELSON W BATES
DB J-31 PG 737
PC 1 PG 21
B AND B CONCRETE PRODUCTS INC
DB G-7 PG 33
SEE STRUCTURE PLANS FOR DRAINAGE BOX MODIFICATION DETAILS.
385' LANE SHIFT LT & RT
100' LEFT TURN TAPER
REMOVE EXIST. GR
N 23° 37' 08.2" E
5" MONOLITHIC ISLAND
FLOWABLE FILL
CONV. CB TO TB JB wMH
REMOVE EXIST. GR
SEAL WELL
SPECIAL BACK OF CURB CUT DITCH
SEE DETAIL #5
5' BERM 'V' DITCH W/ CL 'I' RIP RAP
EST 206 TONS
EST 393 SY GF
EST DDE 410 CY
SEE DETAIL #7
SPEC LAT 2' BASE DITCH W/CL 'B' RIP RAP
EST 112 TONS
EST 304 SY GF
SEE DETAIL #1
CULVERT EXTENSION
SEE SHEET C-1
LAT 5' BASE CHANNEL W/BENCH AND CL 'I' RIP RAP BANKS ONLY
EST 955 TONS
EST 1508 SY GF
EST DDE 3220 CY
SEE DETAIL #10
CAROLINA MOUNTAIN HOLDINGS II LLC
DB K-30 PG 140
JAMES VANDER WOUDE
DB D-23 PG 1104
VIOLET KLATT REVOCABLE TRUST
DB J-23 PG 21
MATCHLINE STA 23+00.00 SEE SHEET 5

5" MONOLITHIC ISLAND (KEYED-IN)

SIDEWALK

NOTE: SEE SHEET 9 FOR -L- PROFILE
SEE SHEET 2B-1 FOR U-TURN BULB DETAIL
SEE SHEET 2D-1 FOR DITCH DETAILS
SEE STRUCTURE SHEETS C1 THRU C5 FOR CULVERT DETAILS
SEE STRUCTURE SHEETS C6 THRU C7 FOR DRAINAGE BOX MOD. DETAILS

6/6/2018
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-L-	-DRWY1-		
PI Sta 24+60.02	PI Sta 10+71.99	PI Sta 12+21.14	PI Sta 14+47.06
△ = 20° 17' 00.1" (LT)	△ = 71° 29' 51.8" (LT)	△ = 51° 49' 02.8" (RT)	△ = 61° 29' 39.7" (RT)
D = 2° 00' 00.0"	D = 57° 17' 44.8"	D = 49° 49' 20.7"	D = 57° 17' 44.8"
L = 1,014.17'	L = 124.79'	L = 104.00'	L = 107.33'
T = 512.45'	T = 71.99'	T = 55.86'	T = 59.49'
R = 2,864.79'	R = 100.00'	R = 115.00'	R = 100.00'
SE = .05	SE = NC	SE = NC	SE = NC

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NC COA No. C-0890

PROJECT REFERENCE NO.	SHEET NO.
R-5734A	5
RW SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 022037 ENGINEER
PETER A SMALLWOOD
DocuSigned by: GF6326A161614C7...
7/25/2018

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 26971 ENGINEER
JOHN D DALTON
DocuSigned by: 1089ADBC14994C3...
7/25/2018

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REVISIONS 8/17/99

MATCHLINE STA 23+00.00 SEE SHEET 4

MATCHLINE STA 35+00.00 SEE SHEET 6

NAD 83/2011

BEG. CONSTRUCTION -DRWY1- STA 10+00.00 N 49° 20' 49.8" W

PT Sta. 11+24.79

PC Sta. 11+65.28

PT Sta. 12+69.28

PC Sta. 13+87.57

PRC Sta. 11+86.73 -Y1-

PT Sta. 14+94.90

BEGIN CONSTRUCTION -Y1- STA 10+90.00

-Y1- PC Sta. 10+90.24

-Y1- POT Sta. 10+00.00

-DRWY1- POT Sta. 15+10.18

-Y1- POC Sta. 11+30.00

-Y1- PT Sta. 13+58.86

-L- PT Sta. 29+61.74

-L- POC Sta. 27+83.56 = -Y1- POT Sta. 14+13.81 BK BRG S 65° 51' 39.5" E -Y2- POT Sta. 10+00.00

-Y2- PC Sta. 11+39.22 BK BRG S 65° 51' 39.5" E

END CONSTRUCTION -Y2- STA 12+20.00

-Y2- PT Sta. 12+69.16

-Y2- POT Sta. 13+33.82 BK BRG = S 89° 07' 36.2" E

END CONSTRUCTION -DRWY5- STA 10+80.00

-DRWY5- POT Sta. 10+90.68

AH BRG N 81° 06' 52.7" E -DRWY5- POT Sta. 10+00.00= -L- POT Sta. 31+38.97=

-BY1-15 9+65.69 POT

-BY2-16

-Y1-	-Y2-
PI Sta 11+39.09	PI Sta 12+83.03	PI Sta 12+05.10
△ = 22° 06' 45.3" (RT)	△ = 64° 02' 32.6" (LT)	△ = 23° 15' 56.6" (LT)
D = 22° 55' 05.9"	D = 37° 12' 18.2"	D = 17° 54' 17.8"
L = 96.48'	L = 172.13'	L = 129.94'
T = 48.85'	T = 96.31'	T = 65.88'
R = 250.00'	R = 154.00'	R = 320.00'
SE = NC	SE = .03	SE = EXIST.

[AB AB] ARCHAEOLOGICAL BOUNDARY
5" MONOLITHIC ISLAND (KEYED-IN)
SIDEWALK

NOTE: SEE SHEET 9 FOR -L- PROFILE
SEE SHEET 11 FOR -Y1- PROFILE
SEE SHEET 11 FOR -Y2- PROFILE
SEE SHEET 2B-1 FOR -Y1-/-Y2- INTERSECTION DETAIL
SEE SHEET 2D-1 FOR DITCH DETAILS

7/25/2018
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cmcraig

PROJECT REFERENCE NO.	SHEET NO.
R-5734A	6
R/W SHEET NO.	

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ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 022037 — STEPHEN E. SMALLWOOD — 6/7/2018

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 26971 — JOSHUA C. DALTON — 6/7/2018

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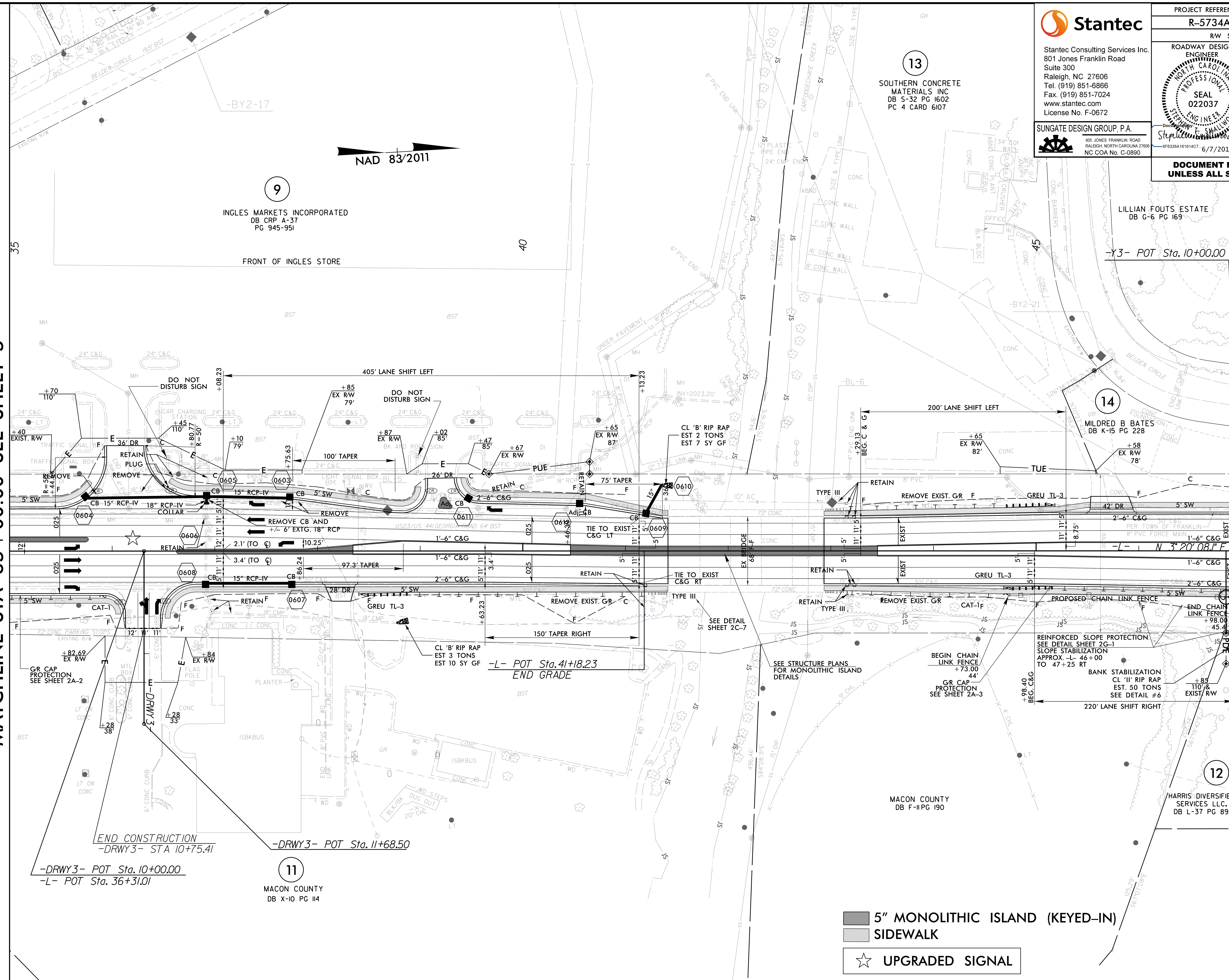
REVISIONS

MATCHLINE STA 35+00.00 SEE SHEET 5

MATCHLINE STA 47+00.00 SEE SHEET 7


NAD 83/2011
9
INGLES MARKETS INCORPORATED
DB CRP A-37
PG 945-951
FRONT OF INGLES STORE
13
SOUTHERN CONCRETE MATERIALS INC
DB S-32 PG 1602
PC 4 CARD 6107
LILLIAN FOUTS ESTATE
DB G-6 PG 169
-Y3- POT Sta. 10+00.00
14
MILDRED B BATES
DB K-15 PG 228
405' LANE SHIFT LEFT
200' LANE SHIFT LEFT
220' LANE SHIFT RIGHT
150' TAPER RIGHT
100' TAPER
75' TAPER
97.3' TAPER
DO NOT DISTURB SIGN
CL 'B' RIP RAP EST 2 TONS EST 7 SY GF
CL 'B' RIP RAP EST 3 TONS EST 10 SY GF
-L- POT Sta. 41+18.23
END GRADE
SEE STRUCTURE PLANS FOR MONOLITHIC ISLAND DETAILS
SEE DETAIL SHEET 2C-7
REINFORCED SLOPE PROTECTION SEE DETAIL SHEET 2G-1
BANK STABILIZATION CL 'II' RIP RAP EST. 50 TONS SEE DETAIL #6
BEGIN CHAIN LINK FENCE
PROPOSED CHAIN LINK FENCE
END CHAIN LINK FENCE
GR CAP PROTECTION SEE SHEET 2A-3
GR CAP PROTECTION SEE SHEET 2A-2
END CONSTRUCTION -DRWY3- STA 10+75.41
-DRWY3- POT Sta. 11+68.50
-DRWY3- POT Sta. 10+00.00
-L- POT Sta. 36+31.01
11
MACON COUNTY
DB X-10 PG 114
MACON COUNTY
DB F-11 PG 190
12
HARRIS DIVERSIFIED SERVICES LLC.
DB L-37 PG 89
EX BRIDGE
-L- N 3°20'08.1" E

Legend	
(dark shading)	5" MONOLITHIC ISLAND (KEYED-IN)
(light shading)	SIDEWALK
☆	UPGRADED SIGNAL

NOTE: SEE SHEET 9 & 10 FOR -L- PROFILE
SEE SHEET 14 FOR -DRWY3- PROFILE
SEE SHEET 2B-1 FOR INTERSECTION DETAILS
SEE STRUCTURE SHEET S-1 FOR MONOLITHIC ISLAND DETAILS ON BRIDGE
SEE SHEET 2D-1 FOR DITCH DETAILS

8/17/99

6/6/2018
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PROJECT REFERENCE NO.	SHEET NO.
R-5734A	7
R/W SHEET NO.	

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ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 022037 STEPHEN T. SMALLWOOD
6/7/2018

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 26971 JOSHUA G. DALTON
6/7/2018

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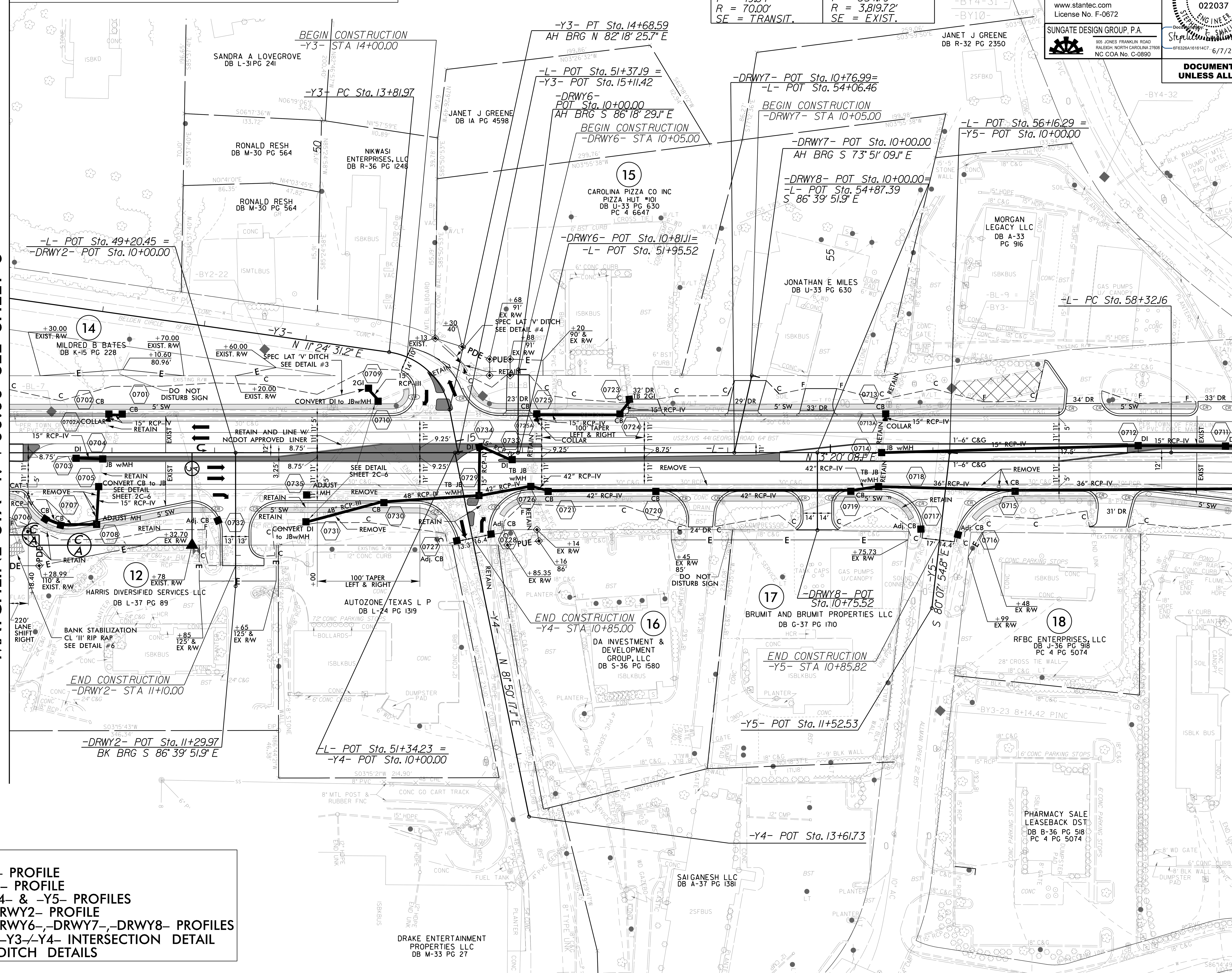
Legend	
(dark shading)	5" MONOLITHIC ISLAND (KEYED-IN)
(light shading)	SIDEWALK
(cross-hatch)	PAVEMENT REMOVAL

NAD 83/2011

-Y3-	-L-
PI Sta 14+31.81	PI Sta 61+86.95
Δ = 70° 53' 54.5" (RT)	Δ = 10° 36' 47.6" (RT)
D = 81° 51' 04.0"	D = 1° 30' 00.0"
L = 86.62'	L = 707.55'
T = 49.84'	T = 354.79'
R = 70.00'	R = 3,819.72'
SE = TRANSIT.	SE = EXIST.

MATCHLINE STA 47+00.00 SEE SHEET 6

MATCHLINE STA 59+00.00 SEE SHEET 8


BEGIN CONSTRUCTION -Y3- STA 14+00.00
-Y3- PT Sta. 14+68.59
AH BRG N 82° 18' 25.7" E
-Y3- PC Sta. 13+81.97
-L- POT Sta. 51+37.19 = -Y3- POT Sta. 15+11.42
-DRWY6- POT Sta. 10+00.00
AH BRG S 86° 18' 29.1" E
BEGIN CONSTRUCTION -DRWY6- STA 10+05.00
-DRWY7- POT Sta. 10+76.99= -L- POT Sta. 54+06.46
BEGIN CONSTRUCTION -DRWY7- STA 10+05.00
-DRWY7- POT Sta. 10+00.00
AH BRG S 73° 51' 09.1" E
-DRWY8- POT Sta. 10+00.00= -L- POT Sta. 54+87.39
S 86° 39' 51.9" E
-L- POT Sta. 56+16.29 = -Y5- POT Sta. 10+00.00
-L- POT Sta. 49+20.45 = -DRWY2- POT Sta. 10+00.00
-DRWY6- POT Sta. 10+81.11= -L- POT Sta. 51+95.52
-L- PC Sta. 58+32.16
SANDRA A LOVEGROVE DB L-31 PG 241
RONALD RESH DB M-30 PG 564
NIKWASI ENTERPRISES, LLC DB R-36 PG 1248
JANET J GREENE DB IA PG 4598
JANET J GREENE DB R-32 PG 2350
CAROLINA PIZZA CO INC PIZZA HUT #101 DB U-33 PG 630 PC 4 6647
MORGAN LEGACY LLC DB A-33 PG 916
JONATHAN E MILES DB U-33 PG 630
MILDRED B BATES DB K-15 PG 228
HARRIS DIVERSIFIED SERVICES LLC DB L-37 PG 89
AUTOZONE TEXAS L P DB L-24 PG 1319
DA INVESTMENT & DEVELOPMENT GROUP, LLC DB S-36 PG 1580
BRUMIT AND BRUMIT PROPERTIES LLC DB G-37 PG 1710
RFBC ENTERPRISES, LLC DB J-36 PG 918 PC 4 PG 5074
PHARMACY SALE LEASEBACK DST DB B-36 PG 518 PC 4 PG 5074
SAI GANESH LLC DB A-37 PG 1381
DRAKE ENTERTAINMENT PROPERTIES LLC DB M-33 PG 27
-Y3- N 11° 24' 31.2" E
N 3° 20' 08.1" E
-Y4- N 81° 50' 17.1" E
-Y5- S 80° 07' 54.8" E
END CONSTRUCTION -Y4- STA 10+85.00
END CONSTRUCTION -Y5- STA 10+85.82
END CONSTRUCTION -DRWY2- STA 11+10.00
-DRWY8- POT Sta. 10+75.52
-Y5- POT Sta. 11+52.53
-Y4- POT Sta. 13+61.73
-DRWY2- POT Sta. 11+29.97
BK BRG S 86° 39' 51.9" E
-L- POT Sta. 51+34.23 = -Y4- POT Sta. 10+00.00
SPEC LAT 'V' DITCH SEE DETAIL #3
SPEC LAT 'V' DITCH SEE DETAIL #4
BANK STABILIZATION CL 'II' RIP RAP SEE DETAIL #6
CONVERT DI to JBwMH
RETAIN AND LINE W/ NCDOT APPROVED LINER
DO NOT DISTURB SIGN
100' TAPER LEFT & RIGHT
220' LANE SHIFT RIGHT
42" RCP-IV
36" RCP-IV
15" RCP-IV
48" RCP-III

NOTES:
SEE SHEET 10 FOR -L- PROFILE
SEE SHEET 11 FOR -Y3- PROFILE
SEE SHEET 12 FOR -Y4- & -Y5- PROFILES
SEE SHEET 13 FOR -DRWY2- PROFILE
SEE SHEET 14 FOR -DRWY6-,-DRWY7-,-DRWY8- PROFILES
SEE SHEET 2B-2 FOR -Y3-/-Y4- INTERSECTION DETAIL
SEE SHEET 2D-1 FOR DITCH DETAILS

8/17/99

6/6/2018
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HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 26971 — JOSHUA G. DALTON — 6/7/2018

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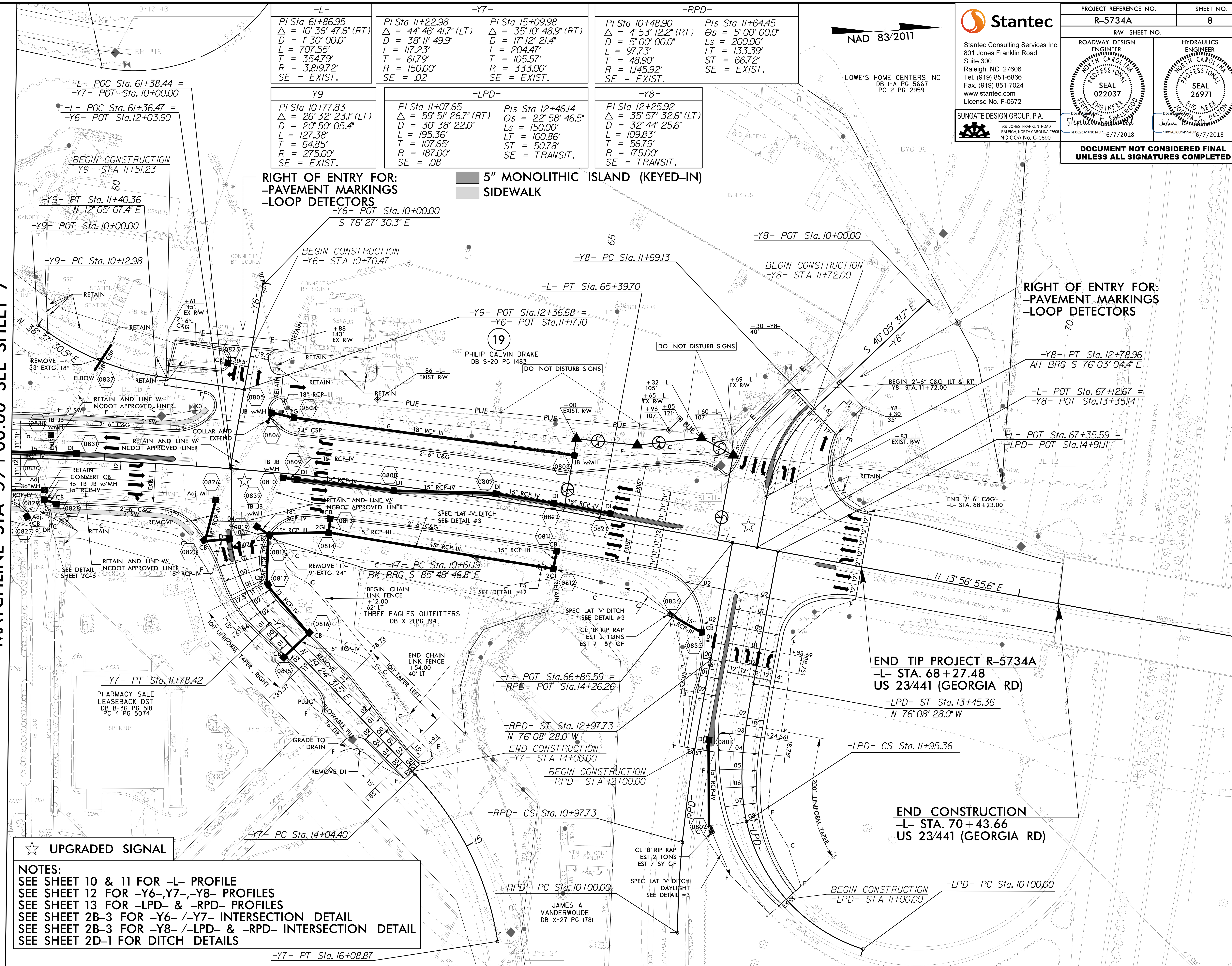
NAD 83/2011

-L-	-Y7-		-RPD-	
PI Sta 61+86.95	PI Sta 11+22.98	PI Sta 15+09.98	PI Sta 10+48.90	PIs Sta 11+64.45
△ = 10° 36' 47.6" (RT)	△ = 44° 46' 41.7" (LT)	△ = 35° 10' 48.9" (RT)	△ = 4° 53' 12.2" (RT)	Θs = 5° 00' 00.0"
D = 1° 30' 00.0"	D = 38° 11' 49.9"	D = 17° 12' 21.4"	D = 5° 00' 00.0"	Ls = 200.00'
L = 707.55'	L = 117.23'	L = 204.47'	L = 97.73'	LT = 133.39'
T = 354.79'	T = 61.79'	T = 105.57'	T = 48.90'	ST = 66.72'
R = 3,819.72'	R = 150.00'	R = 333.00'	R = 1,145.92'	SE = EXIST.
SE = EXIST.	SE = .02	SE = EXIST.	SE = EXIST.	

-Y9-	-LPD-		-Y8-
PI Sta 10+77.83	PI Sta 11+07.65	PIs Sta 12+46.14	PI Sta 12+25.92
△ = 26° 32' 23.1" (LT)	△ = 59° 51' 26.7" (RT)	Θs = 22° 58' 46.5"	△ = 35° 57' 32.6" (LT)
D = 20° 50' 05.4"	D = 30° 38' 22.0"	Ls = 150.00'	D = 32° 44' 25.6"
L = 127.38'	L = 195.36'	LT = 100.86'	L = 109.83'
T = 64.85'	T = 107.65'	ST = 50.78'	T = 56.79'
R = 275.00'	R = 187.00'	SE = TRANSIT.	R = 175.00'
SE = EXIST.	SE = .08		SE = TRANSIT.

5" MONOLITHIC ISLAND (KEYED-IN)
SIDEWALK


MATCHLINE STA 59+00.00 SEE SHEET 7
RIGHT OF ENTRY FOR:
-PAVEMENT MARKINGS
-LOOP DETECTORS
-L- POC Sta. 61+38.44 = -Y7- POT Sta. 10+00.00
-L- POC Sta. 61+36.47 = -Y6- POT Sta. 12+03.90
BEGIN CONSTRUCTION -Y9- STA 11+51.23
-Y9- PT Sta. 11+40.36
N 12° 05' 07.4" E
-Y9- POT Sta. 10+00.00
-Y9- PC Sta. 10+12.98
-Y6- POT Sta. 10+00.00
S 76° 27' 30.3" E
BEGIN CONSTRUCTION -Y6- STA 10+70.47
-Y8- POT Sta. 10+00.00
-Y8- PC Sta. 11+69.13
BEGIN CONSTRUCTION -Y8- STA 11+72.00
-L- PT Sta. 65+39.70
-Y9- POT Sta. 12+36.68 = -Y6- POT Sta. 11+17.10
19
PHILIP CALVIN DRAKE
DB S-20 PG 1483
DO NOT DISTURB SIGNS
LOWE'S HOME CENTERS INC
DB 1-A PG 5667
PC 2 PG 2959
S 40° 05' 31.7" E
-Y8- PT Sta. 12+78.96
AH BRG S 76° 03' 04.4" E
-L- POT Sta. 67+12.67 = -Y8- POT Sta. 13+35.14
-L- POT Sta. 67+35.59 = -LPD- POT Sta. 14+91.11
N 38° 37' 30.5" E
N 13° 56' 55.6" E
-Y7- PC Sta. 10+61.19
BK BRG S 85° 48' 46.8" E
N 49° 24' 31.5" E
THREE EAGLES OUTFITTERS
DB X-21 PG 194
PHARMACY SALE LEASEBACK DST
DB B-36 PG 518
PC 4 PG 5074
-Y7- PT Sta. 11+78.42
100' UNIFORM TAPER - RIGHT
100' TAPER LEFT
SPEC LAT 'V' DITCH SEE DETAIL #3
CL 'B' RIP RAP EST 2 TONS EST 7 SY GF
-L- POT Sta. 66+85.59 = -RPD- POT Sta. 14+26.26
-RPD- ST Sta. 12+97.73
N 76° 08' 28.0" W
END CONSTRUCTION -Y7- STA 14+00.00
BEGIN CONSTRUCTION -RPD- STA 12+00.00
-RPD- CS Sta. 10+97.73
-RPD- PC Sta. 10+00.00
JAMES A VANDERWOUDE
DB X-27 PG 1781
END TIP PROJECT R-5734A
-L- STA. 68+27.48
US 23/441 (GEORGIA RD)
-LPD- ST Sta. 13+45.36
N 76° 08' 28.0" W
-LPD- CS Sta. 11+95.36
END CONSTRUCTION
-L- STA. 70+43.66
US 23/441 (GEORGIA RD)
200' UNIFORM TAPER
BEGIN CONSTRUCTION -LPD- STA 11+00.00
-LPD- PC Sta. 10+00.00
-Y7- PC Sta. 14+04.40
-Y7- PT Sta. 16+08.87

☆ UPGRADED SIGNAL

NOTES:
SEE SHEET 10 & 11 FOR -L- PROFILE
SEE SHEET 12 FOR -Y6-,-Y7-,-Y8- PROFILES
SEE SHEET 13 FOR -LPD- & -RPD- PROFILES
SEE SHEET 2B-3 FOR -Y6- /-Y7- INTERSECTION DETAIL
SEE SHEET 2B-3 FOR -Y8- /-LPD- & -RPD- INTERSECTION DETAIL
SEE SHEET 2D-1 FOR DITCH DETAILS

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
R-5734A	9

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NC COA No. C-0890

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 022037 ENGINEER STEPHEN T. SMALLWOOD
5/31/2018

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 26971 ENGINEER JOSHUA G. DALTON
5/31/2018

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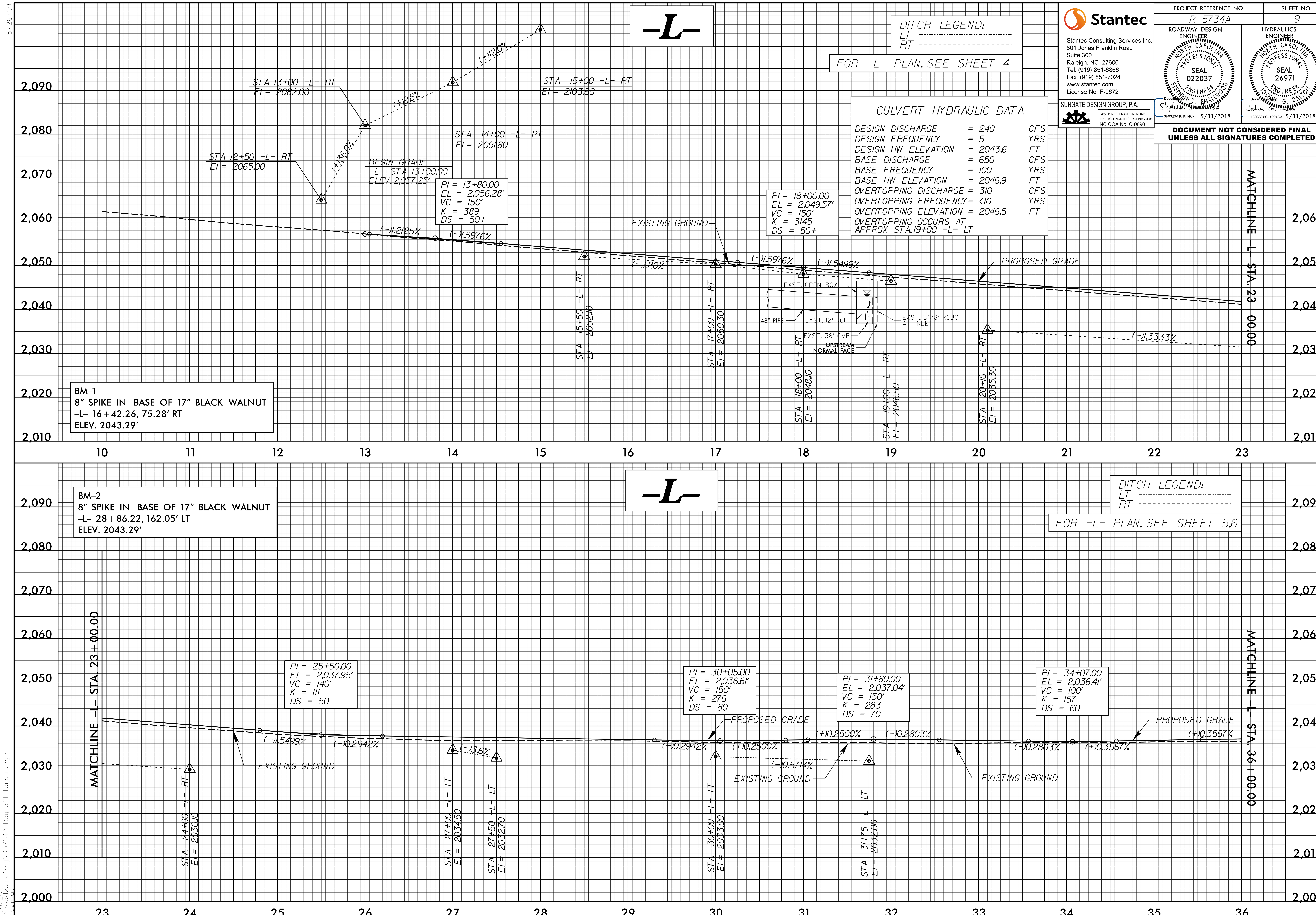
-L-
DITCH LEGEND:
LT
RT
FOR -L- PLAN, SEE SHEET 4
CULVERT HYDRAULIC DATA
DESIGN DISCHARGE = 240 CFS
DESIGN FREQUENCY = 5 YRS
DESIGN HW ELEVATION = 2043.6 FT
BASE DISCHARGE = 650 CFS
BASE FREQUENCY = 100 YRS
BASE HW ELEVATION = 2046.9 FT
OVERTOPPING DISCHARGE = 310 CFS
OVERTOPPING FREQUENCY= <10 YRS
OVERTOPPING ELEVATION = 2046.5 FT
OVERTOPPING OCCURS AT APPROX STA.19+00 -L- LT
STA 13+00 -L- RT El = 2082.00
STA 15+00 -L- RT El = 2103.80
STA 14+00 -L- RT El = 2091.80
STA 12+50 -L- RT El = 2065.00
BEGIN GRADE -L- STA 13+00.00 ELEV. 2,057.25'
PI = 13+80.00 EL = 2,056.28' VC = 150' K = 389 DS = 50+
PI = 18+00.00 EL = 2,049.57' VC = 150' K = 3145 DS = 50+
(+)12.0%
(+)9.8%
(+)36.0%
(-)1.2125%
(-)1.5976%
(-)1.20%
(-)1.5499%
(-)1.3333%
EXISTING GROUND
PROPOSED GRADE
EXST. OPEN BOX
48" PIPE
EXST. 12" RCP
EXST. 36" CMP
UPSTREAM NORMAL FACE
EXST. 5'x6' RCBC AT INLET
STA 15+50 -L- RT El = 2052.10
STA 17+00 -L- RT El = 2050.30
STA 18+00 -L- RT El = 2048.10
STA 19+00 -L- RT El = 2046.50
STA 20+10 -L- RT El = 2035.30
BM-1
8" SPIKE IN BASE OF 17" BLACK WALNUT
-L- 16+42.26, 75.28' RT
ELEV. 2043.29'
MATCHLINE -L- STA. 23+00.00
-L-
DITCH LEGEND:
LT
RT
FOR -L- PLAN, SEE SHEET 5,6
BM-2
8" SPIKE IN BASE OF 17" BLACK WALNUT
-L- 28+86.22, 162.05' LT
ELEV. 2043.29'
PI = 25+50.00 EL = 2,037.95' VC = 140' K = 111 DS = 50
PI = 30+05.00 EL = 2,036.61' VC = 150' K = 276 DS = 80
PI = 31+80.00 EL = 2,037.04' VC = 150' K = 283 DS = 70
PI = 34+07.00 EL = 2,036.41' VC = 100' K = 157 DS = 60
(-)1.5499%
(-)0.2942%
(-)3.6%
(+)0.2500%
(-)0.2803%
(-)0.5714%
(+)0.3567%
EXISTING GROUND
PROPOSED GRADE
STA 24+00 -L- RT El = 2030.10
STA 27+00 -L- LT El = 2034.50
STA 27+50 -L- LT El = 2032.70
STA 30+00 -L- LT El = 2033.00
STA 31+75 -L- LT El = 2032.00
MATCHLINE -L- STA. 36+00.00

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ROADWAY DESIGN ENGINEER — North Carolina Professional Engineer Seal 022037, Stephen T. Smallwood — 5/31/2018

HYDRAULICS ENGINEER — North Carolina Professional Engineer Seal 26971, Joshua G. Dalton — 5/31/2018

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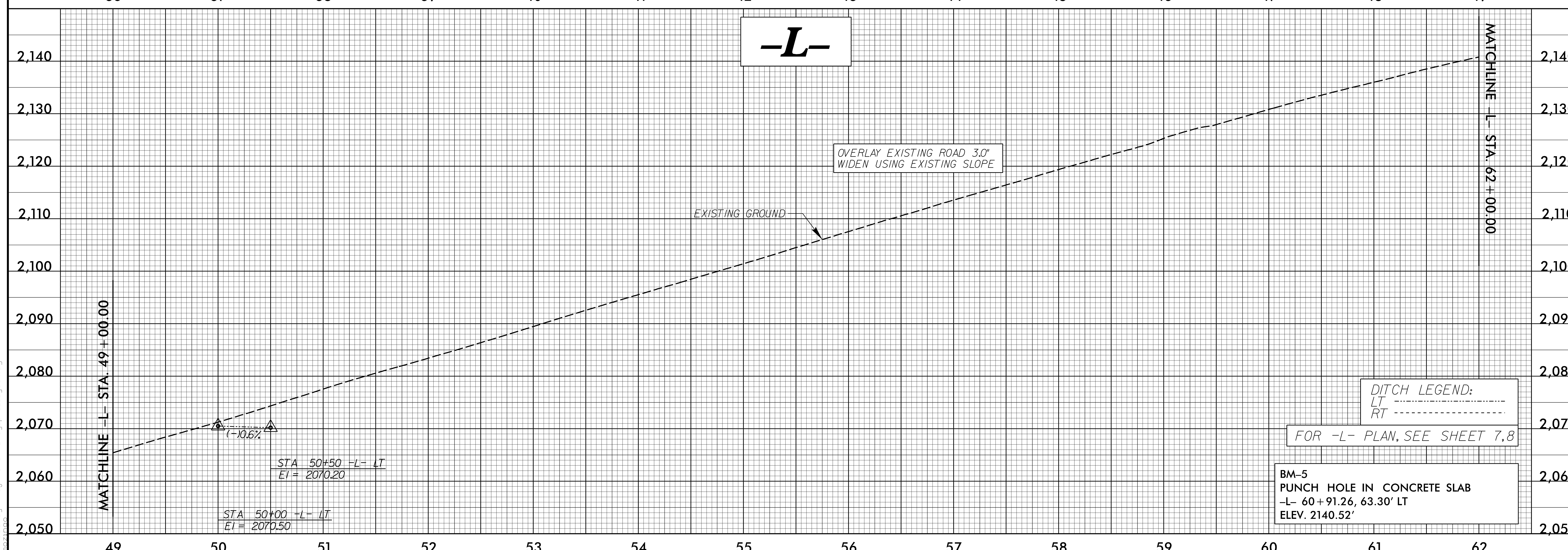

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ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 022037 ENGINEER STEPHEN T. SMALLWOOD
DocuSigned by: Stephen Smallwood
6F6326A161614C7... 5/31/2018

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 26971 ENGINEER JOSHUA G. DALTON
DocuSigned by: Joshua G. Dalton
1089AD8C14994C3... 5/31/2018

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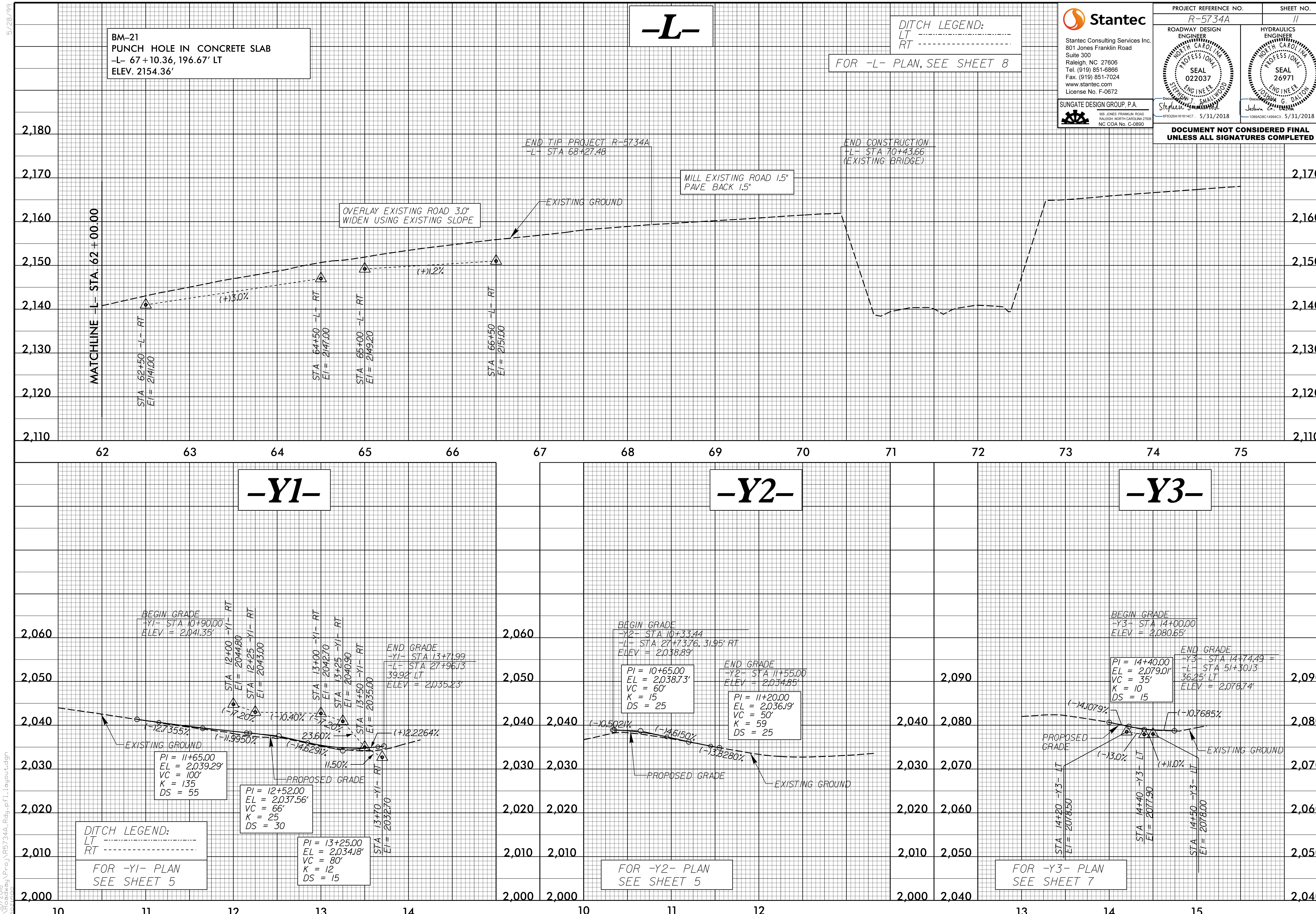
-L-
BM-21
PUNCH HOLE IN CONCRETE SLAB
-L- 67+10.36, 196.67' LT
ELEV. 2154.36'
DITCH LEGEND:
LT
RT
FOR -L- PLAN, SEE SHEET 8
END TIP PROJECT R-5734A
-L- STA 68+27.48
END CONSTRUCTION
-L- STA 70+43.66
(EXISTING BRIDGE)
MILL EXISTING ROAD 1.5"
PAVE BACK 1.5"
OVERLAY EXISTING ROAD 3.0"
WIDEN USING EXISTING SLOPE
EXISTING GROUND
(+)3.0%
(+)1.2%
MATCHLINE -L- STA. 62+00.00
STA 62+50 -L- RT
El = 2141.00
STA 64+50 -L- RT
El = 2147.00
STA 65+00 -L- RT
El = 2149.20
STA 66+50 -L- RT
El = 2151.00
2,180
2,170
2,160
2,150
2,140
2,130
2,120
2,110
62
63
64
65
66
67
68
69
70
71
72
73
74
75
-Y1-
BEGIN GRADE
-Y1- STA 10+90.00
ELEV = 2,041.35'
STA 12+00 -Y1- RT
El = 2044.80
STA 12+25 -Y1- RT
El = 2043.00
STA 13+00 -Y1- RT
El = 2042.70
STA 13+25 -Y1- RT
El = 2040.90
STA 13+50 -Y1- RT
El = 2035.00
STA 13+70 -Y1- RT
El = 2032.70
END GRADE
-Y1- STA 13+71.99
-L- STA 27+96.13
39.92' LT
ELEV = 2,035.23'
(-)2.7355%
(-)1.9950%
(-)4.8291%
(-)7.20%
(-)0.40%
(-)7.20%
23.60%
11.50%
(+)12.2264%
EXISTING GROUND
PROPOSED GRADE
PI = 11+65.00
EL = 2,039.29'
VC = 100'
K = 135
DS = 55
PI = 12+52.00
EL = 2,037.56'
VC = 66'
K = 25
DS = 30
PI = 13+25.00
EL = 2,034.18'
VC = 80'
K = 12
DS = 15
DITCH LEGEND:
LT
RT
FOR -Y1- PLAN
SEE SHEET 5
2,060
2,050
2,040
2,030
2,020
2,010
2,000
10
11
12
13
14
-Y2-
BEGIN GRADE
-Y2- STA 10+33.44
-L- STA 27+73.76, 31.95' RT
ELEV = 2,038.89'
END GRADE
-Y2- STA 11+55.00
ELEV = 2,034.85'
PI = 10+65.00
EL = 2,038.73'
VC = 60'
K = 15
DS = 25
PI = 11+20.00
EL = 2,036.19'
VC = 50'
K = 59
DS = 25
(-)0.5021%
(-)4.6150%
(-)3.8280%
PROPOSED GRADE
EXISTING GROUND
FOR -Y2- PLAN
SEE SHEET 5
2,060
2,050
2,040
2,030
2,020
2,010
2,000
10
11
12
-Y3-
BEGIN GRADE
-Y3- STA 14+00.00
ELEV = 2,080.65'
END GRADE
-Y3- STA 14+74.49 =
-L- STA 51+30.13
36.25' LT
ELEV = 2,078.74'
PI = 14+40.00
EL = 2,079.01'
VC = 35'
K = 10
DS = 15
(-)4.1079%
(-)0.7685%
(-)3.0%
(+)1.0%
PROPOSED GRADE
EXISTING GROUND
STA 14+20 -Y3- LT
El = 2078.50
STA 14+40 -Y3- LT
El = 2077.90
STA 14+50 -Y3- LT
El = 2078.00
FOR -Y3- PLAN
SEE SHEET 7
2,090
2,080
2,070
2,060
2,050
2,040
13
14
15

PROJECT REFERENCE NO.	SHEET NO.
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ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 022037 ENGINEER STEPHEN T. SMALLWOOD — 5/31/2018

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 26971 ENGINEER JOSHUA G. DALTON — 5/31/2018

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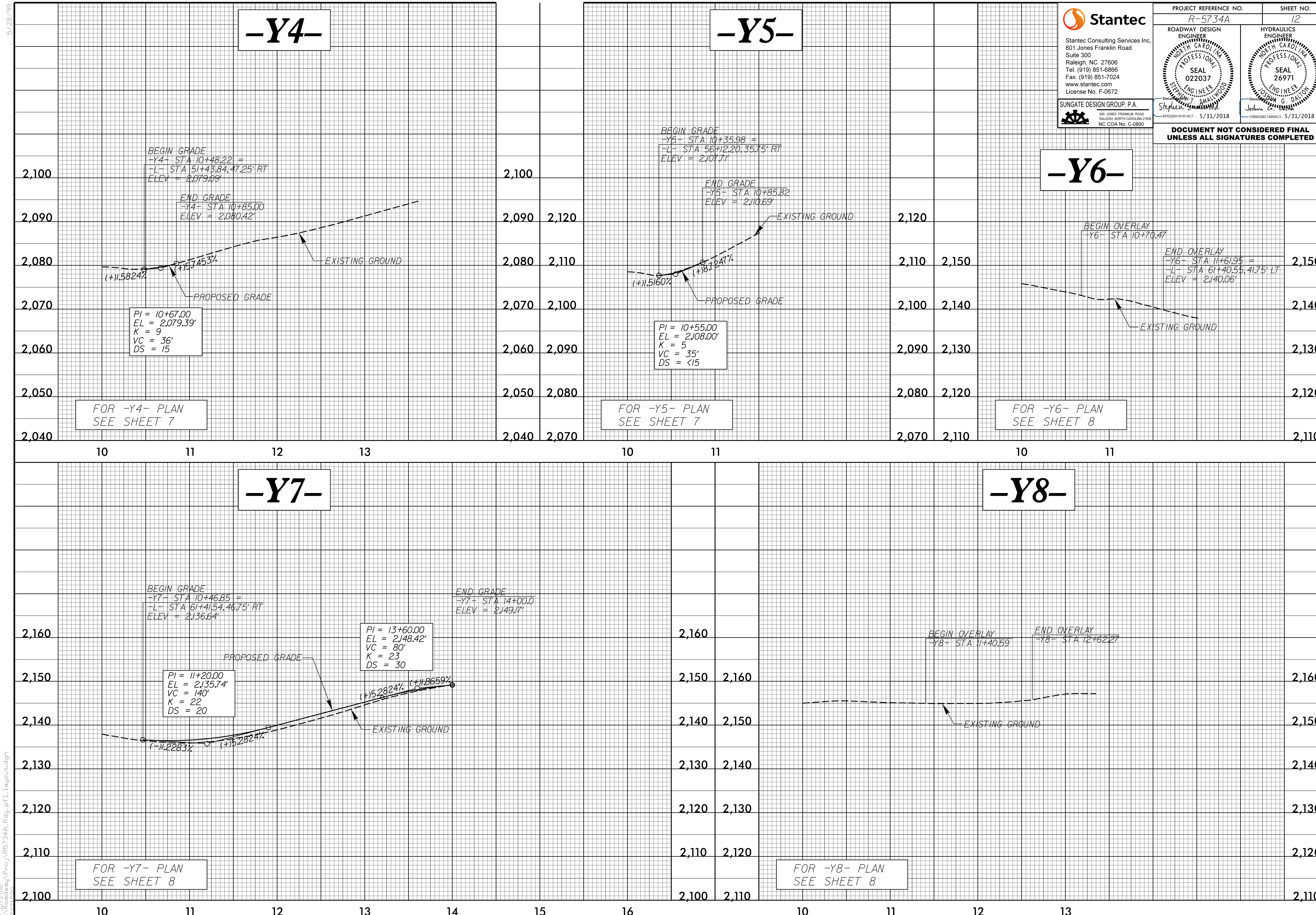
-Y4-
BEGIN GRADE
-Y4- STA 10+48.22 =
-L- STA 51+43.84, 47.25' RT
ELEV = 2,079.09'
END GRADE
-Y4- STA 10+85.00
ELEV = 2,080.42'
(+)1.5824%
(+)3.7453%
EXISTING GROUND
PROPOSED GRADE
PI = 10+67.00
EL = 2,079.39'
K = 9
VC = 36'
DS = 15
FOR -Y4- PLAN
SEE SHEET 7
-Y5-
BEGIN GRADE
-Y5- STA 10+35.98 =
-L- STA 56+12.20, 35.75' RT
ELEV = 2,107.71'
END GRADE
-Y5- STA 10+85.82
ELEV = 2,110.69'
EXISTING GROUND
(+)1.5160%
(+)6.7247%
PROPOSED GRADE
PI = 10+55.00
EL = 2,108.00'
K = 5
VC = 35'
DS = <15
FOR -Y5- PLAN
SEE SHEET 7
-Y6-
BEGIN OVERLAY
-Y6- STA 10+70.47
END OVERLAY
-Y6- STA 11+61.95 =
-L- STA 61+40.55, 41.75' LT
ELEV = 2,140.06'
EXISTING GROUND
FOR -Y6- PLAN
SEE SHEET 8
-Y7-
BEGIN GRADE
-Y7- STA 10+46.85 =
-L- STA 61+41.54, 46.75' RT
ELEV = 2,136.64'
END GRADE
-Y7- STA 14+00.0
ELEV = 2,149.17'
PI = 13+60.00
EL = 2,148.42'
VC = 80'
K = 23
DS = 30
PROPOSED GRADE
PI = 11+20.00
EL = 2,135.74'
VC = 140'
K = 22
DS = 20
(+)5.2824%
(+)1.8659%
EXISTING GROUND
(-)1.2283%
(+)5.2824%
FOR -Y7- PLAN
SEE SHEET 8
-Y8-
BEGIN OVERLAY
-Y8- STA 11+40.59
END OVERLAY
-Y8- STA 12+62.27
EXISTING GROUND
FOR -Y8- PLAN
SEE SHEET 8
2,100 2,090 2,080 2,070 2,060 2,050 2,040
2,120 2,110 2,100 2,090 2,080 2,070
2,150 2,140 2,130 2,120 2,110
2,160 2,150 2,140 2,130 2,120 2,110 2,100
10 11 12 13 14 15 16

5/28/99

-LPD-

BEGIN GRADE
-LPD- STA 111+00.00
ELEV = 2,144.29'

END GRADE
-LPD- STA 114+49.36 =
-L- STA 67+35.66, 41.75' RT
ELEV = 2,157.07'

PROPOSED GRADE

PI = 111+40.00
EL = 2,145.80'
VC = 80'
K = 446
DS = 50

(+)3.6425%
(+)3.0%
(+)3.7820%

EXISTING GROUND

STA 111+50 -LPD- LT
EL = 2145.10

STA 112+00 -LPD- LT
EL = 2146.60

FOR -LPD- PLAN
SEE SHEET 8

-RPD-

BEGIN GRADE
-RPD- STA 112+00.00
ELEV = 2,151.84'

PI = 112+50.00
EL = 2,152.86'
VC = 100'
K = 269
DS = 50+

PROPOSED GRADE

(+)2.0319%
(+)2.4032%

EXISTING GROUND

END GRADE
-RPD- STA 113+84.51 =
-L- STA 66+85.66, 41.75' RT
ELEV = 2,156.09'

FOR -RPD- PLAN
SEE SHEET 8

-DRWY1-

PI = 110+90.00
EL = 2,061.13'
K = 5
VC = 110'
DS = <15

PI = 112+00.00
EL = 2,067.50'
K = 7
VC = 110'
DS = <15

PI = 114+55.00
EL = 2,041.38'
K = 8
VC = 60'
DS = <15

(-)16.8672%
(+)5.7914%
(-)10.2455%
(-)10.7291%
(-)8.1818%
(-)5.5081%
(-)9.9031%

BEGIN GRADE
-DRWY1- STA 110+00.00
ELEV = 2,076.31'

END GRADE
-DRWY2- STA 114+39.46
ELEV = 2040.05'

STA 112+50 -DRWY1- LT
EL = 2066.06

STA 114+25 -DRWY1- LT
EL = 2043.0

STA 114+85 -DRWY1- LT
EL = 2038.0

FOR -DRWY1- PLAN
SEE SHEET 5

-DRWY2-

BEGIN GRADE
-DRWY2- STA 10+46.75 =
-L- STA 49+20.45, 46.75' RT
ELEV = 2,065.09'

END GRADE
-DRWY2- STA 11+10.00
ELEV = 2,071.08'

(+)14.8815%
(+)4.3515%
(+)10.3948%

EXISTING GROUND

PROPOSED GRADE

PI = 10+66.75
EL = 2,065.17'
K = 1
VC = 20
DS = <15

PI = 11+05.00
EL = 2,070.86'
K = 1
VC = 10
DS = <15

FOR -DRWY2- PLAN
SEE SHEET 7

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PROJECT REFERENCE NO.	SHEET NO.
R-5734A	13

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Stephen T. Smallwood
BF6326A161614C7... 5/31/2018

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 26971 ENGINEER JOSHUA G. DALTON
Joshua G. Dalton
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