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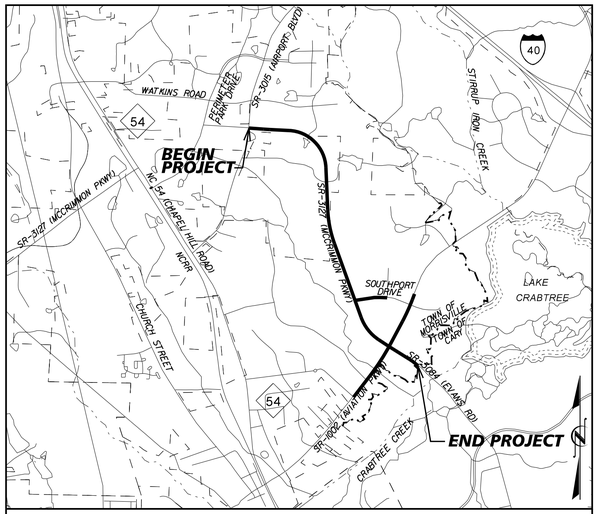
**This file or an individual page shall not be considered a certified document.**

TIP PROJECT: U-5828

CONTRACT: C203981

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




VICINITY MAP — WAKE COUNTY

TOWN OF MORRISVILLE

FINAL PHASE II PLANS

# STATE OF NORTH CAROLINA
# DIVISION OF HIGHWAYS

# *WAKE COUNTY*

| STATE | STATE PROJECT REFERENCE NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|
| N.C. | U-5828 | 1 | |

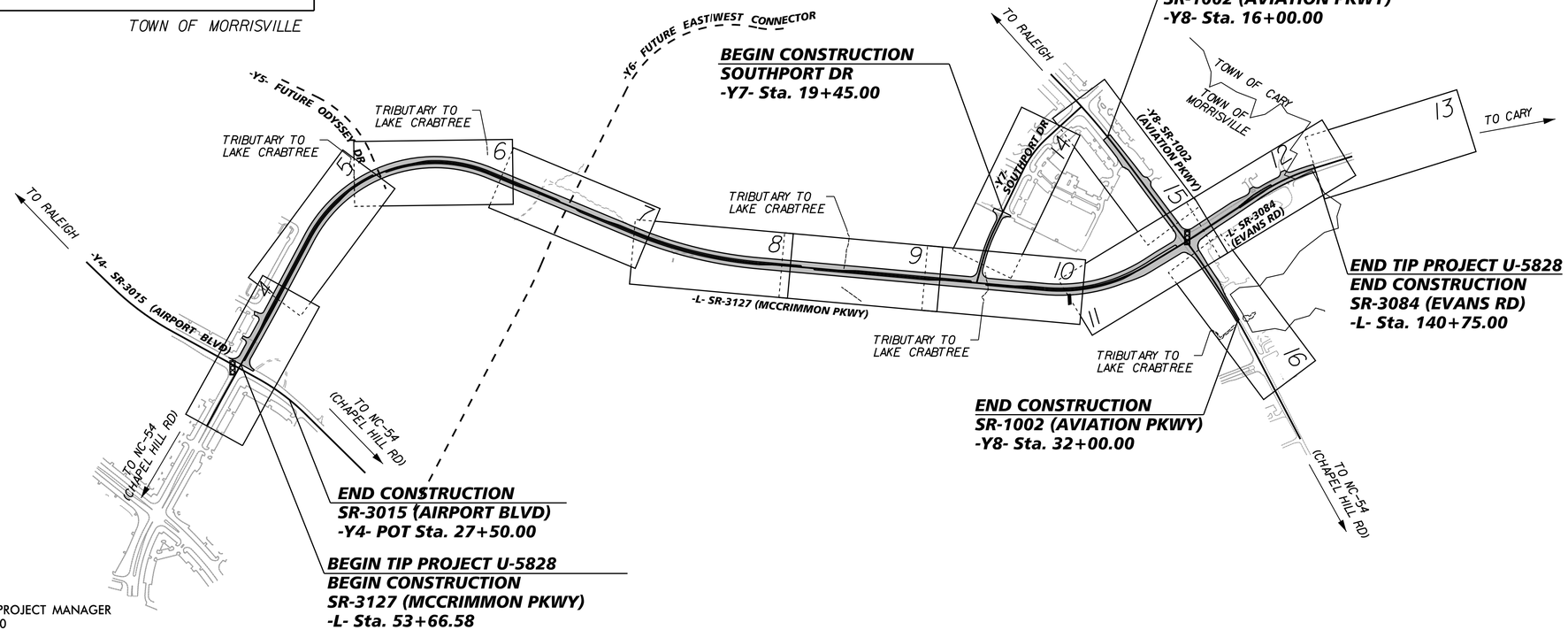
| STATE PROJ. NO. | F. A. PROJ. NO. | DESCRIPTION |
|---|---|---|
| 44401.1.1 | N/A | PE |
| 44401.2.1 | N/A | RW / UTILITIES |
| 44401.3.1 | N/A | CONST |
| | | |
| | | |
| | | |

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

***LOCATION: SR 3127 (MCCRIMMON PARKWAY) FROM SR 3015 (AIRPORT BOULEVARD) TO SR 1002 (AVIATION PARKWAY), SR 3084 (EVANS ROAD)***

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

NC GRID NAD 83 – NAD 2011




NCDOT CONTACT: MIKE KNEIS
DIVISION 5, PROJECT MANAGER
(919) 220–4600

## *GRAPHIC SCALES*

PLANS: 40 20 0 40 80

PROFILE (HORIZONTAL): 40 20 0 40 80

PROFILE (VERTICAL): 10 5 0 10 20

## *DESIGN DATA*

ADT 2016 = 6,500 VPD
ADT 2040 = 10,800 VPD
DHV = 55%
D = 8%
T = 3% *
V = 50 mph
* (TTST 1% + DUAL 2%)

FUNCTIONAL CLASSIFICATION:
URBAN ARTERIAL
SUB REGIONAL TIER

## *PROJECT LENGTH*

LENGTH ROADWAY TIP PROJECT U–5828 = 1.649 MILES

TOTAL LENGTH TIP PROJECT U–5828 = 1.649 MILES

*PLANS PREPARED FOR THE NCDOT BY:*

Kimley»Horn
© 2016
Post Office Box 33068
Raleigh, North Carolina 27636
NC License #F-0102

*2012 STANDARD SPECIFICATIONS*

*RIGHT OF WAY DATE:* 12–16–2016

*LETTING DATE:* 3–20–2018

*MATTHEW WEST, PE*
*PROJECT ENGINEER*

*ERIN THOMPSON, P.E.*
*PROJECT DESIGN ENGINEER*

*HYDRAULICS ENGINEER*

NORTH CAROLINA PROFESSIONAL SEAL 026480 ENGINEER LARRY D. ROBINSON, JR.

DocuSigned by: Larry D. Robinson 1/31/2018
CE1B0B7D9643E...
*SIGNATURE:* *P.E.*

*ROADWAY DESIGN ENGINEER*

NORTH CAROLINA PROFESSIONAL SEAL 029876 ENGINEER MATTHEW S. WEST

DocuSigned by: Matthew S. West 1/31/2018
AC21A1D0736B425...
*SIGNATURE:* *P.E.*

*DIVISION OF HIGHWAYS*
*STATE OF NORTH CAROLINA*

STATE OF NORTH CAROLINA * DEPARTMENT OF TRANSPORTATION *

*P.E.*
*STATE HIGHWAY DESIGN ENGINEER*

1/31/2018

K:\RAL_Roadway\01210800 4 – McCrimmon Parkway\Phase II\Plan\Plan Sheets\U5828_rdy_tshdgn

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-5828 | 1A |

ROADWAY DESIGN ENGINEER
2/1/2018

NORTH CAROLINA PROFESSIONAL SEAL 029876 ENGINEER MATTHEW S. WEST

DocuSigned by:
Matthew S. West
AC71A1D0796B425...

REVISIONS

## INDEX OF SHEETS

| SHEET NUMBER | DESCRIPTION |
|---|---|
| 1 | TITLE SHEET |
| 1A | INDEX OF SHEETS, GENERAL NOTES, AND LIST OF STANDARDS |
| 1B | CONVENTIONAL SYMBOLS |
| 1C-1 THRU 1C-2 | SURVEY CONTROL SHEET |
| 2A-1 THRU 2A-6 | TYPICAL SECTIONS, PAVEMENT SCHEDULE, AND MISCELLANEOUS DETAILS |
| 2B-1 THRU 2B-3 | INTERSECTION DETAILS |
| 2C-1 THRU 2C-2 | CURB RAMP DETAILS |
| 2C-3 THRU 2C-12 | SPECIAL DETAILS |
| 2D-1 | DRAINAGE DETAILS |
| 3B-1 THRU 3B-2 | SUMMARY SHEETS |
| 3D-1 THRU 3D-6 | DRAINAGE SUMMARY SHEETS |
| 3P-1 | PARCEL INDEX SHEET |
| 4-16 | PLAN SHEETS |
| 17-22 | PROFILE SHEETS |
| TMP-1 THRU TMP-17 | TRAFFIC MANAGEMENT PLANS |
| PMP-1 THRU PMP-14 | PAVEMENT MARKING PLANS |
| EC-1 THRU EC-40 | EROSION CONTROL PLANS |
| L0 THRU L12 | LANDSCAPE PLANS |
| SIGN-1 THRU SIGN-14 | SIGNING PLANS |
| SIG-1 THRU SCP-7 | SIGNALS PLANS |
| UC-1 TO UC-33 | UTILITY CONSTRUCTION PLANS |
| U0-1 THRU U0-3 | UTILITIES BY OTHERS PLANS |
| X-0 | CROSS SECTION INDEX |
| X-1A THRU X-1B | CROSS SECTION SUMMARY SHEET |
| X-2 THRU X-66 | CROSS SECTIONS |

## GENERAL NOTES

GENERAL NOTES: 2012 SPECIFICATIONS
EFFECTIVE: 01-17-2012
REVISED: 10-31-2014

GRADING AND SURFACING OR RESURFACING AND WIDENING:

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

CLEARING:

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

SUPERELEVATION -L-:

ALL CURVES ON THIS PROJECT SHALL BE SUPERELEVATED IN ACCORDANCE WITH STD. NO. 225.05 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.

SUPERELEVATION -Y7- AND -Y8-:

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

## GENERAL NOTES

SIDE ROADS:

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

BERM DITCHES:

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

DRIVEWAYS:

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

STREET TURNOUT:

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

GUARDRAIL:

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

SUBSURFACE PLANS:

A SUBSURFACE EXPLORATION ALONG THE LENGTH OF THE PROJECT WAS PERFORMED BY TERRACON AND IS AVAILABLE TO ALL BIDDING CONTRACTORS. ANY ADDITIONAL SUBSURFACE INVESTIGATION WILL BE THE RESPONSIBILITY OF THE CONTRACTOR.

UTILITIES:

UTILITY OWNERS ON THIS PROJECT ARE

(A) POWER: DUKE ENERGY: JB JONES 919-481-6153
(B) TELEPHONE: AT&T: STEVE PENNELL 704-905-9266 **
(C) WATER/SEWER: TOWN OF CARY: JAMIE BISSONNETTE 919-380-2760
(D) GAS: PSNC: JOSUE ALCAREZ 919-367-2745 **
(E) CABLE: CHARTER SPECTRUM: DAVID BRACEY 919-224-9886 **
(F) NETWORK SERVICES: LEVEL 3 COMMUNICATIONS: RUSS WHEAT 803-206-9563 **
(G) NETWORK SERVICES: GOOGLE FIBER: HAROLD GREENE 704-608-4251**

ANY REQUIRED RELOCATION OF SELECT EXISTING UTILITIES WILL BE ACCOMPLISHED BY OTHERS PRIOR TO CONSTRUCTION. CONTRACTOR WILL BE RESPONSIBLE FOR COORDINATING THE REMAINING UTILITY RELOCATIONS/ADJUSTMENTS.

** EXISTING UTILITY WITHIN PROJECT LIMITS. UTILITY OWNER TO RELOCATE FACILITIES PRIOR TO OR DURING CONSTRUCTION. RELOCATION DESIGNS NOT INCLUDED IN UBO PLANS.

RIGHT-OF-WAY MARKERS:

ALL RIGHT-OF-WAY AND EASEMENT 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.

ROCK

POSSIBLE ENCOUNTER OF ROCK LOCATED -L- STA 92+50 AS RECORDED IN THE SUBSURFACE INVESTIGATION. BLASTING MAY BE REQUIRED FOR EXCAVATION ON THIS PROJECT. SEE SECTION 220 OF THE STANDARD SPECIFICATIONS AND IF APPLICABLE, ROCK BLASTING PROVISION.

POND DRAINING

CONTRACTOR TO FULLY BREACH EXISTING POND DAM AND ALLOW POND BOTTOM TO DRY AS SPECIFIED IN EROSION CONTROL PLANS (-L- STA 70+00 RT), ITEM TO BE INCLUDED AS PART OF UNCLASSIFIED EXCAVATION PAY ITEM.

## LIST OF 2012 ROADWAY STANDARD DRAWINGS

EFF. 01-17-2012
REV. 10-30-2012

2012 ROADWAY ENGLISH STANDARD DRAWINGS

The following Roadway Standards as appear in "Roadway Standard Drawings" Highway Design Branch - N.C. Department of Transportation - Raleigh, N.C., Dated January, 2012 are applicable to this project and by reference hereby are considered a part of these plans:

| STD. NO. | TITLE |
|---|---|
| DIVISION 2 - EARTHWORK | |
| 200.03 | Method of Clearing - Method III |
| 225.02 | Guide for Grading Subgrade - Secondary and Local |
| 225.04 | Method of Obtaining Superelevation - Two Lane Pavement |
| 225.05 | Method of Obtaining Superelevation - Divided Highways |
| 225.06 | Method of Grading Sight Distance at Intersections |
| 240.01 | Guide for Berm Ditch Construction |
| DIVISION 3 - PIPE CULVERTS | |
| 300.01 | Method of Pipe Installation |
| 310.10 | Driveway Pipe Construction |
| DIVISION 5 - SUBGRADE, BASES AND SHOULDERS | |
| 560.01 | Method of Shoulder Construction - High Side of Superelevated Curve - Method 1 |
| DIVISION 6 - ASPHALT BASES AND PAVEMENTS | |
| 654.01 | Pavement Repairs |
| DIVISION 8 - INCIDENTALS | |
| 838.01 | Concrete Endwall for Single and Double Pipe Culverts - 15" thru 48" Pipe 90 Skew |
| 838.11 | Brick Endwall for Single and Double Pipe Culverts - 15" thru 48" Pipe 90 Skew |
| 838.80 | Precast Endwalls - 12" thru 72" Pipe 90 Skew |
| 840.00 | Concrete Base Pad for Drainage Structures |
| 840.01 | Brick Catch Basin - 12" thru 54" Pipe |
| 840.02 | Concrete Catch Basin - 12" thru 54" Pipe |
| 840.03 | Frame, Grates and Hood - for Use on Standard Catch Basin |
| 840.14 | Concrete Drop Inlet - 12" thru 30" Pipe |
| 840.15 | Brick Drop Inlet - 12" thru 30" Pipe |
| 840.16 | Drop Inlet Frame and Grates - for use with Std. Dwg 840.14 and 840.15 |
| 840.18 | 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 |
| 840.27 | 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 |
| 840.45 | Precast Drainage Structure |
| 840.46 | Traffic Bearing Precast Drainage Structure |
| 840.54 | Manhole Frame and Cover |
| 840.66 | Drainage Structure Steps |
| 840.72 | Pipe Collar |
| 846.01 | Concrete Curb, Gutter and Curb & Gutter |
| 848.01 | Concrete Sidewalk |
| 848.02 | Driveway Turnout - Radius Type |
| 848.04 | Street Turnout |
| 848.05 | Curb Ramp - Proposed Curb & Gutter |
| 850.01 | Concrete Paved Ditches |
| 850.10 | Guide for Berm Drainage Outlet - 15" and 18" Pipe |
| 852.01 | Concrete Islands |
| 852.04 | Method for Placement of Drop Inlets in Grassed Median - Using 1'-6" Curb and Gutter |
| 852.05 | Median Curb for Catch Basin - for Use with 1'-6" Curb and Gutter |
| 852.06 | Method for Placement of Drop Inlets in Concrete Islands |
| 852.10 | Median Construction - with Curb and Gutter |
| 876.01 | Rip Rap in Channels |
| 876.02 | Guide for Rip Rap at Pipe Outlets |
| 876.04 | Drainage Ditches with Class 'B' Rip Rap |

2/1/2018

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-5828 | IB |

STATE OF NORTH CAROLINA, DIVISION OF HIGHWAYS

# CONVENTIONAL PLAN SHEET SYMBOLS

***Note: Not to Scale***

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

REVISIONS

8/15/2017

## *BOUNDARIES AND PROPERTY:*

- State Line
- County Line
- Township Line
- City Line
- Reservation Line
- Property Line
- Existing Iron Pin — EIP
- Property Corner
- Property Monument — ECM
- Parcel/Sequence Number — 123
- Existing Fence Line
- Proposed Woven Wire Fence
- Proposed Chain Link Fence
- Proposed Barbed Wire Fence
- Existing Wetland Boundary — WLB
- Proposed Wetland Boundary — WLB
- Existing Endangered Animal Boundary — EAB
- Existing Endangered Plant Boundary — EPB
- Existing Historic Property Boundary — HPB
- Known Soil Contamination: Area or Site
- Potential Soil Contamination: Area or Site

## *BUILDINGS AND OTHER CULTURE:*

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

## *HYDROLOGY:*

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

## *RAILROADS:*

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

## *RIGHT OF WAY:*

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

## *ROADS AND RELATED FEATURES:*

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

## *VEGETATION:*

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

## *EXISTING STRUCTURES:*

MAJOR:

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

MINOR:

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

## *UTILITIES:*

POWER:

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

TELEPHONE:

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

WATER:

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

TV:

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

GAS:

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

SANITARY SEWER:

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

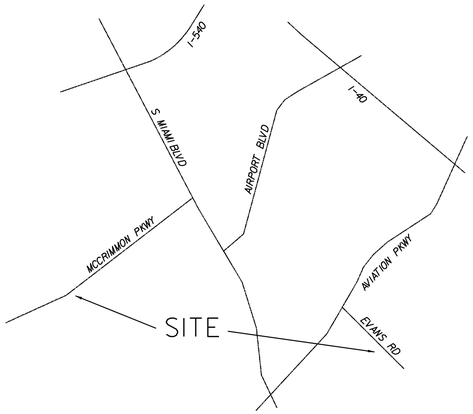
MISCELLANEOUS:

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

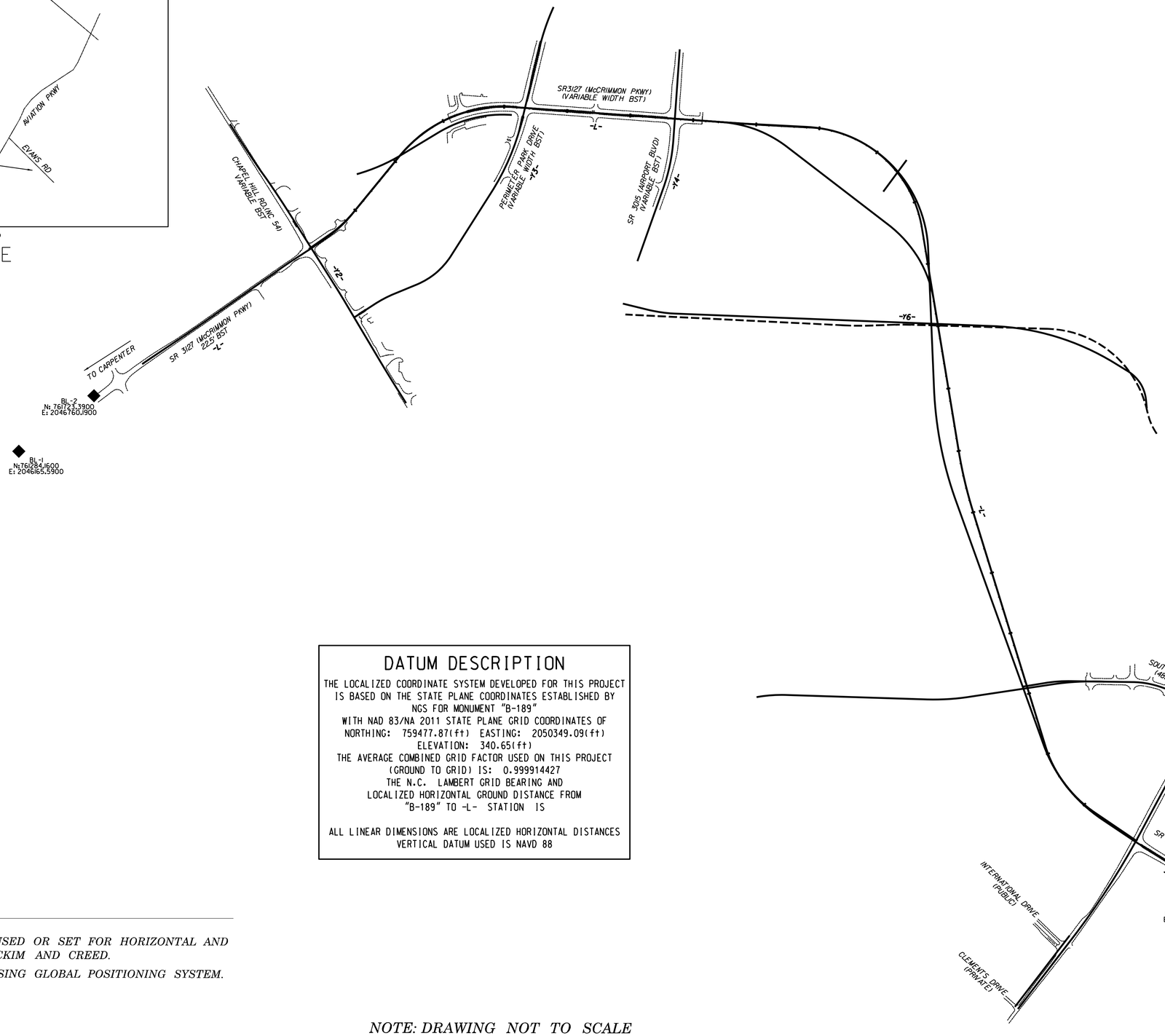
# SURVEY CONTROL SHEET

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| MORRISVILLE-CARPENTER ROAD (SR 3014) | 1C-1 |
| Location and Surveys | |

**TIP #: U-5828**




VICINITY MAP
NOT TO SCALE




NC GRID
NAD 83 NA 2011

## DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NGS FOR MONUMENT "B-189"
WITH NAD 83/NA 2011 STATE PLANE GRID COORDINATES OF
NORTHING: 759477.87(ft) EASTING: 2050349.09(ft)
ELEVATION: 340.65(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.999914427
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "B-189" TO -L- STATION IS

ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

*NOTES:*

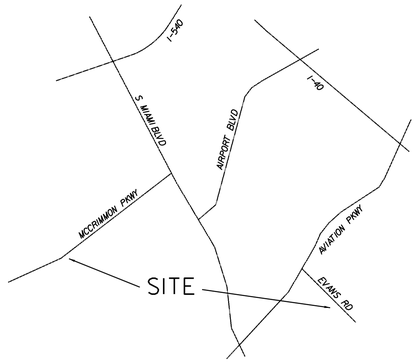
◆ ● *INDICATES CONTROL MONUMENTS USED OR SET FOR HORIZONTAL AND VERTICAL PROJECT CONTROL BY MCKIM AND CREED.*

*PROJECT CONTROL ESTABLISHED USING GLOBAL POSITIONING SYSTEM.*

*NOTE: DRAWING NOT TO SCALE*

# SURVEY CONTROL SHEET

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| MORRISVILLE-CARPENTER ROAD (SR 3014) | 1C-2 |
| Location and Surveys | |
| TIP #: U-5828 | |




VICINITY MAP
NOT TO SCALE

## DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NGS FOR MONUMENT "B-189"
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ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

BL

| POINT | DESC. | NORTH | EAST | ELEVATION | BL STATION | OFFSET |
|---|---|---|---|---|---|---|
| 1 | RC | 761284.1600 | 2046165.5900 | 354.23 | 5+00.00 | 0.00 |
| 2 | RC | 761723.3900 | 2046760.1900 | 368.96 | 12+39.24 | 0.00 |
| 3 | RC | 762158.8400 | 2047381.7700 | 358.04 | 19+98.17 | 0.00 |
| 4 | RC | 762484.5900 | 2047858.9300 | 361.46 | 25+75.92 | 0.00 |
| 5 | RC | 762862.9700 | 2048517.4600 | 372.90 | 33+35.42 | 0.00 |
| 6 | RC | 764001.0900 | 2049630.6900 | 368.08 | 49+27.46 | 0.00 |
| 7 | RC | 764052.1900 | 2050237.6700 | 358.65 | 55+36.58 | 0.00 |
| 8 | RC | 763967.4900 | 2050689.5600 | 350.86 | 59+96.34 | 0.00 |
| 9 | RC | 763977.0000 | 2051411.8400 | 346.42 | 67+18.69 | 0.00 |
| 45 | RC | 763965.3700 | 2051790.4400 | 334.40 | 70+97.46 | 0.00 |
| 44 | RC | 763887.2420 | 2052039.4890 | 348.01 | 73+58.48 | 0.00 |
| 43 | RC | 763820.0780 | 2052283.4650 | 339.16 | 76+11.53 | 0.00 |
| 42 | RC | 763734.1140 | 2052658.8900 | 334.96 | 79+96.67 | 0.00 |
| 41 | RC | 763503.5990 | 2053013.0790 | 338.93 | 84+19.27 | 0.00 |
| 40 | RC | 763191.6540 | 2053225.0450 | 340.34 | 87+96.42 | 0.00 |
| 39 | RC | 762891.6970 | 2053307.4450 | 324.15 | 91+07.48 | 0.00 |
| 38 | RC | 762542.4420 | 2053336.1610 | 341.75 | 94+57.92 | 0.00 |
| 37 | RC | 762190.4560 | 2053454.3990 | 342.47 | 98+29.23 | 0.00 |
| 36 | RC | 761451.6090 | 2053579.2660 | 346.26 | 105+78.56 | 0.00 |
| 35 | RC | 761038.8180 | 2053657.8520 | 339.70 | 109+98.76 | 0.00 |
| 34 | RC | 760214.8200 | 2053870.6500 | 320.61 | 118+49.79 | 0.00 |
| 33 | RC | 759617.0830 | 2054077.6640 | 320.52 | 124+82.36 | 0.00 |
| 32 | RC | 758843.1540 | 2054307.0260 | 306.78 | 132+89.56 | 0.00 |
| 31 | RC | 758387.4680 | 2054691.1150 | 314.29 | 138+85.53 | 0.00 |
| 10 | RC | 758201.9800 | 2055076.9900 | 299.64 | 143+13.67 | 0.00 |
| 11 | RC | 757714.9300 | 2055679.9100 | 284.72 | 150+88.74 | 0.00 |
| 12 | RC | 757412.8900 | 2056052.1100 | 288.59 | 155+68.07 | 0.00 |
| 13 | RC | 756721.8800 | 2056604.2600 | 284.38 | 164+52.59 | 0.00 |

BY2

| POINT | DESC. | NORTH | EAST | ELEVATION | BY2 STATION | OFFSET |
|---|---|---|---|---|---|---|
| 14 | RC | 764679.2400 | 2047359.3400 | 381.01 | 5+00.00 | 0.00 |
| 16 | RC | 763636.3200 | 2048008.6900 | 363.59 | 17+28.55 | 0.00 |
| A5 | RC | 762862.9700 | 2048517.4600 | 372.90 | 26+54.25 | 0.00 |
| 17 | RC | 762309.9800 | 2048880.3300 | 375.44 | 33+15.67 | 0.00 |
| 18 | RC | 761652.4100 | 2049280.8500 | 361.35 | 40+85.61 | 0.00 |
| 19 | RC | 761133.8200 | 2049588.2400 | 354.48 | 46+88.46 | 0.00 |

BY3

| POINT | DESC. | NORTH | EAST | ELEVATION | BY3 STATION | OFFSET |
|---|---|---|---|---|---|---|
| 20 | RC | 764417.3700 | 2050311.0700 | 366.95 | 5+00.00 | 0.00 |
| A7 | RC | 764052.1900 | 2050237.6700 | 358.65 | 8+72.48 | 0.00 |
| 21 | RC | 763725.9400 | 2050131.7500 | 350.48 | 12+15.50 | 0.00 |
| 22 | RC | 763438.7000 | 2050006.9000 | 347.15 | 15+28.70 | 0.00 |

BY4

| POINT | DESC. | NORTH | EAST | ELEVATION | BY4 STATION | OFFSET |
|---|---|---|---|---|---|---|
| 23 | RC | 764396.2900 | 2051423.3700 | 348.26 | 5+00.00 | 0.00 |
| A9 | RC | 763977.0000 | 2051411.8400 | 346.42 | 9+19.45 | 0.00 |
| 24 | RC | 763256.8400 | 2051263.0500 | 337.26 | 16+54.82 | 0.00 |

BY8

| POINT | DESC. | NORTH | EAST | ELEVATION | BY8 STATION | OFFSET |
|---|---|---|---|---|---|---|
| 25 | RC | 759872.2600 | 2055738.7600 | 326.55 | 5+00.00 | 0.00 |
| 26 | RC | 759524.9400 | 2055697.9900 | 325.10 | 8+49.70 | 0.00 |
| 27 | RC | 758774.4700 | 2055345.9100 | 310.85 | 16+78.66 | 0.00 |
| A10 | RC | 758201.9800 | 2055076.9900 | 299.64 | 23+11.16 | 0.00 |
| 28 | RC | 757435.4500 | 2054457.2800 | 290.84 | 32+96.87 | 0.00 |
| 29 | RC | 756836.1000 | 2054021.1900 | 288.79 | 40+38.08 | 0.00 |
| 30 | RC | 756345.5600 | 2053644.2600 | 290.26 | 46+56.71 | 0.00 |

*NOTES:*

◆ ● *INDICATES CONTROL MONUMENTS USED OR SET FOR HORIZONTAL AND VERTICAL PROJECT CONTROL BY MCKIM AND CREED.*

*PROJECT CONTROL ESTABLISHED USING GLOBAL POSITIONING SYSTEM.*

*NOTE: DRAWING NOT TO SCALE*

Kimley»Horn
P.O. BOX 33068
RALEIGH, N.C. 27636–3068

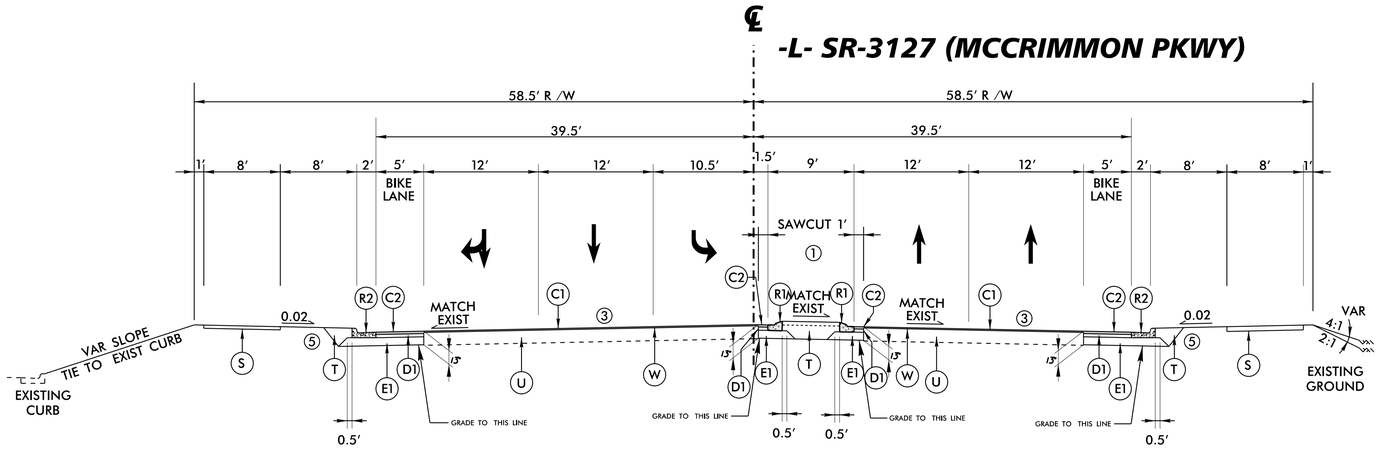
| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-5828 | 2A-1 |

ROADWAY DESIGN ENGINEER

3/8/2018
NORTH CAROLINA PROFESSIONAL SEAL 029876 ENGINEER MATTHEW S. WEST
Matthew S. West
AC71A1D07968425...

PAVEMENT DESIGN ENGINEER

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




***TYPICAL SECTION NO. 1***

***-L- Sta. 53+66.58 TO 55+52.00***

****GRADE POINT BEGINS AT***
***-L- Sta. 54+00.00***
***SEE CROSS SECTIONS AND PROFILE***

***TYPICAL SECTION NOTES:***

1. ***SEE PLAN SHEETS FOR SPECIFIC MEDIAN ISLAND LOCATIONS AND TYPES***
2. ***SEE PARTIAL SECTIONS FOR EXCEPTIONS TO STATION LIMITS***
3. ***USE WEDGING AS NECESSARY. SEE DETAIL 1, SHEET 2A-5***
4. ***SEE PLAN SHEETS FOR LANE TAPER LOCATIONS***
5. ***PAVEMENT EDGE SLOPES ARE 1:1 UNLESS OTHERWISE NOTED***
6. ***SEE CROSS SECTIONS AND PROFILES FOR SPECIAL DITCH GRADES***
7. ***SEE CROSS SECTIONS FOR CROSS SLOPE CONNECT EXSITING CENTERLINE TO EXISTING CURB***
8. ***SIDEWALK LOCATIONS, WIDTH, AND OFFSETS FROM BACK OF CURB WILL VARY. SEE PLANS FOR SPECIFIC LOCATIONS AND DIMENSIONS.***
9. ***SEE DETAIL 9, SHEET 2A-6 FOR SAWCUT DETAIL.***

## *PAVEMENT SCHEDULE*

| | |
|---|---|
| C1 | PROP. APPROX. 1.5" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. |
| C2 | 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. |
| C3 | 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 OR LESS THAN 1.5" IN DEPTH. |
| D1 | PROP. APPROX. 4" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C. AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD. |
| D2 | PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C. AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH TO BE PLACED IN LAYERS NOT TO EXCEED 4" IN DEPTH OR LESS THAN 2.5" IN DEPTH. |
| E1 | 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 |
| E2 | 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. |
| E3 | PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH TO BE PLACED IN LAYERS NOT TO EXCEED 5.5" IN DEPTH OR LESS THAN 3" IN DEPTH. |
| J1 | PROP. 6" AGGREGATE BASE COURSE. |
| J2 | PROP. 10" AGGREGATE BASE COURSE. |
| R1 | 1'-6" CONCRETE CURB AND GUTTER. |
| R2 | 2'-6" CONCRETE CURB AND GUTTER. |
| R3 | 5" MONOLITHIC CONCRETE ISLAND (KEYED IN) |
| S | PROPOSED 4" CONCRETE SIDEWALK |
| T | EARTH MATERIAL. |
| U | EXISTING PAVEMENT. |
| V | MILLING ASHPALT PAVEMENT 1.5" DEPTH |
| W | VARIABLE DEPTH ASPHALT PAVEMENT (SEE STANDARD WEDGING DETAIL 1, SHEET 2A-5) |

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| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-5828 | 2A-2 |

ROADWAY DESIGN ENGINEER

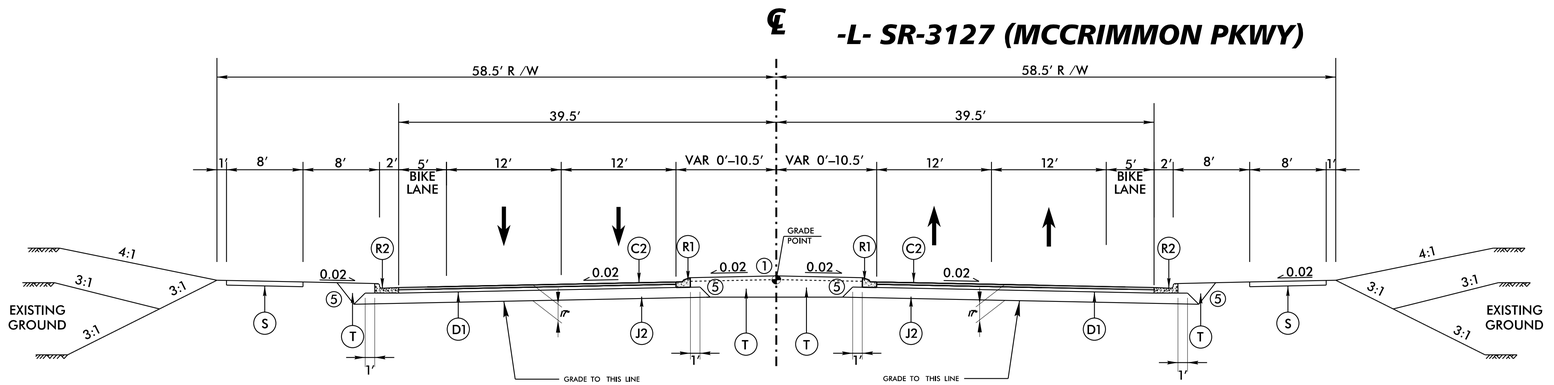
3/8/2018
NORTH CAROLINA PROFESSIONAL SEAL 029876 ENGINEER
Matthew W. Smith
Docusigned by: Matthew W. Smith
ACT1A1D07968425...

PAVEMENT DESIGN ENGINEER

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

## TYPICAL SECTION NOTES:

1. SEE PLAN SHEETS FOR SPECIFIC MEDIAN ISLAND LOCATIONS AND TYPES
2. SEE PARTIAL SECTIONS FOR EXCEPTIONS TO STATION LIMITS
3. USE WEDGING AS NECESSARY. SEE DETAIL 1, SHEET 2A-5
4. SEE PLAN SHEETS FOR LANE TAPER LOCATIONS
5. PAVEMENT EDGE SLOPES ARE 1:1 UNLESS OTHERWISE NOTED
6. SEE CROSS SECTIONS AND PROFILES FOR SPECIAL DITCH GRADES
7. SEE CROSS SECTIONS FOR CROSS SLOPE CONNECT EXSITING CENTERLINE TO EXISTING CURB
8. SIDEWALK LOCATIONS, WIDTH, AND OFFSETS FROM BACK OF CURB WILL VARY. SEE PLANS FOR SPECIFIC LOCATIONS AND DIMENSIONS.
9. SEE DETAIL 9, SHEET 2A-6 FOR SAWCUT DETAIL.




**TYPICAL SECTION NO. 2**

**-L- Sta. 55+52.00 TO 129+93.41**

## PAVEMENT SCHEDULE

| | |
|---|---|
| C1 | PROP. APPROX. 1.5" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. |
| C2 | 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. |
| C3 | 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 OR LESS THAN 1.5" IN DEPTH. |
| D1 | PROP. APPROX. 4" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD. |
| D2 | PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH TO BE PLACED IN LAYERS NOT TO EXCEED 4" IN DEPTH OR LESS THAN 2.5" IN DEPTH. |
| E1 | 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 |
| E2 | 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. |
| E3 | PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH TO BE PLACED IN LAYERS NOT TO EXCEED 5.5" IN DEPTH OR LESS THAN 3" IN DEPTH. |
| J1 | PROP. 6" AGGREGATE BASE COURSE. |
| J2 | PROP. 10" AGGREGATE BASE COURSE. |
| R1 | 1'-6" CONCRETE CURB AND GUTTER. |
| R2 | 2'-6" CONCRETE CURB AND GUTTER. |
| R3 | 5" MONOLITHIC CONCRETE ISLAND (KEYED IN) |
| S | PROPOSED 4" CONCRETE SIDEWALK |
| T | EARTH MATERIAL. |
| U | EXISTING PAVEMENT. |
| V | MILLING ASHPALT PAVEMENT 1.5" DEPTH |
| W | VARIABLE DEPTH ASPHALT PAVEMENT (SEE STANDARD WEDGING DETAIL 1, SHEET 2A-5) |

K:\RAL_Roadway\012\108004 - McCrimmon Parkway\Phase 1\Plan\Plan Sheets\U5828_rdy_typdgn
3/8/2018

Kimley»Horn
P.O. BOX 33068
RALEIGH, N.C. 27636-3068

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-5828 | 2A-3 |

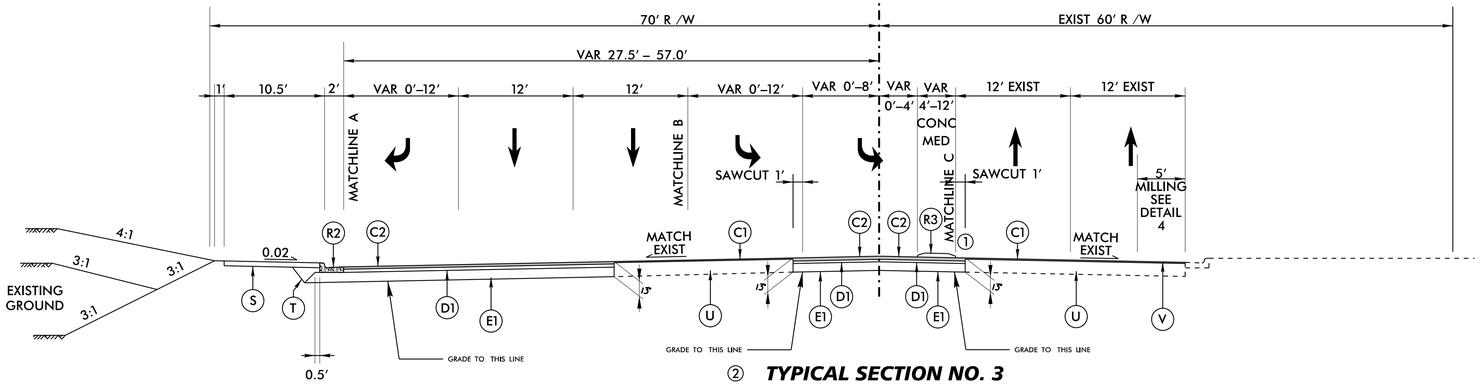
ROADWAY DESIGN ENGINEER

3/8/2018
NORTH CAROLINA PROFESSIONAL SEAL 029876 ENGINEER
MATTHEW S. WEST
Matthew S. West
AC71A1D07968425...

PAVEMENT DESIGN ENGINEER

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

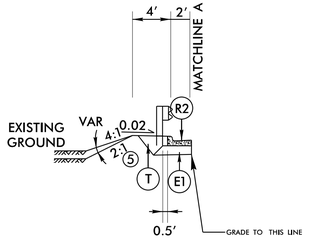
## ℄ -L- SR-3084 (EVANS RD)




② **TYPICAL SECTION NO. 3**

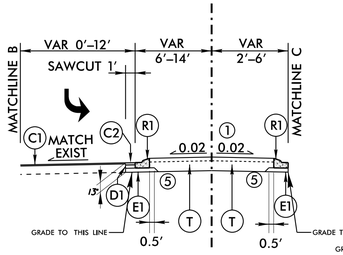
**-L- Sta. 130+45.96 TO 140+75.00**

## ℄ -L- SR-3084 (EVANS RD)



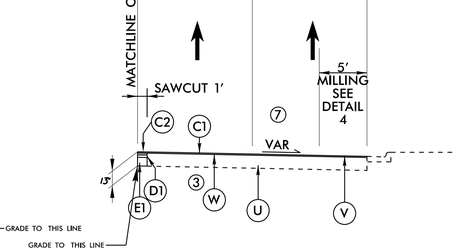

② **INSET 3A**

**-L- Sta. 139+61.20 TO 140+75.00 (LT)**



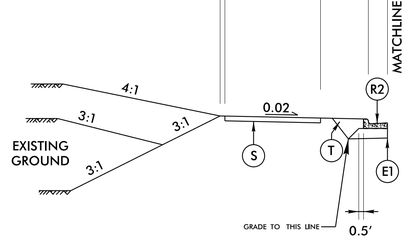

② **INSET 3B**

**-L- Sta. 134+68.50 TO 137+44.84**




② **INSET 3C**

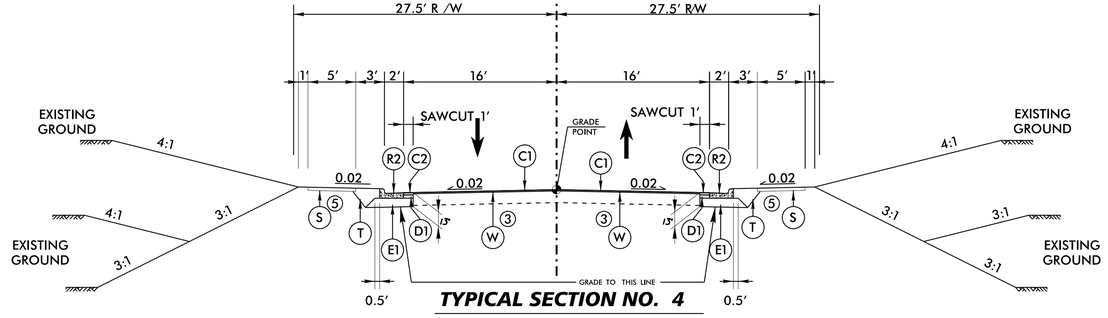
**-L- Sta. 136+00.00 TO 140+75.00 (RT)**




② **INSET 3D**

**-L- Sta. 135+50.00 TO 138+35.00 (LT)**

## ℄ -Y7- SOUTHPORT DR




**TYPICAL SECTION NO. 4**

**-Y7- Sta. 19+45.00 TO 19+81.30**

### TYPICAL SECTION NOTES:

1. SEE PLAN SHEETS FOR SPECIFIC MEDIAN ISLAND LOCATIONS AND TYPES
2. SEE PARTIAL SECTIONS FOR EXCEPTIONS TO STATION LIMITS
3. USE WEDGING AS NECESSARY. SEE DETAIL 1, SHEET 2A-5
4. SEE PLAN SHEETS FOR LANE TAPER LOCATIONS
5. PAVEMENT EDGE SLOPES ARE 1:1 UNLESS OTHERWISE NOTED
6. SEE CROSS SECTIONS AND PROFILES FOR SPECIAL DITCH GRADES
7. SEE CROSS SECTIONS FOR CROSS SLOPE CONNECT EXSITING CENTERLINE TO EXISTING CURB
8. SIDEWALK LOCATIONS, WIDTH, AND OFFSETS FROM BACK OF CURB WILL VARY. SEE PLANS FOR SPECIFIC LOCATIONS AND DIMENSIONS.
9. SEE DETAIL 9, SHEET 2A-6 FOR SAWCUT DETAIL.

## PAVEMENT SCHEDULE

| | |
|---|---|
| C1 | PROP. APPROX. 1.5" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. |
| C2 | 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. |
| C3 | 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 OR LESS THAN 1.5" IN DEPTH. |
| D1 | PROP. APPROX. 4" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD. |
| D2 | PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH TO BE PLACED IN LAYERS NOT TO EXCEED 4" IN DEPTH OR LESS THAN 2.5" IN DEPTH. |
| E1 | 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 |
| E2 | 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. |
| E3 | PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH TO BE PLACED IN LAYERS NOT TO EXCEED 5.5" IN DEPTH OR LESS THAN 3" IN DEPTH. |
| J1 | PROP. 6" AGGREGATE BASE COURSE. |
| J2 | PROP. 10" AGGREGATE BASE COURSE. |
| R1 | 1'-6" CONCRETE CURB AND GUTTER. |
| R2 | 2'-6" CONCRETE CURB AND GUTTER. |
| R3 | 5" MONOLITHIC CONCRETE ISLAND (KEYED IN) |
| S | PROPOSED 4" CONCRETE SIDEWALK |
| T | EARTH MATERIAL. |
| U | EXISTING PAVEMENT. |
| V | MILLING ASHPALT PAVEMENT 1.5" DEPTH |
| W | VARIABLE DEPTH ASPHALT PAVEMENT (SEE STANDARD WEDGING DETAIL 1, SHEET 2A-5) |

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RALEIGH, N.C. 27636–3068

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-5828 | 2A-4 |

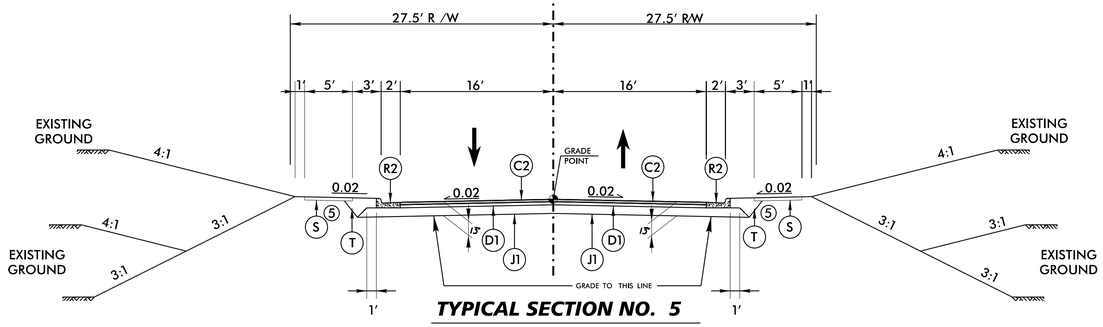
ROADWAY DESIGN ENGINEER

PAVEMENT DESIGN ENGINEER

3/8/2018
NORTH CAROLINA PROFESSIONAL SEAL 029876 ENGINEER MATTHEW S. WEST
Docusigned by: Matthew S. West
AC71A1D0796B425...

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

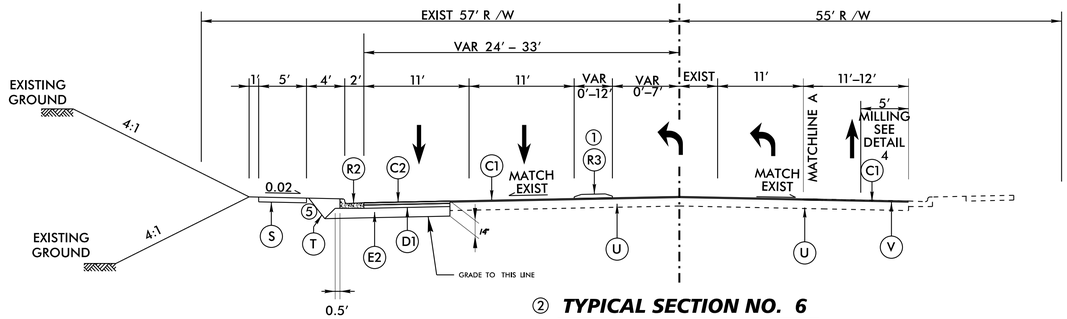
## -Y7- SOUTHPORT DR




**TYPICAL SECTION NO. 5**

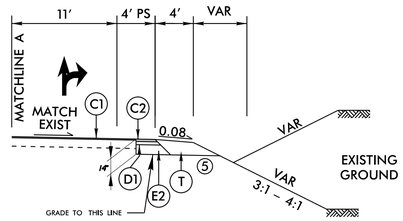
**-Y7- Sta. 19+81.30 TO 24+44.30**

## -Y8- SR-1002 (AVIATION PKWY)




② **TYPICAL SECTION NO. 6**

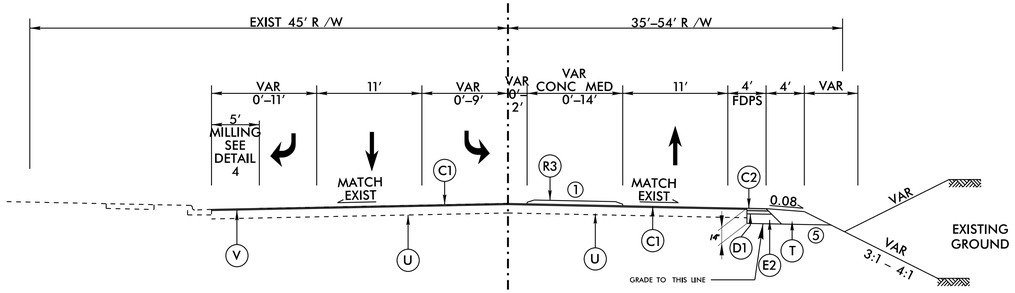
**-Y8- Sta. 16+00.00 TO 25+30.55**




② **INSET 6A**

**-Y8- Sta. 18+75.00 TO 25+30.55 (RT)**

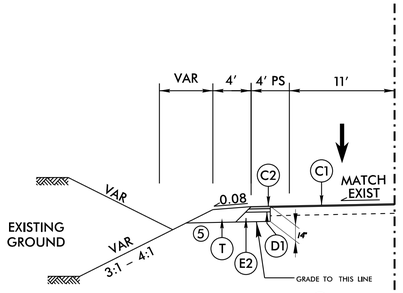
## -Y8- SR-1002 (AVIATION PKWY)




② **TYPICAL SECTION NO. 7**

**-Y8- Sta. 25+30.55 TO 32+00.00**

## -Y8- SR-1002 (AVIATION PKWY)




**INSET 7A** ②

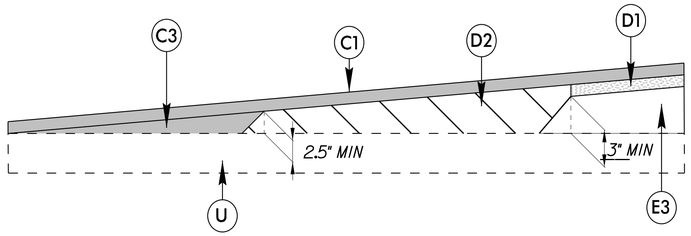
**-Y8- Sta. 30+00.00 TO 32+00.00 (LT)**

**TYPICAL SECTION NOTES:**

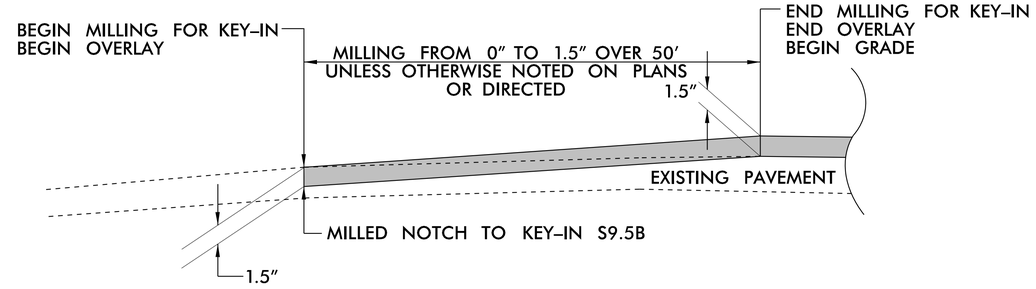
1. SEE PLAN SHEETS FOR SPECIFIC MEDIAN ISLAND LOCATIONS AND TYPES
2. SEE PARTIAL SECTIONS FOR EXCEPTIONS TO STATION LIMITS
3. USE WEDGING AS NECESSARY. SEE DETAIL 1, SHEET 2A-5
4. SEE PLAN SHEETS FOR LANE TAPER LOCATIONS
5. PAVEMENT EDGE SLOPES ARE 1:1 UNLESS OTHERWISE NOTED
6. SEE CROSS SECTIONS AND PROFILES FOR SPECIAL DITCH GRADES
7. SEE CROSS SECTIONS FOR CROSS SLOPE CONNECT EXSITING CENTERLINE TO EXISTING CURB
8. SIDEWALK LOCATIONS, WIDTH, AND OFFSETS FROM BACK OF CURB WILL VARY. SEE PLANS FOR SPECIFIC LOCATIONS AND DIMENSIONS.
9. SEE DETAIL 9, SHEET 2A-6 FOR SAWCUT DETAIL.

## PAVEMENT SCHEDULE

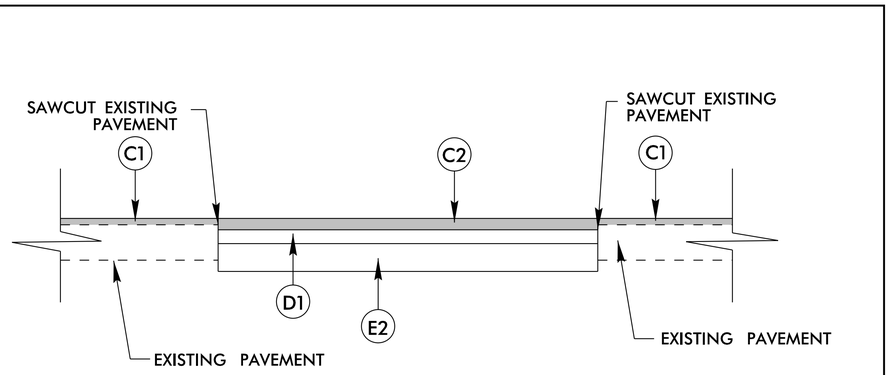
| | |
|---|---|
| C1 | PROP. APPROX. 1.5" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. |
| C2 | PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS. |
| C3 | PROP. VAR. DEPTH ASPHALT 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 OR LESS THAN 1.5" IN DEPTH. |
| D1 | PROP. APPROX. 4" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD. |
| D2 | PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH TO BE PLACED IN LAYERS NOT TO EXCEED 4" IN DEPTH OR LESS THAN 2.5" IN DEPTH. |
| E1 | 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 |
| E2 | 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. |
| E3 | PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH TO BE PLACED IN LAYERS NOT TO EXCEED 5.5" IN DEPTH OR LESS THAN 3" IN DEPTH. |
| J1 | PROP. 6" AGGREGATE BASE COURSE. |
| J2 | PROP. 10" AGGREGATE BASE COURSE. |
| R1 | 1'-6" CONCRETE CURB AND GUTTER. |
| R2 | 2'-6" CONCRETE CURB AND GUTTER. |
| R3 | 5" MONOLITHIC CONCRETE ISLAND (KEYED IN) |
| S | PROPOSED 4" CONCRETE SIDEWALK |
| T | EARTH MATERIAL. |
| U | EXISTING PAVEMENT. |
| V | MILLING ASHPALT PAVEMENT 1.5" DEPTH |
| W | VARIABLE DEPTH ASPHALT PAVEMENT (SEE STANDARD WEDGING DETAIL 1, SHEET 2A-5) |



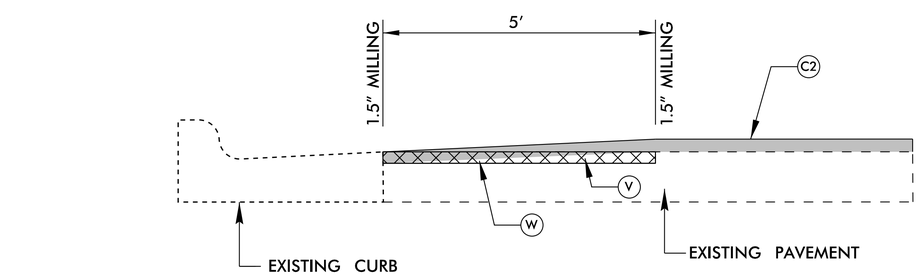

**DETAIL 1 - METHOD OF WEDGING**




**DETAIL - 2 INCIDENTAL MILLING (MILLING FOR KEY-IN)**




**DETAIL 3 - PAVEMENT PATCHING**




**DETAIL 4 - MILLING ADJACENT TO EXISTING CURB**

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| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-5828 | 2A-5 |

ROADWAY DESIGN ENGINEER

PAVEMENT DESIGN ENGINEER

3/8/2018
NORTH CAROLINA PROFESSIONAL SEAL 029876 ENGINEER MATTHEW S. WEST
DocuSigned by: Matthew S. West

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

## PAVEMENT SCHEDULE

| | |
|---|---|
| C1 | PROP. APPROX. 1.5" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. |
| C2 | 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. |
| C3 | 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 OR LESS THAN 1.5" IN DEPTH. |
| D1 | PROP. APPROX. 4" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE 119.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD. |
| D2 | PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE 119.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH TO BE PLACED IN LAYERS NOT TO EXCEED 4" IN DEPTH OR LESS THAN 2.5" IN DEPTH. |
| E1 | 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 |
| E2 | 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. |
| E3 | PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH TO BE PLACED IN LAYERS NOT TO EXCEED 5.5" IN DEPTH OR LESS THAN 3" IN DEPTH. |
| J1 | PROP. 6" AGGREGATE BASE COURSE. |
| J2 | PROP. 10" AGGREGATE BASE COURSE. |
| R1 | 1'-6" CONCRETE CURB AND GUTTER. |
| R2 | 2'-6" CONCRETE CURB AND GUTTER. |
| R3 | 5" MONOLITHIC CONCRETE ISLAND (KEYED IN) |
| S | PROPOSED 4" CONCRETE SIDEWALK |
| T | EARTH MATERIAL. |
| U | EXISTING PAVEMENT. |
| V | MILLING ASHPALT PAVEMENT 1.5" DEPTH |
| W | VARIABLE DEPTH ASPHALT PAVEMENT (SEE STANDARD WEDGING DETAIL 1, SHEET 2A-5) |

K:\RAL_Roadway\012108004 - McCrimmon Parkway\Phase II\Plan\Plan Sheets\U5828_rdy_typ.dgn
3/8/2018

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| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-5828 | 2A-6 |

ROADWAY DESIGN ENGINEER

8/18/2017

NORTH CAROLINA PROFESSIONAL SEAL 029876 ENGINEER MATTHEW S. WEST

DocuSigned by: Matthew S. West
AC71A1D0796B425...

PAVEMENT DESIGN ENGINEER

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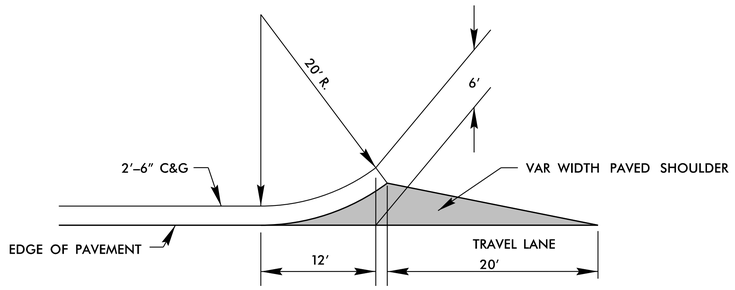
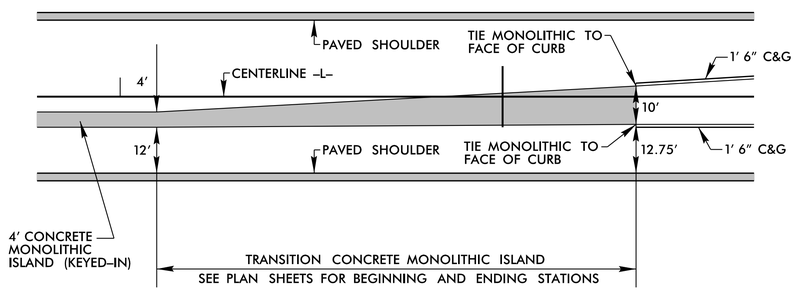
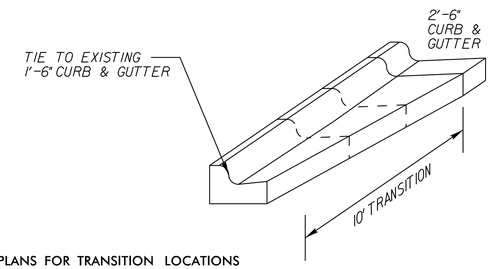



NOT TO SCALE

***DETAIL 5 - STANDARD CURB & GUTTER FLARE***

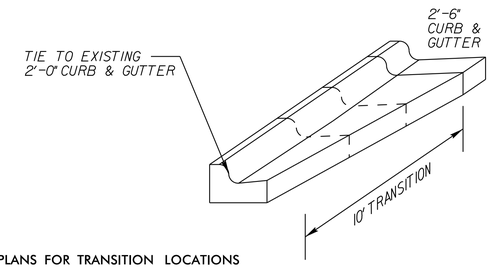



***DETAIL 6 - CONCRETE MONOLITHIC ISLAND TRANSITION***



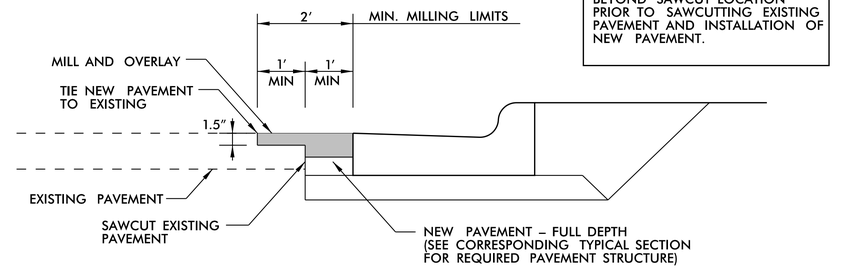

NOTES:
1 SEE PLANS FOR TRANSITION LOCATIONS

***DETAIL 7 - CURB TRANSITION 2'-6" to 1'-6" C&G***




NOTES:
1 SEE PLANS FOR TRANSITION LOCATIONS

***DETAIL 8 - CURB TRANSITION 2'-6" to 2'-0" C&G***




NOTE:
WHERE REQUIRED TO SAWCUT EXISTING PAVEMENT TO INSTALL FULL DEPTH PAVEMENT, MILL 1' BEYOND SAWCUT LOCATION PRIOR TO SAWCUTTING EXISTING PAVEMENT AND INSTALLATION OF NEW PAVEMENT.

NOT TO SCALE

***DETAIL 9 - MINIMUM WIDENING AND SAWCUT DIMENSIONS***

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RIGHT-OF-WAY REV.

CONST. REV.

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-5828 | 2B-1 |
| R/W SHEET NO. | |

ROADWAY DESIGN ENGINEER
8/18/2017
NORTH CAROLINA PROFESSIONAL SEAL 029876 ENGINEER MATTHEW C WEST
DocuSigned by: Matthew C. West
AC71A1D0796B425...

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-L- Sta. 53+36.84 =
-Y4- Sta. 23+27.78

-Y4- SR-3015
(AIRPORT BOULEVARD)
S 3°56'46.0" W

-L- SR-3127 (MCCRIMMON PARKWAY)
S 85°53'00.9" E

NAD 83 / NA 2011

+28.73
30.04' LT
+43.20
33.92' LT
+39.20
49.21' LT
+47.64
53.75' LT
+08.77
62.57' LT
+16.76
58.66' LT
+26.58
57.50' LT
+13.02
43.11' LT
+26.58
39.50' LT
+06.00
6.00' RT
4.5'R
+39.38
39.50' RT
+32.86
78.25' LT
+32.62
64.19' LT
+29.53
57.50' LT
+07.63
39.50' LT
+51.26
78.25' LT
+51.56
63.75' LT
+54.64
57.50' LT
+76.55
39.50' LT
+05.00
01.50' RT
+35.50
57.50' RT
+20.58
60.04' RT
+14.01
67.58' RT
+06.64
65.06' LT
+12.55
57.01' LT
+27.88
53.43' LT
+27.94
42.24' LT

R=60'
41'R
60'R
45'R
R=25'
25'R
R=60'

8' SIDEWALK
2'-6" C&G
1'-6" C&G
5'
12'
9'
CR

30" C&G
BST
55
25

**-L-/-Y4-**
(SEE SHEET NO.4 FOR PLAN)

**INTERSECTION DETAILS**

10 0 20

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RIGHT-OF-WAY REV.

CONST. REV.

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-5828 | 2B-2 |
| R/W SHEET NO. | |

ROADWAY DESIGN ENGINEER

8/18/2017
NORTH CAROLINA PROFESSIONAL SEAL 029876 ENGINEER MATTHEW S WEST
Matthew S. West
AC71A1D07968425...

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NAD 83 / NA 2011

K:\RAL_Roadway\0\2108004 - McCrimmon Parkway\Phase II\Plan\Plan Sheets\Phase2_0\2108004_2B-2.dgn

8/15/2017

**-Y7- SOUTHPORT DRIVE**
S 80° 28' 36.42" W

**-L- SR-3127 (MCCRIMMON PARKWAY)**
S 19° 45' 44.6" E

-L- Sta. 114+53.84 =
-Y7- Sta. 24+84.44

+11.17 26.00' RT
+11.17 26.00' LT
+14.50 02
+27.75 01.5°
+40.55 21.00' LT
+40.55 26.00' LT
+66.12 21.00' RT
+66.12 26.00' RT
+70.55 21.00' LT
+70.55 29.00' LT
+81.62 16.00' LT
+96.12 21.00' RT
+96.12 29.00' RT
+05.38 16.00' RT
+99.61 57.50' LT
+43.90 57.50' LT
+02.89 39.50' LT
+37.02 39.50' LT
+10.00 6.00' LT 4.5' R
+60.00 01.50' LT
+25.00 6.00' RT 4.5' R
+75.00 01.50' RT
+55.11
+44.10

16' 18' 0.2' 2.5% 0.3 2.5% 18' 16' 2'-6" C&G 5' SIDEWALK VAR. SIDEWALK 8' SIDEWALK 42'R R=50' 50'R CR 5' 12' 9' 1'-6" C&G 115 JS

## -L-/-Y7-

(SEE SHEET NO.10 FOR PLAN)

## INTERSECTION DETAILS

10 0 20

Kimley»Horn
P.O. BOX 33068
RALEIGH, N.C. 27636-3068

RIGHT-OF-WAY REV.

CONST. REV.

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-5828 | 2B-3 |
| R/W SHEET NO. | |

ROADWAY DESIGN ENGINEER
8/18/2017
NORTH CAROLINA PROFESSIONAL SEAL 029876 ENGINEER MATTHEW S WEST
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NAD 83 / NA 2011

K:\RAL_Roadway\01\2\108004 - McCrimmon Parkway\Phase II\Plan\Plan Sheets\Phase2_01\2\108004_2B-3.dgn

8/15/2017

-Y8- SR-1002 (AVIATION PARKWAY)

-L- SR-3084 (EVANS RD)
S 58° 04' 31.9" E

S 28° 13' 52.4" W

S 56° 07' 11.6" E

+23.06 65.64' LT
+94.83 67.00' LT
+37.75 67.00' LT
+23.57 47.64' LT
+95.00 49.00' LT
+37.75 49.00' LT
+24.12 18.65' LT
+95.28 20.00' LT
+38.00 10.75' LT 9.25'R
+49.56 51.50' RT
+49.56 69.50' RT
+91.58 21.17' RT
+64.91 39.00' LT
+81.98 37.92' LT
+84.91 44.00' LT
+19.34 33.00' LT
+95.85 30.00' RT
+09.59 31.72' RT
+10.99 33.15' RT
+23.59 44.00' RT
+23.59 26.00' RT
+27.63 82.11' LT 2'R
+09.55 69.00' LT
+09.55 57.00' LT
+00.10 6.00' RT 2'R
+06.28 47.72' RT
+30.28 49.77' RT
+44.65 53.41' RT
+23.53 75.28' RT 4'R
+00.86 51.63' LT
+04.92 9.95' RT
+97.17 45.88' RT
+24.49 11.51' RT
+11.83 46.32' RT
+12.41 44.41' RT
+24.45 37.96' RT
+06.99 59.01' LT
+16.89 55.84' RT
+28.13 57.65' RT
+44.66 61.41' RT
+12.59 56.83' LT
+06.79 49.17' LT
+32.51 55.66' LT
+32.51 47.64' LT

-L- Sta. 130+23.53 = -Y8- Sta. 25+30.55

R=50' 32'R 48'R R=60' 60'R 50'R 40'R 22'R R=40' 100'R 200'R R=200' 30'R 45.6'R 20'R 38'R 10'R

8' SIDEWALK 5' SIDEWALK 10' SIDEWALK VAR SIDEWALK

2'-6" C&G 1'-6" C&G

4' CONC ISLAND VAR CONC ISLAND 4' P.S. 4' F.S.

CR

130 25

5' 12' 12' 18.5' 12' 12' 12' 12' 5' 12' 11' 14' 12' 4' 11' 14'

+43.30 +48.30 +43.30 +43.30

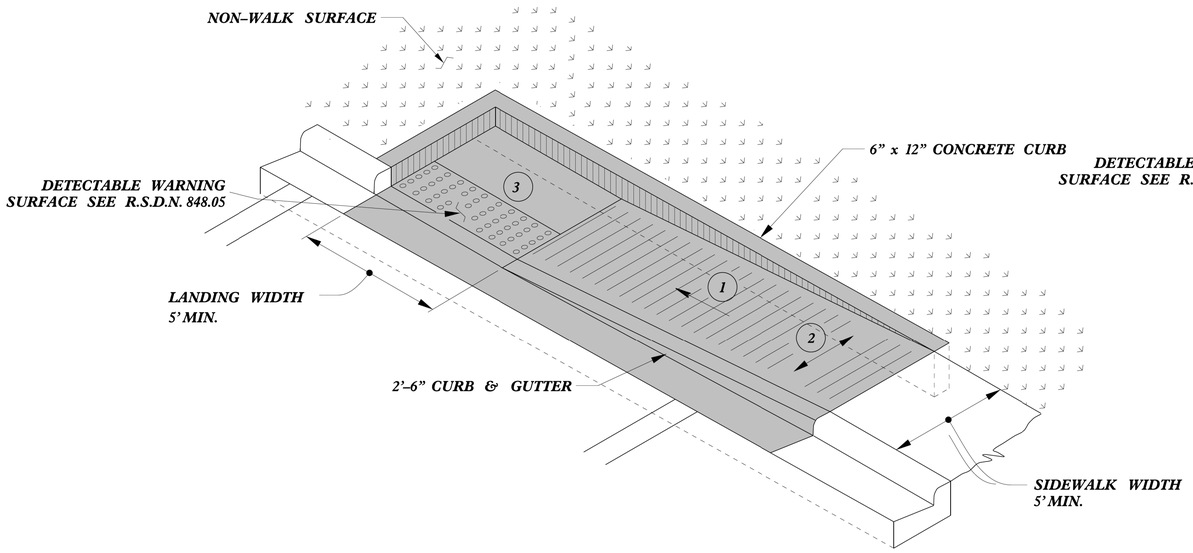
**-L-/-Y8-**
(SEE SHEET NO.11 FOR PLAN)

**INTERSECTION DETAILS**

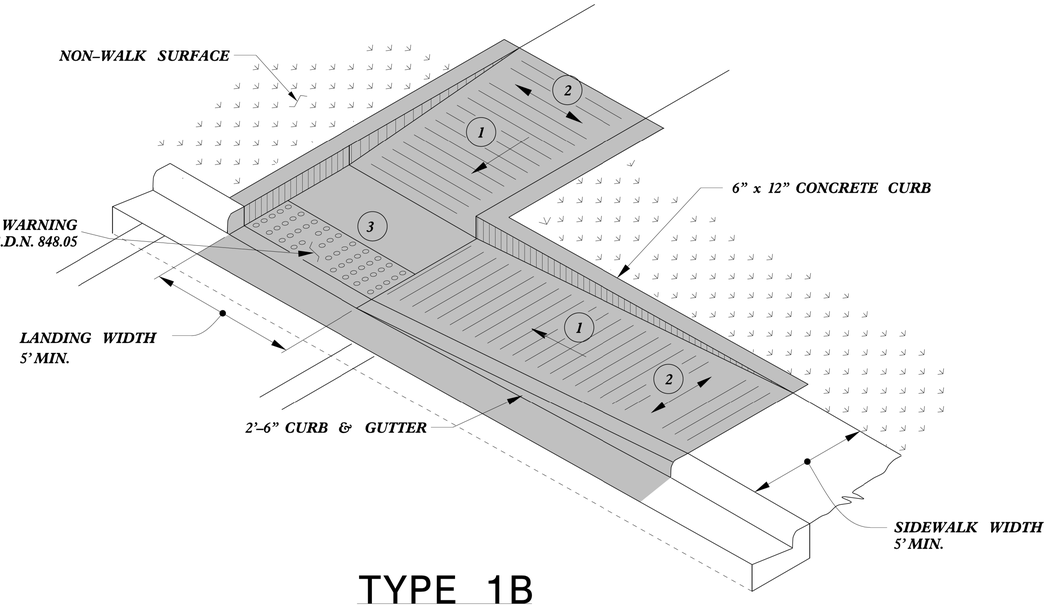
10 0 20

5/14/99

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-5828 | 2C-1 |




TYPE 1A



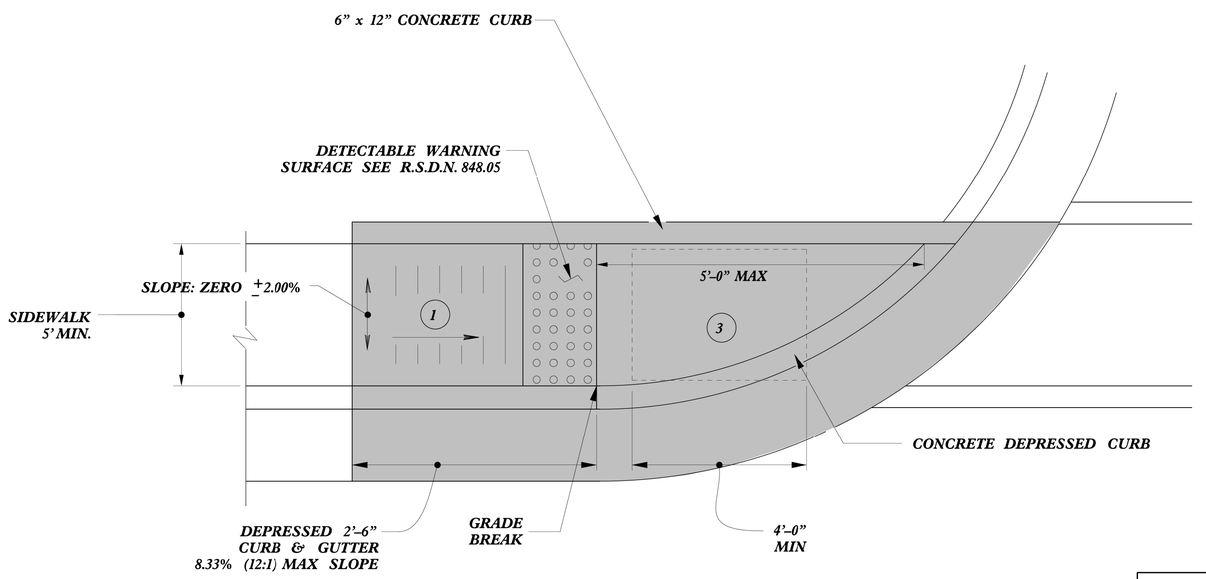

TYPE 1B

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*

11/14/2017

NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER Joel S. Howerton

DocuSigned by: Joel S. Howerton 873F3D17CDDC45F...

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

# CURB RAMPS

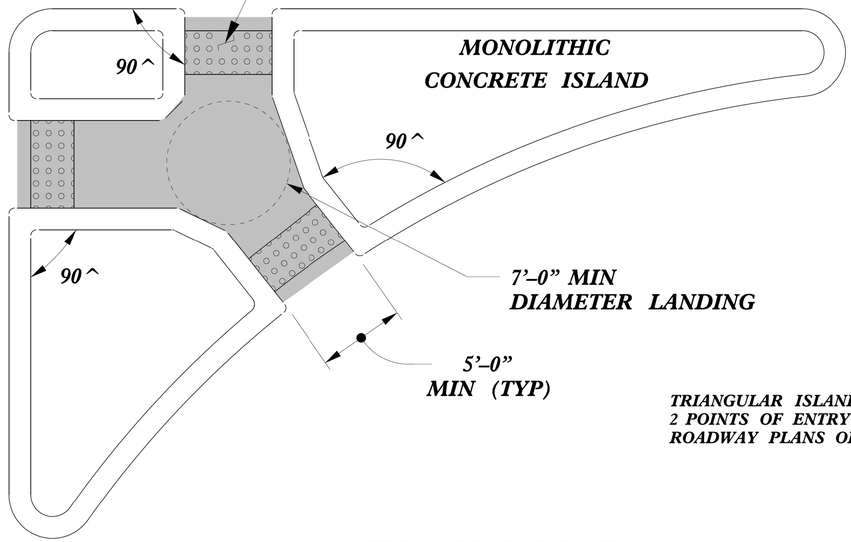
Directional Ramps

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

$$$$SYSTEM$$$$
$$$$DGNSET$$$$
$$$$CELFRAME$$$$

5/14/99

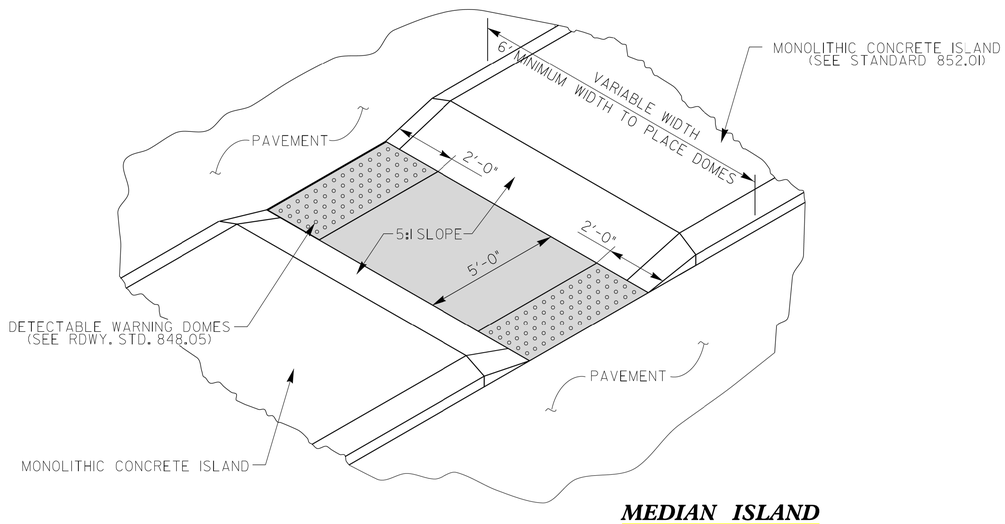
| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-5828 | 2C-2 |



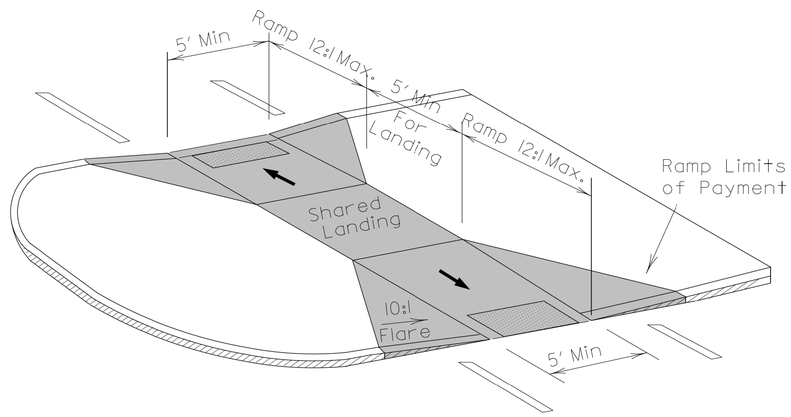

PAY LIMITS FOR 2 OR 3 CURB RAMPS (CALCULATE BASED ON NUMBER OF SETS OF TRUNCATED DOMES)

*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***

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NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER Joel S. Howerton

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

# CURB RAMPS

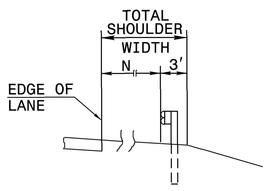
## Median or Turn Lane Islands

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

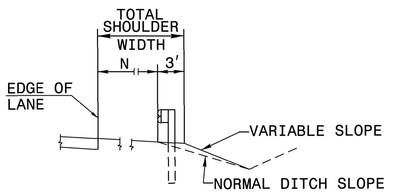
04-MAY-2017 15:15
S:\Contracts\Contracts\Special Details\jhowerton\Standard Drawings\2012 Standard Drawings\Details in Lieu of Standards\Division 8\862d01 862d03 862d03\862d01.dgn
jhowerton AT CSD-292595

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

ROADWAY DETAIL DRAWING FOR
**GUARDRAIL PLACEMENT**

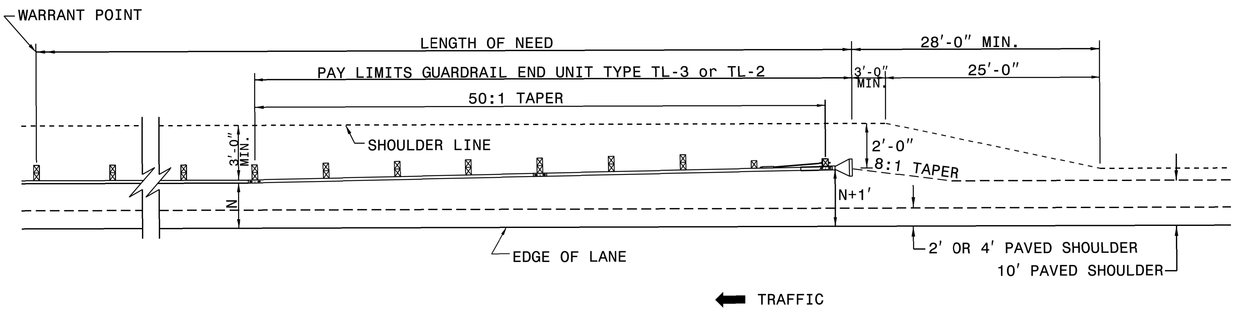



FILL SECTION




CUT SECTION

"N"= DISTANCE FROM EDGE OF LANE TO FACE OF GUARDRAIL WHERE GUARDRAIL IS PARALLEL TO LANE.



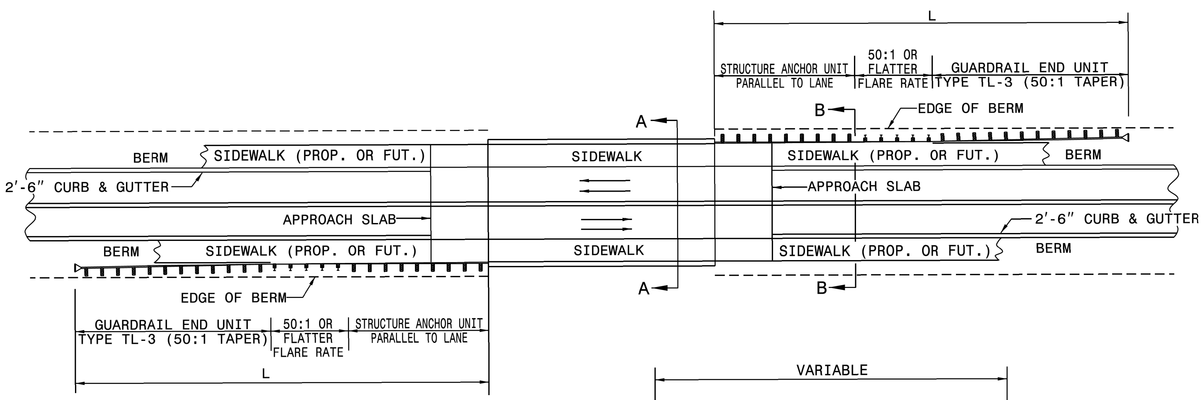

FOR POSTED SPEEDS ≥ 45mph USE GREU TYPE TL-3
FOR POSTED SPEEDS < 45mph USE GREU TYPE TL-2

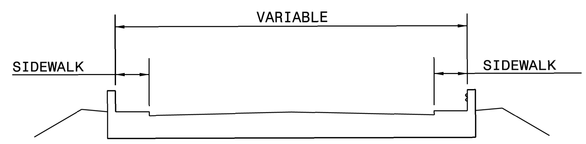
## DETAIL OF BEGINNING OF GUARDRAIL IN CUT OR FILL SECTION

SHEET 6 OF 11
**862D01**

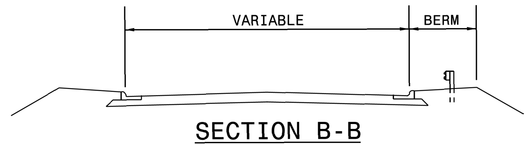
STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR
**GUARDRAIL PLACEMENT**




SECTION A-A

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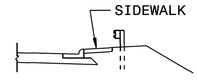


| MINIMUM GUARDRAIL LENGTHS "L" REQUIRED AT BRIDGE APPROACHES ON 2'-6" CONCRETE CURB AND GUTTER ROADWAYS | |
|---|---|
| DESIGN SPEED (MPH) | "L" |
| 40 | 150' |
| 50 | 225' |

NOTE: "L" VALUES ARE BASED ON NO HAZARDS OTHER THAN END OF BRIDGE BEING PRESENT WITHIN THE CLEAR ZONE.

SEE STD. 862D03 FOR STRUCTURE ANCHOR UNITS.

FOR POSTED SPEEDS ≥ 45mph USE GREU TYPE TL-3
FOR POSTED SPEEDS < 45mph USE GREU TYPE TL-2

## STANDARD GUARDRAIL PLACEMENT AT BRIDGES WITH 2'-6" CONCRETE CURB AND GUTTER

SHEET 5 OF 11
**862D01**

STATE OF NORTH CAROLINA
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RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR
**GUARDRAIL PLACEMENT**

SHEET 5 OF 11
**862D01**

**SEE TITLE BLOCK**

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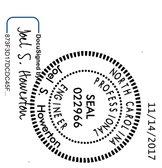


PROJECT REFERENCE NO. U-5828
SHEET NO. 20-3

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-5828 | 2C-4 |

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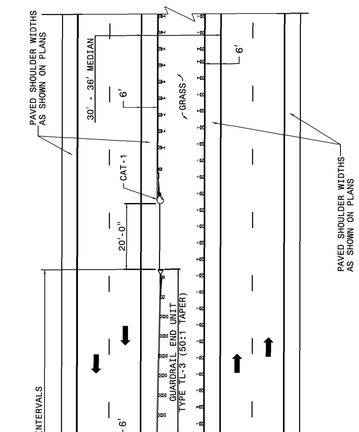
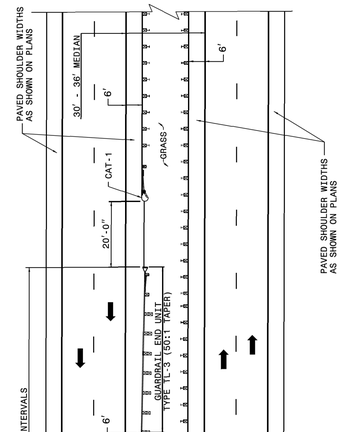
ROADWAY DETAIL DRAWING FOR
**GUARDRAIL PLACEMENT**

SHEET 7 OF 11
862D01




**DETAIL AT UNDERPASSES**




**DETAIL AT OVERPASSES**

* GUARDRAIL OPENING MAY BE SPACED AS CLOSE AS 350 FT. FROM STRUCTURE IF NECCESSARY TO ALLOW MOWER ACCESS TO MEDIAN

FOR POSTED SPEEDS ≥ 45mph USE GREU TYPE TL-3
FOR POSTED SPEEDS < 45mph USE GREU TYPE TL-2

## GUARDRAIL BREAK INTERVALS WITH 30' - 36' MEDIANS

11/14/2017
NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER
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873F3D17DCDC45F...

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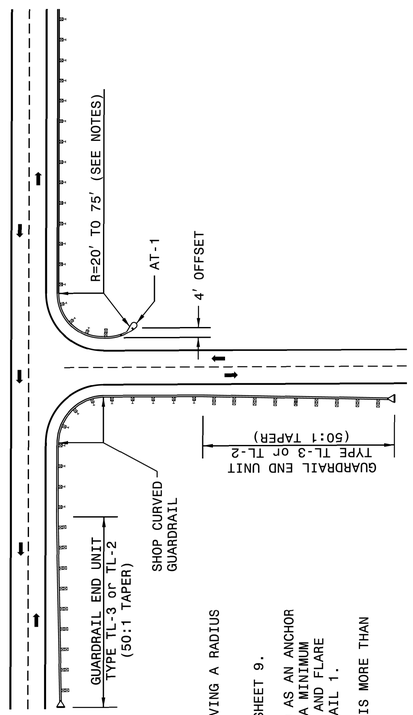
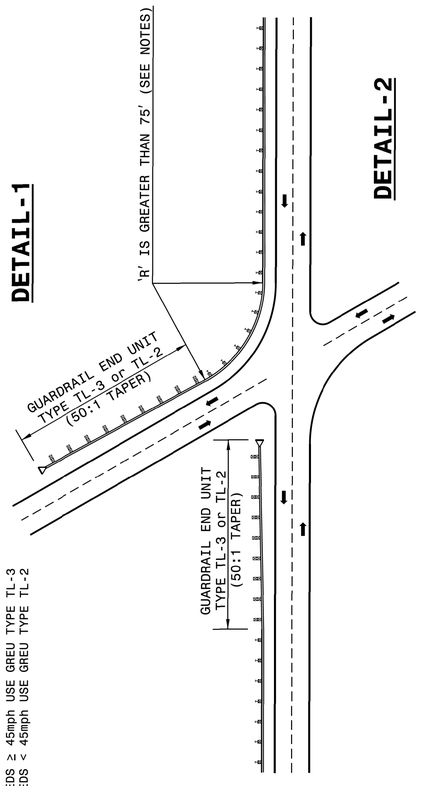
ROADWAY DETAIL DRAWING FOR
**GUARDRAIL PLACEMENT**

SHEET 8 OF 11
862D01




**DETAIL-1**




**DETAIL-2**

NOTES:

SHOP CURVED GUARDRAIL IS DEFINED AS HAVING A RADIUS OF 150' OR LESS.

WHEN RADIUS IS LESS THAN 20' REFER TO SHEET 9.

WHENEVER SHOP CURVED GUARDRAIL IS USED AS AN ANCHOR AND THE RADIUS IS FROM 20' TO 75', USE A MINIMUM LENGTH OF 50' OF SHOP CURVED GUARDRAIL AND FLARE WITH AN AT-1 ANCHOR UNIT. REFER TO DETAIL 1.

WHENEVER SHOP CURVED GUARDRAIL RADIUS IS MORE THAN 75', REFER TO DETAIL 2.

MAINTAIN CLEAR SIGHT DISTANCE.

FOR POSTED SPEEDS ≥ 45mph USE GREU TYPE TL-3
FOR POSTED SPEEDS < 45mph USE GREU TYPE TL-2

## GUARDRAIL TREATMENT AT INTERSECTIONS

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ROADWAY DETAIL DRAWING FOR
**GUARDRAIL PLACEMENT**

SHEET 8 OF 11
862D01

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-5828 | 2C-5 |

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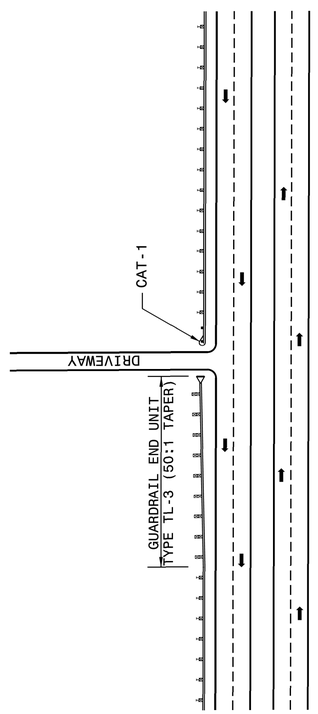
ROADWAY DETAIL DRAWING FOR
**GUARDRAIL PLACEMENT**

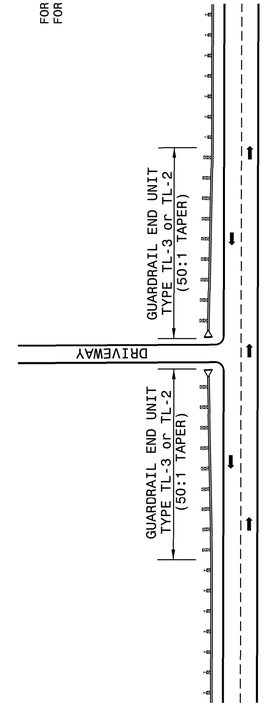
SHEET 9 OF 11
**862D01**

NOTE: USE DETAIL 3 & 4 WHENEVER
20' OR LARGER RADIUS CANNOT
BE UTILIZED.
MAINTAIN CLEAR SIGHT DISTANCE.

FOR POSTED SPEEDS ≥ 45mph USE GREU TYPE TL-3
FOR POSTED SPEEDS < 45mph USE GREU TYPE TL-2




**DETAIL-3**
DIVIDED HIGHWAY




**DETAIL-4**
UNDIVIDED HIGHWAY

**GUARDRAIL TREATMENT AT DRIVEWAYS**

11/14/2017

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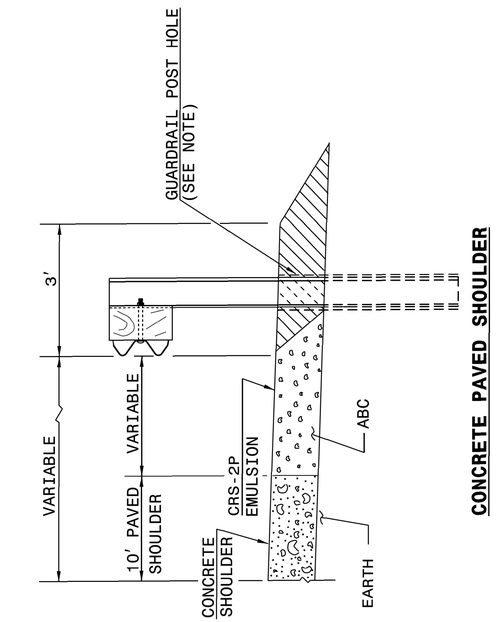
ENGLISH DETAIL DRAWING FOR
**GUARDRAIL PLACEMENT**

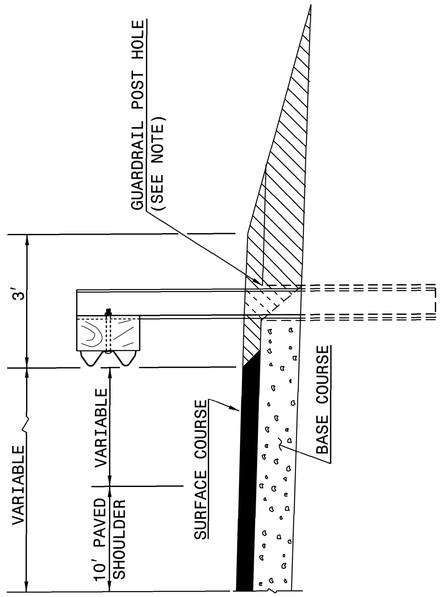
SHEET 10 OF 11
**862D01**




**CONCRETE PAVED SHOULDER**

EARTH MATERIAL

NOTE:
WHEN WOODEN GUARDRAIL POSTS ARE USED, DRILL HOLES THROUGH EARTH MATERIAL AND BASE COURSE. THE POST MAY THEN BE DRIVEN TO THE PROPER DEPTH. DRILL THE HOLE OF SUFFICIENT SIZE TO ACCOMMODATE THE PARTICULAR POST BEING USED. BACKFILL AND TAMP HOLES USING THE EXCAVATED MATERIAL.




**FLEXIBLE PAVED SHOULDER**

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ENGLISH DETAIL DRAWING FOR
**GUARDRAIL PLACEMENT**

SHEET 10 OF 11
**862D01**

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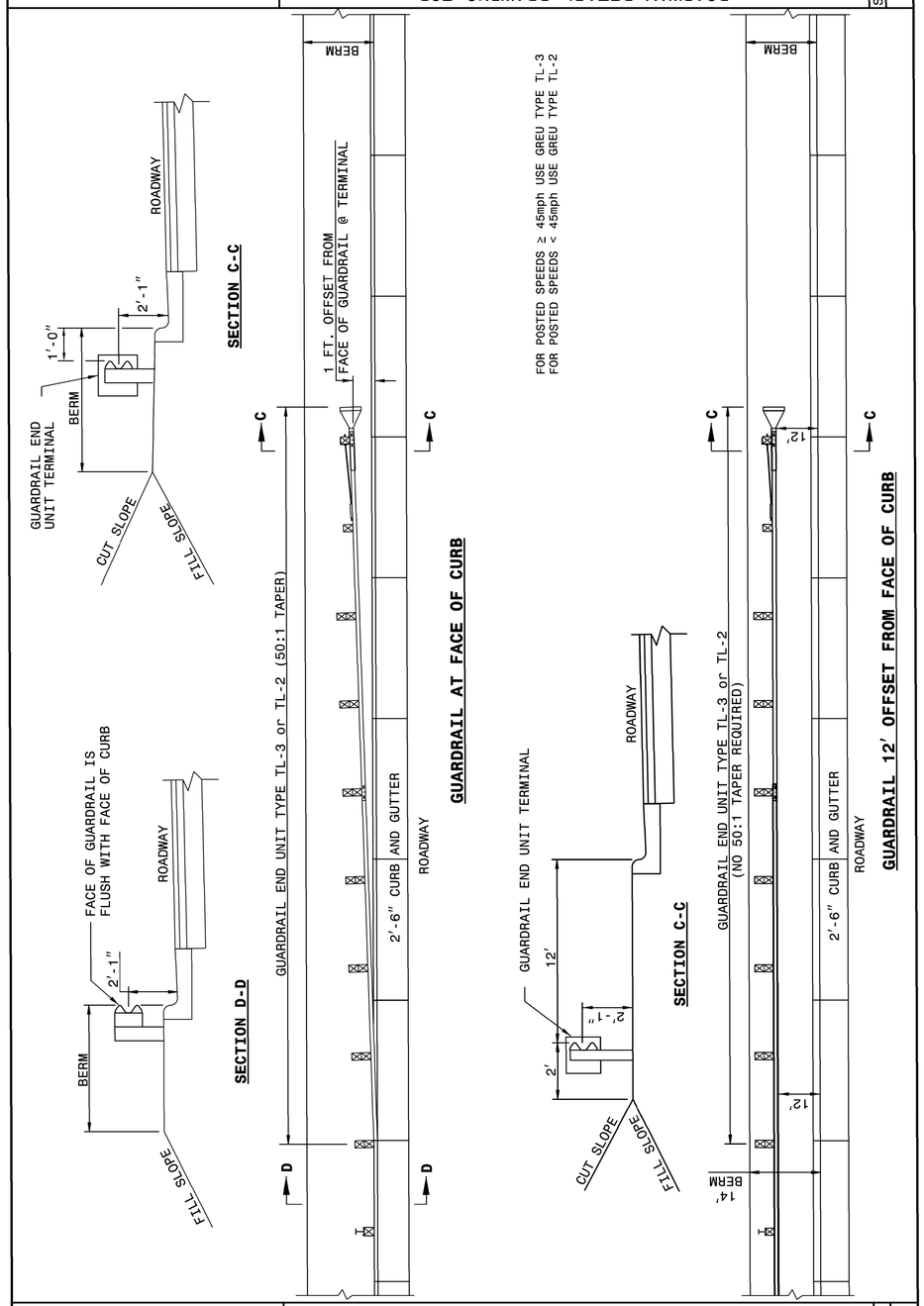
ROADWAY DETAIL DRAWING FOR
**GUARDRAIL PLACEMENT**
GUARDRAIL TREATMENT AT CURB AND GUTTER

SHEET 11OF 11 **862D01**

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ROADWAY DETAIL DRAWING FOR
**GUARDRAIL PLACEMENT**
GUARDRAIL TREATMENT AT CURB AND GUTTER

SHEET 11OF 11 **862D01**

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STATE OF
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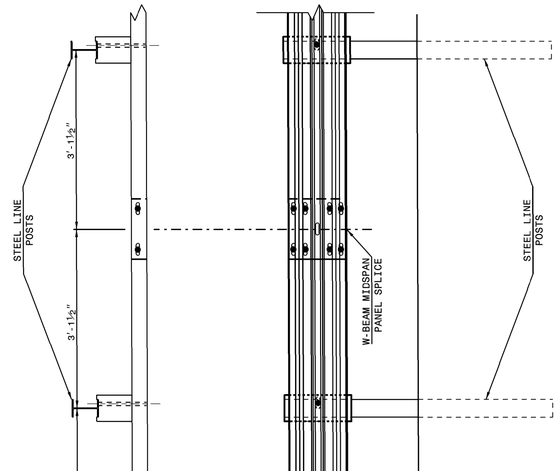
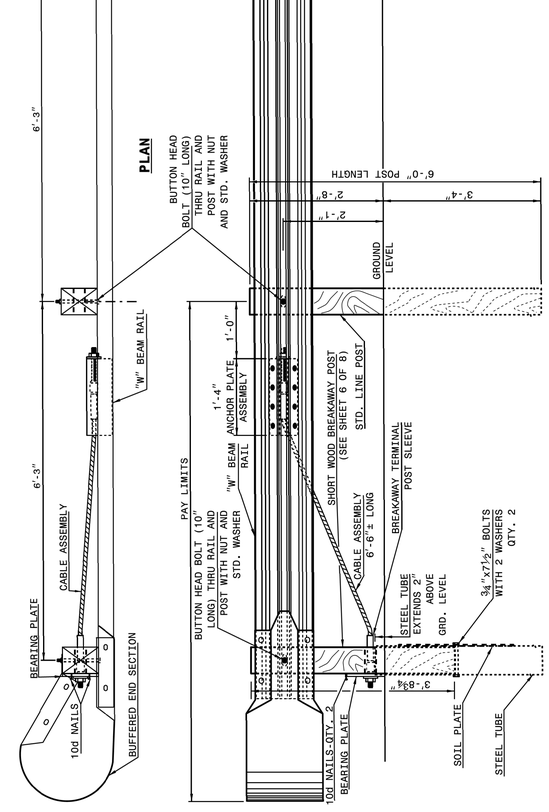
ROADWAY DETAIL DRAWING FOR
**GUARDRAIL INSTALLATION**

SHEET 1 OF 8
**862D02**




**TRAILING END UNIT ASSEMBLY**

**C.A.T.-1 SYSTEM**

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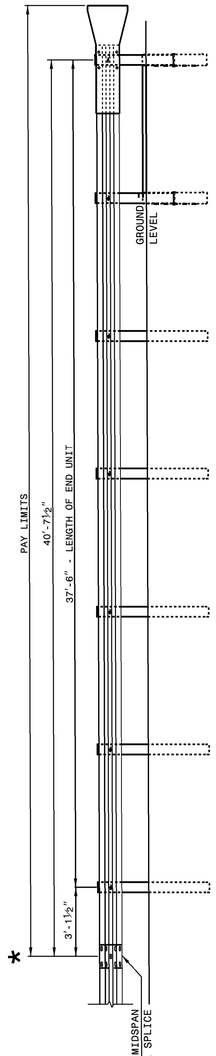
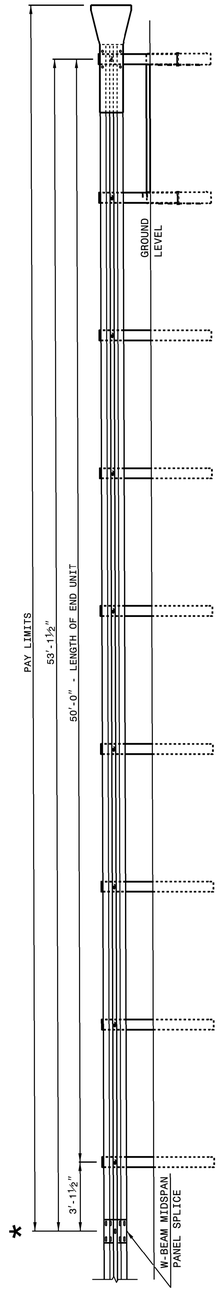
ROADWAY DETAIL DRAWING FOR
**GUARDRAIL INSTALLATION**

SHEET 2 OF 8
**862D02**




**FLARED AND TANGENT**
**ELEVATION VIEW**




**FLARED AND TANGENT**
**ELEVATION VIEW**

**APPROACH END UNITS**

* **WHEN INSTALLING GUARDRAIL END UNITS THAT ARE 2'-1" MOUNTING HEIGHT TO EXISTING GUARDRAIL, REMOVE THE EXISTING GUARDRAIL TO TRANSITION FROM THE EXISTING HEIGHT TO THE PROPOSED 2'-1" HEIGHT. SEE 862.02, SHEET 4 OF 8 FOR TRANSITION DETAILS.**

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ROADWAY DETAIL DRAWING FOR
**GUARDRAIL INSTALLATION**

SHEET 2 OF 8
**862D02**

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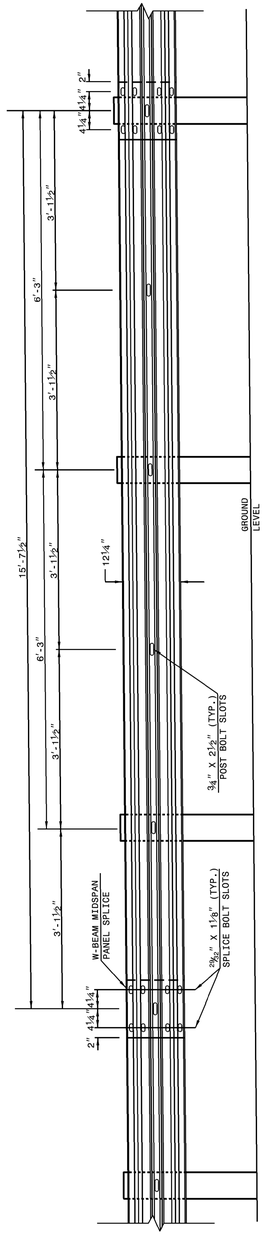


**15'-7½" W-BEAM GUARDRAIL PANEL**

**NOTE:** USE 5-SPACE 15'-7½" W-BEAM GUARDRAIL PANEL AT THE DOWNSTREAM END OF AN END UNIT OR EXISTING GUARDRAIL THAT DOES NOT OFFSET THE W-BEAM PANEL SPLICE TO MIDSPAN

11/14/2017

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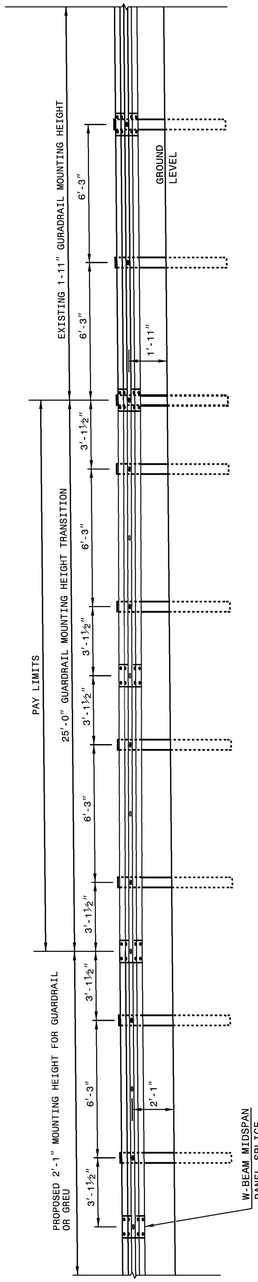
**NOTE: IF EXISTING GUARDRAIL IS LOWER THAN 1'-11", USE AN ADDITIONAL 12'-6" LONG SECTION OF GUARDRAIL, FOR EVERY 1" OF HEIGHT DIFFERENCE, TO TRANSITION FROM EXISTING GUARDRAIL TO PROPOSED 2'-1" GUARDRAIL.**

**ELEVATION VIEW**

**TRANSITION FROM OR 1'-11" TO 2'-1" W-BEAM GUARDRAIL MOUNTING HEIGHT**



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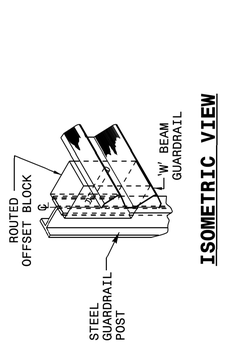
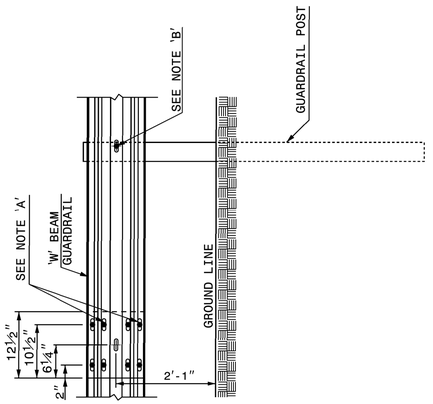
ROADWAY DETAIL DRAWING FOR
**GUARDRAIL INSTALLATION**

SHEET 5 OF 8
**862D02**

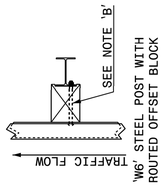
## GUARDRAIL POST ALTERNATIVES



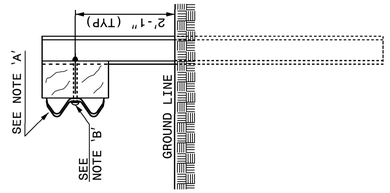

**ISOMETRIC VIEW**




**FRONT - MID SPAN SPLICE**




'W6' STEEL POST WITH
ROUTED OFFSET BLOCK
**PLAN**




'W6' STEEL POST WITH
ROUTED OFFSET BLOCK
**SIDE**

NOTES:
A - ⅝" DIA. BUTTON HEAD SPLICE BOLT 1¼" LONG (8 REQ. PER SPLICE JOINT).
B - ⅝" DIA. BUTTON HEAD BOLT 7½"/9" LONG WITH NUT FOR BOLTING 6"/8" ROUTED OFFSET BLOCK TO STEEL POSTS.
C - FIELD PUNCHING OF HOLES INTO GUARDRAIL AS DIRECTED BY THE ENGINEER.

**TYPICAL GUARDRAIL AND GUARDRAIL POST ALTERNATIVES**

11/14/2017
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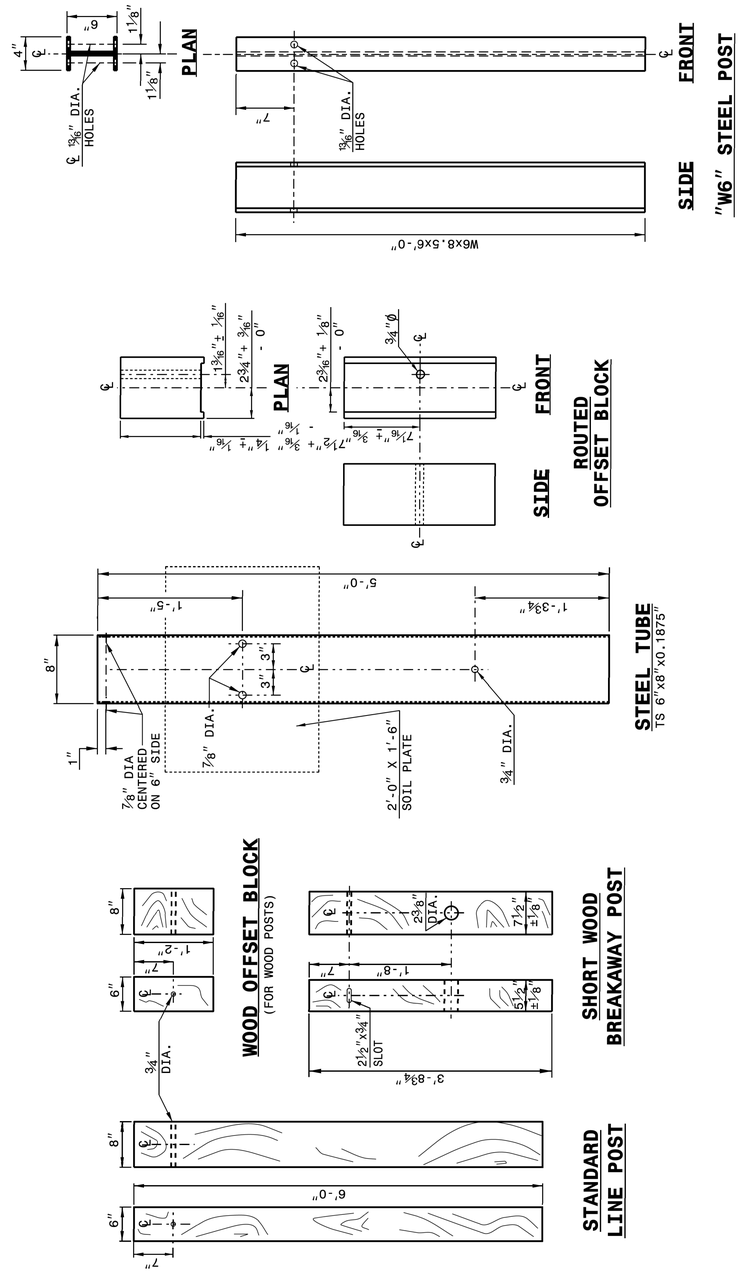
ROADWAY DETAIL DRAWING FOR
**GUARDRAIL INSTALLATION**

SHEET 6 OF 8
**862D02**

## SYSTEM PARTS

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ROADWAY DETAIL DRAWING FOR
**GUARDRAIL INSTALLATION**

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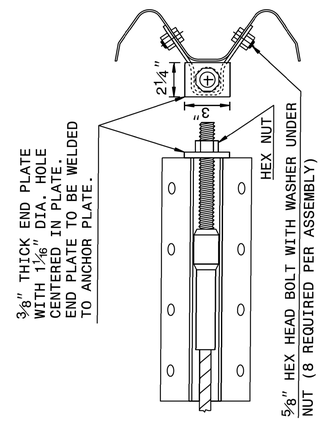
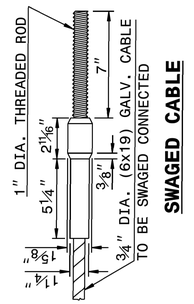
ROADWAY DETAIL DRAWING FOR
**GUARDRAIL INSTALLATION**

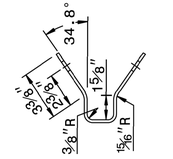
SHEET 7 OF 8
**862D02**

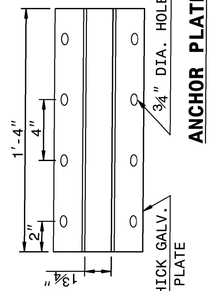



**ANCHOR PLATE ASSEMBLY**




**SWAGED CABLE**

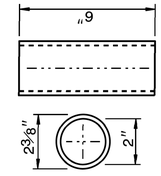



**ANCHOR PLATE**

**CABLE ASSEMBLY**

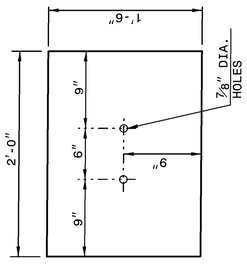
## SYSTEM PARTS - GENERAL USE




**BREAKAWAY TERMINAL POST SLEEVE**

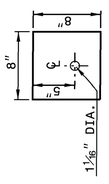

**DETAIL OF STANDARD WASHER**

STANDARD WASHER: TYPICAL USE UNDER NUT WITH WOOD POST



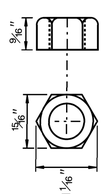

**SOIL PLATE**

¼" THICK PLATE

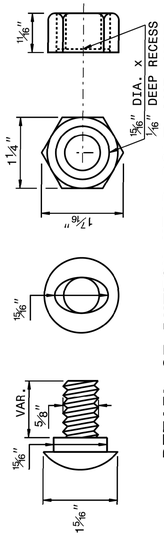



**BEARING PLATE**

⅝" THICK PLATE

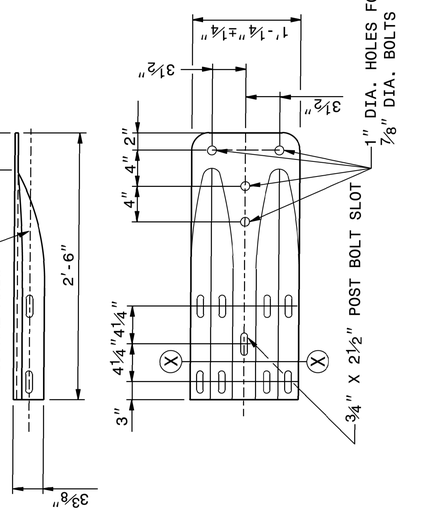



**DETAIL OF STANDARD HEX BOLT AND NUT**

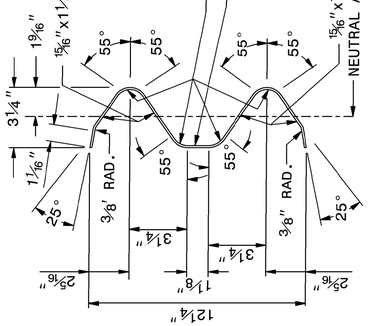



**DETAIL OF BUTTON HEAD BOLT AND NUT**

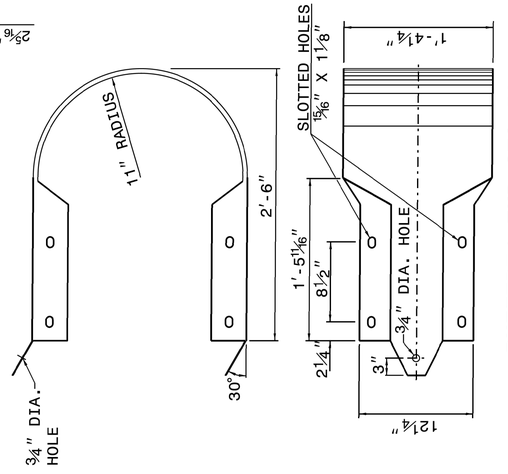
## SYSTEM PARTS - GENERAL USE




**TYPICAL END SHOE**




**SECTION X-X**




**BUFFERED END SECTION**

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

ROADWAY DETAIL DRAWING FOR
**GUARDRAIL INSTALLATION**

SHEET 8 OF 8
**862D02**

11/14/2017

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 BLOCK**

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

04-MAY-2017 15:21
S:\Contracts\Contracts\Special Details\jhowerton\Standard Drawings\2012 Standard Drawings\Details in Lieu of Standards\Division 8\862d01 862d03 862d03\862d02.dgn
jhowerton AT CSD-292595

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-5828 | 2C-11 |

GENERAL NOTES:

USE CLASS "B" CONCRETE THROUGHOUT.

PROVIDE ALL DROP INLETS OVER 3'-6" IN DEPTH WITH STEPS 12" ON CENTER. USE STEPS WHICH COMPLY WITH STD. DRAWING 840.66.

OPTIONAL CONSTRUCTION - MONOLITHIC POUR 2" KEYWAY OR #4 BAR DOWELS AT 12" CENTERS AS DIRECTED BY THE ENGINEER.

USE FORMS FOR THE CONSTRUCTION OF THE BOTTOM SLAB.

IF REINFORCED CONCRETE PIPE IS SET IN BOTTOM SLAB OF BOX, ADD TO SLAB AS SHOWN ON STD. NO. 840.00.

CONSTRUCT WITH PIPE CROWNS MATCHING.

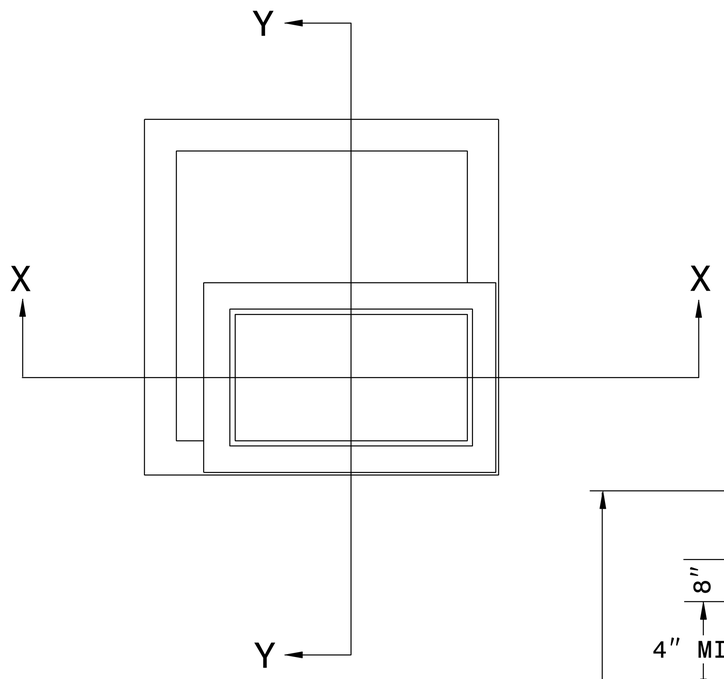
INSTALL 2" WEEPHOLES AS DIRECTED BY THE ENGINEER.

INSTALL STONE DRAINS, OF A MINIMUM OF 1 CUBIC FOOT OF NO. 78M STONE IN A POROUS FABRIC BAG OR WRAP, AT EACH WEEP HOLE OR AS DIRECTED BY THE ENGINEER.

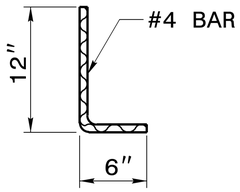
CHAMFER ALL EXPOSED CORNERS 1".

DRAWING NOT TO SCALE.

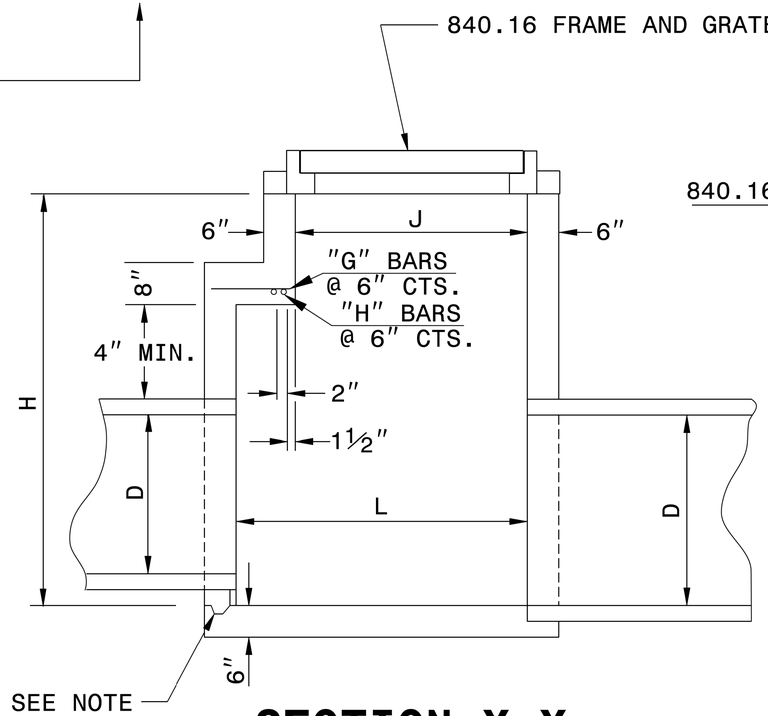
DIMENSIONS MAY BE FIELD ADJUSTED AS DIRECTED BY THE ENGINEER.



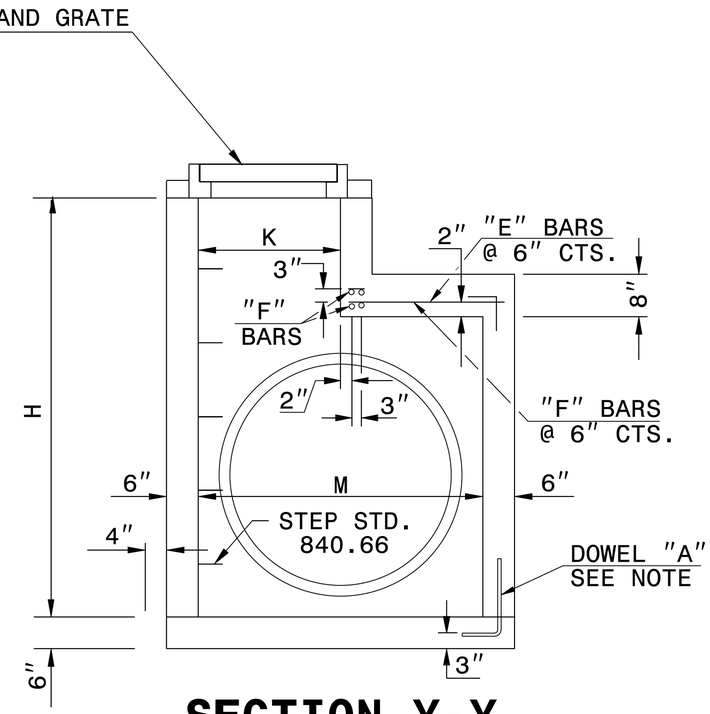

PLAN




DOWEL




SECTION X-X




SECTION Y-Y

**MIN. DIMENSIONS AND QUANTITIES FOR CONCRETE DROP INLET(BASED ON MIN. HEIGHT, H)**

| DIMENSIONS OF BOX AND PIPE | | | | | | REINFORCING STEEL - NO. 4 BARS | | | | | | | | | CU YDS CONC. IN BOX | | | | DEDUCTIONS FOR ONE PIPE | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PIPE | SPAN | WIDTH | SPAN | WIDTH | HEIGHT | BARS E | | BARS F | | BARS G | | BARS H | | TOTAL | BOTTOM SLAB | H TOTAL | H PER FT HT | TOTAL | | |
| D | J | K | L | M | H | NO. | LENGTH | NO. | LENGTH | NO. | LENGTH | NO. | LENGTH | LBS. | | | | | C.S. | R.C. |
| 12" | 3'-0" | 2'-0" | 3'-8" | 2'-0" | 3'-9" | — | — | — | — | — | — | — | — | — | 0.362 | 0.926 | 0.247 | 1.288 | 0.015 | 0.024 |
| 15" | 3'-0" | 2'-0" | 3'-8" | 2'-0" | 4'-0" | — | — | — | — | — | — | — | — | — | 0.362 | 0.988 | 0.247 | 1.350 | 0.023 | 0.036 |
| 18" | | | | 2'-0" | 4'-3" | — | — | — | — | — | — | — | — | — | 0.362 | 1.050 | 0.247 | 1.412 | 0.033 | 0.049 |
| 24" | | | | 2'-10" | 4'-9" | 8 | 1'-5" | 6 | 4'-9" | — | — | — | — | 27 | 0.444 | 1.362 | 0.278 | 1.806 | 0.059 | 0.085 |
| 30" | | | 3'-8" | 3'-5" | 5'-3" | 8 | 2'-0" | 7 | 4'-9" | — | — | — | — | 33 | 0.502 | 1.644 | 0.288 | 2.146 | 0.092 | 0.127 |
| 36" | | | 4'-0" | 4'-0" | 5'-9" | 8 | 2'-5" | 8 | 4'-11" | 4 | 0'-9" | 2 | 4'-11" | 47 | 0.560 | 1.931 | 0.321 | 2.525 | 0.132 | 0.178 |
| 42" | | | 4'-10" | 4'-10" | 6'-3" | 10 | 3'-1" | 9 | 5'-7" | | 1'-5" | 3 | 5'-7" | 67 | 0.704 | 2.500 | 0.370 | 3.282 | 0.180 | 0.243 |
| 48" | | | 5'-4" | 5'-4" | 6'-9" | 11 | 3'-7" | 10 | 6'-1" | | 1'-11" | 4 | 6'-1" | 87 | 0.823 | 3.013 | 0.407 | 3.920 | 0.235 | 0.317 |
| 54" | | | 6'-0" | 6'-0" | 7'-3" | 12 | 4'-1" | 11 | 6'-7" | | 2'-5" | 5 | 6'-7" | 107 | 0.951 | 3.589 | 0.444 | 4.677 | 0.297 | 0.401 |
| 60" | | | 6'-6" | 6'-6" | 7'-9" | 13 | 4'-9" | 12 | 7'-3" | | 3'-1" | 6 | 7'-3" | 135 | 1.311 | 4.539 | 0.494 | 5.775 | 0.367 | 0.495 |
| 66" | | | 7'-2" | 7'-2" | 8'-3" | 14 | 5'-4" | 14 | 7'-10" | | 3'-7" | 7 | 7'-10" | 168 | 1.136 | 5.061 | 0.537 | 6.506 | 0.444 | 0.599 |
| 72" | 3'-0" | 2'-0" | 7'-8" | 7'-8" | 8'-9" | 15 | 5'-11" | 15 | 8'-5" | 4 | 4'-3" | 8 | 8'-5" | 199 | 1.500 | 5.860 | 0.580 | 7.473 | 0.528 | 0.713 |

11/14/2017

NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER Joel S. Howerton

Joel S. Howerton

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DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

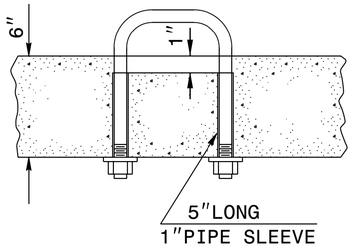
**CONTRACT STANDARDS AND DEVELOPMENT UNIT**
Office 919-707-6950 FAX 919-250-4119

**SPECIAL DI 840D14**

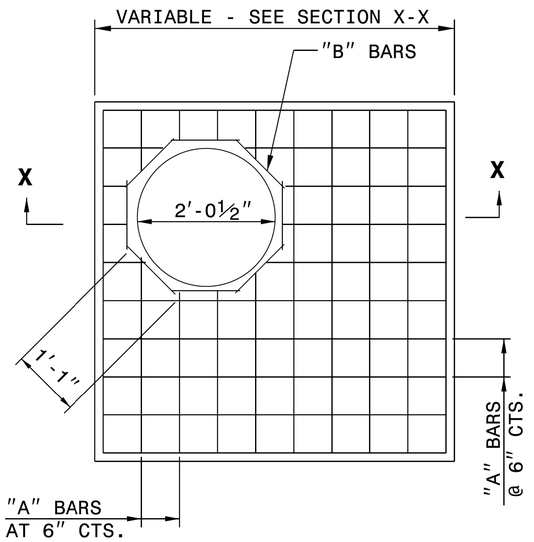
ORIGINAL BY: J HOWERTON DATE: 04/11/17
MODIFIED BY: DATE:
CHECKED BY: DATE:
FILE SPEC.: detail/jhowerton/840d14 di 30 rcp.dgn

05-JUN-2017 08:59
S:\Contracts\Contracts\Special Details\jhowerton\840d14 di 30 rcp.dgn
jhowerton AT CSD-292595

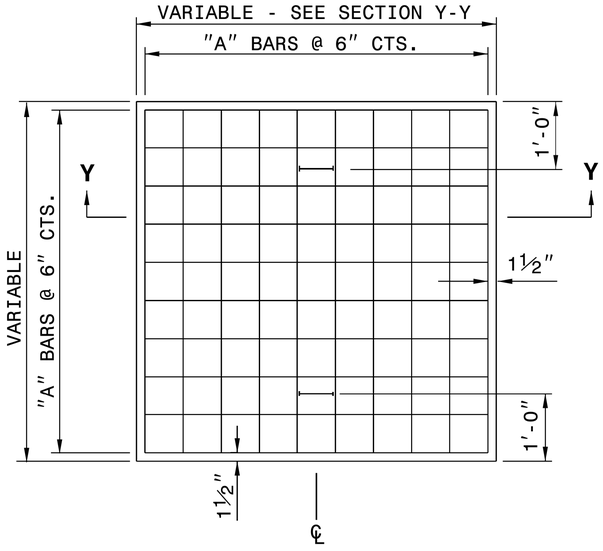
| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-5828 | 2C-12 |




**PARTIAL SECTION**




**PLAN**



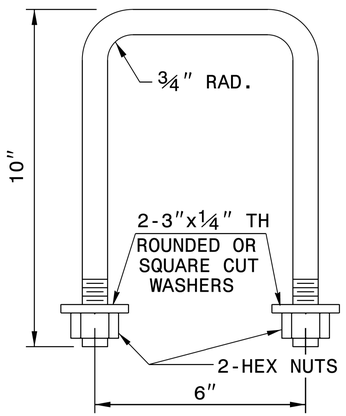

**PLAN**

GENERAL NOTES:

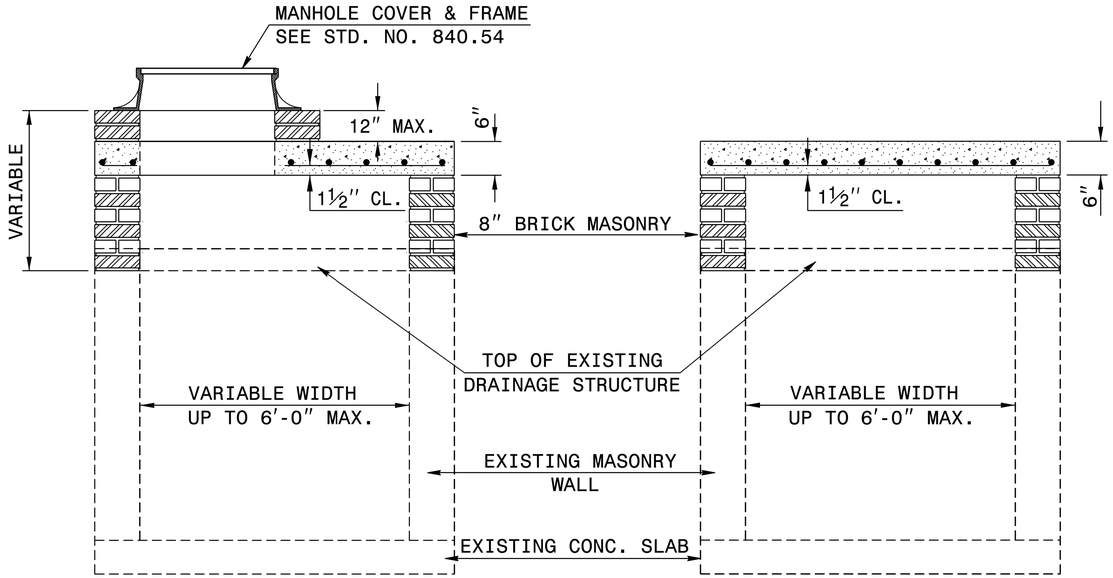
CONSTRUCT IN ACCORDANCE WITH SECTION 859 OF THE STANDARD SPECIFICATIONS.

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

DETAIL INTENDED FOR NON-TRAFFIC BEARING DRAINAGE STRUCTURES.




**DETAIL OF HANDLE**




**SECTION X-X**




**SECTION Y-Y**

## BILL OF MATERIALS

REINFORCING STEEL

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

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

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

11/14/2017

NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER 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 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

05-JUN-2017 09:00
$(LC)contracts\Special Details\vericward\usr\details\stand\boxtojbe.dgn
jhowerton AT CSD-292595

Kimley»Horn
P.O. BOX 33068
RALEIGH, N.C. 27636–3068

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-5828 | 2D-1 |

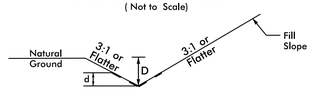
ROADWAY DESIGN ENGINEER

8/18/2017
NORTH CAROLINA PROFESSIONAL SEAL 029876 ENGINEER
MATTHEW S. WEST
Docusigned by: Matthew S. West
AC71A1D079B8425...

PAVEMENT DESIGN ENGINEER

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

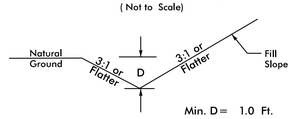
## DETAIL 1
SPECIAL LATERAL 'V' DITCH
( Not to Scale)




Min. D = 1.0 Ft.
Max. d = 1.0 Ft.
Type of Liner = PSRM

FROM STA. 107+50 TO STA. 108+00 –L– (LT)

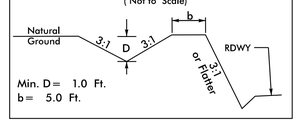
## DETAIL 2
SPECIAL LATERAL 'V' DITCH
( Not to Scale)




Min. D = 1.0 Ft.

FROM STA. 56+00 TO STA. 56+50 –L– (RT)
FROM STA. 56+50 TO STA. 59+00 –L– (RT)
FROM STA. 62+50 TO STA. 65+85 –L– (RT)
FROM STA. 65+85 TO STA. 67+00 –L– (RT)
FROM STA. 77+50 TO STA. 78+70 –L– (RT)
FROM STA. 78+70 TO STA. 81+00 –L– (RT)
FROM STA. 101+00 TO STA. 105+00 –L– (RT)
FROM STA. 101+85 TO STA. 102+25 –L– (LT)
FROM STA. 103+00 TO STA. 105+00 –L– (LT)
FROM STA. 106+50 TO STA. 107+50 –L– (LT)
FROM STA. 108+00 TO STA. 109+00 –L– (LT)
FROM STA. 120+00 TO STA. 121+87 –L– (LT)
FROM STA. 131+50 TO STA. 134+00 –L– (LT)
FROM STA. 23+00 TO STA. 24+00 –Y7– (RT)
FROM STA. 22+00 –Y7– (LT) TO STA. 116+00 –L– (LT)
FROM STA. 19+00 –Y8– (RT) TO STA. 129+60 –L– (LT)

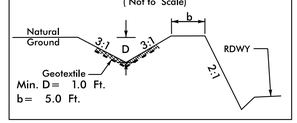
## DETAIL 3
BERM 'V' DITCH
( Not to Scale)




Min. D = 1.0 Ft.
b = 5.0 Ft.

FROM STA. 59+00 TO STA. 60+00 –L– (RT)
FROM STA. 70+50 TO STA. 74+50 –L– (RT)
FROM STA. 89+50 TO STA. 90+50 –L– (LT)
FROM STA. 90+50 TO STA. 95+00 –L– (LT)
FROM STA. 109+00 TO STA. 111+00 –L– (LT)
FROM STA. 111+00 TO STA. 112+12 –L– (LT)
FROM STA. 112+12 TO STA. 112+50 –L– (LT)
FROM STA. 118+00 TO STA. 120+00 –L– (LT)
FROM STA. 125+00 TO STA. 129+00 –L– (LT)

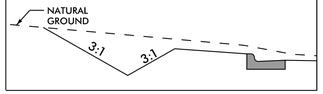
## DETAIL 4
BERM 'V' DITCH
( Not to Scale)




Min. D = 1.0 Ft.
b = 5.0 Ft.

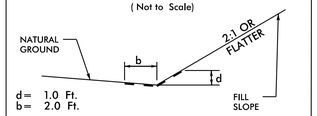
FROM STA. 129+00 TO STA. 129+50 –L– (LT)

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




FROM STA. 87+95 TO STA. 90+50 –L– (RT)

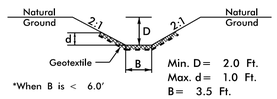
## DETAIL 6
TOE PROTECTION
( Not to Scale)




d = 1.0 Ft.
b = 2.0 Ft.
Type of Liner = PSRM

FROM STA. 64+50 TO STA. 66+75 –L– (LT)
FROM STA. 105+30 TO STA. 106+50 –L– (LT)

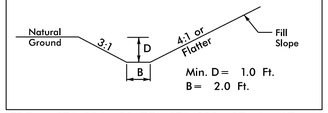
## DETAIL 7
STANDARD BASE DITCH
( Not to Scale)




Min. D = 2.0 Ft.
Max. d = 1.0 Ft.
B = 3.5 Ft.
*When B is < 6.0'
Slope = 0.5%
Type of Liner = Class I Rip–Rap

FROM STA. 105+35 TO STA. 105+42 –L– (RT)

## DETAIL 12
SPECIAL LATERAL BASE DITCH
( Not to Scale)

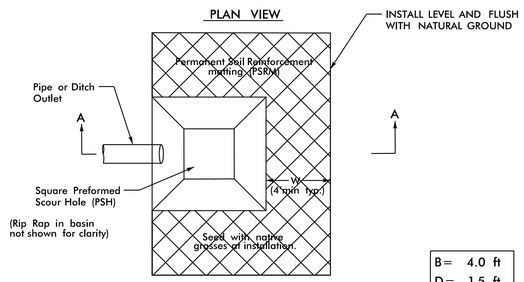



Min. D = 1.0 Ft.
B = 2.0 Ft.

FROM STA. 136+50 TO STA. 138+07 –L– (LT)

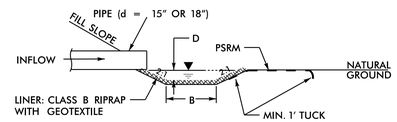
## DETAIL 8
PREFORMED SCOUR HOLE
*NOT TO SCALE

PLAN VIEW




B = 4.0 ft
D = 1.5 ft
W = 4.0 ft

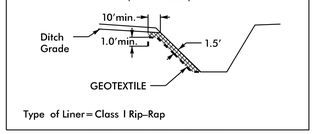
SECTION A–A




3/08

STA. 70+00 –L– (LT)
STA. 120+23 –L– (RT)

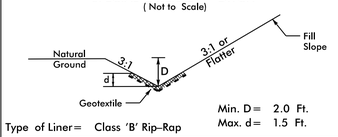
## DETAIL 9
RIP RAP AT EMBANKMENT
( Not to Scale)




Type of Liner = Class I Rip–Rap

STA. 105+00 –L– (RT)

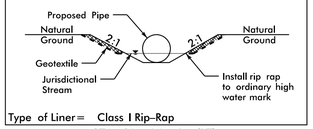
## DETAIL 13
SPECIAL LATERAL 'V' DITCH
( Not to Scale)




Min. D = 2.0 Ft.
Max. d = 1.5 Ft.
Type of Liner = Class 'B' Rip–Rap

FROM STA. 129+50 TO STA. 129+60 –L– (LT)

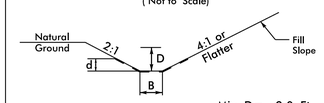
## DETAIL 10
PIPE OUTLET CHANNEL
( Not to Scale)




Type of Liner = Class I Rip–Rap

STA. 69+30 –L– (LT)
STA. 78+28 –L– (LT)
STA. 115+14 –L– (RT)

## DETAIL 11
SPECIAL LATERAL BASE DITCH
( Not to Scale)




Min. D = 2.0 Ft.
Max. d = 1.5 Ft.
B = 2.5 Ft.
Type of Liner = PSRM

FROM STA. 26+50 TO STA. 29+00 –Y8– (RT)

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-5828 | 3B-1 |

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

# EARTHWORK SUMMARY

## IN CUBIC YARDS

| LOCATION | UNCLASSIFIED EXCAVATION | UNDERCUT EXCAVATION | EMBT +% | BORROW | WASTE |
|---|---|---|---|---|---|
| -L- STA 53+66.58 TO 80+00 | 26266 | 3002 | 50990 | 24724 | 3002 |
| -L- STA 80+00 TO STA 105+00 | 108724 | | 21641 | 0 | 87083 |
| -L- STA 105+00 TO STA 129+93.41 | 31634 | 935 | 62747 | 31113 | 935 |
| -L- STA 130+45.96 TO STA 141+00 | 1490 | | 481 | 0 | 1009 |
| -Y7- STA 19+60 TO STA 24+44.30 | 1619 | 839 | 7538 | 5919 | 839 |
| -Y8- STA 16+00 TO STA 32+00 | 2202 | | 196 | 0 | 2006 |
| | | | | | |
| SUB-TOTAL | 171935 | 4776 | 143593 | 61756 | 94874 |
| | | | | | |
| | | | | | |
| UNDERCUT FOR EMBANKMENT STABILITY | | 1000 | 1200 | 1200 | 1000 |
| GRADE POINT UNDERCUT | | 1200 | 1440 | 1440 | 1200 |
| UNDERCUT FOR SUBGRADE STABILITY | | 1500 | 1800 | 1800 | 1500 |
| MEDIAN FILL MATERIAL (L) | | | 5741 | 5741 | 0 |
| | | | | | |
| | | | | | |
| | | | | | |
| EARTH WASTE TO REPLACE BORROW | 0 | | 0 | -71937 | -71937 |
| | | | | | |
| TOTAL | 171935 | 8476 | 153774 | 0 | 26637 |
| SAY | 171940 | 8480 | | 0 | |
| | | | | | |
| | | | | | |

UNCLASSIFIED EXCAVATION- ACCEPTABLE,BUT NOT TO BE USED IN TOP 3' OF EMBANKMENT OR BACKFILL FOR THE FOLLOWING STATION RANGES PER GEOTECH.
-L- 70+25 TO 72+95
-L- 93+55 TO 96+50
-L- 112+50 TO 114+00
-L- 124+50 TO 126+50
-Y7- 19+75 TO 22+15

PAVEMENT STRUCTURE VOLUME = 32550 CY

11/14/2017 K:\RAL_Roadway\012108004 - McCrimmon Parkway\Phase II\Plan\Plan Sheets\U5828_rdy_SUM.dgn

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-5828 | 3B-2 |

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

# *SUMMARY OF ASPHALT PAVEMENT REMOVAL*

| ALIGNMENT | LT/RT | STATION | STATION | AREA (SY) |
|---|---|---|---|---|
| –L– | LT | 53+67 | | 0.89 |
| –L– | RT | 53+78 | | 0.89 |
| –L– | MID | 54+00 | 55+52 | 184.44 |
| –L– | LT | 55+33 | | 2.89 |
| –L– | LT | 55+51 | | 2.89 |
| –L– | LT | 57+34 | | 72.67 |
| –L– | MID | 134+69 | 137+45 | 520.89 |
| –L– | LT | 136+00 | | 1.00 |
| –L– | LT | 136+17 | | 56.78 |
| –L– | LT | 136+55 | | 1.33 |
| –L– | LT | 138+42 | | 1.33 |
| –L– | LT | 138+83 | | 1.11 |
| –L– | LT | 140+29 | 140+75 | 2.67 |
| –Y7– | RT | 19+72 | | 0.89 |
| –Y7– | LT | 19+55 | | 5.67 |
| –Y8– | LT | 16+00 | 16+55 | 3.44 |
| –Y8– | LT | 19+93 | | 0.67 |
| –Y8– | LT | 20+45 | | 2.67 |
| –Y8– | RT | 24+24 | | 3.22 |
| | | | TOTAL | 866.33 |
| | | | SAY | 870 |

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

## *GUARDRAIL SUMMARY*

| SURVEY LINE | BEG. STA. | END STA. | LOCATION | LENGTH | | | WARRANT POINT | | "N" DIST. FROM E.O.L. | TOTAL SHOULDER WIDTH | FLARE LENGTH | | W | | ANCHORS | | | | | | | | | IMPACT ATTENUATOR TYPE 350 | | | TERMINAL SECTIONS | REMOVE EXISTING GUARDRAIL | REMOVE AND STOCKPILE EXISTING GUARDRAIL | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | STRAIGHT | SHOP CURVED | DOUBLE FACED | APPROACH END | TRAILING END | | | APPROACH END | TRAILING END | APPROACH END | TRAILING END | XI MOD | B–77 | GREU TL–3 | TEMP GREU TL–3 | TYPE III | CAT–1 | VI MOD | W–BEAM | AT–1 | EA | G | NG | | | | |
| –L– | 139+51.45 | 140+75.00 | LT | 125.00 | | | | 139+73 | 2' | 12' | | 50 | | 1 | | | 1 | | | | | | | | | | 102 | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | LESS ANCHOR DEDUCTIONS | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | GREU, TYPE TL–3 | 1 @ 50' | = | 50.00 | | | | | | | | | | | | | | | | | | | | | | | | | |
| | TYPE III | 0 @ 18.75' | = | 0.00 | | | | | | | | | | | | | | | | | | | | | | | | | |
| | B–77 | 0 @ 18.75' | = | 0.00 | | | | | | | | | | | | | | | | | | | | | | | | | |
| | AT–1 | 0 @ 6.25' | = | 0.00 | | | | | | | | | | | | | | | | | | | | | | | | | |
| | I. A. 350 | 0 @ 21' | = | 0.00 | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | TOTAL | 75.00 | | | | | | | | | | | | | 1 | | | | | | | | | | 102 | | |
| | | | SAY | 75.00 | | | | | | | | | | | | | 1 | | | | | | | | | | 102 | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

ADDITIONAL GUARDRAIL POSTS = 1 EA

DL84019

COMPUTED BY: BTV DATE: 7/12/2016
CHECKED BY: LDR DATE: 7/12/2016

| PROJECT NO. | SHEET NO. |
|---|---|
| U-5828 | 3D-1 |

# NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
# DIVISION OF HIGHWAYS

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

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

| LINE & STATION | OFFSET | STRUCTURE NUMBER FROM | STRUCTURE NUMBER TO | TOP ELEVATION FT. | INVERT ELEVATION FT. | INVERT ELEVATION FT. | MINIMUM REQUIRED SLOPE % | Drainage Pipe (RCP, CSP, CAAP, HDPE, or PVC) | | | | | | | | | | | | C. S. PIPE | | | | | | | | R. C. PIPE CLASS III | | | | | | | | R. C. PIPE CLASS IV | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SIZE / THICKNESS OR GAUGE | | | | | | | | 12 | 15 | 18 | 24 | 30 | 36 | 42 | DO NOT USE RCP | DO NOT USE CSP | DO NOT USE CAAP | DO NOT USE HDPE | DO NOT USE PVC | 12 .064 | 15 .064 | 18 .064 | 24 .064 | 30 .079 | 36 .079 | 42 .109 | 48 .109 | 12 | 15 | 18 | 24 | 30 | 36 | 42 | 48 | 12 | 15 | 18 | 24 | 30 | 36 | 42 | 48 |
| L 55+00 | 42 LT | 0401 | | 342.6 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 0401 | 0402 | | 339.6 | 338.7 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 148 | | | | | | |
| L 56+50 | 42 LT | 0402 | | 341.7 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 0402 | 0403 | | 338.4 | 337.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 80 | | | | | |
| L 56+50 | 42 RT | 0403 | | 341.7 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 0403 | 0406 | | 336.7 | 332.9 | 0.5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 184 | | | | | |
| | | 0404 | 0403 | | 337.1 | 336.7 | | | | 36 | | | | | | X | X | | X | | | | | | | | | | | | | | | | | | | | | | | | |
| L 58+35 | 41 LT | 0405 | | 340.8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 0405 | 0408 | | 331.9 | 323.5 | 2.8 | | | 56 | | | | | X | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| L 58+35 | 41 RT | 0406 | | 340.8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 0406 | 0405 | | 332.9 | 331.9 | 0.6 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 80 | | | | | |
| L 61+44 | 41 RT | 0501 | | 339.2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 0501 | 0502 | | 334.9 | 333.1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 256 | | | | | |
| L 64+00 | 42 RT | 0502 | | 337.5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 0502 | 0503 | | 333.1 | 331.9 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 176 | | | | | |
| L 65+85 | 42 RT | 0503 | | 336.2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 0503 | 0505 | | 329.0 | 328.5 | | | | | | | | | | | | | | | | | | | | | | | | | | 48 | | | | | | | | | | | |
| | | 0504 | 0503 | | 329.4 | 329.0 | | | | | 40 | | | | | X | X | | X | | | | | | | | | | | | | | | | | | | | | | | | |
| L 65+85 | 9 LT | 0505 | | 338.2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 0505 | 0512 | | 328.5 | 327.5 | | | | | | | | | | | | | | | | | | | | | | | | | | | 96 | | | | | | | | | | |
| L 61+44 | 42 LT | 0506 | | 339.2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 0506 | 0501 | | 336.0 | 334.9 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 80 | | | | | |
| L 61+96 | 42 LT | 0507 | | 339.4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 0507 | 0506 | | 336.4 | 336.2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 52 | | | | | | |
| L 61+00 | 42 LT | 0509 | | 339.4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 0509 | 0506 | | 336.4 | 336.2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 44 | | | | | | |
| L 67+75 | 9 LT | 0510 | | 337.2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 0510 | 0511 | | 334.2 | 333.6 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 124 | | | | | | |
| L 69+00 | 8 LT | 0511 | | 336.6 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 0511 | 0603 | | 333.6 | 333.1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 100 | | | | | | |
| L 66+45 | 82 LT | 0512 | | 333.4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 0512 | 0508 | | 319.5 | 319.3 | | | | | | | 52 | | | X | X | | X | | | | | | | | | | | | | | | | | | | | | | | | |
| L 64+56 | 9 LT | 0513 | | 338.8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 0513 | 0505 | | 335.8 | 335.2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 128 | | | | | | |
| L 69+00 | 41 RT | 0514 | | 334.6 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 0514 | 0604 | | 331.6 | 331.1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 96 | | | | | | |
| L 69+25 | 0 CL | 0516 | 0515 | | 329.0 | 322.4 | | | | | | | | | | | | | | | | | | | | | | | | | | 196 | | | | | | | | | | | |
| L 70+00 | 88 LT | 0601 | | 330.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| L 73+50 | 3 LT | 0602 | | 334.1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 0602 | 0605 | | 330.9 | 329.1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 44 | | | | | |
| L 70+00 | 9 LT | 0603 | | 336.1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 0603 | 0601 | | 330.6 | 328.2 | | | | | | | | | | | | | | | | | | | | | | | | 80 | | | | | | | | | | | | | |
| L 70+00 | 42 RT | 0604 | | 334.1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 0604 | 0603 | | 330.9 | 330.6 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 48 | | | | | |
| L 73+50 | 41 RT | 0605 | | 332.4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 0605 | 0606 | | 329.1 | 328.3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 156 | | | | | |
| L 75+15 | 42 RT | 0606 | | 331.5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 0606 | 0607 | | 328.3 | 327.4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 176 | | | | | |
| L 77+00 | 42 RT | 0607 | | 330.6 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 0607 | 0608 | | 326.9 | 326.7 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 44 | | | | |
| SHEET TOTALS | | | | | | | | | | 92 | 40 | | 52 | | | | | | | | | | | | | | | | | 80 | | 244 | 96 | | | | 692 | 1280 | 44 | | | | |

NOTE: TOTAL LIN. FT. FOR PAY QUANTITY SHALL BE A + (1.3 X B)

| LINE & STATION | OFFSET | FROM | TO | 15" SIDE DRAIN PIPE | 18" SIDE DRAIN PIPE | 24" SIDE DRAIN PIPE | ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CY | REINFORCED ENDWALLS CY | DRAINAGE STRUCTURE MASONRY CY | QUANTITIES FOR DRAINAGE STRUCTURES 0' THRU 5' EACH | 5' THRU 10' A LIN. FT. | 10' AND ABOVE B 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 | D.I. STD. 840.14 OR STD. 840.15 | D.I. FRAME AND GRATES STD. 840.16 | G.D.I. TYPE "A" STD. 840.17 OR STD. 840.26 | G.D.I. TYPE "B" STD. 840.18 OR STD. 840.27 | G.D.I. TYPE "D" STD. 840.19 OR STD. 840.28 | G.D.I. (W.S. FLAT) FRAME W/ 2 GRATES STD. 840.20 | G.D.I. (W.S. SAG) FRAME W/ 2 GRATES STD. 840.22 | G.D.I. (N.S. SAG) FRAME W/ 2 GRATES STD. 840.24 | G.D.I. (N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29 | J.B. STD. 840.31 OR STD. 840.32 | T.B.J.B. STD. 840.34 | T.B.D.I. STD. 840.35 | M.H. STD. 840.51, STD. 840.52, OR STD. 840.53 | M.H. FRAME AND COVER STD. 840.54 | CONVERT EXISTING C.B. TO J.B. | CONVERT EXISTING C.B. TO D.I. | CONVERT EXISTING D.I. TO J.B. | ADJUST C.B. | SPECIAL D.I. (SEE SHEET 2D-3) | 15" DRAINAGE PIPE ELBOW | 18" DRAINAGE PIPE ELBOW | BERM DITCH OUTLET STD. 850.10 (PER EACH) | 4" CONCRETE PAVED DITCH (CY) | PREFORMED SCOUR HOLE (PER EACH) | 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L 55+00 | 42 LT | 0401 | | | | | | | | 1 | | | 1 | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 0401 | 0402 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| L 56+50 | 42 LT | 0402 | | | | | | | | 1 | | | 1 | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 0402 | 0403 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| L 56+50 | 42 RT | 0403 | | | | | | | | 1 | | | 1 | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 0403 | 0406 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 0404 | 0403 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| L 58+35 | 41 LT | 0405 | | | | | | | | 1 | 3.8 | | 1 | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 0405 | 0408 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 2 | | | | | | | | |
| L 58+35 | 41 RT | 0406 | | | | | | | | 1 | 2.8 | | 1 | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 0406 | 0405 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| L 61+44 | 41 RT | 0501 | | | | | | | | 1 | | | 1 | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 0501 | 0502 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| L 64+00 | 42 RT | 0502 | | | | | | | | 1 | | | 1 | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 0502 | 0503 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| L 65+85 | 42 RT | 0503 | | | | | | | | 1 | 2.2 | | 1 | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 0503 | 0505 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 0504 | 0503 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| L 65+85 | 9 LT | 0505 | | | | | | | | 1 | 4.7 | | 1 | | 1 | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 0505 | 0512 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| L 61+44 | 42 LT | 0506 | | | | | | | | 1 | | | 1 | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 0506 | 0501 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| L 61+96 | 42 LT | 0507 | | | | | | | | 1 | | | 1 | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 0507 | 0506 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| L 61+00 | 42 LT | 0509 | | | | | | | | 1 | | | 1 | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 0509 | 0506 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| L 67+75 | 9 LT | 0510 | | | | | | | | 1 | | | 1 | | 1 | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 0510 | 0511 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| L 69+00 | 8 LT | 0511 | | | | | | | | 1 | | | 1 | | 1 | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 0511 | 0603 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| L 66+45 | 82 LT | 0512 | | | | | | | | 1 | 5.0 | 3.9 | | | | | | | | | | | | | | | | | 1 | | | | 1 | | | | | | | | | | | | | | |
| | | 0512 | 0508 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| L 64+56 | 9 LT | 0513 | | | | | | | | 1 | | | 1 | | 1 | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 0513 | 0505 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| L 69+00 | 41 RT | 0514 | | | | | | | | 1 | | | 1 | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 0514 | 0604 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| L 69+25 | 0 CL | 0516 | 0515 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| L 70+00 | 88 LT | 0601 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | | | | | |
| L 73+50 | 3 LT | 0602 | | | | | | | | 1 | | | 1 | | 1 | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 0602 | 0605 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| L 70+00 | 9 LT | 0603 | | | | | | | | 1 | 0.5 | | 1 | | 1 | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 0603 | 0601 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| L 70+00 | 42 RT | 0604 | | | | | | | | 1 | | | 1 | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 0604 | 0603 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| L 73+50 | 41 RT | 0605 | | | | | | | | 1 | | | 1 | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 0605 | 0606 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| L 75+15 | 42 RT | 0606 | | | | | | | | 1 | | | 1 | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 0606 | 0607 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| L 77+00 | 42 RT | 0607 | | | | | | | | 1 | | | 1 | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 0607 | 0608 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| SHEET TOTALS | | | | | | | | | | 23 | 19.0 | 3.9 | 22 | 1 | 17 | 4 | | 6 | | | | | | | | | | | 1 | | | | 1 | | | | | | | 2 | | | 1 | | | | | | |

**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 |

DL84019

COMPUTED BY: BTV DATE: 7/12/2016

CHECKED BY: LDR DATE: 7/12/2016

| PROJECT NO. | SHEET NO. |
|---|---|
| U-5828 | 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 FROM | STRUCTURE NUMBER TO | TOP ELEVATION FT. | INVERT ELEVATION FT. | INVERT ELEVATION FT. | MINIMUM REQUIRED SLOPE % | Drainage Pipe (RCP, CSP, CAAP, HDPE, or PVC) SIZE: 12 | 15 | 18 | 24 | 30 | 36 | 42 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | DO NOT USE RCP | DO NOT USE CSP | DO NOT USE CAAP | DO NOT USE HDPE | DO NOT USE PVC | | |
| | | | | | | | | | .064 | .064 | .064 | .064 | .079 | .079 | .109 |
| L 77+45 | 42 | RT | 0608 | | 330.5 | | | | | | | | | | |
| | | | 0608 | 0609 | | 326.7 | 326.1 | | | | | | | | |
| L 78+70 | 42 | RT | 0609 | | 331.5 | | | | | | | | | | |
| | | | 0609 | 0613 | | 324.0 | 323.8 | | | | | | | | |
| L 75+15 | 8 | LT | 0610 | | 333.5 | | | | | | | | | | |
| | | | 0610 | 0606 | | 330.5 | 328.5 | | | | | | | | |
| L 76+75 | 9 | LT | 0611 | | 332.7 | | | | | | | | | | |
| | | | 0611 | 0612 | | 329.7 | 329.4 | | | | | | | | |
| L 77+45 | 9 | LT | 0612 | | 332.5 | | | | | | | | | | |
| | | | 0612 | 0613 | | 329.1 | 328.5 | | | | | | | | |
| L 78+70 | 9 | LT | 0613 | | 333.0 | | | | | | | | | | |
| | | | 0613 | 0614 | | 323.8 | 320.8 | | | | | | | | |
| | | | 0615 | 0609 | | 324.5 | 324.0 | | | | 44 | | | | |
| L 72+75 | 4 | RT | 0617 | | 334.3 | | | | | | | | | | |
| | | | 0617 | 0602 | | 331.3 | 330.9 | | | | | | | | |
| L 80+69 | 42 | LT | 0701 | | 333.5 | | | | | | | | | | |
| | | | 0701 | 0702 | | 330.1 | 329.7 | | | | | | | | |
| L 80+69 | 41 | RT | 0702 | | 333.0 | | | | | | | | | | |
| | | | 0702 | 0609 | | 329.7 | 328.3 | | | | | | | | |
| L 81+21 | 42 | LT | 0703 | | 333.4 | | | | | | | | | | |
| | | | 0703 | 0701 | | 330.4 | 330.1 | | | | | | | | |
| L 84+00 | 42 | LT | 0705 | | 332.8 | | | | | | | | | | |
| | | | 0705 | 0715 | | 329.4 | 328.7 | | | | | | | | |
| L 84+00 | 41 | RT | 0706 | | 332.8 | | | | | | | | | | |
| | | | 0706 | 0705 | | 329.8 | 329.4 | | | | | | | | |
| L 87+43 | 42 | LT | 0707 | | 331.0 | | | | | | | | | | |
| | | | 0707 | 0710 | | 327.0 | 324.8 | | | | | | | | |
| L 87+43 | 41 | RT | 0708 | | 331.0 | | | | | | | | | | |
| | | | 0708 | 0707 | | 327.4 | 327.0 | | | | | | | | |
| L 87+95 | 42 | RT | 0709 | | 331.1 | | | | | | | | | | |
| | | | 0709 | 0708 | | 327.6 | 327.4 | | | | | | | | |
| L 90+50 | 42 | LT | 0710 | | 328.6 | | | | | | | | | | |
| | | | 0710 | 0801 | | 324.8 | 323.4 | 0.3 | | | | | | | |
| L 90+50 | 8 | RT | 0711 | | 330.5 | | | | | | | | | | |
| | | | 0711 | 0710 | | 327.3 | 325.3 | | | | | | | | |
| L 89+75 | 9 | RT | 0712 | | 330.9 | | | | | | | | | | |
| | | | 0712 | 0711 | | 327.9 | 327.5 | | | | | | | | |
| L 87+95 | 63 | RT | 0713 | | 330.6 | | | | | | | | | | |
| | | | 0713 | 0709 | | 327.8 | 327.6 | | | 24 | | | | | |
| L 90+50 | 87 | LT | 0714 | | 335.5 | | | | | | | | | | |
| | | | 0714 | 0710 | | 327.2 | 322.4 | | | 48 | | | | | |
| L 86+00 | 42 | LT | 0715 | | 331.7 | | | | | | | | | | |
| | | | 0715 | 0707 | | 328.7 | 328.0 | 0.4 | | | | | | | |
| L 86+00 | 41 | RT | 0716 | | 331.7 | | | | | | | | | | |
| | | | 0716 | 0708 | | 328.7 | 328.0 | | | | | | | | |
| L 92+00 | 42 | LT | 0801 | | 327.8 | | | | | | | | | | |
| | | | 0801 | 0808 | | 323.4 | 321.9 | 0.4 | | | | | | | |
| L 92+00 | 9 | RT | 0802 | | 329.8 | | | | | | | | | | |
| | | | 0802 | 0801 | | 326.8 | 324.8 | | | | | | | | |
| L 93+50 | 8 | RT | 0803 | | 329.0 | | | | | | | | | | |
| **SHEET TOTALS** | | | | | | | | | 72 | | | 44 | | | |

| C. S. PIPE SIZE | 12 | 15 | 18 | 24 | 30 | 36 | 42 | 48 |
|---|---|---|---|---|---|---|---|---|
| THICKNESS OR GAUGE | .064 | .064 | .064 | .064 | .079 | .079 | .109 | .109 |
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| L 77+45 | | | | | | | | |
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| L 78+70 | | | | | | | | |
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| L 75+15 | | | | | | | | |
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| L 76+75 | | | | | | | | |
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| L 77+45 | | | | | | | | |
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| L 78+70 | | | | | | | | |
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| L 72+75 | | | | | | | | |
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| L 80+69 | | | | | | | | |
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| L 80+69 | | | | | | | | |
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| L 81+21 | | | | | | | | |
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| L 84+00 | | | | | | | | |
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| L 84+00 | | | | | | | | |
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| L 87+43 | | | | | | | | |
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| L 87+43 | | | | | | | | |
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| L 87+95 | | | | | | | | |
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| L 90+50 | | | | | | | | |
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| L 90+50 | | | | | | | | |
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| L 89+75 | | | | | | | | |
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| L 87+95 | | | | | | | | |
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| L 90+50 | | | | | | | | |
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| L 86+00 | | | | | | | | |
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| L 86+00 | | | | | | | | |
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| L 92+00 | | | | | | | | |
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| L 92+00 | | | | | | | | |
| | | | | | | | | |
| L 93+50 | | | | | | | | |
| | | | | 120 | | 152 | | |

| R. C. PIPE CLASS III SIZE | 12 | 15 | 18 | 24 | 30 | 36 | 42 | 48 |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | | |
| L 77+45 | | | | | | | | |
| | | | | 120 | | | | |
| L 78+70 | | | | | | | | |
| | | | | | | 48 | | |
| L 75+15 | | | | | | | | |
| | | | | | | | | |
| L 76+75 | | | | | | | | |
| | | | | | | | | |
| L 77+45 | | | | | | | | |
| | | | | | | | | |
| L 78+70 | | | | | | | | |
| | | | | | | 104 | | |
| | | | | | | | | |
| L 72+75 | | | | | | | | |
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| L 80+69 | | | | | | | | |
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| L 80+69 | | | | | | | | |
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| L 81+21 | | | | | | | | |
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| L 84+00 | | | | | | | | |
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| L 84+00 | | | | | | | | |
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| L 87+43 | | | | | | | | |
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| L 87+43 | | | | | | | | |
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| L 87+95 | | | | | | | | |
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| L 90+50 | | | | | | | | |
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| L 90+50 | | | | | | | | |
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| L 89+75 | | | | | | | | |
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| L 87+95 | | | | | | | | |
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| L 90+50 | | | | | | | | |
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| L 86+00 | | | | | | | | |
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| L 86+00 | | | | | | | | |
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| L 92+00 | | | | | | | | |
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| L 92+00 | | | | | | | | |
| | | | | | | | | |
| L 93+50 | | | | | | | | |
| | | | | 120 | | 152 | | |

| R. C. PIPE CLASS IV SIZE | 12 | 15 | 18 | 24 | 30 | 36 | 42 | 48 |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | | |
| L 77+45 | | | | | | | | |
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| L 78+70 | | | | | | | | |
| | | | | | | | | |
| L 75+15 | | | | | | | | |
| | | 48 | | | | | | |
| L 76+75 | | | | | | | | |
| | | 68 | | | | | | |
| L 77+45 | | | | | | | | |
| | | 124 | | | | | | |
| L 78+70 | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| L 72+75 | | | | | | | | |
| | | 76 | | | | | | |
| L 80+69 | | | | | | | | |
| | | | 80 | | | | | |
| L 80+69 | | | | | | | | |
| | | | 200 | | | | | |
| L 81+21 | | | | | | | | |
| | | 52 | | | | | | |
| L 84+00 | | | | | | | | |
| | | 200 | | | | | | |
| L 84+00 | | | | | | | | |
| | | 80 | | | | | | |
| L 87+43 | | | | | | | | |
| | | | 304 | | | | | |
| L 87+43 | | | | | | | | |
| | | | 80 | | | | | |
| L 87+95 | | | | | | | | |
| | | 52 | | | | | | |
| L 90+50 | | | | | | | | |
| | | | 148 | | | | | |
| L 90+50 | | | | | | | | |
| | | | 48 | | | | | |
| L 89+75 | | | | | | | | |
| | | 76 | | | | | | |
| L 87+95 | | | | | | | | |
| | | | | | | | | |
| L 90+50 | | | | | | | | |
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| L 86+00 | | | | | | | | |
| | | 144 | | | | | | |
| L 86+00 | | | | | | | | |
| | | 144 | | | | | | |
| L 92+00 | | | | | | | | |
| | | | 148 | | | | | |
| L 92+00 | | | | | | | | |
| | | 48 | | | | | | |
| L 93+50 | | | | | | | | |
| | 1112 | 408 | 600 | | | | | |

| | 15" SIDE DRAIN PIPE | 18" SIDE DRAIN PIPE | 24" SIDE DRAIN PIPE | ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CY | REINFORCED ENDWALLS CY | DRAINAGE STRUCTURE MASONRY CY | QUANTITIES FOR DRAINAGE STRUCTURES NOTE: TOTAL LIN. FT. FOR PAY QUANTITY SHALL BE A + (1.3 X B) A: 0' THRU 5' EACH | B: 5' THRU 10' LIN. FT. | 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 | D.I. STD. 840.14 OR STD. 840.15 | D.I. FRAME AND GRATES STD. 840.16 | G.D.I. TYPE "A" STD. 840.17 OR STD. 840.26 | G.D.I. TYPE "B" STD. 840.18 OR STD. 840.27 | G.D.I. TYPE "D" STD. 840.19 OR STD. 840.28 | G.D.I. (W.S. FLAT) FRAME W/ 2 GRATES STD. 840.20 | G.D.I. (W.S. SAG) FRAME W/ 2 GRATES STD. 840.22 | G.D.I. (N.S. SAG) FRAME W/ 2 GRATES STD. 840.24 | G.D.I. (N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29 | J.B. STD. 840.31 OR STD. 840.32 | T.B.J.B. STD. 840.34 | T.B.D.I. STD. 840.35 | M.H. STD. 840.51. STD. 840.52. OR STD. 840.53 | M.H. FRAME AND COVER STD. 840.54 | CONVERT EXISTING C.B. TO J.B. | CONVERT EXISTING C.B. TO D.I. | CONVERT EXISTING D.I. TO J.B. | ADJUST C.B. | SPECIAL D.I. (SEE SHEET 2D-3) | 15" DRAINAGE PIPE ELBOW | 18" DRAINAGE PIPE ELBOW | BERM DITCH OUTLET STD. 850.10 (PER EACH) | 4" CONCRETE PAVED DITCH (CY) | PREFORMED SCOUR HOLE (PER EACH) | 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L 77+45 | | | | | | | 1 | | | 1 | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| L 78+70 | | | | | | | 1 | 2.5 | | 1 | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| L 75+15 | | | | | | | 1 | | | 1 | | 1 | | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| L 76+75 | | | | | | | 1 | | | 1 | | 1 | | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| L 77+45 | | | | | | | 1 | | | 1 | 1 | | | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| L 78+70 | | | | | | | 1 | 4.2 | | 1 | | | 1 | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| L 72+75 | | | | | | | 1 | | | 1 | | 1 | | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| L 80+69 | | | | | | | 1 | | | 1 | | | 1 | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| L 80+69 | | | | | | | 1 | | | 1 | | | 1 | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| L 81+21 | | | | | | | 1 | | | 1 | 1 | | | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| L 84+00 | | | | | | | 1 | | | 1 | | | 1 | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| L 84+00 | | | | | | | 1 | | | 1 | | 1 | | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| L 87+43 | | | | | | | 1 | | | 1 | | | 1 | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| L 87+43 | | | | | | | 1 | | | 1 | 1 | | | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| L 87+95 | | | | | | | 1 | | | 1 | | | 1 | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| L 90+50 | | | | | | | 1 | 1.2 | | 1 | | | 1 | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| L 89+75 | | | | | | | 1 | | | 1 | | | 1 | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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**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 |

DLB40119

COMPUTED BY: BTV DATE: 7/12/2016

CHECKED BY: LDR DATE: 7/12/2016

| PROJECT NO. | SHEET NO. |
|---|---|
| U-5828 | 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 FROM | STRUCTURE NUMBER TO | TOP ELEVATION FT. | INVERT ELEVATION FT. | INVERT ELEVATION FT. | MINIMUM REQUIRED SLOPE % | Drainage Pipe (RCP, CSP, CAAP, HDPE, or PVC) SIZE: 12 | 15 | 18 | 24 | 30 | 36 | 42 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | |
| | | 0803 | 0808 | | 326.0 | 324.0 | | | | | | | | |
| L 95+00 | 8 RT | 0804 | | 328.2 | | | | | | | | | | |
| | | 0804 | 0809 | | 325.2 | 323.2 | | | | | | | | |
| L 98+00 | 8 RT | 0805 | | 326.6 | | | | | | | | | | |
| | | 0805 | 0810 | | 323.6 | 321.6 | | | | | | | | |
| L 98+78 | 9 RT | 0806 | | 326.1 | | | | | | | | | | |
| | | 0806 | 0807 | | 323.1 | 322.4 | | | | | | | | |
| L 99+82 | 2 RT | 0807 | | 325.4 | | | | | | | | | | |
| | | 0807 | 0811 | | 322.4 | 321.5 | | | | | | | | |
| L 93+50 | 41 LT | 0808 | | 327.0 | | | | | | | | | | |
| | | 0808 | 0809 | | 321.9 | 320.8 | | | | | | | | |
| L 95+00 | 41 LT | 0809 | | 326.2 | | | | | | | | | | |
| | | 0809 | 0813 | | 320.8 | 319.7 | | | | | | | | |
| L 98+00 | 41 LT | 0810 | | 324.6 | | | | | | | | | | |
| | | 0810 | 0811 | | 318.5 | 317.2 | | | | | | | | |
| L 99+81 | 42 LT | 0811 | | 324.5 | | | | | | | | | | |
| | | 0811 | 0902 | | 317.2 | 313.5 | 0.3 | | | | | | | |
| L 96+50 | 9 RT | 0812 | | 327.4 | | | | | | | | | | |
| | | 0812 | 0813 | | 324.4 | 322.4 | | | | | | | | |
| L 96+50 | 42 LT | 0813 | | 325.4 | | | | | | | | | | |
| | | 0813 | 0810 | | 319.7 | 318.5 | | | | | | | | |
| | | 0901 | 0909 | | 315.4 | 314.9 | | | | | | | | |
| L 101+78 | 42 LT | 0902 | | 323.5 | | | | | | | | | | |
| | | 0902 | 0909 | | 313.5 | 312.8 | | | | | | | | |
| L 101+78 | 4 LT | 0903 | | 324.3 | | | | | | | | | | |
| | | 0903 | 0902 | | 321.3 | 320.5 | | | | | | | | |
| L 102+20 | 42 RT | 0904 | | 323.3 | | | | | | | | | | |
| | | 0904 | 0905 | | 311.3 | 307.9 | 0.4 | | | | | | | |
| L 105+10 | 42 RT | 0905 | | 321.8 | | | | | | | | | | |
| | | 0905 | 0906 | | 307.9 | 305.2 | 0.4 | | | | | | 76 | |
| L 105+10 | 42 LT | 0907 | | 321.8 | | | | | | | | | | |
| | | 0907 | 0905 | | 308.7 | 307.9 | | | | | | | | |
| L 105+13 | 87 LT | 0908 | | 312.1 | | | | | | | | | | |
| | | 0908 | 0907 | | 309.1 | 308.7 | | | | | | | | |
| L 102+20 | 42 LT | 0909 | | 323.4 | | | | | | | | | | |
| | | 0909 | 0904 | | 312.8 | 311.3 | 0.4 | | | | | | | |
| L 108+12 | 42 LT | 0910 | | 320.2 | | | | | | | | | | |
| | | 0910 | 0911 | | 311.0 | 308.0 | | | | | | | | |
| L 108+37 | 42 RT | 0911 | | 320.1 | | | | | | | | | | |
| | | 0911 | 0914 | | 308.0 | 305.3 | | | | | | | 68 | |
| L 111+00 | 42 LT | 0912 | | 318.7 | | | | | | | | | | |
| | | 0912 | 1002 | | 315.7 | 315.1 | | | | | | | | |
| | | 0913 | 0910 | | 312.6 | 311.0 | | | | | | | 48 | |
| L 111+00 | 42 RT | 0915 | | 318.7 | | | | | | | | | | |
| | | 0915 | 1003 | | 315.7 | 315.1 | | | | | | | | |
| L 112+12 | 67 LT | 1001 | | 319.3 | | | | | | | | | | |
| | | 1001 | 1002 | | 318.0 | 315.1 | 0.8 | | 28 | | | | | |
| L 112+12 | 42 LT | 1002 | | 318.1 | | | | | | | | | | |
| | | 1002 | 1003 | | 314.9 | 314.0 | | | | | | | | |
| L 112+12 | 42 RT | 1003 | | 318.1 | | | | | | | | | | |
| **SHEET TOTALS** | | | | | | | | | 28 | | | | 116 | |

| Drainage Pipe (RCP, CSP, CAAP, HDPE, or PVC) | | | | | | | | | C. S. PIPE | | | | | | | | | R. C. PIPE CLASS III | | | | | | | | | R. C. PIPE CLASS IV | | | | | | | | | 15" SIDE DRAIN PIPE | 18" SIDE DRAIN PIPE | 24" SIDE DRAIN PIPE | ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) | REINFORCED ENDWALLS | DRAINAGE STRUCTURE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DO NOT USE RCP | DO NOT USE CSP | DO NOT USE CAAP | DO NOT USE HDPE | DO NOT USE PVC | 12 | 15 | 18 | 24 | 30 | 36 | 42 | 48 | 12 | 15 | 18 | 24 | 30 | 36 | 42 | 48 | 12 | 15 | 18 | 24 | 30 | 36 | 42 | 48 | 12 | 15 | 18 | 24 | 30 | 36 | 42 | 48 | | | | CY | CY | CY |
| | | | | | .064 | .064 | .064 | .064 | .079 | .079 | .109 | .109 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| | | | | | | | | | | | | | 116 | | 76 | | | | | | | | | | 80 | | 960 | 536 | | | 556 | 44 | | | | | | | 3,400 | | |

| 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 | | D.I. STD. 840.14 OR STD. 840.15 | D.I. FRAME AND GRATES STD. 840.16 | G.D.I. TYPE "A" STD. 840.17 OR STD. 840.26 | G.D.I. TYPE "B" STD. 840.18 OR STD. 840.27 | G.D.I. TYPE "D" STD. 840.19 OR STD. 840.28 | G.D.I. (W.S. FLAT) FRAME W/ 2 GRATES STD. 840.20 | G.D.I. (W.S. SAG) FRAME W/ 2 GRATES STD. 840.22 | G.D.I. (N.S. SAG) FRAME W/ 2 GRATES STD. 840.24 | G.D.I. (N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29 | J.B. STD. 840.31 OR STD. 840.32 | T.B.J.B. STD. 840.34 | T.B.D.I. STD. 840.35 | M.H. STD. 840.51. STD. 840.52. OR STD. 840.53 | M.H. FRAME AND COVER STD. 840.54 | CONVERT EXISTING C.B. TO J.B. | CONVERT EXISTING C.B. TO D.I. | CONVERT EXISTING D.I. TO J.B. | ADJUST C.B. | SPECIAL D.I. (SEE SHEET 2D-3) | 15" DRAINAGE PIPE ELBOW | 18" DRAINAGE PIPE ELBOW | BERM DITCH OUTLET STD. 850.10 (PER EACH) | 4" CONCRETE PAVED DITCH (CY) | PREFORMED SCOUR HOLE (PER EACH) | FLOWABLE FILL | CONCRETE COLLARS CL. "B" STD. 840.72 | CONCRETE AND BRICK PIPE PLUG STD. 840.71 | PIPE REMOVAL | REMARKS |
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| A 0' THRU 5' | A 5' THRU 10' | A 10' AND ABOVE | B LIN. FT. | EACH | E | F | G | D.I. STD. 852.04 OR STD. 852.06 | C.B. STD. 852.05 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| 1 | 0.1 | | | 1 | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| 1 | 0.4 | | | 1 | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| 1 | 1.1 | | | 1 | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| 1 | 2.4 | | | 1 | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| 1 | | | | 1 | | | 1 | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| 1 | 5.0 | | | 1 | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| 1 | 5.0 | 2.0 | | 1 | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| 1 | 5.0 | 3.9 | | 1 | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| 1 | 5.0 | 3.1 | | 1 | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| 1 | 5.0 | 0.6 | | 1 | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| 1 | 4.1 | | | 1 | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| 1 | 5.0 | 2.0 | | 1 | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| 22 | 38.9 | 11.6 | | 22 | | 5 | 17 | | 6 | | | | | | | | | | | | | | | | | | | | | | | 2 | | 1 | 11 | | |

**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 |

DL84019

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| COMPUTED BY: | BTV | DATE: | 7/12/2016 |
| CHECKED BY: | LDR | DATE: | 7/12/2016 |

| PROJECT NO. | SHEET NO. |
|---|---|
| U-5828 | 3D-4 |

# NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
# DIVISION OF HIGHWAYS

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

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

| LINE & STATION | 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) | | | | | | | DO NOT USE RCP | DO NOT USE CSP | DO NOT USE CAAP | DO NOT USE HDPE | DO NOT USE PVC | C. S. PIPE | | | | | | | | R. C. PIPE CLASS III | | | | | | | | R. C. PIPE CLASS IV | | | | | | | | 15" SIDE DRAIN PIPE | 18" SIDE DRAIN PIPE | 24" SIDE DRAIN PIPE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SIZE | | | | | | | | 12 | 15 | 18 | 24 | 30 | 36 | 42 | | | | | | 12 | 15 | 18 | 24 | 30 | 36 | 42 | 48 | 12 | 15 | 18 | 24 | 30 | 36 | 42 | 48 | 12 | 15 | 18 | 24 | 30 | 36 | 42 | 48 | | | |
| THICKNESS OR GAUGE | | | | | | | | | | | | | | | | | | | | .064 | .064 | .064 | .064 | .079 | .079 | .109 | .109 | | | | | | | | | | | | | | | | | | | |
| | | 1003 | 1004 | | 314.1 | 304.3 | 1.8 | | | 64 | | | | | X | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| L 113+18 | 42 LT | 1005 | | 317.5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 1005 | 1023 | | 314.5 | 314.1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 80 | | | | | | | | | |
| Y7 23+35 | 18 LT | 1006 | | 317.5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 1006 | 1009 | | 306.6 | 306.2 | | | | | | | | | | | | | | | | | | | | | | | | | | | 40 | | | | | | | | | | | | | |
| Y7 23+35 | 18 RT | 1007 | | 318.4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 1007 | 1006 | | 306.9 | 306.6 | 0.4 | | | | | | | | | | | | | | | | | | | | | | | | | 36 | | | | | | | | | | | | | | |
| Y7 23+75 | 18 LT | 1009 | | 317.3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 1009 | 1011 | | 306.2 | 305.6 | | | | | | | | | | | | | | | | | | | | | | | | | | | 68 | | | | | | | | | | | | | |
| L 115+75 | 42 LT | 1010 | | 316.2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 1010 | 1011 | | 304.0 | 302.4 | | | | | | | | | | | | | | | | | | | | | | | | | | 56 | | | | | | | | | | | | | | | |
| L 115+20 | 45 LT | 1011 | | 316.4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 1011 | 1013 | | 302.4 | 299.9 | 0.4 | | | | | | | | | | | | | | | | | | | | | | | | | | 84 | | | | | | | | | | | | | |
| | | 1012 | 1010 | | 305.7 | 304.0 | | | | | 60 | | | | | X | X | | X | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| L 115+20 | 42 RT | 1013 | | 316.5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 1013 | 1014 | | 299.9 | 297.2 | 0.4 | | | | | | 92 | | | X | X | | X | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| L 116+95 | 42 RT | 1015 | | 315.6 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 1015 | 1016 | | 312.6 | 312.3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 52 | | | | | | | | | |
| L 117+47 | 42 RT | 1016 | | 315.7 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 1016 | 1017 | | 312.1 | 311.7 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 80 | | | | | | | | |
| L 117+47 | 42 LT | 1017 | | 315.3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 1017 | 1019 | | 311.7 | 309.6 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 300 | | | | | | | | |
| L 120+50 | 9 RT | 1018 | | 315.1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 1018 | 1020 | | 309.0 | 299.2 | | | | | | | | | | | | | | | | | | | | | | | | 108 | | | | | | | | | | | | | | | | |
| L 120+50 | 41 LT | 1019 | | 312.9 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 1019 | 1018 | | 309.6 | 309.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 48 | | | | | | | | |
| L 120+23 | 112 RT | 1020 | | 313.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| L 120+10 | 9 RT | 1021 | | 315.3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 1021 | 1018 | | 312.3 | 311.9 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 40 | | | | | | | | | |
| L 114+00 | 42 LT | 1023 | | 317.1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 1023 | 1011 | | 314.1 | 313.4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 120 | | | | | | | | | |
| | | 1102 | 1022 | | 305.1 | 299.4 | 0.3 | | | | | | | | | | | | | | | | | | | | | | | | | 240 | | | | | | | | | | | | | | |
| L 124+00 | 8 RT | 1103 | | 309.9 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 1103 | 1104 | | 306.9 | 304.6 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 52 | | | | | | | | | |
| L 124+00 | 43 LT | 1104 | | 307.6 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 1104 | 1110 | | 304.6 | 299.4 | 0.3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 272 | | | | | | | | | |
| L 126+83 | 3 LT | 1105 | | 303.9 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 1105 | 1106 | | 298.7 | 298.2 | 0.5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 52 | | | | | | | | |
| L 127+35 | 4 LT | 1106 | | 302.9 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 1106 | 1107 | | 298.2 | 297.4 | 0.5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 52 | | | | | | | | |
| L 127+87 | 4 LT | 1107 | | 301.9 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 1107 | 1108 | | 297.4 | 296.2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 140 | | | | | | | |
| L 129+30 | 4 LT | 1108 | | 299.5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 1108 | 1109 | | 293.3 | 292.8 | 0.4 | | | | | | | | | | | | | | | | | | | | | | | | | 56 | | | | | | | | | | | | | | |
| L 129+30 | 54 RT | 1109 | | 298.1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 1109 | 1115 | | 292.8 | 290.0 | | | | | | | 88 | | | X | X | | X | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| L 126+83 | 49 LT | 1110 | | 302.4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 1110 | 1105 | | 299.1 | 298.7 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 44 | | | | | | | | |
| L 127+87 | 51 LT | 1114 | | 300.8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 1114 | 1107 | | 297.8 | 297.4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 48 | | | | | | | | | |
| | | | | | | SHEET TOTALS | | | | 64 | 60 | | 180 | | | | | | | | | | | | | | | | | 108 | 56 | 332 | 192 | | | | 664 | 576 | 140 | | | | | | | |

| STRUCTURE NUMBER FROM | STRUCTURE NUMBER TO | ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CY | REINFORCED ENDWALLS CY | DRAINAGE STRUCTURE MASONRY CY | QUANTITIES FOR DRAINAGE STRUCTURES (NOTE: TOTAL LIN. FT. FOR PAY QUANTITY SHALL BE A + (1.3 X B)) 0' THRU 5' EACH | A 5' THRU 10' LIN. FT. | B 10' AND ABOVE LIN. FT. | C.B. STD. 840.01 OR STD. 840.02 | FRAME, GRATES, AND HOOD STD. 840.03 GRATE TYPE E | F | G | CONCRETE TRANSITIONAL SECTION D.I. STD. 852.04 OR STD. 852.06 | C.B. STD. 852.05 | D.I. STD. 840.14 OR STD. 840.15 | D.I. FRAME AND GRATES STD. 840.16 | G.D.I. TYPE "A" STD. 840.17 OR STD. 840.26 | G.D.I. TYPE "B" STD. 840.18 OR STD. 840.27 | G.D.I. TYPE "D" STD. 840.19 OR STD. 840.28 | G.D.I. (W.S. FLAT) FRAME W/ 2 GRATES STD. 840.20 | G.D.I. (W.S. SAG) FRAME W/ 2 GRATES STD. 840.22 | G.D.I. (N.S. SAG) FRAME W/ 2 GRATES STD. 840.24 | G.D.I. (N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29 | J.B. STD. 840.31 OR STD. 840.32 | T.B.J.B. STD. 840.34 | T.B.D.I. STD. 840.35 | M.H. STD. 840.51, STD. 840.52, OR STD. 840.53 | M.H. FRAME AND COVER STD. 840.54 | CONVERT EXISTING C.B. TO J.B. | CONVERT EXISTING C.B. TO D.I. | CONVERT EXISTING D.I. TO J.B. | ADJUST C.B. | SPECIAL D.I. (SEE SHEET 2D-3) | 15" DRAINAGE PIPE ELBOW | 18" DRAINAGE PIPE ELBOW | BERM DITCH OUTLET STD. 850.10 (PER EACH) | 4" CONCRETE PAVED DITCH (CY) | PREFORMED SCOUR HOLE (PER EACH) | 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1003 | 1004 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 2 | | | | | | | | |
| 1005 | | | | | 1 | | | 1 | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1005 | 1023 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1006 | | | | | 1 | 5.0 | 0.9 | 1 | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1006 | 1009 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1007 | | | | | 1 | 5.0 | 1.5 | 1 | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1007 | 1006 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1009 | | | | | 1 | 5.0 | 1.1 | 1 | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1009 | 1011 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1010 | | | | | 1 | 5.0 | 2.2 | 1 | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1010 | 1011 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1011 | | | | | 1 | 5.0 | 4.0 | 1 | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1011 | 1013 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1012 | 1010 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1013 | | | | | 1 | 5.0 | 6.6 | 1 | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1013 | 1014 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1015 | | | | | 1 | | | 1 | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1015 | 1016 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1016 | | | | | 1 | | | 1 | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1016 | 1017 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1017 | | | | | 1 | | | 1 | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1017 | 1019 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1018 | | | | | 1 | 1.1 | | 1 | | | 1 | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1018 | 1020 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1019 | | | | | 1 | | | 1 | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1019 | 1018 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1020 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | | | | | |
| 1021 | | | | | 1 | | | 1 | | | 1 | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1021 | 1018 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1023 | | | | | 1 | | | 1 | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1023 | 1011 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1102 | 1022 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1103 | | | | | 1 | | | 1 | | | 1 | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1103 | 1104 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1104 | | | | | 1 | | | 1 | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1104 | 1110 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1105 | | | | | 1 | 0.2 | | 1 | | | 1 | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1105 | 1106 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1106 | | | | | 1 | | | 1 | | | 1 | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1106 | 1107 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1107 | | | | | 1 | | | 1 | | | 1 | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1107 | 1108 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1108 | | | | | 1 | 1.2 | | 1 | | 1 | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1108 | 1109 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1109 | | | | | 1 | 0.4 | | 1 | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1109 | 1115 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1110 | | | | | 1 | | | 1 | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1110 | 1105 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1114 | | | | | 1 | | | 1 | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1114 | 1107 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| SHEET TOTALS | | | | | 23 | 32.9 | 16.3 | 23 | 1 | 4 | 18 | | 7 | | | | | | | | | | | | | | | | | | | | | 2 | | | 1 | | | | | |

**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 |

DL84019

COMPUTED BY: BTV DATE: 7/12/2016

CHECKED BY: LDR DATE: 7/12/2016

# NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
# DIVISION OF HIGHWAYS

PROJECT NO. U-5828 SHEET NO. 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 | OFFSET | STRUCTURE NUMBER | | TOP ELEVATION | INVERT ELEVATION | INVERT ELEVATION | MINIMUM REQUIRED SLOPE | Drainage Pipe (RCP, CSP, CAAP, HDPE, or PVC) | | | | | | | | | | | | C. S. PIPE | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SIZE | | FROM | TO | | | | | 12 | 15 | 18 | 24 | 30 | 36 | 42 | DO NOT USE RCP | DO NOT USE CSP | DO NOT USE CAAP | DO NOT USE HDPE | DO NOT USE PVC | 12 | 15 | 18 | 24 | 30 | 36 | 42 | 48 |
| THICKNESS OR GAUGE | | | | | | | | | | | | | | | | | | | | .064 | .064 | .064 | .064 | .079 | .079 | .109 | .109 |
| | | | | FT. | FT. | FT. | % | | | | | | | | | | | | | | | | | | | | |
| | | 1117 | 1124 | | 297.5 | 293.8 | | | | | | | | | | | | | | | | | | | | | |
| L 130+94 | 55 LT | 1119 | | 295.6 | | | | | | | | | | | | | | | | | | | | | | | |
| L 129+45 | 54 RT | 1120 | | 297.7 | | | | | | | | | | | | | | | | | | | | | | | |
| | | 1120 | 1109 | | 294.7 | 294.5 | | | | | | | | | | | | | | | | | | | | | |
| Y8 24+18 | 35 LT | 1121 | | 300.9 | | | | | | | | | | | | | | | | | | | | | | | |
| | | 1121 | 1123 | | 297.5 | 294.2 | | | | | | | | | | | | | | | | | | | | | |
| Y8 24+18 | 9 LT | 1122 | | 300.8 | | | | | | | | | | | | | | | | | | | | | | | |
| | | 1122 | 1121 | | 297.6 | 297.5 | | | | | | | | | | | | | | | | | | | | | |
| L 130+94 | 78 LT | 1123 | | 298.2 | | | | | | | | | | | | | | | | | | | | | | | |
| | | 1123 | 1119 | | 294.2 | 294.1 | | | | | | | | | | | | | | | | | | | | | |
| L 129+30 | 51 LT | 1124 | | 298.0 | | | | | | | | | | | | | | | | | | | | | | | |
| | | 1124 | 1108 | | 293.8 | 293.3 | | | | | | | | | | | | | | | | | | | | | |
| L 134+35 | 59 LT | 1201 | | 291.1 | | | | | | | | | | | | | | | | | | | | | | | |
| | | 1201 | 1213 | | 287.6 | 287.3 | | | | | | | | | | | | | | | | | | | | | |
| L 134+86 | 54 LT | 1206 | | 290.9 | | | | | | | | | | | | | | | | | | | | | | | |
| | | 1206 | 1201 | | 287.9 | 287.6 | | | | | | | | | | | | | | | | | | | | | |
| L 134+00 | 59 LT | 1207 | | 291.8 | | | | | | | | | | | | | | | | | | | | | | | |
| | | 1207 | 1201 | | 288.8 | 287.6 | | | | | | | | | | | | | | | | | | | | | |
| L 133+48 | 6 RT | 1210 | | 294.4 | | | | | | | | | | | | | | | | | | | | | | | |
| | | 1210 | 1213 | | 291.3 | 289.3 | | | | | | | | | | | | | | | | | | | | | |
| L 135+88 | 11 LT | 1211 | | 289.4 | | | | | | | | | | | | | | | | | | | | | | | |
| | | 1211 | 1212 | | 283.6 | 283.5 | | | | | | | | | | | | | | | | | | | | | |
| L 135+88 | 0 CL | 1212 | | 289.7 | | | | | | | | | | | | | | | | | | | | | | | |
| L 134+35 | 5 RT | 1213 | | 292.5 | | | | | | | | | | | | | | | | | | | | | | | |
| | | 1213 | 1203 | | 287.3 | 287.1 | | | | | | | | | | | | | | | | | | | | | |
| L 138+29 | 59 LT | 1217 | | 286.9 | | | | | | | | | | | | | | | | | | | | | | | |
| | | 1218 | 1217 | | 285.0 | 284.9 | | | | | | | | | | | | | | | | | | | | | |
| L 136+85 | 11 LT | 1219 | | 287.6 | | | | | | | | | | | | | | | | | | | | | | | |
| | | 1219 | 1211 | | 284.6 | 283.6 | | | | | | | | | | | | | | | | | | | | | |
| L 138+15 | 10 LT | 1220 | | 285.6 | | | | | | | | | | | | | | | | | | | | | | | |
| | | 1220 | 1208 | | 282.5 | 280.2 | | | | | | | | | | | | | | | | | | | | | |
| Y7 20+13 | 19 RT | 1401 | | 325.6 | | | | | | | | | | | | | | | | | | | | | | | |
| | | 1401 | 1405 | | 321.6 | 321.3 | | | | | | | | | | | | | | | | | | | | | |
| Y7 19+76 | 77 RT | 1402 | | 330.1 | | | | | | | | | | | | | | | | | | | | | | | |
| | | 1402 | 1401 | | 327.1 | 321.6 | | | | | | | | | | | | | | | | | | | | | |
| Y7 19+09 | 26 RT | 1403 | | 327.1 | | | | | | | | | | | | | | | | | | | | | | | |
| | | 1403 | 1401 | | 324.1 | 321.6 | | | | | | | | | | | | | | | | | | | | | |
| Y7 20+13 | 18 LT | 1405 | | 325.5 | | | | | | | | | | | | | | | | | | | | | | | |
| | | 1405 | 1406 | | 321.3 | 316.1 | | | | | | | | | | | | | | | | | | | | | |
| Y7 22+00 | 18 LT | 1406 | | 319.4 | | | | | | | | | | | | | | | | | | | | | | | |
| | | 1406 | 1006 | | 316.1 | 314.4 | | | | | | | | | | | | | | | | | | | | | |
| | | 1407 | 1007 | | 307.5 | 306.9 | 0.4 | | | | | 60 | | | | X | X | | X | | | | | | | | |
| Y8 17+96 | 30 LT | 1504 | | 311.8 | | | | | | | | | | | | | | | | | | | | | | | |
| Y8 19+60 | 33 LT | 1506 | | 308.4 | | | | | | | | | | | | | | | | | | | | | | | |
| | | 1506 | 1502 | | 305.4 | 304.0 | | | | | | | | | | | | | | | | | | | | | |
| Y8 22+60 | 35 LT | 1507 | | 303.3 | | | | | | | | | | | | | | | | | | | | | | | |
| | | 1507 | 1508 | | 300.3 | 299.1 | | | | | | | | | | | | | | | | | | | | | |
| Y8 23+31 | 35 LT | 1508 | | 302.1 | | | | | | | | | | | | | | | | | | | | | | | |
| | | 1508 | 1121 | | 299.1 | 297.9 | | | | | | | | | | | | | | | | | | | | | |
| Y8 23+31 | 8 LT | 1509 | | 302.6 | | | | | | | | | | | | | | | | | | | | | | | |
| SHEET TOTALS | | | | | | | | | | | | 60 | | | | | | | | | | | | | | | |

| STRUCTURE NUMBER FROM | TO | R. C. PIPE CLASS III | | | | | | | | R. C. PIPE CLASS IV | | | | | | | | 15" SIDE DRAIN PIPE | 18" SIDE DRAIN PIPE | 24" SIDE DRAIN PIPE | ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) | REINFORCED ENDWALLS | DRAINAGE STRUCTURE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 12 | 15 | 18 | 24 | 30 | 36 | 42 | 48 | 12 | 15 | 18 | 24 | 30 | 36 | 42 | 48 | | | | | | MASONRY |
| | | | | | | | | | | | | | | | | | | | | | CY | CY | CY |
| 1117 | 1124 | | | | | 80 | | | | | | | | | | | | | | | | | |
| 1119 | | | | | | | | | | | | | | | | | | | | | | | |
| 1120 | | | | | | | | | | | | | | | | | | | | | | | |
| 1120 | 1109 | | | | | | | | | | 16 | | | | | | | | | | | | |
| 1121 | | | | | | | | | | | | | | | | | | | | | | | |
| 1121 | 1123 | | | | | | | | | | | 56 | | | | | | | | | | | |
| 1122 | | | | | | | | | | | | | | | | | | | | | | | |
| 1122 | 1121 | | | | | | | | | | 24 | | | | | | | | | | | | |
| 1123 | | | | | | | | | | | | | | | | | | | | | | | |
| 1123 | 1119 | | | 24 | | | | | | | | | | | | | | | | | | | |
| 1124 | | | | | | | | | | | | | | | | | | | | | | | |
| 1124 | 1108 | | | | | | | | | | | | | 48 | | | | | | | | | |
| 1201 | | | | | | | | | | | | | | | | | | | | | | | |
| 1201 | 1213 | | | | | | | | | | 64 | | | | | | | | | | | | |
| 1206 | | | | | | | | | | | | | | | | | | | | | | | |
| 1206 | 1201 | | | | | | | | | | 52 | | | | | | | | | | | | |
| 1207 | | | | | | | | | | | | | | | | | | | | | | | |
| 1207 | 1201 | | | | | | | | | | 36 | | | | | | | | | | | | |
| 1210 | | | | | | | | | | | | | | | | | | | | | | | |
| 1210 | 1213 | | | | | | | | | | 84 | | | | | | | | | | | | |
| 1211 | | | | | | | | | | | | | | | | | | | | | | | |
| 1211 | 1212 | | | | | | | | | | 12 | | | | | | | | | | | | |
| 1212 | | | | | | | | | | | | | | | | | | | | | | | |
| 1213 | | | | | | | | | | | | | | | | | | | | | | | |
| 1213 | 1203 | | 28 | | | | | | | | | | | | | | | | | | | | |
| 1217 | | | | | | | | | | | | | | | | | | | | | | | |
| 1218 | 1217 | | | | 24 | | | | | | | | | | | | | | | | | | |
| 1219 | | | | | | | | | | | | | | | | | | | | | | | |
| 1219 | 1211 | | | | | | | | | | 96 | | | | | | | | | | | | |
| 1220 | | | | | | | | | | | | | | | | | | | | | | | |
| 1220 | 1208 | | | | | | | | | | 48 | | | | | | | | | | | | |
| 1401 | | | | | | | | | | | | | | | | | | | | | | | |
| 1401 | 1405 | | | | | | | | | | | 36 | | | | | | | | | | | |
| 1402 | | | | | | | | | | | | | | | | | | | | | | | |
| 1402 | 1401 | | | | | | | | | | 72 | | | | | | | | | | | | |
| 1403 | | | | | | | | | | | | | | | | | | | | | | | |
| 1403 | 1401 | | | | | | | | | | 104 | | | | | | | | | | | | |
| 1405 | | | | | | | | | | | | | | | | | | | | | | | |
| 1405 | 1406 | | | | | | | | | | | 184 | | | | | | | | | | | |
| 1406 | | | | | | | | | | | | | | | | | | | | | | | |
| 1406 | 1006 | | | | | | | | | | | 132 | | | | | | | | | | | |
| 1407 | 1007 | | | | | | | | | | | | | | | | | | | | | | |
| 1504 | | | | | | | | | | | | | | | | | | | | | | | |
| 1506 | | | | | | | | | | | | | | | | | | | | | | | |
| 1506 | 1502 | | | | | | | | | | 136 | | | | | | | | | | | | |
| 1507 | | | | | | | | | | | | | | | | | | | | | | | |
| 1507 | 1508 | | | | | | | | | | 72 | | | | | | | | | | | | |
| 1508 | | | | | | | | | | | | | | | | | | | | | | | |
| 1508 | 1121 | | | | | | | | | | 88 | | | | | | | | | | | | |
| 1509 | | | | | | | | | | | | | | | | | | | | | | | |
| SHEET TOTALS | | | 28 | 24 | 24 | 80 | | | | | 904 | 408 | | 48 | | | | | | | | | |

| STRUCTURE NUMBER FROM | TO | 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 | | D.I. STD. 840.14 OR STD. 840.15 | D.I. FRAME AND GRATES STD. 840.16 | G.D.I. TYPE "A" STD. 840.17 OR STD. 840.26 | G.D.I. TYPE "B" STD. 840.18 OR STD. 840.27 | G.D.I. TYPE "D" STD. 840.19 OR STD. 840.28 | G.D.I. (W.S. FLAT) FRAME W/ 2 GRATES STD. 840.20 | G.D.I. (W.S. SAG) FRAME W/ 2 GRATES STD. 840.22 | 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | A | B | | GRATE TYPE | | | D.I. STD. 852.04 OR STD. 852.06 | C.B. STD. 852.05 | | | | | | | | | |
| | | 0' THRU 5' | 5' THRU 10' | 10' AND ABOVE | | E | F | G | | | | | | | | | | | |
| | | EACH | LIN. FT. | LIN. FT. | | | | | | | | | | | | | | | |
| 1117 | 1124 | | | | | | | | | | | | | | | | | | |
| 1119 | | | | | | | | | | | | | | | | | | | |
| 1120 | | 1 | | | 1 | | 1 | | | | | | | | | | | | |
| 1120 | 1109 | | | | | | | | | | | | | | | | | | |
| 1121 | | 1 | | | 1 | | | 1 | | | | | | | | | | | |
| 1121 | 1123 | | | | | | | | | | | | | | | | | | |
| 1122 | | 1 | | | | | | | 1 | | 1 | 1 | | | | | | | |
| 1122 | 1121 | | | | | | | | | | | | | | | | | | |
| 1123 | | 1 | | | | | | | | | 1 | 1 | | | | | | | |
| 1123 | 1119 | | | | | | | | | | | | | | | | | | |
| 1124 | | 1 | | | 1 | | | 1 | | | | | | | | | | | |
| 1124 | 1108 | | | | | | | | | | | | | | | | | | |
| 1201 | | 1 | | | 1 | | | 1 | | | | | | | | | | | |
| 1201 | 1213 | | | | | | | | | | | | | | | | | | |
| 1206 | | 1 | | | 1 | | | 1 | | | | | | | | | | | |
| 1206 | 1201 | | | | | | | | | | | | | | | | | | |
| 1207 | | 1 | | | 1 | | | 1 | | | | | | | | | | | |
| 1207 | 1201 | | | | | | | | | | | | | | | | | | |
| 1210 | | 1 | | | | | | | 1 | | 1 | 1 | | | | | | | |
| 1210 | 1213 | | | | | | | | | | | | | | | | | | |
| 1211 | | 1 | 0.8 | | 1 | | 1 | | | 1 | | | | | | | | | |
| 1211 | 1212 | | | | | | | | | | | | | | | | | | |
| 1212 | | | | | | | | | | | | | | | | | | | |
| 1213 | | 1 | 0.2 | | | | | | 1 | | 1 | 1 | | | | | | | |
| 1213 | 1203 | | | | | | | | | | | | | | | | | | |
| 1217 | | | | | | | | | | | | | | | | | | | |
| 1218 | 1217 | | | | | | | | | | | | | | | | | | |
| 1219 | | 1 | | | 1 | | 1 | | | 1 | | | | | | | | | |
| 1219 | 1211 | | | | | | | | | | | | | | | | | | |
| 1220 | | 1 | | | | | | | 1 | | 1 | 1 | | | | | | | |
| 1220 | 1208 | | | | | | | | | | | | | | | | | | |
| 1401 | | 1 | | | 1 | | 1 | | | | | | | | | | | | |
| 1401 | 1405 | | | | | | | | | | | | | | | | | | |
| 1402 | | 1 | | | 1 | | 1 | | | | | | | | | | | | |
| 1402 | 1401 | | | | | | | | | | | | | | | | | | |
| 1403 | | 1 | | | 1 | | 1 | | | | | | | | | | | | |
| 1403 | 1401 | | | | | | | | | | | | | | | | | | |
| 1405 | | 1 | | | 1 | | | 1 | | | | | | | | | | | |
| 1405 | 1406 | | | | | | | | | | | | | | | | | | |
| 1406 | | 1 | | | 1 | | | 1 | | | | | | | | | | | |
| 1406 | 1006 | | | | | | | | | | | | | | | | | | |
| 1407 | 1007 | | | | | | | | | | | | | | | | | | |
| 1504 | | 1 | | | 1 | | | 1 | | | | | | | | | | | |
| 1506 | | 1 | | | 1 | | | 1 | | | | | | | | | | | |
| 1506 | 1502 | | | | | | | | | | | | | | | | | | |
| 1507 | | 1 | | | 1 | | | 1 | | | | | | | | | | | |
| 1507 | 1508 | | | | | | | | | | | | | | | | | | |
| 1508 | | 1 | | | 1 | | | 1 | | | | | | | | | | | |
| 1508 | 1121 | | | | | | | | | | | | | | | | | | |
| 1509 | | 1 | | | | | | | 1 | | 1 | 1 | | | | | | | |
| SHEET TOTALS | | 23 | 1.0 | | 17 | | 6 | 11 | 5 | 2 | 6 | 6 | | | | | | | |

| STRUCTURE NUMBER FROM | TO | 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. STD. 840.51, STD. 840.52, OR STD. 840.53 | M.H. FRAME AND COVER STD. 840.54 | CONVERT EXISTING C.B. TO J.B. | CONVERT EXISTING C.B. TO D.I. | CONVERT EXISTING D.I. TO J.B. | ADJUST C.B. | SPECIAL D.I. (SEE SHEET 2D-3) | 15" DRAINAGE PIPE ELBOW | 18" DRAINAGE PIPE ELBOW | BERM DITCH OUTLET STD. 850.10 (PER EACH) | 4" CONCRETE PAVED DITCH (CY) | PREFORMED SCOUR HOLE (PER EACH) | FLOWABLE FILL | CONCRETE COLLARS CL. "B" STD. 840.72 | CONCRETE AND BRICK PIPE PLUG STD. 840.71 | PIPE REMOVAL | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | | | CY | CY | CY | LIN. FT. | |
| 1117 | 1124 | | | | | | | | | | | | | | | | | | | | |
| 1119 | | | | | | | | | | | | | | | | | | 0.4465 | | | |
| 1120 | | | | | | | | | | | | | | | | | | | | | |
| 1120 | 1109 | | | | | | | | | | | | | | | | | | | | |
| 1121 | | | | | | | | | | | | | | | | | | | | | |
| 1121 | 1123 | | | | | | | | | | | | | | | | | | | | |
| 1122 | | | | | | | | | | | | | | | | | | | | | |
| 1122 | 1121 | | | | | | | | | | | | | | | | | | | | |
| 1123 | | | | | | | | | | | | | | | | | | | | | |
| 1123 | 1119 | | | | | | | | | | | | | | | | | | | | |
| 1124 | | | | | | | | | | | | | | | | | | | | | |
| 1124 | 1108 | | | | | | | | | | | | | | | | | | | | |
| 1201 | | | | | | | | | | | | | | | | | | | | | |
| 1201 | 1213 | | | | | | | | | | | | | | | | | | | | |
| 1206 | | | | | | | | | | | | | | | | | | | | | |
| 1206 | 1201 | | | | | | | | | | | | | | | | | | | | |
| 1207 | | | | | | | | | | | | | | | | | | | | | |
| 1207 | 1201 | | | | | | | | | | | | | | | | | | | | |
| 1210 | | | | | | | | | | | | | | | | | | | | | |
| 1210 | 1213 | | | | | | | | | | | | | | | | | | | | |
| 1211 | | | | | | | | | | | | | | | | | | | | | |
| 1211 | 1212 | | | | | | | | | | | | | | | | | | | | |
| 1212 | | | | | | 1 | 1 | | | | | | | | | | | | | | |
| 1213 | | | | | | | | | | | | | | | | | | | | | |
| 1213 | 1203 | | | | | | | | | | | | | | | | | | | | |
| 1217 | | | | | | | | | | | | | | | | | | 0.5526 | | | |
| 1218 | 1217 | | | | | | | | | | | | | | | | | | | | |
| 1219 | | | | | | | | | | | | | | | | | | | | | |
| 1219 | 1211 | | | | | | | | | | | | | | | | | | | | |
| 1220 | | | | | | | | | | | | | | | | | | | | | |
| 1220 | 1208 | | | | | | | | | | | | | | | | | | | | |
| 1401 | | | | | | | | | | | | | | | | | | | | | |
| 1401 | 1405 | | | | | | | | | | | | | | | | | | | | |
| 1402 | | | | | | | | | | | | | | | | | | | | | |
| 1402 | 1401 | | | | | | | | | | | | | | | | | | | | |
| 1403 | | | | | | | | | | | | | | | | | | | | | |
| 1403 | 1401 | | | | | | | | | | | | | | | | | | | | |
| 1405 | | | | | | | | | | | | | | | | | | | | | |
| 1405 | 1406 | | | | | | | | | | | | | | | | | | | | |
| 1406 | | | | | | | | | | | | | | | | | | | | | |
| 1406 | 1006 | | | | | | | | | | | | | | | | | | | | |
| 1407 | 1007 | | | | | | | | | | | | | | | | | | | | |
| 1504 | | | | | | | | | | | | | | | | | | | | | |
| 1506 | | | | | | | | | | | | | | | | | | | | | |
| 1506 | 1502 | | | | | | | | | | | | | | | | | | | | |
| 1507 | | | | | | | | | | | | | | | | | | | | | |
| 1507 | 1508 | | | | | | | | | | | | | | | | | | | | |
| 1508 | | | | | | | | | | | | | | | | | | | | | |
| 1508 | 1121 | | | | | | | | | | | | | | | | | | | | |
| 1509 | | | | | | | | | | | | | | | | | | | | | |
| SHEET TOTALS | | | | | | 1 | 1 | | | | | | | | | | | 0.9991 | | | |

**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 |

DL84019

**COMPUTED BY:** BTV **DATE:** 7/12/2016

**CHECKED BY:** LDR **DATE:** 7/12/2016

| PROJECT NO. | SHEET NO. |
|---|---|
| U-5828 | 3D-6 |

# NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
# DIVISION OF HIGHWAYS

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

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

| LINE & STATION (SIZE / THICKNESS OR GAUGE) | OFFSET | STRUCTURE NUMBER FROM | STRUCTURE NUMBER TO | TOP ELEVATION FT. | INVERT ELEVATION FT. | INVERT ELEVATION FT. | MINIMUM REQUIRED SLOPE % | Drainage Pipe (RCP, CSP, CAAP, HDPE, or PVC) 12 | 15 | 18 | 24 | 30 | 36 | 42 | DO NOT USE RCP | DO NOT USE CSP | DO NOT USE CAAP | DO NOT USE HDPE | DO NOT USE PVC | C. S. PIPE 12 .064 | 15 .064 | 18 .064 | 24 .064 | 30 .079 | 36 .079 | 42 .109 | 48 .109 | R. C. PIPE CLASS III 12 | 15 | 18 | 24 | 30 | 36 | 42 | 48 | R. C. PIPE CLASS IV 12 | 15 | 18 | 24 | 30 | 36 | 42 | 48 | 15" SIDE DRAIN PIPE | 18" SIDE DRAIN PIPE | 24" SIDE DRAIN PIPE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 1509 | 1508 | | 299.4 | 299.1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 24 | | | | | | | | | |
| Y8 17+90 | 11 RT | 1510 | | 312.2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 1510 | 1511 | | 309.0 | 308.5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 40 | | | | | | | | | |
| Y8 18+30 | 11 RT | 1511 | | 311.5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Y8 27+50 | 3 RT | 1601 | | 295.5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 1601 | 1603 | | 292.3 | 291.5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 72 | | | | | | | | | |
| Y8 28+75 | 6 LT | 1602 | | 294.3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 1602 | 1604 | | 291.1 | 291.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 40 | | | | | | | | | |
| Y8 28+25 | 3 LT | 1603 | | 294.7 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 1603 | 1602 | | 291.5 | 291.1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 48 | | | | | | | | | |
| Y8 29+15 | 4 LT | 1604 | | 294.1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 1604 | 1605 | | 290.7 | 288.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 44 | | | | | | | | |
| L 55+82 | 0 CL | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| L 57+96 | 79 LT | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Y8 23+50 | 26 LT | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Y8 24+58 | 50 LT | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Y8 18+88 | 32 LT | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Y8 24+27 | 43 RT | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| SHEET TOTALS | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 224 | 44 | | | | | | | | |
| PROJECT TOTALS | | | | | | | | | 100 | 156 | 100 | 220 | 232 | 76 | | | | | | | | | | | | | | | 28 | 292 | 200 | 1616 | 976 | | | | 4152 | 2760 | 784 | 48 | | | | | | |

| LINE & STATION | STRUCTURE NUMBER FROM | STRUCTURE NUMBER TO | ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CY | REINFORCED ENDWALLS CY | DRAINAGE STRUCTURE MASONRY CY | QUANTITIES FOR DRAINAGE STRUCTURES (NOTE: TOTAL LIN. FT. FOR PAY QUANTITY SHALL BE A + (1.3 X B)) A 0' THRU 5' EACH | B 5' THRU 10' LIN. FT. | 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 | D.I. STD. 840.14 OR STD. 840.15 | D.I. FRAME AND GRATES STD. 840.16 | G.D.I. TYPE "A" STD. 840.17 OR STD. 840.26 | G.D.I. TYPE "B" STD. 840.18 OR STD. 840.27 | G.D.I. TYPE "D" STD. 840.19 OR STD. 840.28 | G.D.I. (W.S. FLAT) FRAME W/ 2 GRATES STD. 840.20 | G.D.I. (W.S. SAG) FRAME W/ 2 GRATES STD. 840.22 | G.D.I. (N.S. SAG) FRAME W/ 2 GRATES STD. 840.24 | G.D.I. (N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29 | J.B. STD. 840.31 OR STD. 840.32 | T.B.J.B. STD. 840.34 | T.B.D.I. STD. 840.35 | M.H. STD. 840.51, STD. 840.52, OR STD. 840.53 | M.H. FRAME AND COVER STD. 840.54 | CONVERT EXISTING C.B. TO J.B. | CONVERT EXISTING C.B. TO D.I. | CONVERT EXISTING D.I. TO J.B. | ADJUST C.B. | SPECIAL D.I. (SEE SHEET 2D-3) | 15" DRAINAGE PIPE ELBOW | 18" DRAINAGE PIPE ELBOW | BERM DITCH OUTLET STD. 850.10 (PER EACH) | 4" CONCRETE PAVED DITCH (CY) | PREFORMED SCOUR HOLE (PER EACH) | 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1509 | 1508 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Y8 17+90 | 1510 | | | | | 1 | | | | | | | 1 | | 1 | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 1510 | 1511 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Y8 18+30 | 1511 | | | | | 1 | 4.3 | | | | | | | | | 1 | | | | | | | | | | | | | | | | | | 1 | | | | | | | | | | SPECIAL DI, SEE SHEET 2D-3 |
| Y8 27+50 | 1601 | | | | | 1 | | | | | | | 1 | | 1 | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 1601 | 1603 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Y8 28+75 | 1602 | | | | | 1 | | | | | | | 1 | | 1 | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 1602 | 1604 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Y8 28+25 | 1603 | | | | | 1 | | | | | | | 1 | | 1 | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 1603 | 1602 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Y8 29+15 | 1604 | | | | | 1 | | | | | | | 1 | | 1 | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 1604 | 1605 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| L 55+82 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 80 | |
| L 57+96 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 87 | |
| Y8 23+50 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 170 | |
| Y8 24+58 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 65 | |
| Y8 18+88 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 126 | |
| Y8 24+27 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 32 | |
| SHEET TOTALS | | | | | | 6 | 4.3 | | | | | | 5 | | 5 | 6 | | | | | | | | | | | | | | | | | | 1 | | | | | | | | | 560 | |
| PROJECT TOTALS | | | 3.400 | | | 121 | 145.3 | | 107 | 6 | 37 | 64 | 10 | 30 | 11 | 12 | | 1 | | | | 1 | | 1 | | | | 2 | 1 | | | | 1 | 4 | 4 | 2 | 22 | 2 | | 0.9991 | | 560 | |

**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 |

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-5828 | 3P-1 |

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

# PARCEL INDEX

| PARCEL NO. | SHEET NO. | PROPERTY OWNER NAME | DEED BOOK |
|---|---|---|---|
| 19 | 4 | AIRPORT BOULEVARD PARTNERS, LLC. | DB 7366 PG 193 |
| 20 | 4,5 | EXTER 120 TRANS AIR, LLC. | DB 14402 PG 338 |
| 21 | 4 | MICHAEL L. STEWART<br>STEPHENS ENTERPRISES, LLC | DB 15268 PG 769 |
| 22 | 4 | MICHAEL L. STEWART<br>STEPHENS ENTERPRISES, LLC | DB 15268 PG 779 |
| 23 | 4 | MICHAEL L. STEWART<br>STEPHENS ENTERPRISES, LLC | DB 15268 PG 769 |
| 24 | 4,5 | M.A.L. PROPERTIES, LLC<br>CENTRAL CAROLINA REALTY, INC.<br>MICHAEL L. STEWART<br>STEPHENS ENTERPRISES, LLC. | DB 15268 PG 759 |
| 25 | 4,5 | AIR PARK ASSOCIATES | DB 5438 PG 219 |
| 26 | 5,6 | ROI INVESTMENTS, LLC. | DB 15566 PG 2254 |
| 27 | 5,6 | AIS FORESTRY & FARMING, LLC<br>STEPHENS ENTERPRISES, LLC | DB 15268 PG 739 |
| 28 | 6 | MORRISVILLE ASSOCIATES, LLC | DB 10884 PG 730 |
| 29 | 6,7 | CCF PROPERTIES, LLC | DB 14038 PG 1799 |
| 30 | 7,8,9,10,14 | WILLIAM H. SPRUNT<br>FRANK W. WIGGINS U/A FBO | DB 8150 PG 024 |
| 31 | 7,8 | STEPHENS ENTERPRISES, LLC | DB 8716 PG 945 |
| 32 | 9,10 | JT HOBBY & SON, INC.<br>A&J WHITE, LLC | DB 15546 PG 2209 |

| PARCEL NO. | SHEET NO. | PROPERTY OWNER NAME | DEED BOOK |
|---|---|---|---|
| 33 | 10,16 | JT HOBBY & SON, INC.<br>A&J WHITE, LLC | DB 15556 PG 370 |
| 34 | 10,11,15,16 | SOUTHPORT BUSINESS PARK,<br>LIMITED PARTNERSHIP | DB 8681 PG 2240 |
| 35 | 11,12,15 | SOUTHPORT BUSINESS PARK<br>LIMITED PARTNERSHIP | DB 7976 PG 433 |
| 36 | 11,12,16 | MORRISVILLE THEYS STONE, LLC | DB 14621 PG 2126 |
| 37 | 12 | SOUTHPORT BUSINESS PARK<br>LIMITED PARTNERSHIP | DB 7976 PG 433 |
| 38 | 12,13,16 | WAKE COUNTY | DB 3006 PG 246 |
| 42 | 4 | AIR PARK ASSOCIATES | NONE LISTED |
| 44 | 14,15 | SOUTHPORT BUSINESS PARK<br>LIMITED PARTNERSHIP | DB 5425 PG 467 |
| 45 | 14 | SOUTHPORT BUSINESS PARK<br>LIMITED PARTNERSHIP | DB 5425 PG 467 |
| 46 | 14,15 | SOUTHPORT BUSINESS PARK<br>LIMITED PARTNERSHIP | DB 5425 PG 467 |
| 47 | 14 | SOUTHPORT BUSINESS PARK<br>LIMITED PARTNERSHIP | DB 5425 PG 467 |
| 48 | 14 | SOUTHPORT BUSINESS PARK<br>LIMITED PARTNERSHIP | DB 5425 PG 462 |
| 49 | 15 | SOUTHPORT BUSINESS PARK<br>LIMITED PARTNERSHIP | DB 7976 PG 433 |
| 50 | 16 | TOWN OF MORRISVILLE | DB 2979 PG 101 |
| 51 | 16 | ROSE NC II, LLC | DB 14264 PG 1897 |

8/15/2017 K:\RAL_Roadway\0120800 4 - McCrimmon Parkway\Phase II\Plan\Plan Sheets\Phase2_0120800 4_3P-1.dgn

| -L- | -Y4- |
|---|---|
| PI Sta. 57+99.34 | PI Sta. 26+91.10 |
| Δ = 1°04' 50.1" (LT) | Δ = 15° 39' 13.0" (RT) |
| D = 0° 38' 11.8" | D = 3° 49' 11.0" |
| L = 169.74' | L = 409.81' |
| T = 84.87' | T = 206.19' |
| R = 9,000.00' | R = 1,500.00' |

**FINAL DESIGN OF IMPROVEMENTS ON AIRPORT BLVD. TO BE DESIGNED BY OTHERS AS DEVELOPMENT DICTATES.**

**-Y4- SR-3015 (AIRPORT BOULEVARD)**

**-L- SR-3127 (MCCRIMMON PARKWAY)**

**-L- SR-3127 (MCCRIMMON PARKWAY)**

**BEGIN PROJECT**
**BEGIN CONSTRUCTION**
**-L- POT Sta. 53+66.58**

**END CONSTRUCTION**
**-Y4- POT Sta. 27+50.00**

**-L- SR-3127 (MCCRIMMON PARKWAY)**

| 2016 ADT / 2040 ADT | -Y4- (AIRPORT BOULEVARD) SR-3015 | DHV = 10%, DIR = 65%, TTST = 3%, DUAL = 4% |
|---|---|---|
| DHV = 9%, DIR = 55%, TTST = 1%, DUAL = 2% | -L- (MCCRIMMON PARKWAY) SR-3127 | DHV = 9%, DIR = 55%, TTST = 1%, DUAL = 2% |
| DHV = 10%, DIR = 75%, TTST = 3%, DUAL = 4% | -Y4- (AIRPORT BOULEVARD) SR-3015 | |

| 2016 ADT | 2040 ADT |
|---|---|
| 14800 | 23600 |
| 6400 | 10000 |
| 1400 | 2000 |
| 5200 | 6600 |
| 9400 | 13500 |
| 1100 | 2200 |
| 300 | 1100 |
| 9600 | 18300 |

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-5828 | 4 |
| R/W SHEET NO. | |

Kimley»Horn
P.O. BOX 33068
RALEIGH, N.C. 27636-3068
RIGHT-OF-WAY REV.
CONST. REV.

ROADWAY DESIGN ENGINEER
8/18/2017
NORTH CAROLINA PROFESSIONAL SEAL 029876 ENGINEER MATTHEW S. WEST
DocuSigned by: Matthew S. West
AC71A1D07968425...

HYDRAULICS ENGINEER
8/18/2017
NORTH CAROLINA PROFESSIONAL SEAL 026480 ENGINEER LARRY D. ROBINSON, JR.
DocuSigned by: Larry D. Robinson
AC71A1D07968425...

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

**SEE SHEET NO. 17 FOR -L- PROFILE**
**SEE PAVEMENT MARKING PLAN FOR CURB RAMP LOCATIONS**
**SEE SHEET 2B-1 FOR INTERSECTION DETAIL**

NAD 83 / NA 2011

15 N/F DC-150 McCRIMMON PARKWAY, LLC. PIN# 756046227 DB 15196 PG 1531

18 N/F CHARLES WILLIAM MYERS HEIRS PIN# 756142412 DB 06-E PG 216

19 N/F AIRPORT BOULEVARD PARTNERS, LLC. PIN# 756145352, LOT 17 AIRPARK BM 1996 PG 1696 DB 7366 PG 193

20 N/F EXTER 120 TRANS AIR, LLC. PIN# 756241238 LOT 16 AIRPARK BM 1996 PG 1696 DB 14402 PG 338

25 N/F AIR PARK ASSOCIATES PIN# 756235875 FUTURE R/W BM 1998 PG 2106 DB 5438 PG 219

17 N/F DUKE REALTY LIMITED PARTNERSHIP PIN# 756039676 BM 1993 PG 1425 DB 8608 PG 535

21 N/F MICHAEL L. STEWART STEPHENS ENTERPRISES, LLC PIN# 756134625 DB 15268 PG 769

22 N/F MICHAEL L. STEWART STEPHENS ENTERPRISES, LLC PIN# 756135833 DB 15268 PG 779

23 N/F MICHAEL L. STEWART STEPHENS ENTERPRISES, LLC PIN# 756134625 DB 15268 PG 769

24 N/F M.A.L. PROPERTIES, LLC CENTRAL CAROLINA REALTY, INC. MICHAEL L. STEWART STEPHENS ENTERPRISES, LLC. PIN# 756230220 DB 15268 PG 759

42 N/F AIR PARK ASSOCIATES PIN# 756134470 DB 5438 PG 219

-Y4- PC Sta. 24+84.91

-L- PC Sta. 57+99.47

-L- PT Sta. 58+84.20

-BL-45 BEGIN 2'-6" C&G TIE TO EXIST -L- Sta.55+44.04 END 2'-6" C&G TIE TO EXIST -L- Sta.55+30.35 BEGIN 2'-6" C&G TIE TO EXIST -L- Sta.55+53.13 END 2'-6" C&G TIE TO EXIST -L- Sta.57+17.34

TIE EQUALITY -L- POT Sta. 53+36.84 = -Y4- POT Sta. 23+27.78

BEGIN 2'-6" C&G TIE TO EXIST -L- Sta.53+68.58

BEGIN SIDEWALK -L- Sta.53+85.79

BEGIN SIDEWALK BEGIN 2'-6" C&G TIE TO EXIST -L- Sta.53+90.57

BEGIN 1'-6" C&G -L- Sta.54+01.50

SLOPE PROTECTION -L- Sta.54+15.00 TO 55+30.00 (LT) EST 170 SY PSRM

SLOPE PROTECTION -L- Sta.55+55.00 TO 57+15.00 (LT) EST 330 SY PSRM

SLOPE PROTECTION -L- Sta.58+26.00 TO 59+16.00 (LT) EST 230 SY PSRM

TIE TO EXISTING CB

MATCHLINE -L- STA 59+50.00 (SHEET 5)

PAVEMENT MARKINGS ONLY SEE SHEET PMP-3 FOR RIGHT TURN SIGNAGE

SPECIAL LATERAL 'V' DITCH SEE DETAIL 2/SHEET 2D-1

BERM 'V' DITCH SEE DETAIL 3/SHEET 2D-1

150' BAY TAPER

200' LEFT TURN LANE

150' RIGHT TURN LANE

8' SIDEWALK

2'6" C&G

1'6" C&G

18" RCP-IV

15" RCP-IV

8" RCP-IV

8/15/2017 K:\RAL_Roadway\U2108004 - McCrimmon Parkway\Phase II\Plan\Plan Sheets\Phase2_U2108004_psh_4.dgn

Kimley»Horn
P.O. BOX 33068
RALEIGH, N.C. 27636-3068

RIGHT-OF-WAY REV.

CONST. REV.

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-5828 | 5 |
| R/W SHEET NO. | |

ROADWAY DESIGN ENGINEER
8/18/2017
NORTH CAROLINA PROFESSIONAL SEAL 029876 ENGINEER MATTHEW S. WEST
DocuSigned by: Matthew S. West AC71A1D0796B425...

HYDRAULICS ENGINEER
8/18/2017
NORTH CAROLINA PROFESSIONAL SEAL 026480 ENGINEER LARRY D. ROBINSON, JR.
DocuSigned by: Larry D. Robinson CE17B2971D5643E...

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

***SEE SHEET NO. 17 FOR -L- PROFILE***
***SEE PAVEMENT MARKING PLAN FOR CURB RAMP LOCATIONS***

NAD 83 / NA 2011

-L-
PI Sta 73+05.79
△ = 84° 34' 19.1" (RT)
D = 5° 40' 22.3"
L = 1,490.82'
T = 918.58'
R = 1,010.00'

-L- PC Sta. 63+87.22

20
N/F
EXTER 120 TRANS AIR, LLC.
PIN# 756241238
LOT 16 AIRPARK
BM 1996 PG 1696
DB 14402 PG 338
2S BLK BUS (WARESHOUSE)

25
N/F
AIR PARK ASSOCIATES
PIN# 756235875
FUTURE R/W
BM 1998 PG 2106
DB 5438 PG 219

26
N/F
ROI INVESTMENTS, LLC.
PIN# 756247178
LOT 13 AIRPARK
BM 1998 PG 2106
DB 15566 PG 2254

24
N/F
M.A.L. PROPERTIES, LLC
CENTRAL CAROLINA REALTY, INC.
MICHAEL L. STEWART
STEPHENS ENTERPRISES, LLC.
PIN# 756230220
DB 15268 PG 759

27
N/F
AIS FORESTRY & FARMING, LLC
STEPHENS ENTERPRISES, LLC
PIN# 756330565
DB 15268 PG 739

-L- SR-3127 (MCCRIMMON PARKWAY)
S 86°57'50.9" E
S 86°55'12" E 640.86'
S 82°58'40" E 807.08'
N 80°33'55" W 520.82
N 03°43'48" E 536.68'
S 78°27'54" E 200.00'

MATCHLINE -L- STA 59+50.00 (SHEET 4)
MATCHLINE -L- STA 69+50.00 (SHEET 6)

-BL-44
-BL-43
-BL-42

TOE PROTECTION
EST 185 SY PSRM
SEE DETAIL 6/SHEET 2D-1

SPECIAL LATERAL 'V' DITCH
SEE DETAIL 2/SHEET 2D-1

BERM 'V' DITCH
SEE DETAIL 3/SHEET 2D-1

CLASS I RIP RAP
EST 24 TONS
EST 36 SY GEO

CLASS I RIP RAP
BANKS ONLY
SEE DETAIL 10/SHEET 2D-1
EST 11 TONS
EST 22 SY GEO

JB W/ MH COVER

EXISTING POND DAM

30" RCP-III (ADJUST ELEVATION AND LOCATION TO INVERT OF POND AS NECESSARY AFTER DRAINING)

NON-JURISDICTIONAL POND TO BE DRAINED

150' BAY TAPER
150' LEFT TURN LANE

8' SIDEWALK
2'6" C&G
1'6" C&G
15" RCP-IV
18" RCP-IV
24" RCP-IV
30" RCP-III
36" RCP-III
CB
PDE
BLE
BZ 1
BZ 2
WOODS

| -L- | -Y5- |
|---|---|
| PI Sta 73+05.79 | PI Sta 15+75.77 |
| △ = 84° 34' 19.1" (RT) | △ = 40° 49' 53.9" (RT) |
| D = 5° 40' 22.3" | D = 7° 09' 43.1" |
| L = 1,490.82' | L = 570.12' |
| T = 918.58' | T = 297.77' |
| R = 1,010.00' | R = 800.00' |

**FINAL DESIGN OF IMPROVEMENTS AT FUTURE ODYSSEY DRIVE. TO BE DESIGNED BY OTHERS AS DEVELOPMENT DICTATES.**

Kimley»Horn
P.O. BOX 33068
RALEIGH, N.C. 27636-3068
RIGHT-OF-WAY REV.
CONST. REV.

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-5828 | 6 |
| R/W SHEET NO. | |

ROADWAY DESIGN ENGINEER
8/18/2017
NORTH CAROLINA PROFESSIONAL SEAL 029876 ENGINEER MATTHEW S. WEST
Matthew S. West
CE1782971D5643E...

HYDRAULICS ENGINEER
8/18/2017
NORTH CAROLINA PROFESSIONAL SEAL 026480 ENGINEER LARRY D. ROBINSON, JR.
Larry D. Robinson
CE1782971D5643E...

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

NAD 83 / NA 2011

**SEE SHEET NO. 17 AND 18 FOR -L- PROFILE**
**SEE PAVEMENT MARKING PLAN FOR CURB RAMP LOCATIONS**

PREFORMED SCOUR HOLE
OUTLET PROTECTION
CLASS 'B' RIP RAP
EST 8 TONS
EST 16 SY GEO
EST 25 SY PSRM
SEE DETAIL 6/SHEET 2D-1

-L- PT Sta.18+48.12

END 1'-6" C&G
-L- Sta.70+29.47

TIE EQUALITY
-L- POC Sta. 70+74.13 =
-Y5- POT Sta. 20+00.00

-Y5- FUTURE ODYSSEY DRIVE

28 N/F
MORRISVILLE ASSOCIATES, LLC
PIN# 756337955
DB 10884 PG 730

26 N/F
ROTINVESTMENTS, LLC.
PIN# 756247178
LOT 13 AIRPARK
BM 1998 PG 2106
DB 15566 PG 2254

29 N/F
CCF PROPERTIES, LLC
PIN# 756323769
DB 14038 PG 1799

27 N/F
AIS FORESTRY & FARMING, LLC
STEPHENS ENTERPRISES, LLC
PIN# 756330565
DB 15268 PG 739

-L- SR-3127
(MCCRIMMON PARKWAY)

CLASS I RIP RAP
BANKS ONLY
SEE DETAIL 10/SHEET 2D-1
EST 15 TONS
EST 30 SY GEO

150' LEFT TURN LANE
BEGIN 16' C&G
-L- Sta.71+21.36

150' BAY TAPER
150' LEFT TURN LANE

BERM 'V' DITCH
SEE DETAIL 3/SHEET 2D-1

SPECIAL LATERAL 'V' DITCH
SEE DETAIL 2/SHEET 2D-1

NON-JURISDICTIONAL POND TO BE DRAINED

-BL-41
-BL-40
-BL-39

-L- PT Sta.78+78.04

MATCHLINE -L- STA 69+00.00 (SHEET 1)
MATCHLINE -L- STA 80+00.00 (SHEET 1)

S 83°56'34" E 592.69'
S 88°56'41" E 59.86'
S 42°00'12" W
N 02°39'27" E 801.54'
S 2°23'31" E

FLAT IRON
WOODS
POND

K:\RAL_Roadway\0l2108004 - McCrimmon Parkway\Phase II\Plan\Plan Sheets\Phase2_0l2108004_psh_6.dgn
8/15/2017

| Kimley»Horn | PROJECT REFERENCE NO. | SHEET NO. |
|---|---|---|
| P.O. BOX 33068<br>RALEIGH, N.C. 27636-3068 | U-5828 | 7 |
| RIGHT-OF-WAY REV. | R/W SHEET NO. | |
| CONST. REV. | ROADWAY DESIGN ENGINEER<br>8/18/2017<br>NORTH CAROLINA PROFESSIONAL SEAL 029876 ENGINEER MATTHEW S. WEST<br>DocuSigned by: Matthew S. West<br>AC71A1D0796B425... | HYDRAULICS ENGINEER<br>8/18/2017<br>NORTH CAROLINA PROFESSIONAL SEAL 026480 ENGINEER LARRY O. ROBINSON, JR.<br>DocuSigned by: Larry O. Robinson<br>CE17B2971D5643E... |

NAD 83/NA 2011

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

***SEE SHEET NO. 18 FOR -L- PROFILE***
***SEE PAVEMENT MARKING PLAN FOR CURB RAMP LOCATIONS***

**-Y6-**
PI Sta. 34+39.28
△ = 3° 41' 03.4" (LT)
D = 3° 00' 56.0"
L = 122.18'
T = 61.11'
R = 1,900.00'

**-L-**
PI Sta. 94+43.80
△ = 17° 22' 12.7" (LT)
D = 1° 54' 35.5"
L = 909.50'
T = 458.27'
R = 3,000.00'

***FINAL DESIGN OF IMPROVEMENTS ON FUTURE EAST/WEST CONNECTOR. TO BE DESIGNED BY OTHERS AS DEVELOPMENT DICTATES.***

29
N/F
CCF PROPERTIES, LLC
PIN# 756323769
DB 14038 PG 1799

30
AMMONS EAST CORPORATION
PIN #0756410733
DB 16271PG 2732
BM 2016 PG 96

31
N/F
STEPHENS ENTERPRISES, LLC
PIN# 756216570
DB 8716 PG 945

-L- SR-3127 (MCCRIMMON PARKWAY)
S 2° 23' 31.9" E

N 88° 16' 51.7" W

S 85° 09' 10" E 181.43'

S 89° 00' 40" E 420.81'

N 01° 12' 03" E 266.86'

S 88° 02' 04.9" W

TIE EQUALITY
-L- POT Sta. 84+82.06=
-Y6- POT Sta. 32+15.87

BEGIN 1'6" C&G
-L- Sta.85+46.02

END 1'6" C&G
-L- Sta.84+16.34

-Y6- PC Sta. 33+78.17

-Y6- PT Sta. 35+00.35

-L- PC Sta. 89+85.54

-Y6- FUTURE MORRISVILLE EAST CONNECTOR

-BL-37

-BL-38

150' LEFT TURN LANE

150' BAY TAPER

+70.00

+200.00

BERM 'V' DITCH
SEE DETAIL 3/SHEET 2D-1

SPECIAL LATERAL 'V' DITCH
SEE DETAIL 2/SHEET 2D-1

SPECIAL BACK OF CURB CUT DITCH
SEE DETAIL 5/SHEET 2D-1

8' SIDEWALK
2'6" C&G
1'6" C&G
15" RCP-IV
18" RCP-IV
24" RCP-IV
15" W/ ELBOWS
CB
BOC
PDE
PUE
IPF
WOODS
SOIL
SINGLE IRON

MATCHLINE -L- STA 80+00.00 (SHEET 6)

MATCHLINE -L- STA 90+50.00 (SHEET 8)

| 2016 ADT / 2040 ADT | | | | |
|---|---|---|---|---|
| | | -L- (MCCRIMMON PARKWAY) SR-3127 | | DHV = 9%<br>DIR = 55%<br>TTST = 1%<br>DUAL = 2% |
| DHV = 9%<br>DIR = 60%<br>TTST = 1%<br>DUAL = 2% | 300 / 1800 | 200 / 800 | 9300 / 12800<br>700 / 1800 | 1200 / 3500 |
| -Y6- MORRISVILLE EAST CONNECTOR | | 200 / 800 | 500 / 1500 | -Y6- MORRISVILLE EAST CONNECTOR<br>DHV = 9%<br>DIR = 60%<br>TTST = 1%<br>DUAL = 1% |
| DHV = 9%<br>DIR = 55%<br>TTST = 1%<br>DUAL = 2% | | -L- (MCCRIMMON PARKWAY) SR-3127 | 9100 / 12500 | |

35

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-5828 | 8 |
| R/W SHEET NO. | |

Kimley»Horn
P.O. BOX 33068
RALEIGH, N.C. 27636-3068
RIGHT-OF-WAY REV.
CONST. REV.

ROADWAY DESIGN ENGINEER
8/18/2017
NORTH CAROLINA PROFESSIONAL SEAL 029876 ENGINEER MATTHEW S WEST
DocuSigned by: Matthew S West
ACT1A1AD0298BA35...

HYDRAULICS ENGINEER
8/18/2017
NORTH CAROLINA PROFESSIONAL SEAL 026480 ENGINEER LARRY D ROBINSON, JR.
DocuSigned by: Larry D. Robinson
CE4378D6E1DF4AE...

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

NAD 83 / NA 2011

***SEE SHEET NO. 18 AND 19 FOR -L- PROFILE***
***SEE PAVEMENT MARKING PLAN FOR CURB RAMP LOCATIONS***

-L-
PI Sta. 94+43.80
△ = 17° 22' 12.7" (LT)
D = 1° 54' 35.5"
L = 909.50'
T = 458.27'
R = 3,000.00'

30
AMMONS EAST CORPORATION
PIN #0756410733
DB 16271 PG 2732
BM 2016 PG 96

52
N/F
SUSAN S. PEACE, MARTHA S. LANDT & WILLIAM H. SPRUNT, JR.
PIN #0756401266
DB 16056 PG 2518
BM 2016 PG 96

31
N/F
STEPHENS ENTERPRISES, LLC
PIN# 756216570
DB 8716 PG 945

MATCHLINE -L- STA 90+50.00 (SHEET 7)
MATCHLINE -L- STA 101+00.00 (SHEET 9)
-L- PT Sta. 98+95.04
-L- SR-3127 (MCCRIMMON PARKWAY)
-BL-36
-BL-35
BERM 'V' DITCH SEE DETAIL 3/SHEET 2D-1
8' SIDEWALK
2'6" C&G
24" RCP-IV
30" RCP-III
18" RCP-IV
15" RCP-IV
16" C&G
PUE
150' BAY TAPER
150' LEFT TURN LANE
N 75°46'27" E 282.46'
N 00°00'00" E 1796.74'
S 19° 45' 44.6" E

K:\RAL_Roadway\012108004 - McCrimmon Parkway\Phase II\Plan\Plan Sheets\Phase2_012108004_psh_8.dgn
8/15/2017

Kimley»Horn
P.O. BOX 33068
RALEIGH, N.C. 27636-3068

RIGHT-OF-WAY REV.

CONST. REV.

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-5828 | 9 |
| R/W SHEET NO. | |

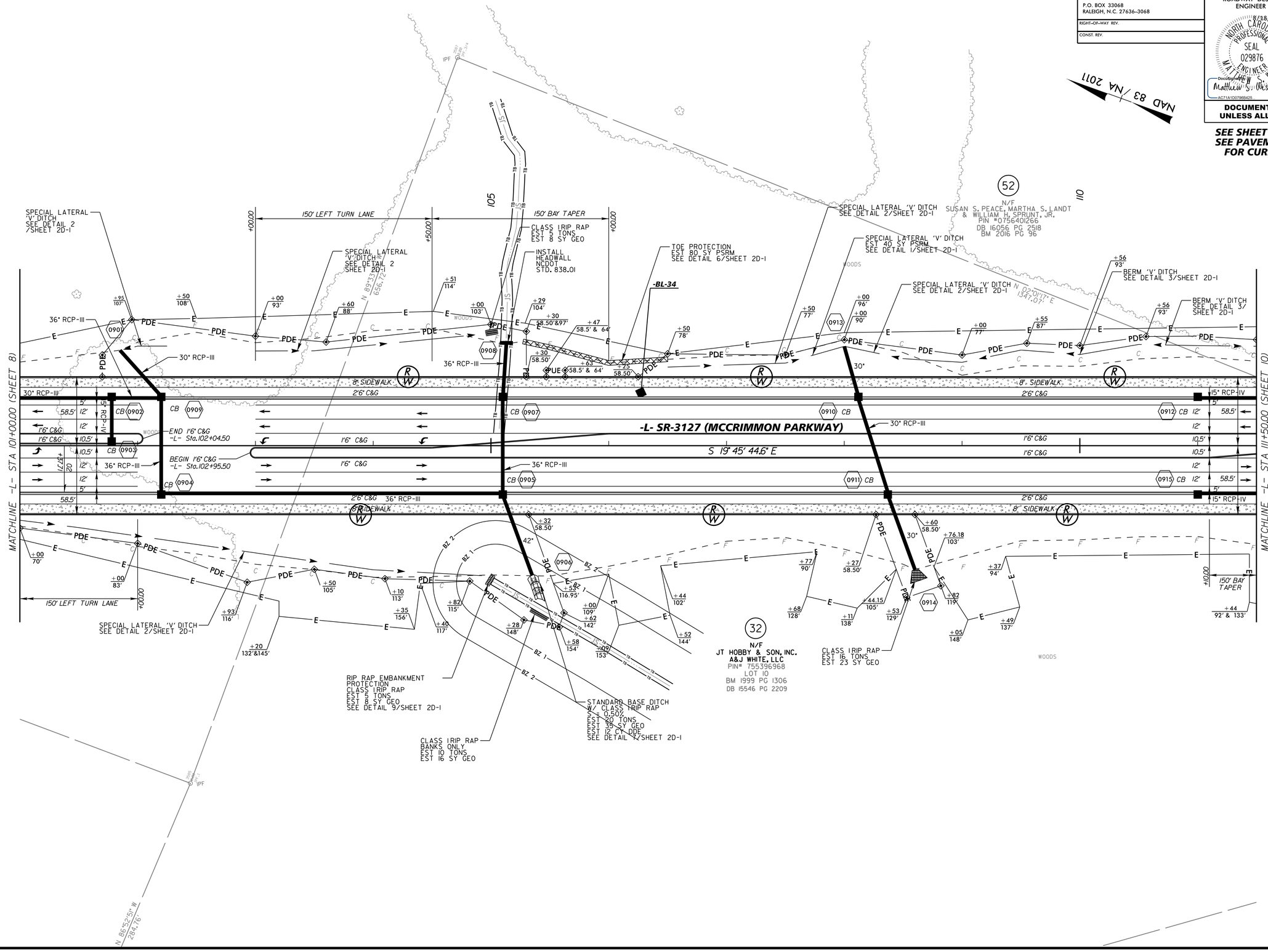
ROADWAY DESIGN ENGINEER
8/18/2017
NORTH CAROLINA PROFESSIONAL SEAL 029876 ENGINEER MATTHEW S WEST
DocuSigned by: Matthew S. West
AC71A1D0796B425...

HYDRAULICS ENGINEER
8/18/2017
NORTH CAROLINA PROFESSIONAL SEAL 026480 ENGINEER LARRY D ROBINSON JR.
DocuSigned by: Larry D. Robinson
CE17B2971D5643E...

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

***SEE SHEET NO. 19 FOR -L- PROFILE***
***SEE PAVEMENT MARKING PLAN FOR CURB RAMP LOCATIONS***

NAD 83 / NA 2011



Kimley»Horn
P.O. BOX 33068
RALEIGH, N.C. 27636-3068

RIGHT-OF-WAY REV.

CONST. REV.

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-5828 | 10 |
| RW SHEET NO. | |

11/14/2017
NORTH CAROLINA PROFESSIONAL SEAL 029876 ENGINEER MATTHEW S. WEST
DocuSigned by: Matthew S. West AC71A1D0796B425...

11/14/2017
NORTH CAROLINA PROFESSIONAL SEAL 026480 ENGINEER LARRY D. ROBINSON, JR.
DocuSigned by: Larry D. Robinson CE17B2971D5643E...

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

NAD 83 / NA 2011

***SEE SHEET NO. 19 AND 20 FOR -L- PROFILE***
***SEE SHEET NO. 21 FOR -Y7- PROFILE***
***SEE PAVEMENT MARKING PLAN FOR CURB RAMP LOCATIONS***
***SEE SHEET 2B-2 FOR INTERSECTION DETAIL***

-L-
PI Sta.123+32.52
Δ = 36° 21' 27.0" (LT)
D = 4° 46' 28.7"
L = 761.47'
T = 394.05'
R = 1,200.00'

MATCHLINE -Y7- STA 23+00 (SHEET 14)
-Y7- PI Sta. 23+11.17
-L- PC Sta. 119+38.47
MATCHLINE -L- STA 111+50.00 (SHEET 9)
MATCHLINE -L- STA 121+50.00 (SHEET 11)
-BL-33
-BL-32
-Y7- SOUTHPORT DRIVE
-L- SR-3127 (MCCRIMMON PARKWAY)
S 11° 45' 44.6" E
150' LEFT TURN LANE
150' BAY TAPER
+75.00
+25.00
BERM 'V' DITCH SEE DETAIL 3/SHEET 2D-I
SPECIAL LATERAL 'V' DITCH SEE DETAIL 2/SHEET 2D-I
SPECIAL LATERAL 'V' DITCH SEE DETAIL 2 SHEET 2D-I
WOODS
8' SIDEWALK
2'6" C&G
15" RCP-IV
18" RCP-IV
24" RCP-III
30" RCP-III
36" RCP-III
18" W. ELBOWS
END 16' C&G -L- Sta.114+14.50
BEGIN 16' C&G -L- Sta.115+20.50
TIE EQUALITY
-L- POT Sta.114+53.84 =
-Y7- POT Sta.24+84.44
CLASS 'B' RIP RAP
EST 7 TONS
EST 8 SY GEO
CLASS I RIP RAP
BANKS ONLY
SEE DETAIL 10/SHEET 2D-I
EST 15 TONS
EST 30 SY GEO
PREFORMED SCOUR HOLE
OUTLET PROTECTION
CLASS 'B' RIP RAP
EST 8 TONS
EST 16 SY GEO
EST 25 SY PSRM
SEE DETAIL 8/SHEET 2D-I
CONSTRUCT AND MAINTAIN TEMORARY GRAVEL EMERGENCY ACCESS
CLASS I RIP RAP
EST 16 TONS
EST 23 SY GEO
280.68'
S 00°32'54" W
S 43°58'58" E
365.32'
S 60°36'41" W
124.24'

52
N/F
SUSAN S. PEACE, MARTHA S. LANDT & WILLIAM H. SPRUNT, JR.
PIN #0756401266
DB 16056 PG 2518
BM 2016 PG 96

32
N/F
JT HOBBY & SON, INC.
A&J WHITE, LLC
PIN# 755396968
LOT 10
BM 1999 PG 1306
DB 15546 PG 2209

33
N/F
JT HOBBY & SON, INC.
A&J WHITE, LLC
PIN# 755388866
LOT 10
BM 1999 PG 1306
DB 15556 PG 370

52
N/F
WILLIAM H. SPRUNT
FRANK W. WIGGINS U/A FBO
PIN# 756318355
DB 8150 PG 024

34
N/F
SOUTHPORT BUSINESS PARK, LIMITED PARTNERSHIP
PIN# 755485334
DB 8681PG 2240

| 2016 ADT / 2040 ADT | -L- (MCCRIMMON PARKWAY) SR-3127 | DHV = 9% DIR = 55% TTST = 1% DUAL = 2% |
|---|---|---|
| DHV = 9% DIR = 60% TTST = 1% DUAL = 2% | 9100 / 12500; 400 / 1200; 100 / 500; 700 / 1700; 1100 / 2900; 100 / 600; 400 / 1100; 8800 / 12000 | -Y7- SOUTHPORT DRIVE DHV = 9% DIR = 60% TTST = 1% DUAL = 2% |
| DHV = 9% DIR = 55% TTST = 1% DUAL = 2% | -L- (MCCRIMMON PARKWAY) SR-3127 | |

K:\RAL_Roadway\012108004 - McCrimmon Parkway\Phase II\Plan\Plan Sheets\U5828_rdy_psh_10.dgn
11/14/17

Kimley»Horn
P.O. BOX 33068
RALEIGH, N.C. 27636-3068

RIGHT-OF-WAY REV.

CONST. REV.

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-5828 | 11 |
| R/W SHEET NO. | |

1/31/2018
NORTH CAROLINA PROFESSIONAL SEAL 029876 ENGINEER MATTHEW S. WEST
DocuSigned by: Matthew S. West
AC71A1D0796B425...

1/31/2018
NORTH CAROLINA PROFESSIONAL SEAL 026480 ENGINEER LARRY D. ROBINSON, JR.
DocuSigned by: Larry D. Robinson
C5A7B0B6E5A9A4E...

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

NAD 83 / NA 2011

***SEE SHEET NO. 20 FOR -L- PROFILE***
***SEE SHEET NO. 22 FOR -Y8- PROFILE***
***SEE PAVEMENT MARKING PLAN FOR CURB RAMP LOCATIONS***
***SEE SHEET 2B-3 FOR INTERSECTION DETAIL***

-L-
PI Sta.123+32.52
Δ = 36° 21' 27.0" (LT)
D = 4° 46' 28.7"
L = 761.47'
T = 394.05'
R = 1,200.00'

-Y8-
PI Sta.29+52.96
Δ = 9° 20' 39.6" (RT)
D = 0° 57' 17.7"
L = 978.54'
T = 490.36'
R = 6,000.00'

-L- SR-3127 (MCCRIMMON PARKWAY)

-Y8- SR-1002 (AVIATION PARKWAY)

MATCHLINE -L- STA 121+50.00 (SHEET 10)

MATCHLINE -L- STA 132+00.00 (SHEET 12)

MATCHLINE -Y8- STA 23+50.00 (SHEET 15)

MATCHLINE -Y8- STA 27+00.00 (SHEET 16)

SPECIAL LATERAL 'V' DITCH
SEE DETAIL 2/SHEET 2D-1

BERM 'V' DITCH
SEE DETAIL 3/SHEET 2D-1

BERM 'V' DITCH
W/ CLASS 'B' RIP RAP
EST 15 TONS
EST 30 SY GEO
SEE DETAIL 4
/SHEET 2D-1

SPECIAL LATERAL 'V' DITCH
W/ CLASS 'B' RIP RAP
EST 5 TONS
EST 8 SY GEO
SEE DETAIL 13
/SHEET 2D-1

-Y8- PC Sta. 24+62.60

END 2'-6" C&G
-Y8- STA 24+10.99
SEE DETAIL 5, SHEET 2A-6
END SIDEWALK
-L- STA 129+69.55

END 1'-6" C&G
-L- STA 129+46.50

500' LANE TAPER

150' BAY TAPER

300' LEFT AND RIGHT TURN LANES
BEGIN CONCRETE MONOLITHIC ISLAND
-Y8- STA 26+01.65

300' LEFT TURN LANE
BEGIN CONCRETE MONOLITHIC ISLAND
-L- STA 130+98.10

300' RIGHT TURN LANE

350' RIGHT TURN LANE

TIE EQUALITY
-L- PI Sta. 130+23.53 =
-Y8- POC Sta. 25+30.55

-L- PT Sta. 126+99.94

END SIDEWALK
-L- STA 129+68.07

END 2'-6" C&G
-L- STA 129+83.86
SEE DETAIL 5, SHEET 2A-6

CLASS I RIP RAP
EST 24 TONS
EST 36 SY GEO

SPECIAL LATERAL BASE DITCH
EST 275 SY PSRM
SEE DETAIL 11/ SHEET 2D-1

REMOVE 15" RCP-IV AND CONCRETE MONOLITHIC ISLAND -Y8- Sta.24+50.88

REMOVE EXIST DI, COLLAR AND EXTEND EXIST 18" RCP

REMOVE

RETAIN

34
N/F
SOUTHPORT BUSINESS PARK, LIMITED PARTNERSHIP
PIN# 755485334
DB 8681PG 2240

35
N/F
SOUTHPORT BUSINESS PARK LIMITED PARTNERSHIP
PIN# 755584219
DB 7376 PG 433

36
N/F
MORRISVILLE THEYS
PIN# 755571774
STONE, LLC
PORTION OF TRACT B
BM 1981PG 199

-BL-10
-BL-31

2016 ADT
2040 ADT

-L-
(MCCRIMMON PARKWAY)
SR-3127

DHV = 9%
DIR = 55%
TTST = 1%
DUAL = 2%

8800
12000

DHV = 9%
DIR = 60%
TTST = 1%
DUAL = 2%

13400
19100

2100
1800

800
1300

17900
26800

-Y8-
(AVIATION PARKWAY)
SR-1002

4300
4900

10100
13100

20300
26900

DHV = 10%
DIR = 55%
TTST = 1%
DUAL = 2%

-L-
(MCCRIMMON PARKWAY)
SR-3127

-Y8-
(AVIATION PARKWAY)
SR-1002

DHV = 9%
DIR = 60%
TTST = 1%
DUAL = 2%

K:\RAL_Roadway\012108004 - McCrimmon Parkway\Phase I\Plan\Plan Sheets\U5828_rdy_psh_II.dgn
1/31/2018

Kimley»Horn
P.O. BOX 33068
RALEIGH, N.C. 27636-3068

RIGHT-OF-WAY REV.

CONST. REV.

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-5828 | 12 |

R/W SHEET NO.

ROADWAY DESIGN ENGINEER
8/18/2017
NORTH CAROLINA PROFESSIONAL SEAL 029876 ENGINEER MATTHEW S. WEST
Docusigned by: Matthew S. West
ACT1AA0029B5A25...

HYDRAULICS ENGINEER
8/18/2017
NORTH CAROLINA PROFESSIONAL SEAL 026480 ENGINEER LARRY D. ROBINSON, JR.
Docusigned by: Larry D. Robinson
CE1328021D6643E...

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

NAD 83 / NA 2011

**SEE SHEET NO. 20 AND 21 FOR -L- PROFILE**
**SEE PAVEMENT MARKING PLAN FOR CURB RAMP LOCATIONS**

-L-
PI Sta.138+49.88
△ = 15° 50' 25.6" (RT)
D = 3° 49' 11.0"
L = 414.70'
T = 208.68'
R = 1,500.00'

S 27°51'41" W 348.95'

35
N/F
SOUTHPORT BUSINESS PARK LIMITED PARTNERSHIP
PIN# 755584219
LOT E
BM 1998 PG 1680
DB 7976 PG 433

37
N/F
SOUTHPORT BUSINESS PARK LIMITED PARTNERSHIP
PIN# 755589312
LOT F
BM 1998 PG 1680
DB 7976 PG 433

38
N/F
WAKE COUNTY
PIN# 755987679
CRABTREE CREEK WATERSHED
BM 1975 PG 80
DB 3006 PG 246

36
N/F
MORRISVILLE THEYS STONE, LLC
PIN# 755571774
PORTION OF TRACT B
BM 1981 PG 199
DB 14621 PG 2126

-L- PT Sta.140+55.90

**END PROJECT**
**END CONSTRUCTION**
**-L- POT Sta. 140+75.00**

END GAURDRAIL
TIE TO EXIST
GUARDRAIL AT JOINT
END 2'-6" C&G
TIE TO EXIST
-L- Sta.140+75.00

-L- PC Sta.136+41.20

MATCHLINE -L- STA 132+00.00 (SHEET 11)

MATCHLINE -L- STA 141+50.00 (SHEET 13)

-L- SR-3084 (EVANS RD)
S 58°04' 31.9" E

END 2'-6" C&G TIE TO EXIST -L- Sta.136+00.40

END SIDEWALK -L- Sta.135+95.21

BEGIN 2'-6" C&G TIE TO EXIST -L- Sta.136+34.95

BEGIN SIDEWALK -L- Sta.136+39.90

END 2'-6" C&G TIE TO EXIST -L- Sta.138+42.22

END SIDEWALK -L- Sta.138+37.39

BEGIN 2'-6" C&G TIE TO EXIST -L- Sta.138+82.42

BEGIN GUARDRAIL -L- Sta.139+51.45

PAVEMENT PATCHING SEE DETAIL 3 SHEET 2A-5 511 SF

SPECIAL LATERAL 'V' DITCH SEE DETAIL 2/SHEET 2D-1

SPECIAL LATERAL BASE DITCH SEE DETAIL 12/SHEET 2D-1

TRANSITION PROTECTION EST 20 SY GEO

350' RIGHT TURN LANE

100' BAY TAPER

675' NB LANE TAPER

300' NB LEFT TURN LANE

200' NB BAY TAPER

100' BAY TAPER

50' LEFT TURN LANE

300' SB OUTSIDE EOT TAPER

RETAIN 36" RCP

COLLAR AND EXTEND EXIST 24" RCP

END CONCRETE MONOLITHIC ISLAND -L- Sta.138+22.47

CONVERT EXIST CB TO TO JB W/ MH COVER

END 1'-6" C&G BEGIN CONCRETE MONOLITHIC ISLAND -L- STA 137+44.84

END CONCRETE MONOLITHIC ISLAND BEGIN 1'-6" C&G -L- STA 134+68.50

RETAIN EXIST SYSTEM

REMOVE

15" RCP-IV

15" RPC-IV

15" RPC-III

12" RCP

24" RCP

10' SIDEWALK

2'-6" C&G

1'-6" C&G

30" C&G

BST

DI

CB

WOODS

EXISTING R/W

S 42°14'06.3" E

N 78°03'22" W 244.25'

S 37°25'45" W 108.08'

N 56°1...

Kimley»Horn
P.O. BOX 33068
RALEIGH, N.C. 27636-3068

RIGHT-OF-WAY REV.

CONST. REV.

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-5828 | 13 |
| R/W SHEET NO. | |

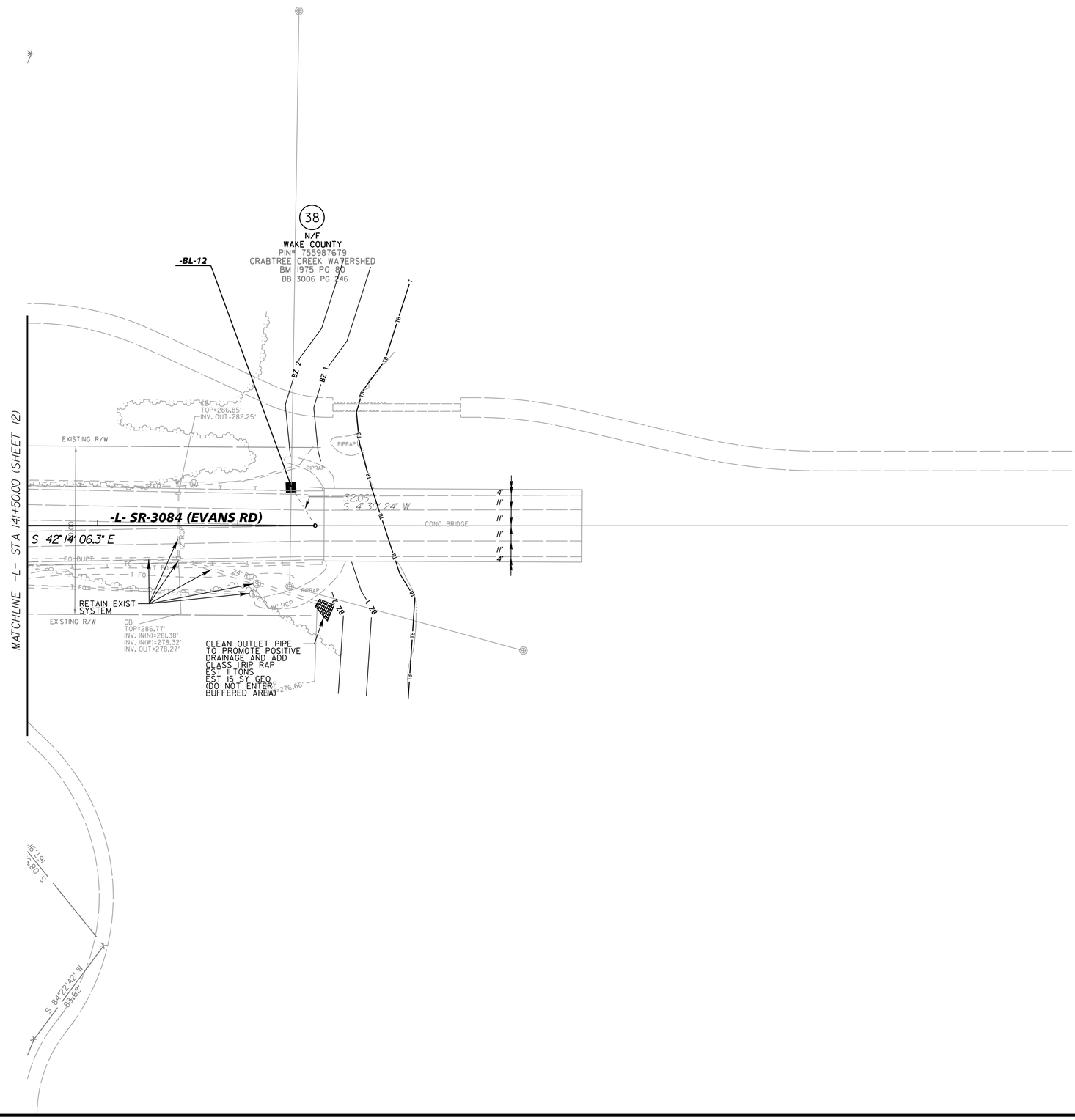
ROADWAY DESIGN ENGINEER
8/18/2017
NORTH CAROLINA PROFESSIONAL SEAL 029876 ENGINEER MATTHEW S. WEST
DocuSigned by: Matthew S. West
AC71A1D0796B425...

HYDRAULICS ENGINEER
8/18/2017
NORTH CAROLINA PROFESSIONAL SEAL 026480 ENGINEER LARRY D. ROBINSON, JR.
DocuSigned by: Larry D. Robinson
CE17B2971D5643E...

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

NAD 83 / NA 2011

***SEE SHEET NO. 21 FOR -L- PROFILE***
***SEE PAVEMENT MARKING PLAN FOR CURB RAMP LOCATIONS***

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Kimley»Horn
P.O. BOX 33068
RALEIGH, N.C. 27636-3068

RIGHT-OF-WAY REV.

CONST. REV.

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-5828 | 14 |
| R/W SHEET NO. | |

ROADWAY DESIGN ENGINEER
8/18/2017
NORTH CAROLINA PROFESSIONAL SEAL 029876 ENGINEER MATTHEW S. WEST
DocuSigned by: Matthew S. West
AC71A1D07968425...

HYDRAULICS ENGINEER
8/18/2017
NORTH CAROLINA PROFESSIONAL SEAL 026480 ENGINEER LARRY D. ROBINSON, JR.
DocuSigned by: Larry D. Robinson
CE1782671D5643E...

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

NAD 83 / NA 2011

***SEE SHEET NO. 21 FOR -Y7- PROFILE***
***SEE PAVEMENT MARKING PLAN FOR CURB RAMP LOCATIONS***

-Y7-
PI Sta 14+77.33
Δ = 21° 44' 09.4" (LT)
D = 7° 38' 22.0"
L = 284.52'
T = 143.99'
R = 750.00'

PI Sta 22+01.65
Δ = 10° 29' 15.9" (LT)
D = 4° 46' 28.7"
L = 219.66'
T = 110.14'
R = 1,200.00'

-Y7- PC Sta. 13+33.34

-Y7- PT Sta. 16+17.86

-Y7- PC Sta. 20+91.51

MATCHLINE -Y7- STA 12+00.00 (SHEET 15)

MATCHLINE -Y7- STA 23+00.00 (SHEET 10)

BEGIN CONSTRUCTION
-Y7- POT Sta. 19+45.00

-Y7- SOUTHPORT DRIVE
N 89°04'07.6" W

BEGIN SIDEWALK
-Y7- Sta.19+79.06

BEGIN 2'-6" C&G TRANSITION TO EXIST 2'-0" C&G
SEE DETAIL 8,SHEET 2A-6
-Y7- Sta.19+57.46

END SIDEWALK
-Y7- Sta.19+88.53

END 2'-6" C&G TRANSITION TO EXIST 2'-0" C&G
SEE DETAIL 8,SHEET 2A-6
-Y7- Sta.19+75.30

SPECIAL LATERAL 'V' DITCH
SEE DETAIL 2/SHEET 2D-1

44 N/F
SOUTHPORT BUSINESS PARK LIMITED PARTNERSHIP
PIN# 755591143
LOT 1
BM 1995 PG 1372
DB 5425 PG 467

45 N/F
SOUTHPORT BUSINESS PARK LIMITED PARTNERSHIP
PIN# 755497184
LOT 2
BM 1995 PG 1372
DB 5425 PG 467

46 N/F
SOUTHPORT BUSINESS PARK LIMITED PARTNERSHIP
PIN# 755595805
LOT 8
BM 1987 PG 1092
DB 5425 PG 467

47 N/F
SOUTHPORT BUSINESS PARK LIMITED PARTNERSHIP
PIN# 755591753
LOT 7
BM 1987 PG 1092
DB 5425 PG 467

48 N/F
SOUTHPORT BUSINESS PARK LIMITED PARTNERSHIP
PIN# 755497860
LOT 3
BM 1992 PG 1275
DB 5425 PG 462

52 N/F
SUSAN S. PEACE, MARTHA S. LANDT & WILLIAM H. SPRUNT, JR.
PIN #075640I266
DB 16056 PG 2518
BM 2016 PG 96

N 67°19'58.2" W

N 11°45'45" E 281.79'

S 20°39'35" E 198.28'

S 01°01'39" W 397.68'

S 19°20'48" W 95.54'

S 01°01'39" W 45.52'

S 01°01'39" W 591.37'

483.49' S 01°00'52" W

15 BK BUS

2S BK BUS

20

WOODS

BST

EXISTING R/W

EXIST. 20' DRAINAGE ESMT.

SOUTHPORT CT. (572' BST)

6' CURB ONLY

24" C&G

30" C&G

18" RCP-IV

15" RCP-IV

5' SIDEWALK

2'6" C&G

24' DW

50' R

90.00'

PDE

CB TOP=324.89' INV. IN=319.49' INV. OUT=319.48'

CB TOP=324.89' INV. IN=319.35' INV. OUT=319.24'

CB TOP=323.95' INV. IN=317.75' INV. OUT=317.73'

CB TOP=326.33' INV. OUT=320.48'

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P.O. BOX 33068
RALEIGH, N.C. 27636-3068

| RIGHT-OF-WAY REV. |
|---|
| CONST. REV. |

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-5828 | 15 |
| R/W SHEET NO. | |

ROADWAY DESIGN ENGINEER
8/18/2017
NORTH CAROLINA PROFESSIONAL SEAL 029876 ENGINEER MATTHEW S. WEST
DocuSigned by: Matthew S. West
AC71A1D70668435...

HYDRAULICS ENGINEER
8/18/2017
NORTH CAROLINA PROFESSIONAL SEAL 026480 ENGINEER LARRY D. ROBINSON, JR.
DocuSigned by: Larry D. Robinson
CE17B2921D5643E...

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NAD 83 / NA 2011

***SEE SHEET NO. 22 FOR -Y8- PROFILE***
***SEE PAVEMENT MARKING PLAN FOR CURB RAMP LOCATIONS***

PI Sta 14+70.48
△ = 7° 10' 41.3" (RT)
D = 1°08' 45.3"
L = 626.41'
T = 313.62'
R = 5,000.00'

-Y8-
S 21°48'39" W 70.57'
N 68°11'21" W 32.81'
S 21°48'39" W 231.47'
S 68°11'21" E 32.81'

S 62°08'19" E 588.38'

TIE EQUALITY
-Y7- POT Sta. 10+00.00 =
-Y8- POC Sta. 13+17.49

BEGIN CONSTRUCTION
-Y8- POC Sta. 16+00.00

-Y7- SOUTHPORT DRIVE
N 67°19'58.2" W

MATCHLINE -Y7- STA 12+00.00 (SHEET 14)

MATCHLINE -Y8- STA 23+50.00 (SHEET 11)

-Y8- SR-1002 (AVIATION PARKWAY)
S 28°13'52.4" W

-Y8- PT Sta. 17+83.28

BEGIN 2'-6" C&G AND SIDEWALK TIE TO EXIST -Y8- Sta.16+00.00

BEGIN CONCRETE MONOLITHIC ISLAND -Y8- Sta.17+36.23

END SIDEWALK -Y8- Sta.19+89.78

END 2'-6" C&G TRANSITION TO EXIST 1'-6" C&G SEE DETAIL 7, SHEET 2A-6 -Y8- Sta.19+96.72

BEGIN 2'-6" C&G TRANSITION TO EXIST 1'-6" C&G SEE DETAIL 7, SHEET 2A-6 -Y8- Sta.20+44.58

BEGIN SIDEWALK -Y8- Sta.20+52.88

TIE PROP CB TO EXIST 18" RCP AND REMOVE EXIST CB

TIE PROP DI TO EXIST 36" RCP

450' LANE TAPER

100' BAY TAPER

200' LANE TAPER

350' DUAL LEFT TURN LANES

SPECIAL DI SEE SHEET 2D-3

SPECIAL LATERAL 'V' DITCH SEE DETAIL 2/SHEET 2D-1

49
N/F
SOUTHPORT BUSINESS PARK LIMITED PARTNERSHIP
PIN# 755585894
LOT D
BM 1998 PG 1680
DB 7976 PG 433

35
N/F
SOUTHPORT BUSINESS PARK LIMITED PARTNERSHIP
PIN# 755584219
LOT E
BM 1998 PG 1680
DB 7976 PG 433

44
N/F
SOUTHPORT BUSINESS PARK LIMITED PARTNERSHIP
PIN# 755591143
LOT I
BM 1995 PG 1372
DB 5425 PG 467

34
N/F
SOUTHPORT BUSINESS PARK, LIMITED PARTNERSHIP
PIN# 755485334
DB 8681 PG 2240

-BL-27

RETAIN EXIST SYSTEM

REMOVE

RETAIN

15" RCP-IV

18" RCP

24" RCP

36" RCP

4' P.S.

4' CONC ISLAND

VAR CONC ISLAND

5' SIDEWALK

2'-6" C&G

30" C&G

6" CURB ONLY

EXISTING R/W

EXIST 30' CP&L ESMT.

POSSIBLE UNDERGROUND JUNCTION BOX

24" STONE WALL

WOODS

BRICK

CONC S/W

TRAFFIC

11' 13' 12' 12' 12'

MATCHLINE -Y8- STA 23+50.00 (SHEET 11)

DocuSign Envelope ID: D8E10CB5-C165-4C23-9202-11E0ED789ED7

**Kimley»Horn**

P.O. BOX 33068
RALEIGH, N.C. 27636-3068

RIGHT-OF-WAY REV.

CONST. REV.

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-5828 | 16 |
| R/W SHEET NO. | |

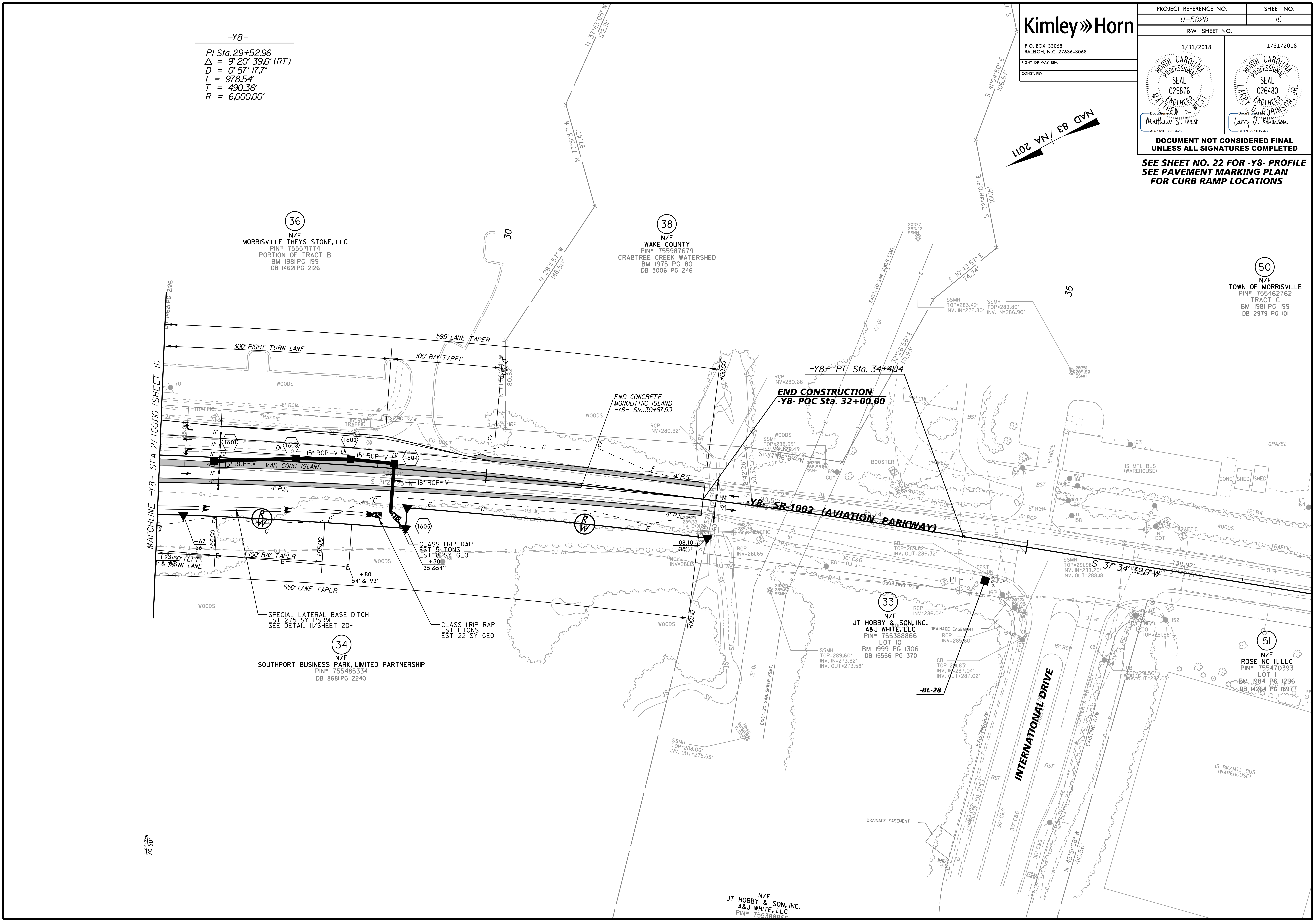
1/31/2018
SEAL 029876
MATTHEW S. WEST
DocuSigned by:
Matthew S. West
AC71A1D0796B425...

1/31/2018
SEAL 026480
LARRY D. ROBINSON, JR.
DocuSigned by:
Larry D. Robinson
CE17B2971D5643E...

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

***SEE SHEET NO. 22 FOR -Y8- PROFILE***
***SEE PAVEMENT MARKING PLAN***
***FOR CURB RAMP LOCATIONS***

-Y8-
PI Sta. 29+52.96
$\Delta$ = 9° 20′ 39.6″ (RT)
D = 0° 57′ 17.7″
L = 978.54′
T = 490.36′
R = 6,000.00′



1/31/2018
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Kimley»Horn
P.O. BOX 33068
RALEIGH, N.C. 27636-3068

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-5828 | 17 |

ROADWAY DESIGN ENGINEER
8/18/2017
NORTH CAROLINA PROFESSIONAL SEAL 029876 ENGINEER MATTHEW S. WEST
DocuSigned by: Matthew S. West
AC71A1D07968425...

HYDRAULICS ENGINEER
8/18/2017
NORTH CAROLINA PROFESSIONAL SEAL 026480 ENGINEER LARRY O. ROBINSON, JR.
DocuSigned by: Larry O. Robinson
CE17B2971D5643E...

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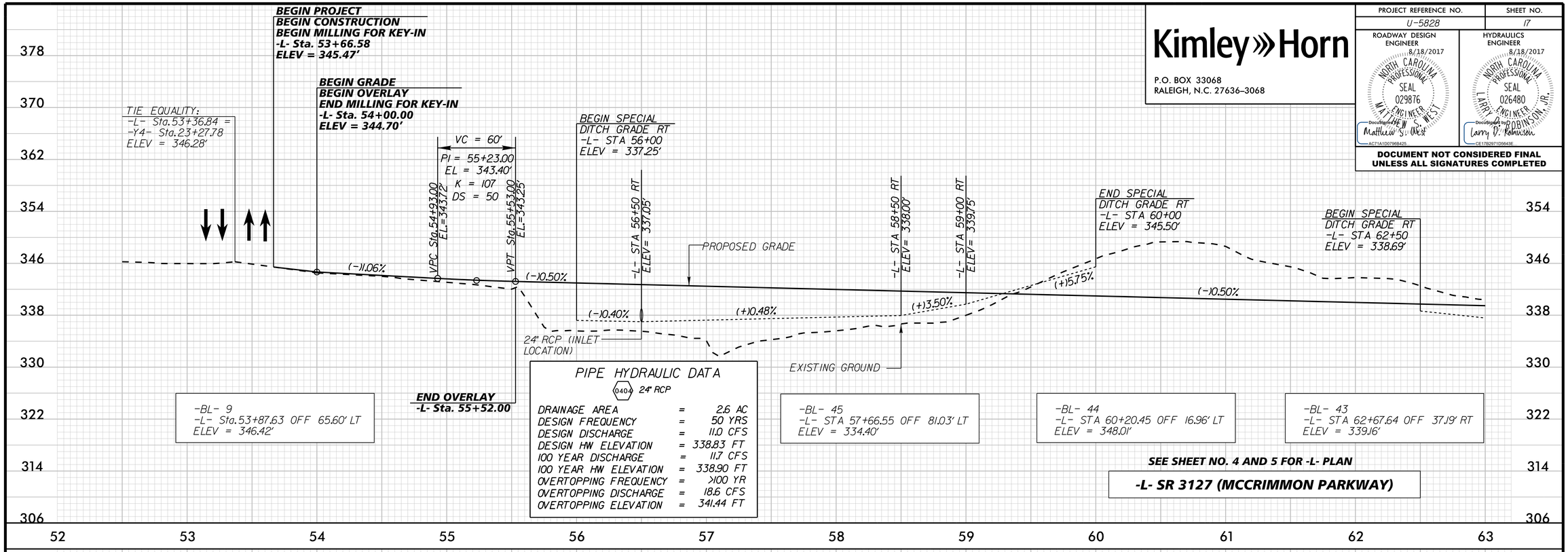


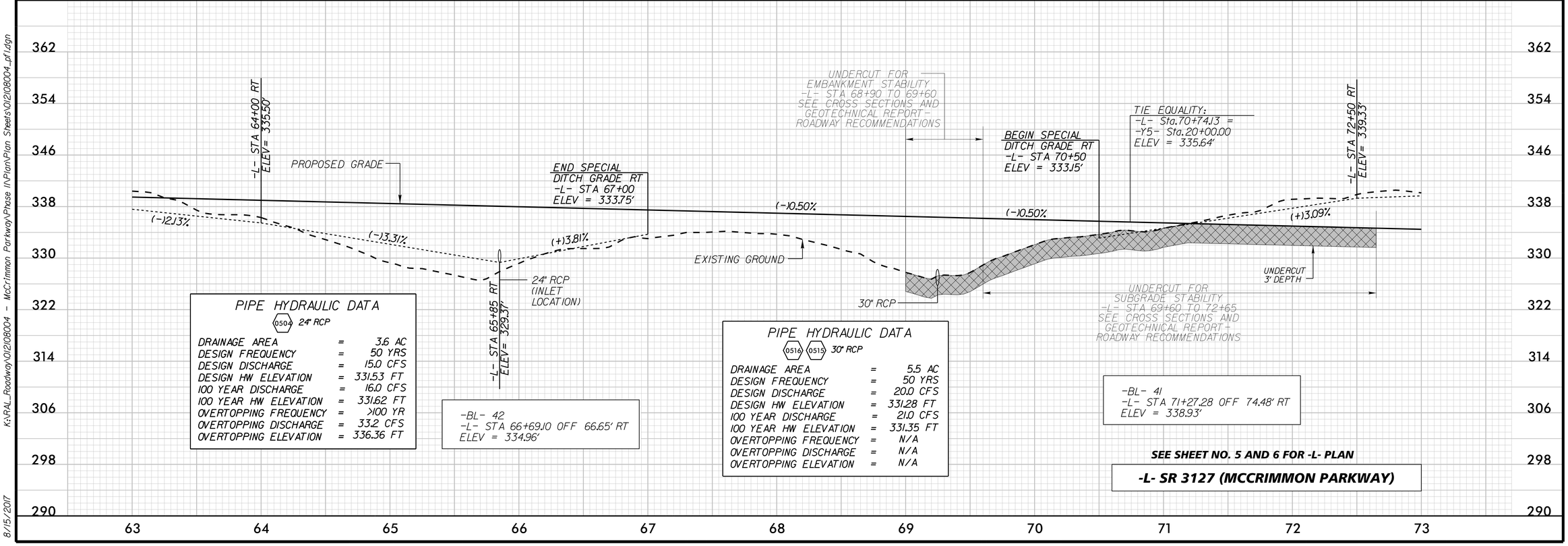

Kimley»Horn
P.O. BOX 33068
RALEIGH, N.C. 27636-3068

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-5828 | 18 |

ROADWAY DESIGN ENGINEER
8/18/2017
NORTH CAROLINA PROFESSIONAL SEAL 029876 ENGINEER MATTHEW S. WEST
DocuSigned by: Matthew S. West
AC71A1D07968425...

HYDRAULICS ENGINEER
8/18/2017
NORTH CAROLINA PROFESSIONAL SEAL 026480 ENGINEER LARRY D. ROBINSON, JR.
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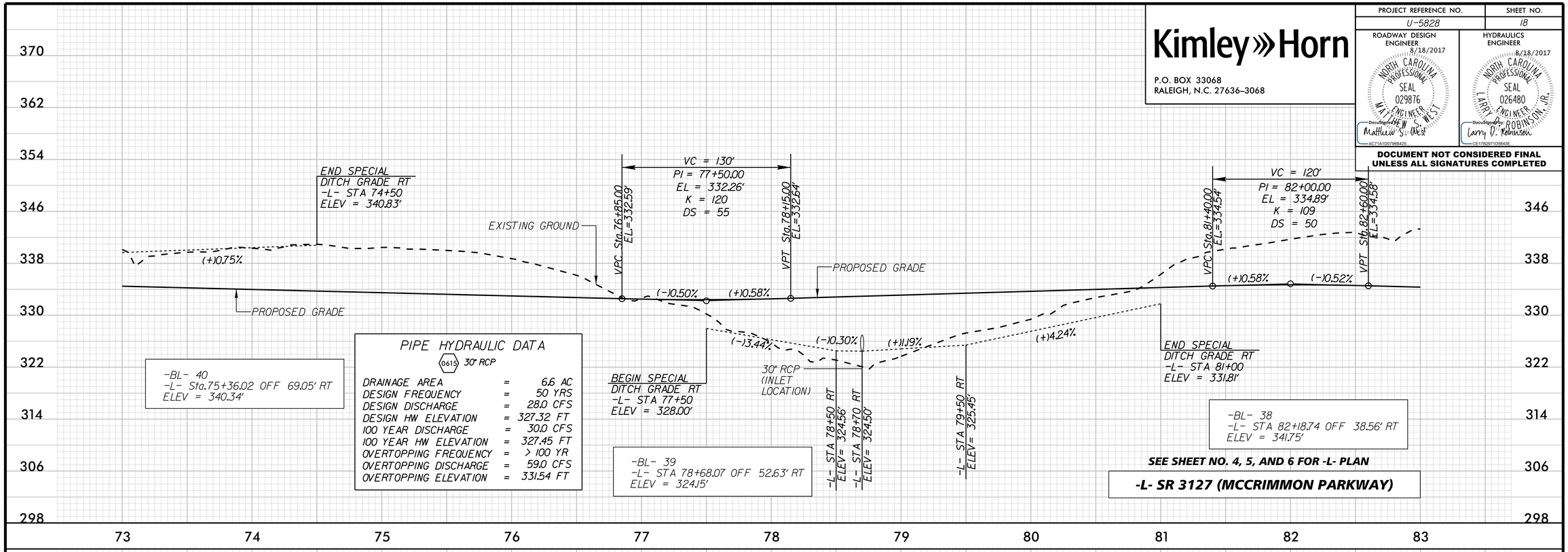


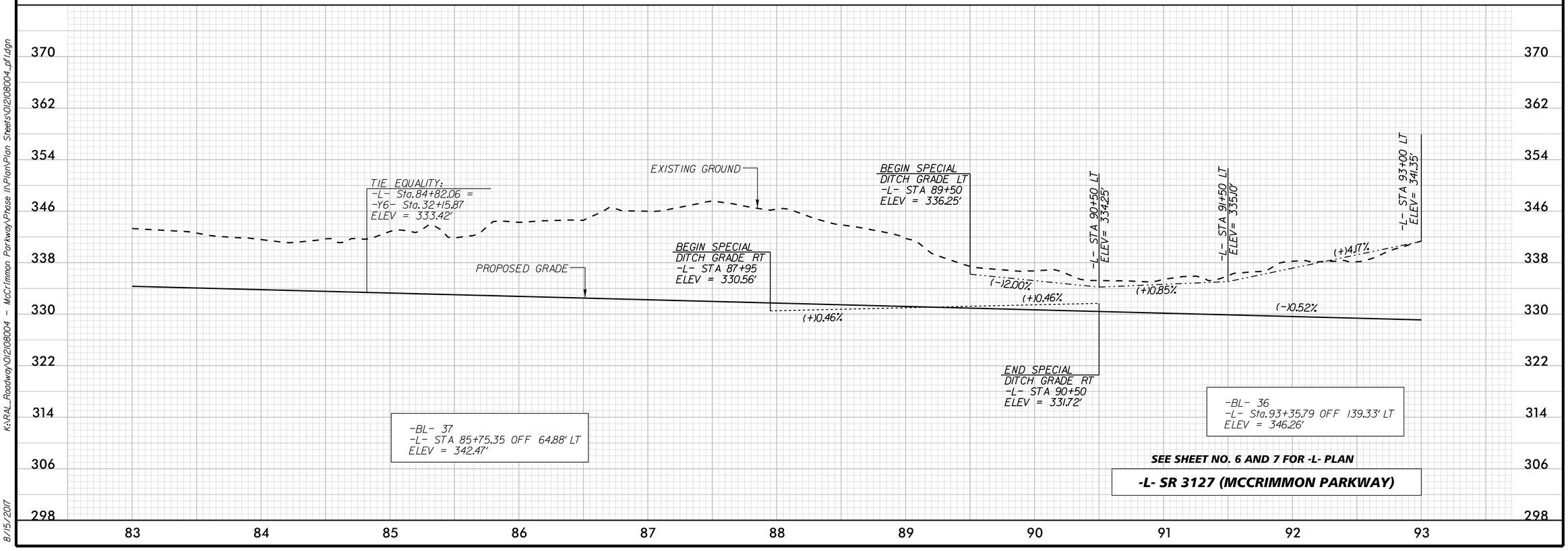


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8/15/2017

Kimley»Horn
P.O. BOX 33068
RALEIGH, N.C. 27636-3068

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-5828 | 19 |

ROADWAY DESIGN ENGINEER
8/18/2017
NORTH CAROLINA PROFESSIONAL SEAL 029876 ENGINEER MATTHEW S. WEST
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AC71A1D07968425...

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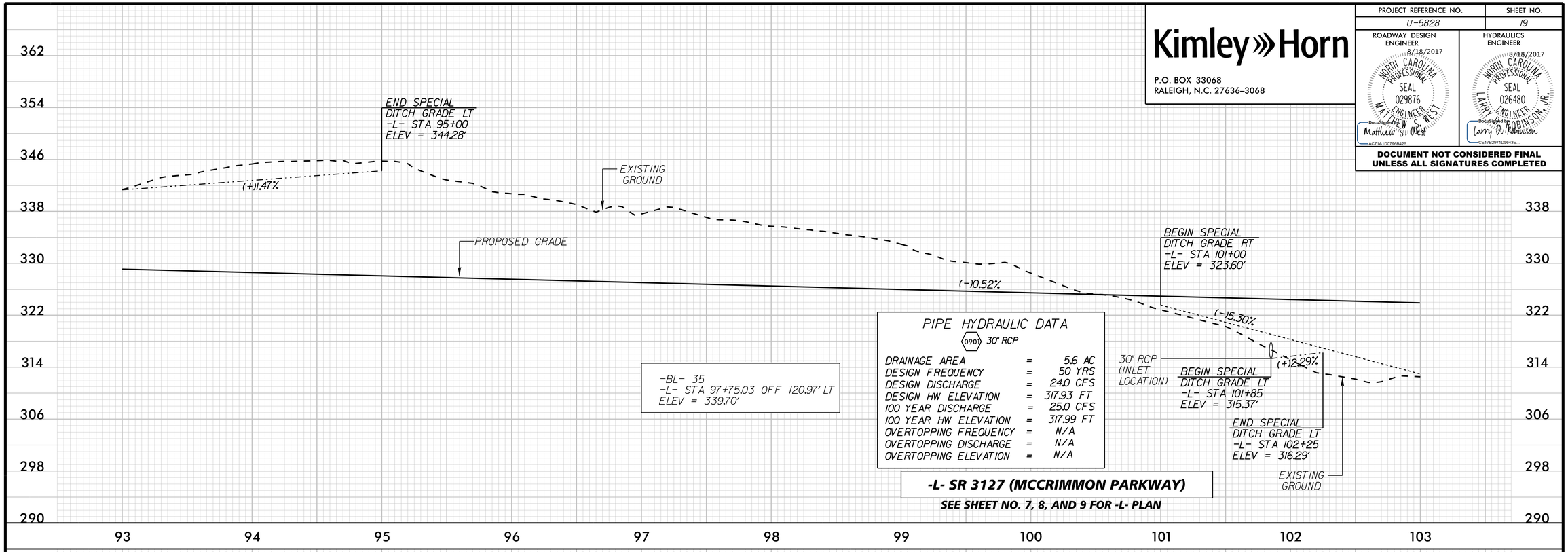


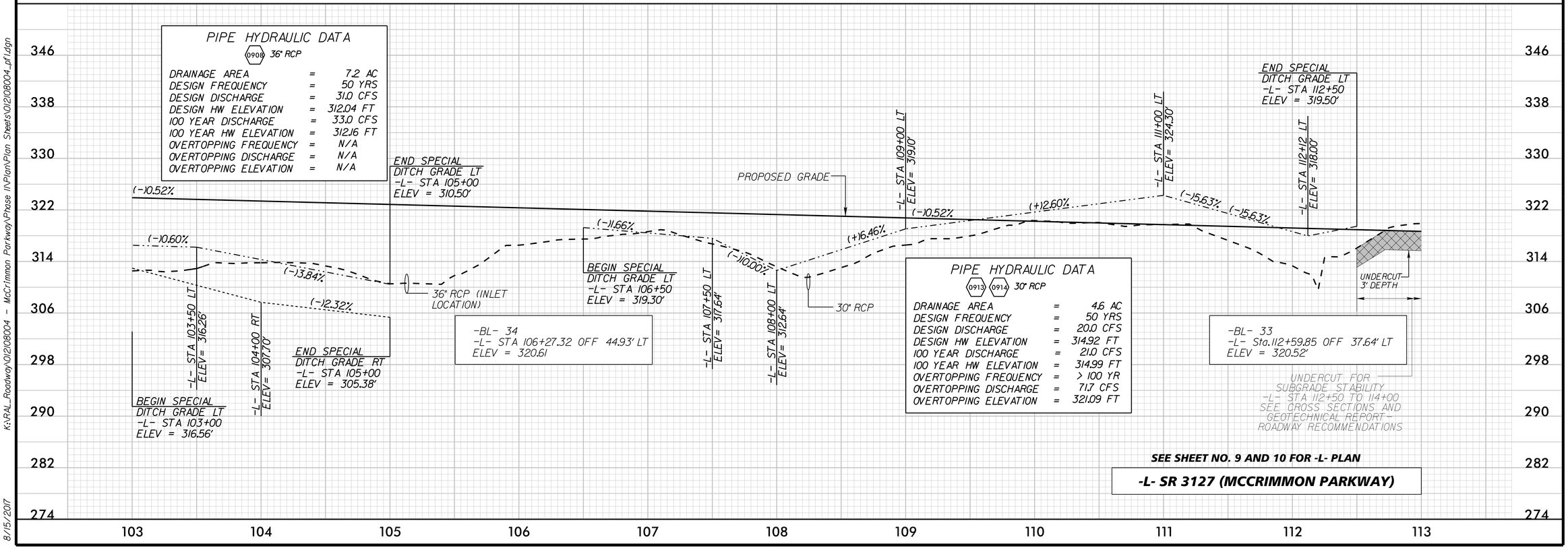


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8/15/2017

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P.O. BOX 33068
RALEIGH, N.C. 27636-3068

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-5828 | 20 |

ROADWAY DESIGN ENGINEER
8/18/2017
NORTH CAROLINA PROFESSIONAL SEAL 029876 ENGINEER MATTHEW S. WEST
DocuSigned by: Matthew S. West
AC71A1D0798B425...

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NORTH CAROLINA PROFESSIONAL SEAL 026480 ENGINEER LARRY D. ROBINSON, JR.
DocuSigned by: Larry D. Robinson
CE1292710564E3E...

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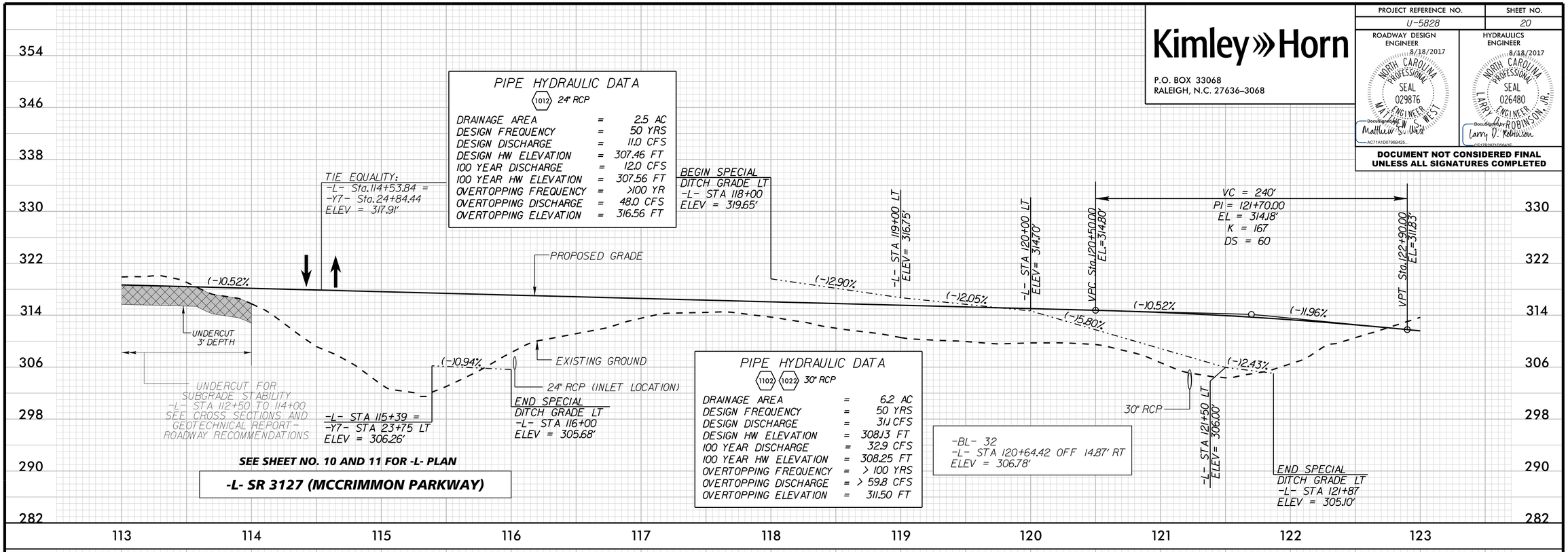


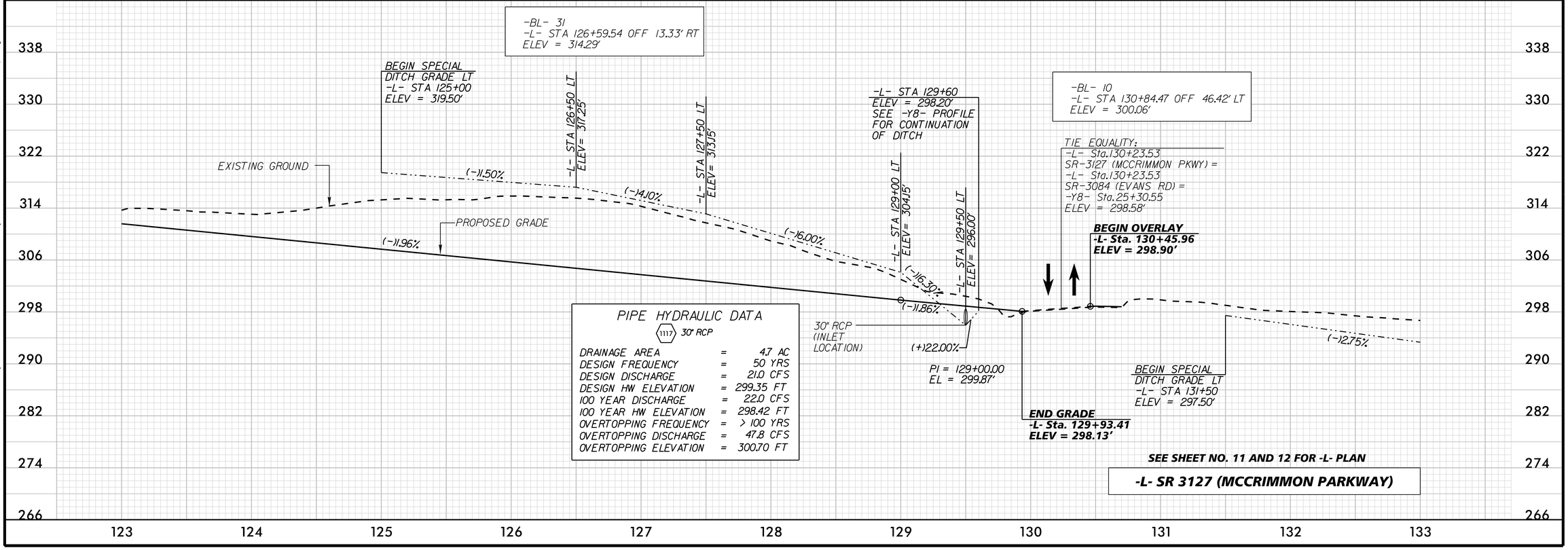


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8/15/2017

Kimley»Horn

P.O. BOX 33068
RALEIGH, N.C. 27636-3068

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-5828 | 21 |

ROADWAY DESIGN ENGINEER
8/18/2017
NORTH CAROLINA PROFESSIONAL SEAL 029876 ENGINEER MATTHEW S. WEST
DocuSigned by: Matthew S. West
AC71A1D0796B425...

HYDRAULICS ENGINEER
8/18/2017
NORTH CAROLINA PROFESSIONAL SEAL 026480 ENGINEER LARRY O. ROBINSON, JR.
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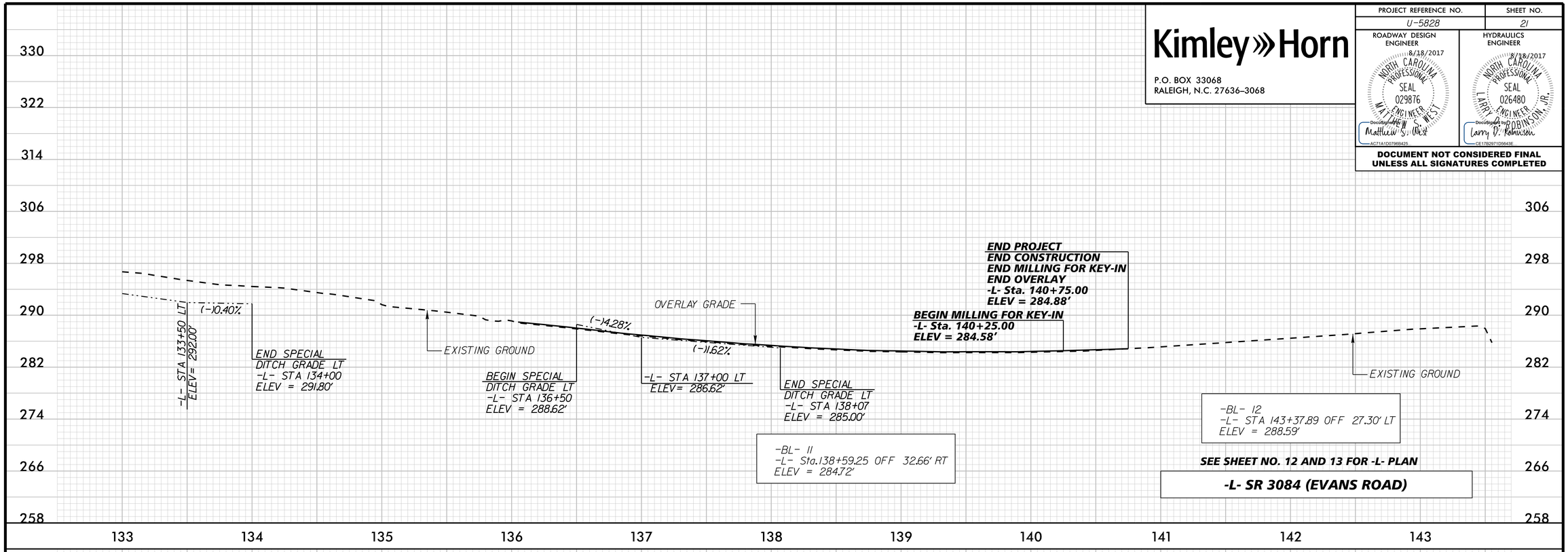


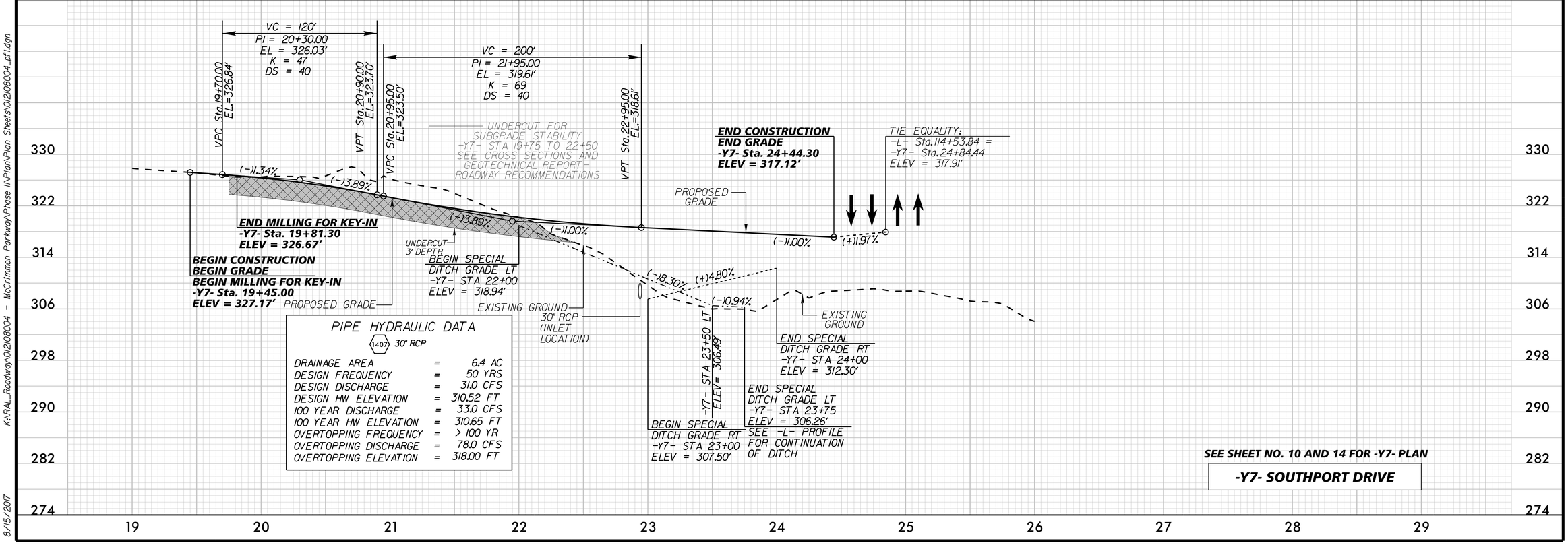


PIPE HYDRAULIC DATA
(1407) 30" RCP

| | | |
|---|---|---|
| DRAINAGE AREA | = | 6.4 AC |
| DESIGN FREQUENCY | = | 50 YRS |
| DESIGN DISCHARGE | = | 31.0 CFS |
| DESIGN HW ELEVATION | = | 310.52 FT |
| 100 YEAR DISCHARGE | = | 33.0 CFS |
| 100 YEAR HW ELEVATION | = | 310.65 FT |
| OVERTOPPING FREQUENCY | = | > 100 YR |
| OVERTOPPING DISCHARGE | = | 78.0 CFS |
| OVERTOPPING ELEVATION | = | 318.00 FT |

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8/15/2017

Kimley»Horn
P.O. BOX 33068
RALEIGH, N.C. 27636-3068

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-5828 | 22 |

ROADWAY DESIGN ENGINEER
8/18/2017
NORTH CAROLINA PROFESSIONAL SEAL 029876 ENGINEER MATTHEW S. WEST
DocuSigned by: Matthew S. West
AC71A1D0796B425...

HYDRAULICS ENGINEER
8/18/2017
NORTH CAROLINA PROFESSIONAL SEAL 026480 ENGINEER LARRY D. ROBINSON, JR.
DocuSigned by: Larry D. Robinson
CE17B2971D5643E...

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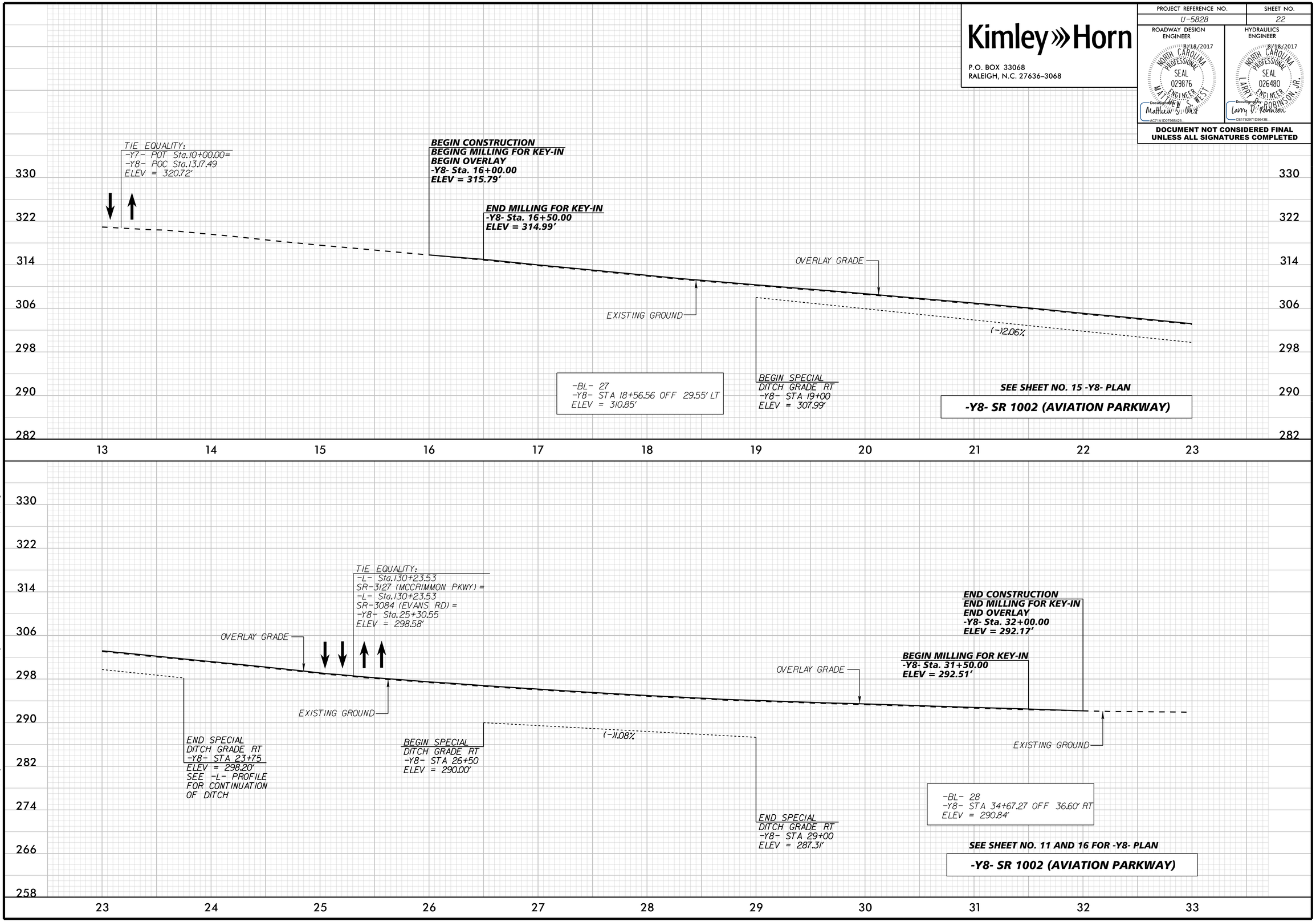


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8/15/2017