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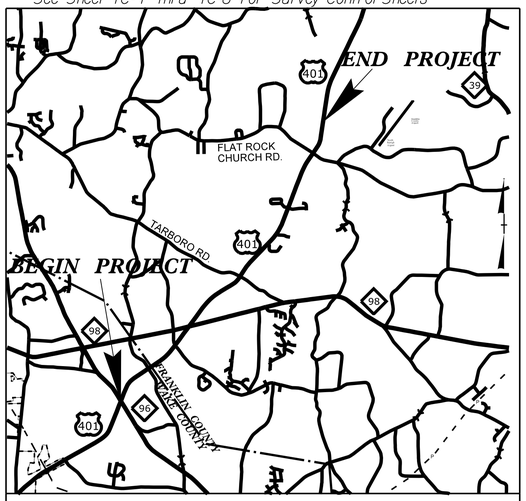
09/08/99

TIP PROJECT: R-2814C

CONTRACT: C204105

See Sheet 1-A For Index of Sheets
See Sheet 1-B For Conventional Symbols
See Sheet 1C-1 thru 1C-6 For Survey Control Sheets



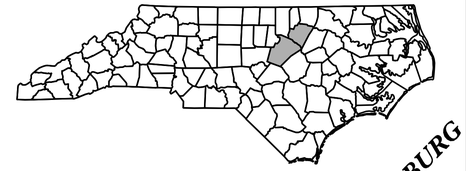
VICINITY MAP

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

WAKE & FRANKLIN COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-2814C	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
34506.1.4	STP-401(249)	PE
34506.2.FR7	STP-401(249)	R/W
34506.2.FRU7	STP-401(249)	UTILITIES
34506.3.12	STP-401(249)	CONSTR



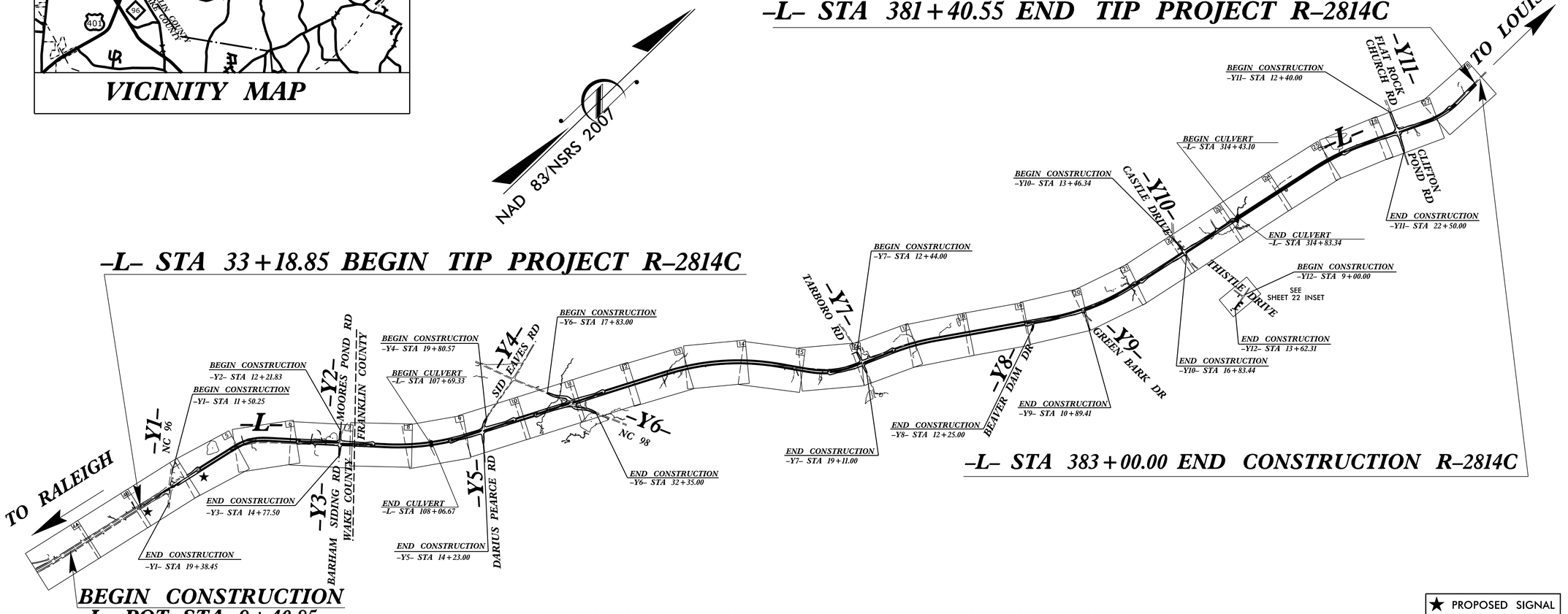
LOCATION: *US 401 FROM NC 96 TO NORTH OF SR 1103 (FLAT ROCK CHURCH RD/CLIFTON POND RD)*

TYPE OF WORK: *GRADING, DRAINAGE, PAVING, CULVERTS, & SIGNALS*

NAD 83/NSRS 2007

–L– STA 33+18.85 BEGIN TIP PROJECT R-2814C

–L– STA 381+40.55 END TIP PROJECT R-2814C



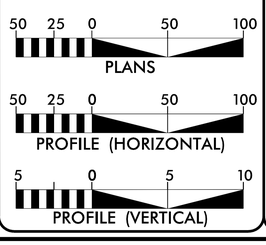
BEGIN CONSTRUCTION
–L– POT STA 9+40.85

–L– STA 383+00.00 END CONSTRUCTION R-2814C

★ PROPOSED SIGNAL

THIS IS A FULL AND PARTIAL CONTROL OF ACCESS PROJECT WITH ACCESS POINTS SHOWN ON THE PLANS

GRAPHIC SCALES



DESIGN DATA

ADT 2018 = 11,388
ADT 2038 = 16,344
K = 10 %
D = 65 %
T = 6 % *
V = 60 MPH
* TTST = 2% DUAL = 4%
FUNC CLASS =
MAJOR COLLECTOR
STATEWIDE TIER

PROJECT LENGTH

LENGTH OF ROADWAY TIP PROJECT R-2814C = 6.580 MILES
LENGTH STRUCTURES TIP PROJECT R-2814C = 0.015 MILES
TOTAL LENGTH OF TIP PROJECT R-2814C = 6.595 MILES

Prepared for the Office of: DIVISION OF HIGHWAYS

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

MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
JANUARY 28, 2015

LETTING DATE:
JULY 17, 2018

PHILLIP E. ROGERS, PE
PROJECT ENGINEER

CASEY E. HARRIS, PE
PROJECT DESIGN ENGINEER

TATIA L. WHITE, PE, PLS
NCDOT CONTACT

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 33246 ENGINEER LINDA M. JOHNS

6/13/2018

SIGNATURE: *P.E.*

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 040286 ENGINEER CASEY E HARRIS

6/13/2018

SIGNATURE: *P.E.*

STATE OF NORTH CAROLINA • DEPARTMENT OF TRANSPORTATION •

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

5/7/2018
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8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-2814C	1-A

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 040266 ENGINEER CASEY E. HARRIS
6/13/2018

INDEX OF SHEETS

SHEET NUMBER	SHEET
1	TITLE SHEET
1A	INDEX OF SHEETS, GENERAL NOTES, AND STANDARD DRAWINGS
1B	CONVENTIONAL SYMBOLS
1C-1 THRU 1C-6	SURVEY CONTROL SHEETS
2A-1 THRU 2A-13	PAVEMENT SCHEDULE, TYPICAL SECTIONS AND WEDGING DETAILS
2B-1 THRU 2B-11	INTERSECTION DETAILS
2C-1	DETAIL OF 1'-6" TO 2'-9" CURB & GUTTER TRANSITION SECTION
2C-2	DETAIL OF 2'-9" CURB AND GUTTER TO FRAME AND GRATE
2C-3	DETAIL IN LIEU OF STANDARD, GUARDRAIL INSTALLATION - SYSTEM PARTS
2C-4	DETAIL IN LIEU OF STANDARD, GUARDRAIL INSTALLATION - A.T.-1 SYSTEM
2C-5	CONCRETE GRATED DROP INLET TYPE 'A' MINIMUM DEPTH
2C-6	DETAIL OF SPECIAL DI 840D14
2C-7	COAL COMBUSTION PRODUCT PLACEMENT DETAIL
2D-1 THRU 2D-3	DRAINAGE DETAILS
2G-1 THRU 2G-4	STANDARD TEMPORARY SHORING DETAIL SHEETS
2G-5	ROCK EMBANKMENT AND ROCK PLATING DETAILS
2H-1	STOCKPILE CONTAINMENT DETAIL
3B-1	SUMMARIES OF EARTHWORK, ASPHALT PAVEMENT REMOVAL SUMMARY SHOULDER BERM GUTTER SUMMARY AND EXPRESSWAY GUTTER SUMMARY
3B-2	SUMMARY OF WOVEN WIRE FENCE
3B-3	GUARDRAIL SUMMARY
3B-4	TEMPORARY GUARDRAIL SUMMARY
3D-1 THRU 3D-16	DRAINAGE SUMMARIES
3G-1	GEOTECHNICAL SUMMARIES
3P-1 THRU 3P-2	PARCEL INDEX SHEETS
4A THRU 46	PLAN AND PROFILE SHEETS
TMP-1 THRU TMP-66	TRAFFIC CONTROL PLANS
PMP-1 THRU PMP-20	PAVEMENT MARKING PLANS
EC-1 THRU EC-53	EROSION CONTROL PLANS
RF-1	REFORESTATION DETAIL SHEET
SIGN-1 THRU SIGN-23	SIGNING PLANS
SIG-1 THRU SIG-22.1	SIGNALIZATION PLANS
SIG-M1 THRU SIG-M8	SIGNAL METAL POLE PLANS
SCP-1 THRU SCP-3	SIGNAL COMMUNICATION PLANS
UC-1 THRU UC-9	UTILITIES CONSTRUCTION PLANS
UO-1 THRU UO-26	UTILITIES BY OTHERS PLANS
X-1	CROSS-SECTION INDEX
X-1A THRU X-1H	CROSS-SECTION EARTHWORK VOLUME SUMMARIES
X-2 THRU X-133	CROSS-SECTIONS
C1-1 THRU C6-5	CULVERT PLANS

GENERAL NOTES

EFFECTIVE: 01-16-2018
REVISED:

GRADING AND SURFACING OR RESURFACING AND WIDENING:

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

CLEARING:

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

SUPERELEVATION:

ALL CURVES ON THIS PROJECT SHALL BE SUPERELEVATED IN ACCORDANCE WITH STD. NO. 225.04 AND 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.

SHOULDER CONSTRUCTION:

ASPHALT, EARTH, AND CONCRETE SHOULDER CONSTRUCTION ON THE HIGH SIDE OF SUPERELEVATED CURVES SHALL BE IN ACCORDANCE WITH STD. NO. 560.01 AND 560.02

SIDE ROADS:

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

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.

UNDERDRAINS:

UNDERDRAINS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. NO. 815.03 AT LOCATIONS DIRECTED BY THE ENGINEER.

DRIVEWAYS:

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

STREET TURNOUT:

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

GUARDRAIL:

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

TEMPORARY SHORING:

SHORING REQUIRED FOR THE MAINTENANCE OF TRAFFIC NOT SHOWN ON THE PLANS WILL BE PAID FOR AT THE CONTRACT PRICE FOR "TEMPORARY SHORING".

UTILITIES:

UTILITY OWNERS ON THIS PROJECT ARE:
A) WAKE COUNTY EMC - POWER (DISTRIBUTION)
B) DUKE ENERGY PROGRESS - POWER (DISTRIBUTION)
C) TIME WARNER CABLE - CATV
D) AQUA NC, INC - WATER
E) FRANKLIN COUNTY - WATER
F) CENTURYLINK - PHONE

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

RIGHT-OF-WAY MARKERS:

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

ROCK

ROCK IS ANTICIPATED BETWEEN -L- 80+75 TO 83+25, 113+75 TO 115+75, 132+25 TO 133+25, 164+25 TO 164+75, 284+75 TO 287+25 AND 299+25 TO 301+75. BLASTING MAY BE REQUIRED FOR EXCAVATION ON THE PROJECT. SEE SECTION 200 OF THE STANDARD SPECIFICATIONS

2018 ROADWAY ENGLISH STANDARD DRAWINGS

EFF. 01-16-2018
REV.

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

STD.NO.	TITLE
DIVISION 2 - EARTHWORK	
200.03	Method of Clearing - Method III
225.01	Guide for Grading Subgrade - Interstate and Freeway
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
275.01	Rock Plating
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 I
560.02	Method of Shoulder Construction - High Side of Superelevated Curve - Method II
DIVISION 6 - ASPHALT BASES AND PAVEMENTS	
654.01	Pavement Repairs
DIVISION 8 - INCIDENTALS	
806.01	Concrete Right-of-Way Marker
806.03	Concrete Contol of Access Marker
815.03	Pipe Underdrain and Blind Drain
816.01	Concrete Pads - for Shoulder Drain Installation
816.02	Aggregate Shoulder Drain
816.04	Markers for Drainage Structure and Concrete Pad
838.01	Concrete Endwall for Single and Double Pipe Culverts - 15" thru 48" Pipe 90 Skew
838.11	Brick Endwall for Single and Double Pipe Culverts - 15" thru 48" Pipe 90 Skew
838.21	Reinforced Concrete Endwall - for Single 54" Pipe 90 Skew
838.33	Reinforced Concrete Endwall - for Single 66" Pipe 90 Skew
838.51	Reinforced Brick Endwall - for Single 54" Pipe 90 Skew
838.63	Reinforced Brick Endwall - for Single 66" Pipe 90 Skew
840.00	Concrete Base Pad for Drainage Structures
840.01	Brick Catch Basin - 12" thru 54" Pipe
840.02	Concrete Catch Basin - 12" thru 54" Pipe
840.03	Frame, Grates and Hood - for Use on Standard Catch Basin
840.14	Concrete Drop Inlet - 12" thru 30" Pipe
840.15	Brick Drop Inlet - 12" thru 30" Pipe
840.16	Drop Inlet Frame and Grates - for use with Std. Dwg 840.14 and 840.15
840.17	Concrete Grated Drop Inlet Type 'A' - 12" thru 72" Pipe
840.18	Concrete Grated Drop Inlet Type 'B' - 12" thru 36" Pipe
840.19	Concrete Grated Drop Inlet Type 'D' - 12" thru 36" Pipe
840.20	Frames and Wide Slot Flat Grates
840.22	Frames and Wide Slot Sag Grates
840.24	Frames and Narrow Slot Sag Grates
840.25	Anchorage for Frames - Brick or Concrete or Precast
840.26	Brick Grated Drop Inlet Type 'A' - 12" thru 72" Pipe
840.27	Brick Grated Drop Inlet Type 'B' - 12" thru 72" Pipe
840.28	Brick Grated Drop Inlet Type 'D' - 12" thru 72" 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
840.35	Traffic Bearing Grated Drop Inlet - for Cast Iron Double Frame and Grates
840.41	Spring Box - Concrete or Brick
840.45	Precast Drainage Structure
840.46	Traffic Bearing Precast Drainage Structure
840.51	Brick Manhole - 12" thru 36" Pipe
840.52	Precast Manhole - 4', 5' and 6' Diameter
840.53	Precast Manhole with Masonry Base - 12" thru 42" Pipe
840.54	Manhole Frame and Cover
840.66	Drainage Structure Steps
846.01	Concrete Curb, Gutter and Curb & Gutter
846.02	Drop Inlet Installation in Expressway Gutter
846.04	Drop Inlet Installation in Shoulder Berm Gutter
848.02	Driveway Turnout - Radius Type
848.04	Street Turnout
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
852.06	Method for Placement of Drop Inlets in Concrete Islands
852.10	Median Construction - with Curb and Gutter
862.01	Guardrail Placement
862.02	Guardrail Installation
866.02	Woven Wire Fence - with Wood Post
876.01	Rip Rap in Channels
876.02	Guide for Rip Rap at Pipe Outlets
876.04	Drainage Ditches with Class 'B' Rip Rap

5/24/2018
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12/2/2016

PROJECT REFERENCE NO.	SHEET NO.
R-2814C	1-B

STATE OF NORTH CAROLINA, DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

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

BOUNDARIES AND PROPERTY:

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

BUILDINGS AND OTHER CULTURE:

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

HYDROLOGY:

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

RAILROADS:

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

RIGHT OF WAY & PROJECT CONTROL:

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

ROADS AND RELATED FEATURES:

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

VEGETATION:

- Single Tree
- Single Shrub
- Hedge
- Woods Line
- Orchard
- Vineyard (Vineyard)

EXISTING STRUCTURES:

MAJOR:

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

MINOR:

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

UTILITIES:

POWER:

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

TELEPHONE:

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

WATER:

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

TV:

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

GAS:

- Gas Valve
- Gas Meter
- U/G Gas Line LOS B (S.U.E.*) (G)
- U/G Gas Line LOS C (S.U.E.*) (G)
- U/G Gas Line LOS D (S.U.E.*) (G)
- Above Ground Gas Line (A/G Gas)

SANITARY SEWER:

- Sanitary Sewer Manhole
- Sanitary Sewer Cleanout
- U/G Sanitary Sewer Line (SS)
- Above Ground Sanitary Sewer (A/G Sanitary Sewer)
- SS Forced Main Line LOS B (S.U.E.*) (FSS)
- SS Forced Main Line LOS C (S.U.E.*) (FSS)
- SS Forced Main Line LOS D (S.U.E.*) (FSS)

MISCELLANEOUS:

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

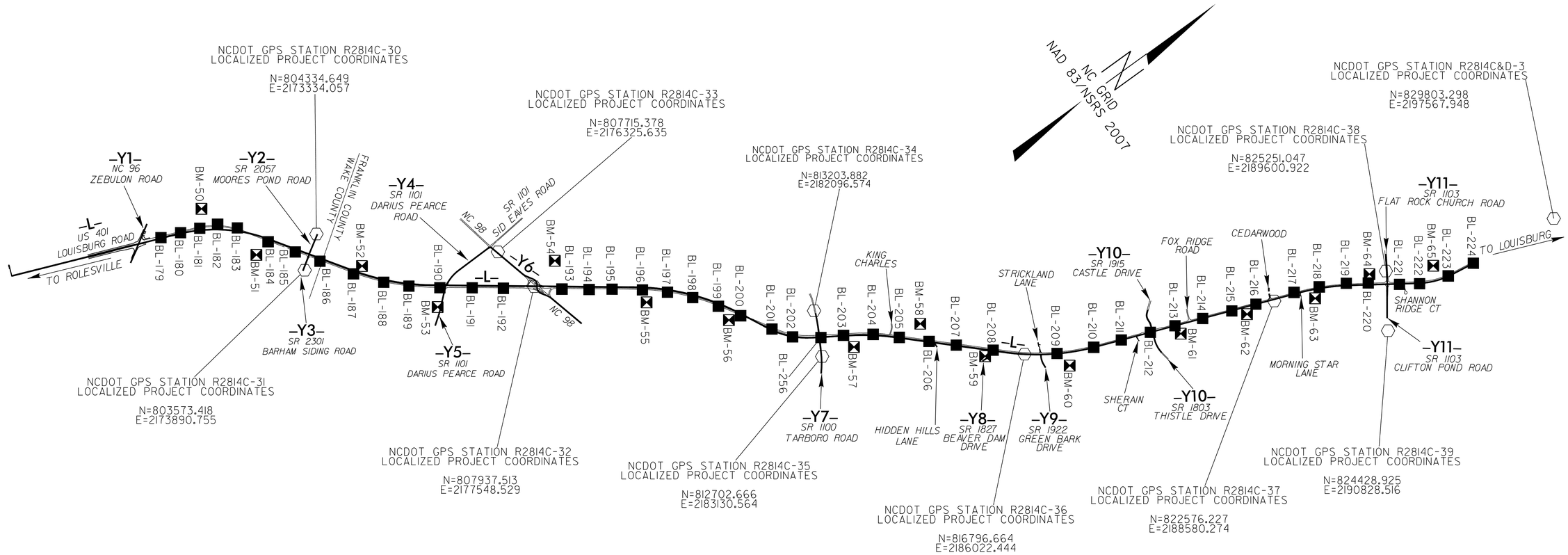
6/2/98

PROJECT REFERENCE NO.	SHEET NO.
R-2814C	1C-1
Location and Surveys	

SURVEY CONTROL SHEET R-2814C

WAKE/FRANKLIN COUNTY

LOCATION: US 401 FROM NC 96 TO NORTH OF SR 1103 (FLAT ROCK CHURCH RD/CLIFTON POND RD.)



NOTES:

1. *THE SITE CALIBRATION SHOWN IS BASED UPON A NETWORK TIED TO THE HARN (HIGH ACCURACY REFERENCE NETWORK) NAD 8395 ADJUSTMENT. THIS CALIBRATION WILL ALLOW THE END USER TO WORK WITHIN THE SAME COORDINATE SYSTEM WHEN USING RTK (REAL TIME KINEMATIC) GPS AND A LOCAL BASE STATION. IF ANOTHER SYSTEM SUCH AS VRS (VIRTUAL REFERENCE STATION) IS USED, ADDITIONAL FIELD TIES MAY BE NEEDED TO REDUCE POSSIBLE ERRORS, OR BIASES.*

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

   THE FILES TO BE FOUND ARE AS FOLLOWS:
   R2814C_LS_GPSCALIB.HTML
   R2814C_LS_WGS84.TXT
   R2814C_LS_LOCAL.TXT
   R2814C_LS_CONTROL.TXT

   THE WGS84 AND LOCAL FILES ARE COMMA DELIMITED AND CAN BE USED TO REPRODUCE THE SITE CALIBRATION FOR THE END USER'S GPS EQUIPMENT. IF FURTHER INFORMATION IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

⬡ *INDICATES GEODETIC CONTROL MONUMENTS USED OR SET FOR HORIZONTAL PROJECT CONTROL BY THE NCDOT LOCATION AND SURVEYS UNIT.*
PROJECT CONTROL ESTABLISHED USING GLOBAL POSITIONING SYSTEM.
NETWORK ESTABLISHED FROM EXISTING HARN MONUMENTATION
SEE GPS CALIBRATION SHEET FOR HORIZONTAL AND VERTICAL COORDINATE VALUES.

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "R2814C&D-3" WITH NAD 83/NSRS 2007 STATE PLANE GRID COORDINATES OF NORTHING: 829803.298(ft) EASTING: 2197567.948(ft) ELEVATION: 345.03(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99994428
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "R2814C&D-3" TO -L- STATION 10+00.00 IS S 40°49'48.3" W 42542.68'
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

NOTE: DRAWING NOT TO SCALE

3/28/2018
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PROJECT REFERENCE NO.	SHEET NO.
R-2814C	1C-2
Location and Surveys	

SURVEY CONTROL SHEET R-2814C

WAKE/FRANKLIN COUNTY

LOCATION: US 401 FROM NC 96 TO NORTH OF SR 1103 (FLAT ROCK CHURCH RD/CLIFTON POND RD.)

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "R2814C&D-3"
WITH NAD 83/NSRS 2007 STATE PLANE GRID COORDINATES OF
NORTHING: 829803.298(ft) EASTING: 2197567.948(ft)
ELEVATION: 345.03(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99994428
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "R2814C&D-3" TO -L- STATION 10+00.00 IS
S 40°49'48.3" W 42542.68'
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

NOTES:

1. *THE SITE CALIBRATION SHOWN IS BASED UPON A NETWORK TIED TO THE HARN (HIGH ACCURACY REFERENCE NETWORK) NAD 83/95 ADJUSTMENT. THIS CALIBRATION WILL ALLOW THE END USER TO WORK WITHIN THE SAME COORDINATE SYSTEM WHEN USING RTK (REAL TIME KINEMATIC) GPS AND A LOCAL BASE STATION. IF ANOTHER SYSTEM SUCH AS VRS (VIRTUAL REFERENCE STATION) IS USED, ADDITIONAL FIELD TIES MAY BE NEEDED TO REDUCE POSSIBLE ERRORS, OR BIASES.*

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

THE FILES TO BE FOUND ARE AS FOLLOWS:
R2814C_LS_GPSCALIB.HTML
R2814C_LS_WGS84.TXT
R2814C_LS_LOCAL.TXT
R2814C_LS_CONTROL.TXT

THE WGS84 AND LOCAL FILES ARE COMMA DELIMITED AND CAN BE USED TO REPRODUCE THE SITE CALIBRATION FOR THE END USER'S GPS EQUIPMENT. IF FURTHER INFORMATION IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

⬡ *INDICATES GEODETIC CONTROL MONUMENTS USED OR SET FOR HORIZONTAL PROJECT CONTROL BY THE NCDOT LOCATION AND SURVEYS UNIT.*
PROJECT CONTROL ESTABLISHED USING GLOBAL POSITIONING SYSTEM.
NETWORK ESTABLISHED FROM EXISTING HARN MONUMENTATION
SEE GPS CALIBRATION SHEET FOR HORIZONTAL AND VERTICAL COORDINATE VALUES.

GPS CALIBRATION REPORT
PROJECT : R2814C&D

```
TIP  NUMBER       R2814-C&D
USER NAME GGREEN      DATE & TIME3:29:45 PM 11/9/2012
COORDINATE SYSTEMUS STATE PLANE 1983(AT GROUND)ZONE NORTH CAROLINA 3200
HORIZONTAL DATUM NAD 1983 (CONUS)
VERTICAL DATUM NGVD88 GEOID MODEL G09 NC
COORDINATE UNITS US SURVEY FEET
DISTANCE UNITS    US SURVEY FEET
HEIGHT UNITS      US SURVEY FEET
--------------------------------------------------------------------------
LOCAL SITE INFORMATION
LOCALIZED AROUND R2814-C&D-3
LATITUDE  36°01'41.26863"N
LONGITUDE 78°19'54.66120"W
SITE SCALE FACTOR 1.0000557231
HEIGHT 234.890SFT
--------------------------------------------------------------------------
        HORIZONTAL ADJUSTMENT PARAMETERS
NORTHING COORDINATE OF ROTATION CENTER 825970.864SFT
EASTING COORDINATE OF ROTATION CENTER 2188489.470SFT
ROTATION ABOUT THE CENTER POINT 0°00'00"
TRANSLATION NORTH 0.000SFT
TRANSLATION EAST  0.000SFT
SCALE FACTOR    1.00000532
--------------------------------------------------------------------------
        VERTICAL ADJUSTMENT PARAMETERS
NORTHING COORDINATE OF ORIGIN POINT 796085.978SFT
EASTING COORDINATE OF ORIGIN POINT 2173740.057SFT
VERTICAL SEPARATION AT ORIGIN -109.758SFT
SLOPE NORTH -1.792PPM
SLOPE EAST   0.580PPM
--------------------------------------------------------------------------

      GEOID MODEL DEFINITION

      G09NC

      RESIDUAL DIFFERENCES BETWEEN GPS (WGS84) AND LOCAL COORDINATES

                  SUMMARY

      MAXIMUM ERROR ROOT MEAN SQUARE ERRORPOINT
      HORIZONTAL          0.010SFT 0.002 R2814C&D-6_GPS
      VERTICAL            0.026SFT 0.005 R2814C&D-1_GPS
      THREE-DIMENSIONAL 0.027SFT 0.006 R2814C&D-1_GPS
```

WGS84 COORDINATES	POINT RESIDUALS CALCULATED POINT FOR DISPLAY ONLY	LOCAL COORDINATES
POINT R2814C&D-1_GPS	NORTHING 796085.978SFT	POINT R2814C&D-1
LATITUDE 35°56'09.33367"N	EASTING 2173740.057SFT	NORTHING 796085.978SFT
LONGITUDE 78°24'47.16299"W	ELEVATION 334.514SFT	EASTING 2173740.050SFT
HEIGHT 224.661SFT	HORZ ERROR 0.007SFT	ELEVATION 334.540SFT
	VERT ERROR 0.026SFT	UTILIZED HORZ AND VERT
	3D ERROR 0.027SFT	QUALITY CONTROL QUALITY
POINT R2814C&D-2_GPS	NORTHING 803526.158SFT	POINT R2814C&D-2
LATITUDE 35°57'23.21019"N	EASTING 2168518.967SFT	NORTHING 803526.159SFT
LONGITUDE 78°25'50.13180"W	ELEVATION 419.123SFT	EASTING 2168518.971SFT
HEIGHT 309.750SFT	HORZ ERROR 0.004SFT	ELEVATION 419.105SFT
	VERT ERROR 0.018SFT	UTILIZED HORZ AND VERT
	3D ERROR 0.018SFT	QUALITY CONTROL QUALITY
POINT R2814C&D-3_GPS	NORTHING 829803.300SFT	POINT R2814C&D-3
LATITUDE 36°01'41.26852"N	EASTING 2197567.940SFT	NORTHING 829803.298SFT
LONGITUDE 78°19'54.66129"W	ELEVATION 345.056SFT	EASTING 2197567.948SFT
HEIGHT 234.977SFT	HORZ ERROR 0.008SFT	ELEVATION 345.032SFT
	VERT ERROR 0.024SFT	UTILIZED HORZ AND VERT
	3D ERROR 0.025SFT	QUALITY CONTROL QUALITY
POINT R2814C&D-4_GPS	NORTHING 827694.610SFT	POINT R2814C&D-4
LATITUDE 36°01'21.08176"N	EASTING 2187305.375SFT	NORTHING 827694.610SFT
LONGITUDE 78°21'59.75872"W	ELEVATION 360.118SFT	EASTING 2187305.379SFT
HEIGHT 250.482SFT	HORZ ERROR 0.004SFT	ELEVATION 360.114SFT
	VERT ERROR 0.004SFT	UTILIZED HORZ AND VERT
	3D ERROR 0.006SFT	QUALITY CONTROL QUALITY
POINT R2814C&D-5_GPS	NORTHING 847914.421SFT	POINT R2814C&D-5
LATITUDE 36°04'39.77569"N	EASTING 2206162.153SFT	NORTHING 847914.419SFT
LONGITUDE 78°18'08.48867"W	ELEVATION 257.223SFT	EASTING 2206162.154SFT
HEIGHT 147.238SFT	HORZ ERROR 0.001SFT	ELEVATION 257.230SFT
	VERT ERROR 0.007SFT	UTILIZED HORZ AND VERT
	3D ERROR 0.007SFT	QUALITY CONTROL QUALITY
POINT R2814C&D-6_GPS	NORTHING 850800.716SFT	POINT R2814C&D-6
LATITUDE 36°05'08.89635"N	EASTING 2197642.324SFT	NORTHING 850800.718SFT
LONGITUDE 78°19'52.03339"W	ELEVATION 340.967SFT	EASTING 2197642.315SFT
HEIGHT 231.429SFT	HORZ ERROR 0.010SFT	ELEVATION 340.980SFT
	VERT ERROR 0.013SFT	UTILIZED HORZ AND VERT
	3D ERROR 0.016SFT	QUALITY CONTROL QUALITY

NOTE: DRAWING NOT TO SCALE

3/26/2018
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PROJECT REFERENCE NO.	SHEET NO.
R-2814C	1C-3
Location and Surveys	

SURVEY CONTROL SHEET R-2814C

WAKE/FRANKLIN COUNTY

LOCATION: US 401 FROM NC 96 TO NORTH OF SR 1103 (FLAT ROCK CHURCH RD/CLIFTON POND RD.)

CONTROL DATA

BASELINE

POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
179	BL-179	801165.307	2171148.068	403.17	48+16.18	20.45 LT
180	BL-180	801629.652	2171334.886	403.48	53+16.22	20.79 LT
181	BL-181	802078.514	2171524.231	402.77	57+98.11	52.34 LT
182	BL-182	802492.804	2171703.726	406.25	62+32.49	131.14 LT
183	BL-183	802837.867	2172062.811	398.72	67+14.87	80.83 LT
184	BL-184	803255.547	2172785.610	381.85	75+36.42	62.82 RT
185	BL-185	803651.370	2173386.125	375.02	82+56.25	67.05 RT
186	BL-186	804011.494	2173929.336	360.24	89+07.99	68.73 RT
187	BL-187	804497.898	2174666.439	363.46	97+90.43	73.44 RT
188	BL-188	804986.112	2175277.567	337.68	105+64.24	62.93 RT
189	BL-189	805434.076	2175720.127	339.40	111+87.70	57.17 RT
190	BL-190	806032.329	2176202.475	361.82	119+50.81	61.36 RT
191	BL-191	806679.264	2176672.880	358.59	127+50.66	55.35 RT
192	BL-192	807300.425	2177133.935	353.17	135+24.23	57.13 RT
32	R2814C-32	807937.513	2177548.529	356.93	142+83.01	12.08 RT
193	BL-193	808463.759	2178000.298	373.34	149+74.71	62.78 RT
194	BL-194	809003.769	2178403.240	372.23	156+48.48	66.04 RT
195	BL-195	809466.613	2178732.286	369.79	162+16.27	55.71 RT
196	BL-196	810064.913	2179186.552	371.65	169+69.41	62.14 RT
197	BL-197	810533.215	2179596.334	378.15	175+98.69	59.78 RT
198	BL-198	810961.415	2180070.692	384.40	182+44.90	61.41 RT
199	BL-199	811350.538	2180613.448	400.57	189+20.34	61.09 RT
200	BL-200	811661.436	2181128.368	415.87	195+26.89	41.24 RT
201	BL-201	812097.929	2181849.899	417.93	203+68.63	27.63 LT
202	BL-202	812395.841	2182309.158	418.88	209+19.48	6.47 RT
256	BL-256	812953.995	2182732.020	406.63	216+20.11	7.25 RT
203	BL-203	813437.974	2183016.607	398.48	221+81.16	13.75 LT
204	BL-204	814047.621	2183424.948	387.23	229+13.07	26.55 LT
205	BL-205	814532.054	2183867.291	382.38	235+67.20	15.73 LT
206	BL-206	815067.350	2184383.376	381.68	243+10.76	12.74 LT
207	BL-207	815558.965	2184849.717	384.33	249+88.36	15.52 LT
208	BL-208	816226.161	2185488.110	355.49	259+11.78	15.31 LT
36	R2814C-36	816796.664	2186022.444	349.97	266+94.21	2.74 LT
209	BL-209	817459.870	2186479.682	335.19	275+01.04	6.15 LT
210	BL-210	818287.995	2186889.406	314.93	284+26.79	3.80 LT
211	BL-211	818944.755	2187142.475	329.22	291+30.65	3.00 LT
212	BL-212	819638.685	2187410.150	340.99	298+74.42	1.59 LT
213	BL-213	820227.121	2187635.924	320.97	305+04.68	1.52 LT
214	BL-214	820889.228	2187892.068	289.88	312+14.61	0.53 RT
215	BL-215	821583.041	2188163.427	291.80	319+59.58	5.42 RT
216	BL-216	822164.337	2188378.084	310.49	325+79.20	2.34 LT
37	R2814C-37	822576.227	2188580.274	321.31	330+36.18	38.94 RT
217	BL-217	823099.272	2188691.252	339.96	335+64.27	44.76 LT
218	BL-218	823687.108	2188951.106	348.18	342+03.38	38.26 LT
219	BL-219	824281.313	2189271.879	361.64	348+73.43	54.36 LT
220	BL-220	824725.388	2189583.565	374.59	354+14.86	44.86 LT
221	BL-221	825333.156	2190064.841	381.91	361+88.03	11.90 RT
222	BL-222	825744.889	2190343.624	375.38	366+85.03	11.65 RT
223	BL-223	826433.634	2190607.371	353.96	374+25.58	5.63 LT
224	BL-224	827120.394	2190712.650	332.42	381+20.72	3.46 LT

BY

POINT	DESC.	NORTH	EAST	ELEVATION	Y2 STATION	OFFSET
30	R2814C-30	804334.649	2173334.057	359.52	10+05.64	23.91 RT

POINT	DESC.	NORTH	EAST	ELEVATION	Y3 STATION	OFFSET
31	R2814C-31	803573.418	2173890.755	367.63	14+11.33	37.02 LT

BY1

POINT	DESC.	NORTH	EAST	ELEVATION	Y6 STATION	OFFSET
33	R2814C-33	807715.378	2176325.635	376.15	12+27.65	24.63 LT
32	R2814C-32	807937.513	2177548.529	356.93	25+67.20	73.62 RT

BY2

POINT	DESC.	NORTH	EAST	ELEVATION	Y7 STATION	OFFSET
34	R2814C-34	813203.882	2182096.574	418.35	OUTSIDE PROJECT LIMITS	
35	R2814C-35	812702.666	2183130.564	399.62	20+83.12	18.48 LT

BY3

POINT	DESC.	NORTH	EAST	ELEVATION	Y11 STATION	OFFSET
38	R2814C-38	825251.047	2189600.922	379.71	14+23.92	23.11 RT
39	R2814C-39	824428.925	2190828.516	375.01	OUTSIDE PROJECT LIMITS	

BENCHMARK DATA

50 ELEVATION = 414.78
N 802394 E 2171160
L STATION 58+77.00 527 LEFT
RRS SET IN 18 INCH PECAN TREE

51 ELEVATION = 385.10
N 802828 E 2172881
L STATION 73+57.00 467 RIGHT
RRS SET IN 16 INCH SWEET GUM TREE

52 ELEVATION = 351.53
N 804784 E 2174637
L STATION 99+30.00 178 LEFT
RRS SET IN 16 INCH PINE TREE

53 ELEVATION = 369.15
N 805706 E 2176559
Y5 STATION 15+71.00 75 RIGHT
RRS SET IN 48 INCH OAK TREE

54 ELEVATION = 372.67
N 808729 E 2177332
L STATION 147+91.00 633 LEFT
RRS SET IN 14 INCH GUM TREE

55 ELEVATION = 383.18
N 809967 E 2179498
L STATION 170+93.00 366 RIGHT
RRS SET IN 14 INCH PINE TREE

56 ELEVATION = 410.74
N 811360 E 2181049
L STATION 193+13.00 272 RIGHT
RRS SET IN 14 INCH PINE TREE

57 ELEVATION = 397.28
N 813478 E 2183403
L STATION 224+28.00 290 RIGHT
RRS SET IN 10 INCH MAPLE TREE

58 ELEVATION = 377.64
N 815147 E 2183899
L STATION 240+33.00 418 LEFT
RRS SET IN 12 INCH POPLAR TREE

59 ELEVATION = 356.10
N 815975 E 2185491
Y8 STATION 12+16.00 62 RIGHT
RRS SET IN 14 INCH PINE

60 ELEVATION = 335.22
N 817536 E 2186908
L STATION 277+71.00 330 RIGHT
RRS SET IN 12 INCH POPLAR

61 ELEVATION = 318.04
N 820229 E 2187880
L STATION 305+94.00 226 RIGHT
RRS SET IN 26 INCH WHITE OAK

62 ELEVATION = 315.11
N 821841 E 2188450
L STATION 323+03.00 181 RIGHT
RRS SET IN 20 INCH OAK TREE

63 ELEVATION = 361.21
N 823436 E 2189122
L STATION 340+48.00 224 RIGHT
RRS SET IN 24 INCH PIN OAK TREE

64 ELEVATION = 375.47
N 824877 E 2189425
L STATION 354+51.00 261 LEFT
RRS SET IN 24 INCH GUM TREE

65 ELEVATION = 367.67
N 826279 E 2190183
L STATION 371+33.00 373 LEFT
RRS SET IN 18 INCH WHITE OAK TREE

NOTES:

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NETWORK ESTABLISHED FROM EXISTING HARN MONUMENTATION
SEE GPS CALIBRATION SHEET FOR HORIZONTAL AND VERTICAL COORDINATE VALUES.

NOTE: DRAWING NOT TO SCALE

DATUM DESCRIPTION

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3/28/2018
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PROJECT REFERENCE NO.	SHEET NO.
R-2814C	1C-4
Location and Surveys	

SURVEY CONTROL SHEET R-2814C

ROW MARKER CONCRETE OR GRANITE-E

ALIGN	STATION	OFFSET	NORTH	EAST
L	30+99.96	-85.31	799650.2744	2170473.7166
L	31+00.00	109.60	799578.0756	2170654.7629
L	43+77.28	-85.40	800836.6762	2170947.0047
L	46+60.56	100.00	801031.0734	2171224.1886
L	46+62.00	-85.40	801101.1187	2171052.5211
L	46+62.00	-100.00	801106.5286	2171038.9628
L	58+90.49	100.36	802173.2894	2171680.3371
L	58+90.49	-100.00	802247.5432	2171494.2437
L	62+10.49	88.38	802458.5310	2171795.6978
L	62+10.49	100.00	802452.8261	2171805.8256
L	62+10.49	-100.00	802550.9830	2171631.5693
L	66+28.29	-100.00	802899.1390	2171917.2058
L	69+48.29	-100.00	803093.1055	2172187.9658
L	82+50.00	-100.00	803802.4459	2173279.4222
L	82+50.00	-75.00	803781.4838	2173293.0455
L	85+00.00	-65.00	803909.3318	2173508.1150
L	87+00.00	98.22	803881.4605	2173764.7553
L	96+35.45	-110.10	804565.8900	2174435.5880
L	97+55.45	-110.10	804630.9981	2174535.0135
L	115+98.35	110.00	805719.2061	2176028.3477
L	115+98.35	86.31	805733.7768	2176009.6662
L	115+98.35	-110.00	805854.5077	2175854.8731
L	118+98.35	-110.00	806091.9470	2176033.4725
L	118+98.35	110.00	805961.2322	2176210.4291
L	140+00.00	125.00	807642.7830	2177471.2074
L	140+00.00	110.00	807651.6953	2177459.1422
L	142+00.00	125.00	807803.6528	2177590.0389
L	145+00.00	-120.00	808190.5259	2177571.2206
L	147+12.52	110.00	808224.8117	2177882.4924
L	166+38.82	-120.00	809910.8848	2178842.0170
L	166+38.82	110.00	809774.2273	2179027.0163
L	169+38.82	110.00	810011.6666	2179205.6157
L	169+38.82	-125.00	810156.1954	2179020.3149
L	193+71.99	110.00	811530.4344	2181023.1644
L	193+72.08	-125.00	811738.5075	2180913.9372
L	196+72.03	110.00	811664.0191	2181288.5949
L	196+72.03	-125.00	811874.8432	2181184.7769
L	201+30.52	110.00	811866.5684	2181699.9155
L	201+30.52	-110.00	812063.9359	2181602.7245
L	201+30.52	-125.00	812077.3927	2181596.0978
L	204+30.52	110.00	812009.5373	2181972.8015
L	204+30.52	-110.00	812199.1722	2181861.2730
L	212+32.61	110.00	812569.6216	2182599.0277
L	212+32.61	-110.00	812701.5415	2182422.9676
L	214+00.00	-110.00	812833.4144	2182514.9886
L	217+00.00	-110.00	813084.4690	2182676.2882
L	223+43.66	110.00	813508.1953	2183208.4106
L	223+43.66	-110.00	813626.7238	2183023.0704
L	234+58.01	110.00	814366.2440	2183882.6905
L	234+58.01	-110.00	814518.3019	2183723.6986
L	254+50.00	115.00	815802.3763	2185263.1084
L	254+50.00	110.00	815805.8322	2185259.4949
L	255+65.00	115.00	815885.4857	2185342.5932
L	255+95.48	155.00	815879.8664	2185392.5677
L	260+00.00	100.00	816210.2235	2185632.4127
L	262+06.29	100.00	816359.3073	2185774.9946
L	262+06.29	-110.00	816504.4534	2185623.2296
L	263+00.00	-86.33	816555.3152	2185703.5847
L	263+00.00	-110.00	816571.3945	2185686.2130
L	276+00.00	-100.00	817591.8656	2186448.1340
L	276+00.00	-75.68	817579.7755	2186469.2351
L	284+84.24	100.00	818304.3301	2187007.1476
L	284+84.24	-100.00	818375.9540	2186820.4125
L	308+53.85	-100.00	820588.4021	2187669.0175
L	309+13.85	-100.00	820644.4226	2187690.5047
L	336+62.78	-100.00	823211.0287	2188674.9505
L	336+62.78	100.00	823139.4090	2188861.6872
L	343+00.00	-70.16	823788.5251	2188966.7240
L	343+00.00	-100.00	823802.2339	2188940.2153
L	348+50.00	65.00	824196.7514	2189359.3012
L	348+50.00	100.00	824177.7735	2189388.7093
L	349+84.29	-100.00	824400.1420	2189296.0831
L	349+84.29	65.00	824307.4558	2189432.5905
L	357+77.00	65.00	824963.2790	2189877.8833
L	360+00.00	65.00	825147.7708	2190003.1501
L	360+07.00	-65.45	825226.8378	2189899.1624
L	362+69.75	65.00	825370.9374	2190154.6764
L	363+21.50	65.00	825413.7567	2190183.7500
L	366+46.03	65.00	825682.2411	2190366.0463
L	369+12.22	65.00	825919.4618	2190504.6938
L	369+37.81	127.94	825915.9280	2190573.0256
L	371+74.76	65.00	826169.6265	2190608.9089
L	371+92.27	132.31	826165.6505	2190678.5686
L	375+36.40	65.00	826532.2996	2190696.2412
L	381+75.00	29.84	827169.3105	2190753.4198
L	381+75.00	65.00	827164.2474	2190788.2101

ROW MARKER CONCRETE OR GRANITE-E

ALIGN	STATION	OFFSET	NORTH	EAST
Y1	13+23.93	-48.77	800831.0150	2170880.0488
Y1	19+38.45	-49.13	800306.6368	2171200.4512

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "R2814C&D-3"
WITH NAD 83/NSRS 2007 STATE PLANE GRID COORDINATES OF NORTHING: 829803.298(ft) EASTING: 2197567.948(ft) ELEVATION: 345.03(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99994428
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "R2814C&D-3" TO -L- STATION 10+00.00 IS S 40°49'48.3" W 42542.68'
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

ROW MARKER CONCRETE OR GRANITE-E

ALIGN	STATION	OFFSET	NORTH	EAST
Y3	11+40.00	-49.00	803807.8511	2173753.6209
Y3	12+85.00	-49.00	803686.0418	2173832.2814
Y3	12+85.00	-30.00	803675.7345	2173816.3202

ROW MARKER CONCRETE OR GRANITE-E

ALIGN	STATION	OFFSET	NORTH	EAST
Y2	12+35.00	-30.00	804167.3470	2173499.9498
Y2	12+35.00	-40.00	804172.5765	2173508.4735
Y2	12+35.00	34.00	804133.8786	2173445.3983
Y2	12+35.00	30.00	804135.9704	2173448.8078
Y2	13+50.00	-40.00	804074.5542	2173568.6120
Y2	13+50.00	34.00	804035.8564	2173505.5368

ROW MARKER CONCRETE OR GRANITE-E

ALIGN	STATION	OFFSET	NORTH	EAST
Y4	21+46.86	30.19	806485.2515	2176114.7451
Y4	21+48.38	62.00	806477.8550	2176083.7656
Y4	21+50.00	-29.81	806493.2186	2176174.2973

ROW MARKER CONCRETE OR GRANITE-E

ALIGN	STATION	OFFSET	NORTH	EAST
Y5	11+80.00	69.72	806003.6273	2176305.3356
Y5	13+70.00	-70.11	805953.2500	2176535.8001
Y5	13+70.00	-30.00	805926.7689	2176505.6775
Y5	13+70.00	70.00	805860.7439	2176430.5730
Y5	13+70.00	30.00	805887.1539	2176460.6148

ROW MARKER CONCRETE OR GRANITE-E

ALIGN	STATION	OFFSET	NORTH	EAST
Y6	18+35.00	30.37	807808.8332	2176928.2621
Y6	18+35.00	45.00	807794.6333	2176931.7996
Y6	18+35.00	-29.63	807867.0538	2176913.7578
Y6	18+35.00	-70.33	807906.5412	2176903.9205
Y6	20+27.06	-70.00	807952.6508	2177090.3642
Y6	21+80.00	-70.00	808003.5731	2177211.6271
Y6	21+80.00	-90.00	808020.6988	2177201.2970
Y6	27+71.57	56.00	807930.1187	2177811.4318
Y6	29+19.02	57.91	808008.1371	2177936.5678
Y6	29+82.29	-71.00	808151.7123	2177930.0697
Y6	30+00.00	53.00	808046.2759	2177997.7397
Y6	30+80.34	60.35	808062.2812	2178067.4631
Y6	32+10.00	63.00	808091.5120	2178193.8085
Y6	32+10.00	29.47	808124.0139	2178185.5845
Y6	32+36.00	-30.50	808188.5366	2178196.0778
Y6	32+36.00	-54.00	808211.3151	2178190.3142

ROW MARKER CONCRETE OR GRANITE-E

ALIGN	STATION	OFFSET	NORTH	EAST
Y7	13+90.00	-32.07	813055.4449	2182532.2267
Y7	13+90.00	-42.00	813064.1869	2182536.9344
Y7	13+90.00	27.93	813002.6173	2182503.7785
Y7	14+50.00	-42.00	813035.1187	2182590.0616
Y7	19+00.00	55.00	812730.3652	2182935.2717
Y7	19+00.00	-65.00	812835.0320	2182993.9646
Y7	19+00.00	21.86	812759.2736	2182951.4823
Y7	19+00.00	-37.00	812810.6085	2182980.2689

ROW MARKER CONCRETE OR GRANITE-E

ALIGN	STATION	OFFSET	NORTH	EAST
Y8	11+37.73	-36.28	816072.4331	2185566.6979
Y8	11+76.71	25.44	816015.4846	2185520.6257

ROW MARKER CONCRETE OR GRANITE-E

ALIGN	STATION	OFFSET	NORTH	EAST
Y10	13+46.34	-30.03	819795.6439	2187218.0995
Y10	13+48.18	-45.00	819810.1487	2187222.4055
Y10	13+50.95	45.00	819720.8009	2187211.2589
Y10	13+54.56	30.30	819734.7915	2187216.6473
Y10	13+91.85	-45.00	819796.5747	2187274.0361
Y10	13+91.85	45.00	819712.5439	2187241.8053

ROW MARKER CONCRETE OR GRANITE-E

ALIGN	STATION	OFFSET	NORTH	EAST
Y11	12+40.00	60.00	825318.3610	2189425.8289
Y11	12+40.00	-60.00	825419.7118	2189490.0785
Y11	12+40.00	-30.77	825395.0212	2189474.4263
Y11	12+40.00	29.23	825344.3500	2189442.3042
Y11	14+88.75	-60.00	825285.2161	2189701.0776
Y11	14+88.75	60.00	825185.4748	2189634.3568
Y11	16+10.87	-60.13	825217.4240	2189802.6546
Y11	18+50.00	-60.00	825079.5493	2190002.2475
Y11	19+00.00	50.00	824961.6361	2189975.4435
Y11	21+00.00	50.00	824839.8372	2190135.8385
Y11	21+00.00	30.06	824856.0183	2190147.4906
Y11	22+50.00	-28.77	824816.1064	2190303.5942
Y11	22+50.00	-60.00	824841.4474	2190321.8423

ROW MARKER PERMANENT EASEMENT-E

ALIGN	STATION	OFFSET	NORTH	EAST
Y2	12+70.00	-40.00	804142.7436	2173526.7765
Y2	12+70.00	-53.00	804149.5419	2173537.8573
Y2	12+85.00	-53.00	804136.7564	2173545.7014
Y2	12+85.00	-40.00	804129.9581	2173534.6206

NOTE: DRAWING NOT TO SCALE

ROW MARKER PERMANENT EASEMENT-E

ALIGN	STATION	OFFSET	NORTH	EAST
Y3	11+22.79	-64.20	803830.5575	2173757.0555
Y3	14+77.50	-47.97	803523.7716	2173935.8441
Y3	14+77.50	-30.00	803514.0231	2173920.7482

ROW MARKER PERMANENT EASEMENT-E

ALIGN	STATION	OFFSET	NORTH	EAST
Y4	20+35.00	30.26	806599.4858	2176100.0010
Y4	20+48.00	63.00	806583.3591	2176068.4242
Y4	20+60.00	39.00	806572.9763	2176093.4689
Y4	20+66.00	56.00	806565.0282	2176077.1801
Y4	20+69.00	30.24	806564.5991	2176103.1289
Y4	20+91.00	-29.78	806549.7399	2176165.2940
Y4	21+86.29	-113.90	806477.3554	2176263.4638
Y4	21+95.90	-105.42	806467.1091	2176257.1382
Y4	22+02.17	-128.36	806467.0810	2176280.7391
Y4	22+19.96	-114.02	806448.4072	2176270.6748
Y4	23+42.00	81.00	806273.6356	2176123.2499
Y4	23+42.00	64.91	806279.5881	2176138.2033
Y4	23+65.96	83.82	806248.5811	2176130.5265
Y4	23+80.33	103.93	806226.6899	2176118.0857
Y4	23+90.73	97.94	806219.5600	2176127.7378

ROW MARKER PERMANENT EASEMENT-E

ALIGN	STATION	OFFSET	NORTH	EAST
Y5	11+80.27	-68.07	806094.3985	2176408.9968
Y5	11+91.74	-118.96	806119.3862	2176454.7942
Y5	12+11.09	-68.40	806071.4700	2176429.5951
Y5	12+22.57	-119.30	806096.4559	2176475.4051
Y5	13+41.00	70.00	805882.5242	2176411.4257
Y5	13+43.00	-69.82	805973.3364	2176517.7552
Y5	13+44.00	-101.00	805993.1739	2176541.8352
Y5	13+50.00	-72.00	805969.5204	2176524.0164
Y5	13+64.00	-106.00	805981.4542	2176558.7955
Y5	13+70.00	56.00	805869.9874	2176441.0876
Y5	13+71.00	-77.00	805957.0497	2176541.6369
Y5	13+76.00	-78.00	805953.9547	2176545.6892
Y5	13+86.00	-30.00	805914.7522	2176516.2415
Y5	14+23.00	30.09	805847.2886	2176495.5400

ROW MARKER PERMANENT EASEMENT-E

ALIGN	STATION	OFFSET	NORTH	EAST
Y11	21+29.31	-62.00	824913.5961	2190225.0730
Y11	21+24.00	-67.00	824920.7574	2190223.6846
Y11	21+34.00	-80.00	824925.4632	2190239.3963
Y11	21+15.00	-94.00	824947.9269	2190232.1589
Y11	19+27.90	-60.91	825032.8500	2190064.9301
Y11	19+32.00	-67.00	825035.2009	2190071.8864
Y11	19+52.00	-79.00	825032.5994	2190095.0646
Y11	19+44.00	-95.00	825050.1709	2190098.4174
Y11	19+23.00	-84.00	825054.1741	2190075.0513
Y11	21+04.00	-79.00	824942.1825	2190214.4671
Y11	15+99.45	144.80	825053.4412	2189679.2258
Y11	16+00.00	78.00	825108.6573	2189716.8180
Y11	16+11.00	79.08	825101.6458	2189725.3620
Y11	15+67.00	76.00	825128.6679	2189690.5012
Y11	15+56.00	92.00	825121.4851	2189672.4621
Y11	15+39.00	79.00	825141.7425	2189665.5602
Y11	15+46.00	69.00	825146.1623	2189676.9385

ROW MARKER PERMANENT EASEMENT-E

ALIGN	STATION	OFFSET	NORTH	EAST
Y7	17+60.00	-112.00	812944.5016	2182894.8415
Y7	17+37.51	-113.40	812956.7225	2182875.9124
Y7	17+60.00	-64.65	812903.1981	2182871.6801
Y7	18+90.00	-82.00	812854.7509	2182993.5573
Y7	18+90.00	-97.00	812867.8342	2183000.8939
Y7	19+11.00	-96.00	812856.6908	2183018.7215
Y7	19+07.91	-36.93	812806.6822	2182987.1405
Y7	17+60.00	-85.00	812920.9516	2182881.6356
Y7	14+45.00	-62.00	813055.0599	2182595.3464
Y7	14+42.00	-77.00	813069.6573	2182599.9501
Y7	14+65.34	-83.17	813063.4954	2182623.7039
Y7	12+46.00	62.00	813037.9425	2182361.5302
Y7	12+68.00	60.00	813030.0103	2182381.8291
Y7	12+44.00	29.45	813067.9631	2182374.2584
Y7	12+66.00	29.30	813058.3232	2182393.8746
Y7	14+68.43	-72.98	813053.0755	2182621.4363

ROW MARKER PERMANENT EASEMENT-E

ALIGN	STATION	OFFSET	NORTH	EAST
Y6	17+78.00	30.59	807794.8399	2176873.0059
Y6	17+78.00	53.00	807773.0916	2176878.4240
Y6	17+83.00	-48.00	807872.3048	2176858.8603
Y6	17+83.00	-29.42	807854.2779	2176863.3512
Y6	17+84.00	53.00	807774.5420	2176884.2461
Y6	17+87.00	81.00	807748.0976	2176893.9257
Y6	18+05.00	51.00	807781.5592	2176904.1398
Y6	18+08.00	79.00	807755.1148	2176913.8194
Y6	18+10.00	30.53	807802.6317	2176904.0429
Y6	18+10.00	50.00	807783.7382	2176908.7497
Y6	18+35.00	-62.00	807898.4599	2176905.9337
Y6	18+68.00	-70.00	807914.2000	2176936.0211
Y6	19+12.85	-81.48	807936.1814	2176976.7658
Y6	19+21.27	-96.94	807953.2183	2176981.1988
Y6	19+44.13	-84.47	807946.6442	2177006.3953
Y6	19+69.28	-91.03	807959.0894	2177029.2136
Y6	19+82.53	-70.00	807941.8861	2177047.1543
Y6	21+58.36	86.32	807857.2639	2177270.9831
Y6	21+88.85	119.11	807846.2083	2177316.8797
Y6	26+60.47	185.66	807772.6802	2177643.3459
Y6	26+61.15	165.72	807792.0975	2177648.1286
Y6	28+92.00	83.00	807972.4328	2177927.3749
Y6	28+95.00	77.00	807979.1028	2177926.6596
Y6	29+10.00	93.00	807973.7370	2177947.9248
Y6	29+18.00	78.00	807990.6820	2177946.5574
Y6	29+95.00	-67.92	808154.9644	2177944.5035
Y6	30+35.29	93.25	808019.8036	2178040.4554
Y6	32+10.00	80.21	808074.8278	2178198.0301
Y6	36+18.97	29.74	808224.0790	2178582.1286
Y6	36+19.85	63.01	808192.0333	2178591.1360

L

TYPE	STATION	NORTH	EAST
POT	9+40.85	797613.2958	2169752.7804
TS	58+90.49	802210.4831	2171587.1230
SC	62+10.49	802501.9046	2171718.6974
CS	66+28.29	802823.2793	2171982.3619
ST	69+48.29	803009.2574	2172242.4589
TS	96+35.45	804473.5709	2174495.5865
SC	97+55.45	804539.3131	2174595.9748
CS	115+98.35	805786.8569	2175941.6104
ST	118+98.35	806026.5897	2176121.9509
TS	166+38.82	809839.5858	2178938.5388
SC	169+38.82	810079.3186	2179118.8793
CS	193+72.03	811627.8303	2180972.0368
ST	196+72.03	811762.7028	2181239.9993
TS	201+30.52	811965.2508	2181651.3174
SC	204+30.52	812104.3540	2181917.0360
CS	212+32.61	812635.5815	2182510.9977
ST	215+32.61	812884.1902	2182678.7768
PC	223+43.66	813567.4632	2183115.7429
PT	234+58.01	814442.2730	2183803.1946
PC	262+06.29	816428.4231	2185702.7242
PT	284+84.24	818340.1420	2186913.7800
PC	336+62.78	823175.2210	2188768.3197
PT	349+84.29	824343.9686	2189378.8148
PC	366+46.03	825718.7539	2190312.2707
PT	375+36.40	826541.6606	2190631.9188
POT	383+00.00	827297.3053	2190741.8896

Y1

TYPE	STATION	NORTH	EAST
POT	10+00.00	801082.1280	2170669.6820
POT	20+49.54	800186.2170	2171216.3730

Y2

TYPE	STATION	NORTH	EAST
POT	10+00.00	804351.9650	2173351.4870
POT	15+21.67	803907.3128	2173624.2897

Y3

TYPE	STATION	NORTH	EAST
POT	9+86.27	803910.4135	2173629.0606
POT	14+91.27	803486.1809	2173903.0163

Y4

TYPE	STATION	NORTH	EAST
POT	10+00.00	807636.4482	2176110.6860
PC	19+80.57	806656.0311	2176127.7524
PT	23+74.55	806273.5495	2176211.0360
POT	24+61.22	806194.1097	2176245.6947

Y5

TYPE	STATION	NORTH	EAST
POT	10+00.00	806184.8482	2176238.8534
PC	15+90.94	805741.0224	2176629.0246
PT	17+64.04	805605.7298	2176736.8885
POT	20+34.59	805386.3179	2176895.1870

Y6

TYPE	STATION	NORTH	EAST
POT	10+00.00	807636.4482	2176110.6860
PC	20+27.06	807884.7269	2177107.2858
PT	21+76.37	807941.7558	2177244.6699
PC	23+47.35	808030.0682	2177391.0780
PT	25+24.19	808022.2780	2177557.6774
PC	25+90.56	807982.8446	2177611.0609
PT	27+71.57	807977.2506	2177781.1898
PC	29+19.02	808056.8802	2177905.2921
PT	30+80.34	808120.7829	2178052.6604
POT	40+35.45	808355.0690	2178978.5850

Y7

TYPE	STATION	NORTH	EAST
POT	10+00.00	813197.6965	2182166.3684
PC	10+81.74	813163.9585	2182240.8190
PT	14+66.89	812990.1760	2182584.4025
PC	19+85.90	812736.3231	2183037.0966
PT	23+84.03	812511.9653	2183365.3631
POT	25+05.86	812434.6010	2183459.4800

Y8

TYPE	STATION	NORTH	EAST
POT	10+00.00	816176.1744	2185461.4767
PC	10+71.34	816117.3021	2185501.7763
PT	12+84.35	815915.1419	2185553.6277
POT	13+48.58	815851.2236	2185547.3360

Y9

TYPE	STATION	NORTH	EAST
POT	10+00.00	817118.0714	2186266.6386
PC	10+45.08	817094.6794	2186305.1798
PT	12+53.07	817030.9299	2186501.2151
POT	13+48.64	817022.9769	2186596.4564

Y10

TYPE	STATION	NORTH	EAST
POT	10+00.00	819913.3179	2186922.3466
PC	10+84.72	819847.2989	2186975.4437
PT	12+49.46	819773.1299	2187117.3502
PC	13+32.55	819767.3376	2187200.2388
PT	13+91.85	819754.5593	2187257.9207
PC	17+83.68	819614.2357	2187623.7667
PT	21+26.45	819567.5797	2187960.3382
POT	21+46.74	819569.4189	2187980.5450

Y11

TYPE	STATION	NORTH	EAST
POT	10+00.00	825497.5355	2189255.2520
PC	14+39.60	825262.1704	2189626.5301
PT	14+88.75	825235.3455	2189667.7172
PC	17+33.51	825099.2573	2189871.1563
PT	18+58.74	825026.4137	2189973.0010
PC	20+74.17	824895.6627	2190144.2158
PT	20+88.22	824887.2938	2190155.4998
POT	25+90.28	824593.9120	2190562.9150

6/01/16

PROJECT REFERENCE NO.	SHEET NO.
R-2814C	1C-5
Location and Surveys	

SURVEY CONTROL SHEET R-2814C

ROW MARKER PERMANENT EASEMENT-E

ALIGN	STATION	OFFSET	NORTH	EAST
L	33+00.00	109.60	799763.8341	2170728.8832
L	33+00.00	135.00	799754.4225	2170752.4702
L	34+45.00	109.60	799898.5089	2170782.6203
L	34+45.00	125.00	799892.8034	2170796.9194
L	46+30.99	-85.40	801072.3168	2171041.0288
L	46+30.99	-110.98	801081.7960	2171017.2723
L	46+60.99	-111.00	801109.6678	2171028.3721
L	46+60.99	-116.00	801111.5180	2171023.7270
L	50+45.00	-116.00	801468.1856	2171166.0424
L	50+47.00	-133.00	801476.3434	2171150.9941
L	50+66.00	-116.00	801487.6903	2171173.8250
L	50+68.00	-130.00	801494.7363	2171161.5631
L	55+72.52	2178.95	801107.6287	2173493.0702
L	55+72.52	2143.07	801120.9259	2173459.7451
L	55+75.09	2209.04	801098.8643	2173521.9700
L	55+75.09	2179.05	801109.9787	2173494.1155
L	55+97.46	2180.75	801130.1257	2173503.9848
L	55+97.46	2210.85	801118.9706	2173531.9414
L	56+05.42	2181.04	801137.4114	2173507.2041
L	56+05.42	2143.07	801151.4831	2173471.9379
L	58+24.00	-116.00	802191.7147	2171454.7407
L	58+26.00	-132.00	802199.5019	2171440.6212
L	58+45.00	-116.00	802211.2193	2171462.5233
L	58+47.00	-130.00	802218.2653	2171450.2614
L	61+07.00	-137.00	802468.3056	2171547.5103
L	61+07.00	-121.00	802461.4806	2171561.9817
L	61+27.00	-121.00	802480.8072	2171571.2344
L	61+27.00	-137.00	802487.8025	2171556.8446
L	63+69.00	-128.00	802711.4386	2171703.0931
L	63+69.00	-144.00	802721.0588	2171690.3083
L	63+88.00	-128.00	802728.1392	2171715.8681
L	63+88.00	-144.00	802737.9606	2171703.2372
L	66+19.00	-128.00	802913.6486	2171891.1865
L	66+22.00	-121.00	802910.5420	2171898.2796
L	66+35.00	-139.00	802933.5793	2171897.4794
L	66+45.60	-117.55	802924.7014	2171920.2381
L	66+69.40	-96.82	802924.9812	2171953.2793
L	66+70.60	-120.07	802943.9096	2171939.7222
L	67+59.61	123.32	802803.8426	2172157.7923
L	67+59.61	134.15	802795.0375	2172164.1110
L	67+70.19	148.73	802788.9110	2172180.6066
L	67+76.15	134.27	802803.9349	2172176.8010
L	67+90.20	155.87	802793.8219	2172199.9943
L	68+01.40	154.47	802800.9560	2172207.8350
L	68+03.20	122.62	802828.1389	2172191.1468
L	68+18.51	142.74	802819.7950	2172214.5500
L	68+60.23	-96.26	803041.1994	2172115.5146
L	68+81.21	-97.06	803053.6637	2172132.9156
L	68+83.26	-166.02	803112.4232	2172096.7604
L	69+01.79	-159.68	803117.5229	2172116.0995
L	71+35.12	2166.02	801294.8986	2173579.4444
L	71+44.01	2139.91	801321.6349	2173572.6683
L	71+54.05	2172.47	801299.8064	2173598.8275
L	71+64.51	2170.75	801306.9480	2173606.6641
L	71+65.34	2138.87	801334.1289	2173589.9809
L	71+80.41	2158.62	801325.7809	2173613.3821
L	74+35.00	-100.00	803358.3271	2172596.0603
L	74+35.00	-127.00	803380.9661	2172581.3471
L	76+55.00	-127.00	803500.8509	2172765.8129
L	76+55.00	-100.00	803478.2120	2172780.5261
L	93+00.00	-110.00	804383.0082	2174154.3779
L	93+00.00	-130.00	804399.7778	2174143.4793
L	93+50.00	-110.00	804410.2547	2174196.3019
L	93+50.00	-130.00	804427.0243	2174185.4033
L	98+80.30	120.49	804510.7106	2174768.0652
L	98+80.73	86.56	804538.7971	2174749.0275
L	99+00.23	120.58	804522.2994	2174784.7924
L	99+00.35	105.96	804534.3357	2174776.4926
L	101+40.00	-125.00	804862.0297	2174832.7858
L	101+40.00	-110.00	804850.1239	2174841.9100
L	103+16.00	120.00	804779.0395	2175122.7341
L	103+16.00	135.00	804767.4195	2175132.2196
L	103+36.00	120.00	804791.9793	2175138.5293
L	103+36.00	135.00	804780.3925	2175148.0554
L	104+00.00	-125.00	805021.2581	2175031.0735
L	104+00.00	-110.00	805009.7783	2175040.7283
L	104+10.00	120.00	804840.3340	2175196.5768
L	104+10.00	122.00	804838.8056	2175197.8668
L	104+10.00	87.58	804865.1055	2175175.6692
L	105+43.00	120.00	804929.1106	2175299.3170
L	105+43.00	122.00	804927.6125	2175300.6421
L	106+39.00	120.00	804994.6596	2175372.1810

ROW MARKER PERMANENT EASEMENT-E

L	106+39.00	135.00	804983.5924	2175382.3061
L	106+59.00	120.00	805008.4687	2175387.2221
L	106+59.00	135.00	804997.4370	2175397.3858
L	109+61.00	135.00	805212.7796	2175619.1010
L	109+61.00	120.00	805223.2606	2175608.3703
L	109+82.00	135.00	805228.1841	2175634.0919
L	109+82.00	120.00	805238.6257	2175623.3228
L	111+90.00	120.00	805393.7334	2175768.3460
L	111+90.00	135.00	805383.6895	2175779.4869
L	112+10.00	135.00	805398.9179	2175793.1677
L	112+10.00	120.00	805408.9229	2175781.9918
L	112+65.00	135.00	805441.0413	2175830.5149
L	112+65.00	120.59	805450.5480	2175819.6883
L	112+65.00	87.89	805472.1278	2175795.1121
L	113+65.00	120.00	805528.2390	2175885.9339
L	113+65.00	135.00	805518.5400	2175897.3763
L	113+65.00	87.56	805549.2156	2175861.1867
L	114+90.00	-110.00	805771.3374	2175788.7302
L	114+90.00	-115.00	805774.4864	2175784.8465
L	115+23.00	131.00	805645.8339	2175997.1106
L	115+23.00	146.00	805636.4541	2176008.8161
L	115+25.00	-115.00	805801.1929	2175806.3658
L	115+25.00	-110.00	805798.0677	2175810.2687
L	115+43.00	131.00	805661.8204	2176009.8751
L	115+43.00	146.00	805652.4814	2176021.6133
L	115+98.35	130.00	805706.9059	2176044.1182
L	119+07.00	128.00	805957.4983	2176230.0493
L	123+26.00	-120.00	806441.8715	2176279.5227
L	129+52.00	-120.00	806945.3939	2176651.4651
L	129+52.00	-140.00	806957.2770	2176635.3781
L	129+96.00	-120.00	806980.7852	2176677.6080
L	129+96.00	-140.00	806992.6684	2176661.5211
L	138+81.00	134.00	807541.7180	2177407.7418
L	138+84.00	110.00	807558.3909	2177390.2199
L	141+99.93	169.88	807776.9307	2177626.0965
L	147+63.00	142.00	808246.4005	2177938.2233
L	150+55.00	154.00	808474.1405	2178121.3695
L	150+55.00	139.00	808483.0528	2178109.3042
L	150+55.31	-153.07	808656.8377	2177874.5622
L	150+55.31	-120.00	808637.1889	2177901.1620
L	150+68.15	-153.07	808667.1656	2177882.1912
L	150+76.00	139.00	808499.9442	2178121.7815
L	150+76.00	154.00	808491.0318	2178133.8468
L	150+84.70	-120.00	808660.8287	2177918.6243
L	151+71.53	-242.31	808803.3417	2177871.8351
L	151+94.95	-215.17	808806.0542	2177907.5803
L	161+45.00	-120.00	809513.6799	2178548.6093
L	161+45.00	-164.00	809539.8228	2178513.2179
L	161+85.00	-164.00	809571.9967	2178536.9842
L	161+85.00	-120.00	809545.8538	2178572.3756
L	166+08.79	-151.19	809905.2606	2178799.0858
L	166+08.79	-120.00	809886.7288	2178824.1735
L	166+29.31	-120.00	809903.2341	2178836.3656
L	166+29.31	-150.84	809921.5579	2178811.5595
L	171+73.08	110.00	810189.9026	2179350.5865
L	171+73.64	133.90	810174.8628	2179369.1675
L	173+90.57	110.00	810349.9448	2179491.5947
L	173+90.57	126.00	810339.1417	2179503.3969
L	195+53.15	201.61	811529.5355	2181223.2286
L	195+60.00	110.83	811613.8349	2181188.8792
L	195+60.00	121.00	811604.7309	2181193.4037
L	195+68.11	120.98	811608.3289	2181200.6031
L	195+85.33	194.54	811550.0046	2181248.5692
L	195+97.87	126.03	811616.9286	2181229.3419
L	202+45.00	127.00	811902.8725	2181811.1712
L	204+55.00	140.00	811997.0842	2182010.4920
L	204+55.00	151.00	811987.6706	2182016.1828
L	204+75.00	151.00	811998.8797	2182034.5194
L	204+75.00	140.00	812008.2366	2182028.7360
L	207+23.00	147.00	812155.6273	2182249.5671
L	207+23.00	136.00	812164.2076	2182242.6839
L	207+42.00	136.00	812176.9693	2182258.4400
L	207+42.00	147.00	812168.4539	2182265.4034
L	209+86.00	136.00	812353.5350	2182449.6049
L	209+86.00	150.00	812343.8412	2182459.7059
L	210+06.00	136.00	812369.0069	2182464.3070
L	210+06.00	150.00	812359.4133	2182474.5032
L	210+83.00	132.00	812432.5368	2182516.4488
L	210+83.00	142.00	812425.9660	2182523.9871
L	211+04.00	129.00	812451.4226	2182528.7773
L	211+04.00	139.00	812444.9304	2182536.3833
L	212+56.00	137.00	812573.4462	2182635.4570
L	212+56.00	126.00	812579.9441	2182626.5814
L	212+76.00	137.00	812590.6095	2182647.9856

ROW MARKER PERMANENT EASEMENT-E

L	212+76.00	126.00	812597.0292	2182638.9733
L	216+99.93	110.00	812965.8815	2182861.5907
L	219+13.00	131.00	813134.0694	2182994.0771
L	219+16.00	128.00	813138.2130	2182993.1661
L	219+30.00	144.00	813141.3871	2183014.1881
L	219+41.00	129.00	813158.7356	2183007.4777
L	220+70.00	-110.00	813396.1775	2182875.6317
L	220+98.00	-144.00	813438.0843	2182862.0737
L	221+11.00	-110.00	813430.7182	2182897.7211
L	221+11.00	-125.00	813438.7997	2182885.0843
L	221+15.00	-133.00	813446.4796	2182880.4997
L	225+73.00	128.00	813684.9346	2183348.1211
L	225+93.00	141.00	813693.4815	2183369.9711
L	226+08.00	121.00	813716.9826	2183362.0623
L	226+29.00	120.00	813734.3312	2183373.1395
L	226+29.00	110.00	813740.1308	2183364.9930
L	227+40.00	-110.00	813959.2406	2183252.2679
L	227+40.00	-120.00	813965.1967	2183244.2351
L	227+60.00	-120.00	813981.5769	2183256.4248
L	227+74.00	-140.00	814005.0248	2183248.9968
L	227+78.00	-110.00	813990.2735	2183275.4374
L	227+90.00	-129.00	814011.4905	2183267.6337
L	231+39.00	-110.00	814277.2126	2183505.6224
L	231+39.00	-153.00	814305.1609	2183472.9437
L	231+60.00	-153.00	814321.5200	2183486.9867
L	231+60.00	-142.00	814314.3399	2183495.3201
L	235+98.59	-134.00	814636.4823	2183803.5156
L	235+98.59	-148.00	814646.1587	2183793.3980
L	236+19.47	-134.00	814651.5736	2183817.9513
L	236+19.47	-147.00	814660.5573	2183808.5523
L	244+25.98	-130.93	815232.3070	2184377.6032
L	244+25.98	-141.62	815239.6957	2184369.8776
L	244+46.54	-142.59	815255.2246	2184383.3871
L	244+46.54	-130.85	815247.1102	2184391.8715
L	244+48.00	110.00	815081.6966	2184566.9405
L	244+65.00	259.00	814990.9977	2184686.3713
L	244+71.00	259.00	814995.3338	2184690.5183
L	244+74.00	289.00	814976.7667	2184714.2726
L	244+79.00	110.00	815104.1000	2184588.3669
L	244+91.00	257.00	815011.1700	2184702.8964
L	244+95.00	286.00	814994.0167	2184726.6191
L	244+96.00	257.00	815014.7834	2184706.3523
L	247+08.00	138.00	815250.2432	2184766.8806
L	247+16.00	110.00	815275.3776	2184752.1746
L	247+29.00	143.00	815261.9639	2184785.0087
L	247+38.00	110.00	815291.2767	2184767.3804
L	251+97.00	-136.00	815793.0199	2184906.8466
L	251+97.00	-128.00	815787.4905	2184912.6281
L	252+06.00	110.00	815629.4958	2185090.8490
L	252+06.00	124.00	815619.8194	2185100.9666
L	252+12.00	124.00	815624.1555	2185105.1137
L	252+12.00	154.00	815603.4203	2185126.7944
L	252+18.00	-137.00	815808.8876	2184920.6385
L	252+18.00	-128.00	815802.6670	2184927.1427
L	252+35.00	124.00	815640.7774	2185121.0106
L	252+35.00	154.00	815620.0422	2185142.6913
L	252+38.00	110.00	815652.6219	2185112.9665
L	252+38.00	124.00	815642.9455	2185123.0841
L	255+33.00	134.00	815849.2274	2185334.2068
L	255+49.00	146.00	815852.4963	2185353.9378
L	255+49.00	115.00	815873.9227	2185331.5344
L	255+68.00	125.00	815880.7421	2185351.8936
L	255+72.00	128.00	815881.5593	2185356.8264
L	255+73.59	126.28	815883.8974	2185356.6806
L	257+60.00	-128.00	816194.3651	2185301.7580
L	257+75.00	-142.00	816214.8819	2185302.0079
L	257+91.00	-128.00	816216.7685	2185323.1843
L	259+90.00	132.00	816180.8791	2185648.6270
L	259+90.00	103.29	816200.7208	2185627.8806
L	259+95.00	-143.00	816374.5649	2185453.3431
L	259+95.00	-128.00	816364.1973	2185464.1834
L	260+11.00	132.00	816196.0556	2185663.1417
L	260+11.00	102.00	816216.7908	2185641.4609
L	260+16.00	100.00	816221.7866	2185643.4714
L	260+16.00	102.00	816220.4042	2185644.9168
L	260+16.00	-128.00	816379.3738	2185478.6981
L	260+16.00	-143.00	816389.7414	2185467.8577
L	264+31.00	100.00	816527.5828	2185929.7395
L	264+41.00	206.00	816465.1396	2186016.0080
L	264+61.00	100.00	816550.5027	2185949.8966
L	264+71.00	203.00	816490.4826	2186034.2289
L	268+90.00	132.00	816870.2263	2186250.3380
L	268+90.00	100.00	816889.4389	2186224.7475

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "R2814C&D-3"
WITH NAD 83/NSRS 2007 STATE PLANE GRID COORDINATES OF
NORTHING: 829803.298(ft) EASTING: 2197567.948(ft)
ELEVATION: 345.03(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99994428
THE N.C. LAMBERT GRID BEARING AND
LOCALIZED HORIZONTAL GROUND DISTANCE FROM
"R2814C&D-3" TO -L- STATION 10+00.00 IS
S 40°49'48.3" W 42542.68'
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

NOTE: DRAWING NOT TO SCALE

3/28/2018
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PROJECT REFERENCE NO.	SHEET NO.
R-2814C	1C-6
Location and Surveys	

SURVEY CONTROL SHEET R-2814C

ROW MARKER PERMANENT EASEMENT-E

L	269+13.00	100.00	816908.1806	2186238.7596
L	269+13.00	132.00	816889.0707	2186264.4269
L	269+16.00	-99.00	817029.3861	2186080.9013
L	271+63.00	-108.00	817232.2754	2186214.0796
L	271+63.00	-124.00	817241.2626	2186200.8421
L	271+84.00	-108.00	817249.3439	2186225.6221
L	271+84.00	-123.00	817257.7239	2186213.1812
L	279+34.17	132.20	817777.8342	2186810.8351
L	279+34.17	100.00	817792.1894	2186782.0121
L	279+50.00	-100.00	817895.2850	2186609.9022
L	279+50.00	-120.00	817904.1519	2186591.9752
L	279+50.00	-125.00	817906.3686	2186587.4934
L	279+55.38	100.00	817811.5235	2186791.5968
L	279+55.38	131.05	817797.7837	2186819.4414
L	280+00.00	-100.00	817939.4161	2186631.4912
L	280+00.00	-125.00	817950.3041	2186608.9867
L	280+00.00	-118.00	817947.2554	2186615.2880
L	281+24.91	131.47	817954.2193	2186894.2466
L	281+24.91	100.00	817967.3054	2186865.6265
L	281+46.50	100.00	817987.2995	2186874.7231
L	281+46.50	131.04	817974.5024	2186902.9985
L	283+25.00	-100.00	818230.6601	2186762.3592
L	283+25.00	-120.00	818238.3377	2186743.8915
L	283+80.00	100.00	818205.6567	2186968.2691
L	283+80.00	120.00	818198.1564	2186986.8095
L	284+00.00	-150.00	818317.4793	2186743.7874
L	284+50.00	120.00	818264.5661	2187013.2048
L	284+50.00	100.00	818271.8397	2186994.5743
L	284+84.24	-150.00	818393.8600	2186773.7287
L	286+60.00	-150.00	818557.9612	2186836.6712
L	286+60.00	-100.00	818540.0552	2186883.3550
L	286+60.00	-118.00	818546.5013	2186866.5488
L	288+27.00	100.00	818624.3550	2187129.8961
L	288+27.00	134.00	818612.1789	2187161.6411
L	288+51.00	100.00	818646.7632	2187138.4910
L	288+51.00	134.00	818634.5871	2187170.2360
L	294+65.00	105.00	819218.2494	2187363.0451
L	294+65.00	100.00	819220.0400	2187358.3767
L	295+40.00	-133.00	819373.5076	2187167.6893
L	295+40.00	-118.00	819368.1358	2187181.6944
L	295+50.00	105.00	819297.6118	2187393.4853
L	295+50.00	100.00	819299.4024	2187388.8169
L	295+60.00	-133.00	819392.1812	2187174.8517
L	295+60.00	-118.00	819386.8094	2187188.8568
L	296+47.00	100.00	819389.9690	2187423.5545
L	296+47.00	103.00	819388.8946	2187426.3555
L	296+53.00	133.00	819383.7531	2187456.5145
L	296+53.00	-133.00	819479.0130	2187208.1568
L	296+53.00	-118.00	819473.6412	2187222.1620
L	296+53.00	103.00	819394.4967	2187428.5043
L	296+73.00	103.00	819413.1702	2187435.6667
L	296+73.00	-118.00	819492.3147	2187229.3244
L	296+73.00	-133.00	819497.6865	2187215.3192
L	296+73.00	133.00	819402.4266	2187463.6769
L	296+78.00	100.00	819418.9129	2187434.6562
L	296+78.00	103.00	819417.8386	2187437.4573
L	302+33.00	119.00	819930.2986	2187651.1527
L	302+42.00	100.00	819945.5059	2187636.6359
L	302+52.00	128.00	819944.8153	2187666.3600
L	302+65.00	100.00	819966.9805	2187644.8727
L	302+70.00	103.00	819970.5745	2187649.4643
L	302+71.00	100.00	819972.5825	2187647.0214
L	303+46.00	-118.00	820120.6784	2187470.3391
L	303+54.00	-134.00	820133.8777	2187458.2653
L	303+68.00	-118.00	820141.2192	2187478.2178
L	303+72.00	-126.00	820147.8189	2187472.1808
L	304+80.00	115.00	820162.3489	2187735.8736
L	304+80.00	100.00	820167.7207	2187721.8685
L	305+70.00	-118.00	820329.8217	2187550.5580
L	305+70.00	-100.00	820323.3755	2187567.3641
L	307+20.00	-118.00	820469.8730	2187604.2760
L	307+20.00	-100.00	820463.4269	2187621.0821
L	307+84.61	115.00	820446.7559	2187844.9605
L	307+84.61	143.53	820436.5387	2187871.5983
L	307+84.61	100.00	820452.1277	2187830.9554
L	308+08.13	146.43	820457.4602	2187882.7289
L	308+08.13	100.00	820474.087	2187839.3784
L	308+08.13	115.00	820468.715	2187853.3835
L	309+00.00	115.00	820554.492	2187886.2840
L	310+40.00	150.00	820672.673	2187969.0994
L	310+40.00	115.00	820685.207	2187936.4208
L	310+80.00	100.00	820727.926	2187936.7405
L	310+80.00	150.00	820710.020	2187983.4242
L	312+20.00	115.00	820853.268	2188000.8824
L	312+20.00	100.00	820858.6407	2187986.8773

EASEMENTS

ROW MARKER PERMANENT EASEMENT-E

L	312+75.00	100.00	820909.9928	2188006.5738
L	312+75.00	115.00	820904.6210	2188020.5790
L	313+50.00	130.00	820969.2749	2188061.4431
L	313+50.00	100.00	820980.0185	2188033.4328
L	313+67.00	-127.00	821077.1842	2187827.5765
L	313+67.00	-118.00	821073.9611	2187835.9796
L	313+87.00	-118.00	821092.6346	2187843.1420
L	313+87.00	-127.00	821095.8577	2187834.7389
L	314+40.00	-118.00	821142.1194	2187862.1224
L	314+40.00	-100.00	821135.6733	2187878.9285
L	314+40.00	-115.00	821141.0451	2187864.9234
L	315+00.00	150.00	821102.1638	2188133.8346
L	315+00.00	-115.00	821197.0656	2187886.4106
L	315+00.00	-100.00	821191.6938	2187900.4157
L	315+00.00	-118.00	821198.1400	2187883.6096
L	317+20.00	100.00	821325.4784	2188165.9372
L	320+15.00	-129.00	821682.9222	2188057.7709
L	320+18.00	-118.00	821681.7839	2188069.1157
L	320+36.00	-134.00	821704.3200	2188060.6231
L	320+39.00	-119.00	821701.7492	2188075.7026
L	320+61.00	100.00	821643.8618	2188288.0562
L	320+72.00	162.00	821631.9288	2188349.8834
L	320+93.00	100.00	821673.7394	2188299.5160
L	321+08.00	157.00	821667.3317	2188358.1073
L	325+33.00	103.00	822083.4823	2188459.8898
L	325+33.00	100.00	822084.5567	2188457.0888
L	325+38.00	103.00	822088.1507	2188461.6804
L	325+38.00	133.00	822077.4071	2188489.6907
L	325+39.00	-133.00	822173.6007	2188241.6911
L	325+39.00	-118.00	822168.2289	2188255.6962
L	325+60.00	-118.00	822187.8361	2188263.2168
L	325+60.00	-133.00	822193.2079	2188249.2116
L	325+60.00	103.00	822108.6916	2188469.5591
L	325+60.00	133.00	822097.9480	2188497.5693
L	325+64.00	100.00	822113.5006	2188468.1905
L	325+64.00	103.00	822112.4263	2188470.9915
L	328+11.00	137.00	822330.8681	2188591.1921
L	328+11.00	107.00	822341.6117	2188563.1819
L	328+13.00	100.00	822345.9858	2188557.3624
L	328+17.00	107.00	822347.2137	2188565.3306
L	328+32.00	140.00	822349.4009	2188601.5137
L	328+37.00	111.00	822364.4547	2188576.2277
L	328+42.00	112.00	822368.7650	2188578.9520
L	328+44.00	100.00	822374.9298	2188568.4641
L	328+92.00	100.00	822419.7462	2188585.6539
L	328+92.00	133.00	822407.9283	2188616.4652
L	329+17.00	134.00	822430.9120	2188626.3518
L	329+17.00	100.00	822443.0881	2188594.6069
L	333+37.00	-118.00	822913.3020	2188541.4760
L	333+37.00	-131.00	822917.9576	2188529.3382
L	333+60.00	-133.00	822940.1483	2188535.7076
L	333+60.00	-118.00	822934.7765	2188549.7127
L	335+73.00	-129.00	823137.5888	2188615.7219
L	335+75.00	-118.00	823135.5168	2188626.7085
L	335+93.00	-135.00	823158.4110	2188617.2822
L	335+98.00	-117.00	823156.6332	2188635.8790
L	336+33.00	100.00	823111.5998	2188851.0208
L	336+38.00	117.00	823110.1802	2188868.6839
L	336+43.00	116.00	823115.2067	2188869.5408
L	336+51.00	144.00	823112.6487	2188898.5487
L	336+63.00	110.00	823136.0250	2188871.0996
L	336+65.00	100.00	823141.4413	2188862.4672
L	336+68.00	109.00	823140.9621	2188871.9247
L	336+71.00	139.00	823132.9250	2188900.9768
L	338+21.00	132.00	823271.4928	2188948.9039
L	338+25.00	100.00	823287.4006	2188920.8628
L	338+42.00	135.00	823289.2635	2188959.5774
L	338+46.00	100.00	823306.4352	2188928.8286
L	338+48.00	-102.00	823386.6337	2188743.4204
L	338+48.00	-92.00	823382.7531	2188752.6368
L	338+69.00	-91.00	823402.0111	2188761.8727
L	338+69.00	-102.00	823406.3168	2188751.7504
L	338+90.00	100.00	823346.2219	2188945.7443
L	338+90.00	125.00	823336.3521	2188968.7136
L	339+75.00	100.00	823422.7100	2188979.2837
L	339+75.00	125.00	823412.5012	2189002.1043
L	345+48.00	-128.00	824037.7095	2189036.6320
L	345+52.00	-116.00	824035.2818	2189049.0737
L	345+67.00	-135.00	824058.0463	2189040.2576
L	345+74.00	-114.00	824053.7227	2189062.0166
L	345+97.00	-100.00	824066.9313	2189085.9004
L	345+97.00	-116.00	824075.0062	2189072.0875

NOTE: DRAWING NOT TO SCALE

ROW MARKER PERMANENT EASEMENT-E

L	346+19.00	100.00	823984.6367	2189269.5072
L	346+50.00	182.00	823968.7965	2189355.4572
L	346+52.00	100.00	824012.5191	2189286.0588
L	346+55.00	180.00	823973.9791	2189356.2246
L	346+66.00	209.00	823968.1821	2189386.5615
L	346+75.00	174.00	823993.6849	2189361.0608
L	346+80.00	172.00	823998.8701	2189361.8543
L	346+86.00	202.00	823988.3101	2189390.5280
L	355+65.00	104.00	824765.9801	2189791.0609
L	355+65.00	65.00	824787.8877	2189758.7956
L	357+40.00	-100.00	825025.3545	2189720.5917
L	362+08.00	-118.00	825422.6503	2189968.5918
L	362+08.00	-64.97	825392.8634	2190012.4616
L	362+10.00	116.00	825292.8591	2190163.3075
L	362+10.00	101.00	825301.2851	2190150.8978
L	362+28.00	-64.93	825409.3834	2190023.7351
L	362+28.00	-118.00	825439.1967	2189979.8264
L	362+30.00	101.00	825317.8314	2190162.1325
L	362+30.00	116.00	825309.4054	2190174.5422
L	362+79.37	101.00	825358.6793	2190189.8675
L	363+31.13	101.00	825401.4986	2190218.9411
L	364+52.97	-113.05	825622.5377	2190110.2951
L	364+54.71	-82.73	825606.9454	2190136.3568
L	364+58.81	-64.38	825600.0296	2190153.8412
L	364+59.60	-83.79	825611.5865	2190138.2267
L	364+72.47	-117.47	825641.1533	2190117.5922
L	364+79.00	-88.70	825630.3945	2190145.0622
L	364+85.00	-90.00	825636.0887	2190147.3571
L	364+89.57	-64.31	825625.4386	2190171.1780
L	365+03.00	101.00	825543.6891	2190315.4860
L	365+03.00	117.00	825534.7014	2190328.7231
L	365+26.15	101.00	825562.8415	2190328.4901
L	365+26.15	117.00	825553.8538	2190341.7272
L	367+31.00	103.00	825735.9297	2190446.1010
L	367+31.00	116.00	825729.0977	2190457.1610
L	367+38.00	-66.09	825830.5570	2190305.7860
L	367+38.00	-117.00	825857.1560	2190262.3820
L	367+51.00	103.00	825753.8906	2190457.0703
L	367+51.00	116.00	825747.1712	2190468.1991
L	367+61.00	-66.51	825849.7895	2190316.9336
L	367+61.00	-117.00	825875.6674	2190273.5781
L	369+25.26	96.53	825917.6888	2190538.9777
L	372+10.00	-73.00	826246.3121	2190488.9157
L	372+32.00	-111.00	826277.7162	2190458.9560
L	372+40.00	-95.00	826280.2835	2190476.4743
L	372+53.00	-118.00	826298.6750	2190457.9819
L	372+59.00	-102.00	826299.5816	2190474.9310
L	374+52.00	87.00	826442.2262	2190703.4571
L	374+52.00	65.00	826446.3240	2190681.8422
L	374+56.00	116.00	826440.9868	2190732.7343
L	374+56.00	87.00	826446.3306	2190704.2309
L	374+64.00	-131.00	826493.8440	2190491.3252
L	374+64.00	-115.00	826490.9596	2190507.0631
L	374+75.00	117.00	826460.6038	2190737.3308
L	374+75.00	87.00	826465.8472	2190707.7926
L	374+81.00	87.00	826472.0174	2190708.8782
L	374+81.00	65.00	826475.7966	2190687.2052
L	374+87.00	-115.00	826512.2844	2190510.8429
L	374+87.00	-131.00	826514.9849	2190495.0725
L	376+65.00	87.00	826656.3955	2190736.5329
L	376+65.00	65.00	826659.5639	2190714.7623
L	376+69.00	116.00	826656.1774	2190765.8067
L	376+69.00	87.00	826660.3538	2190737.1090
L	376+80.00	-112.00	826699.8982	2190541.7676
L	376+80.00	-127.00	826702.0585	2190526.9240
L	376+89.00	117.00	826675.8249	2190769.6766
L	376+89.00	87.00	826680.1454	2190739.9893
L	376+96.00	65.00	826690.2407	2190719.2267
L	376+96.00	87.00	826687.0724	2190740.9974
L	377+01.00	-127.00	826722.8396	2190529.9483
L	377+01.00	-112.00	826720.6793	2190544.7920
L	380+72.57	193.38	827044.3965	2190900.5003
L	380+73.60	163.03	827049.7866	2190870.6150
L	380+78.39	163.95	827054.3942	2190872.2153
L	380+92.20	197.26	827063.2630	2190907.1669
L	380+92.97	65.00	827083.0725	2190776.3965
L	380+98.01	167.83	827073.2508	2190878.8804
L	381+03.04	168.84	827078.0830	2190880.6043
L	381+23.55	65.00	827113.3337	2190780.8005
L	381+31.15	-102.44	827144.9684	2190616.2005
L	381+34.16	-117.68	827150.1418	2190601.5529
L	381+50.57	-97.59	827163.4875	2190623.7967
L	381+53.79	-113.85	827169.0156	2190608.1700
L	382+19.22	-69.97	827227.4399	2190661.0103

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "R2814C&D-3"
WITH NAD 83/NSRS 2007 STATE PLANE GRID COORDINATES OF
NORTHING: 829803.298(ft) EASTING: 2197567.948(ft)
ELEVATION: 345.03(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99994428
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "R2814C&D-3" TO -L- STATION 10+00.00 IS
S 40°49'48.3" W 42542.68'
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

6/01/16

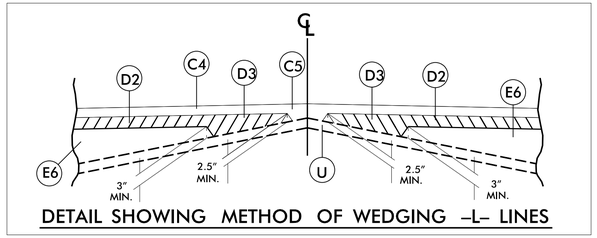
3/28/2018 R2814C_LS_1C-6.dgn PM

6/2/99

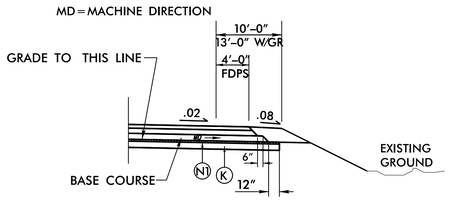
PAVEMENT SCHEDULE

C1	PROP. APPROX. 1.5″ ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD.
C2	PROP. APPROX. 3″ ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD. IN EACH OF 2 LAYERS
C3	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD. PER 1″ DEPTH. TO BE PLACED IN LAYERS NOT TO EXCEED 1 1/2″ IN DEPTH.
C4	PROP. APPROX. 3″ ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF 2 LAYERS
C5	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.
D1	PROP. APPROX. 2.5″ ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 285 LBS. PER SQ. YD.
D2	PROP. APPROX. 4″ ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
D3	PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1″ DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 2.5″ IN DEPTH OR GREATER THAN 4″ IN DEPTH.
E1	PROP. APPROX. 3.5″ ASPHALT CONC. BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 399 LBS. PER SQ. YD.
E2	PROP. APPROX. 4″ ASPHALT CONC. BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
E3	PROP. APPROX. 4.5″ ASPHALT CONC. BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 513 LBS. PER SQ. YD.
E4	PROP. APPROX. 5.5″ ASPHALT CONC. BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 627 LBS. PER SQ. YD.
E5	PROP. APPROX. 7.0″ ASPHALT CONC. BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 399 LBS. PER SQ. YD. IN EACH OF THE 2 LAYERS
E6	PROP. VAR. DEPTH ASPHALT CONC. BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1″ DEPTH TO BE PLACED IN LAYERS NOT GREATER THAN 5.5″ IN DEPTH OR LESS THAN 3″ IN DEPTH
J1	PROP. 3″ AGGREGATE BASE COURSE.
J2	PROP. 8″ AGGREGATE BASE COURSE.
K	BASE TO BE TREATED WITH LIME TO A DEPTH OF 8″, AT A RATE OF 20 LBS. PER SQ. YD. AS DIRECTED BY THE ENGINEER. OR BASE TO BE TREATED WITH CEMENT TO A DEPTH OF 7″, AT A RATE OF 55 LBS. PER SQ. YD. AS DIRECTED BY THE ENGINEER.
L	CLASS IV SUBGRADE STABILIZATION.
N1	GEOTEXTILE FOR PAVEMENT STABILIZATION.
N2	GEOTEXTILE FOR SOIL STABILIZATION.
R1	2′-6″ CONCRETE CURB AND GUTTER.
R2	1′-6″ CONCRETE CURB AND GUTTER.
R3	2′-9″ CONCRETE CURB AND GUTTER.
R4	EXPRESSWAY GUTTER
R5	SHOULDER BERM GUTTER
T	EARTH MATERIAL.
V	VARIABLE ASPHALT MILLING 0″ TO 6″ DEPTH.
U	EXISTING PAVEMENT.
W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE STANDARD WEDGING DETAIL BELOW)

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



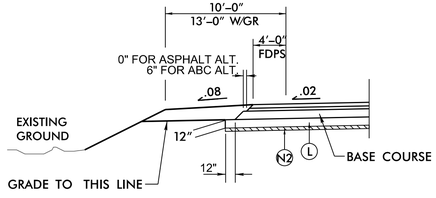
DETAIL SHOWING METHOD OF WEDGING –L– LINES



DETAIL SHOWING GEOTEXTILE FOR PAVEMENT STABILIZATION

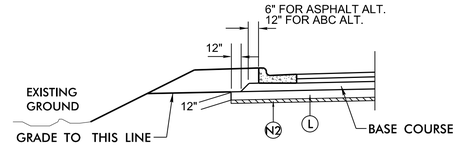
–L– STA. 64+00 TO –L– STA. 66+00
–L– STA. 106+50 TO –L– STA. 108+50
–L– STA. 136+00 TO –L– STA. 138+00
–L– STA. 205+50 TO –L– STA. 207+50
–L– STA. 229+50 TO –L– STA. 231+00

NOTE: AREAS TO BE INVESTIGATED DURING CONSTRUCTION.



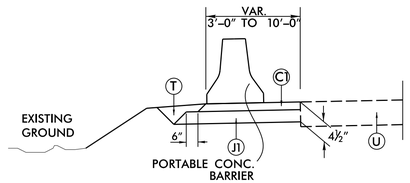
DETAIL SHOWING AGGREGATE SUBGRADE FOR SHALLOW UNDERCUT IN SHOULDER SECTIONS

–L– STA. 47+75 TO –L– STA. 54+75
–L– STA. 117+25 TO –L– STA. 117+75
–L– STA. 118+25 TO –L– STA. 118+75



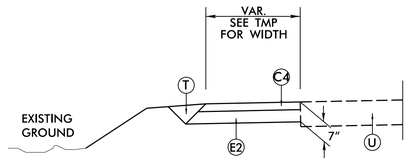
DETAIL SHOWING AGGREGATE SUBGRADE FOR SHALLOW UNDERCUT IN CURB AND GUTTER SECTIONS

–L– STA. 332+75 TO –L– STA. 336+75
–L– STA. 367+75 TO –L– STA. 373+75
–L– STA. 378+75 TO –L– STA. 381+25



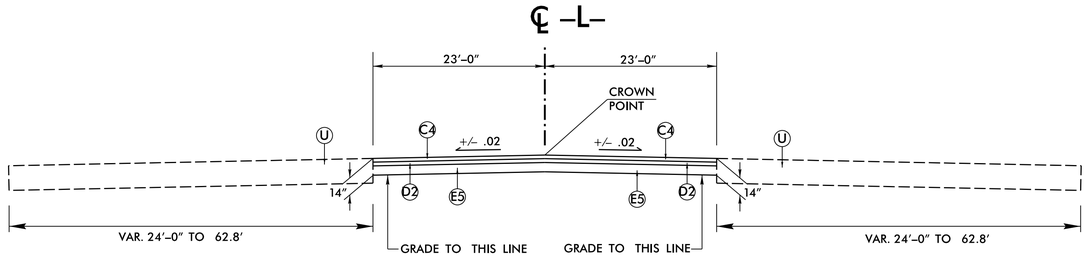
DETAIL OF TEMPORARY SHOULDER WIDENING
(SEE TMP PLANS FOR PHASING AND LOCATION OF PCB)

–L– STA. 105+15 TO –L– STA. 111+50 RT
–L– STA. 134+50 TO –L– STA. 140+50 RT
–L– STA. 165+70 TO –L– STA. 171+60 RT
–L– STA. 280+25 TO –L– STA. 286+50 LT
–L– STA. 311+00 TO –L– STA. 316+50 LT



DETAIL OF TEMPORARY WIDENING FOR LOCATIONS UNDER TRAFFIC
(SEE TMP PLANS FOR ADDITIONAL INFORMATION)

–L– STA. 140+85 TO –L– STA. 142+50 LT
–L– STA. 141+00 TO –L– STA. 142+50 RT
–L– STA. 144+50 TO –L– STA. 149+50 RT
–L– STA. 212+95 TO –L– STA. 215+00 LT
–L– STA. 216+85 TO –L– STA. 219+10 RT
–L– STA. 350+50 TO –L– STA. 357+90 LT



TYPICAL SECTION NO. 1

USE TYPICAL SECTION NO. 1 FROM:
–L– STA. 33+18.85 TO –L– STA. 43+54.23

PROJECT REFERENCE NO.	SHEET NO.
R–2814C	2A–1

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 040286 ENGINEER CASEY E. HARRIS
6/6/2018

PAVEMENT DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 022896 ENGINEER CLARK S. MORRISON
6/8/2018

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

PROJECT REFERENCE NO.	SHEET NO.
R-2814C	2A-2

ROADWAY DESIGN ENGINEER — SEAL 040286, CASEY E. HARRIS, 5/6/2018

PAVEMENT DESIGN ENGINEER — SEAL 022896, CLARK S. MORRISON, 5/8/2018

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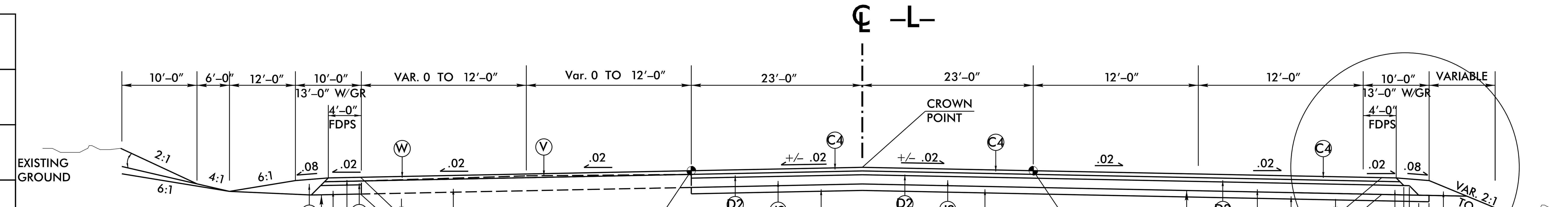
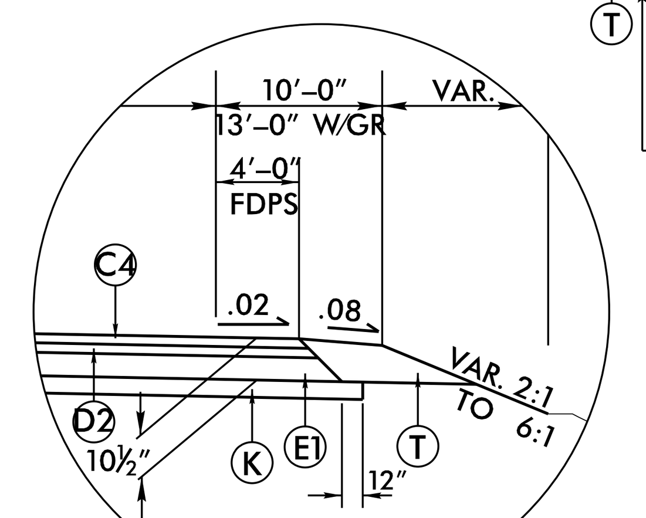
N.C.B.E.L.S. License Number: F-0116

C4	3" TYPE S9.5C
C5	VAR. TYPE S9.5C
D2	4" TYPE I19.0C
D3	VAR TYPE I19.0C
E1	3.5" TYPE B25.0C
E5	7" TYPE B25.0C
E6	VAR TYPE B25.0C
J2	8" ABC
K	SUBGRADE STABILIZATION
R4	EXPRESSWAY GUTTER
R5	SHOULDER BERM GUTTER
T	EARTH MATERIAL
U	EXISTING PAVEMENT
V	VAR. ASPHALT MILLING
W	VARIABLE DEPTH ASPHALT PAVEMENT

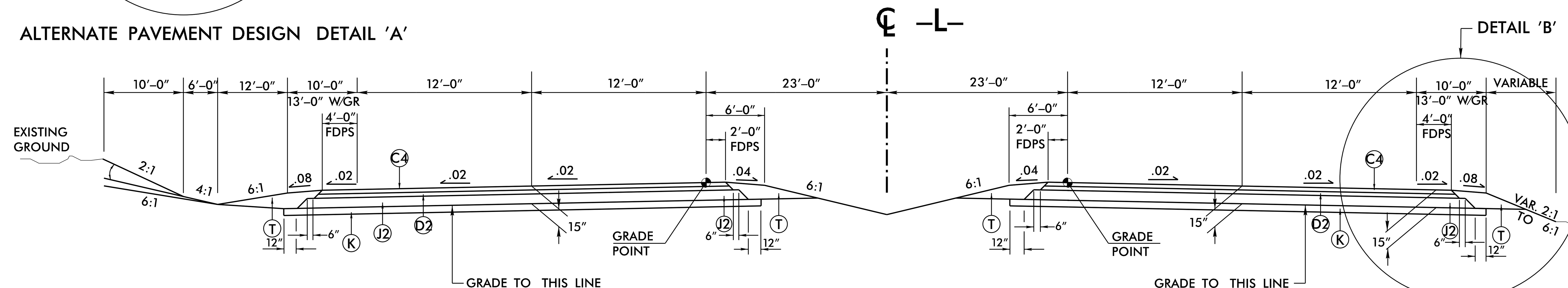




ALTERNATE PAVEMENT DESIGN DETAIL 'A'

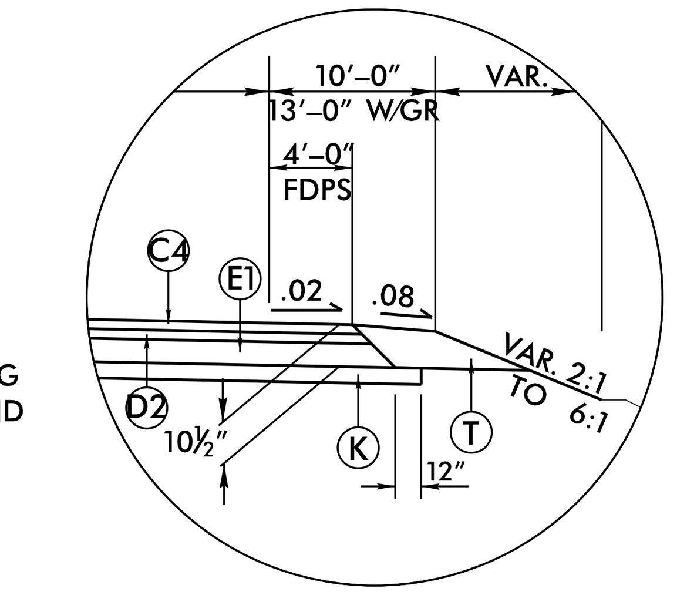
TYPICAL SECTION NO. 2

USE TYPICAL SECTION NO. 2 FROM:
-L- STA. 43+54.23 TO -L- STA. 50+40.85

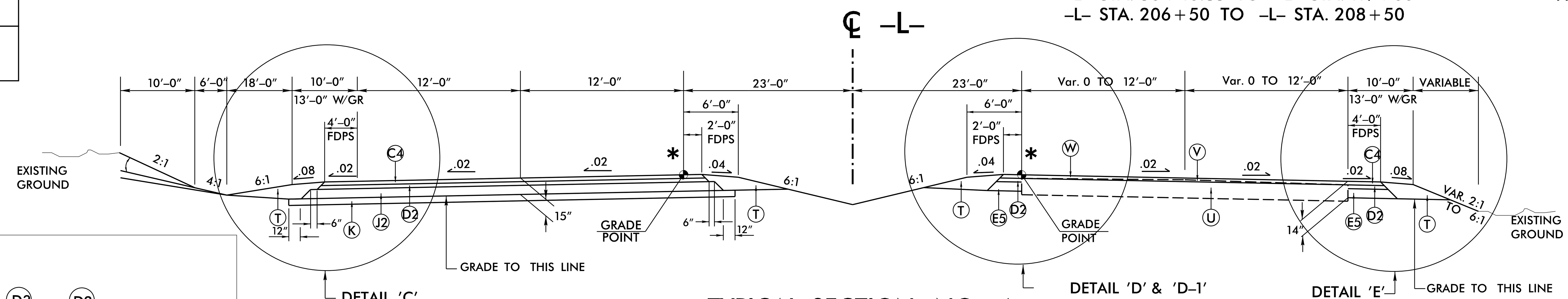


TYPICAL SECTION NO. 3

USE TYPICAL SECTION NO. 3 FROM:
-L- STA. 50+40.85 TO -L- STA. 119+00
-L- STA. 206+50 TO -L- STA. 208+50



ALTERNATE PAVEMENT DESIGN DETAIL 'B'

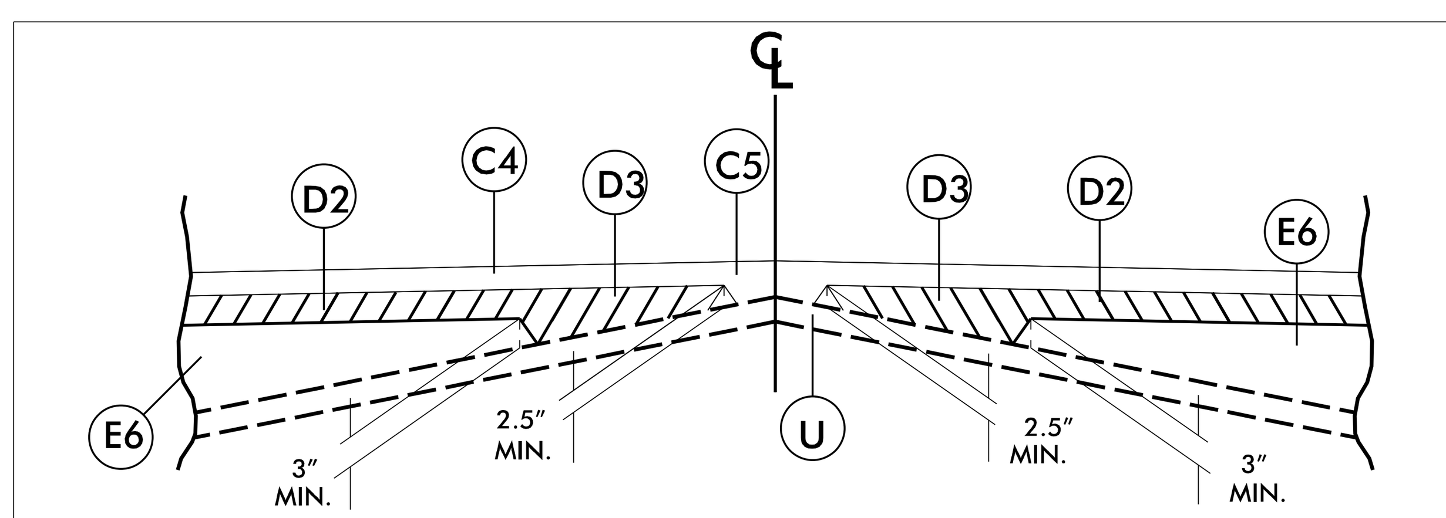


TYPICAL SECTION NO. 4

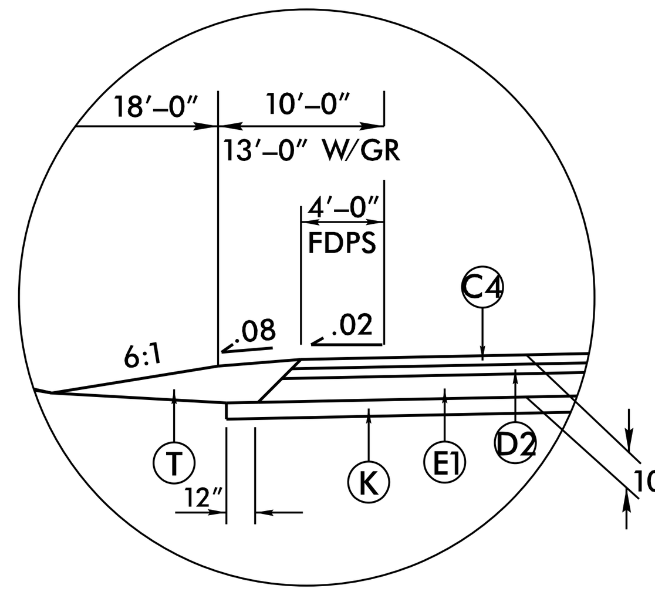
USE TYPICAL SECTION NO. 4 FROM:
-L- STA. 119+00 TO -L- STA. 193+07
** -L- STA. 201+34 TO -L- STA. 206+50
** -L- STA. 208+50 TO -L- STA. 262+06

** NOTE: WEDGING AND NARROW WIDENING ON -L- (LT) WITH NEW LOCATION ON -L- (RT)

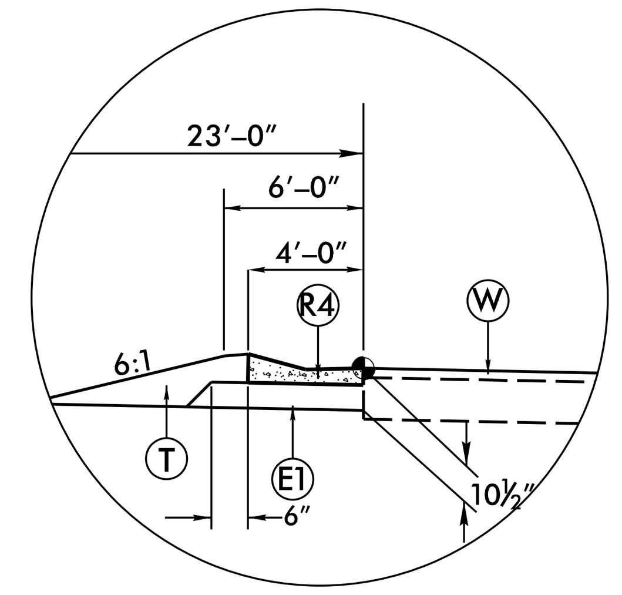
* NOTE: TRANSITION GRADE POINT FROM INSIDE EOT TO CENTER ALIGNMENT BETWEEN -L- STA. 259+06 TO -L- STA. 262+06



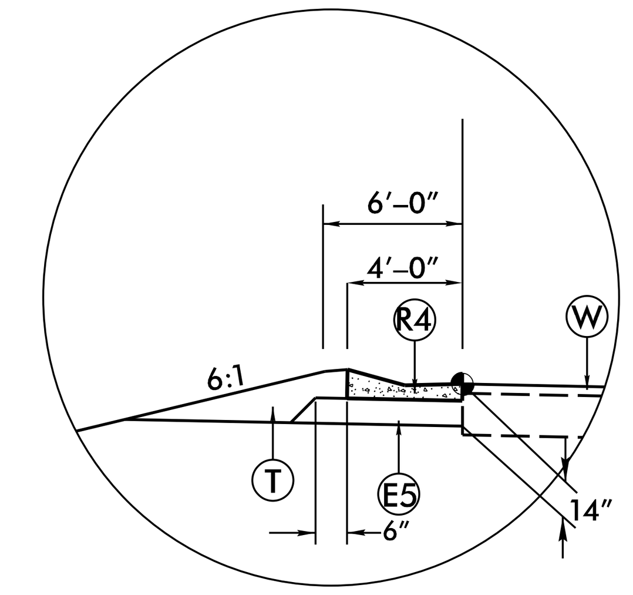
DETAIL SHOWING METHOD OF WEDGING -L- LINES



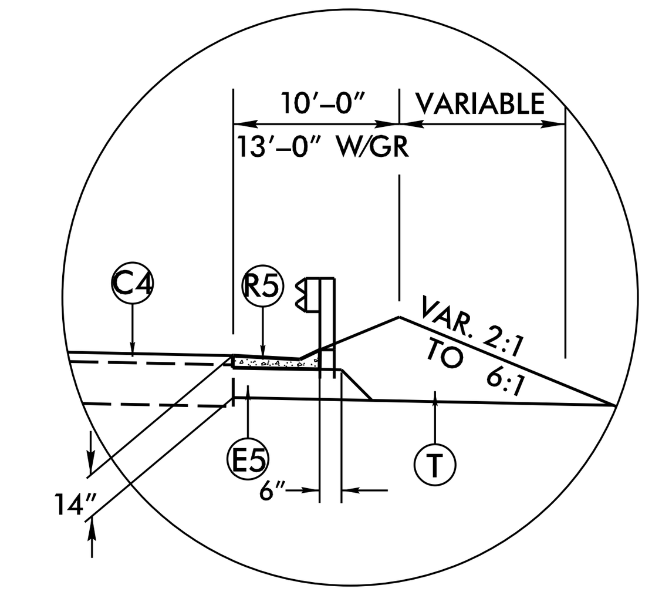
ALTERNATE PAVEMENT DESIGN DETAIL 'C'



TYPICAL EXPRESSWAY GUTTER DETAIL 'D'
-L- STA. 114+50 TO -L- STA. 119+95
-L- STA. 207+95 TO -L- STA. 214+78



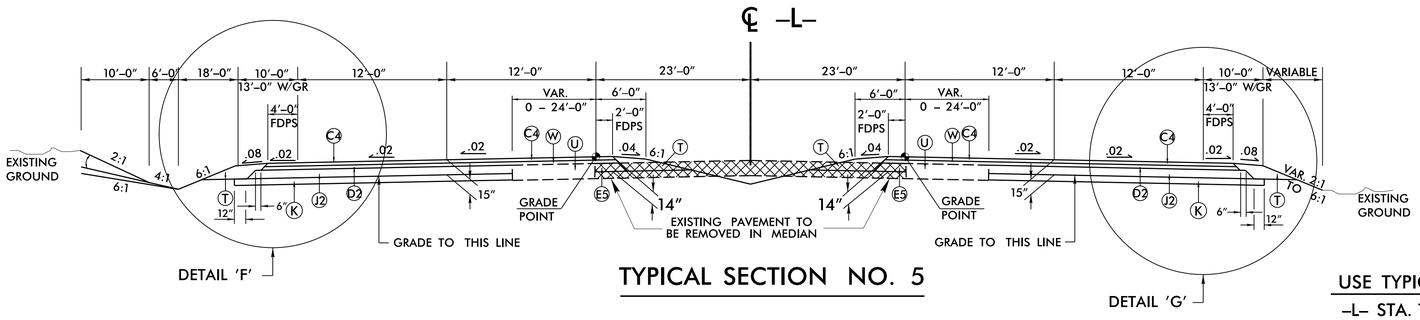
ALTERNATE EXPRESSWAY GUTTER DESIGN DETAIL 'D-1'
-L- STA. 114+50 TO -L- STA. 119+95
-L- STA. 207+95 TO -L- STA. 214+78



DETAIL SHOULDER BERM GUTTER DETAIL 'E'
-L- STA. 106+00 LT TO -L- STA. 110+79 LT
-L- STA. 133+75 RT TO -L- STA. 138+25 RT
-L- STA. 136+50 LT TO -L- STA. 141+25 LT
-L- STA. 166+89 RT TO -L- STA. 168+84 RT

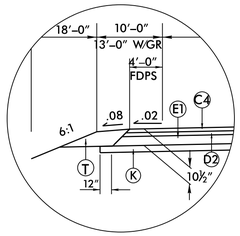
6/2/99

C4	3″ TYPE S9.5C
C5	VAR. TYPE S9.5C
D2	4″ TYPE I19.0C
D3	VAR TYPE I19.0C
E1	3.5″ TYPE B25.0C
E5	7″ TYPE B25.0C
E6	VAR TYPE B25.0C
J2	8″ ABC
K	SUBGRADE STABILIZATION
R1	2′-6″ CONCRETE CURB AND GUTTER
R2	1′-6″ CONCRETE CURB AND GUTTER
R3	2′-9″ CONCRETE CURB AND GUTTER
T	EARTH MATERIAL
U	EXISTING PAVEMENT
V	VAR. ASPHALT MILLING
W	WEDGING



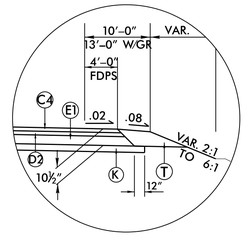
TYPICAL SECTION NO. 5

USE TYPICAL SECTION NO. 5 FROM:
–L– STA. 193+07 TO –L– STA. 201+34

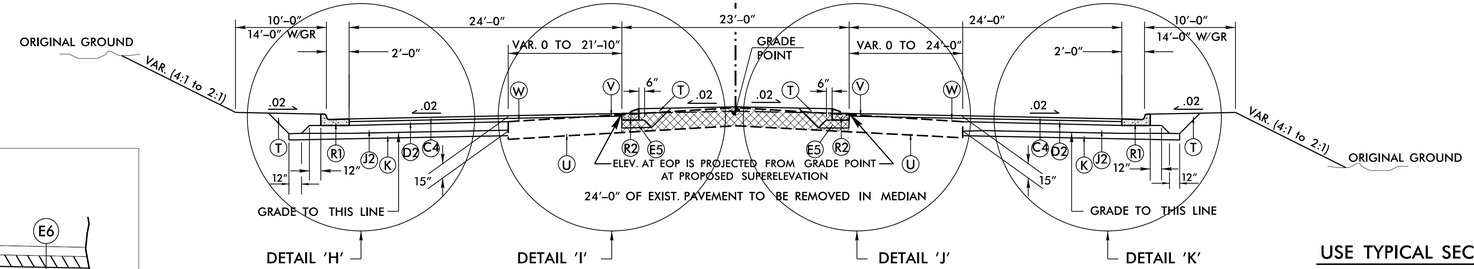


ALTERNATE PAVEMENT DESIGN DETAIL 'F'

NOTE: TRANSITION GRADE POINT FROM 23′ LT & RT TO 0′ FROM –L– STA. 260+06 TO –L– STA. 262+06.

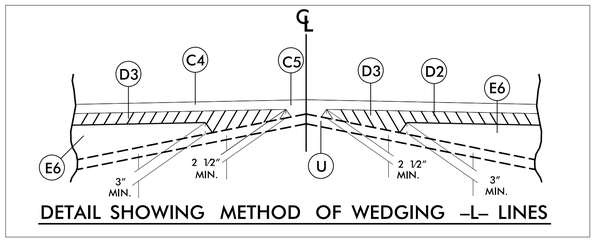


ALTERNATE PAVEMENT DESIGN DETAIL 'G'

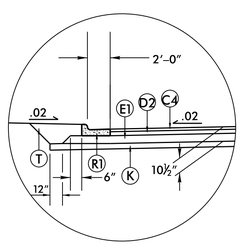


TYPICAL SECTION NO. 6

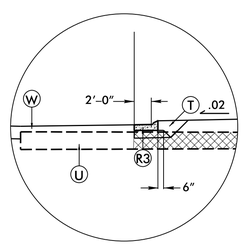
USE TYPICAL SECTION NO. 6 FROM:
–L– STA. 262+06 TO –L– STA. 268+50
–L– STA. 272+50 TO –L– STA. 296+50
–L– STA. 302+00 TO –L– STA. 308+50
–L– STA. 318+00 TO –L– STA. 373+40



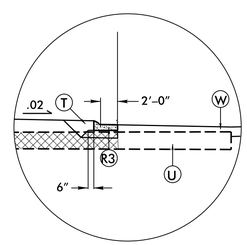
DETAIL SHOWING METHOD OF WEDGING –L– LINES



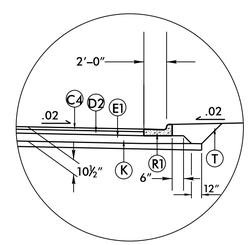
ALTERNATE PAVEMENT DESIGN DETAIL 'H'



USE DETAIL 'I' IN CONJUCTION WITH TYPICAL 6
–L– STA. 335+16 TO –L– STA. 351+60



USE DETAIL 'J' IN CONJUCTION WITH TYPICAL 6
–L– STA. 262+06 TO –L– STA. 269+95
–L– STA. 272+05 TO –L– STA. 284+25



ALTERNATE PAVEMENT DESIGN DETAIL 'K'

PROJECT REFERENCE NO.	SHEET NO.
R–2814C	2A–3

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 040286 ENGINEER CASEY E. HARRIS
6/6/2018

PAVEMENT DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 022896 ENGINEER CLARK S. MORRISON
6/8/2018

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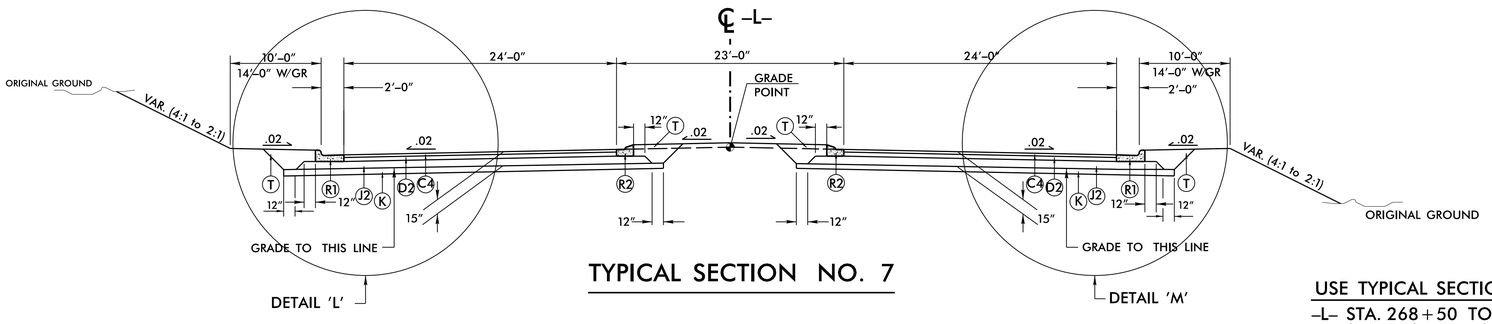
555 Fayetteville St, Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116

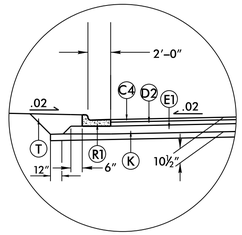
6/2/99

C4	3″ TYPE S9.5C
C5	VAR. TYPE S9.5C
D2	4″ TYPE I19.0C
D3	VAR TYPE I19.0C
E1	3.5″ TYPE B25.0C
E5	7″ TYPE B25.0C
E6	VAR TYPE B25.0C
J2	8″ ABC
K	SUBGRADE STABILIZATION
R1	2'-6″ CONCRETE CURB AND GUTTER
R2	1'-6″ CONCRETE CURB AND GUTTER
T	EARTH MATERIAL
U	EXISTING PAVEMENT
W	WEDGING

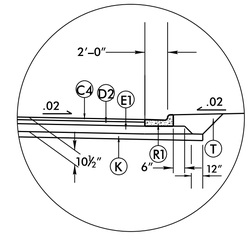


TYPICAL SECTION NO. 7

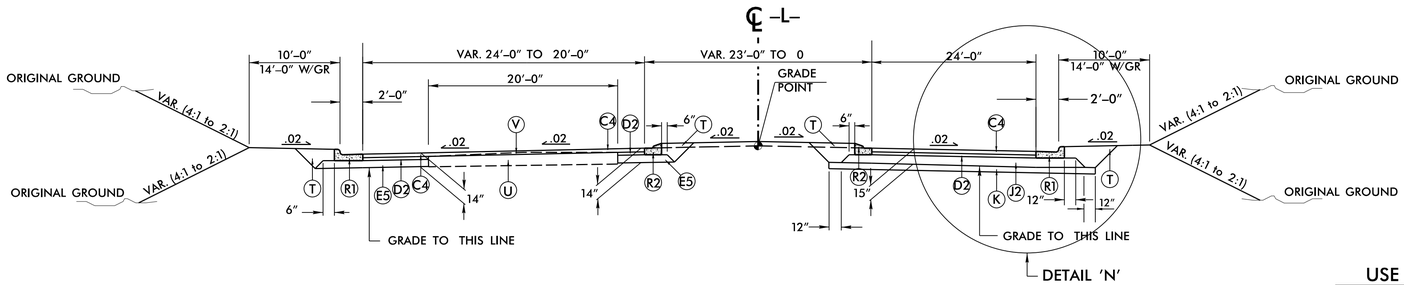
USE TYPICAL SECTION NO. 7 FROM:
–L– STA. 268+50 TO –L– STA. 272+50
–L– STA. 296+50 TO –L– STA. 302+00
–L– STA. 308+50 TO –L– STA. 318+00



ALTERNATE PAVEMENT DESIGN DETAIL 'L'

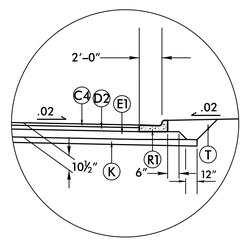


ALTERNATE PAVEMENT DESIGN DETAIL 'M'

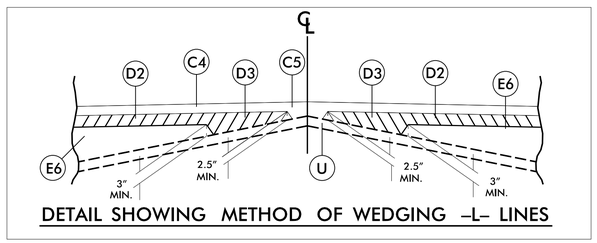


TYPICAL SECTION NO. 8

USE TYPICAL SECTION NO. 8 FROM:
–L– STA. 373+40 TO –L– STA. 374+64.96



ALTERNATE PAVEMENT DESIGN DETAIL 'N'



DETAIL SHOWING METHOD OF WEDGING –L– LINES

PROJECT REFERENCE NO.	SHEET NO.
R–2814C	2A–4

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 040286 ENGINEER CASEY E. HARRIS
6/6/2018

PAVEMENT DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 022896 ENGINEER CLARK S. MORRISON
6/8/2018

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C5	VAR. TYPE S9.5C
D2	4" TYPE I19.0C
D3	VAR TYPE I19.0C
E1	3.5" TYPE B25.0C
E5	7" TYPE B25.0C
E6	VAR TYPE B25.0C
J2	8" ABC
K	SUBGRADE STABILIZATION
R1	2'-6" CONCRETE CURB AND GUTTER
T	EARTH MATERIAL
U	EXISTING PAVEMENT
V	VAR. ASPHALT MILLING
W	WEDGING

PROJECT REFERENCE NO.	SHEET NO.
R-2814C	2A-5
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER
SEAL 040286 CASEY E. HARRIS 5/6/2018	SEAL 022896 CLARK S. MORRISON 5/8/2018

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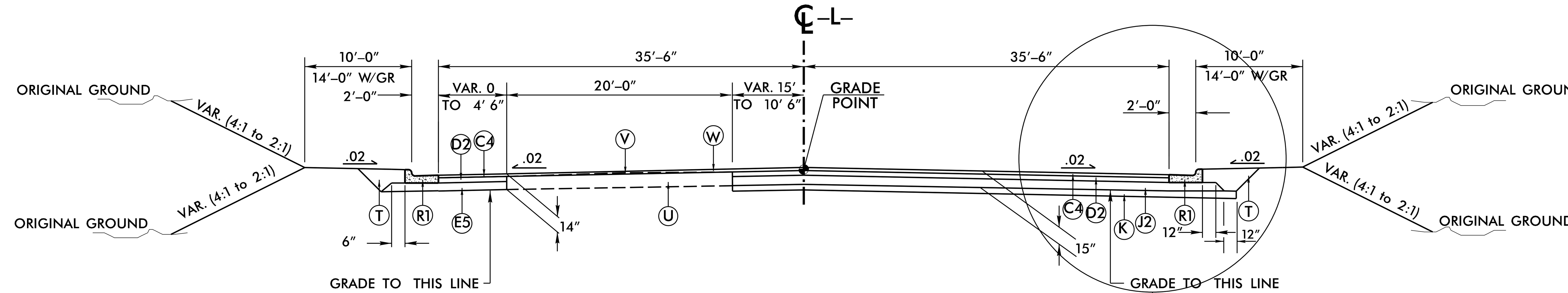
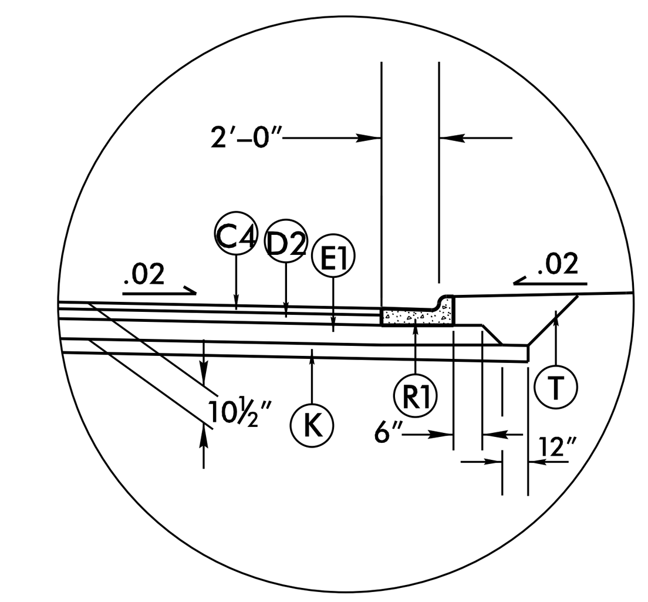
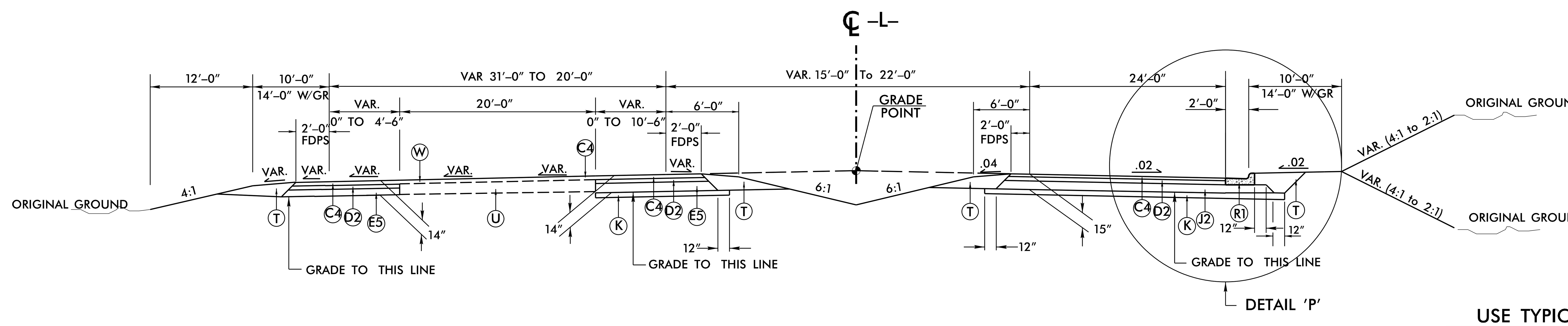


TYPICAL SECTION NO. 9

USE TYPICAL SECTION NO. 9 FROM:
–L– STA. 374+64.96 TO –L– STA. 379+13.50

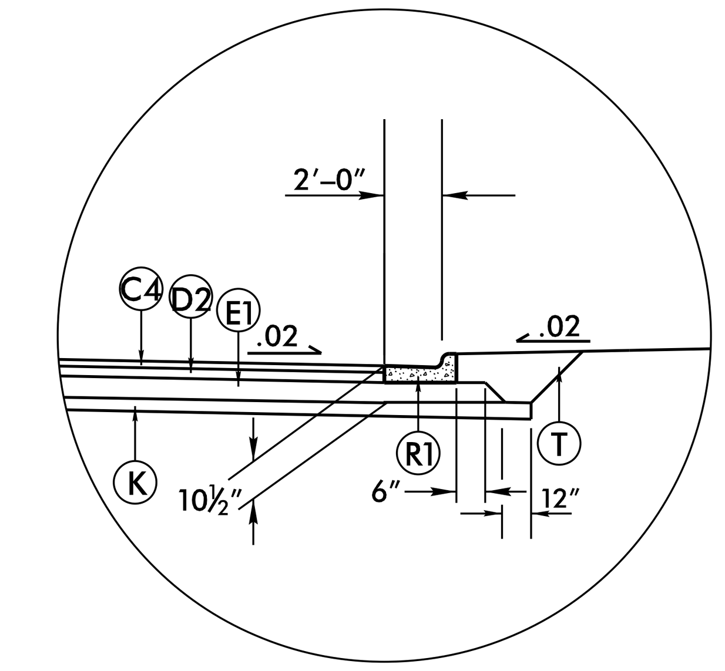


ALTERNATE PAVEMENT DESIGN DETAIL 'O'

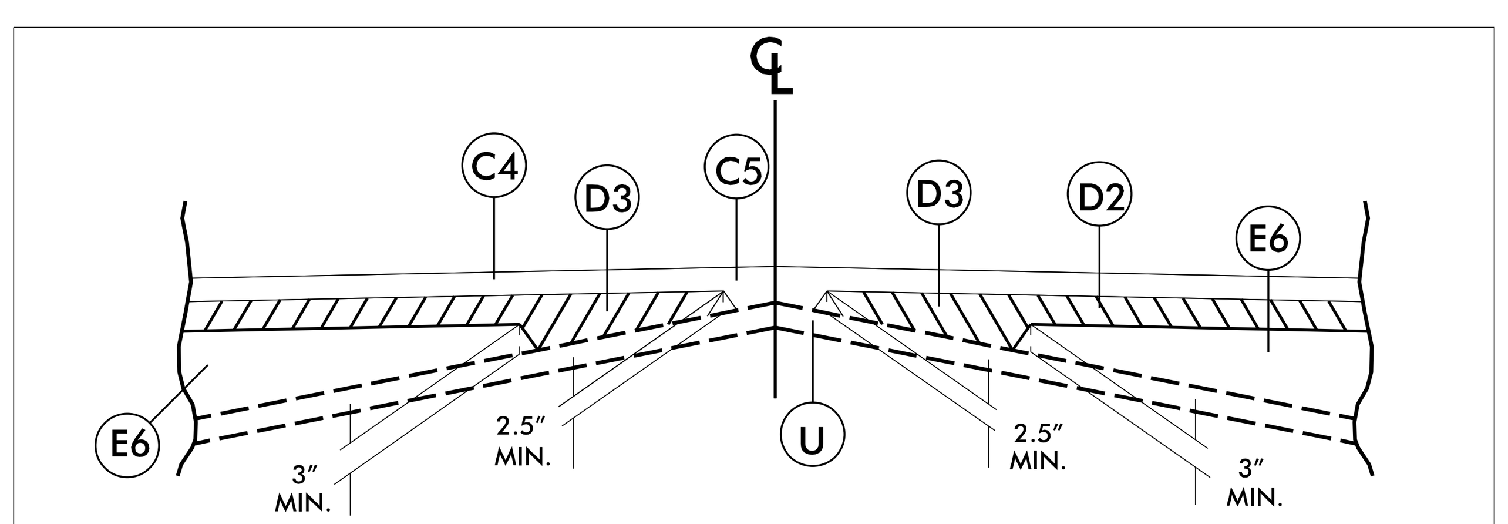


TYPICAL SECTION NO. 10

USE TYPICAL SECTION NO. 10 FROM:
–L– STA. 379+13.50 TO –L– STA. 381+40.55



ALTERNATE PAVEMENT DESIGN DETAIL 'P'



DETAIL SHOWING METHOD OF WEDGING –L– LINES

PROJECT REFERENCE NO.	SHEET NO.
R-2814C	2A-6
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER
5/6/2018	5/8/2018

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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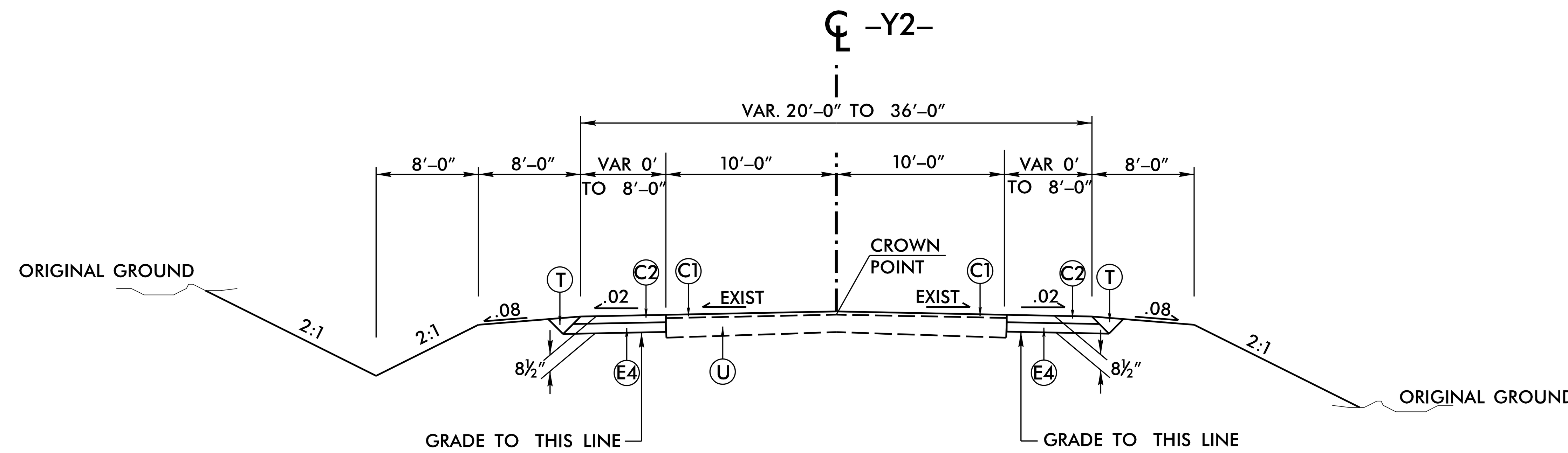
555 Fayetteville St, Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116

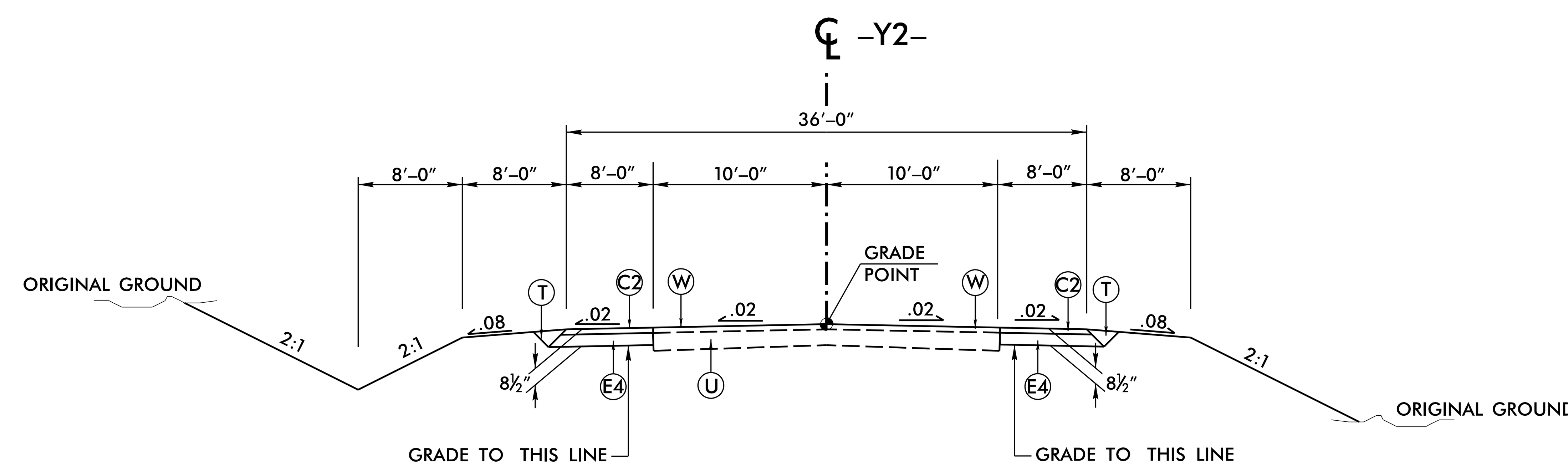
C1	1.5" TYPE S9.5B
C2	3" TYPE S9.5B
C3	VAR. DEPTH TYPE S9.5B
C4	3" TYPE S9.5C
C5	VAR. DEPTH TYPE S9.5C
D1	2.5" TYPE I19.0C
D3	VAR. DEPTH I19.0C
E2	4" TYPE B25.0C
E4	5.5" TYPE B25.0C
E6	VAR. DEPTH TYPE B25.0C
T	EARTH MATERIAL
U	EXISTING PAVEMENT
W	WEDGING



TYPICAL SECTION NO. 11

USE TYPICAL SECTION NO. 11 FROM:

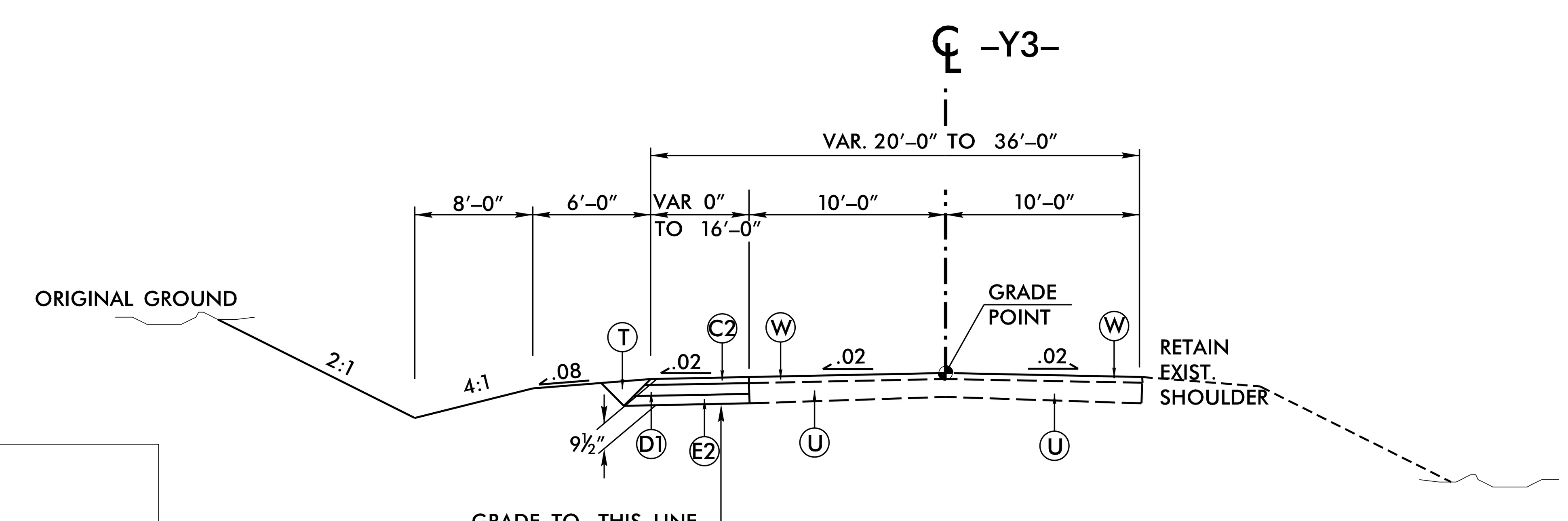
-Y2- STA. 12+21.83 TO -Y2- STA. 13+50



TYPICAL SECTION NO. 12

USE TYPICAL SECTION NO. 12 FROM:

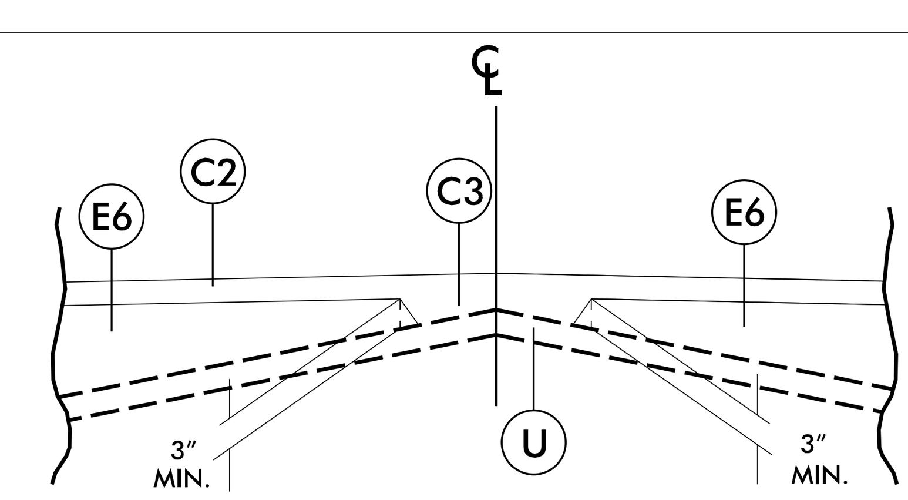
-Y2- STA. 13+50 TO -Y2- STA. 14+74.65



TYPICAL SECTION NO. 13

USE TYPICAL SECTION NO. 13 FROM:

-Y3- STA. 10+33.27 TO -Y3- STA. 12+86.28



DETAIL SHOWING METHOD OF WEDGING -Y- LINES

PROJECT REFERENCE NO.	SHEET NO.
R-2814C	2A-7
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 040286 CASEY E. HARRIS 5/6/2018	NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 022896 CLARK S. MORRISON 5/8/2018

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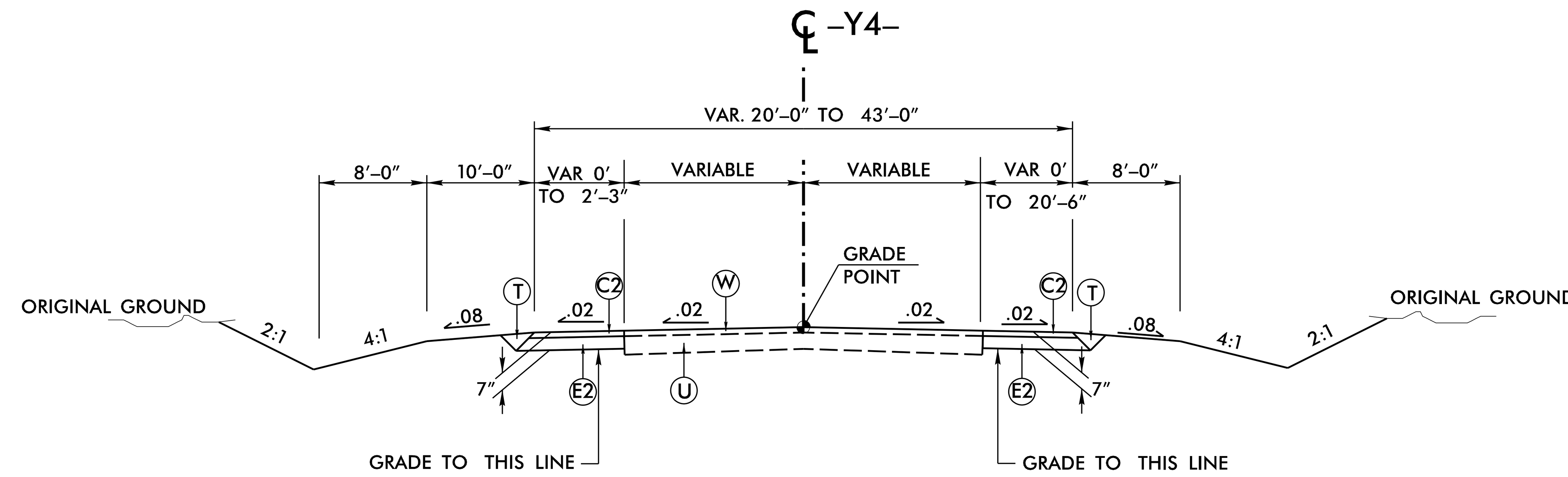
555 Fayetteville St, Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116

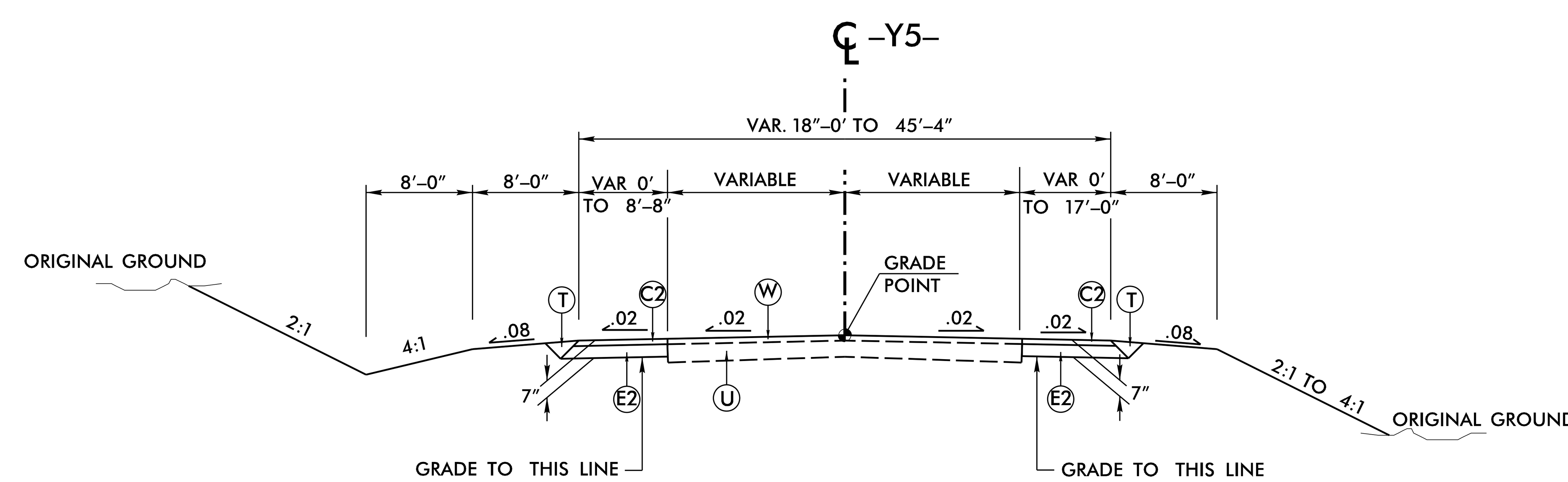
C1	1.5" TYPE S9.5B
C2	3" TYPE S9.5B
C3	VAR. DEPTH TYPE S9.5B
C4	3" TYPE S9.5C
C5	VAR. DEPTH TYPE S9.5C
D1	2.5" TYPE I19.0C
D3	VAR. DEPTH I19.0C
E2	4" TYPE B25.0C
E4	5.5" TYPE B25.0C
E6	VAR. DEPTH TYPE B25.0C
T	EARTH MATERIAL
U	EXISTING PAVEMENT
W	WEDGING



TYPICAL SECTION NO. 14

USE TYPICAL SECTION NO. 14 FROM:

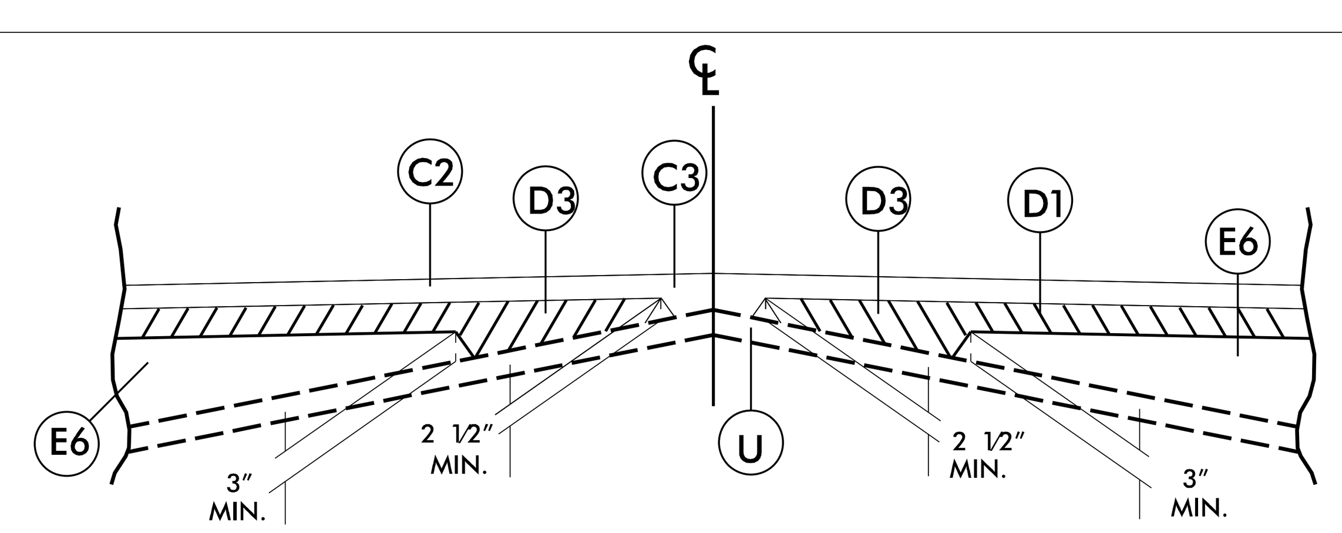
-Y4- STA. 21+60.45 TO -Y4- STA. 24+06.97



TYPICAL SECTION NO. 15

USE TYPICAL SECTION NO. 15 FROM:

-Y5- STA. 10+48.09 TO -Y5- STA. 13+20.20



DETAIL SHOWING METHOD OF WEDGING -Y- LINES

C2	3" TYPE S9.5B
C3	VAR. DEPTH TYPE S9.5B
D1	2.5" TYPE I19.0C
D3	VAR. DEPTH I19.0C
E3	4.5" TYPE B25.0C
E6	VAR. DEPTH TYPE B25.0C
T	EARTH MATERIAL
U	EXISTING PAVEMENT
W	WEDGING

PROJECT REFERENCE NO. R-2814C | SHEET NO. 2A-8
ROADWAY DESIGN ENGINEER — SEAL 040286 CASEY E. HARRIS — 5/6/2018
PAVEMENT DESIGN ENGINEER — SEAL 022896 CLARK S. MORRISON — 5/8/2018
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
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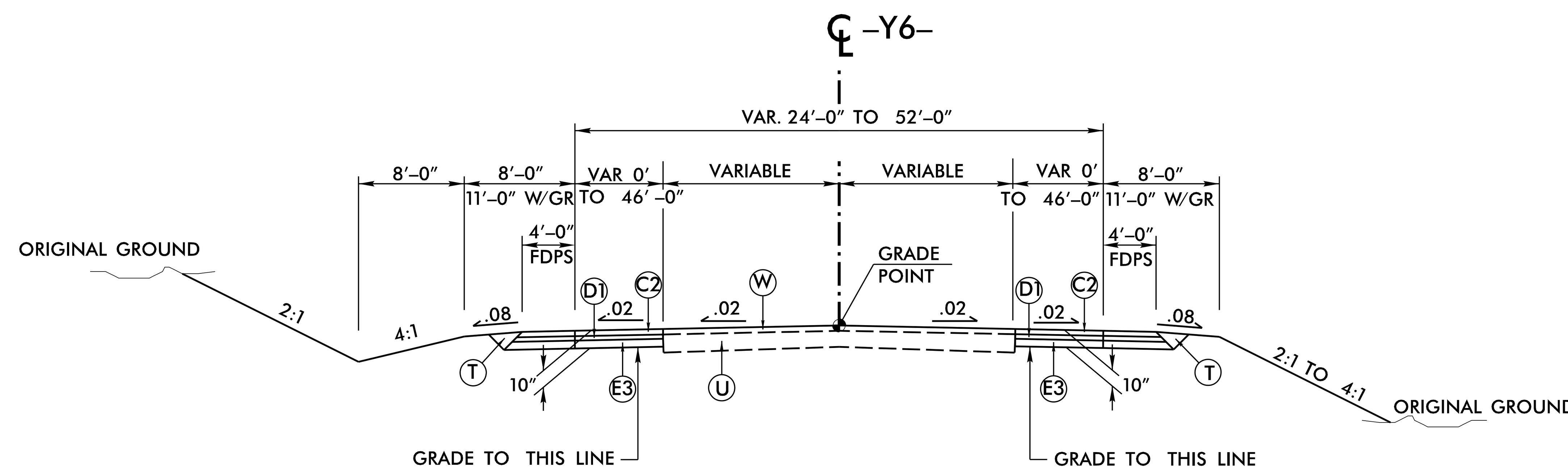
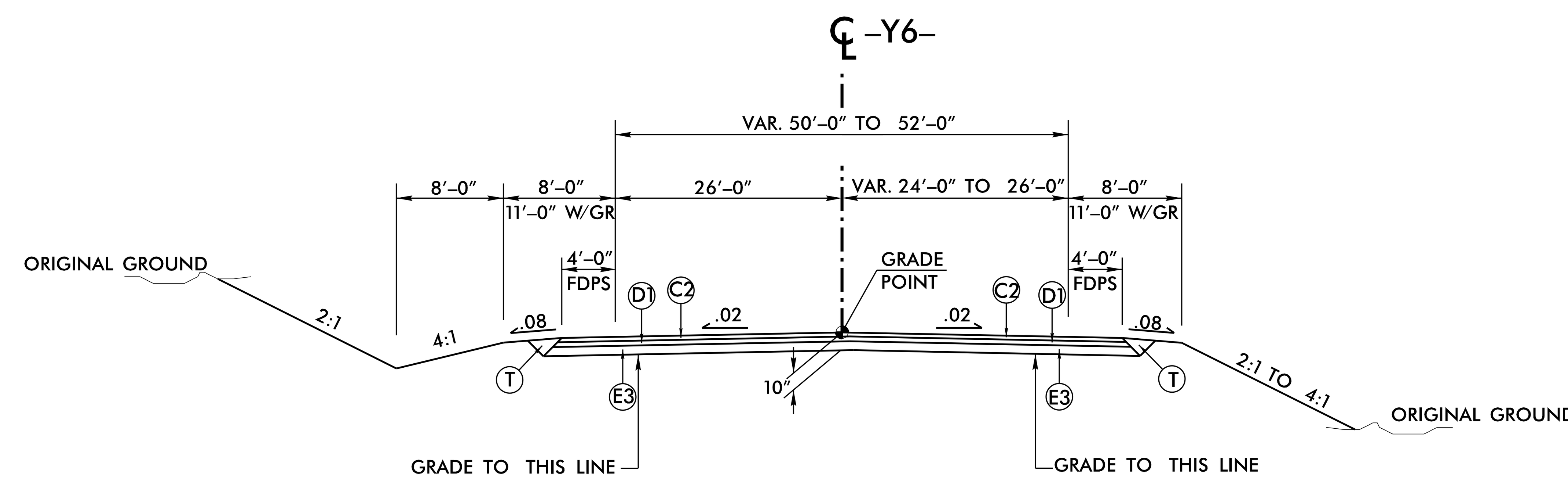


TYPICAL SECTION NO. 16

USE TYPICAL SECTION NO. 16 FROM:

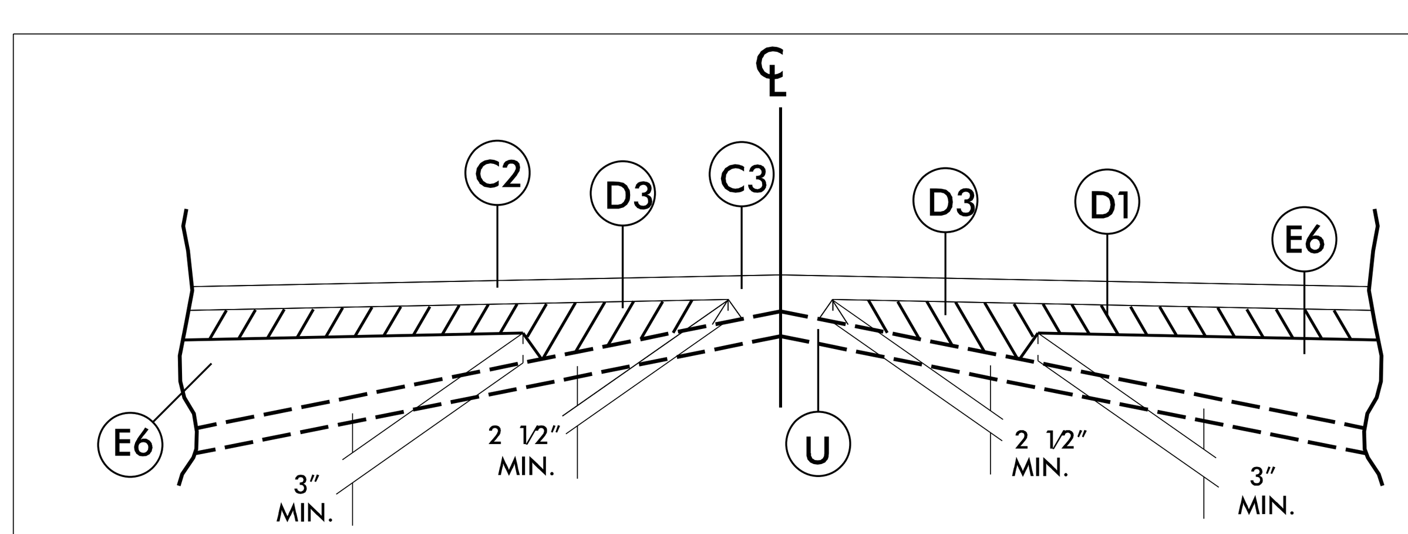
-Y6- STA. 18+88 TO -Y6- STA. 22+11
-Y6- STA. 29+58 TO -Y6- STA. 32+35



TYPICAL SECTION NO. 17

USE TYPICAL SECTION NO. 17 FROM:

-Y6- STA. 22+11 TO -Y6- STA. 25+08.09
-Y6- STA. 26+02.13 TO -Y6- STA. 29+58



DETAIL SHOWING METHOD OF WEDGING -Y- LINES

6/2/99
5/31/2018 R2814C_Rdy_typ.dgn

PROJECT REFERENCE NO.	SHEET NO.
R-2814C	2A-9
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER
SEAL 040286 CASEY E. HARRIS 5/6/2018	SEAL 022896 CLARK S. MORRISON 5/8/2018

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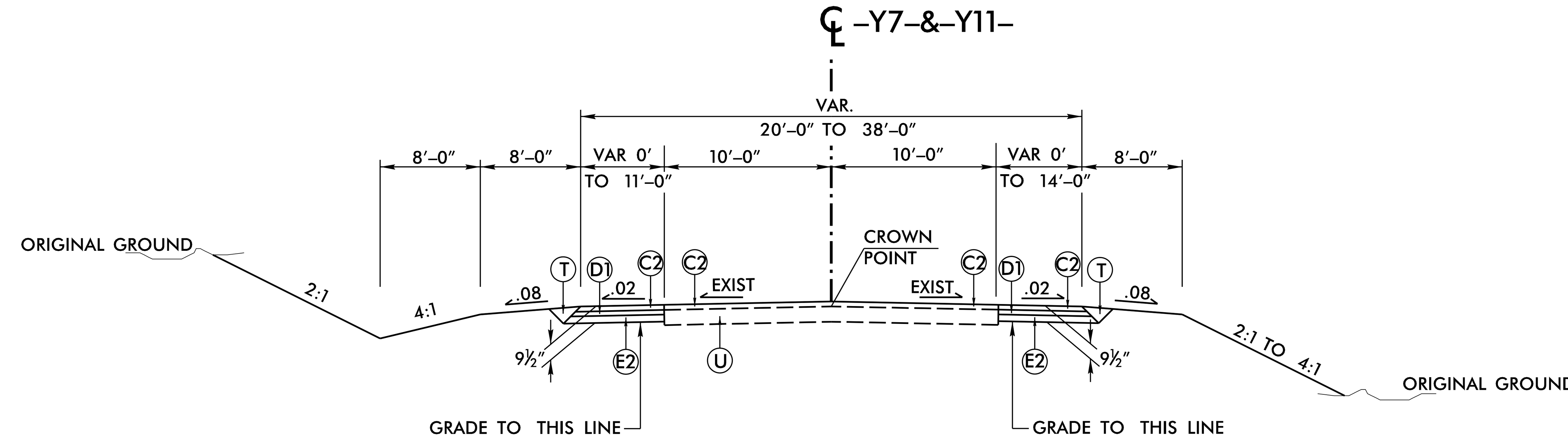
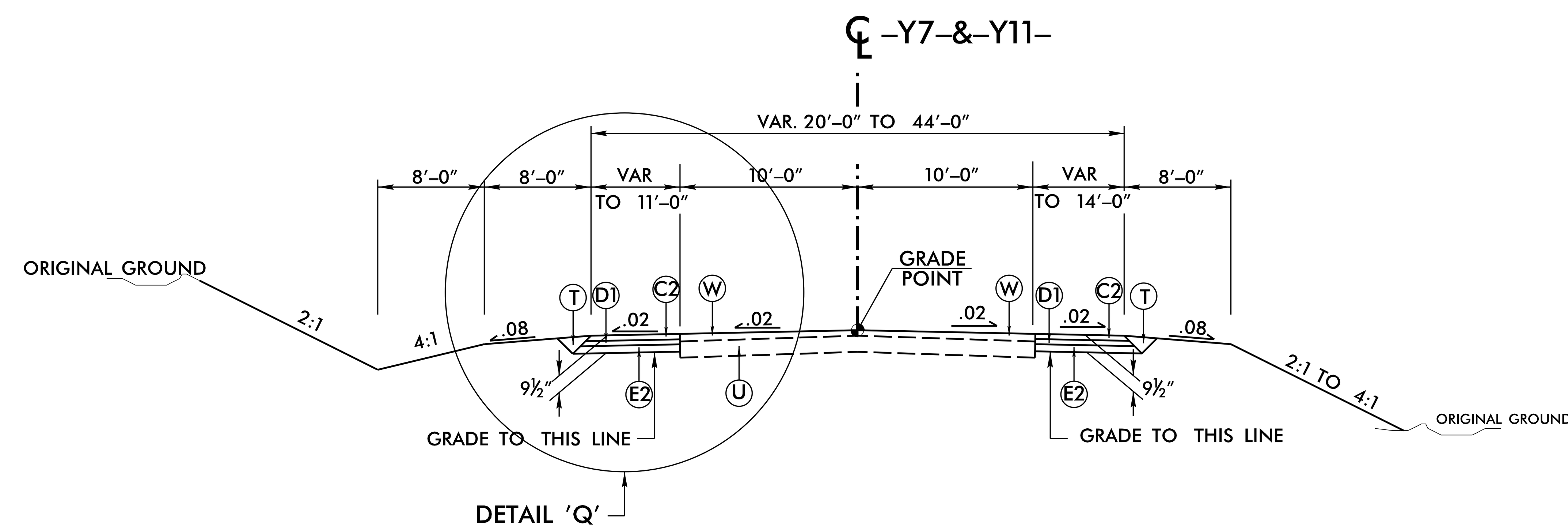
C2	3" TYPE S9.5B
C3	VAR. DEPTH TYPE S9.5B
C4	3" TYPE S9.5C
D1	2.5" TYPE I19.0C
D2	4" TYPE I19.0C
D3	VAR. DEPTH I19.0C
E1	3.5" TYPE B25.0C
E2	4" TYPE B25.0C
E6	VAR. DEPTH TYPE B25.0C
R1	2'-6" CONCRETE CURB AND GUTTER
T	EARTH MATERIAL
U	EXISTING PAVEMENT
W	WEDGING



TYPICAL SECTION NO. 18

USE TYPICAL SECTION NO. 18 FROM:

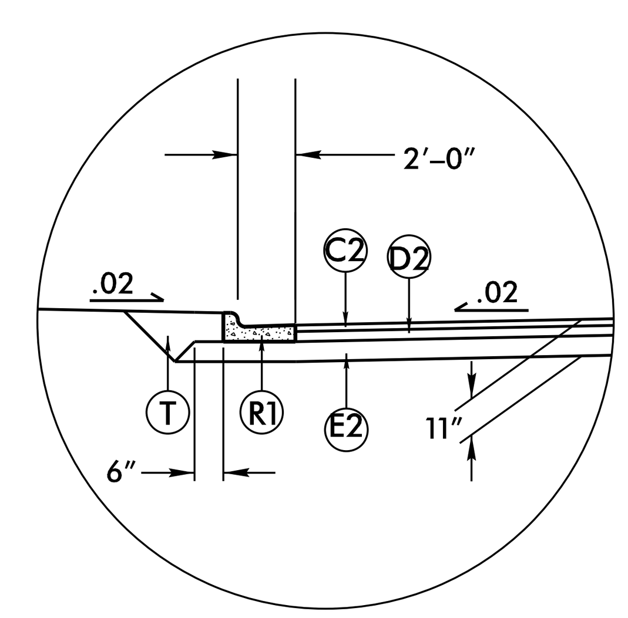
-Y7- STA. 13+11.91 TO -Y7- STA. 14+30
-Y7- STA. 18+00 TO -Y7- STA. 18+55
-Y11- STA. 12+50 TO -Y11- STA. 16+00
-Y11- STA. 19+50 TO -Y11- STA. 22+50



TYPICAL SECTION NO. 19

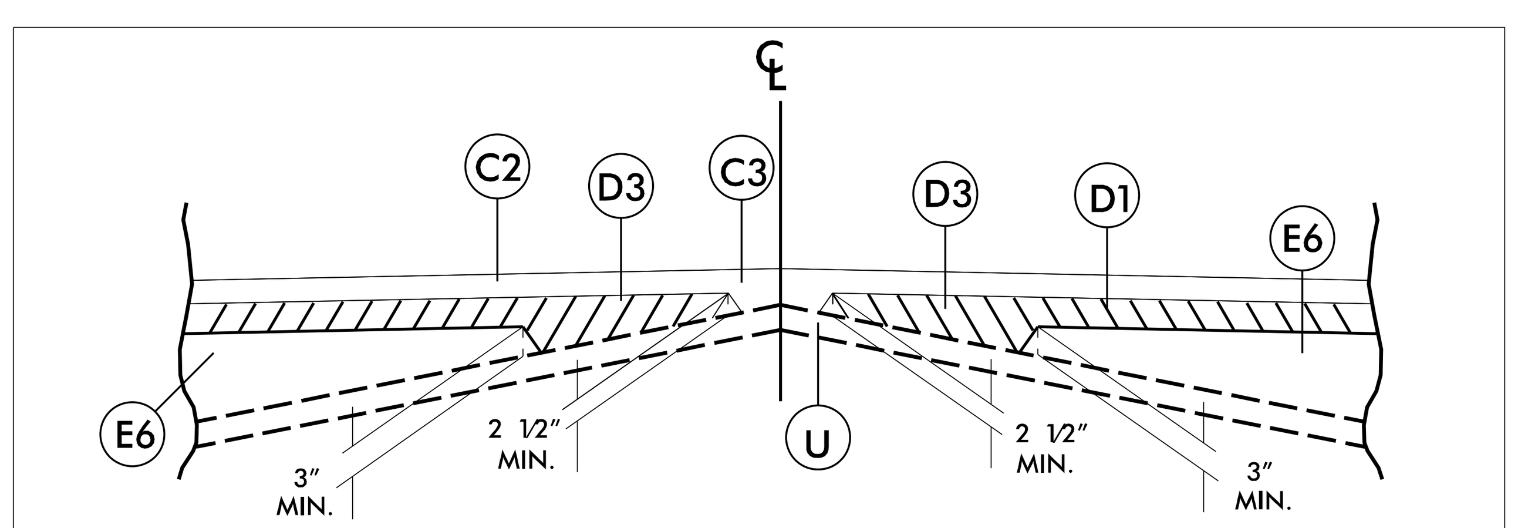
USE TYPICAL SECTION NO. 19 FROM:

-Y7- STA. 14+30 TO -Y7- STA. 15+45
-Y7- STA. 16+55 TO -Y7- STA. 18+00
-Y11- STA. 16+00 TO -Y11- STA. 17+14.96
-Y11- STA. 17+85.96 TO -Y11- STA. 19+50



USE DETAIL 'Q' IN CONJUCTION WITH TYPICAL NO. 19

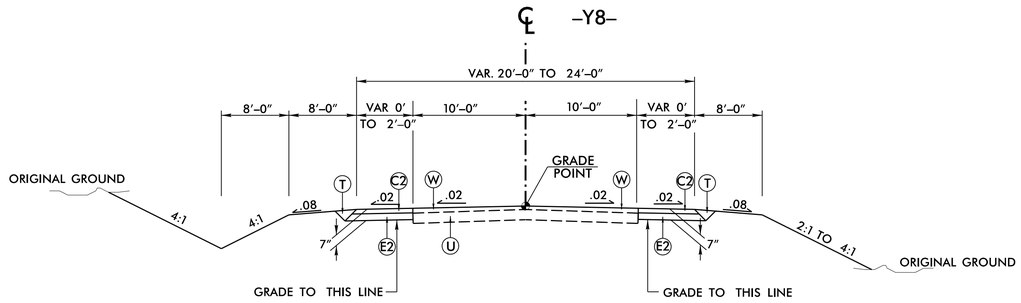
-Y11- STA. 16+00 TO 17+14.96 LT & RT
-Y11- STA. 17+85.96 TO 19+04.66 LT & RT



DETAIL SHOWING METHOD OF WEDGING -Y- LINES

6/2/99

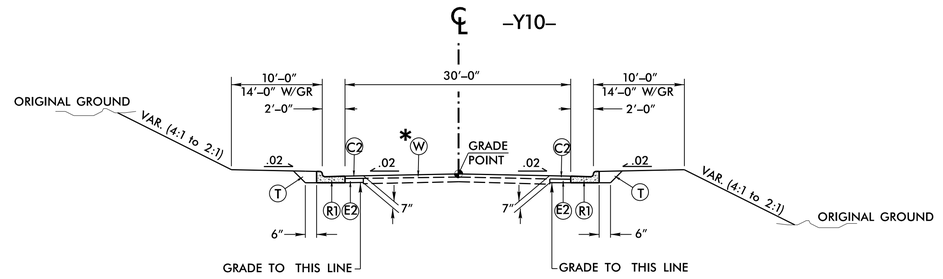
C2	3" TYPE S9.5B
C3	VAR. DEPTH TYPE S9.5B
D1	2.5" TYPE I19.0C
D3	VAR. DEPTH I19.0C
E2	4" TYPE B25.0C
E6	VAR. DEPTH TYPE B25.0C
R1	2'-6" CONCRETE CURB AND GUTTER
T	EARTH MATERIAL
U	EXISTING PAVEMENT
W	WEDGING



TYPICAL SECTION NO. 20

USE TYPICAL SECTION NO. 20 FROM:

–Y8– STA. 10+48.03 TO –Y8– STA. 12+25

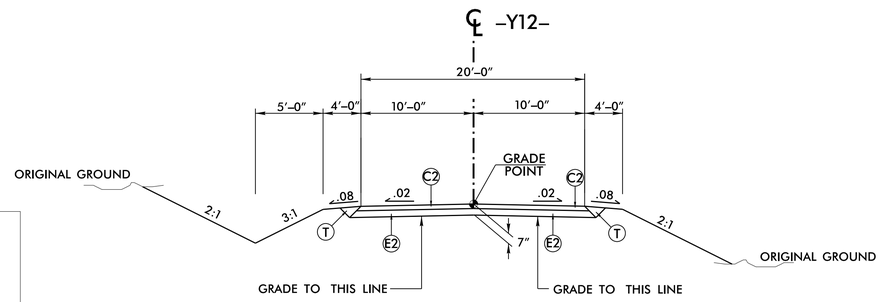


TYPICAL SECTION NO. 21

USE TYPICAL SECTION NO. 21 FROM:

–Y10– STA. 14+00 TO –Y10– STA. 15+41.56

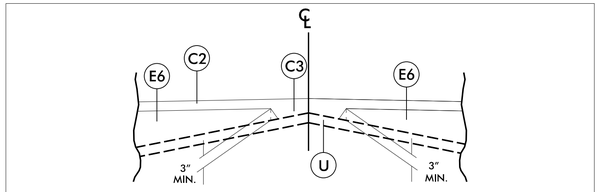
* NOTE: USE FULL DEPTH PAVEMENT DESIGN FOR –Y10– STA. 14+00 TO STA. 15+00



TYPICAL SECTION NO. 22

USE TYPICAL SECTION NO. 22 FROM:

–Y12– STA. 11+67 TO –Y12– STA. 13+57.56



DETAIL SHOWING METHOD OF WEDGING –Y– LINES

PROJECT REFERENCE NO.	SHEET NO.
R–2814C	2A–10

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 040286 ENGINEER CASEY E HARRIS

6/6/2018

PAVEMENT DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 022896 ENGINEER CLARK S MORRISON

6/8/2018

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5/31/2018
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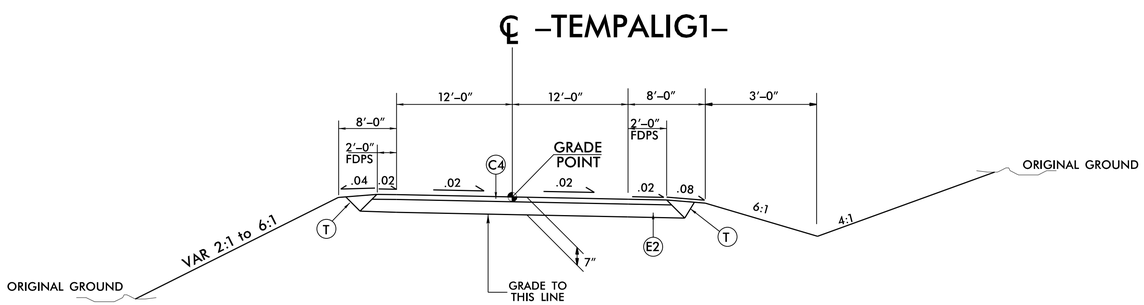
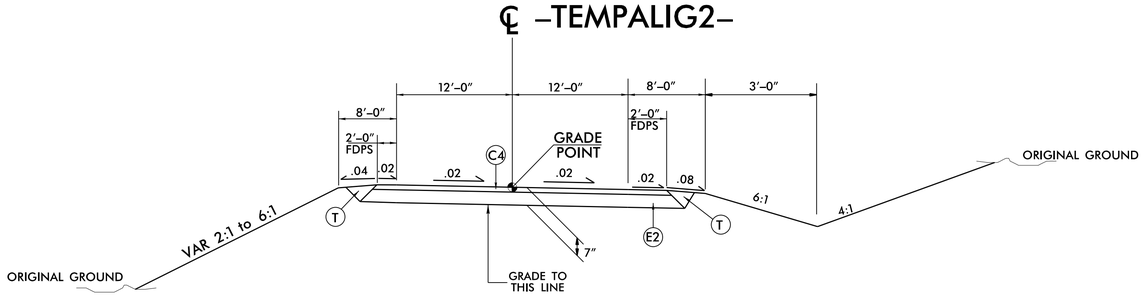
6/2/99

C2	3" TYPE S9.5B
C4	3" TYPE S9.5C
D1	2.5" TYPE I19.0C
D3	VAR. DEPTH I19.0C
E2	4" TYPE B25.0C
E6	VAR. DEPTH TYPE B25.0C
T	EARTH MATERIAL
U	EXISTING PAVEMENT
W	WEDGING



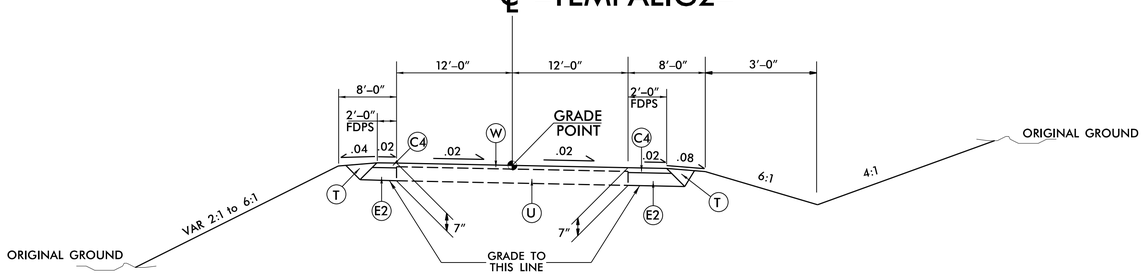
TYPICAL SECTION NO. 23

USE TYPICAL SECTION NO. 23 FROM:
–TEMPALIG1– STA. 13+84.06 TO –TEMPALIG1– STA. 15+59.74



TYPICAL SECTION NO. 24

USE TYPICAL SECTION NO. 24 FROM:
–TEMPALIG2– STA. 12+50.00 TO –TEMPALIG2– STA. 18+61.21



TYPICAL SECTION NO. 25

USE TYPICAL SECTION NO. 25 FROM:
–TEMPALIG2– STA. 18+61.21 TO –TEMPALIG2– STA. 19+16.88

PROJECT REFERENCE NO.	SHEET NO.
R–2814C	2A–11

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 040286 ENGINEER CASEY E HARRIS
6/6/2018

PAVEMENT DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 022896 ENG INEER CLARK S MORRISON
6/8/2018

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5/31/2018
12:30:30 PM
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MAINLINE SHOULDER DRAIN LOCATIONS AND OUTLETS

PROJECT REFERENCE NO.	SHEET NO.
R–2814C	2A–12

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 040286 ENGINEER CASEY E. HARRIS

6/6/2018

PAVEMENT DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 022896 ENGINEER CLARK S. MORRISON

6/8/2018

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NORTHBOUND OUTSIDE

FROM –L– STA. 35+92 (RT) TO –L– STA. 63+50 (RT)

35+92
39+00
43+54
46+50
50+70
54+90
58+00
61+00
63+50

FROM –L– STA. 84+50 (RT) TO –L– STA. 96+30 (RT)

84+50
89+25
91+00
94+00

FROM –L– STA. 123+50 (RT) TO –L– STA. 142+00 (RT)

123+50
126+50
129+50
132+50
135+50
137+70 2GI
141+00

FROM –L– STA. 147+50 (RT) TO –L– STA. 166+00 (RT)

149+00
152+00
155+00
158+00
161+00
164+30 2GI
166+00

FROM –L– STA. 191+00 (RT) TO –L– STA. 201+50 (RT)

191+00
194+00
197+00
200+00

FROM –L– STA. 228+00 (RT) TO –L– STA. 253+50 (RT)

230+00
233+00
236+00
238+50
242+00
246+00
249+00
253+00

SOUTHBOUND OUTSIDE

FROM –L– STA. 35+92 (LT) TO –L– STA. 59+00 (LT)

35+92
39+00
43+54
46+50
49+50
52+00
54+90
57+00

FROM –L– STA. 84+50 (LT) TO –L– STA. 96+30 (LT)

84+50
89+25
92+00
95+00
96+30

FROM –L– STA. 104+40 (LT) TO –L– STA. 113+50 (LT)

106+50
109+50 2GI
112+00
113+50

FROM –L– STA. 123+50 (LT) TO –L– STA. 142+00 (LT)

123+50
127+00
130+00
133+00
138+00 2GI
140+50 2GI
142+00

FROM –L– STA. 147+50 (LT) TO –L– STA. 166+00 (LT)

147+50
152+00 2GI
155+20 2GI
158+00
161+00
164+30
166+00

FROM –L– STA. 196+70 (LT) TO –L– STA. 210+50 (LT)

196+70
200+00
203+00
206+00
210+50

FROM –L– STA. 236+00 (LT) TO –L– STA. 253+50 (LT)

236+00
238+50
241+00
244+00
247+00
250+00
253+00

NORTHBOUND INSIDE

FROM –L– STA. 93+60 (RT) TO –L– STA. 99+00 (RT)

93+60 2GI
96+30

FROM –L– STA. 104+40 (RT) TO –L– STA. 113+50 (RT)

106+50 2GI
109+50 2GI
112+00
113+50

FROM –L– STA. 201+50 (RT) TO –L– STA. 210+50 (RT)

203+50
206+00 2GI
210+50 2GI

SOUTHBOUND INSIDE

FROM –L– STA. 59+00 (LT) TO –L– STA. 64+50 (LT)

59+00 2GI
64+50 2GI

FROM –L– STA. 189+50 (LT) TO –L– STA. 196+70 (LT)

189+50 2GI
194+00

FROM –L– STA. 228+00 (LT) TO –L– STA. 236+00 (LT)

229+60 2GI
233+00
235+60 2GI

PROJECT REFERENCE NO.	SHEET NO.
R-2814C	2A-13

ROADWAY DESIGN ENGINEER — SEAL 040286, CASEY E. HARRIS, 5/6/2018

PAVEMENT DESIGN ENGINEER — SEAL 022896, CLARK S. MORRISON, 5/8/2018

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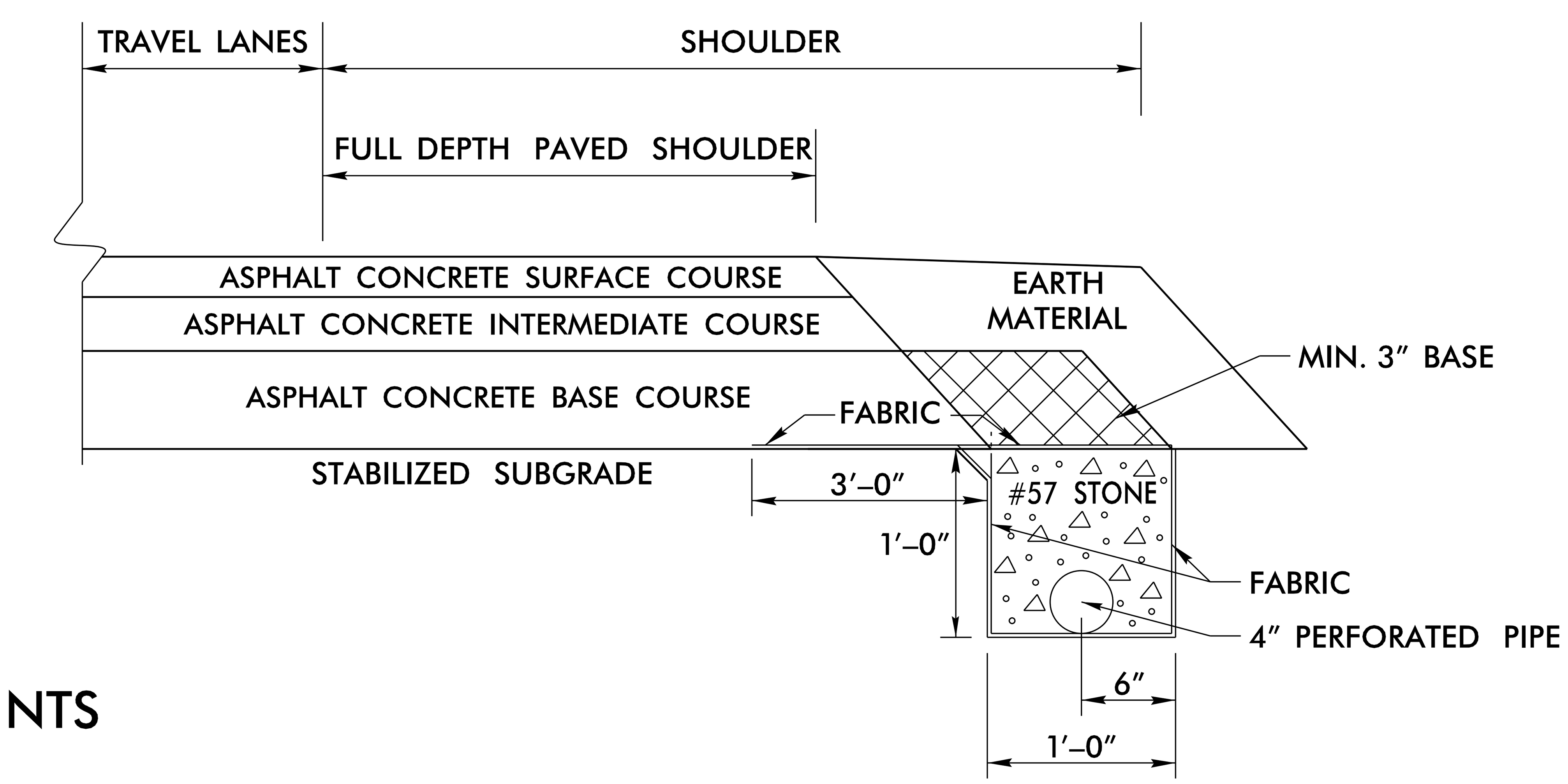
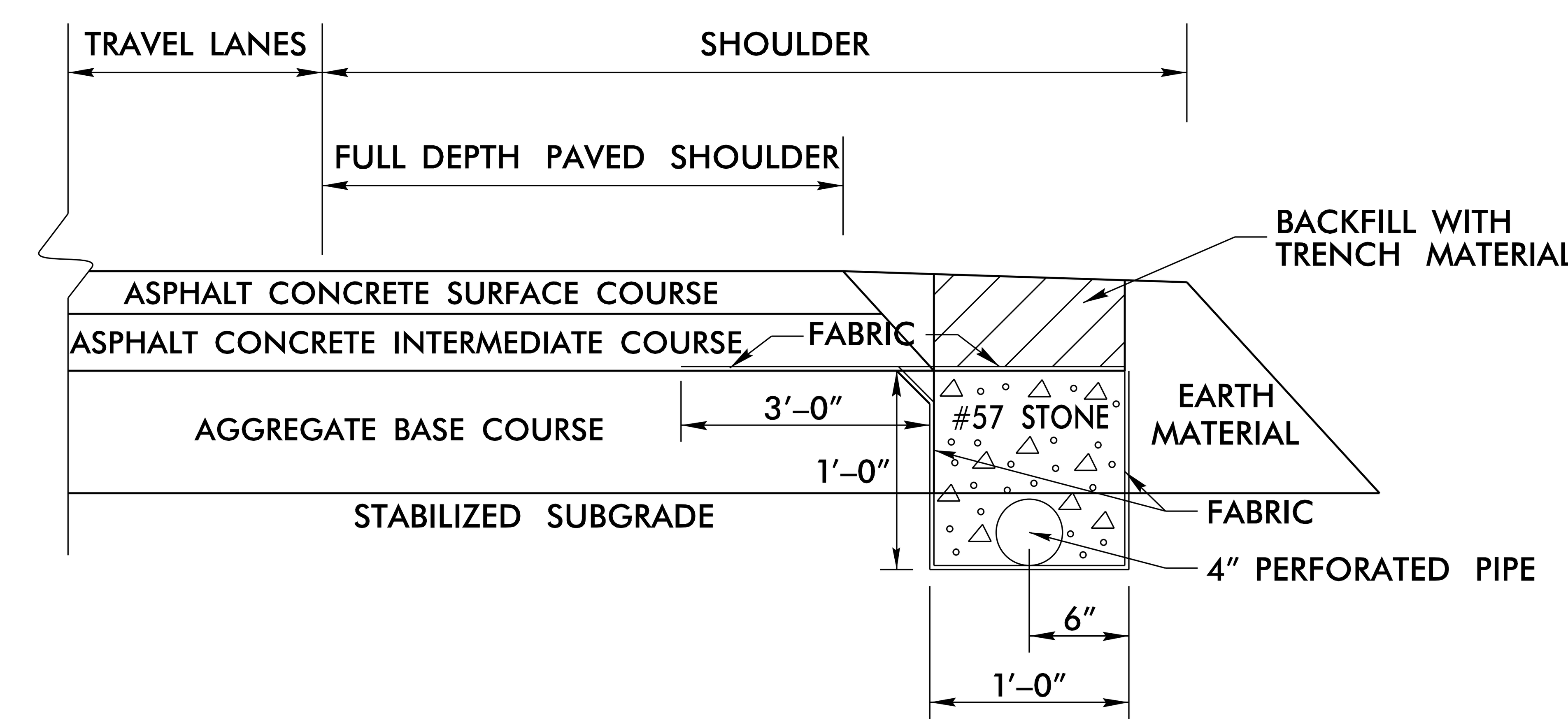
MAINLINE SHOULDER DRAIN DETAILS



DETAIL OF SHOULDER DRAIN – MAINLINE SHOULDER

TO BE USED WITH ASPHALT CONCRETE BASE COURSE LAYER



DETAIL OF SHOULDER DRAIN – MAINLINE SHOULDER

TO BE USED WITH AGGREGATE BASE COURSE LAYER

PROJECT REFERENCE NO.	SHEET NO.
R-2814C	2B-1

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 040286 ENGINEER CASEY E. HARRIS

6/13/2018

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INTERSECTION -L- WITH -Y1-

SEE SHEET 4 NOT TO SCALE

PROP. CONC. 5" MONOLITHIC KEYED IN ISLAND

PROP. REVISED TRAFFIC SIGNAL

5/7/2018
R-2814C_Intersection_Details.dgn

PROJECT REFERENCE NO.	SHEET NO.
R-2814C	2B-2

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 040286 ENGINEER CASEY E. HARRIS

6/13/2018

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REVISIONS
8/17/99
NAD 83/NSRS 2007
100' TAPER LT & RT.
-Y2-
18'
36'
-L- POT Sta.85+96.31=
-Y2- POT Sta.15+21.60
+11.79 -Y2-
-L- STA. 85+16.20
112' LT
+00.54 -Y2-
-L- STA. 86+77.43
119' LT
2'R
AT-1
100'R
60'R
65'R
10' P.S
+81.41 -L-
+66.31 -L-
4'R
10'
4'R
12'
4' P.S
2' P.S
24'
24'
02
+71.41 -L-
20'R
5'R
4'
8'
2'R
2' P.S
26'
100'R
12'
75'R
75'R
100'R
26'
-L-
150' TAPER
12'
2'R
4'
2FT P.S
8'
5'R
20'R
+26.31 -L-
24'
4' P.S
24'
12'
11'
2'R
3'
2'R
4' P.S
+39.75
70'R
85'R
65'R
+16.31 -L-
-L- POT Sta.86+02.00=
-Y3- POT Sta.9+86.27
+92.52 -Y3-
-L- STA. 86+94.03
107' RT
2'R
+15.19 -Y3-
-L- STA. 85+21.03
129' RT
194' TAPER LT
-Y3-
5/7/2018
R2814C_Intersection_Details.dgn

INTERSECTION -L- WITH -Y2- & -Y3-

SEE SHEET 7 NOT TO SCALE

PROP. CONC. 5" MONOLITHIC KEYED IN ISLAND

PROJECT REFERENCE NO.	SHEET NO.
R-2814C	2B-3

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 048286 ENGINEER CASEY E. HARRIS

6/13/2018

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

REVISIONS 8/17/99

-L- POT Sta. 120+95.10=
-Y5- POT Sta. 10+00.00

-L- STA. 120+39.36
157.35' LT

ST Sta. 118+98.35

100' FULL LANE LT. & RT.

+60.45 -Y4-

+71.11 -Y4-

-L- STA. 122+65.33
119' LT

PT Sta. 23+74.55

NAD 83/NSRS 2007

-L- +95.00

-L- +88.85

-L- +14.99

-L- +05.00

EXIST .00

EXIST .05

.01

.02

.04

.00

.01

.02

.10

4' PS

2' PS

24'

26'

12'

8'

4'

2'R

4'R

5'R

6.5'

20'R

60'R

65'R

120'R

138'R

100'R

27'

18'

+38.80 -Y5-

+97.44 -Y5-

-L- STA. 119+88.88
119' RT

-L- STA. 121+64.11
114.66' RT

80' FULL LANE

100' FULL LANE

-L- POT Sta. 121+06.61=
-Y4- POT Sta. 24+61.22

INTERSECTION -L- WITH -Y4- & -Y5-

SEE SHEET 10 NOT TO SCALE

PROP. CONC. 5" MONOLITHIC KEYED IN ISLAND

5/7/2018
R2814c_Intersection_Details.dgn
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PROJECT REFERENCE NO.	SHEET NO.
R-2814C	2B-4

ROADWAY DESIGN ENGINEER

6/13/2018

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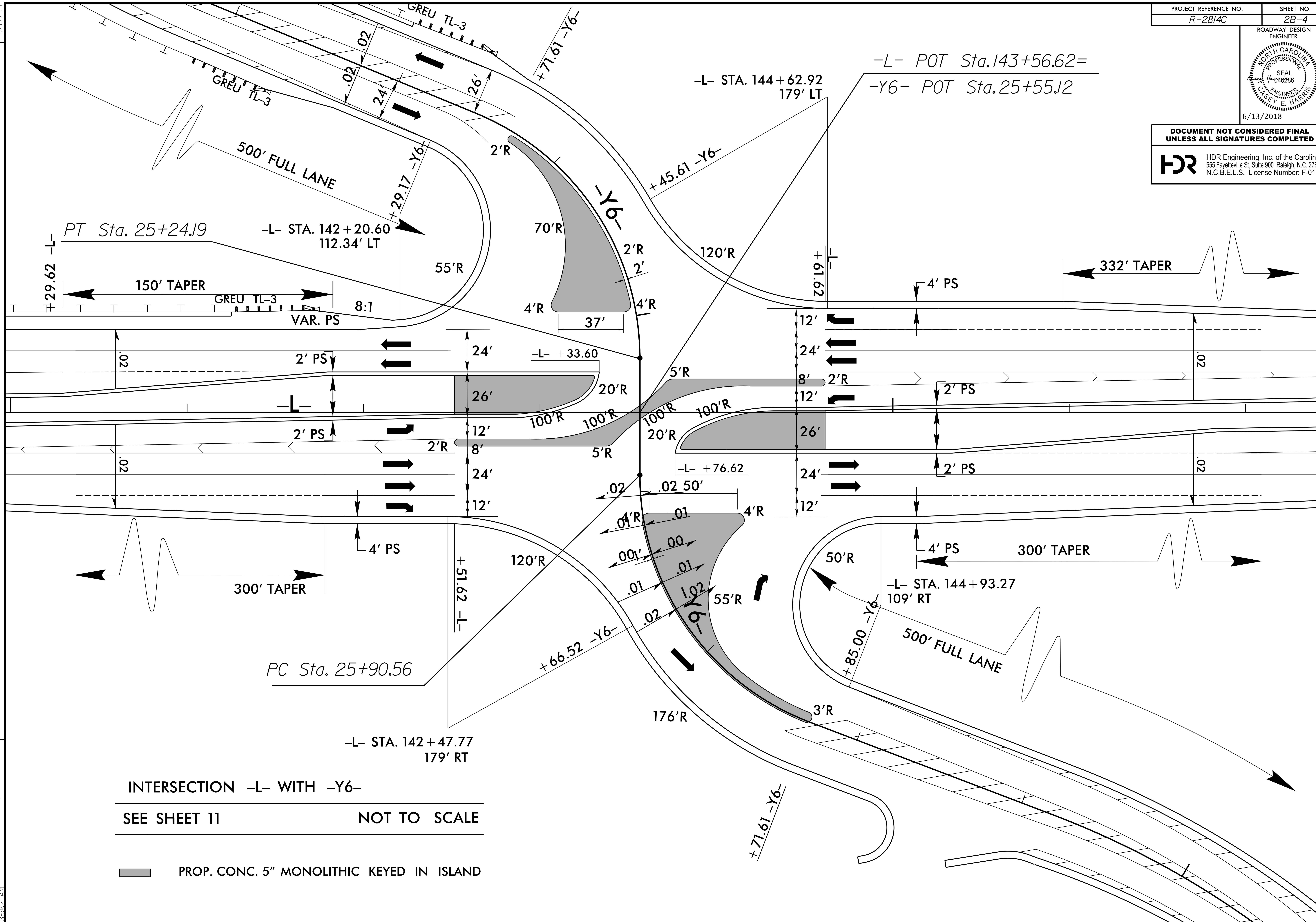
N.C.B.E.L.S. License Number: F-0116



INTERSECTION -L- WITH -Y6-

SEE SHEET 11 NOT TO SCALE

PROP. CONC. 5" MONOLITHIC KEYED IN ISLAND

REVISIONS

8/17/99

5/7/2018 R2814C_Intersection_Details.dgn

PROJECT REFERENCE NO.	SHEET NO.
R-2814C	2B-5

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 040286 ENGINEER CASEY E. HARRIS

6/13/2018

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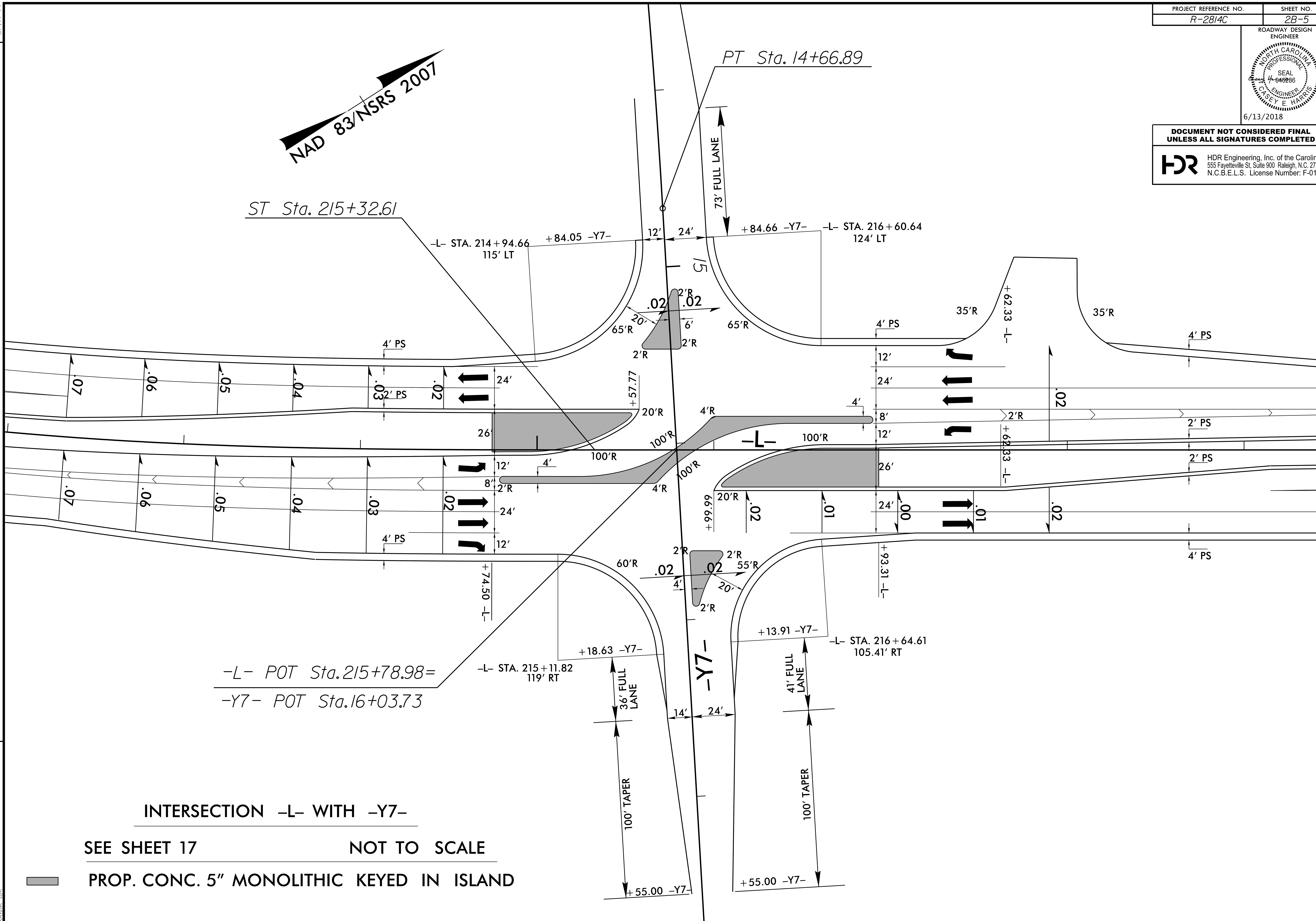
555 Fayetteville St, Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116



INTERSECTION -L- WITH -Y7-

SEE SHEET 17 NOT TO SCALE

PROP. CONC. 5" MONOLITHIC KEYED IN ISLAND

REVISIONS

8/17/99

5/7/2018 R2814C_Intersection_Details.dgn

PROJECT REFERENCE NO.	SHEET NO.
R-2814C	2B-6

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 040286 ENGINEER CASEY E. HARRIS

6/13/2018

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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INTERSECTION -L- WITH -Y8-

SEE SHEET 20 NOT TO SCALE

PROP. CONC. 5" MONOLITHIC KEYED IN ISLAND

PROJECT REFERENCE NO.	SHEET NO.
R-2814C	2B-7

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 040286 CASEY E. HARRIS

6/13/2018

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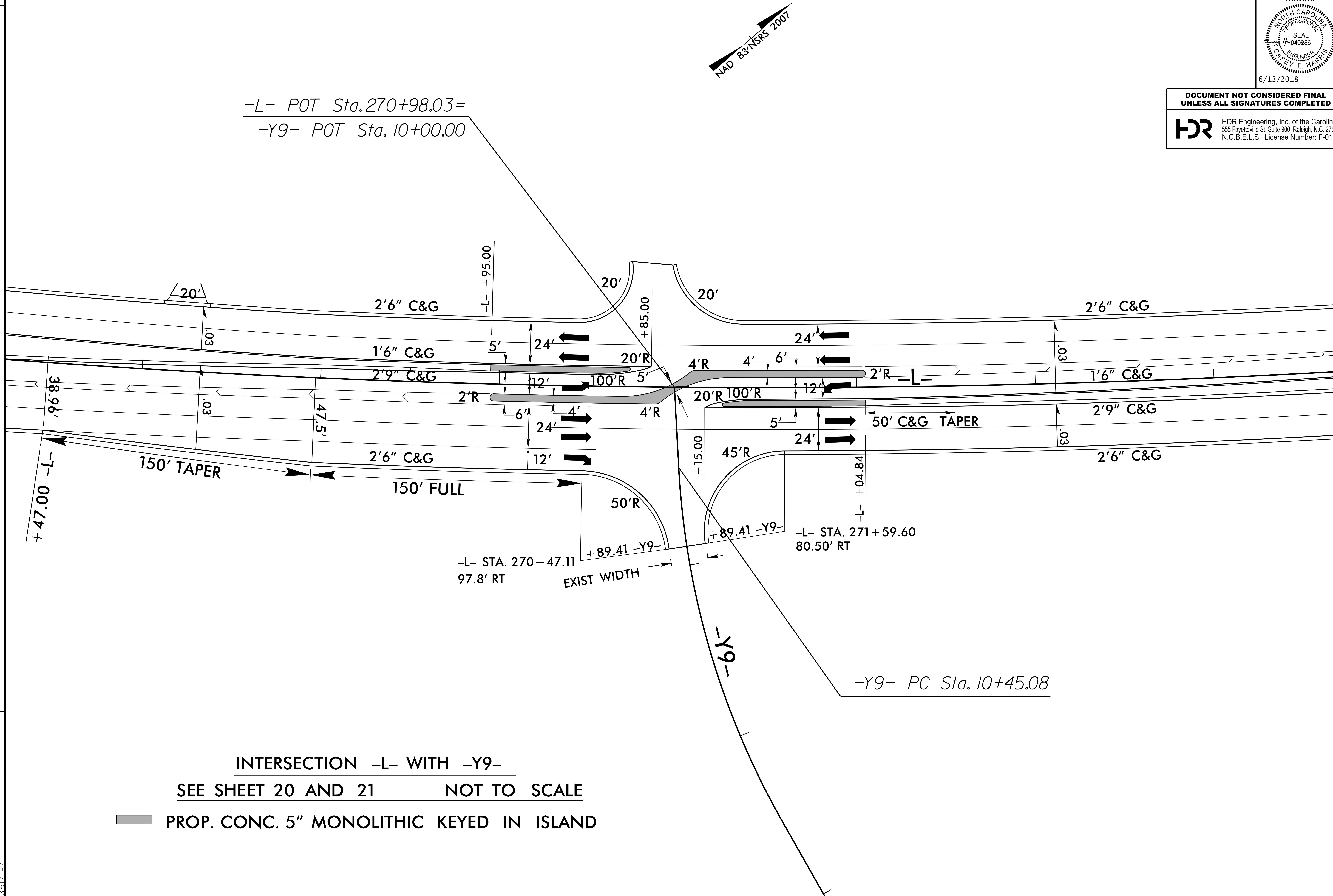
REVISIONS



INTERSECTION -L- WITH -Y9-

SEE SHEET 20 AND 21 NOT TO SCALE

PROP. CONC. 5" MONOLITHIC KEYED IN ISLAND

PROJECT REFERENCE NO.	SHEET NO.
R-2814C	2B-8

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 040286 ENGINEER CASEY E. HARRIS

6/13/2018

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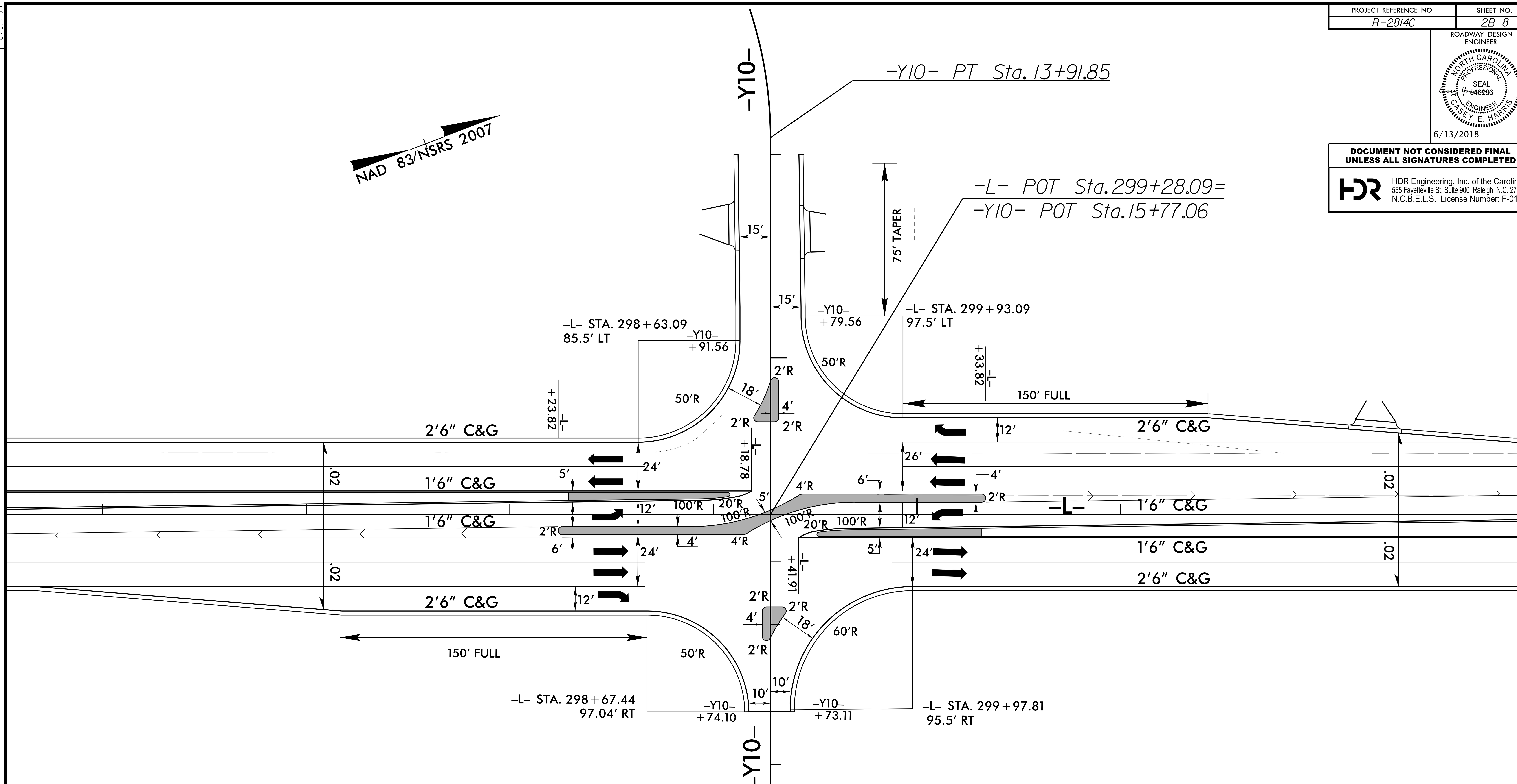

REVISIONS

INTERSECTION -L- WITH -Y10-

SEE SHEET 23

NOT TO SCALE

PROP. CONC. 5" MONOLITHIC KEYED IN ISLAND

8/17/99

5/7/2018
R2814C_Intersection_Details.dgn

PROJECT REFERENCE NO.	SHEET NO.
R-2814C	2B-9

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 040286 ENGINEER CASEY E. HARRIS

6/13/2018

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

REVISIONS 8/17/99

-Y11- PT Sta. 14+88.75

NAD 83/NSRS 2007

-L- STA. 357+58.90
135.50' LT

+14.08 -Y11-

500' FULL LANE

18'

26'

-L- POT STA 358+85.76=

-Y11- POT STA 17+50.46

+03.77 -Y11-

-L- STA. 360+02.82
147.50' LT

100'R

-L-
+67.32

-Y11-
+74.45

150' FULL

150' TAPER

2'6" C&G

20'

2'R

36'

10'

2'R

2'R

-L-
+57.32

-L-
+05.25

12'

24'

.02

1'6" C&G

5'

4'R

4'

2'R

100'R

20'R

100'R

100'R

100'R

4'R

4'

6'

4'

24'

12'

1'6" C&G

-L-

5' 1'6" C&G

.02

2'R

10'

2'R

6'

2'6" C&G

-L-
+15.25

12'

2'6" C&G

150' TAPER

150' FULL

100'R

100'R

36'

2'R

-Y11-
+33.36

-Y11-
+79.03

-L- STA. 360+07.34
135.50' RT

-Y11- PT Sta. 18+58.74

-L- STA. 357+62.29
147.50' RT

-Y11-
+04.66

26'

18'

36'

250' TAPER

-Y11-

350' FULL LANE

INTERSECTION -L- WITH -Y11-

SEE SHEET 27 NOT TO SCALE

PROP. CONC. 5" MONOLITHIC KEYED IN ISLAND

5/7/2018
R-2814C_Intersection_Details.dgn
8:42:27 AM

5/14/99

PROJECT REFERENCE NO.	SHEET NO.
R-2814C	2B-10
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 040266 ENGINEER CASEY E HARRIS

6/13/2018

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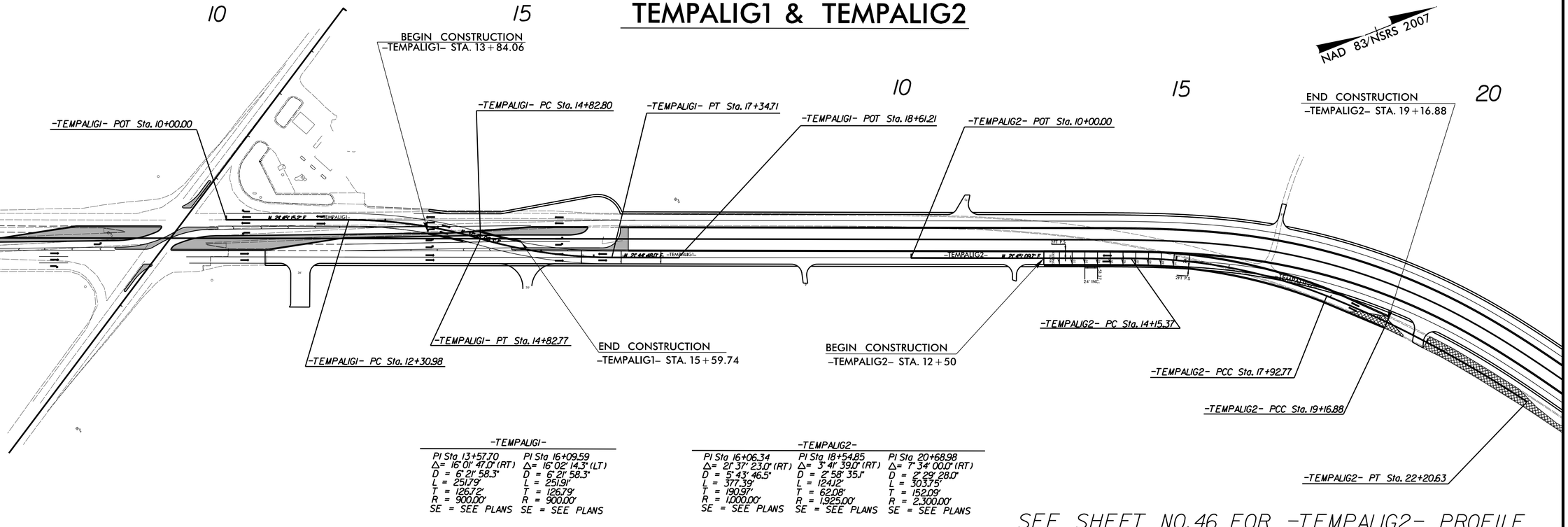
N.C.B.E.L.S. License Number: F-0116

TEMPALIG1 & TEMPALIG2



-TEMPALIG1-

PI Sta 13+57.70	PI Sta 16+09.59
Δ= 16° 01' 47.0" (RT)	Δ= 16° 02' 14.3" (LT)
D = 6° 21' 58.3"	D = 6° 21' 58.3"
L = 251.79'	L = 251.91'
T = 126.72'	T = 126.79'
R = 900.00'	R = 900.00'
SE = SEE PLANS	SE = SEE PLANS

-TEMPALIG2-

PI Sta 16+06.34	PI Sta 18+54.85	PI Sta 20+68.98
Δ= 21° 37' 23.0" (RT)	Δ= 3° 41' 39.0" (RT)	Δ= 7° 34' 00.0" (RT)
D = 5° 43' 46.5"	D = 2° 58' 35.1"	D = 2° 29' 28.0"
L = 377.39'	L = 124.12'	L = 303.75'
T = 190.97'	T = 62.08'	T = 152.09'
R = 1,000.00'	R = 1,925.00'	R = 2,300.00'
SE = SEE PLANS	SE = SEE PLANS	SE = SEE PLANS

SEE SHEET NO. 46 FOR -TEMPALIG2- PROFILE

TEMPORARY ALIGNMENT SHIFT FOR PHASE 1 (SEE TMP PLANS)

GRAPHIC SCALE
100 50 0 100 200
PLANS

5/30/2018
R-2814C_Intersection_Details.dgn
...\2814C_SW

PROJECT REFERENCE NO.	SHEET NO.
R-2814C	2B-11

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 040286 ENGINEER CASEY E. HARRIS

6/13/2018

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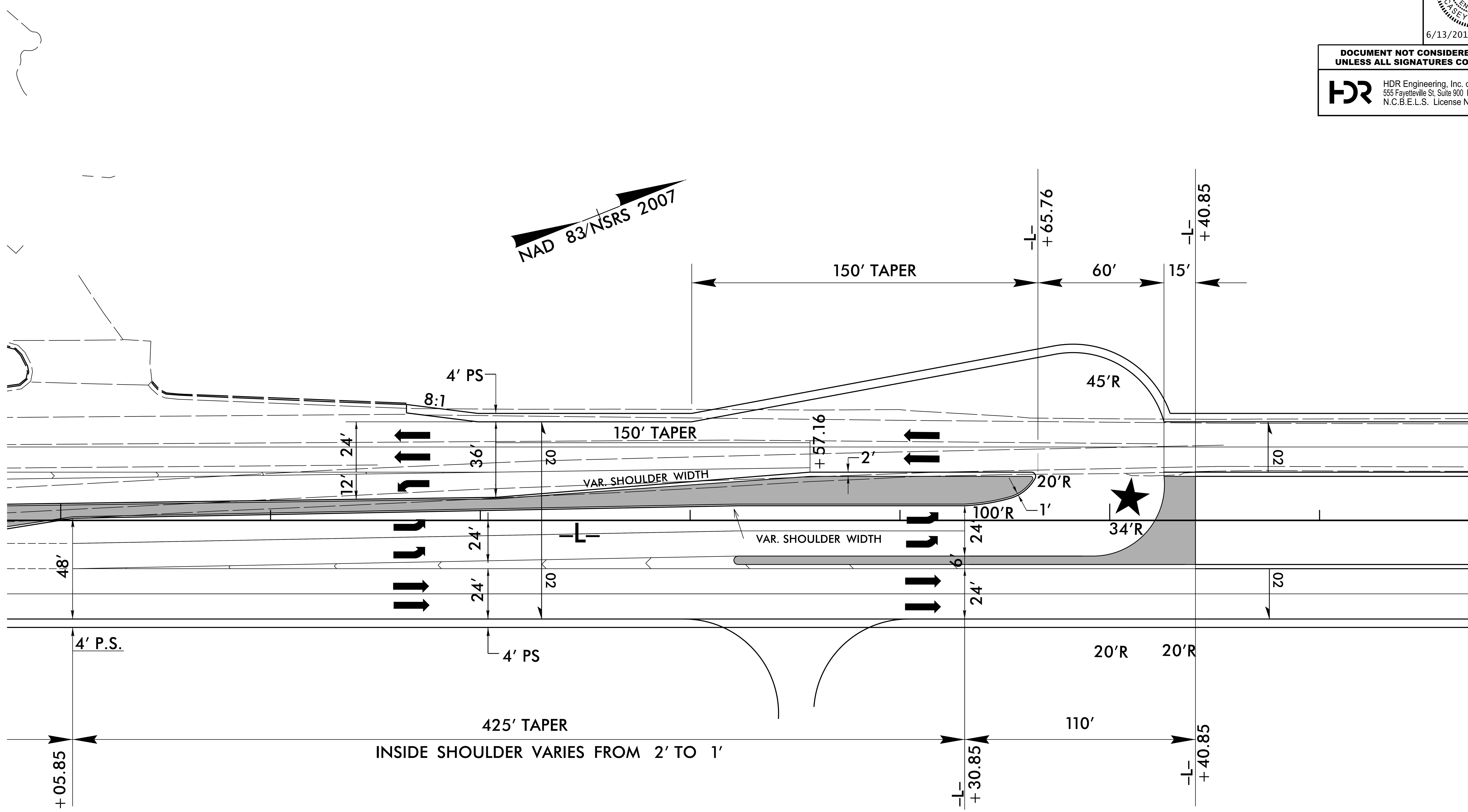
REVISIONS



DUAL LEFT TURN LANES DETAIL

SEE SHEET 4 & 5 NOT TO SCALE

PROP. CONC. 5" MONOLITHIC KEYED IN ISLAND

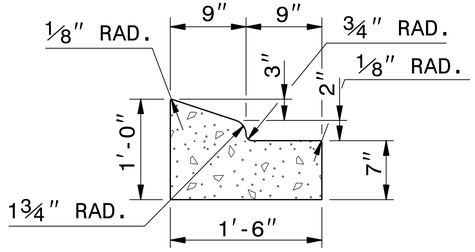
★ PROP. REVISED TRAFFIC SIGNAL

8/17/99

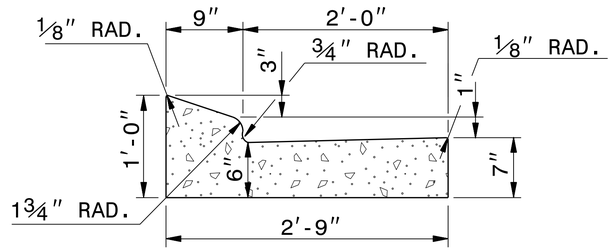
5/7/2018 R-2814C_Intersection_Details.dgn

5/14/99

PROJECT REFERENCE NO.	SHEET NO.
R-2814C	2C-1



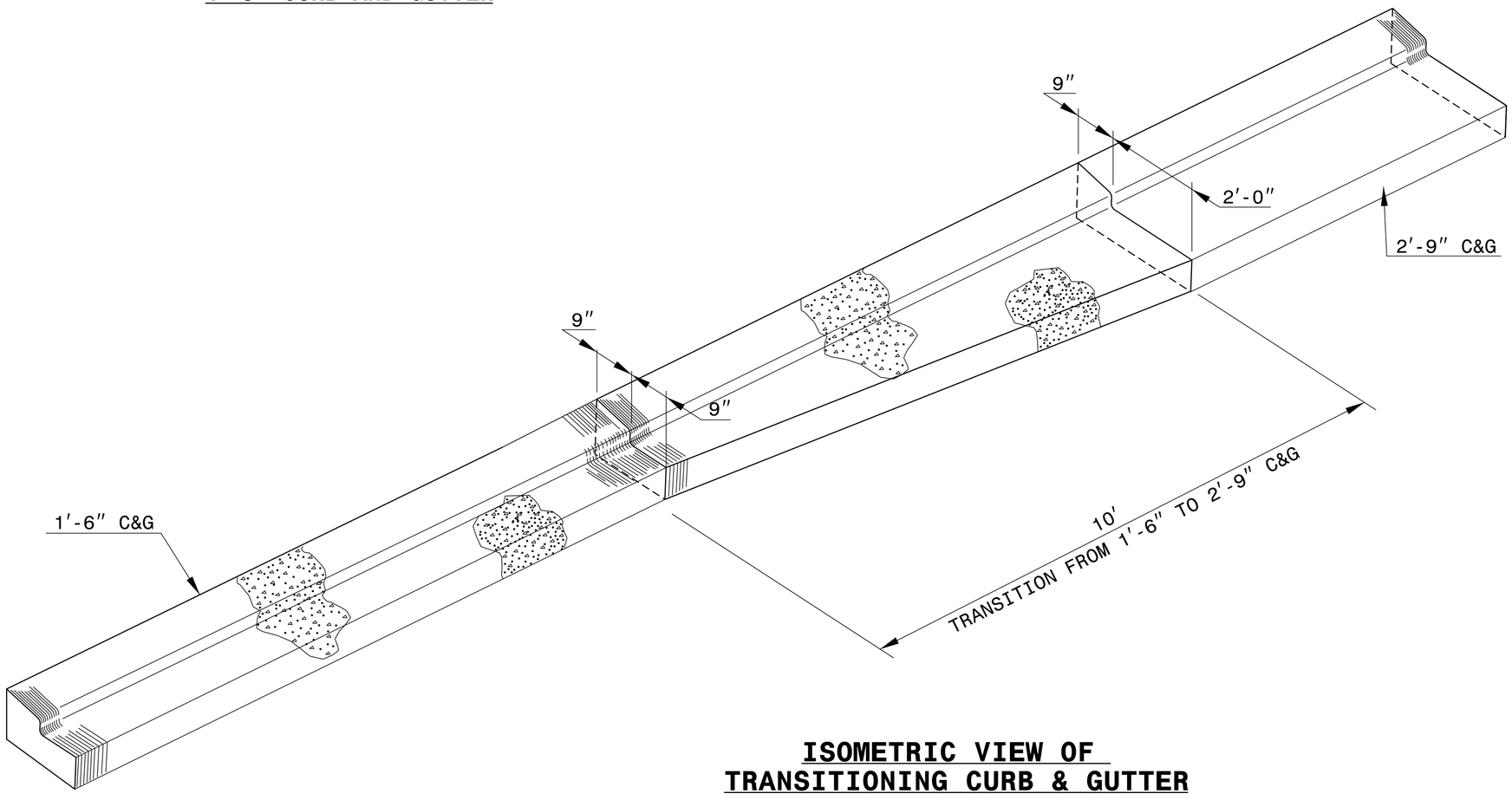
1′-6″ CURB AND GUTTER



2′-9″ CURB AND GUTTER

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

SEE ROADWAY PLANS FOR LOCATION OF CURB TRANSITION.



ISOMETRIC VIEW OF TRANSITIONING CURB & GUTTER

NORTH CAROLINA PROFESSIONAL SEAL 023966 ENGINEER Joel S. Howerton

6/5/2018

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

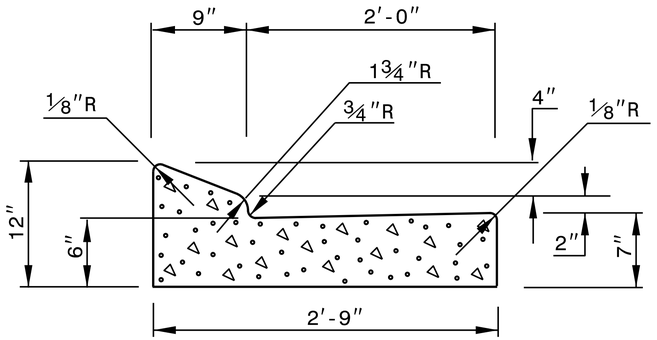
CONTRACT STANDARDS AND DEVELOPMENT UNIT
Office 919-707-6950 FAX 919-250-4119

DETAIL OF 1′-6″ TO 2′-9″ CURB & GUTTER TRANSITION SECTION

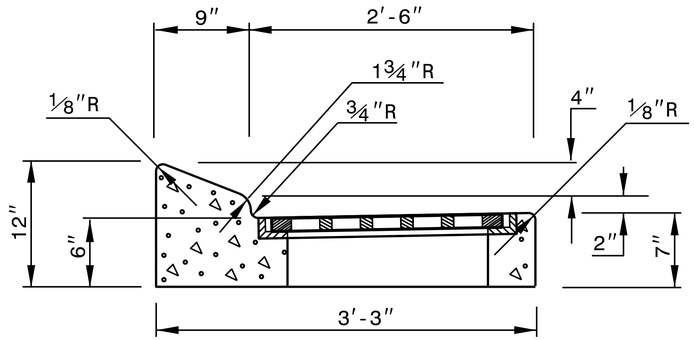
ORIGINAL BY: T.S.SPELL DATE: NOV. 26, 2001
MODIFIED BY: T.S.SPELL DATE: JAN. 23, 2007
CHECKED BY: DATE:
FILE SPEC.: DS174:/usr/details/stand/cgtransit.dgn

5/14/99

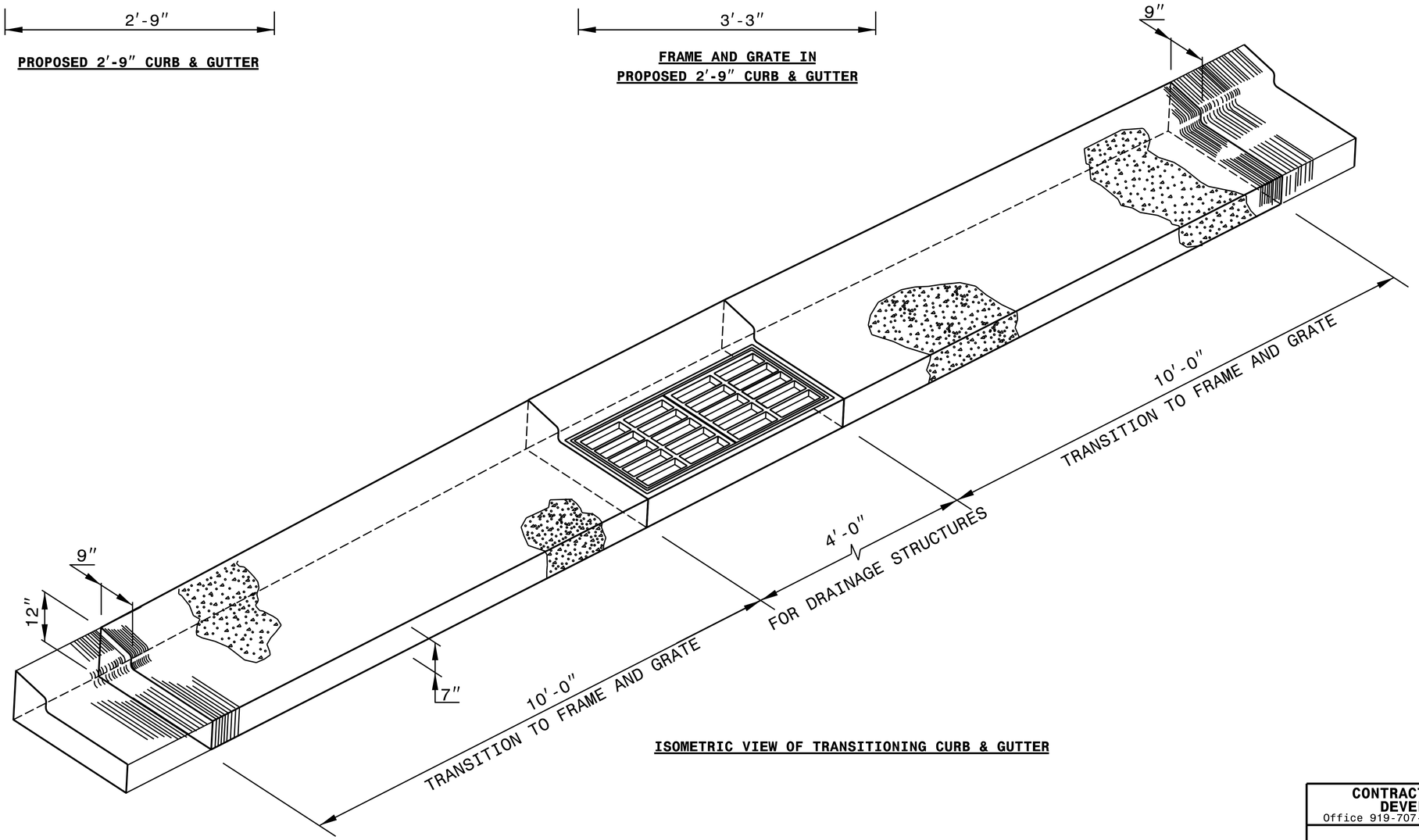
PROJECT REFERENCE NO.	SHEET NO.
R-2814C	2C-2



PROPOSED 2′-9″ CURB & GUTTER



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



ISOMETRIC VIEW OF TRANSITIONING CURB & GUTTER

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 022966 DEREK B. HOWERTON

6/5/2018

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

DETAIL OF 2′-9″ TO FRAME AND GRATE

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

PROJECT REFERENCE NO.	SHEET NO.
R-2814C	2C-3

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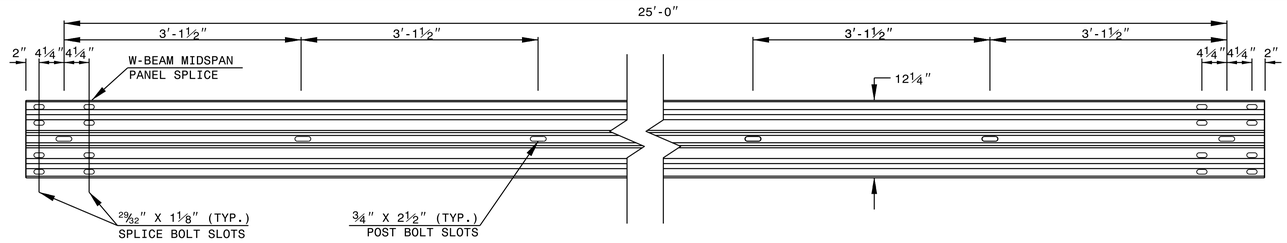
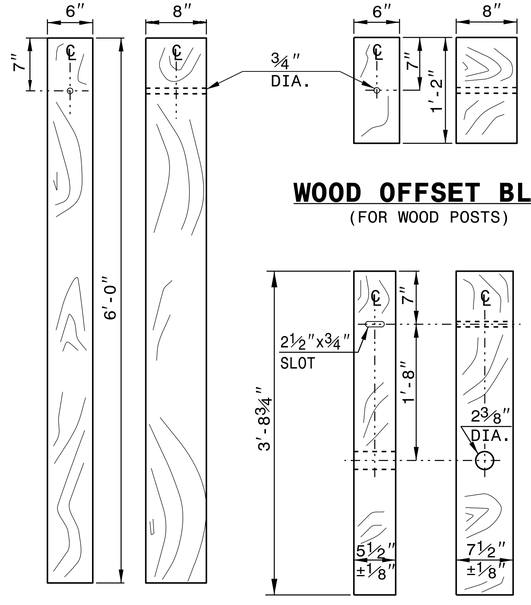
STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALIGH, N.C.

ROADWAY DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

SHEET 6 OF 8
862D02



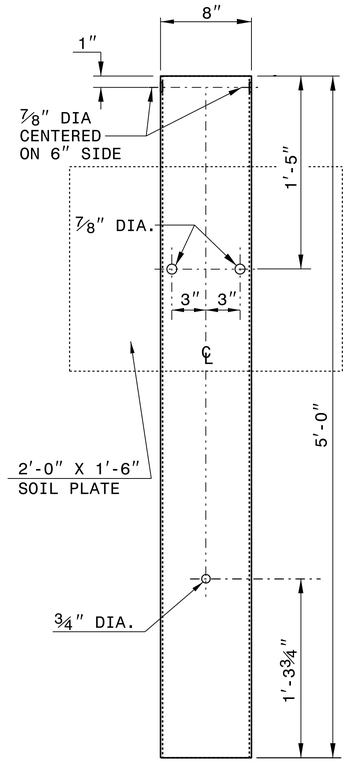
STANDARD W-BEAM GUARDRAIL



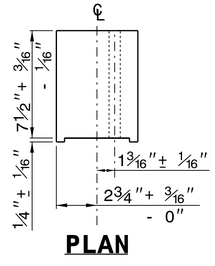
STANDARD LINE POST

SHORT WOOD BREAKAWAY POST

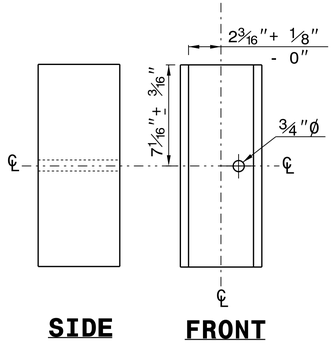
WOOD OFFSET BLOCK
(FOR WOOD POSTS)



STEEL TUBE
TS 6"x8"x0.1875"

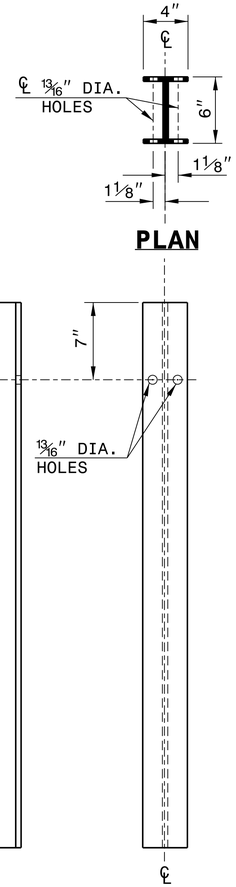


PLAN



SIDE **FRONT**

ROUTED OFFSET BLOCK



PLAN

SIDE **FRONT**

"W6" STEEL POST

SYSTEM PARTS

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

ROADWAY DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

SHEET 6 OF 8
862D02

NORTH CAROLINA PROFESSIONAL SEAL 023966 ENGINEER JOHN S. HOWERTON
6/5/2018

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

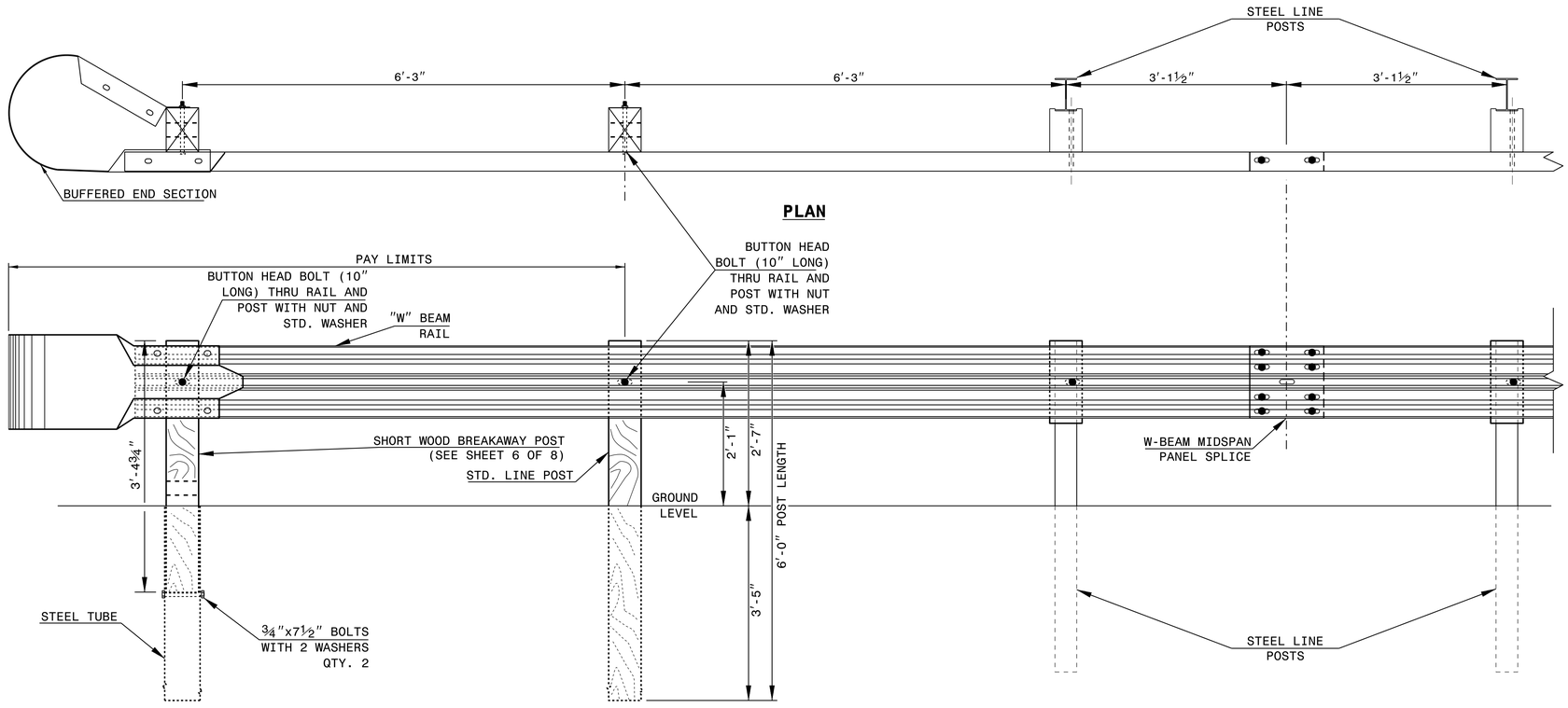
SEE TITLE BLOCK

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

PROJECT REFERENCE NO.	SHEET NO.
R-2814C	2C-4

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

ROADWAY DETAIL DRAWING FOR
GUARDRAIL INSTALLATION



TRAILING END UNIT ASSEMBLY

A.T.-1 SYSTEM

SHEET OF

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

ROADWAY DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

SHEET OF

NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER DAVID S. HOWERTON
6/5/2018

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

A.T.-1 SYSTEM

ORIGINAL BY: _____ DATE: _____
MODIFIED BY: _____ DATE: _____
CHECKED BY: _____ DATE: _____
FILE SPEC.: _____

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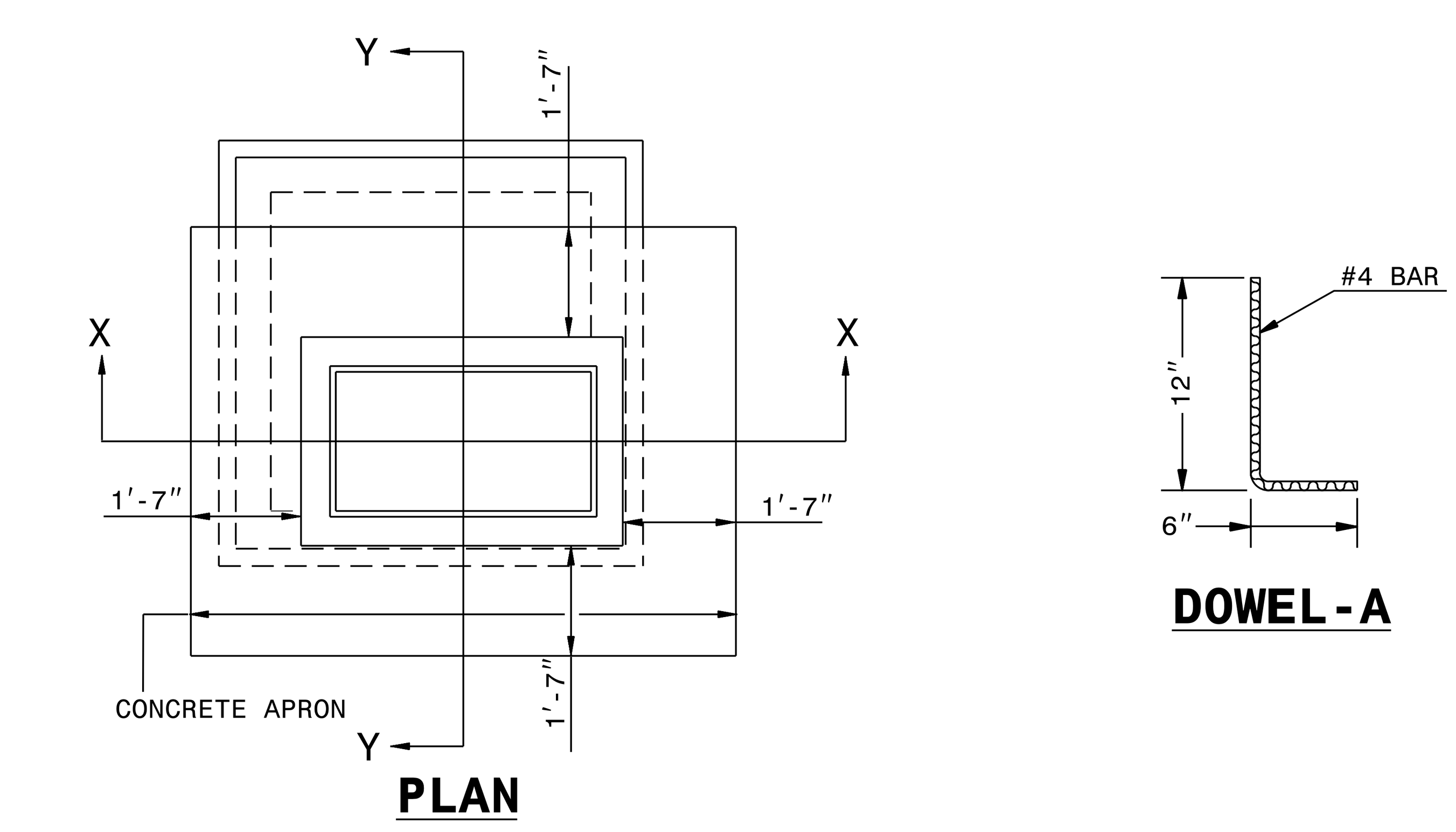
11-SEP-2017 11:55
S:\Contracts\Contracts\Special Details\jhowerton\840D17 Minimum Depth Type A.dgn
jhowerton AT CSD-292595

PROJECT REFERENCE NO.	SHEET NO.
R-2814C	2C-5

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

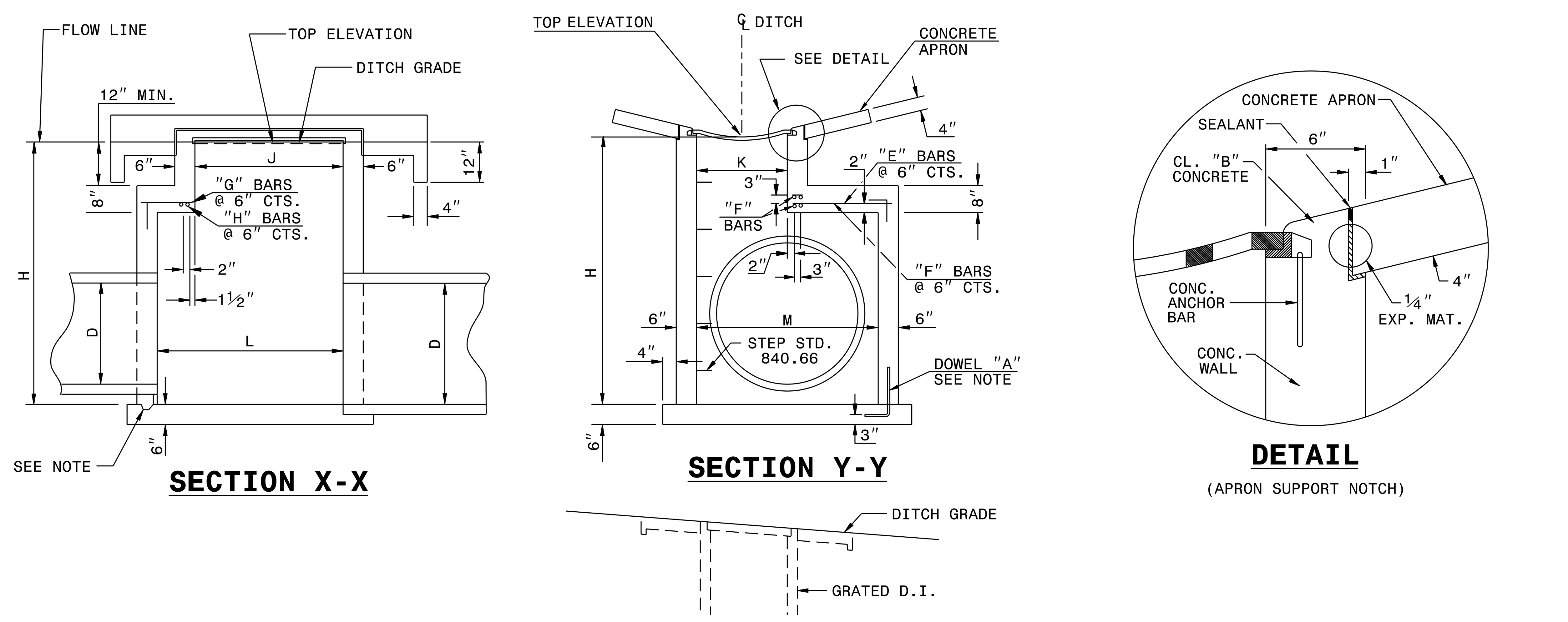
ENGLISH DETAIL DRAWING FOR
CONCRETE GRATED DROP INLET TYPE 'A' MINIMUM DEPTH
12" THRU 72" PIPE

SHEET 1 OF 2
840d17



GENERAL NOTES:

- USE CLASS "B" CONCRETE THROUGHOUT.
- PROVIDE ALL GRATED 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.
- USE STANDARD FRAMES AND GRATES 840.22 (SHOWN), 840.24(SHOWN), 840.20 (NOT SHOWN) OR 840.29 (NOT SHOWN).
- SEE STANDARD DRAWING 840.25 FOR ATTACHMENT OF FRAMES AND GRATES.
- CHAMFER ALL EXPOSED CORNERS 1".
- DRAWING NOT TO SCALE.
- MAX. DEPTH OF THIS STRUCTURE FROM TOP OF BOTTOM SLAB TO TOP ELEVATION IS 12 FEET.



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

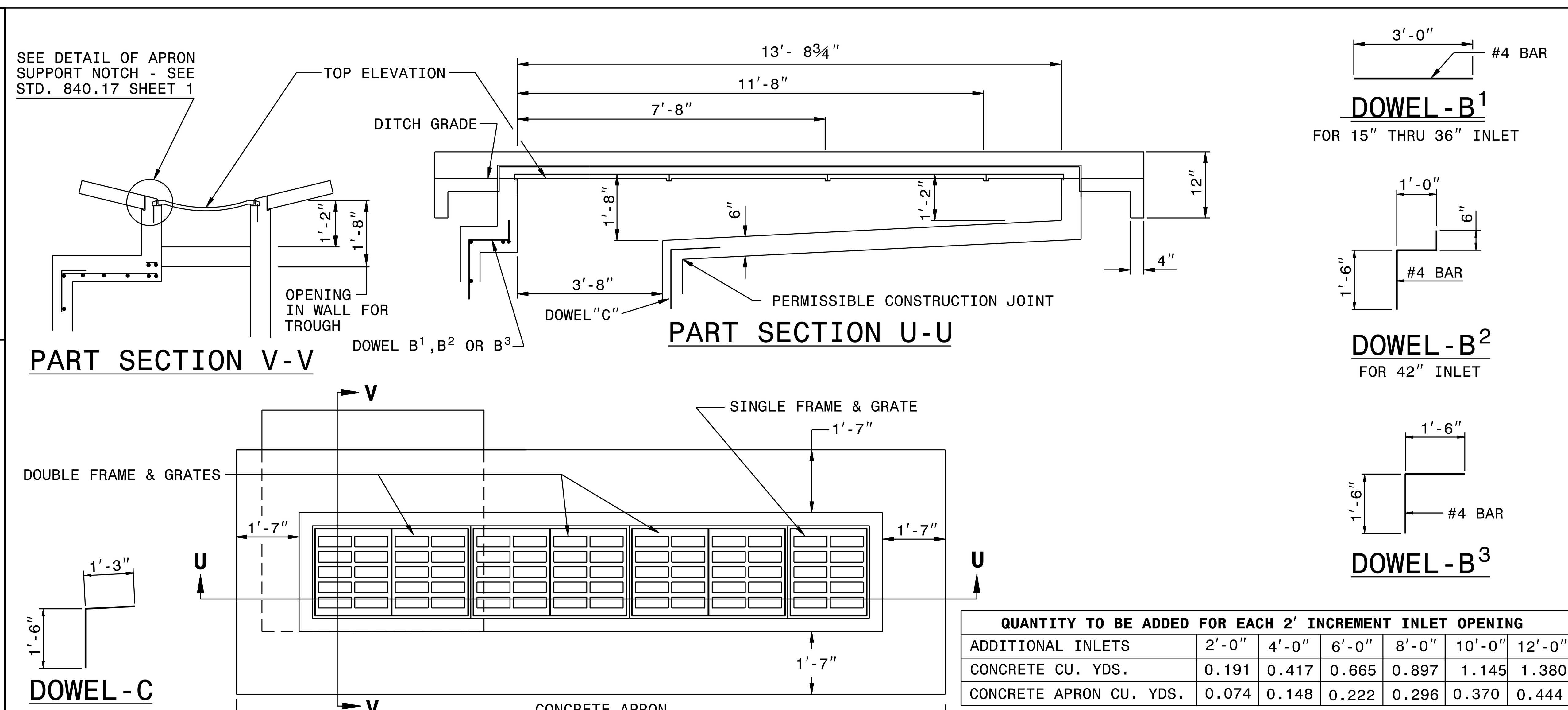
ENGLISH DETAIL DRAWING FOR
CONCRETE GRATED DROP INLET TYPE 'A' MINIMUM DEPTH
12" THRU 72" PIPE

SHEET 1 OF 2
840d17

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

ENGLISH DETAIL DRAWING FOR
CONCRETE GRATED DROP INLET TYPE 'A' MINIMUM DEPTH
12" THRU 72" PIPE

SHEET 2 OF 2
840d17



QUANTITY TO BE ADDED FOR EACH 2' INCREMENT INLET OPENING						
ADDITIONAL INLETS	2'-0"	4'-0"	6'-0"	8'-0"	10'-0"	12'-0"
CONCRETE CU. YDS.	0.191	0.417	0.665	0.897	1.145	1.380
CONCRETE APRON CU. YDS.	0.074	0.148	0.222	0.296	0.370	0.444

MIN. DIMENSIONS AND QUANTITIES FOR CONCRETE GRATED 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	H	H PER	APRON	TOTAL		
D	J	K	L	M	H	NO.	LENGTH	NO.	LENGTH	NO.	LENGTH	NO.	LENGTH	LBS.	SLAB	TOTAL	FT HT			C.S.	R.C.
12"	3'-8"	2'-0"	3'-8"	2'-0"	2'-3"	—	—	—	—	—	—	—	—	—	0.362	0.926	0.247	0.395	1.683	0.015	0.024
15"	3'-8"	2'-0"	3'-8"	2'-0"	2'-5"	—	—	—	—	—	—	—	—	—	0.362	0.988	0.247	0.395	1.745	0.023	0.036
18"				2'-0"	2'-8"	—	—	—	—	—	—	—	—	—	0.362	1.050	0.247		1.807	0.033	0.049
24"				2'-10"	3'-3"	8	1'-5"	6	4'-9"	—	—	—	—	27	0.444	1.362	0.278		2.201	0.059	0.085
30"			3'-8"	3'-5"	3'-10"	8	2'-0"	7	4'-9"	—	—	—	—	33	0.502	1.644	0.288		2.541	0.092	0.127
36"			4'-0"	4'-0"	4'-4"	8	2'-5"	8	4'-11"	4	0'-9"	2	4'-11"	47	0.560	1.931	0.321		2.920	0.132	0.178
42"			4'-10"	4'-10"	5'-0"	10	3'-1"	9	5'-7"		1'-5"	3	5'-7"	67	0.704	2.500	0.370		3.677	0.180	0.243
48"			5'-4"	5'-4"	5'-6"	11	3'-7"	10	6'-1"		1'-11"	4	6'-1"	87	0.823	3.013	0.407		4.315	0.235	0.317
54"			6'-0"	6'-0"	6'-0"	12	4'-1"	11	6'-7"		2'-5"	5	6'-7"	107	0.951	3.589	0.444		5.072	0.297	0.401
60"			6'-6"	6'-6"	6'-7"	13	4'-9"	12	7'-3"		3'-1"	6	7'-3"	135	1.311	4.539	0.494		6.170	0.367	0.495
66"			7'-2"	7'-2"	7'-1"	14	5'-4"	14	7'-10"		3'-7"	7	7'-10"	168	1.136	5.061	0.537		6.901	0.444	0.599
72"	3'-8"	2'-0"	7'-8"	7'-8"	7'-8"	15	5'-11"	15	8'-5"	4	4'-3"	8	8'-5"	199	1.500	5.860	0.580	0.395	7.868	0.528	0.713

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

ENGLISH DETAIL DRAWING FOR
CONCRETE GRATED DROP INLET TYPE 'A' MINIMUM DEPTH
12" THRU 72" PIPE

SHEET 2 OF 2
840d17

NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER Joel S. Howerton
6/5/2018

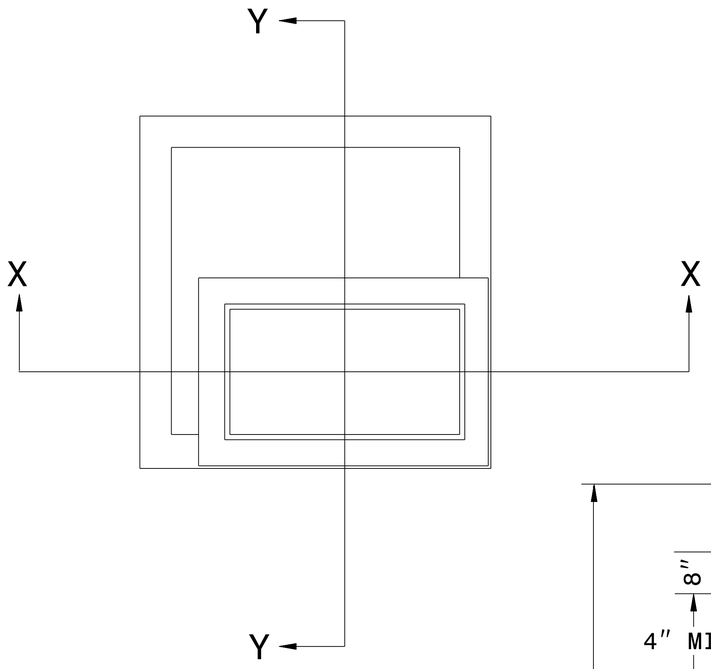
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

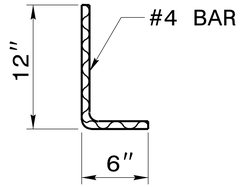
SEE TITLE BLOCK

ORIGINAL BY: J. Howerton DATE: 1/22/14
MODIFIED BY: DATE:
CHECKED BY: DATE:
FILE SPEC.: jhowerton\minimum depth type A.dgn

PROJECT REFERENCE NO.	SHEET NO.
R-2814C	2C-6



PLAN



DOWEL

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.

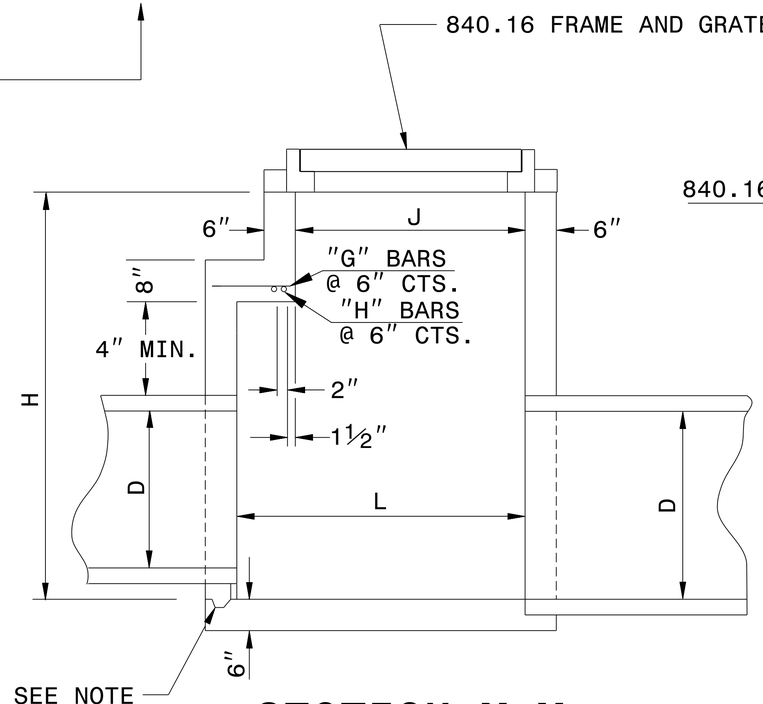
INSTALL 2" WEEPHOLES AS DIRECTED BY THE ENGINEER.

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.

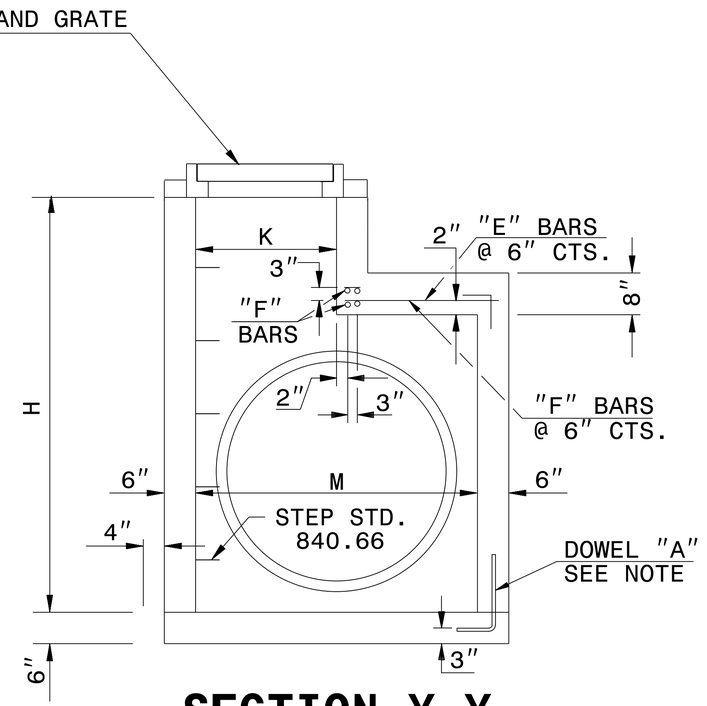
CHAMFER ALL EXPOSED CORNERS 1".

DRAWING NOT TO SCALE.

DIMENSIONS MAY BE FIELD ADJUSTED AS DIRECTED BY THE ENGINEER.



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 LBS.	BOTTOM SLAB	H TOTAL	H PER FT HT	TOTAL	C.S.	R.C.
D	J	K	L	M	H	NO.	LENGTH	NO.	LENGTH	NO.	LENGTH	NO.	LENGTH							
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

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

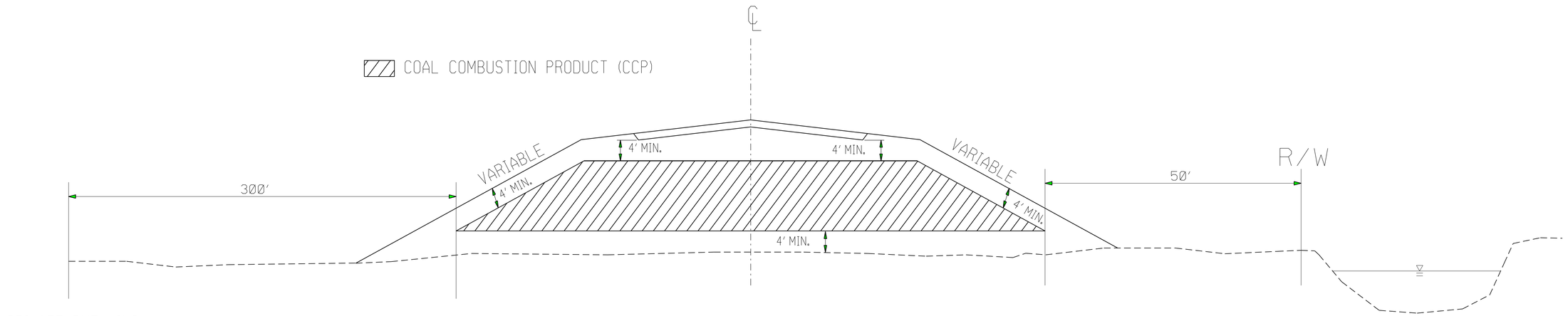
SPECIAL DI 840D14

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

NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER Jason S. Howerton
6/5/2018

PROJECT REFERENCE NO.	SHEET NO.
R-2814C	2C-7

COAL COMBUSTION PRODUCT PLACEMENT



PLACE CCP IN HATCHED AREA IN ACCORDANCE WITH THE PROJECT SPECIAL PROVISIONS

PLACE CCP A MINIMUM OF 5' ABOVE SEASONAL HIGH GROUND WATER

PLACE AT LOCATIONS AS APPROVED BY THE ENGINEER

PLACE SOIL BORROW MATERIAL ON THE OUTSIDE OF CCP AS EACH LIFT OF CCP IS PLACED

NORTH CAROLINA PROFESSIONAL SEAL 027966 ENGINEER Joel S. Howerton
6/5/2018

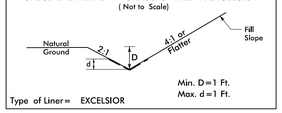
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

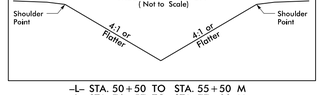
CONTRACT STANDARDS AND DEVELOPMENT UNIT
Office 919-707-6950 FAX 919-250-4119

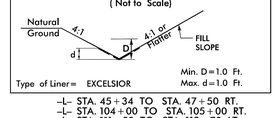
COAL COMBUSTION PRODUCT PLACEMENT DETAIL

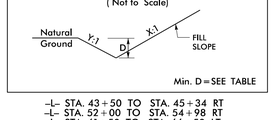
ORIGINAL BY: J.S.H. DATE: 3/16/15
MODIFIED BY: DATE:
CHECKED BY: DATE:
FILE SPEC.: joel/coal combustion material detail.dgn

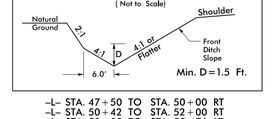
07-SEP-2017 08:21
S:\Contracts\Special Details\jhowerton\Coal Combustion Product Detail.dgn
jhowerton AT CSD-292595

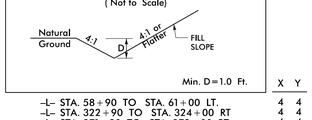


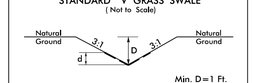


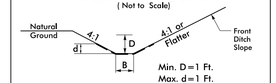


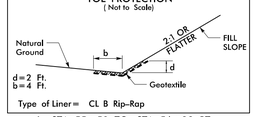


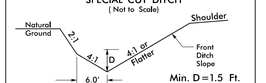


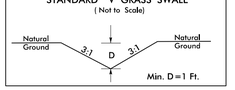


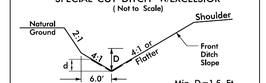


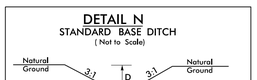


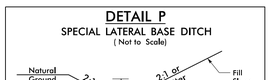


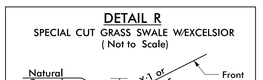


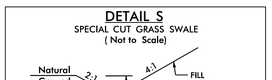


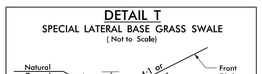


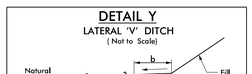


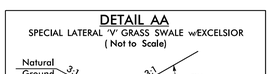


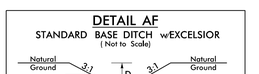


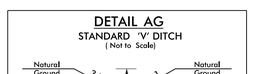












PROJECT REFERENCE NO.	SHEET NO.
R-2814C	2D-1
R/W SHEET NO.	
HYDRAULICS ENGINEER	

LINDA M. JOHNS
6/13/2018

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

DETAIL A
SPECIAL LATERAL 'V' GRASS SWALE W/EXCELSIOR
(Not to Scale)

Min. D=1 Ft.
Max. d=1 Ft.
Type of Liner= EXCELSIOR

–L– STA. 33+50 TO STA. 35+62 RT

DETAIL B
MEDIAN V DITCH
(Not to Scale)

–L– STA. 50+50 TO STA. 55+50 M
–L– STA. 76+57 TO STA. 77+00 M
–L– STA. 89+95 TO STA. 92+00 M
–L– STA. 94+60 TO STA. 96+50 M
–L– STA. 123+00 TO STA. 127+00 M
–L– STA. 135+00 TO STA. 137+65 M
–L– STA. 137+77 TO STA. 141+50 M
–L– STA. 152+50 TO STA. 156+50 M
–L– STA. 236+10 TO STA. 243+00 M
–L– STA. 261+10 TO STA. 262+00 M

DETAIL C
SPECIAL LATERAL 'V' GRASS SWALE w/EXCELSIOR
(Not to Scale)

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

–L– STA. 45+34 TO STA. 47+50 RT.
–L– STA. 104+00 TO STA. 105+00 RT.
–L– STA. 111+50 TO STA. 112+70 LT.
–L– STA. 134+00 TO STA. 134+75 RT.
–L– STA. 185+50 TO STA. 189+17 RT
–L– STA. 185+20 TO STA. 189+40 LT

DETAIL D
SPECIAL LATERAL 'V' GRASS SWALE
(Not to Scale)

Min. D=SEE TABLE

	X	Y	D
–L– STA. 43+50 TO STA. 45+34 RT	4	4	1
–L– STA. 52+00 TO STA. 54+98 RT	4	4	1
–L– STA. 61+50 TO STA. 66+50 LT	4	4	1
–L– STA. 61+50 TO STA. 63+50 RT	6	4	1
–L– STA. 76+57 TO STA. 77+50 RT	4	6	1
–L– STA. 179+84 TO STA. 185+20 LT	6	4	2
–L– STA. 175+20 TO STA. 178+50 RT	6	4	1.5
–L– STA. 181+50 TO STA. 182+50 RT	6	4	1.5
–L– STA. 199+11 TO STA. 199+77 RT	3	3	1.0
–L– STA. 205+50 TO STA. 208+50 LT	4	4	1.0
–L– STA. 276+50 TO STA. 278+25 LT	4–6	4	1.7
–L– STA. 276+50 TO STA. 282+50 RT.	3–6	3–6	1.0

DETAIL E
SPECIAL CUT GRASS SWALE
(Not to Scale)

Min. D=1.5 Ft.

–L– STA. 47+50 TO STA. 50+00 RT
–L– STA. 50+42 TO STA. 52+00 RT
–L– STA. 50+00 TO STA. 55+76 LT.
–L– STA. 57+00 TO STA. 58+90 LT.
–L– STA. 88+50 TO STA. 89+95 LT.
–L– STA. 89+00 TO STA. 91+00 RT.
–L– STA. 92+00 TO STA. 94+50 RT.
–L– STA. 95+00 TO STA. 97+50 RT.
–L– STA. 121+50 TO STA. 124+19 RT.
–L– STA. 129+50 TO STA. 135+00 LT.
–L– STA. 140+00 TO STA. 142+50 RT
–L– STA. 154+05 TO STA. 158+68 LT
–L– STA. 152+03 TO STA. 153+50 LT
–L– STA. 163+40 TO STA. 167+25 LT
–L– STA. 158+95 TO STA. 161+63 LT
–L– STA. 195+50 TO STA. 199+03 LT
–L– STA. 223+00 TO STA. 227+00 RT
–L– STA. 223+50 TO STA. 228+00 LT
–L– STA. 235+60 TO STA. 238+50 RT

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

Min. D=1.0 Ft.

	X	Y
–L– STA. 58+90 TO STA. 61+00 LT.	4	4
–L– STA. 322+90 TO STA. 324+00 RT	4	4
–L– STA. 371+30 TO STA. 372+00 RT.	4	4
–Y7– STA. 17+11 TO STA. 18+50 RT	4	4
–L– STA. 256+50 TO STA. 265+00 RT	4	4
–L– STA. 259+50 TO STA. 263+00 LT	6	4
–L– STA. 266+00 TO STA. 267+00 LT	4–6	3
–L– STA. 287+71 TO STA. 288+75 RT	4	4
–L– STA. 289+50 TO STA. 290+50 RT	3–6	3

DETAIL G
SPECIAL CUT GRASS SWALE
(Not to Scale)

Min. D=1.0 Ft.

	X	Y
–L– STA. 47+50 TO STA. 49+00 LT.	6	2
–L– STA. 71+50 TO STA. 76+00 RT	6	4–6
–L– STA. 76+40 TO STA. 77+37 LT	4	4
–L– STA. 79+00 TO STA. 81+00 LT	4	4
–L– STA. 86+50 TO STA. 87+00 RT	6	4
–L– STA. 120+00 TO STA. 120+89 LT.	6	6
–Y5– STA. 12+10 TO STA. 13+55 RT.	4	2
–Y5– STA. 12+15 TO STA. 13+56 LT.	4	2
–L– STA. 128+50 TO STA. 129+50 LT.	6–4	4–2
–L– STA. 126+63 TO STA. 128+50 LT	6	4
–L– STA. 135+00 TO STA. 136+50 LT	3–3.66	3
–L– STA. 153+50 TO STA. 155+30 RT	6	4
–L– STA. 145+00 RT TO –Y6– STA. 32+00 LT	4	2
–L– STA. 159+50 TO STA. 162+50 RT	6	4
–L– STA. 161+63 TO STA. 162+85 LT	6	4
–L– STA. 169+68 TO STA. 173+00 RT	6	4
–L– STA. 199+03 TO STA. 202+00 LT	6	4
–L– STA. 202+50 TO STA. 205+50 LT	6	4
–L– STA. 212+00 TO STA. 214+55 LT	6	6
–L– STA. 233+60 TO STA. 235+65 LT	6	4
–L– STA. 240+00 TO STA. 246+00 LT	6	4

DETAIL H
STANDARD 'V' GRASS SWALE
(Not to Scale)

Min. D=1 Ft.
Max. d=1 Ft.
Type of Liner= 53 SY EXCELSIOR

–L– STA. 32+72 RT, L=79', S=1.62%, DDE=10 CY

DETAIL I
SPECIAL CUT BASE DITCH
(Not to Scale)

Min. D=1 Ft.
Max. d=1 Ft.
B=4 Ft.
Type of Liner= EXCELSIOR

–L– STA. 55+76 TO 56+50 LT

DETAIL J
TOE PROTECTION
(Not to Scale)

d=2 Ft.
b=4 Ft.
Type of Liner= CL B Rip–Rap

–L– STA. 55+50 TO STA. 56+23 RT.
–L– STA. 58+38 TO STA. 59+07 RT.
–L– STA. 136+00 TO STA. 137+64 LT.
–L– STA. 138+01 TO STA. 139+72 LT.
–L– STA. 134+75 TO STA. 136+40 RT.
–L– STA. 136+76 TO STA. 137+25 RT.
–L– STA. 284+61 TO STA. 285+55 LT.
–Y6– STA. 21+26 TO STA. 21+87 LT.
–Y6– STA. 22+16 TO STA. 22+56 LT.
–Y6– STA. 31+00 TO STA. 32+35 RT.

DETAIL K
SPECIAL CUT DITCH
(Not to Scale)

Min. D=1.5 Ft.

–L– STA 68+87 TO STA. 69+50 LT
–L– STA 73+50 TO STA. 74+00 LT
–L– STA. 129+50 TO STA. 131+50 RT
–L– STA. 210+50 TO STA. 213+00 RT
–L– STA. 218+50 TO STA. 223+00 LT
–L– STA. 248+20 TO STA. 252+50 RT

DETAIL L
STANDARD 'V' GRASS SWALE
(Not to Scale)

Min. D=1 Ft.

–L– STA. 67+00 RT, L=84', S=1.89%, DDE=31CY
–L– STA. 70+50 RT, L=30', S=0.3%, DDE=2CY
–L– STA. 115+00 LT, L=58', S=1.72%, DDE=5CY
–L– STA. 295+50 RT, L=77', S=2.47%, DDE=10CY

DETAIL M
SPECIAL CUT DITCH W/EXCELSIOR
(Not to Scale)

Min. D=1.5 Ft.
Max. d=1.0 Ft.
Type of Liner= EXCELSIOR

–L– STA. 67+50 TO STA. 68+87 LT.
–L– STA. 122+50 TO STA. 123+50 LT.
–L– STA. 146+50 TO STA. 148+50 RT
–L– STA. 191+50 TO STA. 193+00 LT
–L– STA. 213+00 TO STA. 215+30 RT

DETAIL N
STANDARD BASE DITCH
(Not to Scale)

Min. D=2Ft.
B=See Table

	B
–L– STA. 76+57 RT, L=24', S=1.0% DDE=0.5C.Y.	2'
–L– STA. 126+51 RT, L=88', S=0.43% DDE=12CY	3'
–L– STA. 128+50 RT, L=20', S=1.33% DDE=3CY	2'
–L– STA. 161+70 RT, L=106', s=0.3%, DDE=35CY	2'
–L– STA. 232+73 RT, L=50', S=1.0%, DDE=25CY	2'
–L– STA 312+57 RT, L=26', s=0.3%, DDE=2CY	2'
–L– STA. 357+55 LT, L=62', s=0.27%, DDE=5cy	2'
–Y11– STA 16+12 RT, L=72' s=0.42%, DDE=26 CY	2'
–L– STA. 240+00 LT, L=40', S=0.7%, DDE=25CY	2'

DETAIL P
SPECIAL LATERAL BASE DITCH
(Not to Scale)

Min. D=1 Ft.
Max. d=1 Ft.
B=4 Ft.
Type of Liner= EXCELSIOR

–Y2 STA. 12+80 TO STA. 14+00 LT

DETAIL Q
SPECIAL LATERAL BASE GRASS SWALE w/EXCELSIOR
(Not to Scale)

Min. D=SEE TABLE
Max. d=SEE TABLE
B=SEE TABLE
Type of Liner= EXCELSIOR

	B	D	d
–L– STA. 86+33 TO STA. 87+50 LT	4	1	1
–L– STA. 168+50 TO STA. 169+00 RT	2	1	1
–L– STA. 176+20 TO STA. 179+84 LT	2	1.5	1.5
–L– STA. 342+75 TO STA. 343+50 RT	2	1	1

DETAIL R
SPECIAL CUT GRASS SWALE W/EXCELSIOR
(Not to Scale)

Min. D=SEE TABLE
Max. d=SEE TABLE
Type of Liner= EXCELSIOR

	X	Y	D	d
–L– STA. 83+50 TO STA. 85+64 RT.	6	6	1	1
–L– STA. 74+00 TO STA. 76+40 LT.	6	4	1	1
–L– STA. 128+50 TO STA. 129+50 RT.	4	4	1	1
–Y6– STA. 18+50 TO STA. 20+40 RT	3	3	1.2	1.2
–Y6– STA. 20+00 TO STA. 21+10 LT	4	2	1	1
–Y6– STA. 22+85 TO STA. 23+50 LT	3	3	1.2	1.2
–Y6– STA. 23+50 TO STA. 24+90 LT	4	2	1.2	1.2
–L– STA. 140+15 TO STA. 142+00 LT	2–4	4	1	1
–L– STA. 133+00 TO STA. 134+00 RT	6–2	4	1.5	1.5
–L– STA. 137+25 TO STA. 138+50 RT	2–6	4	1	1

DETAIL S
SPECIAL CUT GRASS SWALE
(Not to Scale)

Min. D=1.0 Ft.

–Y3– STA. 10+75 TO STA. 11+00 LT
–Y3– STA. 11+50 TO STA. 13+00 LT

DETAIL T
SPECIAL LATERAL BASE GRASS SWALE
(Not to Scale)

Min. D=2.0 Ft.
B=4.0 Ft.

–L– STA. 89+95 TO STA. 93+37 LT
–L– STA. 174+50 TO STA. 176+20 LT

DETAIL U
SPECIAL CUT GRASS SWALE W/EXCELSIOR
(Not to Scale)

Min. D=1.5 Ft.
Max. d=1.0 Ft.
Type of Liner= EXCELSIOR

–L– STA. 100+00 TO STA. 102+76 RT.
–L– STA. 114+50 TO STA. 115+50 RT.
–L– STA. 112+70 TO STA. 114+50 LT.
–L– STA. 124+50 TO STA. 126+63 LT.

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

Min. D=1.0 Ft.
Max. d=1.0 Ft.
b=5 Ft.
Type of Liner= CL I Rip–Rap

–L– STA. 101+50 TO STA. 103+00 LT
–L– STA. 111+60 TO STA. 112+50 RT.
–L– STA. 282+50 TO STA. 283+85 RT

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

Min. D=1 Ft.
Max. d=1 Ft.
b=5Ft.
Type of Liner= CL B Rip–Rap

–L– STA. 105+00 TO STA. 105+50 RT.
–L– STA. 167+25 TO STA. 167+95 LT

DETAIL X
LATERAL 'V' GRASS SWALE
(Not to Scale)

Min. D=1 Ft.
Max. d=1 Ft.
b=5Ft.
Type of Liner= EXCELSIOR

–L– STA. 103+00 TO STA. 103+84 LT.
–L– STA. 105+50 TO STA. 107+50 RT.
–L– STA. 111+10 TO STA. 111+60 RT.

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

Min. D=1 Ft.
Max. d=1 Ft.
b=5Ft.
Type of Liner= CL II Rip–Rap

–L– STA. 107+50 TO STA. 107+60 RT.

DETAIL AA
SPECIAL LATERAL 'V' GRASS SWALE w/EXCELSIOR
(Not to Scale)

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

–L– STA. 199+97 TO STA. 202+00 RT
–L– STA. 189+57 TO STA. 193+50 RT

DETAIL AB
LATERAL 'V' GRASS SWALE
(Not to Scale)

Min. D=1 Ft.
b=5Ft.

–L– STA. 110+72 TO STA. 111+50 LT.

DETAIL AC
LATERAL BASE GRASS SWALE W/EXCELSIOR
(Not to Scale)

Min. D=1 Ft.
Max. d=1 Ft.
B=2 Ft.
b=5 Ft.
Type of Liner= EXCELSIOR

–L– STA. 110+00 TO STA. 110+72 LT.

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

Min. D=1 Ft.
Max. d=1 Ft.
Type of Liner= CL I Rip–Rap

–L– STA. 112+50 TO STA. 113+50 RT.
–L– STA. 255+50 TO STA. 256+50 RT.

DETAIL AE
SPECIAL CUT DITCH W/EXCELSIOR
(Not to Scale)

Min. D=1 Ft.
Max d=1 Ft.
Type of Liner= EXCELSIOR

	X	Y
–Y4– STA. 22+50 TO –L– STA. 122+50 LT.	4	2
–L– STA. 142+50 TO –Y6– STA. 27+00 RT.	4	2
–Y6– STA. 18+25 TO –Y6– STA. 19+50 LT.	3	3
–L– STA. 223+00 TO –L– STA. 223+50 LT	3	3
–L– STA. 251+00 TO –L– STA. 255+00 LT	6	4
–L– STA. 252+50 TO –L– STA. 254+00 RT	6	4

DETAIL AF
STANDARD BASE DITCH w/EXCELSIOR
(Not to Scale)

Min. D=1 Ft.
Max. d=1 Ft.
B=2 Ft.
*When B is < 6.0'
Type of Liner= EXCELSIOR

–L– STA. 126+63 LT, L=30', S=3.74% DDE=3 CY
EXCELSIOR= 20sy

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

Min. D=1 Ft.
Max. d=1 Ft.
Type of Liner= CL B Rip–Rap

–L– STA. 129+50 LT, L=60', S=6.0%, DDE=25 CY
Cl B Rip–Rap= 21tons, Geotextile= 63sy

DETAIL AH
FALSE CUT GRASS SWALE
(Not to Scale)

W = 5' Min.

	X
–L– STA. 136+50 TO STA. 136+90 LT	4
–L– STA. 178+50 TO STA. 181+50 RT	2

DETAIL AI
ROADWAY CUT DITCH w/EXCELSIOR
(Not to Scale)

Min. D=1.5 Ft.
Max d=1.5 Ft.
Type of Liner=EXCELSIOR

–L– STA. 144+50 TO STA. 148+50 LT
–L– STA. 145+00 TO STA. 146+50 RT

DETAIL AJ
SPECIAL LATERAL 'V' DITCH w/RIP RAP
(Not to Scale)

Min. D=1.0 Ft.
Max. d=1.0 Ft.
Type of Liner= CL B Rip–Rap

–L– STA. 155+30 TO STA. 156+00 RT
–L– STA. 227+00 TO STA. 228+20 RT
–L– STA. 254+00 TO STA. 255+50 RT
–L– STA. 255+00 TO STA. 259+50 LT

DETAIL AK
STANDARD BASE GRASS SWALE
(Not to Scale)

Min. D= 1.0 Ft.
B= 4.0 Ft.

–L– STA. 155+30 RT, L=97', s=0.003FT/FT, DDE=135CY
–L– STA. 216+75 RT, L=50', s=0.003FT/FT, DDE=28CY

DETAIL AL
STANDARD BASE DITCH
(Not to Scale)

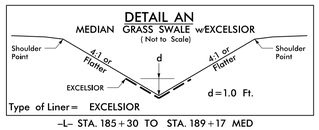
Min. D=0.0 Ft.
Max. d=1.0 Ft.
B=2.0 Ft.
Type of Liner= CL B Rip–Rap

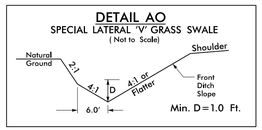
–L– STA. 161+64 LT, L=77', s=0.053FT/FT, DDE=30CY
CL B Rip–Rap= 34tons, Geotextile= 98sy

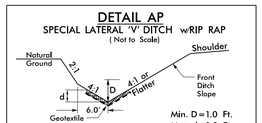
DETAIL AM
TOE PROTECTION
(Not to Scale)

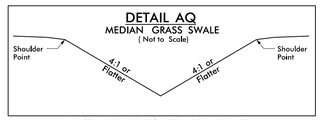
d=1.0 Ft.
Type of Liner= CL B Rip–Rap

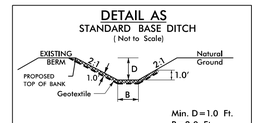
–L– STA. 167+95 TO STA. 168+65 LT
–L– STA. 169+05 TO STA. 170+05 LT
–L– STA. 167+83 TO STA. 168+50 RT
–L– STA. 228+80 TO STA. 229+32 RT
–L– STA. 229+43 TO STA. 230+50 RT

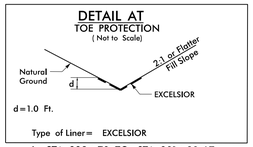


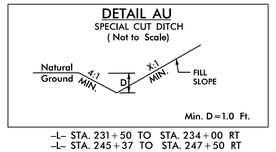


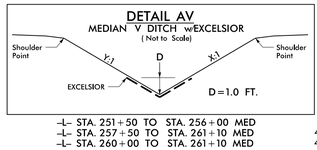


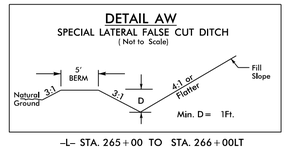


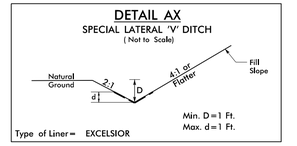


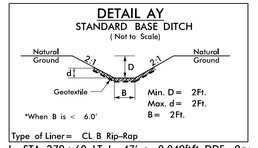


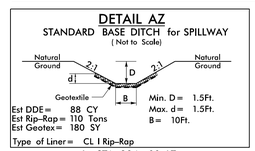


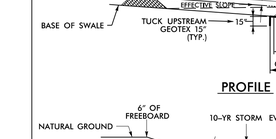


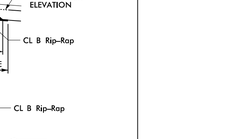


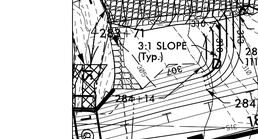


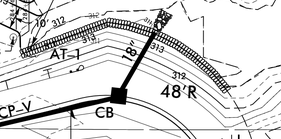


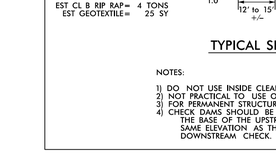


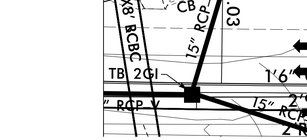


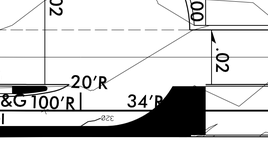


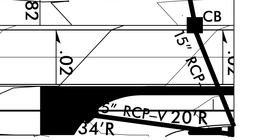












PROJECT REFERENCE NO.	SHEET NO.
R–2814C	2D–2

R/W SHEET NO.

HYDRAULICS
ENGINEER

LINDA M. JOHNS

6/13/2018

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

DETAIL AN
MEDIAN GRASS SWALE w/EXCELSIOR
(Not to Scale)

–L– STA. 185+30 TO STA. 189+17 MED
–L– STA. 189+57 TO STA. 193+00 MED
–L– STA. 102+00 TO STA. 106+50 MED

DETAIL AO
SPECIAL LATERAL 'V' GRASS SWALE
(Not to Scale)

–L– STA. 189+40 TO STA. 190+00 LT

DETAIL AP
SPECIAL LATERAL 'V' DITCH w/RIP RAP
(Not to Scale)

–L– STA. 190+00 TO STA. 191+50 LT
–L– STA. 228+00 TO STA. 229+60 LT

DETAIL AQ
MEDIAN GRASS SWALE
(Not to Scale)

–L– STA. 70+00 TO STA. 70+50 MED
–L– STA. 197+00 TO STA. 201+50 MED
–L– STA. 204+00 TO STA. 207+00 MED
–L– STA. 224+50 TO STA. 230+05 MED
–L– STA. 234+00 TO STA. 236+10 MED

DETAIL AS
STANDARD BASE DITCH
(Not to Scale)

–L– STA. 205+80 RT, L=65', s=0.007FT/FT, DDE=25CY
CL B Rip–Rap= 35tons, Geotextile= 85sy

DETAIL AT
TOE PROTECTION
(Not to Scale)

–L– STA. 229+70 TO STA. 231+80 LT

DETAIL AU
SPECIAL CUT DITCH
(Not to Scale)

	X
–L– STA. 231+50 TO STA. 234+00 RT	6
–L– STA. 245+37 TO STA. 247+50 RT	6
–L– STA. 248+50 TO STA. 251+00 LT	6
–Y11– STA. 14+00 TO STA. 15+70 LT	4–6

DETAIL AV
MEDIAN V DITCH w/EXCELSIOR
(Not to Scale)

	X	Y
–L– STA. 251+50 TO STA. 256+00 MED	6	6
–L– STA. 257+50 TO STA. 261+10 MED	4–6	4–6
–L– STA. 260+00 TO STA. 261+10 MED	4–6	4–6

DETAIL AW
SPECIAL LATERAL FALSE CUT DITCH
(Not to Scale)

–L– STA. 265+00 TO STA. 266+00LT

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

–L– STA. 278+25 TO STA. 279+50 LT

DETAIL AY
STANDARD BASE DITCH
(Not to Scale)

–L– STA 279+60 LT, L=47', s=0.049ft/ft, DDE=9cy
CL B Rip–Rap=32tons, Geotextile=83sy

DETAIL AZ
STANDARD BASE DITCH for SPILLWAY
(Not to Scale)

–L– STA 284+00 LT,
Slope: Begin at Toe of Stream
41' @ 0.08 ft/ft
23' @ 0.28 ft/ft

DETAIL BA
RIP RAP AT EMBANKMENT
(Not to Scale)

–L– STA. 107+60 RT, CL I Rip–Rap=12TONS, Geotextile=21SY
–L– STA. 283+90 RT, CL I Rip–Rap=9TONS, Geotextile=20SY
–L– STA. 310+61 RT., CL I Rip–Rap=2TONS, Geotextile=2SY
–L– STA. 314+85 LT., CL I Rip–Rap=24TONS, Geotextile=46SY

DETAIL BB
LATERAL BASE DITCH
(Not to Scale)

–L– STA. 292+75 TO STA. 293+50 RT

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

–L– STA. 42+50 – 43+50 RT., 100'@2.25%, DDE=12 CY
–Y5– STA. 13+15 RT., 18'@1.0%, DDE=1 CY
–L– STA. 115+00 LT, L=47', S=0.5%, DDE=5 CY

DETAIL BD
SPECIAL CUT BASE GRASS SWALE
(Not to Scale)

–L– STA. 291+00 TO STA. 293+00 LT

DETAIL BE
TOE PROTECTION
(Not to Scale)

–L– STA. 295+00 TO STA. 296+75 LT
–L– STA. 292+00 TO STA. 292+75 RT
–L– STA. 313+28 TO STA. 313+84 RT
–L– STA. 315+40 TO STA. 316+26 LT

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

–L– STA. 296+75 TO STA. 298+70 LT

DETAIL BG
SPECIAL LATERAL BASE GRASS SWALE w/EXCELSIOR
(Not to Scale)

–L– STA. 305+50 TO STA. 305+75 LT

DETAIL BH
STANDARD BASE DITCH
(Not to Scale)

–L– STA. 305+75 TO STA. 306+00 LT
L=40', s=0.2816, DDE=27cy
CL I Rip–Rap=30tons, Geotextile=65sy

DETAIL BI
LATERAL BASE GRASS SWALE
(Not to Scale)

–L– STA. 305+00 TO STA. 305+50 RT
–L– STA. 306+50 TO STA. 307+50 RT

DETAIL BJ
LATERAL BASE DITCH
(Not to Scale)

–L– STA. 305+50 TO STA. 306+50 RT
–L– STA. 307+50 TO STA. 308+80 RT

DETAIL BK
STANDARD BASE DITCH
(Not to Scale)

–L– STA. 310+60 RT, L=60' s=0.20FT/FT, DDE=35CY
CL I Rip–Rap=48tons, Geotextile=93sy
–L– STA. 306+65 LT, L=40', s=0.11FT/FT, DDE=20CY
CL I Rip–Rap=32tons, Geotextile=62sy

DETAIL BL
LATERAL GRASS SWALE W/EARTH BERM
(Not to Scale)

–L– STA. 309+50 TO STA. 310+50 RT

DETAIL BM
BANK STABILIZATION
(Not to Scale)

–L– STA. 229+64 LT, 16 Tons CL I Rip–Rap, 39SY Geotextile, DDE=16CY, B=4'
–L– STA. 229+39 RT, 12 Tons CL I Rip–Rap, 27SY Geotextile, DDE=8CY, B=4'
–L– STA. 306+60 LT, 14 Tons CL I Rip–Rap, 32SY Geotextile, DDE=14CY, B=4'
–L– STA. 308+82 RT, 7 Tons CL I Rip–Rap, 25SY Geotextile, DDE=24CY, B=4'
–L– STA. 64+47 RT, 7 Tons CL I Rip–Rap, 17SY Geotextile, DDE=20CY, B=4'

DETAIL BN
SPECIAL LATERAL BASE GRASS SWALE
(Not to Scale)

	D
–L– STA. 293+00 TO STA. 295+00 LT	1
–L– STA. 307+00 TO STA. 308+50 LT	1
–L– STA. 343+60 TO STA. 344+65 RT	1.7
–L– STA. 345+00 TO STA. 348+00 RT	1.7

DETAIL BO
LATERAL BASE DITCH
(Not to Scale)

–L– STA. 314+00 TO STA. 314+70 LT.

DETAIL BP
BERM DITCH
(Not to Scale)

–L– STA. 309+50 TO STA. 314+00 LT
–L– STA. 324+00 TO STA. 328+50 RT
–L– STA. 337+15 TO STA. 337+50 RT

DETAIL BQ
BERM DITCH
(Not to Scale)

–L– STA. 321+50 TO STA. 322+50 RT
–L– STA. 337+50 TO STA. 338+75 RT
–L– STA. 339+40 TO STA. 342+75 RT

DETAIL BR
STANDARD BASE DITCH
(Not to Scale)

–L– STA. 344+00 LT, L=51', DDE=8cy
CL I Rip–Rap=31 tons, Geotextile=70sy
Slope: From Pipe End, 16' @ 0.0375 ft/ft,
Then 35' @ 0.0 ft/ft to Pond

DETAIL BS
SPECIAL LATERAL BASE DITCH
(Not to Scale)

–L– STA. 344+50 TO STA. 345+00 RT

DETAIL BT
STANDARD BASE DITCH
(Not to Scale)

–L– STA. 373+49 LT., L=38', s=2.63%, DDE=2cy

DETAIL BU
SPECIAL BACK OF CURB CUT DITCH, TYPICAL 'A'
(NOT TO SCALE)

–L– STA. 372+50 TO STA. 375+50 RT.
–L– STA. 375+60 TO STA. 377+60 RT.
(No Ditch Profile)

DETAIL BW
TRAPEZOIDAL SWALE w/ROCK CHECK DAM
(Not to Scale)

EST CL B RIP RAP= 4 TONS
EST GEOTEXTILE= 25 SY

NOTES:

1) DO NOT USE INSIDE CLEAR RECOVERY AREA.
2) NOT PRACTICAL TO USE ON SLOPES > 5%.
3) FOR PERMANENT STRUCTURES IN GRASS SWALE.
4) CHECK DAMS SHOULD BE SPACED SUCH THAT THE BASE OF THE UPSTREAM CHECK IS AT THE SAME ELEVATION AS THE TOP OF THE DOWNSTREAM CHECK.

–L– STA.315+08 TO STA. 316+85 RT

DETAIL BX
ENVIRONMENTAL SITE DESIGN
(NOT TO SCALE)

–L– STA. 284+50 LT

5/14/99

PROJECT REFERENCE NO.	SHEET NO.
R–2814C	2D–3
R/W SHEET NO.	

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 31246 ENGINEER INDIA M. JOHNS

6/13/2018

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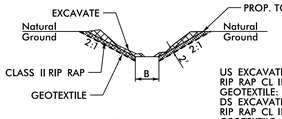
DETAIL BY
BANK STABILIZATION
(Not to Scale)



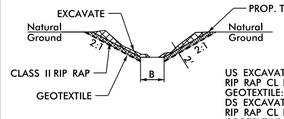
US EXCAVATION: 34 CY
RIP RAP CL II: 33 TONS
GEOTEXTILE: 71 SY
DS EXCAVATION: 56 CY
RIP RAP CL II: 41 TONS
GEOTEXTILE: 63 SY

US DIM B = VAR. 3′ TO 12′
DS DIM B = VAR. 12′ TO 8′

ADJUST SLOPE TO TIE PROPOSED BANKS TO TOP OF EXISTING BANKS AT CHANNEL IMPROVEMENT TIE IN.

–Y6– STA 21+86 LT & RT, CSR 2
LITTLE RIVER TRIB. 3

DETAIL BZ
BANK STABILIZATION
(Not to Scale)



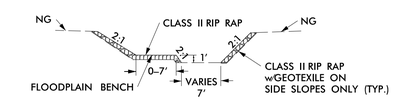
US EXCAVATION: 24 CY
RIP RAP CL II: 21 TONS
GEOTEXTILE: 64 SY
DS EXCAVATION: 41 CY
RIP RAP CL II: 28 TONS
GEOTEXTILE: 106 SY

US DIM B = VAR. 3.5′ TO 12′
DS DIM B = VAR. 12′ TO 2.5′

ADJUST SLOPE TO TIE PROPOSED BANKS TO TOP OF EXISTING BANKS AT CHANNEL IMPROVEMENT TIE IN.

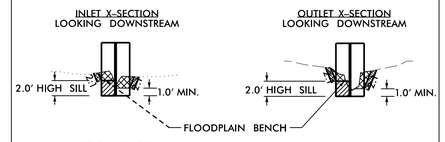
–L– STA 137+22 LT & RT, CSR 3
LITTLE RIVER TRIB. 3

DETAIL CA
FLOODPLAIN BENCH DETAIL
INLET/OUTLET CHANNEL
NOT TO SCALE



–L– STA 168+21 LT & RT, CSR 4
UT TO LITTLE RIVER TRIB. 3B

DETAIL CB
BANK STABILIZATION
(Not to Scale)



US CLASS II RIP RAP 70 TONS
GEOTEXTILE 80 SY
☒EXCAVATION 35 CY

DS CLASS II RIP RAP 70 TONS
GEOTEXTILE 80 SY
☒EXCAVATION 55 CY

–L– STA 168+21 LT & RT, CSR 4
UT TO LITTLE RIVER TRIB. 3B

DETAIL CC
BANK STABILIZATION
(Not to Scale)

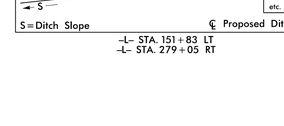
US EXCAVATION: 9 CY
RIP RAP CL II: 20 TONS
GEOTEXTILE: 35 SY
DS EXCAVATION: 19 CY
RIP RAP CL II: 27 TONS
GEOTEXTILE: 60 SY

US DIM B = VAR. 10′ TO 13′
DS DIM B = VAR. 10′ TO 14′

ADJUST SLOPE TO TIE PROPOSED BANKS TO TOP OF EXISTING BANKS AT CHANNEL IMPROVEMENT TIE IN.

–L– STA 283+77 LT & RT, CSR 5
CROOKED CREEK TRIB 3

DETAIL CD
BANK STABILIZATION
(Not to Scale)



US EXCAVATION: 65 CY
RIP RAP CL II: 244 TONS
GEOTEXTILE: 240 SY
DS EXCAVATION: 52 CY
RIP RAP CL II: 93 TONS
GEOTEXTILE: 120 SY

US DIM B = VAR. 30′ TO 35′
DS DIM B = VAR. 24′ TO 35′

ADJUST SLOPE TO TIE PROPOSED BANKS TO TOP OF EXISTING BANKS AT CHANNEL IMPROVEMENT TIE IN.

–L– STA 314+63 LT & RT, CSR 6
CROOKED CREEK

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

–Y12– STA. 13+39 LT, L=46′, S=1.0%, DDE=17 CY

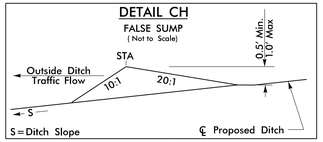
DETAIL CF
STANDARD 'V' DITCH
(Not to Scale)

–Y12– STA. 13+50 RT, L=33′, S=15.4%, DDE=14 CY, 3:1, 2:1
Cl B Rip–Rap= 11tons, Geotextile= 23sy

DETAIL CG
SPECIAL CUT DITCH
(Not to Scale)

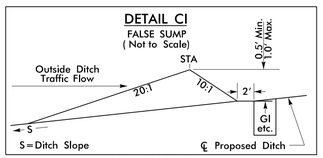
–Y12– STA. 13+00 TO STA. 13+50 RT
–Y12– STA. 13+00 TO STA. 13+39 LT

DETAIL CH
FALSE SUMP
(Not to Scale)



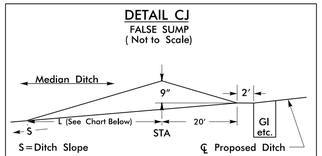
–L– STA. 77+37 LT
–L– STA. 128+50 LT
–L– STA. 140+00 RT
–L– STA. 163+04 LT
–L– STA. 175+03 RT
–L– STA. 185+22 RT
–L– STA. 195+41 LT

DETAIL CI
FALSE SUMP
(Not to Scale)



–L– STA. 35+42 RT
–L– STA. 189+32 RT
–L– STA. 325+87 RT

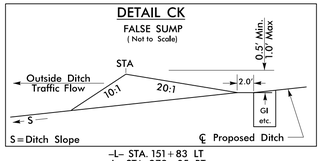
DETAIL CJ
FALSE SUMP
(Not to Scale)



Ditch Grade	L	Ditch Grade	L
0.0% To 2.0%	20′	Over 4.0% To 6.0%	40′
Over 2.0% To 4.0%	30′	Over 6.0%	50′

–L– STA. 58+66 MED
–L– STA. 64+71 MED
–L– STA. 67+24 MED
–L– STA. 69+11 MED
–L– STA. 70+74 MED
–L– STA. 101+74 MED
–L– STA. 106+74 MED
–L– STA. 140+40 MED
–L– STA. 156+70 MED
–L– STA. 161+95 MED
–L– STA. 169+88 MED
–L– STA. 176+05 MED
–L– STA. 185+16 MED
–L– STA. 189+26 MED
–L– STA. 230+19 MED
–L– STA. 235+88 MED

DETAIL CK
FALSE SUMP
(Not to Scale)



–L– STA. 151+83 LT
–L– STA. 279+05 RT

PROJECT REFERENCE NO.	SHEET NO.
R-2814C	2G-1

GEOTECHNICAL ENGINEER — SEAL 022246 — NORTH CAROLINA PROFESSIONAL ENGINEER — SCOTT A. HIDDEN

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SIGNATURE DATE

ENGINEER

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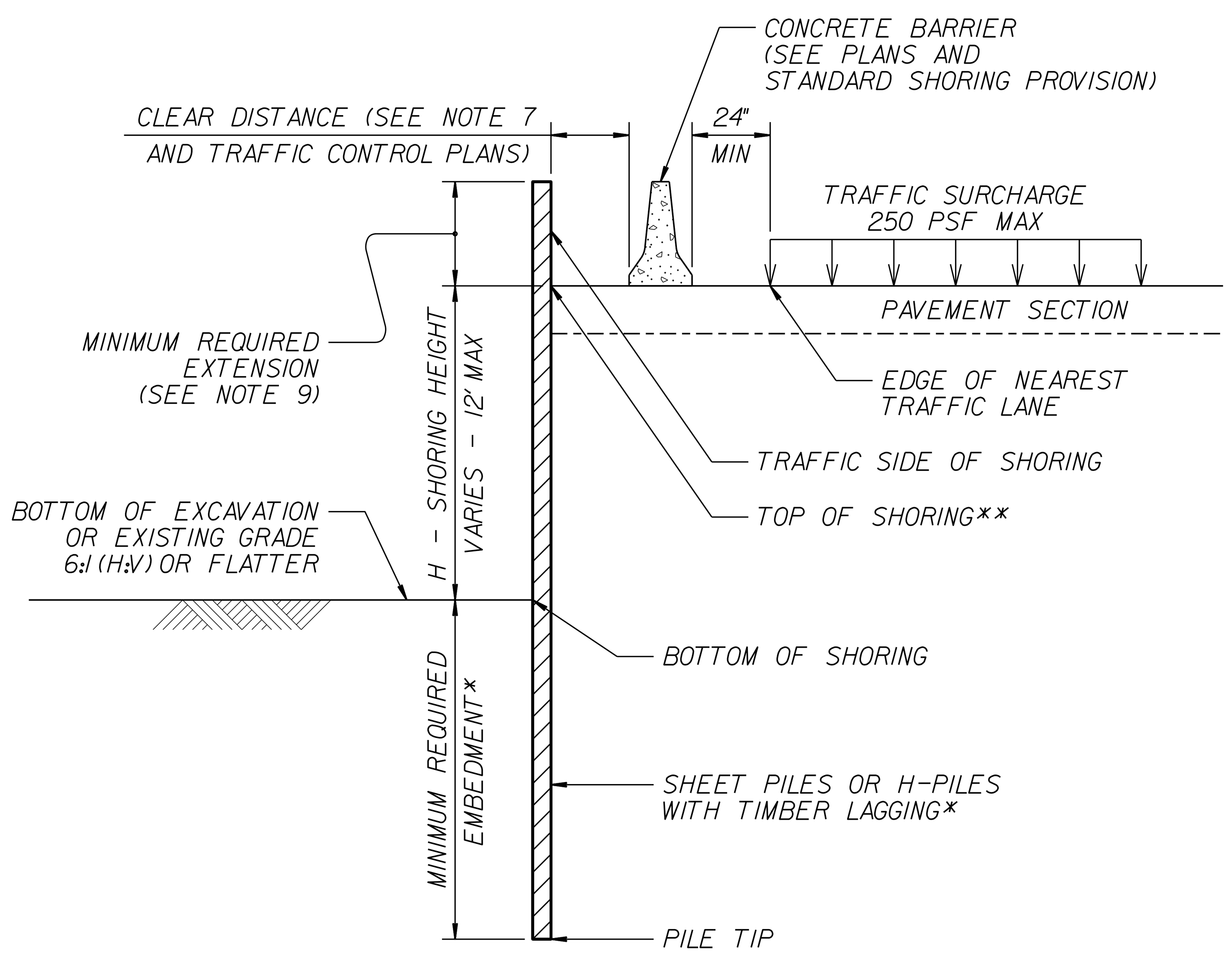
GROUNDWATER CONDITION (SEE NOTE 6)	H SHORING HEIGHT (FT)	SLOPE OR SURCHARGE CASE WITH NO TRAFFIC IMPACT					SURCHARGE CASE WITH TRAFFIC IMPACT				
		SHEET PILES		H-PILES WITH TIMBER LAGGING			SHEET PILES		H-PILES WITH TIMBER LAGGING		
		MINIMUM REQUIRED EMBEDMENT (FT)	MINIMUM REQUIRED SECTION MODULUS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

MINIMUM REQUIRED EMBEDMENT AND SECTION MODULUS

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

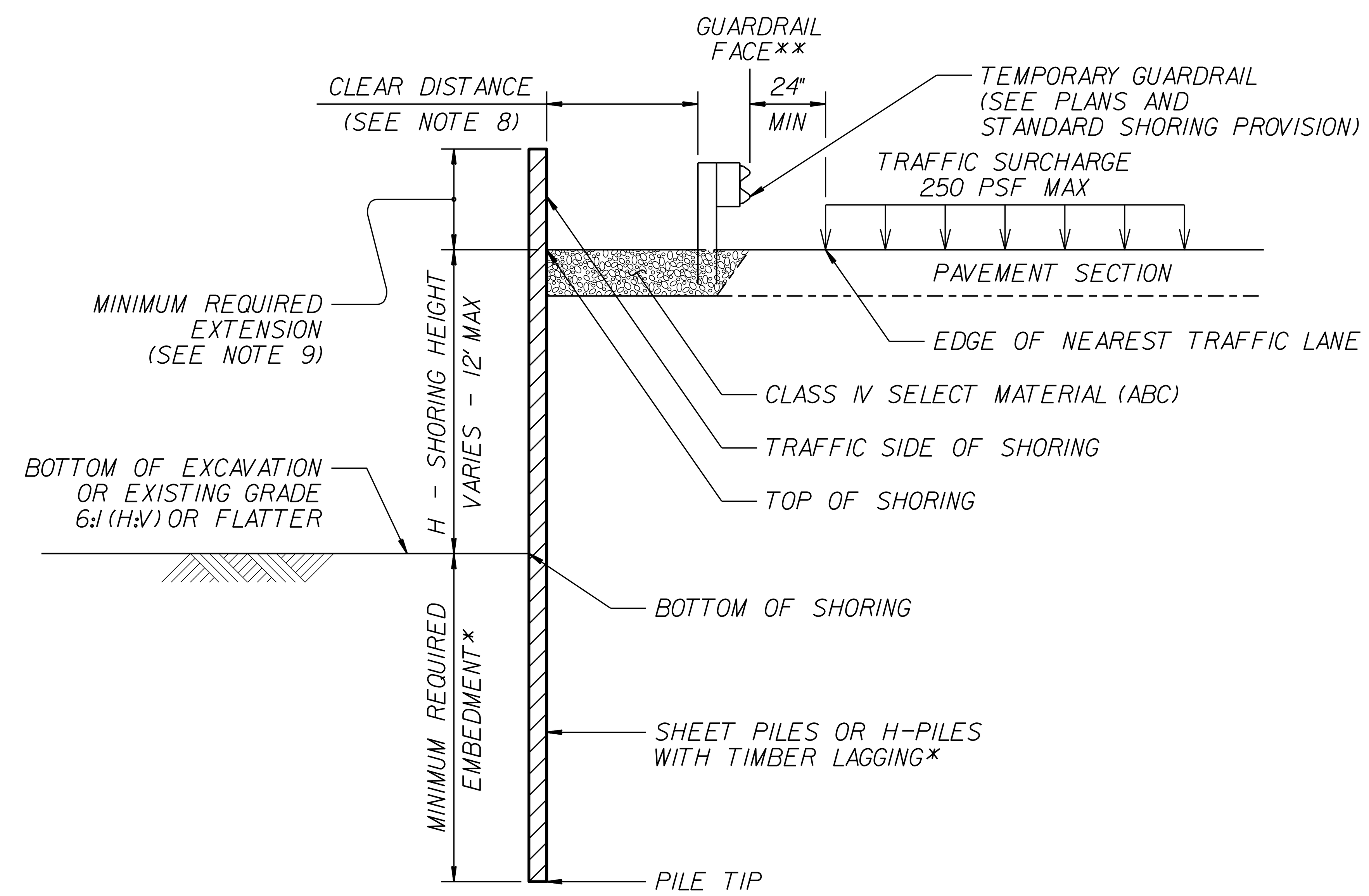
NOTES:

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



CONCRETE BARRIER

**TOP OF SHORING = EDGE OF PAVEMENT

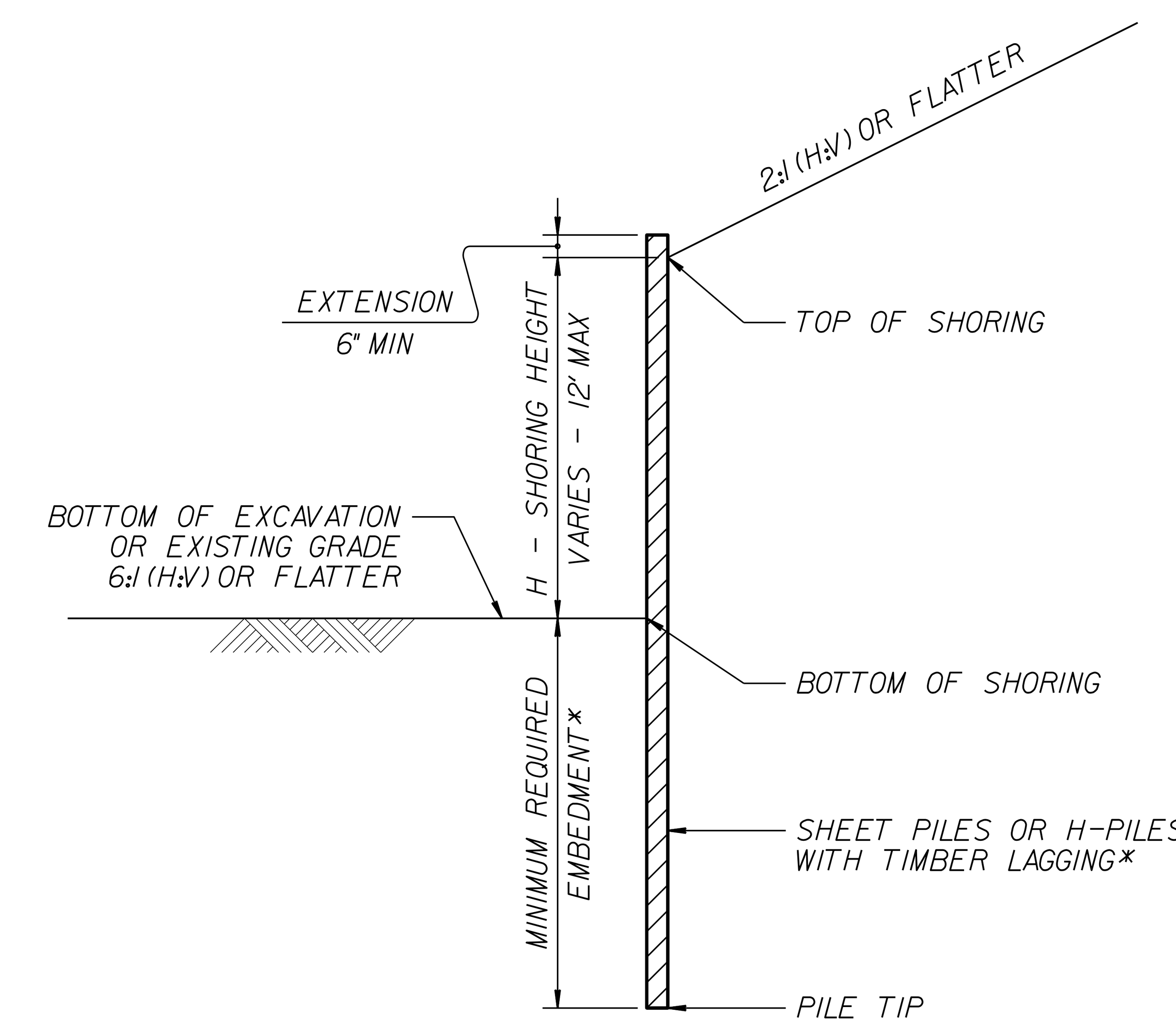


TEMPORARY GUARDRAIL

**GUARDRAIL FACE = EDGE OF PAVEMENT

STANDARD TEMPORARY SHORING

(SURCHARGE CASE)
*SEE TABLE ABOVE.



STANDARD TEMPORARY SHORING

(SLOPE CASE)
*SEE TABLE ABOVE.

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

GEOTECHNICAL ENGINEERING UNIT

STANDARD DETAIL NO. 1801.01

STANDARD TEMPORARY SHORING

DATE: 11-19-13

PROJECT REFERENCE NO.	SHEET NO.
R-2814C	2G-2

GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 022246 ENGINEER SCOTT A. HIDDEN

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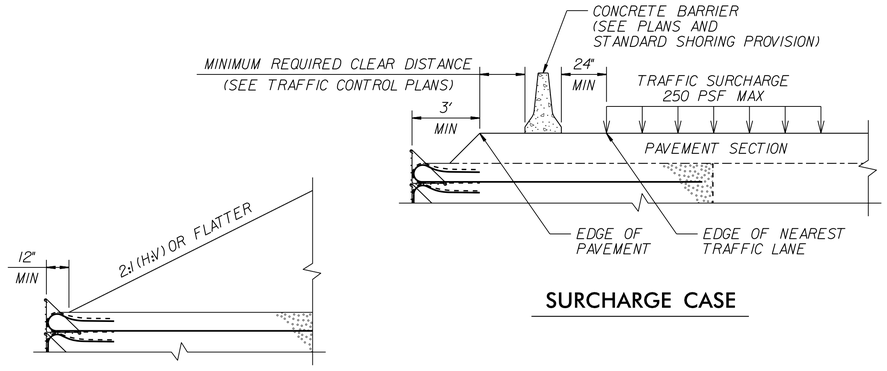
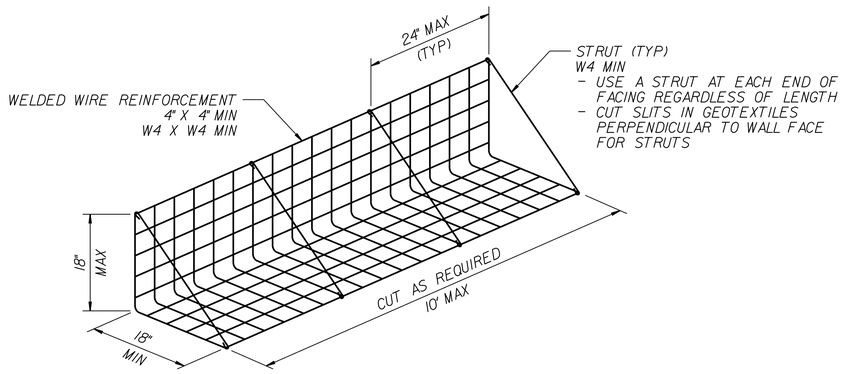
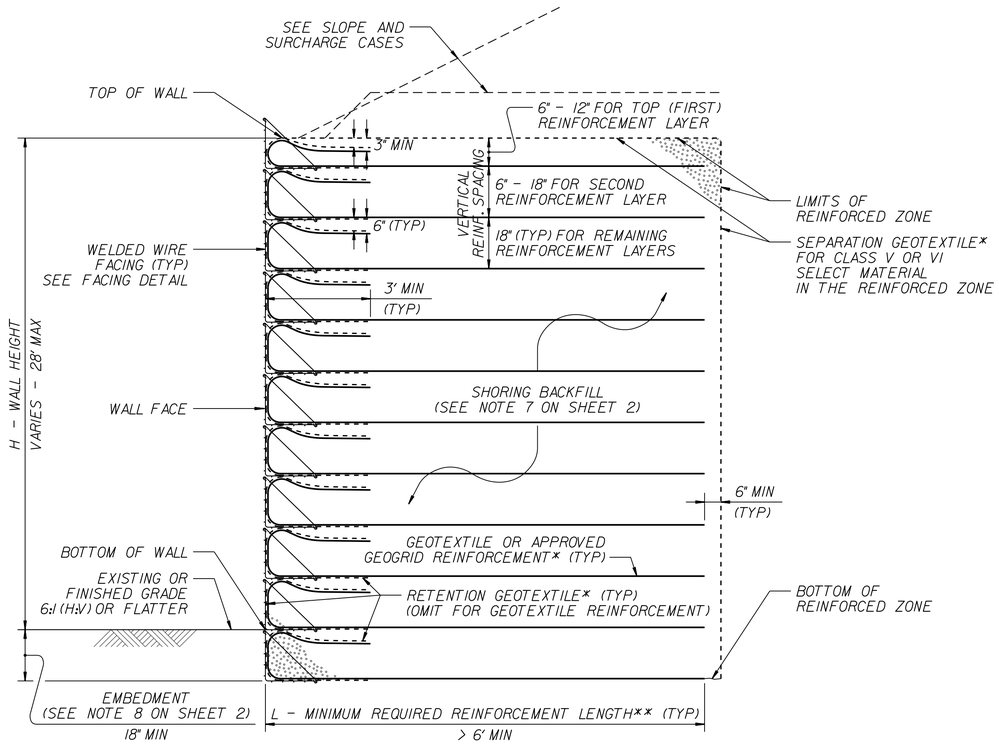


SURCHARGE CASE

SLOPE CASE

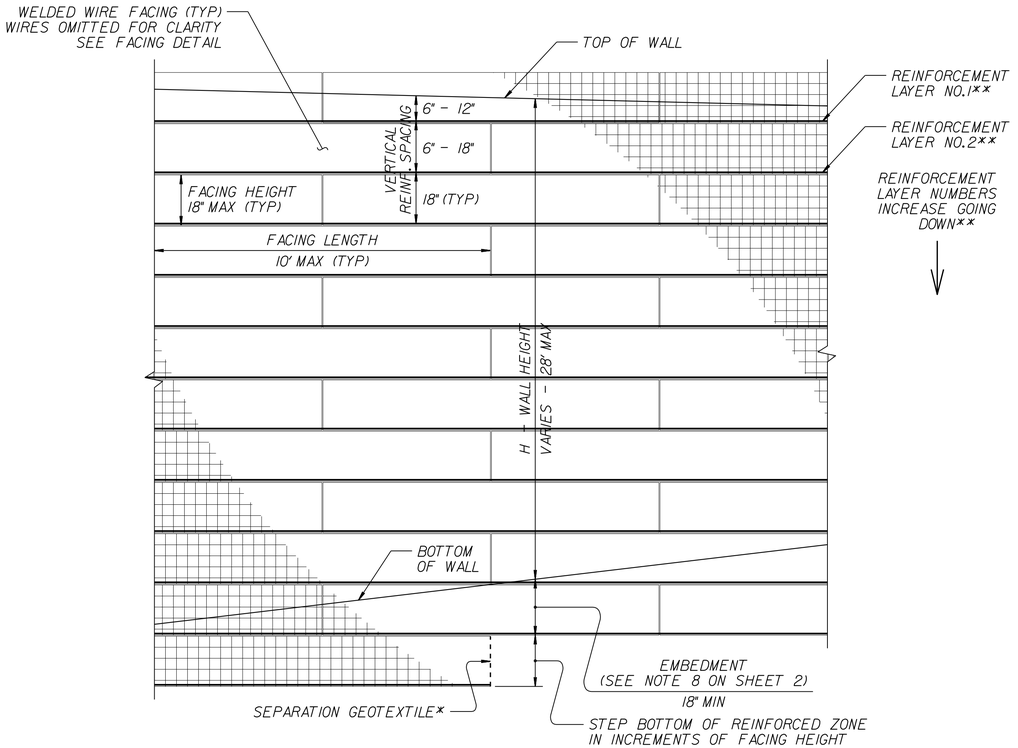


FACING DETAIL



STANDARD TEMPORARY WALL

(FOR STANDARD TEMPORARY WALLS ON STRUCTURES, SEE TEMPORARY WALL ON STRUCTURE DETAIL ON SHEET 2.)
*SEE GEOSYNTHETIC PLACEMENT DETAILS ON SHEET 2.
**SEE REINFORCEMENT TABLES ON SHEET 3.



STANDARD TEMPORARY WALL – PARTIAL ELEVATION

*SEE GEOSYNTHETIC PLACEMENT DETAILS ON SHEET 2.
**SEE REINFORCEMENT TABLES ON SHEET 3.

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

GEOTECHNICAL ENGINEERING UNIT

STANDARD DETAIL NO. 1801.02

STANDARD
TEMPORARY WALL
SHEET 1 OF 3

DATE: 11-19-13

PROJECT REFERENCE NO.	SHEET NO.
R-2814C	2G-3

GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 022246 ENGINEER SCOTT A. HIDDEN

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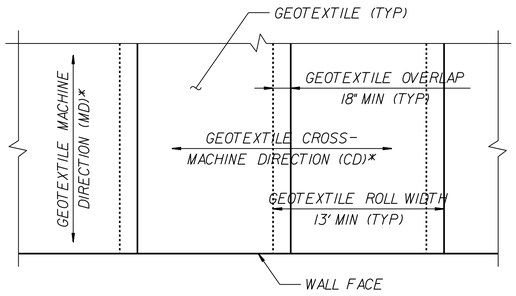
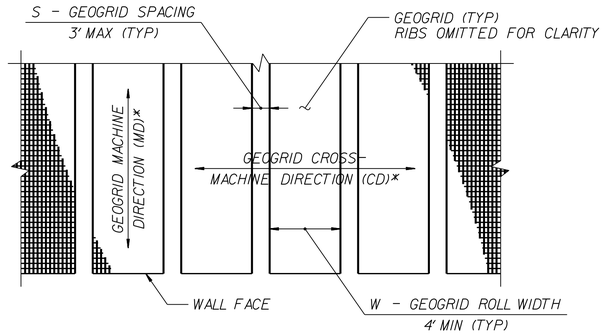


GEOTEXTILE PLACEMENT

(100% COVERAGE MIN FOR GEOTEXTILE REINFORCEMENT)

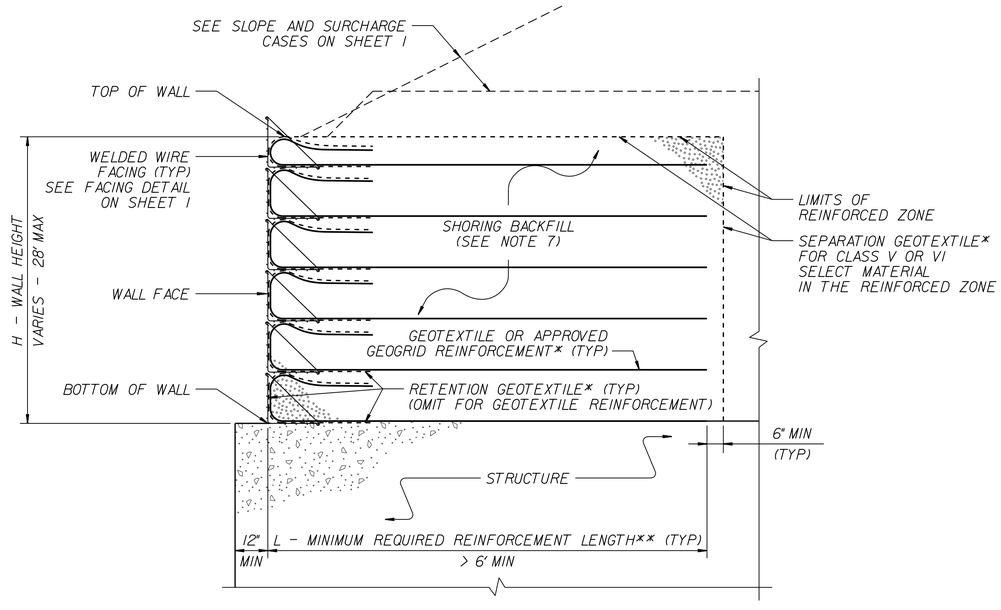


GEOGRID PLACEMENT

(80% COVERAGE MIN FOR GEOGRID REINFORCEMENT – $\frac{W}{W+S}$ x 100 $\geq$ 80%, SEE NOTE 11)

GEOSYNTHETIC PLACEMENT DETAILS

(PLAN VIEW)
*SEE NOTE 12.



TEMPORARY WALL ON STRUCTURE DETAIL

*SEE GEOSYNTHETIC PLACEMENT DETAILS.
**SEE REINFORCEMENT TABLES ON SHEET 3.

NOTES:

1. AT THE CONTRACTOR'S OPTION, USE STANDARD TEMPORARY WALLS AS NOTED IN THE PLANS.
2. FOR STANDARD TEMPORARY WALLS, SEE STANDARD SHORING PROVISION.
3. STANDARD TEMPORARY WALLS ARE BASED ON THE FOLLOWING IN-SITU ASSUMED SOIL PARAMETERS:
   UNIT WEIGHT, γ = 120 PCF
   FRICTION ANGLE, ϕ = 30 DEGREES
   COHESION, c = 0 PSF
4. DO NOT USE STANDARD TEMPORARY WALLS IF ASSUMED SOIL PARAMETERS ARE NOT APPLICABLE.
5. DO NOT USE STANDARD TEMPORARY WALLS WHEN VERY LOOSE OR SOFT SOIL OR MUCK IS BELOW TEMPORARY WALLS.
6. USE GROUNDWATER ELEVATION NOTED IN THE PLANS. IF NO GROUNDWATER ELEVATION IS SHOWN IN THE PLANS, ASSUME GROUNDWATER DEPTH IS LESS THAN 7' BELOW BOTTOM OF REINFORCED ZONE. DO NOT USE STANDARD TEMPORARY WALLS IF GROUNDWATER IS ABOVE BOTTOM OF REINFORCED ZONE.
7. DO NOT USE A-2-4 SOIL FOR STANDARD TEMPORARY WALLS AROUND CULVERTS OR IN THE REINFORCED ZONE OF STANDARD TEMPORARY WALLS FOR SLOPE CASES. DO NOT USE CLASS VI SELECT MATERIAL IN THE REINFORCED ZONE OF STANDARD TEMPORARY WALLS WITH GEOTEXTILE REINFORCEMENT.
8. EMBEDMENT IS NOT REQUIRED FOR STANDARD TEMPORARY WALLS ON STRUCTURES OR ROCK AS DETERMINED BY THE ENGINEER.
9. DO NOT USE MORE THAN 4 DIFFERENT REINFORCEMENT STRENGTHS FOR EACH STANDARD TEMPORARY WALL.
10. GEOGRIDS ARE TYPICALLY APPROVED FOR ULTIMATE TENSILE STRENGTHS IN THE MACHINE DIRECTION (MD) AND CROSS-MACHINE DIRECTION (CD) OR SHORT-TERM DESIGN STRENGTHS FOR A 3-YEAR DESIGN LIFE IN THE MD BASED ON MATERIAL TYPE. THE LIST OF APPROVED GEOGRIDS WITH DESIGN STRENGTHS IS AVAILABLE FROM: connect.ncdot.gov/resources/Materials/Pages/Materials-Manual-by-Manual.aspx
    DEFINE MATERIAL TYPE FROM THE WEBSITE ABOVE FOR SHORING BACKFILL AS FOLLOWS:

MATERIAL TYPE	SHORING BACKFILL
BORROW	A-2-4 SOIL
FINE AGGREGATE	CLASS II, TYPE I OR CLASS III SELECT MATERIAL
COARSE AGGREGATE	CLASS V OR VI SELECT MATERIAL

    IF THE WEBSITE DOES NOT LIST A SHORT-TERM DESIGN STRENGTH FOR AN APPROVED GEOGRID, USE A SHORT-TERM DESIGN STRENGTH EQUAL TO THE ULTIMATE TENSILE STRENGTH DIVIDED BY 3.5 FOR THE GEOGRID REINFORCEMENT.
11. FOR GEOGRID REINFORCEMENT WITH LESS THAN 100% COVERAGE, STAGGER REINFORCEMENT SO GEOGRIDS ARE CENTERED OVER GAPS IN THE REINFORCEMENT LAYER BELOW.
12. AT THE CONTRACTOR'S OPTION, REINFORCEMENT MAY BE INSTALLED WITH THE MD PARALLEL TO THE WALL FACE IF BOTH OF THE FOLLOWING CONDITIONS OCCUR:
    - W (REINFORCEMENT ROLL WIDTH) $\geq$ (MINIMUM REQUIRED REINFORCEMENT LENGTH) + 4.5' AND
    - REINFORCEMENT STRENGTH IN CD $\geq$ MINIMUM REQUIRED REINFORCEMENT STRENGTH IN MD.
13. SUBMIT A "STANDARD TEMPORARY WALL SELECTION FORM" AT LEAST 7 DAYS BEFORE STARTING TEMPORARY WALL CONSTRUCTION. STANDARD SHORING SELECTION FORMS ARE AVAILABLE FROM: connect.ncdot.gov/resources/Geological/Pages/Geotech_Forms_Details.aspx
14. DO NOT PLACE SHORING BACKFILL OR REINFORCEMENT UNTIL EXCAVATION DIMENSIONS AND FOUNDATION MATERIAL ARE APPROVED.
15. FOR STANDARD TEMPORARY WALLS WITH PILE FOUNDATIONS IN THE REINFORCED ZONE, DRIVE PILES THROUGH REINFORCEMENT AFTER CONSTRUCTING TEMPORARY WALLS.
16. DO NOT SPLICE OR OVERLAP REINFORCEMENT SO SEAMS ARE PARALLEL TO THE WALL FACE.
17. CONTACT THE ENGINEER WHEN EXISTING OR FUTURE OBSTRUCTIONS SUCH AS FOUNDATIONS, PAVEMENTS, PIPES, INLETS OR UTILITIES WILL INTERFERE WITH REINFORCEMENT.
18. FOR STANDARD TEMPORARY WALLS WITH INTERIOR ANGLES LESS THAN 90 DEGREES, WRAP GEOSYNTHETICS AT ACUTE CORNERS AS DIRECTED BY THE ENGINEER.
19. FOR STANDARD TEMPORARY WALLS WITH TOP OF WALL WITHIN 5' OF FINISHED GRADE, REMOVE TOP FACING AND INCORPORATE TOP REINFORCEMENT LAYER INTO FILL WHEN PLACING FILL IN FRONT OF WALL.

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS

GEOTECHNICAL ENGINEERING UNIT

STANDARD DETAIL NO. 1801.02

STANDARD TEMPORARY WALL SHEET 2 OF 3

DATE: 11-19-13

PROJECT REFERENCE NO.	SHEET NO.
R-2714C	2G-4

GEOTECHNICAL ENGINEER

SEAL 022246 NORTH CAROLINA PROFESSIONAL ENGINEER SCOTT A. HIDDEN

DocuSigned by: Scott A. Hidden 4/26/2018
SIGNATURE DATE

ENGINEER
SIGNATURE DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SLOPE OR SURCHARGE CASE	GROUNDWATER DEPTH BELOW BOTTOM OF REINFORCED ZONE (SEE NOTE 6 ON SHEET 2) (FT)	SHORING BACKFILL TYPE IN THE REINFORCED ZONE (SEE NOTE 7 ON SHEET 2)	H - WALL HEIGHT (FT)																							
			< 4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
SLOPE CASE	> 0	CLASS II,TYPE I, CLASS III,CLASS V OR CLASS VI SELECT MATERIAL	6	6	7	8	9	11	12	13	13	14	15	16	17	18	19	20	21	22	23	24	24	25	26	27	27
SURCHARGE CASE	> 0 TO 7 FOR H < 20' > 0 TO 10 FOR H ≥ 20'	ALL SHORING BACKFILL TYPES	6	7	7	8	8	9	9	10	11	11	12	12	13	14	14	15	16	17	17	18	19	19	20	21	22
	> 7 FOR H < 20' > 10 FOR H ≥ 20'	A-2-4 SOIL	6	6	7	8	8	9	9	10	11	11	12	12	13	14	14	15	16	16	17	18	18	19	20	20	21
		CLASS II,TYPE I OR CLASS III SELECT MATERIAL	6	6	7	7	8	8	9	10	10	11	11	12	12	13	14	15	15	16	16	17	17	18	18	19	20
		CLASS V OR CLASS VI SELECT MATERIAL	6	6	7	7	7	8	8	9	9	10	10	11	12	13	13	14	14	15	15	16	17	17	18	19	19

L – MINIMUM REQUIRED REINFORCEMENT LENGTH (FT)

(FOR ALL REINFORCEMENT TYPES)

WALL HEIGHT (H) + EMBEDMENT (FT)	NUMBER OF REINFORCEMENT LAYERS*
2.5 - 4	3
4 - 5.5	4
5.5 - 7	5
7 - 8.5	6
8.5 - 10	7
10 - 11.5	8
11.5 - 13	9
13 - 14.5	10
14.5 - 16	11
16 - 17.5	12
17.5 - 19	13
19 - 20.5	14
20.5 - 22	15
22 - 23.5	16
23.5 - 25	17
25 - 26.5	18
26.5 - 28	19
28 - 29.5	20

*BASED ON VERTICAL REINFORCEMENT SPACING SHOWN ON SHEET 1.

REINFORCEMENT LAYER NUMBER*	SHORING BACKFILL TYPE IN THE REINFORCED ZONE (SEE NOTE 7 ON SHEET 2)				
	SLOPE CASE		SURCHARGE CASE		
	CLASS II,TYPE I OR CLASS III SELECT MATERIAL	CLASS V SELECT MATERIAL	A-2-4 SOIL	CLASS II,TYPE I OR CLASS III SELECT MATERIAL	CLASS V SELECT MATERIAL
1	2400	2400	2400	2400	2400
2	2400	2400	2400	2400	2400
3	2400	2400	2400	2400	2400
4	2400	2400	2500	2400	2400
5	2500	2400	3000	2400	2400
6	3000	2400	3500	2800	2400
7	3500	2700	4000	3200	2600
8	4000	3100	4500	3600	2900
9	4500	3500	5000	4000	3200
10	5000	3900	5500	4400	3500
11	5500	4300	6000	4800	3800
12	6000	4700	6500	5200	4100
13	6500	5100	7000	5600	4400
14	7000	5400	7500	6000	4700
15	7500	5800	8000	6400	5000
16	8000	6200	8500	6800	5300
17	8500	6600	9000	7200	5600
18	9000	7000	9500	7600	5900
19	9500	7400	10000	8000	6200
20	10000	7800	10500	8400	6500

GEOTEXTILE REINFORCEMENT ULTIMATE TENSILE STRENGTH (LB/FT)

REINFORCEMENT LAYER NUMBER*	SHORING BACKFILL TYPE IN THE REINFORCED ZONE (SEE NOTE 7 ON SHEET 2)				
	SLOPE CASE		SURCHARGE CASE		
	CLASS II,TYPE I OR CLASS III SELECT MATERIAL	CLASS V OR CLASS VI SELECT MATERIAL	A-2-4 SOIL	CLASS II,TYPE I OR CLASS III SELECT MATERIAL	CLASS V OR CLASS VI SELECT MATERIAL
1	240	200	340	290	240
2	380	310	520	430	350
3	530	420	700	570	460
4	690	550	870	720	570
5	860	690	1050	860	680
6	1030	830	1220	1000	790
7	1200	970	1400	1150	900
8	1370	1110	1580	1290	1010
9	1550	1240	1750	1430	1120
10	1720	1380	1930	1580	1230
11	1890	1520	2100	1720	1340
12	2060	1660	2280	1860	1450
13	2240	1800	2450	2010	1560
14	2410	1940	2630	2150	1670
15	2580	2080	2800	2290	1780
16	2750	2220	2980	2440	1890
17	2930	2360	3160	2580	2000
18	3100	2500	3330	2720	2110
19	3270	2640	3510	2860	2220
20	3440	2780	3690	3000	2330

GEOGRID REINFORCEMENT SHORT–TERM DESIGN STRENGTH (LB/FT)

(SEE NOTE 10 ON SHEET 2.)

MINIMUM REQUIRED REINFORCEMENT STRENGTH IN MD

(SEE NOTE 9 ON SHEET 2.)
*SEE PARTIAL ELEVATION ON SHEET 1 FOR REINFORCEMENT LAYER NUMBERING.

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

GEOTECHNICAL ENGINEERING UNIT

STANDARD DETAIL NO. 1801.02

STANDARD TEMPORARY WALL
SHEET 3 OF 3

DATE: 11-19-13

PROJECT REFERENCE NO.	SHEET NO.
R-2814C	2G-5

GEOTECHNICAL ENGINEER

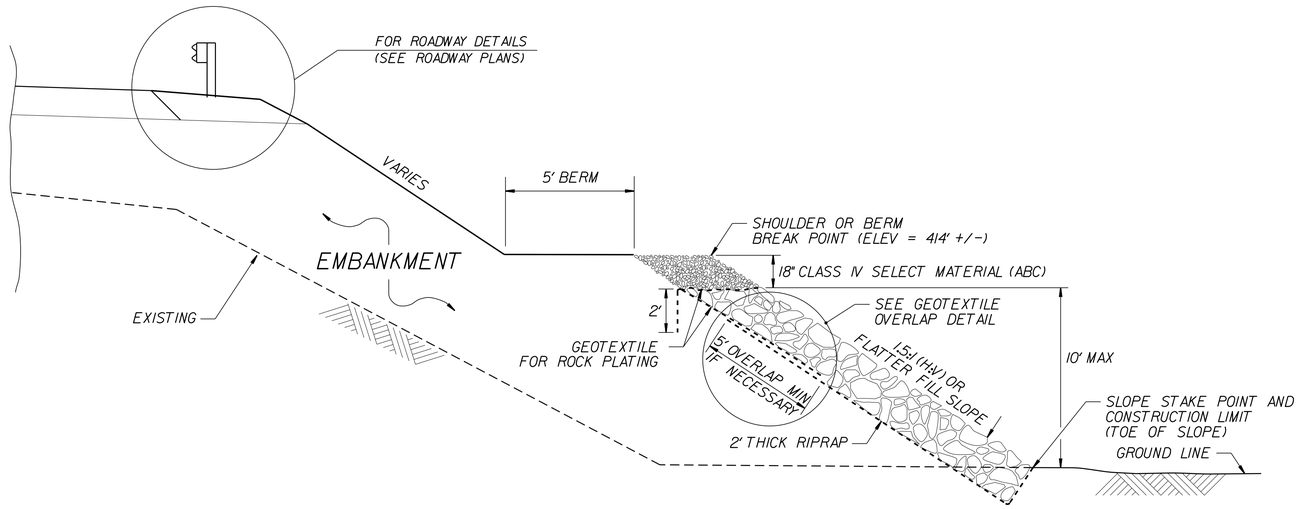
NORTH CAROLINA PROFESSIONAL SEAL 030943 ENGINEER THEIN TUN ZAN

DocuSigned by: Thein Tun Zan 4/19/2018
A43688C08C19472... SIGNATURE DATE

ENGINEER

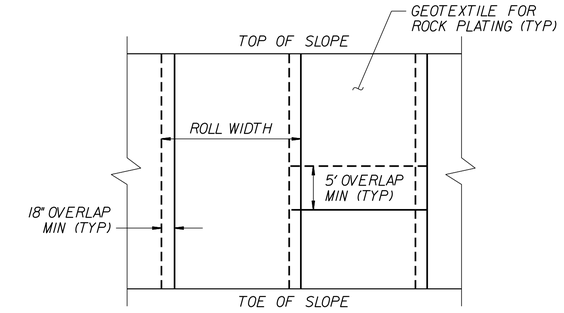
SIGNATURE DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



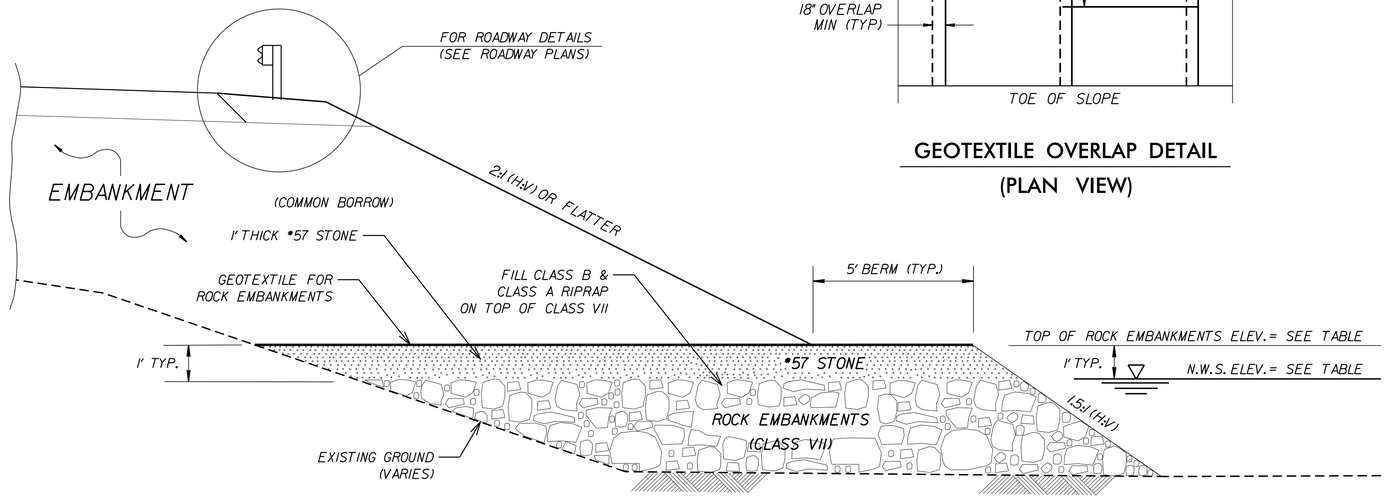
ROCK PLATING DETAIL NO. 1 – TYPICAL SECTION

(SEE TABLE FOR LOCATION AND ELEVATION)
(NOT TO SCALE)



GEOTEXTILE OVERLAP DETAIL

(PLAN VIEW)



ROCK EMBANKMENTS TYPICAL SECTION

(SEE TABLE FOR LOCATIONS AND ELEVATIONS)
(NOT TO SCALE)

ROCK PLATING

FOR ROCK PLATING, SEE SECTION 275 OF THE STANDARD SPECIFICATIONS.

USE ROCK PLATING AT FOLLOWING LOCATIONS:

LINES	BEGINNING SLOPE	APPROX. STATION	ENDING SLOPE	APPROX. STATION	LOCATION LT/RT	TOP OF ROCK PLATING ELEVATION	ROCK PLATING DETAIL NO.	RIPRAP CLASS*I/2/B	ROCK PLATING QUANTITY
-L-	2.5:1	205+24	2.5:1	205+72	RIGHT	414.0'	1	2	80 SY

USE ROCK PLATING UP TO ELEV. 414' OR 1 FT ABOVE NORMAL WATER SURFACE AS SHOWN IN THE ROCK PLATING DETAIL NO.1.

ROCK EMBANKMENTS

FOR ROCK EMBANKMENTS, SEE ROCK EMBANKMENTS SPECIAL PROVISION.

USE ROCK EMBANKMENTS AT FOLLOWING LOCATIONS:

-LINE-	APPROX. BEGINNING STATION	APPROX. ENDING STATION	LOCATION LT/RT	N.W.S. ELEVATION	TOP OF ROCK EMBANKMENTS ELEVATION
-L-	82+50 +/-	85+40 +/-	LEFT	365.8'	366.8'
-L-	105+25 +/-	107+69.33 +/-	LEFT	330'	331'
-L-	108+06.67 +/-	110+00 +/-	LEFT	330'	331'
-L-	107+25 +/-	107+69.33 +/-	RIGHT	330'	331'
-L-	108+06.67 +/-	111+00 +/-	RIGHT	330'	331'

CONSTRUCT ROCK EMBANKMENTS TO THE ELEVATION SHOWN IN THE ROCK EMBANKMENTS TYPICAL SECTION AND ACCORDING TO THE ROCK EMBANKMENTS SPECIAL PROVISION.

FILL VOIDS IN THE TOP OF ROCK EMBANKMENTS WITH CLASS B AND CLASS A RIP RAP.

PLACE *57 STONE AS SHOWN IN THE ROCK EMBANKMENTS TYPICAL SECTION.

INSTALL GEOTEXTILE ON TOP OF *57 STONE IN ACCORDANCE WITH THE ARTICLE 270-3 OF THE STANDARD SPECIFICATIONS.

ESTIMATED MATERIAL QUANTITIES FOR ROCK EMBANKMENTS

ROCK EMBANKMENTS (SELECT MATERIAL, CLASS VII) = 9,960 TONS

RIP RAP CLASS A = 1,330 TONS

RIP RAP CLASS B = 1,330 TONS

*57 STONE (SELECT MATERIAL, CLASS VI) = 3,060 TONS

GEOTEXTILE FOR ROCK EMBANKMENTS = 5,620 SY

PREPARED BY: THEIN T. ZAN	DATE: 04-2018
REVIEWED BY: JAMES R. BATTS	DATE: 04-2018

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS

GEOTECHNICAL ENGINEERING UNIT

ROCK EMBANKMENTS & ROCK PLATING DETAILS

REVISIONS

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

PROJECT REFERENCE NO.	SHEET
R-2814C	2H-1

GEOENVIRONMENTAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 31499 ENGINEER CYRUS F. PARKER

DocuSigned by: Cyrus Parker 3/27/2015 C96492AF5E824DF...

SIGNATURE DATE

ENGINEER

SIGNATURE DATE

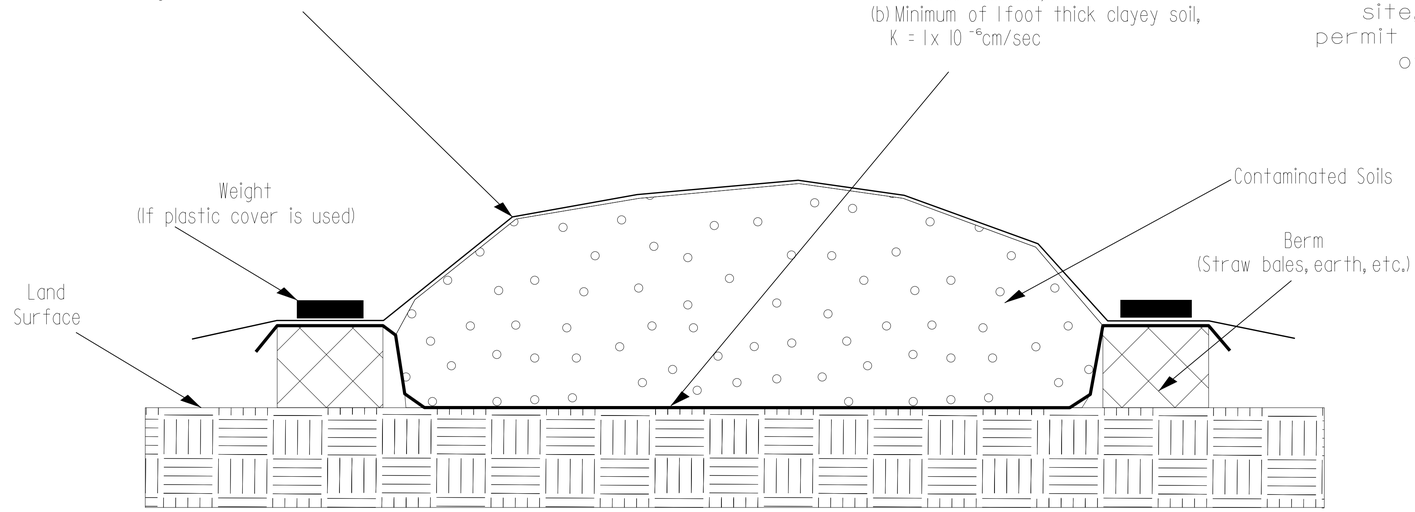
Detail for Temporary Containment of Contaminated Soil

Cross-Section View

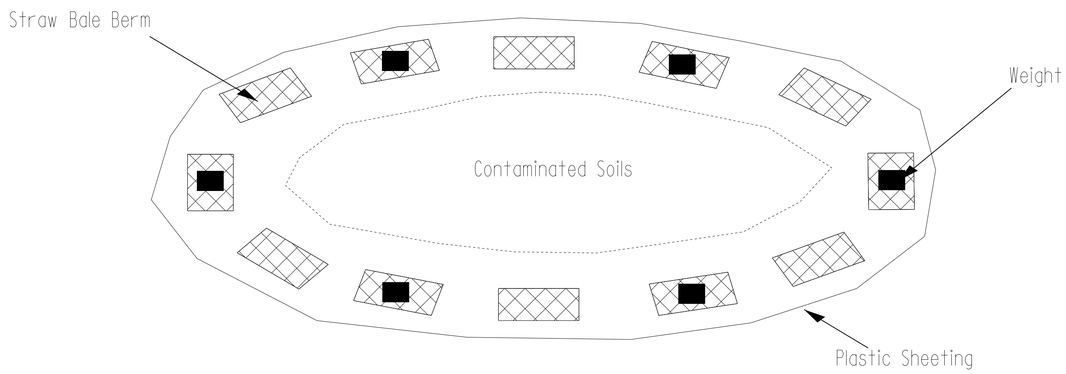
Top Plastic Cover Sheeting
(1 Layer, minimum: 10 mil thick)
Not necessary if leachate collection & treatment system is installed

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

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



Map View



PREPARED BY:	DATE:
REVIEWED BY:	DATE:

GEOTECHNICAL ENGINEERING UNIT

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

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STOCKPILE CONTAINMENT DETAIL

REVISIONS

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

COMPUTED BY: BC	DATE: 9/30/16
CHECKED BY: NNA	DATE: 9/30/16

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PROJECT REFERENCE NO.	SHEET NO.
R-2814C	3B-1

SUMMARY OF EARTHWORK IN CUBIC YARDS

SURVEY LINE	STATION	STATION	UNCL. EXCAV. CY	UNDERCUT	EMBANK. +% CY	BORROW CY	WASTE CY
-L- LT	33+50.00	63+50.00	6,672	520	4,812	2,743	5,123
-L- LT	63+50.00	86+00.00	5,829		11,436	5,607	0
-Y2- LT	10+00.00	15+00.00	85		514	429	0
-L- LT	86+00.00	116+00.00	4,244		44,731	40,487	0
-L- LT	116+00.00	120+50.00	2,372	1,175	1,472	230	2,305
SUBTOTALS:			19,202	1,695	62,965	49,496	7,428
-Y4- LT	22+00.00	24+00.00	155		385	230	0
-L- LT	120+50.00	143+50.00	24,064	511	15,315	0	9,260
-Y6- LT	18+50.00	25+00.00	1,113		2,364	1,251	0
-L- LT	143+50.00	173+50.00	25,853		8,025	0	17,828
-L- LT	173+50.00	203+50.00	10,751	601	16,507	11,651	6,496
SUBTOTALS:			61,936	1,112	42,596	13,132	33,584
-L- LT	203+50.00	215+50.00	1,128		4,000	2,872	0
-Y7- LT	13+50.00	15+50.00	15		49	34	0
-L- LT	215+50.00	245+50.00	4,175		5,315	1,140	0
-L- LT	245+50.00	258+50.00	1,527		2,674	1,147	0
SUBTOTALS:			6,845		12,038	5,193	0
-L- LT	258+50.00	270+00.00	1,071		3,685	2,614	0
-L- LT	270+00.00	299+00.00	2,637		9,418	6,781	0
-Y10- LT	14+00.00	16+50.00	390		16	0	374
-L- LT	299+00.00	329+00.00	5,563		12,538	6,975	0
-L- LT	329+00.00	359+00.00	1,097		9,865	8,768	0
SUBTOTALS:			10,758		35,521	25,138	374
-Y11- LT	13+00.00	17+00.00	123		877	754	0
-L- LT	359+00.00	381+00.00	1,690		3,634	2,314	370
SUBTOTALS:			1,813		4,511	3,068	370
-L- RT	33+50.00	63+50.00	3,930	2,313	16,435	15,341	5,149
-L- RT	63+50.00	86+00.00	3,730		5,584	1,854	0
-Y3- RT	11+00.00	13+00.00	100		0	0	100
-L- RT	86+00.00	116+00.00	3,878		18,471	14,593	0
-L- RT	116+00.00	120+50.00	1,981		319	0	1,662
SUBTOTALS:			13,619	2,313	40,809	31,787	6,911
-Y5- RT	10+50.00	14+00.00	524		248	0	276
-L- RT	120+50.00	143+50.00	6,178	197	6,454	284	205
-Y6- RT	26+50.00	32+50.00	1,553		1,343	0	210
-L- RT	143+50.00	173+50.00	4,732		5,098	366	0
-L- RT	173+50.00	203+50.00	4,045	42	12,655	9,179	611
SUBTOTALS:			17,032	239	25,798	9,829	1,302
-Y7- RT	17+00.00	18+50.00	121		114	0	7
-L- RT	203+50.00	215+50.00	1,574		15,926	14,352	0
-L- RT	215+50.00	245+50.00	8,399		16,667	8,268	0
-Y8- RT	11+00.00	12+00.00	7		166	159	0
SUBTOTALS:			10,101		32,873	22,779	7
-L- RT	245+50.00	258+50.00	7,780		6,240	0	1,540
-L- RT	258+50.00	270+00.00	461		4,898	4,437	0
-L- RT	270+00.00	299+00.00	10,264		22,639	12,375	0
-Y12-	11+67.00	13+50.00	579		5	0	574
-L- RT	299+00.00	329+00.00	9,153		31,294	22,141	0
-L- RT	329+00.00	359+00.00	5,673	1,240	9,637	4,567	1,933
-Y11- RT	18+00.00	22+00.00	277		526	249	0
-L- RT	359+00.00	381+00.00	5,869	2,395	8,092	4,682	4,854
SUBTOTALS:			40,056	3,635	83,331	48,451	8,901
PROJECT SUBTOTALS:			181,362	8,994	340,442	208,962	58,877
MATERIAL FOR SHOULDER CONSTRUCTION					25,980	25,980	
LOSS DUE TO CLEARING AND GRUBBING			-17,600			17,600	
ADDITIONAL UNDERCUT				2,000	2,400	2,400	2,000
LESS SELECT GRANULAR MATERIAL					-12,600	-12,600	
WASTE IN LIEU OF BORROW						-27,672	-27,672
PROJECT TOTALS:			163,762	10,994	356,222	214,671	33,205
TOP SOIL TO REPLACE BORROW PITS						10,733	
GRAND TOTALS:			163,762			225,404	
SAY:			164,000	11,000		225,500	

EST. DDE = 2,400 CY
PAVEMENT STRUCTURE VOLUME = 86,000 CY

EARTHWORK FOR ALTERNATE PVMT. DESIGN

	UNCL. EXCAV. CY	UNDERCUT	EMBANK. +% CY	BORROW CY	WASTE CY
PROJECT SUBTOTALS:	181,362	8,994	340,442	208,962	58,877
ADJUSTED FOR ALT. PVMT.	-20,225	1,001	32,854	44,283	-7,796
ADJUSTED PROJECT TOTALS:	161,137	9,995	373,296	253,245	51,081
LOSS DUE TO CLEARING AND GRUBBING	-17,600			17,600	
ADDITIONAL UNDERCUT		2,000	2,400	2,400	2,000
MATERIAL FOR SHOULDER CONSTRUCTION			25,980	25,980	
LESS SELECT GRANULAR MATERIAL			-12,600	-12,600	
WASTE IN LIEU OF BORROW				-21,161	-21,161
PROJECT TOTALS:	143,537	11,995	389,076	265,464	31,920
TOP SOIL TO REPLACE BORROW PITS				13,273	
GRAND TOTALS:	143,537			278,737	
SAY:	144,000	12,000		279,000	

PAVEMENT STRUCTURE VOLUME = 65,000 CY

PAVEMENT REMOVAL SUMMARY

SURVEY LINE	STATION	STATION	LOCATION LT/RT/CL	YD^2
-L-	46+65.00	119+00.00	LT/RT	18,949.59
-L-	119+00.00	120+03.00	RT	26.95
-L-	121+64.00	140+89.00	RT	1026.96
-L-	147+38.00	193+08.00	RT	2954.77
-L-	193+08.00	206+50.00	LT/RT	3675.85
-L-	206+50.00	214+99.00	LT	1349.02
-L-	216+91.00	262+22.00	LT	3484.32
-L-	262+22.00	298+63.00	RT	3069.63
-L-	296+50.00	358+04.00	LT	3984.59
-L-	359+98.00	381+41.00	LT	1580.96
-Y4-	23+56.00	24+61.00	RT	49.45
-Y4-	23+51.00	24+37.00	LT	26.17
-Y5-	10+36.00	12+24.00	LT	75.22
-Y5-	10+70.00	12+20.00	RT	65.50
-Y6-	18+88.00	25+80.00	LT/RT	1618.32
-Y6-	26+00.00	32+35.00	LT/RT	2207.95
-Y7-	14+04.00	15+49.00	RT	63.87
-Y7-	13+12.00	15+59.00	LT	70.51
-Y7-	15+80.00	18+23.00	RT	81.48
-Y7-	15+91.00	18+25.00	LT	58.93
-Y11-	12+50.00	17+14.00	RT	131.49
-Y11-	13+50.00	17+15.00	LT	107.49
-Y11-	17+51.00	20+50.00	RT	70.39
-Y11-	17+47.00	22+50.00	LT	159.89
-L-	TEMP. PVMT.	TEMP. PVMT.	VARIES	3,030.22
-TEMPALIG1-	13+84.00	15+60.00	LT/RT	273.12
-TEMPALIG2-	12+50.00	18+60.00	LT/RT	1,914.56
			TOTAL:	50,107.19
			SAY:	50,110

SHOULDER BERM GUTTER SUMMARY

SURVEY LINE	STATION	STATION	LENGTH
-L- LT	106+00.00	110+79.00	479.00
-L- RT	133+00.00	138+25.00	525.00
-L- LT	136+50.00	141+25.00	475.00
-L- RT	166+84.00	168+84.00	200.00
-Y6- LT	21+21.00	22+95.00	174.00
		TOTAL:	1,853.00
		SAY:	1,860

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

EXPRESSWAY GUTTER SUMMARY

SURVEY LINE	STATION	STATION	LENGTH
-L- MED LT	114+50.00	119+95.00	545
-L- MED RT	207+94.74	214+78.51	683.8
		TOTAL:	1,228.8
		SAY:	1,230

12/06/07

5/24/2018
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COMPUTED BY: BC	DATE: 9/21/16
CHECKED BY: CEH	DATE: 3/23/18

PROJECT REFERENCE NO.	SHEET NO.
R-2814C	3B-2

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SUMMARY OF WOVEN WIRE FENCE

SURVEY LINE	STATION	STATION	FABRIC (LF)	4″ POST	5″ POST
–L– RT	09+41.00	14+15.00	475.00	29	10
–L– RT	14+75.00	22+05.00	730.00	45	13
–L– RT	22+65.00	28+35.00	570.00	35	10
–L– RT	28+95.00	39+61.00	1066.00	66	19
–Y1– RT	17+60.00	19+38.00	216.00	10	10
–Y1– LT	19+38.00	15+50.00	433.00	22	16
–L– RT	43+11.00	43+95.00	85.00	1	10
–L– RT	44+55.00	48+20.00	375.00	18	16
–L– RT	48+80.00	52+05.00	375.00	21	10
–L– RT	52+65.00	53+45.00	80.00	2	7
–L– RT	54+05.00	57+40.00	335.00	19	10
–L– RT	58+00.00	65+55.00	724.00	38	25
–L– RT	66+15.00	79+75.00	1344.00	84	22
–L– RT	80+35.00	85+00.00	465.00	28	10
–Y3– LT	12+85.00	10+84.00	220.00	9	13
–L– RT	87+00.00	94+55.00	755.00	45	16
–L– RT	95+15.00	107+61.00	1,262.00	80	19
–L– RT	108+15.00	119+60.00	1183.00	69	28
–Y5– RT	11+36.00	13+70.00	249.00	11	13
–Y5– LT	13+70.00	10+98.00	272.00	16	7
–L– RT	121+40.00	121+90.00	50.00	–2	10
–L– RT	122+50.00	136+40.00	1,398.00	86	25
–L– RT	136+76.00	142+00.00	564.00	27	25
–Y6– RT	26+33.00	28+15.00	299.00	16	10
–Y6– RT	28+75.00	32+10.00	318.00	16	13
–Y6– LT	32+36.00	29+73.00	357.00	15	19
–L– RT	147+13.00	166+25.00	1913.00	121	28
–L– RT	166+85.00	167+38.00	62.00	1	7
–L– RT	167+78.00	169+15.00	162.00	6	10
–L– RT	169+75.00	170+95.00	118.00	5	7
–L– RT	171+55.00	173+05.00	148.00	7	7
–L– RT	173+65.00	177+00.00	329.00	18	10
–L– RT	178+75.00	184+05.00	520.00	30	13
–L– RT	184+65.00	187+25.00	255.00	13	10
–L– RT	187+85.00	189+75.00	187.00	10	7
–L– RT	190+35.00	191+70.00	133.00	6	7
–L– RT	192+30.00	195+65.00	330.00	18	10
–L– RT	196+25.00	199+60.00	335.00	19	10
–L– RT	200+20.00	201+95.00	176.00	9	7

SURVEY LINE	STATION	STATION	FABRIC (LF)	4″ POST	5″ POST
–L– RT	202+55.00	210+10.00	794.00	46	19
–L– RT	210+70.00	215+33.00	482.00	27	13
–Y7– RT	17+00.00	19+00.00	165.00	8	7
–Y7– LT	19+00.00	17+18.00	183.00	9	7
–L– RT	216+50.00	224+10.00	759.00	49	16
–L– RT	224+70.00	234+95.00	1,006.00	62	19
–L– RT	235+55.00	236+55.00	100.00	3	7
–L– RT	237+15.00	238+75.00	160.00	8	7
–L– RT	239+35.00	244+98.00	563.00	35	10
–L– RT	245+58.00	249+00.00	342.00	19	10
–L– RT	249+60.00	252+00.00	240.00	13	7
–L– RT	252+60.00	257+82.00	547.00	27	22
–L– RT	258+55.00	263+55.00	511.00	28	16
–L– RT	264+14.00	270+83.00	681.00	40	16
–L– RT	271+33.00	279+65.00	847.00	53	13
–L– RT	280+25.00	281+70.00	148.00	7	7
–L– RT	282+30.00	289+65.00	954.00	51	31
–L– RT	290+25.00	299+04.00	879.00	56	13
–L– RT	299+54.00	303+20.00	367.00	21	10
–L– RT	303+80.00	311+43.00	764.00	48	13
–L– RT	312+03.00	313+86.00	188.00	6	13
–L– RT	314+51.00	319+60.00	553.00	29	19
–L– RT	320+20.00	322+35.00	215.00	12	7
–L– RT	322+95.00	325+00.00	205.00	11	7
–L– RT	325+60.00	327+70.00	210.00	11	7
–L– RT	328+30.00	331+15.00	285.00	17	7
–L– RT	331+75.00	336+65.00	488.00	29	10
–L– RT	337+25.00	338+90.00	188.00	8	10
–L– RT	339+50.00	349+65.00	1131.00	61	37
–L– RT	350+25.00	351+05.00	80.00	2	7
–L– RT	351+65.00	353+80.00	215.00	12	7
–L– RT	354+40.00	357+77.00	337.00	17	13
–Y11– RT	18+19.00	18+75.00	67.00	1	7
–Y11– LT	18+50.00	18+12.00	70.00	1	7
–L– RT	360+00.00	362+70.00	270.00	14	10
–L– RT	363+22.00	367+00.00	381.00	22	10
–L– RT	367+60.00	369+40.00	186.00	10	7
–L– RT	370+40.00	373+15.00	284.00	17	7
–L– RT	373+75.00	374+25.00	52.00	0	7
–L– RT	374+85.00	376+25.00	146.00	7	7
–L– RT	376+85.00	377+87.00	102.00	4	7
–L– RT	379+20.00	380+35	115.00	4	7
–L– RT	380+95.00	381+75.00	115.00	3	10

SURVEY LINE	STATION	STATION	FABRIC (LF)	4″ POST	5″ POST
–L– LT	09+51.00	16+55.00	740.00	39	25
–L– LT	17+15.00	19+30.00	215.00	12	7
–L– LT	19+90.00	26+20.00	637.00	35	19
–L– LT	26+80.00	29+45.00	265.00	15	7
–L– LT	30+05.00	31+15.00	110.00	4	7
–L– LT	32+95.00	40+11.00	716.00	42	16
–Y1– LT	11+50.00	15+74.00	458.00	26	13
–L– LT	43+47.00	44+70.00	160.00	4	13
–L– LT	45+50.00	56+50.00	1115.00	66	25
–L– LT	57+10.00	62+30.00	535.00	31	13
–L– LT	62+90.00	69+63.00	715.00	44	13
–L– LT	70+23.00	78+80.00	857.00	54	13
–L– LT	79+40.00	85+00.00	827.00	47	22
–Y2– RT	12+35.00	14+59.00	242.00	10	13
–Y2– LT	12+35.00	14+09.00	200.00	7	13
–L– LT	87+00.00	98+25.00	1123.00	70	19
–L– LT	99+55.00	107+61.00	808.00	49	16
–L– LT	108+16.00	120+90.00	1284.00	78	25
–Y4– LT	21+50.00	22+48.00	116.00	5	7
–L– LT	123+00.00	137+64.00	1497.00	93	25
–L– LT	138+01.00	141+00.00	313.00	14	16
–Y6– RT	22+15.00	18+35.00	409.00	21	16
–Y6– LT	19+00.00	24+80.00	686.00	35	25
–L– LT	145+00.00	153+65.00	865.00	54	14
–L– LT	154+25.00	168+64.00	1468.00	95	19
–L– LT	169+05.00	179+65.00	1103.00	65	25
–L– LT	180+25.00	201+95.00	2,218.00	135	43
–L– LT	202+55.00	208+70.00	584.00	33	16
–L– LT	209+30.00	214+00.00	617.00	35	16
–Y7– RT	14+83.00	13+90.00	170.00	8	7
–Y7– LT	13+90.00	15+00.00	160.00	4	13
–L– LT	217+00.00	217+58.00	58.00	–1	10
–L– LT	218+18.00	220+95.00	278.00	16	7
–L– LT	221+55.00	226+20.00	471.00	28	10
–L– LT	226+80.00	231+60.00	490.00	30	10
–L– LT	233+64.00	244+50.00	1088.00	69	16
–L– LT	245+10.00	249+10.00	400.00	23	10
–L– LT	250+80.00	252+10.00	130.00	6	7
–L– LT	253+80.00	257+95.00	415.00	24	10
–L– LT	258+55.00	263+96.00	562.00	30	19
–L– LT	265+20.00	267+95.00	271.00	14	7
–L– LT	268+56.00	270+55.00	197.00	10	7
–L– LT	271+15.00	274+50.00	331.00	18	10
–L– LT	275+10.00	276+50.00	162.00	5	13
–L– LT	277+10.00	283+47.00	630.00	35	19
–L– LT	283+75.00	293+95.00	1021.00	63	19
–L– LT	294+55.00	298+83.00	428.00	25	10
–L– LT	299+73.00	301+95.00	222.00	12	7
–L– LT	302+55.00	303+40.00	85.00	2	7
–L– LT	304+00.00	304+90.00	90.00	3	7
–L– LT	305+50.00	308+54.00	284.00	15	10
–L– LT	309+14.00	314+74.00	568.00	34	13
–L– LT	315+39.00	329+30.00	1400.00	88	22
–L– LT	329+90.00	337+75.00	815.00	46	22
–L– LT	339+15.00	340+05.00	91.00	3	7
–L– LT	340+65.00	341+90.00	127.00	5	7
–L– LT	342+60.00	348+20.00	600.00	33	19
–L– LT	348+80.00	355+75.00	697.00	43	13
–L– LT	356+35.00	358+00.00	165.00	6	10
–Y11– RT	16+50.00	12+40.00	411.00	22	13
–Y11– LT	14+89.00	16+86.00	220.00	9	13
–L– LT	360+07.00	360+95.00	88.00	1	10
–L– LT	361+55.00	363+35.00	180.00	9	7
–L– LT	366+80.00	371+65.00	471.00	25	16
–L– LT	372+25.00	376+20.00	381.00	19	16
–L– LT	376+80.00	379+55.00	275.00	16	7
–L– LT	380+15.00	381+75.00	160.00	8	7
		TOTALS:	70,625.00	3,987.00	1,953.00
		SAY:	70,630	3,987	1,953

COMPUTED BY: *MMO* DATE: *2/14/2018*

CHECKED BY: *TNB* DATE: *3/23/2018*

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

PROJECT REFERENCE NO.	SHEET NO.
R-2814C	3B-3

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

GUARDRAIL SUMMARY

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

SURVEY LINE	BEG. STA.	END STA.	LOCATION	LENGTH			WARRANT POINT		"N" DIST. FROM E.O.L.	TOTAL SHOULDER WIDTH	FLARE LENGTH		W		ANCHORS								IMPACT ATTENUATOR TYPE 350		SINGLE FACED CONCRETE BARRIER	REMOVE EXISTING GUARDRAIL	REMOVE & STOCKPILE EXISTING GUARDRAIL	REMARKS
				STRAIGHT	SHOP CURVED	DOUBLE FACED	APPROACH END	TRAILING END			APPROACH END	TRAILING END	APPROACH END	TRAILING END	XI MOD	CAT-1	TL-2 GREU	AT-1	M GREU	TL-3 GREU	VI MOD	BIC		G	NG				
-L-	82+50.00	85+59.68	LT	243.75	81.25		85+00	82+50	10	13						1		1										
-L-	94+43.08	95+75	LT	131.25			94+50	94+50	10	13	50		1			1				1								
-L-	104+00.00	112+00.00	LT	793.75			110+75	104+00	10	13	50		1			1				1								
-L-	104+75.00	111+56.25	RT	687.5			106+00	111+25	10	13	50		1			1				1								
-L-	132+50.00	138+31.25	RT	518.75	75		133+75	138+25	10	13	50		1			1				1								
-L-	136+43.75	141+75.00	LT	531.25			140+50	136+50	10	13	50		1			1				1								
-L-	164+50.00	166+30.00	RT	181.25			167+37.95		10	13	50		1			1				1								
-L-	166+75.00	168+56.00	RT	181.25				168+25	10	13	50		1			1				1								
-L-	166+93.75	171+75.00	LT	487.5			170+50	167+00	10	13	50		1			1				1								
-L-	203+26.04	208+56.25	RT	468.75	87.5		204+50	208+50.33	10	13	50		1			1				1								
-L-	282+25.65	284+56.17	RT	231.25			283+00	284+50	14							1				1								
-L-	282+86.34	284+90.00	LT	200	6.25		284+90	283+00	14							2												
-L-	290+25.00	295+00.00	RT	475			291+50	295+00	14							1				1								
-L-	303+75.00	311+56.48	RT	781.25			305+00	311+50	14							1				1								
-L-	312+00.00	315+56.25	RT	356.25			312+50	315+50	14							1				1								
-L-	305+93.75	308+39.94	LT	206.25	56.25		307+00	306+00	14							1		1										
-L-	314+43.79	318+25.00	LT	381.25			317+00	314+50	14							1				1								
-L-	343+93.84	347+25.00	LT	331.25			345+50	344+00	14							1				1								
-Y6-	20+25.57	22+35.00	RT	218.75			21+50.00	22+00.00	8	11	50	50	1	1						2								
-Y6-	20+67.15	23+45.27	LT	268.75			21+86.00	22+14.00	8	11	50	50	1	1						2								
																										50		-L- RT Sta. 43+60
																										50		-L- LT Sta. 314+50
Subtotal				7675.00	306.25											19		2		19						100		
Less Anchor Deductions																												
GREU TL-3		19 @ 50'		950	0																							
CAT-1		19 @ 6.25'		118.75	0						Additional Guardrail Posts :		20															
AT-1		2 @ 6.25		0	12.5																							
End Unit Deductions				1068.75	12.5																							
Total				6606.25	293.75																							
Say				6625	300																							

COMPUTED BY: SMP DATE: 4/27/2018

CHECKED BY: CEH DATE: 4/30/2018

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

PROJECT REFERENCE NO.	SHEET NO.
R-2814C	3B-4

"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

TEMPORARY GUARDRAIL SUMMARY

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

SURVEY LINE	BEG. STA.	END STA.	LOCATION	LENGTH			WARRANT POINT		"N" DIST. FROM E.O.L.	TOTAL SHOULDER WIDTH	FLARE LENGTH		W		ANCHORS									IMPACT ATTENUATOR TYPE 350		SINGLE FACED CONCRETE BARRIER	REMOVE EXISTING GUARDRAIL	REMOVE & STOCKPILE EXISTING GUARDRAIL	REMARKS
				STRAIGHT	SHOP CURVED	DOUBLE FACED	APPROACH END	TRAILING END			APPROACH END	TRAILING END	APPROACH END	TRAILING END	XI MOD	CAT-1	TL-2 GREU	AT-1	M GREU	TL-3 GREU	VI MOD	BIC		G	NG				
Phase II																												
-L-	312+25.00	318+00.00	RT	575.00																2								
Phase III																												
-L-	104+60.00	110+40.00	LT	580.00																2								
	165+10.00	170+50.00	LT	540.00																2								
Subtotal				1695.00	0															6								
Less Anchor Deductions																												
GREU TL-3	6 @ 50'			300	0																							
				0	0																							
				0																								
End Unit Deductions				300																								
Total				1395.00	0																							
Say				1400	0																							

LINDA092017-PC

COMPUTED BY:	LMJ	**DATE:**	5-23-18
CHECKED BY:	ATN	**DATE:**	5-23-18

PROJECT NO.	SHEET NO.
R-2814C	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 SIZE THICKNESS OR GAUGE	OFFSET		STRUCTURE NUMBER FROM	STRUCTURE NUMBER TO	TOP ELEVATION FT.	INVERT ELEVATION FT.	INVERT ELEVATION FT.	MINIMUM REQUIRED SLOPE %	Side Drain Pipe (RCP, CSP, CAAP, HDPE, or PVC) 15	Side Drain Pipe 18	Side Drain Pipe 24	Side Drain Pipe 30	DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE	DO NOT USE PVC	C. S. PIPE 15 .064	C. S. PIPE 18 .064	C. S. PIPE 24 .064	C. S. PIPE 30 .079	C. S. PIPE 36 .079	R. C. PIPE CLASS III 15	R. C. PIPE CLASS III 18	R. C. PIPE CLASS III 24	R. C. PIPE CLASS III 30	R. C. PIPE CLASS III 36	R. C. PIPE CLASS IV 15	R. C. PIPE CLASS IV 18	R. C. PIPE CLASS IV 24	R. C. PIPE CLASS IV 30	R. C. PIPE CLASS IV 36	R. C. PIPE CLASS V 15	R. C. PIPE CLASS V 18	R. C. PIPE CLASS V 24	R. C. PIPE CLASS V 30	ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CY
L 42+25	17	LT	0405		404.1																																
			0405	0406		400.8	400.1																										144				
L 35+61	6	RT	0403		401.8	395.9																															
L 33+38	1	LT	0404		399.6	390.6																															
			0403	0412		395.8	395.8		8																												
L 40+84	18	RT	0406		403.6																																
			0406	0407		400.1	400.0																										24				
L 40+66	3	RT	0407		404.2																																
L 45+95	5	LT	0410		405.6																																
			0410	0411		395.5	393.7																					120										
L 35+61	3	LT	0412		399.0	396.1																															
L 44+35	91	RT	0456						52																												
L 52+42	74	RT	0501						60																												
L 49+55	13	LT	0502		405.1																																
			0502	0503		402.6	402.3																										56				
L 50+00	17	RT	0503		404.9																																
			0503	0504		401.0	400.3																						68									
L 53+75	75	RT	0505						16																												
L 54+90	0	CL	0506		399.5																																
			0506	0508		396.8	396.5		84																												
L 55+76	64	LT	0507		401.0																																3.400
			0507	0508		398.0	397.2																									64					
L 55+76	0	CL	0508		401.0																																
			0508	0509		397.2	396.0																									88					
L 58+90	78	LT	0510	0511		399.4	398.4																								80							
L 58+90	0	CL	0511		401.9																																
			0511	0512		398.4	395.7																								92							
L 48+52	70	RT	0513						40																												
L 62+63	84	LT	0601						20																												
L 64+47	83	LT	0602			398.6																															
			0602	0603		398.6	392.7																				84											
L 64+47	0	CL	0603		399.7																																
			0603	0604		392.7	391.8																				88											
L 67+00	0	CL	0605		396.4																																
			0605	0603		393.6	392.7		252																												
L 68+87	73	LT	0607		393.0																																
			0607	0608		390.0	389.8																76														
L 68+87	0	CL	0608		393.8																																
			0608	0609		389.8	389.0																96														
L 70+50	0	CL	0611		392.2																																
			0611	0612		390.3	390.0																						96									
L 75+00	0	CL	0701		383.9																																
			0701	0704		381.1	379.4																156														
L 76+40	77	LT	0702			379.0																															
			0702	0703		379.0	378.8																												60		
L 76+40	18	LT	0703		384.4																																
			0703	0704		378.8	378.6																								32							
L 76+57	9	RT	0704		381.9																																
			0704	0705		378.6	378.4																								88							
L 80+04	69	RT	0706						80																												
								SHEET TOTALS	612														156	172		172	120	164		292		152	224		60		3.400
								PROJECT TOTALS	3276	672	232							700	144	48		48	956	668	308	992	480	976	480	888	536	152	10012	1672	1044	716	6.800

LINE & STATION	STRUCTURE NUMBER FROM	STRUCTURE NUMBER TO	QUANTITIES FOR DRAINAGE STRUCTURES (NOTE: TOTAL LIN. FT. FOR PAY QUANTITY SHALL BE A + (1.3 X B)) 0' THRU 5' EACH	A 5' THRU 10' LIN. FT.	B 10' AND ABOVE LIN. FT.	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STD. 840.03 GRATE TYPE E	F	G	CONCRETE TRANSITIONAL SECTION D.I. STD. 852.04 OR STD. 852.06	CONCRETE TRANSITIONAL SECTION C.B. STD. 852.05	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATES STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR STD. 840.26	G.D.I. TYPE "B" STD. 840.18 OR STD. 840.27	G.D.I. TYPE "D" STD. 840.19 OR STD. 840.28	G.D.I. (W.S. FLAT) FRAME WITH GRATE STD. 840.20	G.D.I. (W.S. FLAT) FRAME W/ 2 GRATES STD. 840.20	G.D.I. (W.S. SAG) FRAME W/ GRATE STD. 840.22	G.D.I. (W.S. SAG) FRAME W/ 2 GRATES STD. 840.22	G.D.I. (N.S. SAG) FRAME W/ GRATE STD. 840.24	G.D.I. (N.S. SAG) FRAME W/ 2 GRATES STD. 840.24	G.D.I. (N.S. FLAT) FRAME W/ GRATE STD. 840.29	G.D.I. (N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29	J.B. STD. 840.31 OR STD. 840.32	ANGLED VANE GRATES AND FRAMES STD. 840.33	T.B.J.B. STD. 840.34	T.B.D.I. STD. 840.35 OR STD. 840.46	T.B.D.I. FOR STEEL GRATES STD. 840.36	STEEL FRAME WITH TWO GRATES STD. 840.37	TEMP STEEL PLATE COVER MASONRY DRAINAGE	6" SPRING BOX PIPE	SPRING BOX STD. 840.41	Special D.I. (See Detail 2C-6)	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.	CONVERT EXISTING J.B. TO D.I.	ADJUST C.B.	ADJUST DI	ADJUST 2GI TO JB W/MH	15" C.S. ELBOW	18" C.S. ELBOW	24" C.S. ELBOW	BERM DRAINAGE OUTLET STD. 850.10 (PER SY)	BERM DRAINAGE OUTLET STD. 850.11 (PER SY)	FLOWABLE FILL CY	PIPE REMOVAL LIN. FT.	REMARKS
L 42+25	0405		1							1		1	1																																						
	0405	0406																																																	
L 35+61	0403		1	1.0						1		1	1																																						
L 33+38	0404		1	4.0																																							1									
	0403	0412																																																10	
L 40+84	0406		1							1		1	1																																						
	0406	0407																																																	
L 40+66	0407		1	3.3						1			1																					1																	
L 45+95	0410		1	5.0	0.1					1			1																					1																	
	0410	0411																																																	
L 35+61	0412		1																										1									1															
L 44+35	0456																																																		
L 52+42	0501																																																		
L 49+55	0502		1							1		1	1																																						
	0502	0503																																																	
L 50+00	0503		1							1		1	1																																						
	0503	0504																																																	
L 53+75	0505																																																		
L 54+90	0506		1												1					1																															
	0506	0508																																																	
L 55+76	0507																																																		
	0507	0508																																																	
L 55+76	0508		1												1			1																																	
	0508	0509																																																	
L 58+90	0510	0511																																																	
L 58+90	0511		1												1					1																															
	0511	0512																																																	
L 48+52	0513																																																		
L 62+63	0601																																																		
L 64+47	0602																																																		
	0602	0603																																																	
L 64+47	0603		1	2.0											1					1																															
	0603	0604																																																	
L 67+00	0605		1												1					1																															
	0605	0603																																																	
L 68+87	0607		1												1					1																															
	0607	0608																																																	
L 68+87	0608		1												1					1																															
	0608	0609																																																	
L 70+50	0611		1													1				1																															
	0611	0612																																																	
L 75+00	0701		1												1					1																															
	0701	0704																																																	
L 76+40	0702																																																		
	0702	0703																																																	
L 76+40	0703		1	0.7						1		1	1																																						
	0703	0704																																																	
L 76+57	0704		1													1				1																															
	0704	0705																																																	
L 80+04	0706																																																		
SHEET TOTALS			20	16.0	0.1					8		6	8		8	2		1		9							1							2		1						1								10	
PROJECT TOTALS			249	45.9		102	8	38	56	62		33	38	3	46	19		41		56		3		3	2		1	35				24	1	5	1	4						1		15	2	2	33		23	4927	

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

LINDA092017-PC

COMPUTED BY:	LMJ	DATE:	5-23-18
CHECKED BY:	ATN	DATE:	5-23-18

PROJECT NO.	SHEET NO.
R-2814C	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 SIZE THICKNESS OR GAUGE	OFFSET	STRUCTURE NUMBER FROM	STRUCTURE NUMBER TO	TOP ELEVATION FT.	INVERT ELEVATION FT.	INVERT ELEVATION FT.	MINIMUM REQUIRED SLOPE %	Side Drain Pipe (RCP, CSP, CAAP, HDPE, or PVC) 15	18	24	30	DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE	DO NOT USE PVC	C. S. PIPE 15 .064	18 .064	24 .064	30 .079	36 .079		R. C. PIPE CLASS III 15	18	24	30	36		R. C. PIPE CLASS IV 15	18	24	30	36		R. C. PIPE CLASS V 15	18	24	30		ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CY	QUANTITIES FOR DRAINAGE STRUCTURES NOTE: TOTAL LIN. FT. FOR PAY QUANTITY SHALL BE A + (1.3 X B) A 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 WITH GRATE STD. 840.20	G.D.I. (W.S. FLAT) FRAME W/ 2 GRATES STD. 840.20	G.D.I. (W.S. SAG) FRAME W/ GRATE STD. 840.22	G.D.I. (W.S. SAG) FRAME W/ 2 GRATES STD. 840.22	G.D.I. (N.S. SAG) FRAME W/ GRATE STD. 840.24	G.D.I. (N.S. SAG) FRAME W/ 2 GRATES STD. 840.24	G.D.I. (N.S. FLAT) FRAME W/ GRATE STD. 840.29	G.D.I. (N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29	J.B. STD. 840.31 OR STD. 840.32	ANGLED VANE GRATES AND FRAMES STD. 840.33	T.B.J.B. STD. 840.34	T.B.D.I. STD. 840.35 OR STD. 840.46	T.B.D.I. FOR STEEL GRATES STD. 840.36	STEEL FRAME WITH TWO GRATES STD. 840.37	TEMP STEEL PLATE COVER MASONRY DRAINAGE	6" SPRING BOX PIPE	SPRING BOX STD. 840.41	Special D.I. (See Detail 2C-6)	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.	CONVERT EXISTING J.B. TO D.I.	ADJUST C.B.	ADJUST DI	ADJUST 2GI TO JB W/MH		15" C.S. ELBOW	18" C.S. ELBOW	24" C.S. ELBOW	BERM DRAINAGE OUTLET STD. 850.10 (PER SY)	BERM DRAINAGE OUTLET STD. 850.11 (PER SY)		FLOWABLE FILL CY	PIPE REMOVAL LIN. FT.	REMARKS
L 84+50	11 LT	0708		369.3																																					1												1					1																																	
		0708	0710		366.5	364.2																													128																																																								
L 85+60	95 RT	0709		365.0																																					1	0.3										1						1																																	
		0709	0710		359.8	359.5																				88																																																																	
L 85+78	10 RT	0710		368.2																																					1	3.7						1			1																					1																			
		0710	0711		359.5	359.1																				124																																																																	
L 87+00	16 LT	0711		366.1																																					1	1.9						1			1																					1																			
		0711	0712		359.1	358.9																				88																																																																	
Y2 12+84	28 RT	0713		358.7																																					1													1				1																																	
		0713	0714		356.1	355.7																			68																																																																		
L 79+08	65 LT	0715						28																																																																																			
L 88+58	20 LT	0716		364.1																																					1							1		1	1																																								
		0716	0711		360.9	360.4																													156																																																								
L 84+50	86 RT	0717		366.3																																					1											1				1																																			
		0717	0709		361.6	360.3				112																																																																																	
L 91+00	4 LT	0801		361.8																																					1												1					1																																	
		0801	0803		359.1	358.8		104																																																																																			
L 89+95	74 RT	0802			357.6																																																																																						
		0802	0803		357.6	357.4																										76																																																											
L 89+95	0 CL	0803		362.6																																					1	0.2											1			1																																			
		0803	0804		357.4	357.0																										80																																																											
L 93+50	18 RT	0806		364.0																																					1							1		1	1																																								
		0806	0807		360.9	360.0																													56																																																								
L 101+50	0 CL	0808		349.4																																					1												1					1																																	
		0808	0809		344.4	343.4																	104																																																																				
L 106+50	0 CL	0901		337.5																																					1												1					1																																	
		0901	0902		332.5	331.1																	84																																																																				
L 109+59	0 CL	0903		336.2																																					1												1					1																																	
		0903	0904		333.5	333.5		12																																																																																			
L 109+47	0 CL	0904		336.2																																					1												1					1																																	
		0904	0906		333.5	333.1																							56																																																														
L 109+35	56 LT	0905		338.1																																					1												1			1																																			
		0905	0906		335.4	335.1																													8																																																								
L 109+47	56 LT	0906		338.1																																					1												1					1																																	
		0906	0907		333.1	332.7																								120																																																													
L 110+72	56 LT	0907		338.7																																					1	1.0											1			1																																			
		0907	0908		332.7	331.2			32																																																																																		
L 115+00	14 RT	0909		350.1																																					1							1								1										1																									
		0909	0910		347.3	341.1		148																																																																																			
L 113+50	8 RT	0910		343.9																																					1												1					1																																	
		0910	0911		341.1	337.4	0.3																80																																																																				
L 112+70	11 LT	0911		342.4																																					1							1		1	1																																								
		0911	0912		337.4	336.0	0.4																						76																																																														
L 121+49	15 LT	1001		364.6																																					1							1		1	1																																								
		1001	1002		361.4	360.6																													152																																																								
L 120+00	16 RT	1002		363.8																																					1							1		1	1																																								
		1002	1003		360.6	356.0																													248																																																								
L 117+50	6 RT	1003		358.8																																					1							1								1										1																									
		1003	0909		356.0	347.3																													248																																																								
L 122+26	80 RT	1004						28																																																																																			
SHEET TOTALS								320	32	112													268		68	300			132	120		156			996						23	7.1						9		5	7	2	11	1		6		10								2						2																			
PROJECT TOTALS								3276	672	232							700	144	48		48		956	668	308	992	480		976	480	888	536	152		10012	1672	1044	716		6.800	249	45.9		102	8	38	56	62		33	38	3	46	19		41		56		3		3	2		1	35				24	1	5	1	4						1			15	2	2	33			23	4927	

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

LINDA092017-PC

COMPUTED BY:	LMJ	DATE:	5-23-18
CHECKED BY:	ATN	DATE:	5-23-18

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
R-2814C	3D-3

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)

ABBREVIATIONS

C.A.A.	CORRUGATED ALUMINIUM ALLOY
C.B.	CATCH BASIN
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T.B.J.B.	TRAFFIC BEARING JUNCTION BOX
W.S.	WIDE SLOT

LINE & STATION	OFFSET	STRUCTURE NUMBER		TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	MINIMUM REQUIRED SLOPE	Side Drain Pipe (RCP, CSP, CAAP, HDPE, or PVC)									C. S. PIPE						R. C. PIPE CLASS III						R. C. PIPE CLASS IV						R. C. PIPE CLASS V					ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE)	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 WITH GRATE STD. 840.20	G.D.I. (W.S. FLAT) FRAME W/ 2 GRATES STD. 840.20	G.D.I. (W.S. SAG) FRAME W/ GRATE STD. 840.22	G.D.I. (W.S. SAG) FRAME W/ 2 GRATES STD. 840.22	G.D.I. (N.S. SAG) FRAME W/ GRATE STD. 840.24	G.D.I. (N.S. SAG) FRAME W/ 2 GRATES STD. 840.24	G.D.I. (N.S. FLAT) FRAME W/ GRATE STD. 840.29	G.D.I. (N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29	J.B. STD. 840.31 OR STD. 840.32	ANGLED VANE GRATES AND FRAMES STD. 840.33	T.B.J.B. STD. 840.34	T.B.D.I. STD. 840.35 OR STD. 840.46	T.B.D.I. FOR STEEL GRATES STD. 840.36	STEEL FRAME WITH TWO GRATES STD. 840.37	TEMP STEEL PLATE COVER MASONRY DRAINAGE	6" SPRING BOX PIPE	SPRING BOX STD. 840.41	Special D.I. (See Detail 2C-6)	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.	CONVERT EXISTING J.B. TO D.I.	ADJUST C.B.	ADJUST DI	ADJUST 2GI TO JB W/MH		15" C.S. ELBOW	18" C.S. ELBOW	24" C.S. ELBOW	BERM DRAINAGE OUTLET STD. 850.10 (PER SY)	BERM DRAINAGE OUTLET STD. 850.11 (PER SY)		FLOWABLE FILL	PIPE REMOVAL	REMARKS
SIZE								15	18	24	30						15	18	24	30	36		15	18	24	30	36		15	18	24	30	36		15	18	24	30				A	B		GRATE TYPE																																																		
THICKNESS OR GAUGE		FROM	TO	FT.	FT.	FT.	%					DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE	DO NOT USE PVC	.064	.064	.064	.079	.079																			CY	0' THRU 5' EACH	5' THRU 10' LIN. FT.	10' AND ABOVE LIN. FT.		E	F	G	D.I. STD. 852.04 OR STD. 852.06	C.B. STD. 852.05																																								CY	LIN. FT.	
L 126+63	90 LT	1005			354.3																																																																																							
		1005	1006		354.3	350.6																				180																																																																	
L 129+50	77 LT	1007			354.1																																																																																								
		1007	1008		354.1	353.6	0.3																														100																																																									
L 129+17	17 RT	1008		358.7																																					1	0.2						1		1	1																																												
		1008	1010		353.6	353.2	0.3																														60																																																									
L 128+50	10 LT	1009		357.8																																					1												1					1																																					
		1009	1010		354.7	354.6																													28																																																											
L 128+59	18 RT	1010		359.1																																					1	0.5						1		1	1																																												
		1010	1011		353.6	350.5	0.3																			72																																																																					
L 133+80	0 CL	1101		353.2																																					1												1					1																																					
		1101	1102		350.5	350.2																													120																																																												
L 135+00	19 LT	1102		355.1																																					1							1		1	1																																												
		1102	1103		350.2	350.0																													64																																																													
L 135+24	74 RT	1104		353.8																																					1																	1									1																													
		1104	1105		350.6	350.3																													72																																																													
L 134+50	84 RT	1105		353.9																																					1															1												1																													
		1105	1106		350.3	346.8		20																																																																												2								
L 138+00	56 LT	1107		353.2																																					1												1			1																																								
		1107	1108		350.5	350.0																													8																																																													
L 137+88	56 LT	1108		353.2																																					1												1					1																																					
		1108	1110		350.0	349.9																													60																																																													
L 137+66	2 RT	1109		353.2																																					1												1					1																																					
		1109	1110		350.4	349.9		12																																																																																						
L 137+78	2 RT	1110		353.3																																					1												1			1																																								
		1110	1112		349.9	349.7																									52																																																																			
L 137+66	56 RT	1111		353.2																																					1												1			1																																								
		1111	1112		350.5	350.4																													12																																																													
L 137+78	56 RT	1112		353.2																																					1												1					1																																					
		1112	1113		349.7	349.6																														40																																																												
L 138+19	56 RT	1113		353.3																																					1												1			1																																								
		1113	1114		349.6	349.5			20																																																																																					
L 140+64	93 RT	1115			350.6																																																																																								
		1115	1116		350.6	350.3																			96																																																																						
L 140+64	4 LT	1116		355.3																																					1												1					1																																					
		1116	1117		350.3	349.3	0.4																		52																																																																							
L 140+64	56 LT	1117		355.3																																					1	1.0											1			1																																								
		1117	1118		349.3	348.6	0.4		16																																																																																					
L 145+00	11 RT	1119		361.9																																					1												1					1																																					
		1119	1120		358.1	355.7																													120																																																												
L 143+80	10 LT	1120		359.9																																					1							1		1	1																																												
		1120	1125		355.7	353.9																													120																																																													
L 142+57	16 RT	1121		357.9																																					1							1		1	1																																												
		1121	1125		355.1	353.9																													24																																																													
Y6 21+32	31 LT	1122		352.4																																					1												1					1																																					
		1122	1123		349.6	349.3		64																																																																																					
Y6 20+65	28 LT	1123		353.2																																					1																						1											1																	
		1123	1124		349.3	349.2		16																																																																																						
L 142+57	7 LT	1125		358.0																																					1																																	1	1																	
		1125	1116		353.9	352.5		192																																																																																						
SHEET TOTALS								304	36															148	72	180			52						628	40	160				22	1.7						5		5	5		13			6		9					1			2							1	2									2								
PROJECT TOTALS								3276	672	232							700	144	48		48		956	668	308	992	480		976	480	888	536	152		10012	1672	1044	716		6.800	249	45.9		102	8	38	56	62		33	38	3	46	19		41		56		3		3	2		1	35				24	1	5	1	4						1			15	2	2	33			23	4927	

LINDA092017-PC

COMPUTED BY: LMJ DATE: 5-23-18
CHECKED BY: ATN DATE: 5-23-18

PROJECT NO.	SHEET NO.
R-2814C	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		TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	MINIMUM REQUIRED SLOPE	Side Drain Pipe (RCP, CSP, CAAP, HDPE, or PVC)									C. S. PIPE						R. C. PIPE CLASS III						R. C. PIPE CLASS IV						R. C. PIPE CLASS V					ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE)
SIZE			FROM	TO					15	18	24	30	DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE	DO NOT USE PVC	15	18	24	30	36		15	18	24	30	36		15	18	24	30	36		15	18	24	30		
THICKNESS OR GAUGE					FT.	FT.	FT.	%										.064	.064	.064	.079	.079																			CY
L 138+79	425	LT	1126						28																																
L 152+03	77	LT	1201		371.9																																				
			1201	1202		369.4	369.1																	92																	
L 152+01	15	RT	1202		376.8																																				
			1202	1204		369.1	368.5																	68																	
L 151+14	19	RT	1203		376.1																																				
			1203	1202		372.9	369.1																	88																	
L 155+32	82	LT	1205		369.7																																				
			1205	1206		367.5	367.2																		84																
L 155+32	0	CL	1206		370.6																																				
			1206	1207		367.2	367.0																		96																
L 161+64	77	LT	1301			366.9																																			
			1301	1302		366.9	365.8	0.3																								76									
L 161+72	0	CL	1302		368.5																																				
			1302	1303		365.8	365.2	0.4																								88									
L 164+67	0	CL	1304		367.1																																				
			1304	1309		364.3	364.2																	48																	
L 170+17	0	CL	1306		371.7																																				
			1306	1307		369.5	369.0																							88											
L 166+90	56	RT	1308		371.0																																				
			1308	1309		367.9	364.2																						220												
L 164+68	51	RT	1309		369.5																																				
			1309	1305		364.2	364.0		40																																
L 164+79	0	CL	1310		367.1																																				
			1310	1304		364.4	364.3		12																																
L 171+29	83	RT	1311							56																															
L 169+42	84	RT	1312								52																														
L 176+50	89	RT	1401			375.0																																			
			1401	1402		375.0	374.7																										92								
L 176+29	0	CL	1402		378.0																																				
			1402	1403		374.7	374.4																										100								
L 185+52	86	RT	1404			387.1																																			
			1404	1405		387.1	386.8																							88											
L 185+34	0	CL	1405		390.1																																				
			1405	1406		386.8	386.6																							96											
L 173+35	78	RT	1407							56																															
L 177+32	88	RT	1408							36																															
L 178+46	79	RT	1409							40																															
L 184+35	76	RT	1410						32																																
L 189+59	85	RT	1501			399.0																																			
			1501	1502		399.0	398.7																							88											
L 189+53	0	CL	1502		402.0																																				
			1502	1503		398.2	397.9																								100										
L 199+02	94	LT	1504			412.0																																			
			1504	1505		412.0	411.0																								96										
L 199+05	0	CL	1505		414.5																																				
			1505	1506		411.0	408.5	0.4																								88									
L 187+51	86	RT	1507						32																																
L 190+00	92	RT	1509							48																															
L 191+96	88	RT	1510						40																																
SHEET TOTALS									184	236	52													296	180					220	360	448	192								
PROJECT TOTALS									3276	672	232							700	144	48		48		956	668	308	992	480		976	480	888	536	152		10012	1672	1044	716		6.800

LINE & STATION	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 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 WITH GRATE STD. 840.20	G.D.I. (W.S. FLAT) FRAME W/ 2 GRATES STD. 840.20	G.D.I. (W.S. SAG) FRAME W/ GRATE STD. 840.22	G.D.I. (W.S. SAG) FRAME W/ 2 GRATES STD. 840.22	G.D.I. (N.S. SAG) FRAME W/ GRATE STD. 840.24	G.D.I. (N.S. SAG) FRAME W/ 2 GRATES STD. 840.24	G.D.I. (N.S. FLAT) FRAME W/ GRATE STD. 840.29	G.D.I. (N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29	J.B. STD. 840.31 OR STD. 840.32	ANGLED VANE GRATES AND FRAMES STD. 840.33	T.B.J.B. STD. 840.34	T.B.D.I. STD. 840.35 OR STD. 840.46	T.B.D.I. FOR STEEL GRATES STD. 840.36
			0' THRU 5' EACH	A 5' THRU 10' LIN. FT.	B 10' AND ABOVE LIN. FT.		E	F	G	D.I. STD. 852.04 OR STD. 852.06	C.B. STD. 852.05																		
L 138+79	1126																												
L 152+03	1201		1													1				1									
	1201	1202																											
L 152+01	1202		1	2.7																					1				
	1202	1204																											
L 151+14	1203		1							1		1	1																
	1203	1202																											
L 155+32	1205		1													1				1									
	1205	1206																											
L 155+32	1206		1													1				1									
	1206	1207																											
L 161+64	1301																												
	1301	1302																											
L 161+72	1302		1													1				1									
	1302	1303																											
L 164+67	1304		1												1					1									
	1304	1309																											
L 170+17	1306		1													1				1									
	1306	1307																											
L 166+90	1308		1																					1				1	
	1308	1309																											
L 164+68	1309		1	0.3														1										1	
	1309	1305																											
L 164+79	1310		1												1					1									
	1310	1304																											
L 171+29	1311																												
L 169+42	1312																												
L 176+50	1401																												
	1401	1402																											
L 176+29	1402		1													1				1									
	1402	1403																											
L 185+52	1404																												
	1404	1405																											
L 185+34	1405		1												1					1									
	1405	1406																											
L 173+35	1407																												
L 177+32	1408																												
L 178+46	1409																												
L 184+35	1410																												
L 189+59	1501																												
	1501	1502																											
L 189+53	1502		1													1				1									
	1502	1503																											
L 199+02	1504																												
	1504	1505																											
L 199+05	1505		1												1					1									
	1505	1506																											
L 187+51	1507																												
L 190+00	1509																												
L 191+96	1510																												
SHEET TOTALS			15	3.0						1		1	1		4	7		1		11				1	1			2	
PROJECT TOTALS			249	45.9		102	8	38	56	62		33	38	3	46	19		41		56		3		3	2		1	35	

LINE & STATION	FROM	TO	STEEL FRAME WITH TWO GRATES STD. 840.37	TEMP STEEL PLATE COVER MASONRY DRAINAGE	6" SPRING BOX PIPE	SPRING BOX STD. 840.41	Special D.I. (See Detail 2C-6)	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.	CONVERT EXISTING J.B. TO D.I.	ADJUST C.B.	ADJUST DI	ADJUST 2GI TO JB W/MH		15" C.S. ELBOW	18" C.S. ELBOW	24" C.S. ELBOW	BERM DRAINAGE OUTLET STD. 850.10 (PER SY)	BERM DRAINAGE OUTLET STD. 850.11 (PER SY)		FLOWABLE FILL CY	PIPE REMOVAL LIN. FT.	REMARKS
L 138+79	1126																									
L 152+03	1201																									
	1201	1202																								
L 152+01	1202								1																	
	1202	1204																								
L 151+14	1203																									
	1203	1202																								
L 155+32	1205																									
	1205	1206																								
L 155+32	1206																									
	1206	1207																								
L 161+64	1301																									
	1301	1302																								
L 161+72	1302																									
	1302	1303																								
L 164+67	1304																									
	1304	1309																								
L 170+17	1306																									
	1306	1307																								
L 166+90	1308																									
	1308	1309																								
L 164+68	1309																									
	1309	1305																								
L 164+79	1310																									
	1310	1304																								
L 171+29	1311																									
L 169+42	1312																									
L 176+50	1401																									
	1401	1402																								
L 176+29	1402																									
	1402	1403																								
L 185+52	1404																									
	1404	1405																								
L 185+34	1405																									
	1405	1406																								
L 173+35	1407																									
L 177+32	1408																									
L 178+46	1409																									
L 184+35	1410																									
L 189+59	1501																									
	1501	1502																								
L 189+53	1502																									
	1502	1503																								
L 199+02	1504																									
	1504	1505																								
L 199+05	1505																									
	1505	1506																								
L 187+51	1507																									
L 190+00	1509																									
L 191+96	1510																									
SHEET TOTALS									1																	
PROJECT TOTALS					24	1	5	1	4						1			15	2	2	33			23	4927	

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

LINDA092017-PC

COMPUTED BY: LMJ DATE: 5-23-18

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PROJECT NO.	SHEET NO.
R-2814C	3D-5

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

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

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

LINE & STATION / SIZE / THICKNESS OR GAUGE	OFFSET	STRUCTURE NUMBER		TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	MINIMUM REQUIRED SLOPE	Side Drain Pipe (RCP, CSP, CAAP, HDPE, or PVC)									C. S. PIPE						R. C. PIPE CLASS III						R. C. PIPE CLASS IV						R. C. PIPE CLASS V					ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE)
		FROM	TO	FT.	FT.	FT.	%	15	18	24	30	DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE	DO NOT USE PVC	15 .064	18 .064	24 .064	30 .079	36 .079		15	18	24	30	36		15	18	24	30	36		15	18	24	30		CY
L 195+94	77 RT	1511						32																																
L 199+86	85 RT	1512						24																																
L 206+06	84 LT	1601			412.5																																			
		1601	1602		412.5	412.2																				88														
L 205+96	0 CL	1602		417.7																																				
		1602	1605		412.2	411.5																				100														
L 207+42	11 LT	1603		421.3																																				
		1603	1602		416.2	414.9																148																		
L 208+15	18 LT	1604		420.6																																				
		1604	1603		416.4	416.2																							72											
L 214+92	129 LT	1606			405.0																																			
		1606	1701		405.0	399.8																										188								
L 210+52	9 RT	1610		418.0																																				
		1610	1612		415.2	411.8																													196					
L 212+48	5 RT	1612		414.5																																				
		1612	1613		411.8	409.2																							224											
L 214+75	1 RT	1613		412.0																																				
		1613	1704		409.2	407.3	0.3																						76											
L 216+78	112 LT	1701		405.5																																				
		1701	1702		399.8	399.4																					96													
L 216+74	16 LT	1702		408.5																																				
		1702	1703		399.4	398.9																					120													
L 215+49	17 LT	1704		410.5																																				
		1704	1708		407.3	404.0	0.4																												88					
L 223+35	9 LT	1705		396.3																																				
		1705	1706		393.6	393.2																													72					
L 224+00	18 RT	1706		396.4																																				
		1706	1707		393.2	392.6																													60					
L 216+38	16 LT	1708		409.0																																				
		1708	1702		404.0	401.2	0.5																						36											
L 221+25	80 LT	1709						32																																
L 224+38	74 RT	1710						20																																
L 235+61	81 RT	1804			379.0																																			
		1804	1805		379.0	378.7																	80																	
L 235+62	0 CL	1805		380.9																																				
		1805	1806		378.7	378.4	0.4																88																	
L 239+26	0 CL	1807		379.8																																				
		1807	1809		377.8	377.6		72																																
L 240+00	0 CL	1809		380.0																																				
		1809	1808		377.6	377.3																88																		
L 233+33	77 LT	1810							52																													
L 235+23	79 RT	1811						44																																
L 236+84	77 RT	1812						32																																
L 254+36	0 CL	1901		371.7																																				
		1901	1909		369.0	366.2																													152					
L 255+80	19 LT	1909		369.4																																				
		1909	1910		366.2	364.4																													64					
L 244+77	77 LT	1902						44																																
L 249+41	81 LT	1903						24																																
L 250+51	78 LT	1904						24																																
SHEET TOTALS								348	52														236	168		188	216		408			188			632					
PROJECT TOTALS								3276	672	232							700	144	48		48		956	668	308	992	480		976	480	888	536	152		10012	1672	1044	716		6.800

LINE & STATION	STRUCTURE NUMBER FROM	STRUCTURE NUMBER TO	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 WITH GRATE STD. 840.20	G.D.I. (W.S. FLAT) FRAME W/ 2 GRATES STD. 840.20	G.D.I. (W.S. SAG) FRAME W/ GRATE STD. 840.22	G.D.I. (W.S. SAG) FRAME W/ 2 GRATES STD. 840.22	G.D.I. (N.S. SAG) FRAME W/ GRATE STD. 840.24	G.D.I. (N.S. SAG) FRAME W/ 2 GRATES STD. 840.24	G.D.I. (N.S. FLAT) FRAME W/ GRATE STD. 840.29	G.D.I. (N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29	J.B. STD. 840.31 OR STD. 840.32	ANGLED VANE GRATES AND FRAMES STD. 840.33	T.B.J.B. STD. 840.34	T.B.D.I. STD. 840.35 OR STD. 840.46	T.B.D.I. FOR STEEL GRATES STD. 840.36	STEEL FRAME WITH TWO GRATES STD. 840.37	TEMP STEEL PLATE COVER MASONRY DRAINAGE	6" SPRING BOX PIPE	SPRING BOX STD. 840.41	Special D.I. (See Detail 2C-6)	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.	CONVERT EXISTING J.B. TO D.I.	ADJUST C.B.	ADJUST DI	ADJUST 2GI TO JB W/MH		15" C.S. ELBOW	18" C.S. ELBOW	24" C.S. ELBOW	BERM DRAINAGE OUTLET STD. 850.10 (PER SY)	BERM DRAINAGE OUTLET STD. 850.11 (PER SY)		FLOWABLE FILL CY	PIPE REMOVAL LIN. FT.	REMARKS
L 195+94	1511																																																				
L 199+86	1512																																																				
L 206+06	1601																																																				
	1601	1602																																																			
L 205+96	1602		1	0.5												1					1																																
	1602	1605																																																			
L 207+42	1603		1	0.1						1		1	1																																								
	1603	1602																																																			
L 208+15	1604		1							1		1	1																																								
	1604	1603																																																			
L 214+92	1606																																																				
	1606	1701																																																			
L 210+52	1610		1							1								1										1																									
	1610	1612																																																			
L 212+48	1612		1							1								1										1																									
	1612	1613																																																			
L 214+75	1613		1							1								1										1																									
	1613	1704																																																			
L 216+78	1701		1	0.3										1								1																															
	1701	1702																																																			
L 216+74	1702		1	4.1						1			1																						1																			
	1702	1703																																																			
L 215+49	1704		1							1		1	1																																								
	1704	1708																																																			
L 223+35	1705		1												1					1																																	
	1705	1706																																																			
L 224+00	1706		1							1		1	1																																								
	1706	1707																																																			
L 216+38	1708		1							1		1	1																																								
	1708	1702																																																			
L 221+25	1709																																																				
L 224+38	1710																																																				
L 235+61	1804																																																				
	1804	1805																																																				
L 235+62	1805		1													1				1																																	
	1805	1806																																																			
L 239+26	1807		1													1				1																																	
	1807	1809																																																			
L 240+00	1809		1													1		1																																			
	1809	1808																																																			
L 233+33	1810																																																				
L 235+23	1811																																																				
L 236+84	1812																																																				
L 254+36	1901		1												1					1																																	
	1901	1909																																																			
L 255+80	1909		1							1		1	1																																								
	1909	1910																																																			
L 244+77	1902																																																				
L 249+41	1903																																																				
L 250+51	1904																																																				
SHEET TOTALS			17	5.0						10		6	7	1	3	3		4		5		1						3						1																			
PROJECT TOTALS			249	45.9		102	8	38	56	62		33	38	3	46	19		41		56		3		3	2		1	35				24	1	5	1	4						1			15	2	2	33			23	4927	

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

LINDA092017-PC

COMPUTED BY:	LMJ	DATE:	5-23-18
CHECKED BY:	ATN	DATE:	5-23-18

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
R-2814C	3D-6

**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	Side Drain Pipe (RCP, CSP, CAAP, HDPE, or PVC)									C. S. PIPE						R. C. PIPE CLASS III						R. C. PIPE CLASS IV						R. C. PIPE CLASS V					ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE)	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 WITH GRATE STD. 840.20	G.D.I. (W.S. FLAT) FRAME W/ 2 GRATES STD. 840.20	G.D.I. (W.S. SAG) FRAME W/ GRATE STD. 840.22	G.D.I. (W.S. SAG) FRAME W/ 2 GRATES STD. 840.22	G.D.I. (N.S. SAG) FRAME W/ GRATE STD. 840.24	G.D.I. (N.S. SAG) FRAME W/ 2 GRATES STD. 840.24	G.D.I. (N.S. FLAT) FRAME W/ GRATE STD. 840.29	G.D.I. (N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29	J.B. STD. 840.31 OR STD. 840.32	ANGLED VANE GRATES AND FRAMES STD. 840.33	T.B.J.B. STD. 840.34	T.B.D.I. STD. 840.35 OR STD. 840.46	T.B.D.I. FOR STEEL GRATES STD. 840.36	STEEL FRAME WITH TWO GRATES STD. 840.37	TEMP STEEL PLATE COVER MASONRY DRAINAGE	6" SPRING BOX PIPE	SPRING BOX STD. 840.41	Special D.I. (See Detail 2C-6)	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.	CONVERT EXISTING J.B. TO D.I.	ADJUST C.B.	ADJUST DI	ADJUST 2GI TO JB W/MH		15" C.S. ELBOW	18" C.S. ELBOW	24" C.S. ELBOW	BERM DRAINAGE OUTLET STD. 850.10 (PER SY)	BERM DRAINAGE OUTLET STD. 850.11 (PER SY)		FLOWABLE FILL	PIPE REMOVAL	REMARKS
SIZE								15	18	24	30	DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE	DO NOT USE PVC	15	18	24	30	36		15	18	24	30	36		15	18	24	30	36		15	18	24	30				A	B		GRATE TYPE			D.I. STD. 852.04 OR STD. 852.06	C.B. STD. 852.05																																									
THICKNESS OR GAUGE		FROM	TO	FT.	FT.	FT.	%									.064	.064	.064	.079	.079																		CY	0' THRU 5' EACH	5' THRU 10' LIN. FT.	10' AND ABOVE LIN. FT.		E	F	G																																									CY	LIN. FT.	
L 252+35	77 LT	1905						24																																																																																				
L 253+48	77 LT	1906						24																																																																																				
L 245+19	89 RT	1907						40																																																																																				
L 252+34	77 RT	1908						32																																																																																				
L 249+30	76 RT	1911						32																																																																																				
L 263+70	14 RT	2001		352.0																																						1						1							1									1																								See Detail Sheet 2C-2
		2001	2002		350.1	349.3																												36																																																							
L 263+33	17 RT	2002		352.0																																						1						1							1									1																								See Detail Sheet 2C-2
		2002	2005		349.3	347.9																												64																																																							
L 263+33	47 LT	2005		350.2																																						1			1	1																																													
		2005	2006		347.9	347.8	0.3																											32																																																							
L 263+00	47 LT	2006		350.2																																						1			1			1																																											
		2006	2007		347.8	347.7	0.3	32																																																																																				
L 267+00	0 LT	2008		351.3																																						1						1							1									1																								See Detail Sheet 2C-2
		2008	2009		348.5	347.7																												40																																																							
L 267+00	41 LT	2009		350.0																																						1			1		1																																												
		2009	2010		347.7	347.7	0.3	20																																																																																				
L 269+45	7 LT	2011		348.7																																						1						1							1									1																								See Detail Sheet 2C-2
		2011	2015		345.9	345.1																												112																																																							
L 270+60	43 LT	2012		345.1																																						1			1			1																																											
		2012	2110		341.8	339.7																													136																																																						
L 270+44	70 RT	2014		347.5																																						1								1	1																																							
		2014	2015		345.3	345.1																												76																																																							
L 270+60	9 LT	2015		346.8																																						1						1									1							1																								See Detail Sheet 2C-2
		2015	2012		343.8	341.8																													32																																																						
L 265+00	66 LT	2016						40																																																																																				
L 261+05	77 RT	2018			348.9																																																																																					
		2018	2019		348.9	347.3																															76																																																				
L 261+10	1 RT	2019		350.4																																						1												1			1																																
		2019	2020		347.3	347.1																															92																																																				
L 258+34	96 RT	2021							60																																																																																			
L 258+33	91 LT	2022						24																																																																																				
L 263+84	71 RT	2023						28																																																																																				
L 282+80	5 LT	2101		318.3																																						1						1							1									1																								**See Detail Sheet 2C-2**
		2101	2103		315.5	314.8																												116																																																							
L 285+45	10 RT	2235		319.0																																						1						1		1	1																																							
		2235	2102		315.8	315.0																												88																																																							
L 284+57	11 RT	2102		318.2																																						1						1		1	1																																							
		2102	2103		315.0	314.8																												60																																																							
L 283+98	7 LT	2103		317.6																																						1						1									1							1																								See Detail Sheet 2C-2
		2103	2105		314.8	313.5																												60																																																							
L 283+14	37 LT	2104		316.8																																						1			1			1																																											
		2104	2105		313.8	313.1	0.3																											100																																																							
L 284+13	64 LT	2105		316.0																																						1			1	1																																													
		2105	2210		312.8	313.1	0.5																												92																																																						
L 276+80	78 LT	2106						20																																																																																				
L 272+00	5 LT	2109		344.1																																						1														1									1																								
		2109	2110		340.9	339.9																												28																																																							
L 272+00	37 LT	2110		342.9																																						1			1			1																																											
		2110	2125		339.7	333.5																													248																																																						
SHEET TOTALS								316	60																									812	508		168			19			7	2	1	4	9		3	3			1		6		3								8																								
PROJECT TOTALS								3276	672	232							700	144	48		48		956	668	308	992	480		976	480	888	536	152		10012	1672	1044	716		6.800	249	45.9		102	8	38	56	62		33	38	3	46	19		41		56		3		3	2		1	35				24	1	5	1	4						1			15	2	2	33			23	4927	

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

LINDA092017-PC

COMPUTED BY:	LMJ	DATE:	5-23-18
CHECKED BY:	ATN	DATE:	5-23-18

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
R-2814C	3D-7

**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	Side Drain Pipe (RCP, CSP, CAAP, HDPE, or PVC)									C. S. PIPE						R. C. PIPE CLASS III						R. C. PIPE CLASS IV						R. C. PIPE CLASS V					ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE)
SIZE								15	18	24	30						15	18	24	30	36		15	18	24	30	36		15	18	24	30	36		15	18	24	30		
THICKNESS OR GAUGE		FROM	TO	FT.	FT.	FT.	%					DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE	DO NOT USE PVC	.064	.064	.064	.079	.079																			CY
L 274+50	37 LT	2125		336.7																																				
		2125	2111		333.5	327.0																														252				
L 277+05	37 LT	2111		330.3																																				
		2111	2112		327.0	323.7	0.5		40																															
L 276+50	10 RT	2115		333.3																																				
		2115	2116		330.6	327.8																													60					
L 280+75	37 LT	2117		320.9																																				
		2117	2104		317.9	313.8																													236					
L 278+92	70 RT	2118																																						
		2118	2119		323.5	318.7																										148								
L 281+00	3 LT	2122		321.6																																				
		2122	2123		318.9	318.1	0.3																												72					
L 279+99	68 RT	2124						24																																
L 293+00	37 LT	2201		333.5																																				
		2201	2202		330.5	327.5		40																																
L 291+00	37 LT	2203		329.3																																				
		2203	2204		326.5	326.4		28																																
L 286+45	1 RT	2205		320.5																																				
		2205	2206		317.4	317.2	0.3																												64					
L 287+41	10 RT	2232		322.5																																				
		2232	2206		317.7	317.3																													28					
L 287+10	10 RT	2206		322.1																																				
		2206	2207		317.2	317.0	0.3																												52					
L 286+92	37 LT	2207		320.5																																				
		2207	2209		317.0	315.8	0.5	28																																
L 294+16	80 LT	2208							32																															
L 285+05	85 LT	2210		316.4																																				
		2210	2211		313.1	311.3	0.4		32																															
L 295+50	4 LT	2212		339.8																																				
		2212	2213		336.6	336.1																													40					
L 295+50	37 RT	2213		338.9																																				
		2213	2214		336.1	329.7	0.8										44																							
L 293+50	37 RT	2215		334.6																																				
		2215	2216		331.6	321.2											52																							
L 290+10	38 RT	2217		327.3																																				
		2217	2219		324.3	323.3																													60					
L 289+50	38 RT	2219		326.3																																				
		2219	2220		323.3	323.0		28																																
L 298+70	55 LT	2221		340.3																																				
		2221	2307		337.5	337.4		52																																
L 297+22	50 RT	2224		341.3																																				
		2224	2213		337.5	336.1																													172					
L 298+60	50 RT	2225		341.6																																				
		2225	2224		337.9	337.5																													136					
L 292+00	75 LT	2226																																						
		2226	2231		325.5	323.3																					112													
L 292+00	37 RT	2231		331.4																																				
		2231	2227		323.3	320.9																					40													
L 295+33	83 RT	2228						24																																
L 295+00	38 LT	2229		337.8																																				
SHEET TOTALS								224	104								96									152					148				920	252				
PROJECT TOTALS								3276	672	232							700	144	48		48		956	668	308	992	480		976	480	888	536	152		10012	1672	1044	716		6.800

LINE & STATION	STRUCTURE NUMBER		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 WITH GRATE STD. 840.20	G.D.I. (W.S. FLAT) FRAME W/ 2 GRATES STD. 840.20	G.D.I. (W.S. SAG) FRAME W/ GRATE STD. 840.22	G.D.I. (W.S. SAG) FRAME W/ 2 GRATES STD. 840.22	G.D.I. (N.S. SAG) FRAME W/ GRATE STD. 840.24	G.D.I. (N.S. SAG) FRAME W/ 2 GRATES STD. 840.24	G.D.I. (N.S. FLAT) FRAME W/ GRATE STD. 840.29	G.D.I. (N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29	J.B. STD. 840.31 OR STD. 840.32	ANGLED VANE GRATES AND FRAMES STD. 840.33	T.B.J.B. STD. 840.34	T.B.D.I. STD. 840.35 OR STD. 840.46	T.B.D.I. FOR STEEL GRATES STD. 840.36	STEEL FRAME WITH TWO GRATES STD. 840.37	TEMP STEEL PLATE COVER MASONRY DRAINAGE	6" SPRING BOX PIPE	SPRING BOX STD. 840.41	Special D.I. (See Detail 2C-6)	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.	CONVERT EXISTING J.B. TO D.I.	ADJUST C.B.	ADJUST DI	ADJUST 2GI TO JB W/MH		15" C.S. ELBOW	18" C.S. ELBOW	24" C.S. ELBOW	BERM DRAINAGE OUTLET STD. 850.10 (PER SY)	BERM DRAINAGE OUTLET STD. 850.11 (PER SY)		FLOWABLE FILL	PIPE REMOVAL	REMARKS
	FROM	TO	0' THRU 5'	A 5' THRU 10'	B 10' AND ABOVE		E	F	G	D.I. STD. 852.04 OR STD. 852.06	C.B. STD. 852.05																																										
			EACH	LIN. FT.	LIN. FT.																																														CY	LIN. FT.	
L 274+50	2125		1			1			1																																												
	2125	2111																																																			
L 277+05	2111		1			1			1																																												
	2111	2112																																																			
L 276+50	2115		1							1								1										1																									See Detail Sheet 2C-2
	2115	2116																																																		
L 280+75	2117		1			1			1																																												
	2117	2104																																																			
L 278+92	2118																																																				
	2118	2119																																																			
L 281+00	2122		1							1								1										1																									
	2122	2123																																																			
L 279+99	2124																																																				
L 293+00	2201		1			1		1																																													
	2201	2202																																																			
L 291+00	2203		1			1		1																																													
	2203	2204																																																			
L 286+45	2205		1							1		1	1																																								
	2205	2206																																																			
L 287+41	2232		1							1								1										1																									
	2232	2206																																																			
L 287+10	2206		1							1								1										1																									
	2206	2207																																																			
L 286+92	2207		1			1		1																																													
	2207	2209																																																			
L 294+16	2208																																																				
L 285+05	2210		1			1		1																																													
	2210	2211																																																			
L 295+50	2212		1							1		1	1																																								
	2212	2213																																																			
L 295+50	2213		1			1			1																																												
	2213	2214																																										2								
L 293+50	2215		1			1			1																																												
	2215	2216																																																			
L 290+10	2217		1			1			1																																												
	2217	2219																																																			
L 289+50	2219		1			1			1																																												
	2219	2220																																																			
L 298+70	2221		1													1				1																																	
	2221	2307																																																		
L 297+22	2224		1			1			1																																												
	2224	2213																																																			
L 298+60	2225		1			1		1																																													
	2225	2224																																																			
L 292+00	2226																																																				
	2226	2231																																																			
L 292+00	2231		1			1			1																																												
	2231	2227																																																			
L 295+33	2228																																																				
L 295+00	2229		1			1		1																																													
SHEET TOTALS			22			15		6	9	6		2	2			1		4		1								4																	2								
PROJECT TOTALS			249	45.9		102	8	38	56	62		33	38	3	46	19		41		56		3		3	2		1	35				24	1	5	1	4						1			15	2	2	33			23	4927	

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

LINDA092017-PC

COMPUTED BY: LMJ DATE: 5-23-18
CHECKED BY: ATN DATE: 5-23-18

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
R-2814C	3D-8

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 %	Side Drain Pipe (RCP, CSP, CAAP, HDPE, or PVC) 15	18	24	30	DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE	DO NOT USE PVC	C. S. PIPE 15 .064	18 .064	24 .064	30 .079	36 .079		R. C. PIPE CLASS III 15	18	24	30	36		R. C. PIPE CLASS IV 15	18	24	30	36		R. C. PIPE CLASS V 15	18	24	30		ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CY
		2229	2230		334.8	330.1											44																							
Y10 14+50	17 LT	2303		342.5																																				
		2303	2304		339.3	337.3																													20					
Y10 14+70	17 LT	2304		341.6																																				
		2304	2306		337.3	337.0		80																																
L 303+00	4 RT	2305		333.1																																				
		2305	2308		329.9	329.5																													32					
L 300+00	49 LT	2306		340.3																																				
		2306	2342		337.0	334.4																													136					
L 301+38	49 LT	2342		337.4																																				
		2342	2309		334.4	329.2																													160					
Y10 14+90	17 RT	2307		341.4																																				
		2307	2304		337.4	337.3																													36					
L 303+00	38 RT	2308		332.5																																				
		2308	2314		329.5	320.1																													200					
L 303+00	37 LT	2309		332.2																																				
		2309	2310		329.2	315.8	0.6																										248					
L 305+50	37 LT	2310		320.8																																				
		2310	2311		315.8	314.2	3.4										36																							
L 308+15	37 LT	2312		308.6																																				
		2312	2313		305.6	305.4		28																																
L 305+00	38 RT	2314		323.1																																				
		2314	2315		320.1	311.3	0.6										56																							
L 307+00	38 RT	2316		313.9																																				
		2316	2317		311.1	299.8											52																							
Y10 16+80	17 LT	2320		341.0																																				
		2320	2321		338.3	338.2	0.3																										32					
Y10 16+80	16 RT	2321		341.5																																				
		2321	2225		338.2	337.9	0.3	76																																
L 309+50	67 LT	2325			306.3																																			
		2325	2326		306.3	299.3											32																							
L 309+50	37 LT	2326		302.3																																				
		2326	2334		299.3	299.1																													72					
312+25	94 LT	2330			300.2																																			
		2330	2331		300.2	287.5	1.2											40																						
L 312+25	56 LT	2331		290.7																																				
		2331	2336		287.5	283.3	0.5																											32				
L 309+50	38 RT	2334		302.3																																				
		2334	2335		299.1	288.0	1.0										52																							
L 312+57	66 LT	2336		289.7																																				
		2336	2337		283.3	283.1																			56															
L 312+57	9 LT	2337		291.0																																				
		2337	2338		283.1	283.0																			44															
L 311+50	37 RT	2343		293.6																																				
		2343	2338		290.6	283.0																													104					
L 312+57	38 RT	2338		290.2																																				
		2338	2339		283.0	272.2	0.7												48																					
L 326+00	75 RT	2401		319.3																																				
		2401	2420		316.6	308.3		36																																
L 324+00	37 LT	2402		305.5																																				
SHEET TOTALS								220									272	40	48						100										1040	32				
PROJECT TOTALS								3276	672	232							700	144	48		48		956	668	308	992	480		976	480	888	536	152		10012	1672	1044	716		6.800

LINE & STATION	OFFSET	STRUCTURE NUMBER FROM	STRUCTURE NUMBER TO	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 WITH GRATE STD. 840.20	G.D.I. (W.S. FLAT) FRAME W/ 2 GRATES STD. 840.20	G.D.I. (W.S. SAG) FRAME W/ GRATE STD. 840.22	G.D.I. (W.S. SAG) FRAME W/ 2 GRATES STD. 840.22	G.D.I. (N.S. SAG) FRAME W/ GRATE STD. 840.24	G.D.I. (N.S. SAG) FRAME W/ 2 GRATES STD. 840.24	G.D.I. (N.S. FLAT) FRAME W/ GRATE STD. 840.29	G.D.I. (N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29	J.B. STD. 840.31 OR STD. 840.32	ANGLED VANE GRATES AND FRAMES STD. 840.33	T.B.J.B. STD. 840.34	T.B.D.I. STD. 840.35 OR STD. 840.46	T.B.D.I. FOR STEEL GRATES STD. 840.36	STEEL FRAME WITH TWO GRATES STD. 840.37	TEMP STEEL PLATE COVER MASONRY DRAINAGE	6" SPRING BOX PIPE	SPRING BOX STD. 840.41	Special D.I. (See Detail 2C-6)	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.	CONVERT EXISTING J.B. TO D.I.	ADJUST C.B.	ADJUST DI	ADJUST 2GI TO JB W/MH		15" C.S. ELBOW	18" C.S. ELBOW	24" C.S. ELBOW	BERM DRAINAGE OUTLET STD. 850.10 (PER SY)	BERM DRAINAGE OUTLET STD. 850.11 (PER SY)		FLOWABLE FILL CY	PIPE REMOVAL LIN. FT.	REMARKS
		2229	2230																																									2										
Y10 14+50	17 LT	2303		1			1			1																																												
		2303	2304																																																			
Y10 14+70	17 LT	2304		1			1			1																																												
		2304	2306																																																			
L 303+00	4 RT	2305		1							1		1	1																																								
		2305	2308																																																			
L 300+00	49 LT	2306		1			1			1																																												
		2306	2342																																																			
L 301+38	49 LT	2342		1			1			1																																												
		2342	2309																																																			
Y10 14+90	17 RT	2307		1			1	1																																														
		2307	2304																																																			
L 303+00	38 RT	2308		1			1		1																																													
		2308	2314																																																			
L 303+00	37 LT	2309		1			1			1																																												
		2309	2310																																																			
L 305+50	37 LT	2310		1			1			1																																												
		2310	2311																																																			
L 308+15	37 LT	2312		1			1			1																																												
		2312	2313																																																			
L 305+00	38 RT	2314		1			1		1																																													
		2314	2315																																									2										
L 307+00	38 RT	2316		1			1		1																																													
		2316	2317																																									2										
Y10 16+80	17 LT	2320		1												1							1																															
		2320	2321																																																			
Y10 16+80	16 RT	2321		1												1							1																															
		2321	2225																																																			
L 309+50	67 LT	2325																																													11					
		2325	2326																																																			
L 309+50	37 LT	2326		1			1			1																																												
		2326	2334																																																			
312+25	94 LT	2330																																													11					
		2330	2331																																										2									
L 312+25	56 LT	2331		1			1			1																																												
		2331	2336																																																			
L 309+50	38 RT	2334		1			1		1																																													
		2334	2335																																									2										
L 312+57	66 LT	2336		1	1.7		1			1																																												
		2336	2337																																																			
L 312+57	9 LT	2337		1	3.0						1								1										1																									
		2337	2338																																																			
L 311+50	37 RT	2343		1			1		1																																													
		2343	2338																																																			
L 312+57	38 RT	2338		1	2.4		1		1																																													
		2338	2339																																											2								
L 326+00	75 RT	2401		1												1					1																																	
		2401	2420																																																			
L 324+00	37 LT	2402		1			1		1																																													
SHEET TOTALS				23	7.1		18	1	7	10	2		1	1		3			1		1		2						1																	8	2	2	22					
PROJECT TOTALS				249	45.9		102	8	38	56	62		33	38	3	46	19		41		56		3		3	2		1	35				24	1	5	1	4						1			15	2	2	33			23	4927	

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

LINDA/092017-PC

COMPUTED BY: LMJ DATE: 5-23-18

CHECKED BY: ATN DATE: 5-23-18

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
R-2814C	3D-9

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 %	Side Drain Pipe (RCP, CSP, CAAP, HDPE, or PVC) SIZE 15	18	24	30	DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE	DO NOT USE PVC	C. S. PIPE SIZE 15	18	24	30	36	R. C. PIPE CLASS III SIZE 15	18	24	30	36	R. C. PIPE CLASS IV SIZE 15	18	24	30	36	R. C. PIPE CLASS V SIZE 15	18	24	30
																	.064	.064	.064	.079	.079														
		2402	2403		302.5	301.3																										72			
L 324+00	38 RT	2403		305.5																															
		2403	2406		301.3	296.6	1.0																										148		
L 322+90	56 RT	2404		301.2																															
		2404	2405		299.3	299.1		40																											
L 322+50	50 RT	2405		301.0																															
		2405	2406		299.1	297.9	0.4	12																											
L 322+50	38 RT	2406		300.9																															
		2406	2408		296.6	290.5	0.4																											148		
L 321+00	38 LT	2407		296.3																															
		2407	2408		293.3	291.8																										72			
L 321+00	38 RT	2408		296.4																															
		2408	2423		291.8	285.7	0.4																											200		
L 326+00	38 LT	2421		311.7																															
		2421	2420		308.7	308.3																										72			
L 319+00	38 LT	2422		290.2																															
		2422	2423		287.2	285.7																										72			
L 319+00	38 RT	2423		290.2																															
		2423	2410		285.7	281.9																												200		
L 317+00	37 LT	2409		286.4																															
		2409	2410		283.4	281.9																										72			
L 317+00	38 RT	2410		286.4																															
		2410	2411		281.9	280.0	0.8																											48		
L 313+67	73 LT	2412		287.0																															
		2412	2336		284.0	283.3																										108			
L 315+10	37 LT	2413		286.0																															
		2413	2414		283.0	282.7																										68			
L 315+79	37 LT	2414		285.7																															
		2414	2417		282.7	282.5																										72			
L 314+00	38 RT	2415		287.1																															
		2415	2416		284.1	283.0																										108			
L 315+10	38 RT	2416		286.0																															
		2416	2417		283.0	282.5																										68			
L 315+79	38 RT	2417		285.7																															
		2417	2418		282.5	273.9	1.5										60																			
L 325+21	73 RT	2419						24																											
L 340+50	10 LT	2501		347.6																															
		2501	2503		344.4	343.4																										48			
L 340+50	64 RT	2502			350.0																														
		2502	2503		350.0	343.4											28																			
L 340+50	38 RT	2503		346.4																															
		2503	2515		343.4	341.3	0.4																										248			
L 338+00	37 RT	2515		344.3																															
		2515	2506		341.3	340.1																										84			
L 337+15	12 LT	2504		344.8																															
		2504	2506		341.6	340.4																										48			
L 337+15	63 RT	2505		343.0																															
		2505	2506		341.3	340.1		28																											
L 337+15	37 RT	2506		343.4																															
		2506	2508		340.1	338.4	0.6																										112			
					SHEET TOTALS			104									88			48														1212	112	148	548
					PROJECT TOTALS			3276	672	232							700	144	48	48		956	668	308	992	480	976	480	888	536	152	10012	1672	1044	716

ENDWALLS STD. 826.01, 826.02, 826.11 (UNLESS NOTED OTHERWISE) 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 WITH GRATE STD. 840.20	G.D.I. (W.S. FLAT) FRAME W/ 2 GRATES STD. 840.20	G.D.I. (W.S. SAG) FRAME W/ GRATE STD. 840.22	G.D.I. (W.S. SAG) FRAME W/ 2 GRATES STD. 840.22	G.D.I. (N.S. SAG) FRAME W/ GRATE STD. 840.24	G.D.I. (N.S. SAG) FRAME W/ 2 GRATES STD. 840.24	G.D.I. (N.S. FLAT) FRAME W/ GRATE STD. 840.29	G.D.I. (N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29	J.B. STD. 840.31 OR STD. 840.32	ANGLED VANE GRATES AND FRAMES STD. 840.33	T.B.J.B. STD. 840.34	T.B.D.I. STD. 840.35 OR STD. 840.46	T.B.D.I. FOR STEEL GRATES STD. 840.36	STEEL FRAME WITH TWO GRATES STD. 840.37	TEMP STEEL PLATE COVER MASONRY DRAINAGE	6" SPRING BOX PIPE	SPRING BOX STD. 840.41	Special D.I. (See Detail 2C-6)	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.	CONVERT EXISTING J.B. TO D.I.	ADJUST C.B.	ADJUST DI	ADJUST 2GI TO JB W/MH	15" C.S. ELBOW	18" C.S. ELBOW	24" C.S. ELBOW	BERM DRAINAGE OUTLET STD. 850.10 (PER SY)	BERM DRAINAGE OUTLET STD. 850.11 (PER SY)	FLOWABLE FILL CY	PIPE REMOVAL LIN. FT.	REMARKS
				6.800	249	45.9		102	8	38	56	62		33	38	3	46	19		41		56		3		3	2		1	35			24	1	5	1	4				1		15	2	2	33			23	4927	

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

LINDA092017-PC

COMPUTED BY:	LMJ	DATE:	5-23-18
CHECKED BY:	ATN	DATE:	5-23-18

PROJECT NO.	SHEET NO.
R-2814C	3D-10

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 %	Side Drain Pipe (RCP, CSP, CAAP, HDPE, or PVC) 15	Side Drain Pipe 18	Side Drain Pipe 24	Side Drain Pipe 30	DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE	DO NOT USE PVC	C. S. PIPE 15 .064	C. S. PIPE 18 .064	C. S. PIPE 24 .064	C. S. PIPE 30 .079	C. S. PIPE 36 .079		R. C. PIPE CLASS III 15	R. C. PIPE CLASS III 18	R. C. PIPE CLASS III 24	R. C. PIPE CLASS III 30	R. C. PIPE CLASS III 36		R. C. PIPE CLASS IV 15	R. C. PIPE CLASS IV 18	R. C. PIPE CLASS IV 24	R. C. PIPE CLASS IV 30	R. C. PIPE CLASS IV 36		R. C. PIPE CLASS V 15	R. C. PIPE CLASS V 18	R. C. PIPE CLASS V 24	R. C. PIPE CLASS V 30		ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CY
L 336+00	12 LT	2507		342.7																																				
		2507	2508		339.5	338.4																													48					
L 336+00	37 RT	2508		341.6																																				
		2508	2509		338.4	329.3	0.7																													324				
L 332+75	38 RT	2509		332.5																																				
		2509	2513		329.3	320.7	0.9																													252				
L 332+75	37 LT	2510		332.5																																				
		2510	2509		329.5	329.3																													72					
L 330+20	37 LT	2511		324.7																																				
		2511	2513		321.7	321.4																													72					
L 329+00	63 RT	2512		319.5																																				
		2512	2514		316.5	316.4				28																														
L 330+20	38 RT	2513		324.7																																				
		2513	2514		320.7	316.4	0.3																														120			
L 329+00	38 RT	2514		321.0																																				
		2514	2420		316.4	308.3	0.5																														300			
L 326+00	38 LT	2421		311.7																																				
		2421	2420		308.7	308.3																													72					
L 330+20	38 RT	2420		311.7																																				
		2420	2403		308.3	301.3																															200			
L 353+00	38 LT	2601		372.7																																				
		2601	2602		369.7	367.2																													100					
L 352+00	38 LT	2602		370.2																																				
		2602	2604		367.2	366.8																													72					
L 354+50	38 RT	2615		376.4																																				
		2615	2603		373.4	369.7																													148					
L 353+00	50 RT	2616		373.0																																				
		2616	2603		370.8	369.7		12																																
L 353+00	37 RT	2603		372.7																																				
		2603	2604		369.7	366.8																													100					
L 352+00	37 RT	2604		369.8																																				
		2604	2619		366.8	352.2	0.7																												180					
		2619		364.6																																				
		2619	2606		361.6	352.2																													316					
L 347+00	4 RT	2605		356.1																																				
		2605	2606		352.9	352.2																													32					
L 347+00	37 RT	2606		355.0																																				
		2606	2607		352.0	349.7	3.0												36																					
L 345+25	6 RT	2608		351.9																																				
		2608	2609		348.7	345.5																													96					
L 344+73	89 RT	2609		348.5																																				
		2609	2610		345.5	345.4		28																																
L 343+60	64 RT	2611			334.1																																			3.400
		2611	2612		344.1	340.0																						144												
L 342+75	10 LT	2613		349.9																																				
		2613	2617		346.9	345.3																													48					
		2617		348.3																																				
		2617	2618		345.3	345.2		28																																
L 360+12	6 RT	2701		383.0																																				
		2701	2702		380.3	379.2																													28					
SHEET TOTALS								68		28								36									144								1384	576	620			3.400
PROJECT TOTALS								3276	672	232							700	144	48		48		956	668	308	992	480		976	480	888	536	152		10012	1672	1044	716		6.800

LINE & STATION	STRUCTURE NUMBER FROM	STRUCTURE NUMBER TO	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	GRATE TYPE F	GRATE TYPE G	CONCRETE TRANSITIONAL SECTION D.I. STD. 852.04 OR STD. 852.06	CONCRETE TRANSITIONAL SECTION 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 WITH GRATE STD. 840.20	G.D.I. (W.S. FLAT) FRAME W/ 2 GRATES STD. 840.20	G.D.I. (W.S. SAG) FRAME W/ GRATE STD. 840.22	G.D.I. (W.S. SAG) FRAME W/ 2 GRATES STD. 840.22	G.D.I. (N.S. SAG) FRAME W/ GRATE STD. 840.24	G.D.I. (N.S. SAG) FRAME W/ 2 GRATES STD. 840.24	G.D.I. (N.S. FLAT) FRAME W/ GRATE STD. 840.29	G.D.I. (N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29	J.B. STD. 840.31 OR STD. 840.32	ANGLED VANE GRATES AND FRAMES STD. 840.33	T.B.J.B. STD. 840.34	T.B.D.I. STD. 840.35 OR STD. 840.46	T.B.D.I. FOR STEEL GRATES STD. 840.36	STEEL FRAME WITH TWO GRATES STD. 840.37	TEMP STEEL PLATE COVER MASONRY DRAINAGE	6" SPRING BOX PIPE	SPRING BOX STD. 840.41	Special D.I. (See Detail 2C-6)	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.	CONVERT EXISTING J.B. TO D.I.	ADJUST C.B.	ADJUST DI	ADJUST 2GI TO JB W/MH		15" C.S. ELBOW	18" C.S. ELBOW	24" C.S. ELBOW	BERM DRAINAGE OUTLET STD. 850.10 (PER SY)	BERM DRAINAGE OUTLET STD. 850.11 (PER SY)		FLOWABLE FILL CY	PIPE REMOVAL LIN. FT.	REMARKS
L 336+00	2507		1							1								1										1																									See Detail Sheet 2C-2
	2507	2508																																																				
L 336+00	2508		1			1			1																																													
	2508	2509																																																				
L 332+75	2509		1			1			1																																													
	2509	2513																																																				
L 332+75	2510		1			1		1																																														
	2510	2509																																																				
L 330+20	2511		1			1		1																																														
	2511	2513																																																				
L 329+00	2512		1									1	1																																									
	2512	2514																																																				
L 330+20	2513		1			1			1																																													
	2513	2514																																																				
L 329+00	2514		1			1			1																																													
	2514	2420																																																				
L 326+00	2421		1			1		1																																														
	2421	2420																																																				
L 330+20	2420		1			1			1																																													
	2420	2403																																																				
L 353+00	2601		1			1		1																																														
	2601	2602																																																				
L 352+00	2602		1			1		1																																														
	2602	2604																																																				
L 354+50	2615		1			1			1																																													
	2615	2603																																																				
L 353+00	2616		1									1	1																																									
	2616	2603																																																				
L 353+00	2603		1			1			1																																													
	2603	2604																																																				
L 352+00	2604		1			1			1																																													
	2604	2619																																																				
	2619		1			1			1																																													
	2619	2606																																																				
L 347+00	2605		1							1								1										1																									See Detail Sheet 2C-2
	2605	2606																																																				
L 347+00	2606		1			1			1																																													
	2606	2607																																																				
L 345+25	2608		1							1								1										1																									
	2608	2609																																																				
L 344+73	2609		1			1	1																																															
	2609	2610																																																				
L 343+60	2611																																																					
	2611	2612																																																				
L 342+75	2613		1							1								1										1																									See Detail Sheet 2C-2
	2613	2617																																																				
	2617		1			1			1																																													
	2617	2618																																																				
L 360+12	2701		1							1								1										1																									
	2701	2702																																																				
SHEET TOTALS			24			17	1	5	11	5		2	2					5										5																									
PROJECT TOTALS			249	45.9		102	8	38	56	62		33	38	3	46	19		41		56		3		3	2		1	35				24	1	5	1	4						1			15	2	2	33				23	4927	

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

LINDA092017-PC

COMPUTED BY:	LMJ	DATE:	5-23-18
CHECKED BY:	ATN	DATE:	5-23-18

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
R-2814C	3D-11

**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	Side Drain Pipe (RCP, CSP, CAAP, HDPE, or PVC)									C. S. PIPE						R. C. PIPE CLASS III						R. C. PIPE CLASS IV						R. C. PIPE CLASS V					ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE)	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		
SIZE		FROM	TO					15	18	24	30						15	18	24	30	36		15	18	24	30	36		15	18	24	30	36		15	18	24	30				A	B		GRATE TYPE		
THICKNESS OR GAUGE				FT.	FT.	FT.	%					DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE	DO NOT USE PVC	.064	.064	.064	.079	.079																			CY	0' THRU 5' EACH	5' THRU 10' LIN. FT.	10' AND ABOVE LIN. FT.		E	F	G
L 361+00	37 RT	2728		382.8																																					1			1			1
		2728	2702		379.8	379.2																													88												
L 360+12	37 RT	2702		382.2																																					1			1			1
		2702	2703		379.2	376.0		88																																							
Y11 18+42	62 LT	2703		379.2																																					1						
		2703	2704		376.0	375.9		32																																							
Y11 18+53	32 LT	2704		380.1																																					1			1			1
		2704	2709		375.9	375.7																													72												
L 356+50	7 LT	2706		380.4																																					1						
		2706	2712		377.7	376.5																													32												
L 356+25	49 RT	2707		379.0																																					1			1			1
		2707	2711		376.0	372.4																													128												
Y11 19+00	20 RT	2708		379.6																																					1			1		1	
		2708	2715		376.6	376.3		60																																							
Y11 18+43	42 RT	2709		379.8																																					1			1		1	
		2709	2710		375.7	372.6		44																																							
L 357+98	83 RT	2710		376.0																																					1						
		2710	2711		372.6	372.4			56																																						
L 357+55	49 RT	2711		380.1																																					1	2.7		1		1	
		2711	2713		372.4	372.2																														84											
L 356+50	38 LT	2712		379.5																																					1			1		1	
		2712	2713		376.5	376.2																													104												
L 357+55	38 LT	2713		380.3																																					1	3.2		1		1	
		2713	2714		372.2	371.5			36																																						
L 360+07	50 LT	2716		381.9																																					1			1		1	
		2716	2717		378.9	378.0		80																																							
Y11 16+72	48 LT	2717		381.0																																					1			1		1	
		2717	2719		377.7	376.0			60																																						
Y11 15+70	41 LT	2718			376.8																																										
		2718	2719		376.8	376.0		44																																							
Y11 16+12	42 LT	2719		379.0																																					1						
		2719	2721		376.0	375.0																														68											
Y11 16+50	35 RT	2720		379.8																																					1			1			1
		2720	2721		376.8	376.6		40																																							
Y11 16+12	28 RT	2721		379.7																																					1			1			1
		2721	2722		375.0	371.7	0.9											32																													
L 364+45	37 RT	2725		382.7																																					1			1		1	
		2725	2726		379.7	379.0																													60												
L 364+62	37 RT	2726		382.0																																					1			1		1	
		2726	2731		379.0	378.4																													88												
L 365+50	37 RT	2731		381.4																																					1			1		1	
		2731	2727		378.4	378.3																													24												
L 364+00	38 LT	2729		382.7																																					1			1			1
		2729	2730		379.7	377.1																													148												
L 365+50	38 LT	2730		380.1																																					1			1			1
		2730	2727		377.1	377.0																													48												
L 365+50	10 RT	2727		381.2																																					1						
		2727	2801		377.0	367.3																													352												
L 369+05	4 LT	2801		370.5																																					1						
		2801	2802		367.3	366.5																													72												
SHEET TOTALS								388	152									32																	1216	152					24	5.9		18		10	8
PROJECT TOTALS								3276	672	232							700	144	48		48		956	668	308	992	480		976	480	888	536	152		10012	1672	1044	716		6.800	249	45.9		102	8	38	56

LINE & STATION	FROM	TO	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 WITH GRATE STD. 840.20	G.D.I. (W.S. FLAT) FRAME W/ 2 GRATES STD. 840.20	G.D.I. (W.S. SAG) FRAME W/ GRATE STD. 840.22	G.D.I. (W.S. SAG) FRAME W/ 2 GRATES STD. 840.22	G.D.I. (N.S. SAG) FRAME W/ GRATE STD. 840.24	G.D.I. (N.S. SAG) FRAME W/ 2 GRATES STD. 840.24	G.D.I. (N.S. FLAT) FRAME W/ GRATE STD. 840.29	G.D.I. (N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29	J.B. STD. 840.31 OR STD. 840.32	ANGLED VANE GRATES AND FRAMES STD. 840.33	T.B.J.B. STD. 840.34	T.B.D.I. STD. 840.35 OR STD. 840.46	T.B.D.I. FOR STEEL GRATES STD. 840.36	STEEL FRAME WITH TWO GRATES STD. 840.37	TEMP STEEL PLATE COVER MASONRY DRAINAGE	6" SPRING BOX PIPE	SPRING BOX STD. 840.41	Special D.I. (See Detail 2C-6)	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.	CONVERT EXISTING J.B. TO D.I.	ADJUST C.B.	ADJUST DI	ADJUST 2GI TO JB W/MH		15" C.S. ELBOW	18" C.S. ELBOW	24" C.S. ELBOW	BERM DRAINAGE OUTLET STD. 850.10 (PER SY)	BERM DRAINAGE OUTLET STD. 850.11 (PER SY)		FLOWABLE FILL CY	PIPE REMOVAL LIN. FT.	REMARKS
L 361+00	2728																																												
	2728	2702																																											
L 360+12	2702																																												
	2702	2703																																											
Y11 18+42	2703															1				1																									
	2703	2704																																											
Y11 18+53	2704																																												
	2704	2709																																											
L 356+50	2706		1								1										1																								
	2706	2712																																											
L 356+25	2707																																												
	2707	2711																																											
Y11 19+00	2708																																												
	2708	2715																																											
Y11 18+43	2709																																												
	2709	2710																																											
L 357+98	2710															1				1																									
	2710	2711																																											
L 357+55	2711																																												
	2711	2713																																											
L 356+50	2712																																												
	2712	2713																																											
L 357+55	2713																																												
	2713	2714																																											
L 360+07	2716																																												
	2716	2717																																											
Y11 16+72	2717																																												
	2717	2719																																											
Y11 15+70	2718																																												
	2718	2719																																											
Y11 16+12	2719							1					1																																
	2719	2721																																											
Y11 16+50	2720																																												
	2720	2721																																											
Y11 16+12	2721																																												
	2721	2722																																											
L 364+45	2725																																												
	2725	2726																																											
L 364+62	2726																																												
	2726	2731																																											
L 365+50	2731																																												
	2731	2727																																											
L 364+00	2729																																												
	2729	2730																																											
L 365+50	2730																																												
	2730	2727																																											
L 365+50	2727		1								1										1																								
	2727	2801																																											
L 369+05	2801		1								1										1																								
	2801	2802																																											
SHEET TOTALS			3					1			3		1				2				5																								
PROJECT TOTALS			62		33	38	3	46	19		41		56		3		3	2		1	35				24	1	5	1	4						1			15	2	2	33			23	4927	

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

LINDA092017-PC

COMPUTED BY:	LMJ	DATE:	5-23-18
CHECKED BY:	ATN	DATE:	5-23-18

PROJECT NO.	SHEET NO.
R-2814C	3D-12

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		TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	MINIMUM REQUIRED SLOPE	Side Drain Pipe (RCP, CSP, CAAP, HDPE, or PVC)									C. S. PIPE						R. C. PIPE CLASS III						R. C. PIPE CLASS IV						R. C. PIPE CLASS V					ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE)	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 WITH GRATE STD. 840.20	G.D.I. (W.S. FLAT) FRAME W/ 2 GRATES STD. 840.20	G.D.I. (W.S. SAG) FRAME W/ GRATE STD. 840.22	G.D.I. (W.S. SAG) FRAME W/ 2 GRATES STD. 840.22	G.D.I. (N.S. SAG) FRAME W/ GRATE STD. 840.24	G.D.I. (N.S. SAG) FRAME W/ 2 GRATES STD. 840.24	G.D.I. (N.S. FLAT) FRAME W/ GRATE STD. 840.29	G.D.I. (N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29	J.B. STD. 840.31 OR STD. 840.32	ANGLED VANE GRATES AND FRAMES STD. 840.33	T.B.J.B. STD. 840.34	T.B.D.I. STD. 840.35 OR STD. 840.46	T.B.D.I. FOR STEEL GRATES STD. 840.36	STEEL FRAME WITH TWO GRATES STD. 840.37	TEMP STEEL PLATE COVER MASONRY DRAINAGE	6" SPRING BOX PIPE	SPRING BOX STD. 840.41	Special D.I. (See Detail 2C-6)	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.	CONVERT EXISTING J.B. TO D.I.	ADJUST C.B.	ADJUST DI	ADJUST 2GI TO JB W/MH		15" C.S. ELBOW	18" C.S. ELBOW	24" C.S. ELBOW	BERM DRAINAGE OUTLET STD. 850.10 (PER SY)	BERM DRAINAGE OUTLET STD. 850.11 (PER SY)		FLOWABLE FILL	PIPE REMOVAL	REMARKS
			FROM	TO	FT.	FT.	FT.	%	15	18	24	30	DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE	DO NOT USE PVC	15 .064	18 .064	24 .064	30 .079	36 .079		15	18	24	30	36		15	18	24	30	36		15	18	24	30		CY	0' THRU 5' EACH	A 5' THRU 10' LIN. FT.	B 10' AND ABOVE LIN. FT.		GRATE TYPE E	F	G	D.I. STD. 852.04 OR STD. 852.06	C.B. STD. 852.05																																												CY	LIN. FT.	
372+00	56	RT	2803		362.1																																					1												1					1																																
			2803	2804		359.3	356.5																													88																																																											
L 372+54	9	LT	2804		359.7																																					1							1		1	1																																													
			2804	2805		356.5	352.1																													76																																																											
L 371+48	75	LT	2825		358.5																																					1									1	1																																													
			2825	2805		356.3	352.1																													96																																																											
L 372+50	63	LT	2805		355.1																																					1			1			1																																															
			2805	2806		351.3	349.4	1.4																														56																																																									
L 373+05	63	LT	2806		353.2																																					1			1	1																																																	
			2806	2807		349.4	348.9	2.4			40																																																																																			
L 374+53	10	RT	2808		354.9																																					1							1								1										1																								
			2808	2809		351.7	348.8																													44																																																											
L 374+53	38	LT	2809		351.8																																					1			1			1																																															
			2809	2826		348.8	345.6																													156																																																											
L 376+11	38	LT	2826		348.8																																					1			1			1																																															
			2826	2813		345.6	340.2																													172																																																											
L 377+60	51	RT	2810		344.4																																					1												1					1																																
			2810	2811		341.6	340.9		16																																																																																					
L 377+63	37	RT	2811		343.9																																					1			1		1																																															
			2811	2813		340.9	340.2																													76																																																											
L 377+83	38	LT	2813		343.2																																					1			1			1																																															
			2813	2814		338.2	337.8	1.3											36																																																																										
L 374+55	51	RT	2815						32																																																																																						
L 376+65	51	RT	2816						32																																																																																									
L 379+10	38	LT	2817		339.1																																					1			1			1																																															
			2817	2818		336.1	329.7											244																																																																														
L 379+50	38	RT	2827		337.8																																					1			1		1																																															
			2827	2819		334.8	331.3																													100																																																												
L 380+50	37	RT	2819		334.6																																					1			1		1																																															
			2819	2820		331.3	328.4																													104																																																												
L 371+88	78	LT	2821						20																																																																																									
L 382+52	44	LT	2822						24																																																																																									
L 373+37	51	RT	2824						32																																																																																									
L 380+50	2	RT	2823		334.6																																					1												1			1																																			
			2823	2819		331.4	331.3																													36																																																												
L 306+30	61	RT	2340																																							1																																1																			
			2340	2341			302.2																																																																		24																				
Y12 12+28	19	LT	0713		358.7				32																																	1													1				1																																
			0713	0714		356.1	355.7																				68																																																																						
L 35+61	3	RT	0000																																																																																												9	
L 45+52	80	RT	0000																																																																																												54	
L 40+66	4	RT	0000																																																																																											19	
L 190+00	65	RT	0000																																																																																												57	
L 191+88	69	RT	0000																																																																																											33	
L 196+76	26	RT	0000																																																																																											18	
L 178+49	70	RT	0000																																																																																											21	
L 187+53	66	RT	0000																																																																																											28	
L 188+39	64	RT	0000																																																																																										20	
L 189+45	39	RT	0000																																																																																										47	
L 199+05	11	LT	0000																																																																																										50	
SHEET TOTALS									188		40							244	36							68										948		56				17			9	1	3	5	2		2	2		3	1		2		3								1				24	1																				356	
PROJECT TOTALS									3276	672	232							700	144	48		48		956	668	308	992	480		976	480	888	536	152		10012	1672	1044	716		6.800	249	45.9		102	8	38	56	62		33	38	3	46	19		41		56		3		3	2		1	35				24	1	5	1	4						1			15	2	2	33			23	4927	

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

LINDA092017-PC

COMPUTED BY: LMJ DATE: 5-23-18
CHECKED BY: ATN DATE: 5-23-18

PROJECT NO.	SHEET NO.
R-2814C	3D-13

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

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

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

LINE & STATION	OFFSET	STRUCTURE NUMBER		TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	MINIMUM REQUIRED SLOPE	Side Drain Pipe (RCP, CSP, CAAP, HDPE, or PVC)									C. S. PIPE						R. C. PIPE CLASS III						R. C. PIPE CLASS IV						R. C. PIPE CLASS V					ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE)	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 WITH GRATE STD. 840.20	G.D.I. (W.S. FLAT) FRAME W/ 2 GRATES STD. 840.20	G.D.I. (W.S. SAG) FRAME W/ GRATE STD. 840.22	G.D.I. (W.S. SAG) FRAME W/ 2 GRATES STD. 840.22	G.D.I. (N.S. SAG) FRAME W/ GRATE STD. 840.24	G.D.I. (N.S. SAG) FRAME W/ 2 GRATES STD. 840.24	G.D.I. (N.S. FLAT) FRAME W/ GRATE STD. 840.29	G.D.I. (N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29	J.B. STD. 840.31 OR STD. 840.32	ANGLED VANE GRATES AND FRAMES STD. 840.33	T.B.J.B. STD. 840.34	T.B.D.I. STD. 840.35 OR STD. 840.46	T.B.D.I. FOR STEEL GRATES STD. 840.36	STEEL FRAME WITH TWO GRATES STD. 840.37	TEMP STEEL PLATE COVER MASONRY DRAINAGE	6" SPRING BOX PIPE	SPRING BOX STD. 840.41	Special D.I. (See Detail 2C-6)	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.	CONVERT EXISTING J.B. TO D.I.	ADJUST C.B.	ADJUST DI	ADJUST 2GI TO JB W/MH		15" C.S. ELBOW	18" C.S. ELBOW	24" C.S. ELBOW	BERM DRAINAGE OUTLET STD. 850.10 (PER SY)	BERM DRAINAGE OUTLET STD. 850.11 (PER SY)		FLOWABLE FILL	PIPE REMOVAL	REMARKS
SIZE		FROM	TO					15	18	24	30	DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE	DO NOT USE PVC	15	18	24	30	36		15	18	24	30	36		15	18	24	30	36		15	18	24	30			0' THRU 5'	A 5' THRU 10'	B 10' AND ABOVE		E	F	G	D.I. STD. 852.04 OR STD. 852.06	C.B. STD. 852.05																																										
THICKNESS OR GAUGE				FT.	FT.	FT.	%										.064	.064	.064	.079	.079																			CY	EACH	LIN. FT.	LIN. FT.																																																	CY	LIN. FT.	
L 173+36	68 RT	0000																																																																																									41	
L 190+00	65 RT	0000																																																																																								57	
L 191+88	69 RT	0000																																																																																							33	
L 196+76	26 RT	0000																																																																																						18	
L 178+49	70 RT	0000																																																																																						21	
L 187+53	66 RT	0000																																																																																						28	
L 188+39	64 RT	0000																																																																																						20	
L 189+45	39 RT	0000																																																																																						47	
L 173+36	68 RT	0000																																																																																						41	
L 258+56	1 RT	0000																																																																																						62	
L 250+45	60 LT	0000																																																																																						20	
L 252+39	58 LT	0000																																																																																					17	
L 253+50	57 LT	0000																																																																																					19	
L 253+21	14 LT	0000																																																																																					24	
L 252+32	13 LT	0000																																																																																				18	
L 239+00	12 LT	0000																																																																																					23	
L 235+26	10 LT	0000																																																																																					20	
L 233+34	67 LT	0000																																																																																					52	
L 221+26	58 LT	0000																																																																																					24	
L 219+06	57 LT	0000																																																																																					25	
L 217+20	27 RT	0000																																																																																					29	
L 196+76	26 RT	0000																																																																																				18	
L 191+88	69 RT	0000																																																																																					33	
L 187+53	66 RT	0000																																																																																					28	
L 190+00	65 RT	0000																																																																																					57	
L 188+39	64 RT	0000																																																																																					20	
L 178+49	70 RT	0000																																																																																					21	
L 171+33	66 RT	0000																																																																																					68	
L 169+38	69 RT	0000																																																																																					69	
L 258+56	1 RT	0000																																																																																						62	
L 250+45	60 LT	0000																																																																																					20	
L 252+39	58 LT	0000																																																																																					17	
L 253+50	57 LT	0000																																																																																					19	
L 253+21	14 LT	0000																																																																																					24	
L 252+32	13 LT	0000																																																																																					18	
L 239+00	12 LT	0000																																																																																					23	
L 235+26	10 LT	0000																																																																																					20	
L 233+34	67 LT	0000																																																																																					52	
L 221+26	58 LT	0000																																																																																					24	
L 219+06	57 LT	0000																																																																																					25	
L 196+76	26 RT	0000																																																																																					18	
L 191+88	69 RT	0000																																																																																					33	
L 178+49	70 RT	0000																																																																																					21	
L 171+33	66 RT	0000																																																																																					68	
L 169+38	69 RT	0000																																																																																					69	
L 187+53	66 RT	0000																																																																																					28	
L 190+00	65 RT	0000																																																																																					57	
L 188+39	64 RT	0000																																																																																					20	
L 217+20	27 RT	0000																																																																																					29	
L 167+76	40 RT	0000																																																																																					44	
SHEET TOTALS																																																																																													1644	
PROJECT TOTALS								3276	672	232							700	144	48		48		956	668	308	992	480		976	480	888	536	152		10012	1672	1044	716		6.800	249	45.9		102	8	38	56	62		33	38	3	46	19		41		56		3		3	2		1	35				24	1	5	1	4						1			15	2	2	33			23	4927	

ABBREVIATIONS

C.A.A.	CORRUGATED ALUMINIUM ALLOY
C.B.	CATCH BASIN
C.S.	CORRUGATED STEEL
D.I.	DROP INLET
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T.B.D.I.	TRAFFIC BEARING DROP INLET
T.B.J.B.	TRAFFIC BEARING JUNCTION BOX
W.S.	WIDE SLOT

LINDA092017-PC

COMPUTED BY:	LMJ	**DATE:**	5-23-18
CHECKED BY:	ATN	**DATE:**	5-23-18

PROJECT NO.	SHEET NO.
R-2814C	3D-14

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

LINE & STATION / SIZE / THICKNESS OR GAUGE	OFFSET		STRUCTURE NUMBER FROM	TO	TOP ELEVATION FT.	INVERT ELEVATION FT.	INVERT ELEVATION FT.	MINIMUM REQUIRED SLOPE %	FLOWABLE FILL CY	PIPE REMOVAL LIN. FT.	REMARKS
L 177+35	70	RT	0000							20	
L 179+76	12	RT	0000							14	
L 229+63	41	LT	0000							65	
L 235+60	33	LT	0000							41	
L 211+11	13	LT	0000							31	
L 215+18	102	LT	0000							77	
L 215+99	69	LT	0000							105	
L 216+37	13	LT	0000							109	
L 215+91	47	RT	0000							59	
L 216+45	53	RT	0000							53	
L 217+05	25	RT	0000							18	
L 217+20	27	RT	0000							29	
L 216+66	89	LT	0000							52	
L 219+06	57	LT	0000							25	
L 221+26	58	LT	0000							24	
L 233+34	67	LT	0000							52	
L 235+26	10	LT	0000							20	
L 239+00	12	LT	0000							23	
L 270+63	31	LT	0000							45	
L 295+30	78	RT	0000							16	
L 291+69	19	LT	0000							66	
L 306+99	53	LT	0000							8	
L 277+68	25	LT	0000							47	
Y9 10+94	19	RT	0000							20	
L 363+81	46	LT	0000							20	
L 364+11	47	LT	0000							21	
L 365+06	53	LT	0000							40	
L 366+51	57	LT	0000							41	
L 368+73	13	RT	0000							12	
L 376+52	43	LT	0000							20	
L 371+81	48	LT	0000							21	
L 371+98	3	LT	0000							24	
L 374+54	5	LT	0000							37	
L 376+67	2	LT	0000							18	
L 378+93	0	CL	0000							22	
L 380+81	3	RT	0000							24	
DET1 377+98	54	LT	0000							9	
L 372+83	6	LT	0000							4	
L 328+77	3	RT	0000							5	
L 274+82	53	LT	0000							19	
L 268+23	51	LT	0000							21	
L 276+85	56	LT	0000							17	
L 337+02	4	RT	0000							45	
L 340+72	41	LT	0000							20	
L 328+27	7	RT	0000							19	
L 349+93	0	CL	0000							40	
L 351+37	2	RT	0000							22	
L 352+94	4	RT	0000							20	
L 354+09	3	RT	0000							20	
L 348+55	38	LT	0000							20	

Column	SHEET TOTALS	PROJECT TOTALS
Side Drain Pipe (RCP, CSP, CAAP, HDPE, or PVC) 15		3276
Side Drain Pipe 18		672
Side Drain Pipe 24		232
Side Drain Pipe 30		
DO NOT USE RCP		
DO NOT USE CSP		
DO NOT USE CAAP		
DO NOT USE HDPE		
DO NOT USE PVC		
C. S. PIPE 15 (.064)		700
C. S. PIPE 18 (.064)		144
C. S. PIPE 24 (.064)		48
C. S. PIPE 30 (.079)		
C. S. PIPE 36 (.079)		48
R. C. PIPE CLASS III 15		956
R. C. PIPE CLASS III 18		668
R. C. PIPE CLASS III 24		308
R. C. PIPE CLASS III 30		992
R. C. PIPE CLASS III 36		480
R. C. PIPE CLASS IV 15		976
R. C. PIPE CLASS IV 18		480
R. C. PIPE CLASS IV 24		888
R. C. PIPE CLASS IV 30		536
R. C. PIPE CLASS IV 36		152
R. C. PIPE CLASS V 15		10012
R. C. PIPE CLASS V 18		1672
R. C. PIPE CLASS V 24		1044
R. C. PIPE CLASS V 30		716
ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CY		6.800
QUANTITIES FOR DRAINAGE STRUCTURES (NOTE: TOTAL LIN. FT. FOR PAY QUANTITY SHALL BE A + (1.3 X B)) 0' THRU 5' EACH		249
A: 5' THRU 10' LIN. FT.; B: 10' AND ABOVE LIN. FT.		45.9
C.B. STD. 840.01 OR STD. 840.02		102
FRAME, GRATES, AND HOOD STD. 840.03 GRATE TYPE E		8
FRAME, GRATES, AND HOOD STD. 840.03 GRATE TYPE F		38
FRAME, GRATES, AND HOOD STD. 840.03 GRATE TYPE G		56
CONCRETE TRANSITIONAL SECTION D.I. STD. 852.04 OR STD. 852.06		62
CONCRETE TRANSITIONAL SECTION C.B. STD. 852.05		
D.I. STD. 840.14 OR STD. 840.15		33
D.I. FRAME AND GRATES STD. 840.16		38
G.D.I. TYPE "A" STD. 840.17 OR STD. 840.26		3
G.D.I. TYPE "B" STD. 840.18 OR STD. 840.27		46
G.D.I. TYPE "D" STD. 840.19 OR STD. 840.28		19
G.D.I. (W.S. FLAT) FRAME WITH GRATE STD. 840.20		
G.D.I. (W.S. FLAT) FRAME W/ 2 GRATES STD. 840.20		41
G.D.I. (W.S. SAG) FRAME W/ GRATE STD. 840.22		
G.D.I. (W.S. SAG) FRAME W/ 2 GRATES STD. 840.22		56
G.D.I. (N.S. SAG) FRAME W/ GRATE STD. 840.24		
G.D.I. (N.S. SAG) FRAME W/ 2 GRATES STD. 840.24		3
G.D.I. (N.S. FLAT) FRAME W/ GRATE STD. 840.29		
G.D.I. (N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29		3
J.B. STD. 840.31 OR STD. 840.32		2
ANGLED VANE GRATES AND FRAMES STD. 840.33		
T.B.J.B. STD. 840.34		1
T.B.D.I. STD. 840.35 OR STD. 840.46		35
T.B.D.I. FOR STEEL GRATES STD. 840.36		
STEEL FRAME WITH TWO GRATES STD. 840.37		
TEMP STEEL PLATE COVER MASONRY DRAINAGE		
6" SPRING BOX PIPE		24
SPRING BOX STD. 840.41		1
Special D.I. (See Detail 2C-6)		5
M.H. STD. 840.51, STD. 840.52, OR STD. 840.53		1
M.H. FRAME AND COVER STD. 840.54		4
CONVERT EXISTING C.B. TO J.B.		
CONVERT EXISTING C.B. TO D.I.		
CONVERT EXISTING D.I. TO J.B.		
CONVERT EXISTING J.B. TO D.I.		
ADJUST C.B.		
ADJUST DI		1
ADJUST 2GI TO JB W/MH		
15" C.S. ELBOW		15
18" C.S. ELBOW		2
24" C.S. ELBOW		2
BERM DRAINAGE OUTLET STD. 850.10 (PER SY)		33
BERM DRAINAGE OUTLET STD. 850.11 (PER SY)		
FLOWABLE FILL CY		23
PIPE REMOVAL LIN. FT.	1600	4927

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

LINDA092017-PC

COMPUTED BY:	LMJ	**DATE:**	5-23-18
CHECKED BY:	ATN	**DATE:**	5-23-18

PROJECT NO.	SHEET NO.
R-2814C	3D-15

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 %	FLOWABLE FILL CY	PIPE REMOVAL LIN. FT.	REMARKS
L 366+94	9	RT	0000							15	
L 365+65	11	RT	0000							175	
L 360+73	12	RT	0000							61	
L 305+12	46	LT	0000							20	
L 322+78	7	RT	0000							25	
L 325+29	4	RT	0000							20	
L 333+73	1	RT	0000							35	
L 359+20	161	LT	0000							37	
Y4 23+68	24	RT	0000							20	
L 122+21	65	RT	0000							24	
L 140+63	4	LT	0000							3	
Y6 22+46	86	RT	0000							55	
L 140+63	4	LT	0000							3	
L 144+55	9	RT	0000							98	
Y6 18+78	20	LT	0000							24	
L 128+65	37	RT	0000							54	
L 126+58	35	RT	0000							72	
L 55+78	35	LT	0000							53	
L 85+61	46	RT	0000							51	
L 89+95	43	RT	0000							44	
L 85+61	46	RT	0000							51	
L 82+63	36	RT	0000							24	
L 78+89	37	RT	0000							24	
L 62+52	22	RT	0000							24	
L 57+72	2	RT	0000							24	
L 53+63	13	LT	0000							24	
L 48+55	0	CL	0000							40	
L 82+78	13	RT	0000							41	
L 81+64	77	LT	0000							16	
L 65+81	26	LT	0000							24	
L 45+94	5	RT	0000							20	
L 119+81	67	RT	0000							20	
L 307+28	16	LT	0000							96	
L 343+93	23	LT	0000						6		
L 372+89	26	LT	0000						3		
L 357+86	24	LT	0000						5		
L 328+73	21	LT	0000						3		
L 339+36	20	LT	0000						3		
L 322+47	20	LT	0000						3		

	Side Drain Pipe (RCP, CSP, CAAP, HDPE, or PVC) 15	18	24	30	DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE	DO NOT USE PVC	C. S. PIPE 15 .064	18 .064	24 .064	30 .079	36 .079	
SHEET TOTALS															
PROJECT TOTALS	3276	672	232							700	144	48		48	

	R. C. PIPE CLASS III 15	18	24	30	36		R. C. PIPE CLASS IV 15	18	24	30	36		R. C. PIPE CLASS V 15	18	24	30	
SHEET TOTALS																	
PROJECT TOTALS	956	668	308	992	480		976	480	888	536	152		10012	1672	1044	716	

	ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CY	QUANTITIES FOR DRAINAGE STRUCTURES (NOTE: TOTAL LIN. FT. FOR PAY QUANTITY SHALL BE A + (1.3 X B)) A: 0' THRU 5' EACH	B: 5' THRU 10' LIN. FT.	B: 10' AND ABOVE LIN. FT.	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STD. 840.03 GRATE TYPE E	F	G	CONCRETE TRANSITIONAL SECTION D.I. STD. 852.04 OR STD. 852.06	C.B. STD. 852.05
SHEET TOTALS										
PROJECT TOTALS	6.800	249	45.9		102	8	38	56	62	

	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATES STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR STD. 840.26	G.D.I. TYPE "B" STD. 840.18 OR STD. 840.27	G.D.I. TYPE "D" STD. 840.19 OR STD. 840.28	G.D.I. (W.S. FLAT) FRAME WITH GRATE STD. 840.20	G.D.I. (W.S. FLAT) FRAME W/ 2 GRATES STD. 840.20	G.D.I. (W.S. SAG) FRAME W/ GRATE STD. 840.22	G.D.I. (W.S. SAG) FRAME W/ 2 GRATES STD. 840.22	G.D.I. (N.S. SAG) FRAME W/ GRATE STD. 840.24	G.D.I. (N.S. SAG) FRAME W/ 2 GRATES STD. 840.24	G.D.I. (N.S. FLAT) FRAME W/ GRATE STD. 840.29	G.D.I. (N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29	J.B. STD. 840.31 OR STD. 840.32	ANGLED VANE GRATES AND FRAMES STD. 840.33
SHEET TOTALS															
PROJECT TOTALS	33	38	3	46	19		41		56		3		3	2	

	T.B.J.B. STD. 840.34	T.B.D.I. STD. 840.35 OR STD. 840.46	T.B.D.I. FOR STEEL GRATES STD. 840.36	STEEL FRAME WITH TWO GRATES STD. 840.37	TEMP STEEL PLATE COVER MASONRY DRAINAGE	6" SPRING BOX PIPE	SPRING BOX STD. 840.41	Special D.I. (See Detail 2C-6)	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.	CONVERT EXISTING J.B. TO D.I.
SHEET TOTALS														
PROJECT TOTALS	1	35				24	1	5	1	4				

	ADJUST C.B.	ADJUST DI	ADJUST 2GI TO JB W/MH		15" C.S. ELBOW	18" C.S. ELBOW	24" C.S. ELBOW	BERM DRAINAGE OUTLET STD. 850.10 (PER SY)	BERM DRAINAGE OUTLET STD. 850.11 (PER SY)		FLOWABLE FILL CY	PIPE REMOVAL LIN. FT.
SHEET TOTALS											23	1317
PROJECT TOTALS		1			15	2	2	33			23	4927

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

LINDA092017-PC

COMPUTED BY:	LMJ	DATE:	5-23-18
CHECKED BY:	ATN	DATE:	5-23-18

PROJECT NO.	SHEET NO.
R-2814C	3D-16

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 54 INCHES & OVER)

LINE & STATION / SIZE / THICKNESS OR GAUGE	OFFSET	STRUCTURE NUMBER		TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	MINIMUM REQUIRED SLOPE	R. C. PIPE CLASS III					ENDWALLS STD. 838.21 OR STD. 838.51 (UNLESS NOTED OTHERWISE)	ENDWALLS STD. 838.33 OR STD. 838.63 (UNLESS NOTED OTHERWISE)	DRAINAGE STRUCTURE	QUANTITIES FOR DRAINAGE STRUCTURES NOTE: TOTAL LIN. FT. FOR PAY QUANTITY SHALL BE A + (1.3 X B)	A	B	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STD. 840.03 GRATE TYPE			
		FROM	TO	FT.	FT.	FT.	%	36	42	48	54	66	CY	CY	MASONRY CY	0' THRU 5' EACH	5' THRU 10' LIN. FT.	10' AND ABOVE LIN. FT.		E	F	G	
229+64	85 Lt	1801			376.3								5.100										
		1801	1802		376.3	376.0					84												
229+64	0 CL	1802		383.7	376.0										4.000								
		1802	1803		376.0	375.4					92												
306+65	80 Lt	2301			298.6									6.300									
		2301	2302		298.6	287.0						264											
SHEET TOTALS											176	264	5.100	6.300	4.000								
PROJECT TOTALS											176	264	5.100	6.300	4.000								

FROM	TO	CONCRETE TRANSITIONAL SECTION D.I. STD. 852.04 OR STD. 852.06	CONCRETE TRANSITIONAL SECTION C.B. STD. 852.05	OPEN THROAT C.B. STD. 840.04 OR STD. 840.05	CONCRETE BRIDGE APPROACH D.I. STD. 840.13	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATES STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR STD. 840.26-	G.D.I. TYPE "B" STD. 840.18 OR STD. 840.27	G.D.I. TYPE "D" STD. 840.19 OR STD. 840.28	G.D.I. (W.S. FLAT) FRAME WITH GRATE STD. 840.20	G.D.I. (W.S. FLAT) FRAME W/ 2 GRATES STD. 840.20	G.D.I. (W.S. SAG) FRAME W/ GRATE STD. 840.22	G.D.I. (W.S. SAG) FRAME W/ 2 GRATES STD. 840.22	G.D.I. (N.S. SAG) FRAME W/ GRATE STD. 840.24	G.D.I. (N.S. SAG) FRAME W/ 2 GRATES STD. 840.24	G.D.I. (N.S. FLAT) FRAME W/ GRATE STD. 840.29	G.D.I. (N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29	DRIVEWAY D.I. STD. 840.30	FRAME W/ GRATE FOR DRIVEWAY STD. 840.30	J.B. STD. 840.31 OR STD. 840.32	ANGLED VANE GRATES AND FRAMES STD. 840.33	T.B.J.B. STD. 840.34	T.B.D.I. STD. 840.35	T.B.D.I. FOR STEEL GRATES STD. 840.36	STEEL FRAME WITH TWO GRATES STD. 840.37	TEMP STEEL PLATE COVER MASONRY DRAINAGE	##" SPRING BOX PIPE	SPRING BOX STD. 840.41		M.H. STD. 840.51, STD. 840.52, OR STD. 840.53	M.H. FRAME AND COVER STD. 840.54		
1801																																		
1801	1802																																	
1802														1																				
1802	1803																																	
2301																																		
2301	2302																																	
SHEET TOTALS														1																				
PROJECT TOTALS														1																				

FROM	TO	CONVERT EXISTING C.B. TO J.B.	CONVERT EXISTING C.B. TO D.I.	CONVERT EXISTING D.I. TO J.B.	CONVERT EXISTING J.B. TO D.I.	ADJUST C.B.	ADJUST D.I.			15" C.S. ELBOW	18" C.S. ELBOW	24" C.S. ELBOW	30" C.S. ELBOW	36" C.S. ELBOW	##" C.S. ELBOW							BERM DITCH OUTLET STD. 850.10 (PER EACH)	BERM DITCH OUTLET STD. 850.11 (PER EACH)		##" SLUICE GATE (##" SIZE SLUICE GATE)		MODIFIED CONC. FLUME	PREFORMED SCOUR HOLE (PER EACH)	ENERGY DISSIPATION BASIN		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
1801																																			
1801	1802																																		
1802																																			
1802	1803																																		
2301																																			
2301	2302																																		
SHEET TOTALS																																			
PROJECT TOTALS																																			

ABBREVIATIONS

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

COMPUTED BY: GEOTECH DATE: 6-4-14 CHECKED BY: CEH DATE: 3-26-18	(2-16-16)	PROJECT NO. R-2814C	SHEET NO. 3G-1

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SUMMARY OF SUBSURFACE DRAINAGE

LINE	Station	Station	Location LT/RT/CL	Drain Type* UD/BD/SD	LF
-L-	310+00	313+50	LT	UD	700
CONTINGENCY				UD	1000
				TOTAL LF:	1700

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

SUMMARY OF GEOTEXTILE FOR PAVEMENT STABILIZATION

LINE	Station	Station	SY
-L-	64+00	66+00	840
-L-	106+50	108+50	840
-L-	136+00	138+00	840
-L-	205+50	207+50	840
-L-	229+50	231+00	840
CONTINGENCY			
		TOTAL SY:	4200

SUMMARY OF AGGREGATE SUBGRADE/STABILIZATION

LINE	Station	Station	Aggregate Type* ASU/AST	Aggregate Thickness INCHES	Shallow Undercut CY	Class IV Subgrade Stabilization TONS	Geotextile for Soil Stabilization SY	Stabilizer Aggregate TONS	Class IV Aggregate Stabilization TONS
CONTINGENCY			ASU		1300	2700			
CONTINGENCY							16500	500	
				TOTAL CY/TONS/SY:	1300	2700	16500	500	0

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

PROJ. REFERENCE NO.	SHEET NO.
R-2814C	3P-1

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PARCEL INDEX SHEET

PARCEL No.	SHEET No.	PROPERTY OWNER NAME
1	17	WINKES SOUND LLC
2	17	JAMES CARL ALLEN
3	4B,4	E.C. LUMPKIN LIMITED PARTNERSHIP
4	4	TOMMIE LEWIS BAILEY
5	4,5,6,7	E.C. LUMPKIN LIMITED PARTNERSHIP
6, (6Z)	4,5	TOMMIE L. BAILEY
7	4,5	BENNIE T. BARHAM
8	5	WAKE FOREST FARMS, LLC
9	5	CARL GLENN BRADSHER & LOU ANN BRADSHER
10	7,8,9	E.C. LUMPKIN LIMITED PARTNERSHIP
11	5	VASSAR P. SHEARON
12	5,6,7	VASSAR P. SHEARON
13	6	ELSIE P. SHEARON
14	7	RODNEY PRIVETTE
15	7	JACKIE E. THOMPSON, SR.; DONNA YOUNG
16	7	JACKIE E. THOMPSON, SR. & DONNA Y. THOMPSON
17	7,8	JAMES AL PRIVETTE
18	5	NEW LIFE CHURCH OF GOD OF PROPHECY
19	8,9,10	E.C. LUMPKIN LIMITED PARTNERSHIP
20	9,10	BARRY WAYNE WHITAKER, BETTY WHITAKER
20A	10	BARRY WAYNE WHITAKER, BETTY WHITAKER
21	10	DONNIE POE, NANCY G. POE
22	10	PATSY B. HICKS
23	10	WALLACE WAYNE HICKS
24	10	CATLETT EVA PEARCE
25	10,11,12,13	BARRY WAYNE WHITAKER AND WIFE BETTY P. WHITAKER; BETTY W. FRAZIER
25A	10,11	BARRY WAYNE WHITAKER AND WIFE BETTY P. WHITAKER; BETTY W. FRAZIER
25B	12,13	BARRY WAYNE WHITAKER AND WIFE BETTY P. WHITAKER; BETTY W. FRAZIER
26	11,12,13	BARRY WAYNE WHITAKER AND WIFE BETTY P. WHITAKER; BETTY W. FRAZIER
26A	11,12,13	GOLDEN LEAF PROPERTIES, LLC
26B	11	BARRY WAYNE WHITAKER AND WIFE BETTY P. WHITAKER; BETTY W. FRAZIER
32	11	HENRY EDWARD JOYNER
37	13	KIMBERLY BROWN FORD, C. VAUGHN FORD
38	13	EXCURSIONS, LLC
40	13,14	JAMES E. UNDERWOOD, JACK P. UNDERWOOD
41	13,14	EXCURSIONS, LLC
42	14	MICHAEL & BARBARA CHORNEY
43	14	NORRIS CREEK DEVELOPMENT, LLC
43A	14	NORRIS CREEK DEVELOPMENT, LLC
44	14	HORACE W. BAKER, REBECCA M. BAKER
45	14	HORACE W. BAKER, REBECCA M. BAKER
46	14,15,16	CAROL JOHNSON WINN
47	14,15	JOHNNIE A. CLARK, SHERRY W. CLARK
48	15	LEE L. SIMON, VIRGINIA SIMON
49	15	CHRIS DANIEL RAPER, STEPHANIE RAPER
50	15	JAMES ELROY BELL, ESTHER B. BELL
51	15	JAMES ELROY BELL, JR
52	15,16	GATEKEEPER INVESTMENTS, LLC.
52A	16,17	EDGAR HARRIS WINN
53	16	JEAN H. WINN FAMILY LIMITED PARTNERSHIP
54	16,17	JEAN H. WINN FAMILY LIMITED PARTNERSHIP
55	16,17	JEAN H. WINN FAMILY LIMITED PARTNERSHIP
56	17,18	TIMBERLAKE BROTHERS LLC
57	17,18	TIMBERLAKE BROTHERS LLC
58	17	ANNIE L. HAMM
59	17	ALAN D. BAILEY, LAUREN W. SMITH
60	18	DEBORAH L. WILLIAMS
61	18	PATSY G. CARTER
62	18	ALANDALE INVESTMENT GROUP, LLC
63	18	LEMUEL H. HOYLE, BILLIE J. HOYLE

PARCEL No.	SHEET No.	PROPERTY OWNER NAME
64	18,19,20	CHARLES E. STRICKLAND
65	18	JACK R. THOMASON|
66	18,19	SUSAN S. TIMBERLAKE
67	18,19	SUSAN S. TIMBERLAKE
68	19	UNITY THREE BUILDERS, INC
69	19	DAVID W. BROWN, MARGARET H. BROWN
70	19,20	TONY C. BAILEY, JAMES R. BAILEY
71	19	WALTER J. MCDONALD, TRACY MICHELLE KING
72	19	BILLY CARNLEY, CAROL N. CARNLEY
73	20	MIMI F. DAVIS
74	20	JACK AND REBECCA GRODEN
75	20	ROBERT ALAN WAGNER
76	20	JAMES R. BAILEY, MARTHA C. BAILEY|
77	20	CAMLA VIET NGUYEN, THAIPHAT T. PHAM
78	20	DIANA S. JOYNER, STANFORD C. JOYNER
78A	20	KENNETH AND SABRINA STUTTS
79	20,21	CHRISTOPHER FOSTER
80	20	HARRY E. BRAZIER, JR. MARY L. BRAZIER
81	20	RYAN BRAZILL
82	21	TIMOTHY E. BURRIS, REBECCA A. BURRIS
83	21	DANIEL D. AGEMY, NANCY P. AGEMY
84	21	LORENZO HYRUM LEE AND TERESA LEE
85	20,21	JOE N. RIDLEHOOVER, CATHY H. RIDLEHOOVER
86	21	VALINDA L. SMITH, ROBERT G. PREWITT
87	21	ANGELICA L. DEMONT ETAL
88	21,22	ANNIE P. YOUNG
89	21,22	CROSSWIND DEVELOPMENT INC
89A	22	SUSAN STRICKLAND TIMBERLAKE
89B	22	MATTHEW SCOTT KNOWLES
90	22	MICHAEL G. MONKUSKY, LODUSKA DEAN GUION
91	22	C. TODD WHITAKER, MARY CHARLES WHITAKER
92	22,23	WADE MOORE EQUIPMENT CO., INC
93	22,23	JOHN P. CLIFT KAREN S. CLIFT
96	23	NANCY ELIZABETH HOUSTON
97	23	CHING SHUN CHENG, ZHAO YAN XIN
98	23	KATHLEEN N. MASON, STEVEN J. MASON
99	23	JEFFERY R. ATKINS
100	22	ERIC LEVINSON, DEBORA LEVINSON
101	22,23	CLIFFORD SCOTT JOHNSON, RETA W. JOHNSON
102	22,23	GARY K. NEWSOM, JR. ANGELA D. NEWSOM
103	23	STEVEN HESLIN, DIANE HESLIN
111	23	PHILLIP R. STEWART
112	23	LYNN V. ROSS
113	23	DENNIS R. AQUILO, LISA S. AQUILO
114	23	AQUA NORTHCAROLINA INC.
115	23	FEDERAL HOME LOAN MORTGAGE
116	23	RICHARD P. BRECK, BARRIE A. BRECK
117	23	LUTHER H. PERRY, LOUISE K. PERRY
118	23	NICHOLE L. STEPHENSON, ERIN P. BEAUCHAMP
119	23	BEULAH M. STRICKLAND, WILLIE W. STRICKLAND
120	23	TONKA LYNN WALTON & WILLIAM J. WALTON
121	23	MAXINE CAMPBELL, EARL WILLIAMS
122	23	AUBREY L. FIELDS, LUCY G. FIELDS
123	23,24	KATHY S. ANDERSON & DANIEL W. ANDERSON
124	23,24	CAPE ROMAIN PROPERTIES LLC, PEGGY W. GINN
125	24	WILLIAM CHRISTOPHER HOLLEMAN, MELISSA SUE WHALEY
126	24,25	KATH HANNAM, SEAN HANNAM
127	24	SAINTS DELIGHT UNITED CHURCH OF CHRIST
129	24,25	SANDRA J. MACON
130	24,25	401, INC

PROJ. REFERENCE NO.	SHEET NO.
R-2814C	3P-2

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PARCEL INDEX SHEET

PARCEL No.	SHEET No.	PROPERTY OWNER NAME
131	25,26	DARK HORSE ACRES, LLC
132	25	401, INC
133	25,26	E.C. LUMPKIN LIMITED PARTNERSHIP
134	25	JOSHUA L. KRUSKIE
135	25	KATHLEEN LEE COOK
136	25,26	JOHN W. DAY & CAROL A. DAY
137	26	DOUGLAS R. DUNNE, SHERYL A. DUNNE
138	26	ROYSTER T. HARRIS, JR; ROCHELLE HARRIS
139	26,27	JVC HOMES INC
140	26	KM STANLEY INVESTMENTS LLC
141	26	ROYSTER T. HARRIS, JR ROCHELLE HARRIS
142	26	ROYSTER T. HARRIS, JR ROCHELLE HARRIS
143	26,27	LAURA W. HOLLINGSWORTH, WALTER C. HOLLINGSWORTH, JR
146	26,27	FOUNTAIN REAL ESTATE RENTALS, LLC
147	27	SHEARIN REALTY INC
146	26,27	FOUNTAIN REAL ESTATE RENTALS, LLC
147	27	SHEARIN REALTY INC
150	27	FU-SING CORPORATION
151	27	ROYAL MINI MART, LLC
152	27	PHIL MCNAMARA
157	27	ANNIE S. LLOYD
158	27,28	LLOYD CARROLL FARM LLC
159	27	BETTY C. PERRY
160	27	BETTY C. PERRY
161	27	JVC HOMES INC
162	27	BOBBY C. JONES, JR, JUDY T. JONES
163	27	DAN ALAN EWING
164	27	JEFFREY C. SCHICKEL
165	27	JOHN R. WILLIAMS, CHRISTINE B. WILLIAMS
166	27	ALTON P. CARTER, JR.
167	27	HERBERT L. HOLLIFIELD, PATRICIA E. HOLLIFIELD
168	27	TIMOTHY M. MCKIBBEN, MICHELLE S. MCKIBBEN
169	27	GEORGE ROGERS & WIFE SUSAN ROGERS
170	27,28	CAROLYN R. MARIN
171	28	AHMAD AL-AMARI, RASHA AL-AMARI
172	28	W. MAURICE HILL, III
173	28	THE WILLIAMS FAMILY TRUST
174	28	SHIRLEY G. MARSHALL
175	28	LLOYD CARROLL FARMS, INC.
176	28	SHIRLEY G. MARSHALL
177	28	SHIRLEY G. MARSHALL
178	28	JOHN P. COOPER, HAZEL H. COOPER
179	28	JEANETTE P. LORD
180	28	JOHN L HARRIS
181	4B,4	E.C. LUMPKIN LIMITED PARTNERSHIP
182	4	TOMMIE LEWIS BAILEY
183	4	WAKE FOREST FARMS, LLC
184	4A	ARSENIO V. BUGARIN AND WIFE, EVELYN Y. BUGARIN
185	4A,4B	LEE ROY FRAZIER AND MYRTAS BAKER
186	4A,4B	JAMES T. DANIEL, AND WIFE JOANNE T. DANIEL
187	4B	DOMINICK ARENA
188	4B	WARREN PAUL JONES AND WIFE, KATHY S. JONES
189	4B	JEFFREY C. AUSTIN
190	4B	A.L. CARTER AND HENERY H. CARTER
191	4B	GREGORY SCOTT SMITH (SEPARATED)

PARCEL No.	SHEET No.	PROPERTY OWNER NAME

PROJECT REFERENCE NO.	SHEET NO.
R-2814C	4A

R/W SHEET NO.

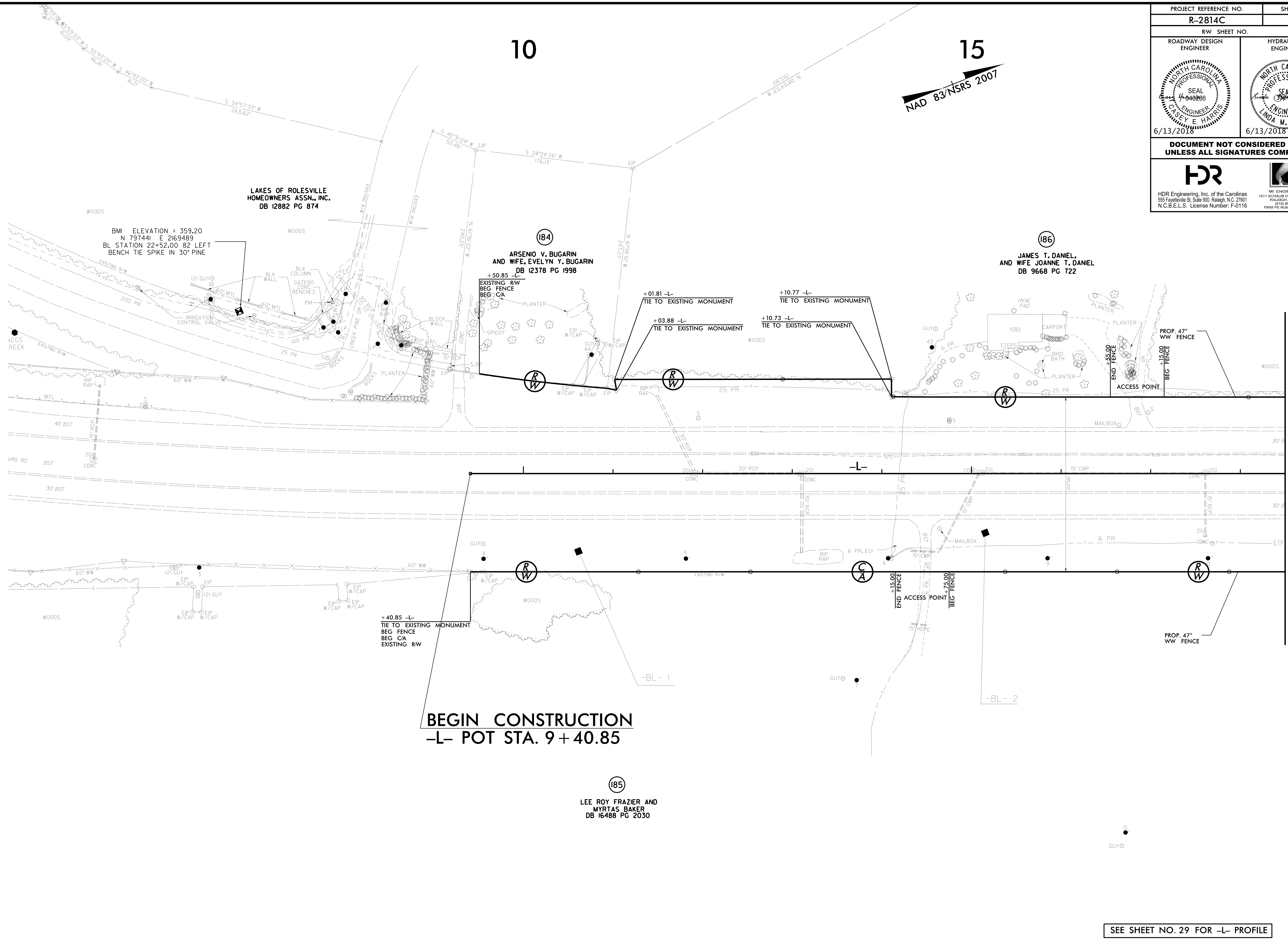
ROADWAY DESIGN ENGINEER — SEAL 040266, CASEY E. HARRIS, 6/13/2018

HYDRAULICS ENGINEER — SEAL 37246, LINDA M. JOHNS, 6/13/2018

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671



10
15
NAD 83/NSRS 2007
LAKES OF ROLESVILLE HOMEOWNERS ASSN., INC.
DB 12882 PG 874
BMI ELEVATION = 359.20
N 797441 E 2169489
BL STATION 22+52.00 82 LEFT
BENCH TIE SPIKE IN 30" PINE
184
ARSENIO V. BUGARIN AND WIFE, EVELYN Y. BUGARIN
DB 12378 PG 1998
+50.85 -L-
EXISTING R/W
BEG FENCE
BEG C/A
+01.81 -L-
TIE TO EXISTING MONUMENT
+03.88 -L-
TIE TO EXISTING MONUMENT
+10.77 -L-
TIE TO EXISTING MONUMENT
+10.73 -L-
TIE TO EXISTING MONUMENT
186
JAMES T. DANIEL, AND WIFE JOANNE T. DANIEL
DB 9668 PG 722
PROP. 47" WW FENCE
+55.00 END FENCE
ACCESS POINT
+15.00 BEG FENCE
MATCHLINE -L- STA 18+50 SEE SHEET 4B
-L-
+40.85 -L-
TIE TO EXISTING MONUMENT
BEG FENCE
BEG C/A
EXISTING R/W
+15.00 END FENCE
ACCESS POINT
+75.00 BEG FENCE
PROP. 47" WW FENCE
-BL- 1
-BL- 2
BEGIN CONSTRUCTION
-L- POT STA. 9+40.85
185
LEE ROY FRAZIER AND MYRTAS BAKER
DB 16488 PG 2030
WOODS

REVISIONS

SEE SHEET NO. 29 FOR -L- PROFILE

8/17/99

5/14/2018 R2814C_psh_s4A.dgn

PROJECT REFERENCE NO.	SHEET NO.
R-2814C	4B
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 040266 ENGINEER CASEY E. HARRIS 6/13/2018	NORTH CAROLINA PROFESSIONAL SEAL 37246 ENGINEER LINDA M. JOHNS 6/13/2018

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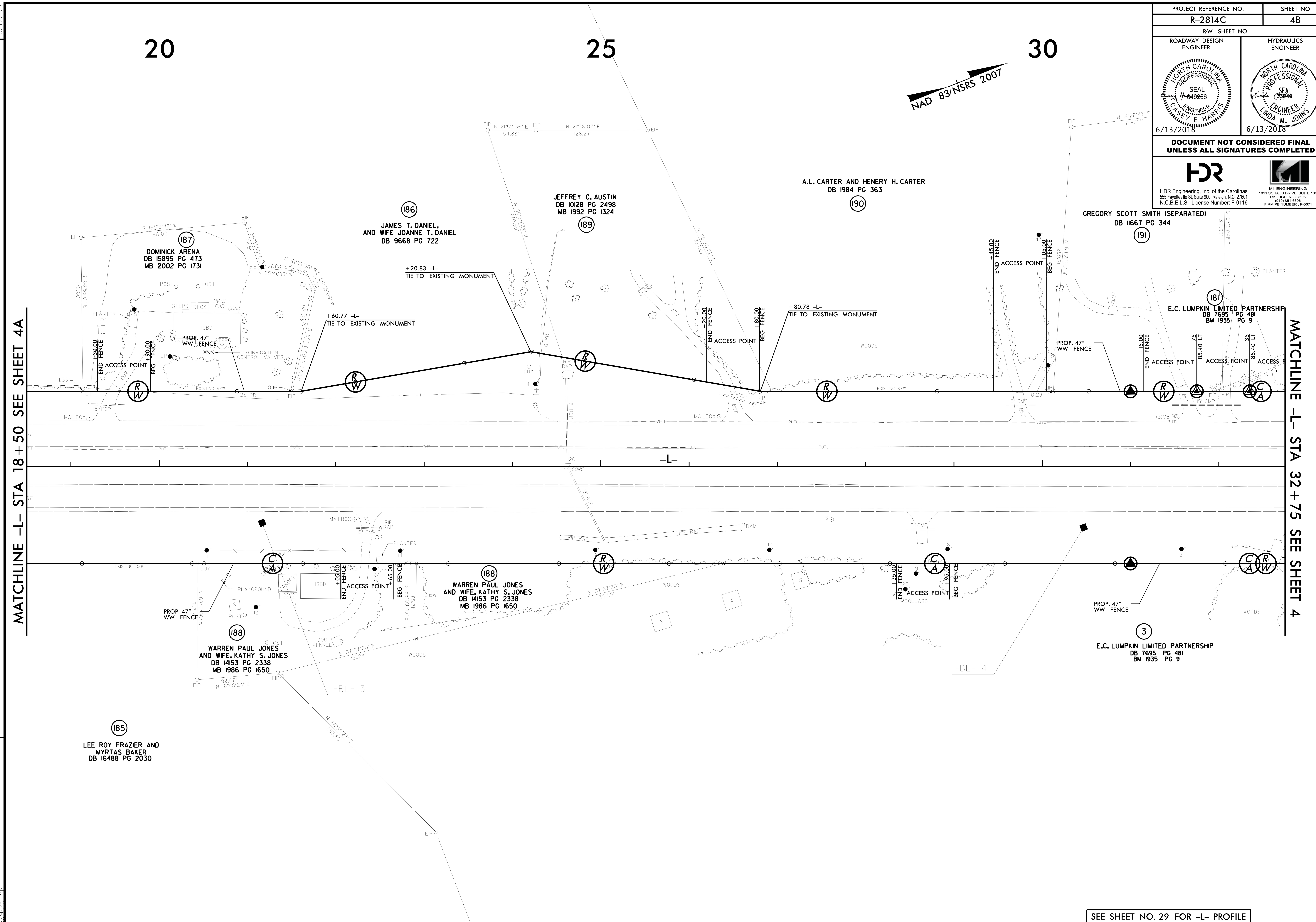
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

REVISIONS

8/17/99


20
25
30
NAD 83/NSRS 2007
MATCHLINE -L- STA 18+50 SEE SHEET 4A
MATCHLINE -L- STA 32+75 SEE SHEET 4
-L-
187
DOMINICK ARENA
DB 15895 PG 473
MB 2002 PG 1731
186
JAMES T. DANIEL,
AND WIFE JOANNE T. DANIEL
DB 9668 PG 722
189
JEFFREY C. AUSTIN
DB 10128 PG 2498
MB 1992 PG 1324
190
A.L. CARTER AND HENERY H. CARTER
DB 1984 PG 363
191
GREGORY SCOTT SMITH (SEPARATED)
DB 11667 PG 344
181
E.C. LUMPKIN LIMITED PARTNERSHIP
DB 7695 PG 481
BM 1935 PG 9
188
WARREN PAUL JONES
AND WIFE, KATHY S. JONES
DB 14153 PG 2338
MB 1986 PG 1650
3
E.C. LUMPKIN LIMITED PARTNERSHIP
DB 7695 PG 481
BM 1935 PG 9
185
LEE ROY FRAZIER AND
MYRTAS BAKER
DB 16488 PG 2030
+20.83 -L-
TIE TO EXISTING MONUMENT
+60.77 -L-
TIE TO EXISTING MONUMENT
+80.78 -L-
TIE TO EXISTING MONUMENT
ACCESS POINT
END FENCE
BEG FENCE
PROP. 47" WW FENCE
-BL- 3
-BL- 4
WOODS
PLAYGROUND
DOG KENNEL
MAILBOX
PLANTER
(3) IRRIGATION CONTROL VALVES

SEE SHEET NO. 29 FOR -L- PROFILE

5/14/2018
R2814C_psh_s4B.dgn

PROJECT REFERENCE NO.	SHEET NO.
R-2814C	4

R/W SHEET NO.

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 040286 CASEY E. HARRIS 6/13/2018

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL LINDA M. JOHNS 6/13/2018

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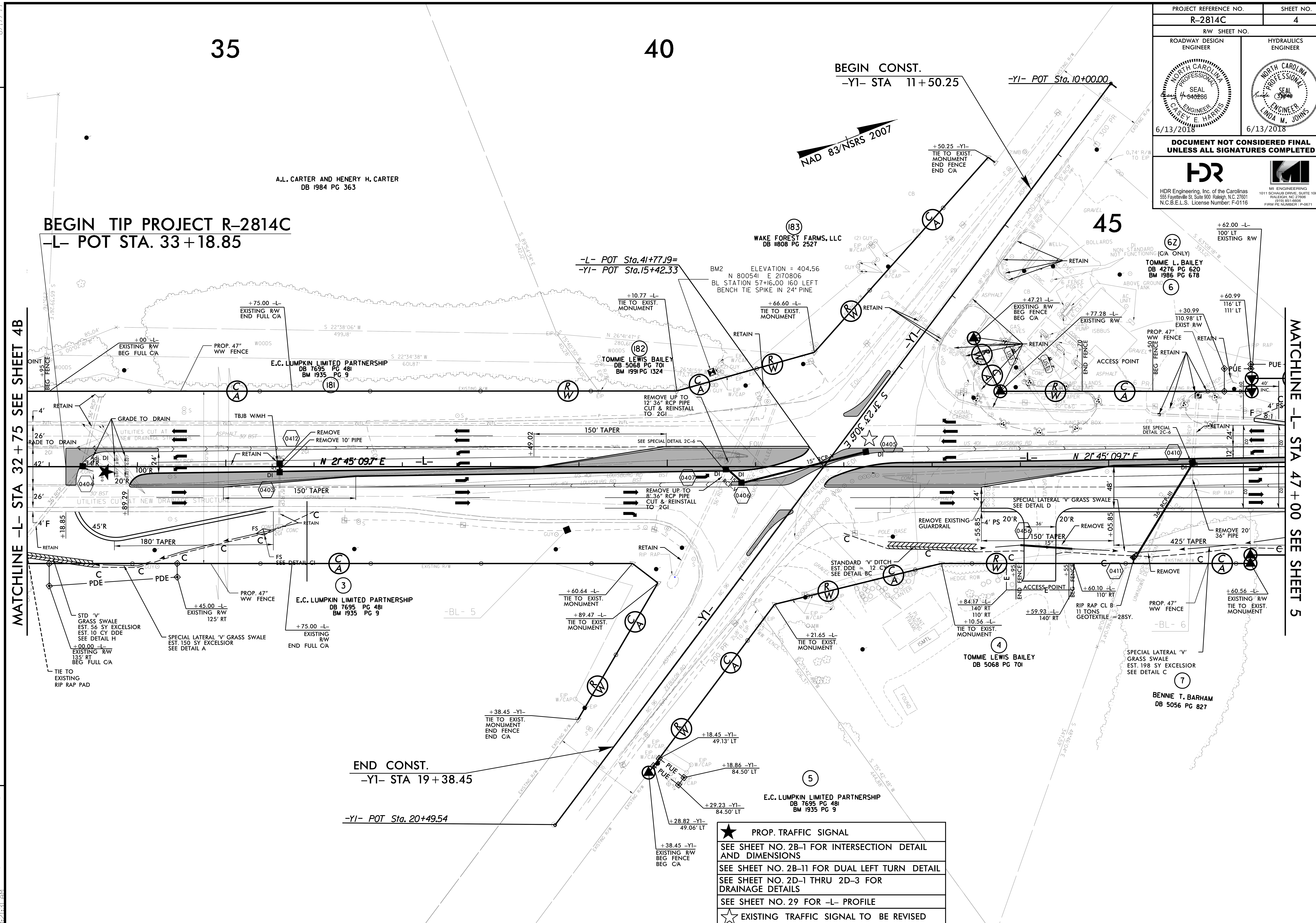
N.C.B.E.L.S. License Number: F-0116

MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671



★ PROP. TRAFFIC SIGNAL

SEE SHEET NO. 2B-1 FOR INTERSECTION DETAIL AND DIMENSIONS

SEE SHEET NO. 2B-11 FOR DUAL LEFT TURN DETAIL

SEE SHEET NO. 2D-1 THRU 2D-3 FOR DRAINAGE DETAILS

SEE SHEET NO. 29 FOR -L- PROFILE

☆ EXISTING TRAFFIC SIGNAL TO BE REVISED

REVISIONS

8/17/99

6/13/2018
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PROJECT REFERENCE NO.	SHEET NO.
R–2814C	5
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
CASEY E. HARRIS 040286 6/13/2018	LINDA M. JOHNS 33246 6/13/2018

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

MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

–L–
PIs Sta 61+04.03
Θs = 7° 38' 22.0"
Ls = 320.00'
LT = 213.53'
ST = 106.85'

SEE SHEET NO. 2B–11 FOR DUAL LEFT TURN DETAIL

SEE SHEET NO. 2D–1 THRU 2D–3 FOR DRAINAGE DETAILS

SEE SHEET NO. 30 FOR –L– PROFILE

★ PROP. TRAFFIC SIGNAL

REVISIONS

8/17/99

5/14/2018
...\Roadway\Proj\R2814C_rdy_psh_s5.dgn

PROJECT REFERENCE NO.	SHEET NO.
R-2814C	6
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
SEAL 040266 CASEY E. HARRIS 6/13/2018	SEAL 31246 LINDA M. JOHNS 6/13/2018

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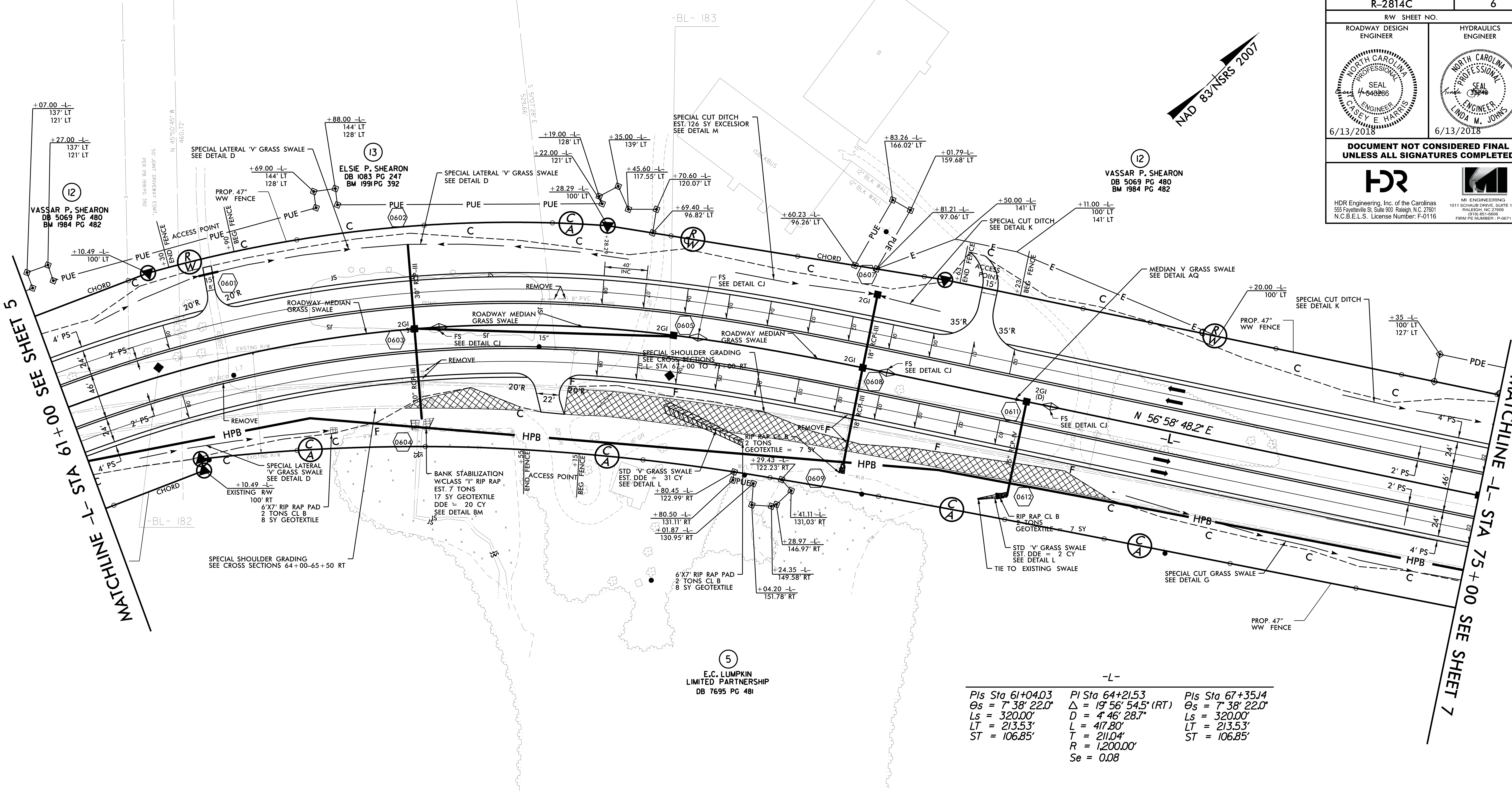
555 Fayetteville St, Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116

MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6066
FIRM PE NUMBER : P-0671


NAD 83/NSRS 2007
MATCHLINE -L- STA 61+00 SEE SHEET 5
MATCHLINE -L- STA 75+00 SEE SHEET 7
VASSAR P. SHEARON
DB 5069 PG 480
BM 1984 PG 482
ELSIE P. SHEARON
DB 1083 PG 247
BM 1991 PG 392
E.C. LUMPKIN LIMITED PARTNERSHIP
DB 7695 PG 481
SPECIAL LATERAL 'V' GRASS SWALE SEE DETAIL D
SPECIAL CUT DITCH EST. 126 SY EXCELSIOR SEE DETAIL M
SPECIAL CUT DITCH SEE DETAIL K
MEDIAN V GRASS SWALE SEE DETAIL AQ
ROADWAY MEDIAN GRASS SWALE
FS SEE DETAIL CJ
SPECIAL SHOULDER GRADING SEE CROSS SECTIONS -L- STA 67+00 TO 71+00 RT
SPECIAL SHOULDER GRADING SEE CROSS SECTIONS 64+00-65+50 RT
BANK STABILIZATION W/CLASS "I" RIP RAP EST. 7 TONS 17 SY GEOTEXTILE DDE = 20 CY SEE DETAIL BM
6'X7' RIP RAP PAD 2 TONS CL B 8 SY GEOTEXTILE
RIP RAP CL B 2 TONS GEOTEXTILE = 7 SY
STD 'V' GRASS SWALE EST. DDE = 31 CY SEE DETAIL L
STD 'V' GRASS SWALE EST. DDE = 2 CY SEE DETAIL L
TIE TO EXISTING SWALE
SPECIAL CUT GRASS SWALE SEE DETAIL G
PROP. 47" WW FENCE
ACCESS POINT
END FENCE
BEG FENCE
REMOVE
N 56° 58' 48.2" E
-L-
HPB
PUE
PDE
CHORD
-BL- 183
-BL- 182
-L-
PIs Sta 61+04.03 θs = 7° 38' 22.0" Ls = 320.00' LT = 213.53' ST = 106.85'
PI Sta 64+21.53 Δ = 19° 56' 54.5" (RT) D = 4° 46' 28.7" L = 417.80' T = 211.04' R = 1,200.00' Se = 0.08
PIs Sta 67+35.14 θs = 7° 38' 22.0" Ls = 320.00' LT = 213.53' ST = 106.85'
BM #51

SEE SHEET NO. 2D-1 THRU 2D-3 FOR DRAINAGE DETAILS

SEE SHEET NO. 30 & 31 FOR -L- PROFILE

PAVEMENT REMOVAL

REVISIONS

8/17/99

5/14/2018
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PROJECT REFERENCE NO.	SHEET NO.
R-2814C	7
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 040286 CASEY E. HARRIS 6/13/2018	NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 33246 LINDA M. JOHNS 6/13/2018

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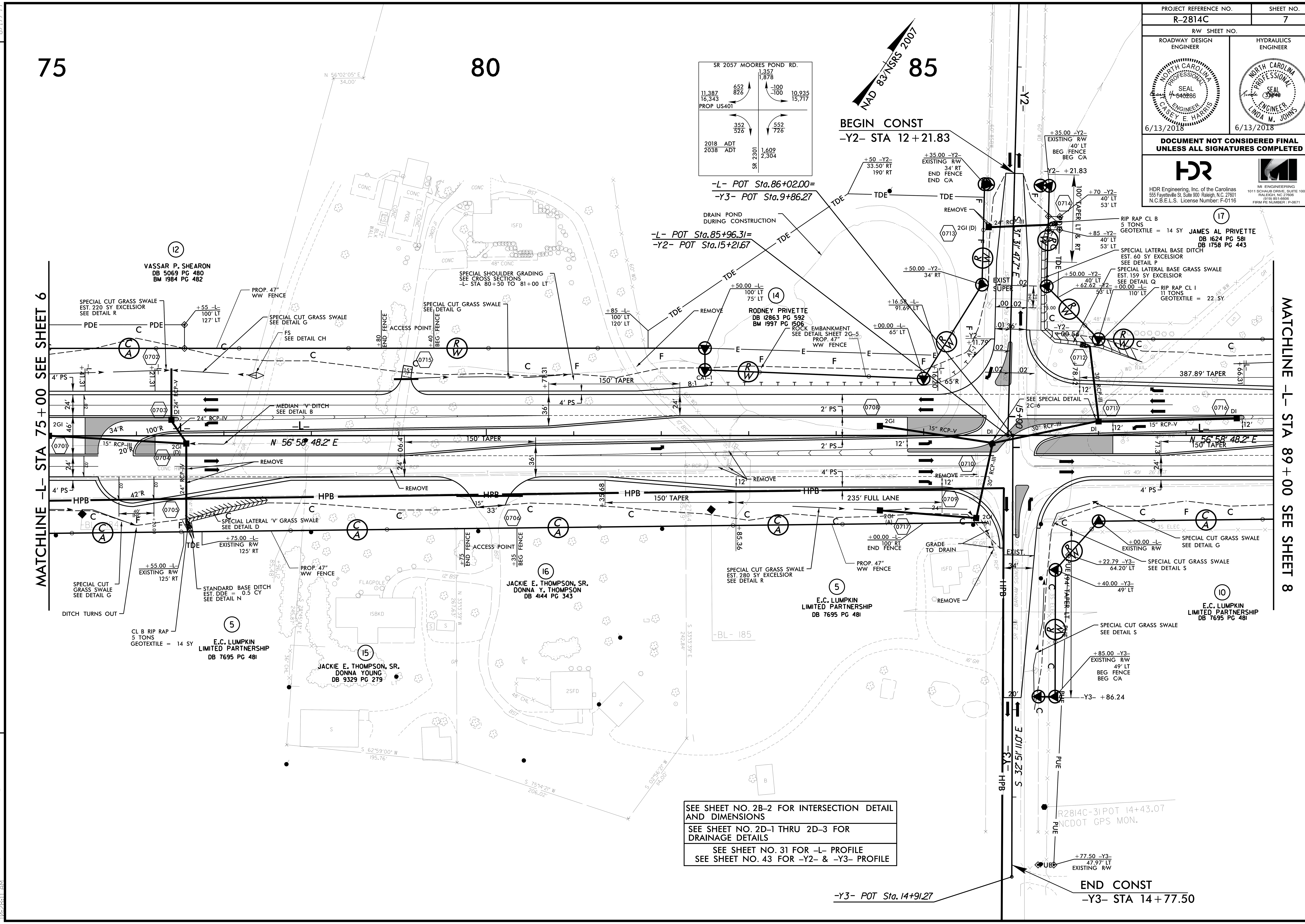
N.C.B.E.L.S. License Number: F-0116

MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671


75
80
85
NAD 83/NSRS 2007
SR 2057 MOORES POND RD.
PROP US401
2018 ADT
2038 ADT
SR 2301
BEGIN CONST
-Y2- STA 12+21.83
-L- POT Sta.86+02.00=
-Y3- POT Sta.9+86.27
-L- POT Sta.85+96.31=
-Y2- POT Sta.15+21.67
DRAIN POND DURING CONSTRUCTION
VASSAR P. SHEARON
DB 5069 PG 480
BM 1984 PG 482
RODNEY PRIVETTE
DB 12863 PG 592
BM 1997 PG 1506
JAMES AL PRIVETTE
DB 1624 PG 581
DB 1758 PG 443
E.C. LUMPKIN LIMITED PARTNERSHIP
DB 7695 PG 481
JACKIE E. THOMPSON, SR.
DONNA Y. THOMPSON
DB 4144 PG 343
JACKIE E. THOMPSON, SR.
DONNA YOUNG
DB 9329 PG 279
MATCHLINE -L- STA 75+00 SEE SHEET 6
MATCHLINE -L- STA 89+00 SEE SHEET 8
N 56°58' 48.2" E
S 32°51' 11.0" E
150' TAPER
235' FULL LANE
387.89' TAPER
SPECIAL CUT GRASS SWALE
SPECIAL LATERAL BASE DITCH
MEDIAN 'V' DITCH SEE DETAIL B
ROCK EMBANKMENT SEE DETAIL SHEET 2G-5
SPECIAL SHOULDER GRADING SEE CROSS SECTIONS -L- STA 80+50 TO 81+00 LT
REMOVE
ACCESS POINT
END CONST
-Y3- STA 14+77.50
-Y3- POT Sta. 14+91.27
R2814C-31POT 14+43.07
NCDOT GPS MON.

SEE SHEET NO. 2B-2 FOR INTERSECTION DETAIL AND DIMENSIONS

SEE SHEET NO. 2D-1 THRU 2D-3 FOR DRAINAGE DETAILS

SEE SHEET NO. 31 FOR -L- PROFILE
SEE SHEET NO. 43 FOR -Y2- & -Y3- PROFILE

REVISIONS

8/17/99

6/13/2018
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PROJECT REFERENCE NO.	SHEET NO.
R-2814C	8
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 040266 ENGINEER CASEY E HARRIS

6/13/2018

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 39248 ENGINEER LINDA M. JOHNS

6/13/2018

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

MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 852-6606
FIRM PE NUMBER - P-0671

8/17/99

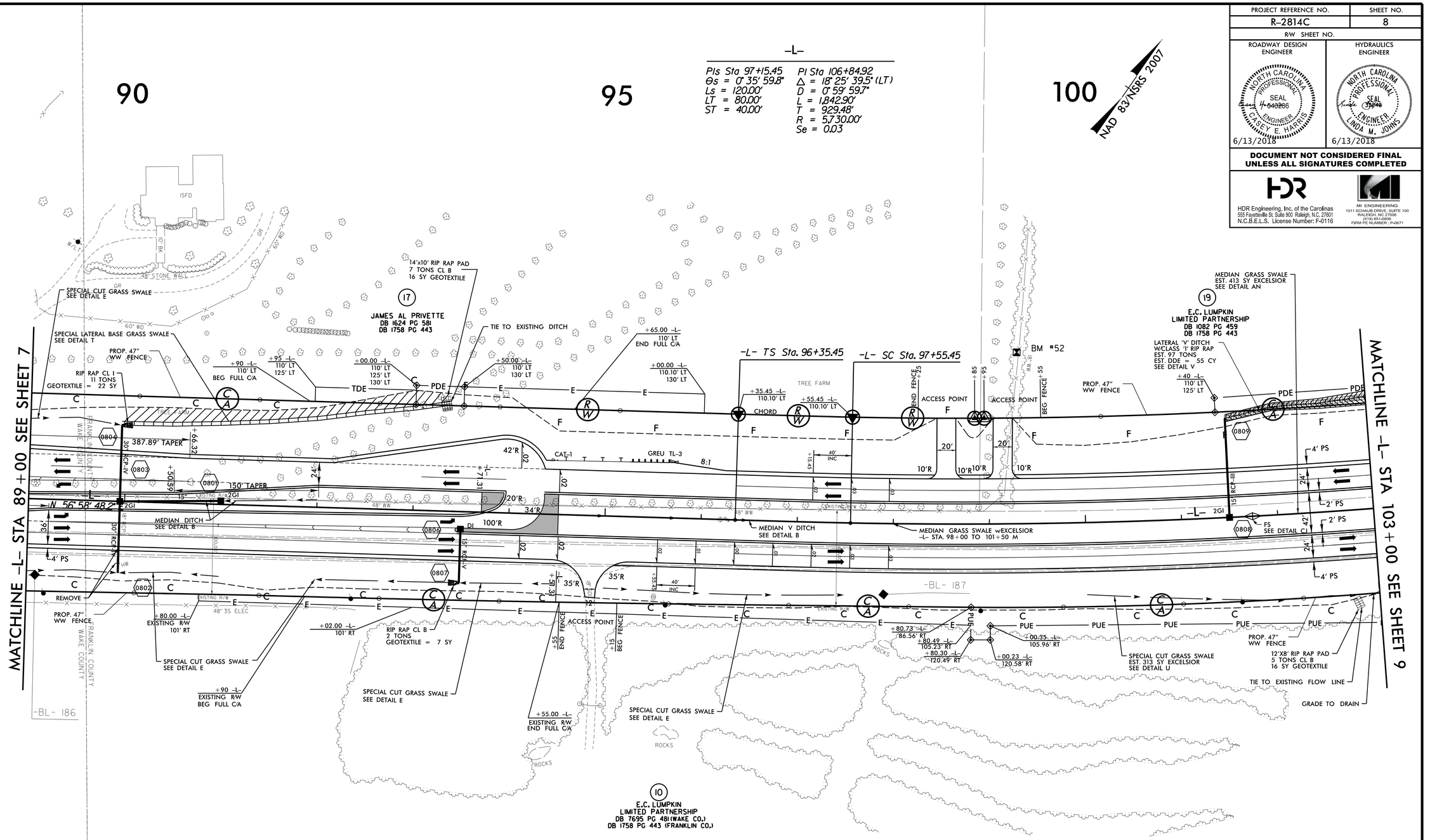
REVISIONS

90 95 100

NAD 83/NSRS 2007

–L–
PIs Sta 97+15.45
Θs = 0° 35' 59.8"
Ls = 120.00'
LT = 80.00'
ST = 40.00'

PI Sta 106+84.92
Δ = 18° 25' 39.5" (LT)
D = 0° 59' 59.7"
L = 1,842.90'
T = 929.48'
R = 5,730.00'
Se = 0.03



10
E.C. LUMPKIN LIMITED PARTNERSHIP
DB 7695 PG 481 (WAKE CO.)
DB 1758 PG 443 (FRANKLIN CO.)

SEE SHEET NO. 2D-1 THRU 2D-3 FOR DRAINAGE DETAILS

SEE SHEET NO. 31 & 32 FOR –L– PROFILE

5/14/2018
11:10:21 AM
C:\Projects\Proj\R2814C_esh_s8.dgn

PROJECT REFERENCE NO.	SHEET NO.
R-2814C	9

R/W SHEET NO.

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 040266 ENGINEER CASEY E. HARRIS — 6/13/2018

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 37240 ENGINEER LINDA M. JOHNS — 6/13/2018

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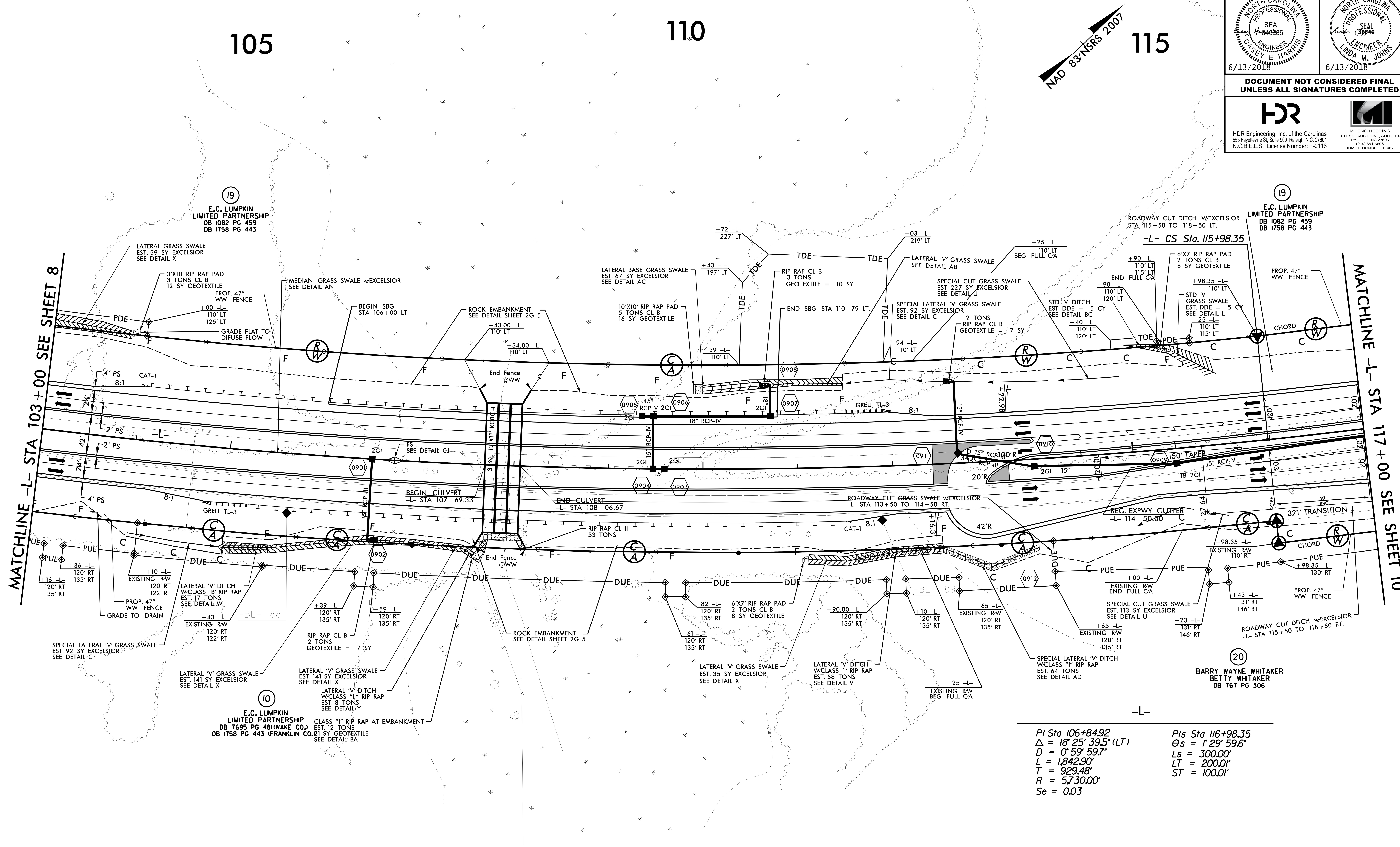
MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

REVISIONS



-L-

PI Sta 106+84.92	PIs Sta 116+98.35
Δ = 18° 25' 39.5" (LT)	θs = 1° 29' 59.6"
D = 0° 59' 59.7"	Ls = 300.00'
L = 1,842.90'	LT = 200.01'
T = 929.48'	ST = 100.01'
R = 5,730.00'	
Se = 0.03	

SEE SHEET NO. 2D-1 THRU 2D-3 FOR DRAINAGE DETAILS
SEE SHEET NO. 32 FOR -L- PROFILE
SEE SHEET C1-1 THRU C6-5 FOR CULVERT PLANS

5/14/2018
\Roadway\Proj\R2814C_psh_s9.dgn
8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-2814C	10
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 040286 ENGINEER CASEY E HARRIS

6/13/2018

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 39248 ENGINEER INDIA M. JOHNS

6/13/2018

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 833-6606
FIRM PE NUMBER - P-0671

8/17/99

REVISIONS

-Y4-
PI Sta 21+80.15
Δ = 22° 34' 25.7" (LT)
D = 5° 43' 46.5"
L = 393.99'
T = 199.58'
R = 1,000.00'
SE = SEE PLANS

-Y5-
PI Sta 16+77.56
Δ = 5° 30' 35.2" (RT)
D = 3° 10' 59.2"
L = 173.09'
T = 86.61'
R = 1,800.00'
SE = SEE PLANS

SR 1101 SID EAVES RD
DARIUS PEARCE RD
PROP US401
10,935 / 15,717
578 / 839
1,383 / 1,991
-48 / 126
9,300 / 13,300
1,309 / 2,004
226 / 313
2,313 / 3,357
2018 ADT / 2038 ADT

PRESENT GRAVE SITES PER BM 1998 PG 369 NOT PHYSICALLY LOCATED

24 CATLETT EVA PEARCE DB 1121 PG 144 DB 98 PG 369

BEGIN CONST. -Y4- PC Sta. 19+80.57

NAD 83/NSRS 2007

-Y4- PT Sta. 23+74.55

-L- ST Sta. 118+98.35

-L- POT Sta.120+95.10= -Y5- POT Sta. 10+00.00

19 E.C. LUMPKIN LIMITED PARTNERSHIP DB 1082 PG 459 DB 1758 PG 443

25A BARRY WAYNE WHITAKER AND WIFE BETTY P. WHITAKER; BETTY W. FRAZIER DB 305 PG 335 DB 1736 PG 871

MATCHLINE -L- STA 117+00 SEE SHEET 9

MATCHLINE -L- STA 131+00 SEE SHEET 11

-L- POT Sta.121+06.61= -Y4- POT Sta. 24+61.22

END CONST -Y5- STA 14+23.00

20 BARRY WAYNE WHITAKER BETTY WHITAKER DB 767 PG 306

20A BARRY WAYNE WHITAKER BETTY WHITAKER DB 767 PG 306

21 DONNIE POE NANCY G POE DB 900 PG 52

22 PATSY B. HICKS DB 901 PG 882

23 WALLACE WAYNE HICKS DB 901 PG 103

25 BARRY WAYNE WHITAKER AND WIFE BETTY P. WHITAKER; BETTY W. FRAZIER DB 305 PG 335 DB 1736 PG 871

SEE SHEET NO. 2B-3 FOR INTERSECTION DETAIL AND DIMENSIONS
SEE SHEET NO. 2D-1 THRU 2D-3 FOR DRAINAGE DETAILS
SEE SHEET NO. 32 & 33 FOR -L- PROFILE SEE SHEET NO. 43 FOR -Y4- & -Y5- PROFILE

5/16/2018
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