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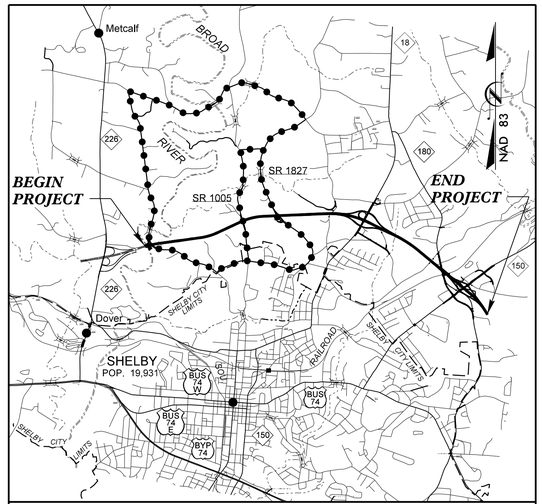
09/08/99

TIP PROJECT: R-2707C

CONTRACT: C203905

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



VICINITY MAP

—●—●—●—●—OFFSITE DETOURS

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CLEVELAND COUNTY

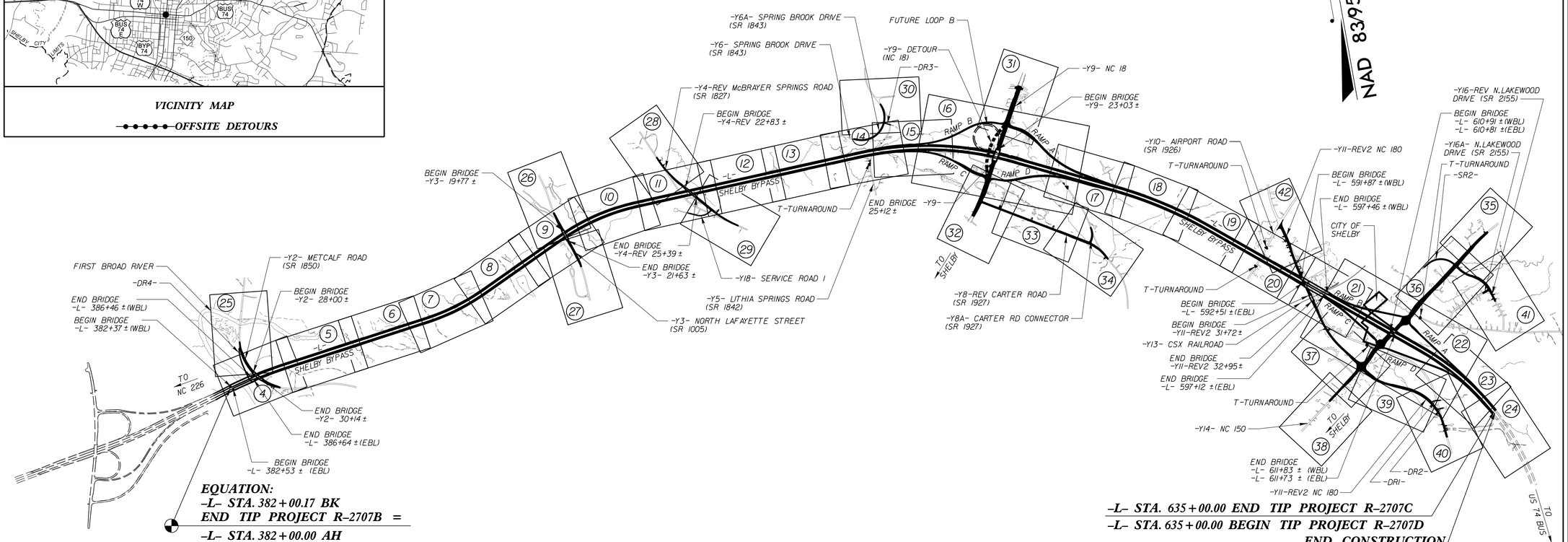
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-2707C	1	

STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION
34497.1.4		P.E.
34497.2.FS9	NHF-0074(152)	ROW
34497.2.FSU4	NHF-0074(152)	UTILITY
34497.3.6		CONST

LOCATION: US 74 SHELBY BYPASS FROM EAST OF NC 226 TO EAST OF NC 150

TYPE OF WORK: GRADING, PAVING, DRAINAGE, SIGNING, RETAINING WALLS, CULVERTS, AND STRUCTURE

NAD 83/95



EQUATION:
-L- STA. 382+00.17 BK
END TIP PROJECT R-2707B =
-L- STA. 382+00.00 AH
BEGIN TIP PROJECT R-2707C

-L- STA. 635+00.00 END TIP PROJECT R-2707C
-L- STA. 635+00.00 BEGIN TIP PROJECT R-2707D
END CONSTRUCTION
-L- STA. 635+26.86

THERE ARE THREE DESIGN EXCEPTIONS ON THIS PROJECT, ONE FOR SIGHT DISTANCE ON -Y2- AND TWO FOR k VALUE ON -Y14- PROFILE.

THIS IS A CONTROLLED ACCESS PROJECT WITH ACCESS BEING LIMITED TO THE INTERCHANGES.

NCDOT CONTACT: GARY LOVERING, PE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

GRAPHIC SCALES

50 25 0 50 100
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

DESIGN DATA

ADT 2017 = 21,010
ADT 2037 = 35,110
K = 11 %
D = 55 %
T = 14 % *
V = 70 MPH
FUNC CLASS = FREEWAY
(* TTST 9% DUAL 5%)
STATEWIDE TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT R-2707C	= 4.591 MILES
LENGTH STRUCTURES TIP PROJECT R-2707C	= 0.201 MILES
LENGTH TIP PROJECT R-2707C	= 4.792 MILES

NOTE : PROJECT LENGTH BASED ON WBL

Prepared for NCDOT in the Office of:
moffatt & nichol
4700 FALLS OF NEUSE ROAD, SUITE 300
RALEIGH, NORTH CAROLINA 27609
(919) 781-4626 VOICE (919) 781-4869 FAX
PE (F-0105)

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: November 21, 2014

LETTING DATE: May 16, 2017

TIM R. REID, P.E.
PROJECT ENGINEER

TRENT E. HUFFMAN, P.E.
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER
SDG
Sungate Design Group, P.A.
Engineering - Landscape Architecture - Environmental
915-A Jones Franklin Rd.
Raleigh, N.C. 27606
NORTH CAROLINA PROFESSIONAL SEAL 26971 ENGINEER JOSHUA G. DALTON
DocuSigned by: Joshua G. Dalton 1088ADBC149943C3...
SIGNATURE: P.E. 4/12/2017

ROADWAY DESIGN ENGINEER
moffatt & nichol
4700 FALLS OF NEUSE ROAD, SUITE 300
RALEIGH, NORTH CAROLINA 27609
(919) 781-4626 VOICE (919) 781-4869 FAX
PE (F-0105)
NORTH CAROLINA PROFESSIONAL SEAL 15869 ENGINEER R. REID
DocuSigned by: Timothy R. Reid 2658BA242EB3411...
SIGNATURE: P.E. 4/12/2017

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

4/11/2017
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8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-2707C	1A

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 015869 ENGINEER

DocuSigned by: JIMMY W. REID
26569A242E83411...
4/12/2017

moffatt & nichol
4700 FALLS OF NEUSE ROAD, SUITE 300
RALEIGH, NORTH CAROLINA 27609
(919) 781-4626 VOICE (919) 781-4869 FAX
PE 0-0-051

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

INDEX OF SHEETS

SHEET NUMBER	SHEET
1	TITLE SHEET
1A	INDEX OF SHEETS, GENERAL NOTES AND LIST OF STANDARD DRAWINGS
1B	CONVENTIONAL SYMBOLS
1C-1 THRU 1C-9	SURVEY CONTROL SHEETS
2A-1 THRU 2A-7	PAVEMENT SCHEDULE AND TYPICAL SECTIONS
2B-1 THRU 2B-2	DETOUR PLAN AND PROFILE
2B-3 THRU 2B-7	INTERSECTION DETAILS
2B-8 THRU 2B-9	ENDANGERED PLANT BOUNDARY DETAILS
2C-1	SPECIAL JB
2C-2	GUARDRAIL ANCHOR UNIT, TYPE III
2C-3	CONVERT EXISTING TBDI OR CB TO TBJB DETAIL
2C-4	TEMPORARY 1" STEEL COVER OVER DRAINAGE STRUCTURE DETAIL
2D-1 THRU 2D-4	DRAINAGE DITCH DETAILS
2G-1	TEMPORARY SHORING DETAIL 1801.01
2H-1	STOCKPILE CONTAINMENT DETAIL
3B-1	EARTHWORK SUMMARY
3B-2	ASPHALT PAVEMENT REMOVAL SUMMARY, CONCRETE PAVEMENT REMOVAL SUMMARY, BREAKING ASHPHALT PAVEMENT SUMMARY
3B-3	WOVEN WIRE FENCE SUMMARY
3B-4	GUARDRAIL SUMMARY
3D-1 THRU 3D-20	DRAINAGE SUMMARY
3G-1	GEOTECHNICAL SUMMARIES
3P-1 THRU 3P-2	PARCEL INDEX SHEETS
4 THRU 42	PLAN SHEETS
43 THRU 77	PROFILE SHEETS
TMP-1 THRU TMP-56	TRANSPORTATION MANAGEMENT PLANS
PMP-1 THRU PMP-14	PAVEMENT MARKING PLANS
EC-1 THRU EC-82	EROSION CONTROL PLANS
RF-1 THRU RF-3	REFORESTATION PLANS
SIGN-1 THRU SIGN-16	SIGNING PLANS
SIG-1 THRU SIG-2	SIGNAL PLANS
UC-1 THRU UC-41	UTILITY CONSTRUCTION PLANS
UO-1 THRU UO-35	UTILITY BY OTHER PLANS
X	CROSS-SECTION INDEX
X-1A THRU X-1G	CROSS-SECTION VOLUME SHEETS
X-1 THRU X-864	CROSS-SECTIONS
S1-1 THRU S1-36	STRUCTURE PLANS - STRUCTURE #1
S2-1 THRU S2-36	STRUCTURE PLANS - STRUCTURE #2
S3-1 THRU S3-37	STRUCTURE PLANS - STRUCTURE #3
S4-1 THRU S4-29	STRUCTURE PLANS - STRUCTURE #4
S5-1 THRU S5-25	STRUCTURE PLANS - STRUCTURE #5
S6-1 THRU S6-37	STRUCTURE PLANS - STRUCTURE #6
S7-1 THRU S7-56	STRUCTURE PLANS - STRUCTURE #7
S8-1 THRU S8-44	STRUCTURE PLANS - STRUCTURE #8
S9-1 THRU S9-25	STRUCTURE PLANS - STRUCTURE #9
S10-1 THRU S10-25	STRUCTURE PLANS - STRUCTURE #10
S11-1 THRU S11-27	STRUCTURE PLANS - STRUCTURE #11
C12-1 THRU C12-5	CULVERT PLANS
C13-1 THRU C13-5	CULVERT PLANS
W-1 THRU W-9	WALL PLANS

GENERAL NOTES:

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

GRADING AND SURFACING OR RESURFACING AND WIDENING:

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

CLEARING:

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

SUPERELEVATION:

ALL CURVES ON THIS PROJECT SHALL BE SUPERELEVATED IN ACCORDANCE WITH STD. NO. 224.05 & STD. NO. 225.05 USING THE RATE OF SUPERELEVATION AND RUNOFF SHOWN ON THE PLANS. SUPERELEVATION IS TO BE REVOLVED ABOUT THE GRADE POINTS SHOWN ON THE TYPICAL SECTIONS.

SHOULDER CONSTRUCTION:

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

SIDE ROADS:

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

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.

SUBSURFACE DRAINS:

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

DRIVEWAYS:

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

GUARDRAIL:

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

TEMPORARY SHORING:

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

END BENTS:

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

UTILITIES:

UTILITY OWNERS ON THIS PROJECT ARE

Duke Power, AT&T, Windstream, MCNC, City of Shelby

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

RIGHT-OF-WAY MARKERS:

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

ROCK

ROCK IS ANTICIPATED BETWEEN -L- 386+50 TO 470+00. BLASTING MAY BE REQUIRED FOR EXCAVATION ON THE PROJECT. SEE SECTION 220 OF THE STANDARD SPECIFICATIONS AND IF APPLICABLE, ROCK BLASTING PROVISION.

EFF. 01-17-2012
REV. 02-29-2016

2012 ROADWAY ENGLISH STANDARD DRAWINGS

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

STD.NO.	TITLE
DIVISION 2 - EARTHWORK	
200.03	Method of Clearing - Method III
225.01	Guide for Grading Subgrade - Interstate and Freeway
225.02	Guide for Grading Subgrade - Secondary and Local
225.03	Deceleration and Acceleration Lanes
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
225.09	Guide for Shoulder and Ditch Transition at Grade Separations
240.01	Guide for Berm Ditch Construction
DIVISION 3 - PIPE CULVERTS	
300.01	Method of Pipe Installation
310.10	Driveway Pipe Construction
DIVISION 4 - MAJOR STRUCTURES	
422.10	Reinforced Bridge Approach Fills
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 (Sheet 2 of 3 is no longer applicable)
DIVISION 6 - ASPHALT BASES AND PAVEMENTS	
610.01	Guide for Paving Shoulders Under Bridges - Method I
610.02	Guide for Paving Shoulders Under Bridges - Method II
610.03	Guide for Paving Shoulders Under Bridges - Method III
654.01	Pavement Repairs
DIVISION 8 - INCIDENTALS	
806.03	Concrete Contol of Access Marker
815.02	Subsurface Drain
838.01	Concrete Endwall for Single and Double Pipe Culverts - 15" thru 48" Pipe 90 Skew
838.11	Brick Endwall for Single and Double Pipe Culverts - 15" thru 48" Pipe 90 Skew
838.21	Reinforced Concrete Endwall - for Single 54" Pipe 90 Skew
838.27	Reinforced Concrete Endwall - for Single 60" Pipe 90 Skew
838.33	Reinforced Concrete Endwall - for Single 66" Pipe 90 Skew
838.39	Reinforced Concrete Endwall - for Single 72" Pipe 90 Skew
838.45	Notes for Reinforced Concrete Endwall - Std. Dwg 838.21 thru 838.40
838.51	Reinforced Brick Endwall - for Single 54" Pipe 90 Skew
838.57	Reinforced Brick Endwall - for Single 60" Pipe 90 Skew
838.63	Reinforced Brick Endwall - for Single 66" Pipe 90 Skew
838.69	Reinforced Brick Endwall - for Single 72" Pipe 90 Skew
838.75	Notes for Reinforced Brick Endwall - Std. Dwg 838.51 thru 838.70
838.80	Precast Endwalls - 12" thru 72" Pipe 90 Skew
840.00	Concrete Base Pad for Drainage Structures
840.01	Brick Catch Basin - 12" thru 54" Pipe
840.02	Concrete Catch Basin - 12" thru 54" Pipe
840.03	Frame, Grates and Hood - for Use on Standard Catch Basin
840.14	Concrete Drop Inlet - 12" thru 30" Pipe
840.15	Brick Drop Inlet - 12" thru 30" Pipe
840.16	Drop Inlet Frame and Grates - for use with Std. Dwg 840.14 and 840.15
840.17	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 36" Pipe
840.28	Brick Grated Drop Inlet Type 'D' - 12" thru 36" Pipe
840.29	Frames and Narrow Slot Flat Grates
840.31	Concrete Junction Box - 12" thru 66" Pipe
840.32	Brick Junction Box - 12" thru 66" Pipe
840.35	Traffic Bearing Grated Drop Inlet - for Cast Iron Double Frame and Grates
840.45	Precast Drainage Structure
840.46	Traffic Bearing Precast Drainage Structure
840.54	Manhole Frame and Cover
840.66	Drainage Structure Steps
840.71	Concrete and Brick Pipe Plug
840.72	Pipe Collar
846.01	Concrete Curb, Gutter and Curb & Gutter
846.04	Drop Inlet Installation in Shoulder Berm Gutter
848.02	Driveway Turnout - Radius Type
850.01	Concrete Paved Ditches
850.10	Guide for Berm Drainage Outlet - 15" and 18" Pipe
850.11	Guide for Berm Drainage Outlet - 24" and 30" Pipe
852.01	Concrete Islands
852.06	Method for Placement of Drop Inlets in Concrete Islands
857.01	Precast Reinforced Concrete Barrier - 41" Single Faced
862.01	Guardrail Placement
862.02	Guardrail Installation
862.03	Structure Anchor Units (Beg. March 2013 Letting use detail in lieu of Standard)
862.04	Anchoring End of Guardrail - B-77 and B-83 Anchor Units
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

4/12/2017
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smoolin

12/2/2016

PROJECT REFERENCE NO.	SHEET NO.
R-2707C	1B

STATE OF NORTH CAROLINA, DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

Note: Not to Scale

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

BOUNDARIES AND PROPERTY:

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

BUILDINGS AND OTHER CULTURE:

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

HYDROLOGY:

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

RAILROADS:

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

RIGHT OF WAY & PROJECT CONTROL:

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

ROADS AND RELATED FEATURES:

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

VEGETATION:

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

EXISTING STRUCTURES:

MAJOR:

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

MINOR:

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

UTILITIES:

POWER:

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

TELEPHONE:

- Existing Telephone Pole
- Proposed Telephone Pole
- Telephone Manhole — T
- Telephone Pedestal — T
- Telephone Cell Tower
- U/G Telephone Cable Hand Hole — 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:

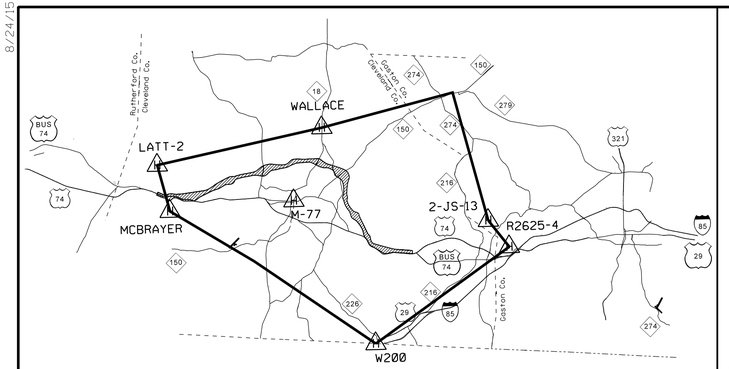
- Sanitary Sewer Manhole
- Sanitary Sewer Cleanout
- U/G Sanitary Sewer Line — SS
- Above Ground Sanitary Sewer — A/G Sanitary Sewer
- SS Forced Main Line LOS B (S.U.E.*) — FSS
- SS Forced Main Line LOS C (S.U.E.*) — FSS
- SS Forced Main Line LOS D (S.U.E.*) — FSS

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.

PROJECT REFERENCE NO.	SHEET NO.
R-2707C	1C-1
Location and Surveys	

SURVEY CONTROL SHEET



GPS NETWORK

NOT TO SCALE

NC GRID NAD 83/95

–Y6A– SPRING BROOK DRIVE (SR 1843)

–Y6– SPRING BROOK DRIVE (SR 1843)

–Y4–REV–McBRAYER SPRINGS ROAD (SR 1837)

NCDOT GPS STATION R2707–10
LOCALIZED PROJECT COORDINATES
N = 584,283.7960
E = 1,244,462.4320

FUTURE LOOP B

–DR3–

NCDOT GPS STATION R2707–12
LOCALIZED PROJECT COORDINATES
N = 583,972.9870
E = 1,251,363.4710

–Y9–NC 18

NCDOT GPS STATION R2707–11
LOCALIZED PROJECT COORDINATES
N = 582,905.2970
E = 1,250,689.3060

–Y2– METCALF ROAD (SR 1850)

–Y3– NORTH LAFAYETTE STREET (SR 1005)

–Y4–REV–

–RPB2–

–RPA2–

–RPC2–

–RPD2–

–Y10– AIRPORT ROAD (SR 1926)

–Y2–

–L–

–Y3–

TO NC 226

SHELBY BYPASS

NCDOT GPS STATION R2707–8
LOCALIZED PROJECT COORDINATES
N = 580,239.3390
E = 1,233,459.6170

–Y18– SERVICE ROAD 1

–Y5– LITHIA SPRINGS ROAD (SR 1842)

TO SHELBY

–Y8–REV CARTER ROAD (SR 1927)

–Y8A–CARTER ROAD CONNECTOR (SR 1927)

NCDOT GPS STATION R2707–9
LOCALIZED PROJECT COORDINATES
N = 583,249.2080
E = 1,244,885.0920

–L–

NCDOT GPS STATION R2707–16
LOCALIZED PROJECT COORDINATES
N = 579,290.1370
E = 1,258,413.5100

–Y16–REV N. LAKEWOOD DR. (SR 2155)

–RPB3–

–Y13– CSX RAILROAD

–RPC3–

–RPA3–

–Y16A– N. LAKEWOOD DR. (SR 2155)

NCDOT GPS STATION R2707–7
LOCALIZED PROJECT COORDINATES
N = 579,006.8290
E = 1,233,137.4580

NCDOT GPS STATION R2707–15
LOCALIZED PROJECT COORDINATES
N = 578,350.5470
E = 1,257,235.4380

–Y14– NC 150

–RPD3–

–Y11–REV2 NC 180

–DR1–

–DR2–

RAMP A
RAMP B
RAMP C
RAMP D

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCGS FOR MONUMENT "M 77"
WITH NAD 83/95 STATE PLANE GRID COORDINATES OF
NORTHING: 573127.522(ft) EASTING: 1242971.658(ft)
ELEVATION: 852.279'(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99984410
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "M 77" TO -L- L STATION 384+00.00 IS
N 39 19 10 W 10435.24'
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

R–2707C
BEGIN STATE PROJECT 34497.1.2
LOCALIZED PROJECT COORDINATES

R–2707B –L– POT Sta. 383+99.83 BK =
R–2707C –L– POT Sta. 384+00.00 AH

N = 581,200.4952
E = 1,236,359.4457

–L–STA 635+00.00 END STATE PROJECT 34497.1.2
LOCALIZED PROJECT COORDINATES
N = 576,674.0634
E = 1,258,868.5310

–L– STA. 635+00.00 END TIP PROJECT R–2707C
END CONSTRUCTION
–L– STA. 635+00.00 BEGIN TIP PROJECT R–2707D

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 WORKWITHIN 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/

THE FILES TO BE FOUND ARE AS FOLLOWS:
R2707A_LS_GPSCALIB_100701.HTML
R2707A_LS_WGS84_100701.TXT
R2707A_LS_LOCAL_100701.TXT
R2707C_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 UTILIZING GLOBAL POSITIONING SYSTEM.
NETWORK ESTABLISHED FROM EXISTING HARN MONUMENTATION.
SEE GPS CALIBRATION SHEET FOR HORIZONTAL AND VERTICAL COORDINATE VALUES

NOTE: DRAWING NOT TO SCALE

8/24/15
4/14/2017
8:54:41 AM
C:\Users\01\CADD\R2707C\Roadway\Proj\r2707c_ls_1C-1.dgn
amodlin

PROJECT REFERENCE NO.	SHEET NO.
R-2707C	1C-2
Location and Surveys	

SURVEY CONTROL SHEET

GPS CALIBRATION REPORT

GPS CALIBRATION REPORT PROJECT : R2707C

```
TIP NUMBER    R2707C
USER NAME        RDWOODS     DATE & TIME        9:23:27 AM 6/29/2010
COORDINATE SYSTEM     SITE(AT GROUND)  ZONE      NORTH CAROLINA 3200
HORIZONTAL DATUMNAD 1983 (CONUS)
VERTICAL DATUM     NAVD 88    GEOID MODEL  G99NC
COORDINATE UNITS   US SURVEY FEET
DISTANCE UNITS     US SURVEY FEET
HEIGHT UNITS     US SURVEY FEET


LOCAL SITE INFORMATION
LOCALIZED AROUND    M-77

LATITUDE     35°17'53.47519"N
LONGITUDE    81°32'14.87764"W
SITE SCALE FACTOR     1.0001559240
HEIGHT       747.565SFT


THE NORTH CAROLINA DEPARTMENT OF TRANSPORTATION USES A LOCALIZED
COORDINATE SYSTEM
WHICH IS VERY SIMILAR TO NORTH CAROLINA ZONE 3200 FROM WHICH IT IS
DERIVED.
PLEASE TAKE CARE IN UTILIZING THESE COORDINATES TO ELIMINATE CONFUSION OF
THE TWO SYSTEMS.
THIS FILE IS TO AID IN THE USE OF REAL TIME KINEMATIC (RTK) GPS DURING
CONSTRUCTION LAYOUT.


DATUM TRANSFORMATION PARAMETERS

DATUM TRANSFORMATION COMPUTATION NOT REQUESTED

UPDATED DEFAULT PROJECTION (TRANSVERSE MERCATOR) DEFINITION

UPDATED DEFAULT PROJECTION NOT REQUESTED

HORIZONTAL ADJUSTMENT PARAMETERS

NORTHING COORDINATE OF ROTATION CENTER      564891.530SFT
EASTING COORDINATE OF ROTATION CENTER       1248940.722SFT
ROTATION ABOUT THE CENTER POINT      0°00'00"
TRANSLATION NORTH    -1.241SFT
TRANSLATION EAST      0.938SFT
SCALE FACTOR      1.00015517


VERTICAL ADJUSTMENT PARAMETERS

NORTHING COORDINATE OF ORIGIN POINT      568742.403SFT
EASTING COORDINATE OF ORIGIN POINT       1203773.275SFT
VERTICAL SEPARATION AT ORIGIN      0.211SFT
SLOPE NORTH      5.123PPM
SLOPE EAST      -1.547PPM


GEOID MODEL DEFINITION

G99NC

RESIDUAL DIFFERENCES BETWEEN GPS (WGS84) AND LOCAL COORDINATES

SUMMARY

MAXIMUM          ERROR        ROOT MEAN SQUARE        POINT
HORIZONTAL       0.050SFT        0.009                GPS15
VERTICAL         0.045SFT        0.008                MCBRAYER
THREE-DIMENL     0.057SFT        0.012                MCBRAYER
```

Point Residuals

WGS84 Coordinates	Calculated point	Local
Point MCBRAYER Latitude 35 16'59.95696"N Longitude 81 40'06.15783"W Height 751.773sft	Easting 1203773.275sft Elevation 856.819sft Horz error 0.035sft Vert error 0.045sft 3D error 0.057sft	Northing 568742.428sft Easting 1203773.299sft Elevation 856.774sft Utilized Horz and Vert Quality Survey quality
Point LATT-2 Latitude 35 19'02.46223"N Longitude 81 39'42.94665"W Height 820.821sft	Northing 581073.131sft Easting 1206029.125sft Elevation 925.966sft Horz error 0.009sft Vert error 0.004sft 3D error 0.010sft	Point LATT-2 Local Northing 581073.122sft Easting 1206029.126sft Elevation 925.970sft Utilized Horz and Vert Quality Survey quality
Point GPS4 Latitude 35 18'17.64678"N Longitude 81 37'04.79740"W Height 770.106sft	Northing 576194.767sft Easting 1219011.564sft Elevation 875.093sft Horz error 0.024sft Vert error 0.017sft 3D error 0.029sft	Point R2707-4 Local Northing 576194.769sft Easting 1219011.540sft Elevation 875.110sft Utilized Horz and Vert Quality Survey quality
Point M77 Latitude 35 17'53.47450"N Longitude 81 32'14.87790"W Height 747.535sft	Northing 573127.494sft Easting 1242971.651sft Elevation 852.249sft Horz error 0.029sft Vert error 0.030sft 3D error 0.042sft	Point M77 Local Northing 573127.522sft Easting 1242971.658sft Elevation 852.279sft Utilized Horz and Vert Quality Survey quality
Point WALLACE Latitude 35 21'21.03039"N Longitude 81 30'27.11508"W Height 863.861sft	Northing 593880.476sft Easting 1252431.750sft Elevation 968.736sft Horz error 0.018sft Vert error 0.001sft 3D error 0.018sft	Point WALLACE Local Northing 593880.490sft Easting 1252431.739sft Elevation 968.735sft Utilized Horz and Vert Quality Survey quality
Point GPS15 Latitude 35 18'48.68592"N Longitude 81 29'24.43979"W Height 832.090sft	Northing 578350.583sft Easting 1257235.473sft Elevation 936.723sft Horz error 0.050sft Vert error 0.024sft 3D error 0.056sft	Point R2707-15 Local Northing 578350.547sft Easting 1257235.438sft Elevation 936.747sft Utilized Horz and Vert Quality Survey quality
Point 2JS13 Latitude 35 14'52.39137"N Longitude 81 25'26.08075"W Height 770.050sft	Northing 553976.489sft Easting 1276400.935sft Elevation 874.121sft Horz error 0.021sft Vert error 0.044sft 3D error 0.049sft	Point 2-JS-13 Local Northing 553976.474sft Easting 1276400.950sft Elevation 874.077sft Utilized Horz and Vert Quality Survey quality
Point GPS23 Latitude 35 14'49.16395"N Longitude 81 25'35.37802"W Height 763.346sft	Northing 553669.095sft Easting 1275622.024sft Elevation 867.424sft Horz error 0.017sft Vert error 0.007sft 3D error 0.018sft	Point R2707-23 Local Northing 553669.094sft Easting 1275622.041sft Elevation 867.417sft Utilized Horz and Vert Quality Survey quality
Point R26254 Latitude 35 13'23.79431"N Longitude 81 23'00.98772"W Height 846.141sft	Northing 544729.486sft Easting 1288217.128sft Elevation 949.783sft Horz error 0.031sft Vert error 0.017sft 3D error 0.036sft	Point R2625-4 Local Northing 544729.474sft Easting 1288217.099sft Elevation 949.766sft Utilized Horz and Vert Quality Survey quality
Point W200 Latitude 35 10'05.36224"N Longitude 81 27'02.08704"W Height 776.498sft	Northing 525158.972sft Easting 1267723.676sft Elevation 880.183sft Horz error 0.036sft Vert error 0.039sft 3D error 0.053sft	Point W200 Local Northing 525158.975sft Easting 1267723.712sft Elevation 880.222sft Utilized Horz and Vert Quality Survey quality

DATUM DESCRIPTION

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LOCALIZED HORIZONTAL GROUND DISTANCE FROM
"M 77" TO -L- L STATION 384+00.00 IS
N 39 19 10 W 10435.24'
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

SEE SHEET 1C-1 FOR NOTES

8/24/15
8/4/2017
8:\4401\01\CADD\R2707C\Roadway\Proj\r2707c_ls_1C-2.dgn
mmadlin

PROJECT REFERENCE NO.	SHEET NO.
R-2707C	1C-3
Location and Surveys	

SURVEY CONTROL SHEET

BL

POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
8	R2707-8	580239.3390	1233459.6170	811.53	353+64.47	197.06 RT
90	BL-90	580499.7062	1234006.2199	807.65	359+46.93	36.13 RT
91	BL-91	580653.6979	1234513.7582	763.47	364+74.97	0.87 RT
92	BL-92	580787.4190	1234972.5183	778.06	369+52.81	1.52 RT
93	BL-93	581010.5855	1235703.0526	769.83	377+16.66	2.09 LT
94	BL-94 DESTROYED	581155.9601	1236203.9489	717.34	382+38.24	1.97 RT
95	BL-95	581329.7707	1236682.0576	757.35	387+42.67	51.04 LT
96	BL-96	581363.0525	1237129.8424	807.57	391+87.57	2.61 LT
97	BL-97	581385.3270	1237747.7834	819.92	398+02.70	60.93 RT
98	BL-98	581441.3744	1237989.0270	806.29	400+49.35	38.46 RT
99	BL-99	581562.7353	1238412.4954	744.00	404+85.45	23.73 LT
100	BL-100	581591.7439	1238860.7158	784.24	409+33.42	8.94 RT
101	BL-101	581648.8387	1239202.4984	796.99	412+79.80	0.79 LT
102	BL-102	581705.7306	1239625.2933	803.77	417+06.40	0.78 RT
103	BL-103	581772.0457	1240024.3920	827.59	421+11.02	8.77 LT
104	BL-104	581822.4752	1240313.2576	806.90	424+04.65	1.87 LT
105	BL-105	581967.2211	1240873.6825	823.13	429+80.83	31.42 RT
106	BL-106	582168.4381	1241395.8497	861.73	435+37.69	63.59 RT
107	BL-107	582285.2092	1241545.5699	840.76	437+22.68	20.79 RT
108	BL-108	582473.0270	1241819.6134	814.22	440+50.35	34.06 LT
109	BL-109	582576.3191	1242106.1363	844.48	443+53.71	7.00 LT
110	BL-110	582713.1169	1242666.2453	872.95	449+20.25	104.58 RT
111	BL-111	582986.9774	1243304.8822	806.47	456+29.10	59.39 RT
112	BL-112	583145.9650	1243910.8472	843.04	462+58.75	2.16 RT
113	BL-113	583149.2337	1244331.1892	859.77	466+78.99	20.44 RT
114	BL-114	583190.9681	1244640.3908	878.52	469+89.68	8.26 LT
9	R2707-9	583249.2080	1244885.0920	873.64	472+36.61	56.17 LT
115	BL-115	583217.3760	1245136.1329	872.98	474+86.09	13.81 LT
116	BL-116	583260.8385	1245636.1001	882.46	479+87.44	36.22 LT
117	BL-117	583251.6341	1246086.1543	901.61	484+36.71	8.11 LT
118	BL-118	583252.7603	1246653.9656	845.94	490+04.07	14.63 RT
119	BL-119	583294.6886	1247010.7034	863.34	493+62.25	12.27 LT
120	BL-120	583280.4906	1247377.0770	873.93	497+27.71	17.31 RT
121	BL-121	583297.0021	1247639.3506	886.22	499+90.44	11.84 RT
122	BL-122	583315.3048	1247870.6946	871.31	502+22.35	3.27 RT
123	BL-123	583345.0360	1248181.1793	856.12	505+33.81	13.39 LT
124	BL-124	583335.5867	1248558.3513	865.43	509+10.59	3.53 RT
125	BL-125	583337.7387	1249001.8039	890.12	513+52.83	20.66 LT
126	BL-126	583279.5289	1249369.4328	920.13	517+23.96	7.12 LT
127	BL-127	583157.5247	1249761.3805	924.66	521+33.07	39.20 RT
128	BL-128	583014.5821	1250250.9513	937.38	526+47.08	46.81 RT
11	R2707-11	582905.2970	1250689.3060	939.71	530+97.99	2.54 LT
129	BL-129	582303.8927	1251799.9209	898.20	543+59.92	61.84 RT
130	BL-130	582207.0337	1252147.2268	907.55	547+14.52	3.44 LT
131	BL-131	581944.3099	1252696.4446	869.41	553+23.32	8.22 LT
132	BL-132	581782.8872	1253038.7789	895.88	557+01.13	18.79 LT
133	BL-133	581554.3763	1253392.2681	910.32	561+21.07	4.13 RT
134	BL-134	581124.4521	1253975.3773	924.95	568+47.01	33.79 RT
135	BL-135	580389.3884	1255061.3326	958.59	581+53.88	85.41 LT
136	BL-136	579461.0402	1256078.9467	941.54	595+29.89	22.61 LT
137	BL-137	578867.7314	1256823.1962	926.92	604+81.49	42.52 LT
138	BL-138	578626.3585	1257073.3897	943.37	608+28.19	16.99 LT
15	R2707-15	578350.5470	1257235.4380	936.75	611+29.17	91.39 RT
139	BL-139	577678.5653	1258118.7960	935.00	622+40.66	14.80 RT
140	BL-140	577242.6811	1258514.4410	926.25	628+29.98	5.53 LT
141	BL-141	576613.2984	1258898.3305	882.15	635+67.67	1.95 RT
142	BL-142	576330.4614	1259031.0892	875.23	638+80.35	3.32 RT
143	BL-143	575990.9017	1259165.4912	862.61	642+45.78	0.53 RT
144	BL-144	575671.8882	1259248.8384	824.00	645+75.82	13.01 RT
145	BL-145	575448.0445	1259298.4589	860.79	648+05.84	16.26 RT
146	BL-146	575239.0736	1259351.7873	868.20	650+21.48	2.00 RT
147	BL-147	574934.4050	1259379.8653	857.12	653+27.80	12.67 RT
148	BL-148	573969.4460	1259519.5048	887.83	662+85.09	134.05 LT
149	BL-149	573599.5193	1259358.5836	884.28	666+66.29	2.05 LT
150	BL-150	572582.7492	1259272.4626	902.85	676+86.67	5.65 RT
151	BL-151	572145.5097	1259262.4435	884.12	681+23.39	17.98 LT
152	BL-152	571156.8899	1259127.9022	900.20	691+19.43	40.16 RT
153	BL-153	570536.7910	1259121.0319	893.67	697+38.22	0.66 LT

BY9

POINT	DESC.	NORTH	EAST	ELEVATION	Y1 STATION	OFFSET
447	BY9-447	581959.6179	1233724.2499	806.04	13+07.11	25.52 LT
360	BY9-360	581416.7323	1233713.6148	799.32	18+47.55	18.70 LT
361	BY9-361	580831.7503	1233650.7821	803.25	24+33.70	27.88 LT
Y8	R2707-8	580239.3390	1233459.6170	811.53	30+53.94	24.73 RT
7	R2707-7	579006.8290	1233137.4580	816.98	43+26.78	16.91 RT

BY10

POINT	DESC.	NORTH	EAST	ELEVATION	Y2 STATION	OFFSET
362	BY10-362	582016.7270	1236469.3313	733.57	21+24.92	25.45 RT
363	BY10-363	581443.2347	1236575.2458	752.92	27+03.59	19.14 RT
Y95	BL-95	581329.7707	1236682.0576	757.35	28+55.90	11.94 LT
364	BY10-364	581047.9599	1236951.0094	777.81	32+45.66	18.58 RT
365	BY10-365	580920.1510	1237376.2533	794.84	36+85.68	16.06 RT
366	BY10-366	580898.8189	1238009.8400	810.01	43+21.35	12.96 RT

BY11

POINT	DESC.	NORTH	EAST	ELEVATION	Y3 STATION	OFFSET
367	BY11-367	583637.4924	1242492.3408	790.18	12+47.31	14.68 RT
368	BY11-368	582895.4278	1242678.1550	843.43	20+13.07	2.52 RT
369	BY11-369	582330.9054	1242876.0145	867.50	26+10.17	15.99 LT

BY12

POINT	DESC.	NORTH	EAST	ELEVATION	Y4 STATION	OFFSET
10	R2707-10	584283.7960	1244462.4320	848.40	11+40.49	12.95 LT
Y9	R2707-9	583249.2080	1244885.0920	873.64	22+57.67	15.42 RT
370	BY12-370	582773.3240	1245334.9653	886.89	29+16.61	16.72 RT

BY13

POINT	DESC.	NORTH	EAST	ELEVATION	Y5 STATION	OFFSET
446	BY13-446	584580.8466	1248605.7669	909.03	OUTSIDE PROJECT LIMITS	
445	BY13-445	584304.4307	1248714.6376	907.35	OUTSIDE PROJECT LIMITS	
371	BY13-371	583598.6206	1248806.7294	872.74	14+32.09	12.13 RT
372	BY13-372	583324.3422	1248804.8770	867.98	18+40.17	13.67 RT
373	BY13-373	583022.2766	1248395.0999	882.91	21+59.93	16.42 RT

BY14

POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
374	BY14-374	583104.1386	1249772.4054	924.89	521+56.06	88.74 RT
375	BY14-375	583058.4136	1250347.7930	938.38	527+25.26	25.42 LT
YA11	R2707-11	582905.2970	1250689.3060	939.71	530+97.99	2.54 LT

BY15

POINT	DESC.	NORTH	EAST	ELEVATION	Y9 STATION	OFFSET
12	R2707-12	583972.9870	1251363.4710	946.57	11+48.85	37.42 LT
Y11	R2707-11	582905.2970	1250689.3060	939.71	24+09.41	36.43 RT
376	BY15 376	582214.4470	1250314.3952	942.30	31+96.56	27.78 RT

BY16

POINT	DESC.	NORTH	EAST	ELEVATION	Y8 STATION	OFFSET
377	BY16-377	582642.2311	1251139.3362	916.15	14+87.27	12.12 RT
378	BY16-378	582372.7849	1251689.1044	903.34	20+97.18	13.27 LT
379	BY16-379	581686.3248	1252099.8244	898.14	28+97.72	16.67 LT
380	BY16-380	580939.4936	1252256.6954	872.55	36+58.40	11.24 RT
381	BY16-381	580494.7128	1252484.9895	867.89	41+57.06	11.69 RT

BY17

POINT	DESC.	NORTH	EAST	ELEVATION	Y10 STATION	OFFSET
382	BY17-382	580830.0080	1255615.6361	949.98	14+88.10	47.25 RT
383	BY17-383	580525.8170	1255408.7601	963.67	18+51.60	15.16 RT
384	BY17-384	580111.6458	1255071.1476	952.83	23+86.98	12.51 RT

BY18

POINT	DESC.	NORTH	EAST	ELEVATION	Y11REV STATION	OFFSET
385	BY18-385	581316.7411	1255492.7094	945.74	11+85.85	26.14 RT
Y382	BY18-382	580830.0080	1255615.6361	949.98	16+86.19	22.41 LT
386	BY18-386	580049.9873	1255821.6808	948.13	24+92.62	21.86 LT
387	BY18-387	579372.8619	1255991.3208	944.05	31+90.65	16.22 LT
388	BY18-388	578769.4032	1256126.9294	945.65	38+08.83	3.89 RT
389	BY18-389	578369.5059	1256607.4114	941.69	44+35.43	259.63 LT
390	BY18-390	578097.5529	1257088.5263	931.89	49+49.42	498.12 LT
391	BY18-391	577786.5236	1257611.8436	927.46	57+93.29	483.64 LT
392	BY18-392	577120.9627	1257852.4468	919.20	62+62.92	117.95 LT

BY19

POINT	DESC.	NORTH	EAST	ELEVATION	Y13 STATION	OFFSET
393	BY19-393	579619.7713	1256925.2185	888.19	15+79.75	20.75 LT
394	BY19-394	579436.7322	1256472.5195	897.29	20+46.70	11.51 LT
395	BY19-395	579300.6353	1255861.6691	905.97	26+71.73	9.34 RT

BY20

POINT	DESC.	NORTH	EAST	ELEVATION	Y14 STATION	OFFSET
396	BY20-396	579898.1427	1259247.5429	889.63	13+37.19	14.97 RT
16	R2707-16 DESTROYED	579290.1370	1258413.5100	889.77	23+68.15	17.87 RT
397	BY20-397	578741.6752	1257692.5969	919.49	32+71.16	43.56 RT
Y15	R2707-15	578350.5470	1257235.4380	936.75	38+79.16	17.83 LT
398	BY20-398	577799.1363	1256515.1666	938.54	47+91.91	21.29 LT

BY21

POINT	DESC.	NORTH	EAST	ELEVATION	Y15 STATION	OFFSET
Y397	BY20-397	578741.6752	1257692.5969	919.49	OUTSIDE PROJECT LIMITS	
399	BY21-399	578322.9564	1258287.5101	920.87	20+79.21	33.92 LT
400	BY21-400	578213.3559	1258880.9382	908.36	14+77.81	10.71 RT
401	BY21-401	578058.7883	1259375.4708	899.89	OUTSIDE PROJECT LIMITS	
402	BY21-402	577964.9514	1260185.0722	880.67	OUTSIDE PROJECT LIMITS	

BY22

POINT	DESC.	NORTH	EAST	ELEVATION	Y15 STATION	OFFSET
Y399	BY21-399	578322.9564	1258287.5101	920.87	20+79.21	33.92 LT
403	BY22-403	578636.9019	1258470.3705	893.14	19+82.33	316.36 RT
404	BY22-404	578828.6352	1259047.7047	874.42	14+72.45	648.17 RT
405	BY22-405	578659.0744	1259260.3524	885.34	12+23.76	538.05 RT

BY35

POINT	DESC.	NORTH	EAST	ELEVATION	Y6A STATION	OFFSET
36	BY35-36	583623.3056	1248206.1398	858.05	10+11.38	15.64 RT
35	BY35-35	583533.3793	1248717.5771	867.12	14+61.65	141.02 RT
Y371	BY13-371	583598.6206	1248806.7294	872.74	15+43.99	144.01 RT

BM17 ELEVATION - 707.47
N 581329 E 1236485
L STATION 385+52 94 LEFT
8 INCH NAIL IN BASE OF 20 INCH SYCAMORE

BM18 ELEVATION - 778.74
N 581170 E 1236857
Y2 STATION 30+98 28 LEFT
8 INCH NAIL IN BASE OF 20 INCH WHITE OAK

BM19 ELEVATION - 743.84
N 581644 E 1238548
L STATION 406+30 86 LEFT
8 INCH NAIL IN BASE OF 15 INCH WHITE OAK

BM20 ELEVATION - 786.98
N 581893 E 1242601
L STATION 427+00 8 RIGHT
8 INCH NAIL IN ROOT OF 24 INCH WHITE OAK

BM21 ELEVATION - 798.79
N 582415 E 1241740
L STATION 439+54 15 LEFT
8 INCH NAIL IN BASE OF 24 INCH RED OAK

BM22 ELEVATION - 830.34
N 583077 E 1242589
Y3 STATION 18+13 31 RIGHT
8 INCH NAIL IN ROOT OF 10 INCH POPLAR

BM23 ELEVATION - 788.05
N 582919 E 1243124
L STATION 454+33 76 RIGHT
8 INCH NAIL IN TOP OF 15 INCH MAPLE STUMP

BM24 ELEVATION - 863.23
N 583410 E 1248643
L STATION 509+93 73 LEFT
CHISLED X ON HEADWALL 9.5 FEET FROM LEFT EP OF SR 1842

BM25 ELEVATION - 870.32
N 581826 E 1252767
L STATION 554+39 67 RIGHT
8 INCH NAIL BASE OF 24 INCH POPLAR

BM26 ELEVATION - 967.25
N 580542 E 1255352
Y10 STATION 18+73 70 RIGHT
8 INCH NAIL IN ROOT OF 12 INCH WILD CHERRY

BM27 ELEVATION - 944.58
N 579371 E 1255992
Y11REV STATION 31+93 16 LEFT
CHISLED SQUARE WITH X ON THE NORTHEAST WINGWALL OF BRIDGE THAT CROSSSES RAILROAD

BM28 ELEVATION - 878.16
N 576356 E 1259016
L STATION 638+51 7 RIGHT
8 INCH NAIL IN ROOT OF 12 INCH PINE

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCGS FOR MONUMENT "M 77"
WITH NAD 83/95 STATE PLANE GRID COORDINATES OF
NORTHING: 573127.522(ft) EASTING: 1242971.658(ft)
ELEVATION: 852.279(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99984410
THE N.C. LAMBERT GRID BEARING AND
LOCALIZED HORIZONTAL GROUND DISTANCE FROM
"M 77" TO -L- STATION 384+00.00 IS
N 39° 19'10" W 10435.24'
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

SEE SHEET 1C-1 FOR NOTES

8/24/15
R-2707C_SHEET_1C-3_01\CADD\R2707C\Roadway\Proj\r2707c_ls_1C-3.dgn
$$USER$$

SURVEY CONTROL SHEET

L

TYPE	STATION	NORTH	EAST
POT	296+88.89	579458.5952	1227834.5403
PC	357+87.23	580506.0876	1233842.2410
PT	366+97.36	580715.3954	1234727.4288
PC	381+28.31	581126.9908	1236097.9065
PT	393+07.22	581377.7976	1237248.6261
TS	419+08.08	581734.1388	1239824.9615
SC	421+58.08	581771.0885	1240072.2038
CS	430+44.59	582020.8044	1240920.7418
ST	432+94.59	582123.6678	1241148.5864
TS	447+89.28	582753.5157	1242504.0887
SC	450+39.28	582856.3791	1242731.9333
CS	462+90.19	583150.5940	1243942.0136
ST	465+40.19	583163.8241	1244191.6514
TS	505+06.12	583330.4991	1248154.0693
SC	507+06.12	583337.7417	1248353.9354
CS	533+48.37	582802.0706	1250917.4681
ST	535+48.37	582715.4012	1251097.7106
PC	554+11.59	581898.2146	1252772.1633
PT	572+44.47	580905.3725	1254307.6185
TS	616+11.49	578112.3161	1257664.6590
SC	618+61.49	577950.6863	1257855.3726
CS	659+83.39	574280.7078	1259406.7749
ST	662+33.39	574031.2915	1259389.8218
POT	716+72.56	568608.2255	1258971.6556

LREV1

TYPE	STATION	NORTH	EAST
POT	0+00.00	576906.6470	1219182.3540
PC	73+70.86	579060.7305	1226231.4294
PT	102+11.45	579720.6134	1228992.4403
PC	130+42.44	580206.8973	1231781.3562
CS	138+27.60	580316.3738	1232558.7081
SC	140+07.60	580333.5427	1232737.8817
CS	143+35.79	580371.5715	1233063.7838
ST	145+15.79	580401.3070	1233241.3075
POT	151+25.79	580506.0876	1233842.2410

Y

TYPE	STATION	NORTH	EAST
POT	10+00.00	581893.4763	1233490.5341
POT	12+19.84	581965.1939	1233698.3478

Y1

TYPE	STATION	NORTH	EAST
POT	10+00.00	582264.1692	1233673.6746
TS	11+43.33	582121.3856	1233686.1555
SC	12+48.33	582016.7467	1233694.8461
PCC	18+13.03	581452.5049	1233697.3263
CS	29+90.03	580294.1431	1233500.7149
ST	30+40.03	580246.0050	1233487.1977
PC	36+79.85	579630.2586	1233313.3290
PT	38+00.10	579514.3104	1233281.4627
TS	39+84.08	579336.5776	1233233.9508
SC	40+34.08	579288.2551	1233221.1084
CS	44+25.51	578906.5638	1233134.6753
ST	44+75.51	578857.4228	1233125.4473
POT	46+58.19	578677.8338	1233091.9933

Y1DET

TYPE	STATION	NORTH	EAST
POT	10+00.00	581495.4609	1233699.9109
PC	11+41.18	581354.4949	1233692.1815
PT	13+83.03	581114.5517	1233714.4868
PC	14+77.62	581022.6799	1233736.9855
PT	18+90.25	580614.4183	1233732.3162
PC	21+48.46	580365.0854	1233665.1763
PT	24+70.70	580078.1266	1233523.1714
PC	25+28.54	580032.2921	1233487.8906
PT	28+40.81	579754.9508	1233348.5384
POT	29+70.38	579630.2586	1233313.3290

Y2

TYPE	STATION	NORTH	EAST
POT	10+00.00	583099.2560	1236786.8870
TS	19+14.64	582218.3350	1236540.8433
SC	20+64.64	582072.8974	1236504.2977
CS	36+66.39	580937.6717	1237358.1190
ST	38+16.39	580932.4384	1237507.9866
TS	40+51.11	580930.3901	1237742.6981
SC	41+81.11	580927.1262	1237872.6432
CS	44+89.38	580873.7402	1238175.5420
ST	46+19.38	580832.3818	1238298.7729
POT	46+51.63	580821.6205	1238329.1763

Y3

TYPE	STATION	NORTH	EAST
POT	10+00.00	583880.4785	1242449.7690
TS	10+17.69	583863.4111	1242454.4221
SC	11+67.69	583718.0952	1242491.5528
CS	12+18.82	583668.0054	1242501.8007
ST	13+68.82	583519.7831	1242524.7252
TS	13+93.00	583495.8359	1242528.0376
SC	15+43.00	583347.5777	1242550.7470
CS	16+94.67	583199.7768	1242584.6067
ST	18+44.67	583056.4184	1242628.7038
TS	24+29.02	582500.4533	1242808.6101
SC	25+54.02	582381.1179	1242845.7932
CS	29+38.20	582003.7568	1242914.3270
ST	30+63.20	581878.9676	1242921.4803
POT	33+07.74	581634.6933	1242932.8110

Y4

TYPE	STATION	NORTH	EAST
POT	10+00.00	584407.5165	1244394.6287
PC	13+71.86	584066.3854	1244542.6565
PT	13+99.44	584041.1152	1244553.6943
TS	22+23.25	583286.9748	1244885.2621
SC	23+73.25	583151.7671	1244950.0665
CS	26+56.14	582936.1921	1245130.7418
ST	28+06.14	582848.7519	1245252.5406
POT	36+67.87	582368.6570	1245968.1418

Y4REV

TYPE	STATION	NORTH	EAST
POT	10+00.00	584407.5165	1244394.6287
TS	15+02.00	583947.0042	1244594.4598
SC	16+22.00	583837.4327	1244643.3761
CS	20+64.99	583462.1995	1244876.9601
ST	21+84.99	583369.9388	1244953.6850
TS	28+35.99	582873.7892	1245375.1544
SC	29+55.99	582783.1555	1245453.7946
CS	33+56.31	582516.5675	1245751.4556
ST	34+76.31	582448.3549	1245850.1763
POT	36+18.68	582368.6570	1245968.1418

Y5

TYPE	STATION	NORTH	EAST
POT	10+00.00	583994.3022	1248867.5623
TS	10+38.45	583957.0472	1248877.0814
SC	12+38.45	583759.8525	1248901.9059
CS	13+29.15	583673.4982	1248875.6419
ST	15+29.15	583523.5183	1248745.2270
TS	17+64.19	583366.7569	1248570.1042
SC	18+89.19	583277.9294	1248482.4287
CS	20+40.46	583141.6279	1248419.7851
ST	22+15.46	582967.2480	1248413.9835
PC	24+90.82	582692.2784	1248428.6347
PT	26+25.27	582557.8875	1248428.6929
POT	26+48.42	582534.7760	1248427.4815

Y6

TYPE	STATION	NORTH	EAST
POT	10+00.00	583643.8540	1248201.0920
PC	10+58.05	583625.1957	1248256.0579
PT	11+69.75	583595.2670	1248363.6129
PC	14+44.61	583536.4784	1248632.1154
PT	15+24.85	583499.6521	1248702.3332
POT	15+35.72	583492.2384	1248710.2833

Y6A

TYPE	STATION	NORTH	EAST
POT	10+00.00	583641.7745	1248200.3909
PC	10+93.66	583611.6659	1248289.0786
PCC	20+67.38	584184.4893	1248796.4916
PT	21+25.54	584236.2182	1248769.9259
POT	22+42.82	584339.1055	1248713.6338

Y7

TYPE	STATION	NORTH	EAST
POT	48+89.23	577757.2279	1256424.7861
EQB	135+09.49	583128.6530	1249682.6375
EQA	10+56.59	583128.6530	1249682.6375
PT	12+21.93	583109.8890	1249846.9025
PC	12+69.68	583105.3258	1249894.4383
PT	13+36.36	583098.3759	1249960.7481
PC	14+11.54	583089.8860	1250035.4555
PT	15+39.55	583080.7741	1250163.0934
PC	17+22.98	583075.3855	1250346.4500
PT	20+79.55	582968.2168	1250681.6653
POT	21+53.36	582927.1854	1250743.0156

Y7DET

TYPE	STATION	NORTH	EAST
POT	10+00.00	582055.0750	1250243.7400
PC	10+82.96	582122.4045	1250292.2056
PT	14+99.44	582506.5810	1250441.0585
PC	15+73.02	582579.6748	1250449.5303
PT	18+89.97	582879.7408	1250545.2808
PC	19+82.64	582960.9596	1250589.9022
PT	22+87.23	583194.8450	1250782.2826
PC	23+91.85	583261.9645	1250862.5370
PT	26+96.45	583495.8497	1251054.9172

Y8

TYPE	STATION	NORTH	EAST
POT	10+00.00	582927.1854	1250743.0156
PC	14+31.46	582682.7454	1251098.5579
PT	15+58.07	582618.9486	1251207.7816
TS	18+43.57	582493.4837	1251464.2421
SC	19+93.57	582423.1287	1251596.6431
CS	23+43.05	582177.3432	1251840.5901
ST	24+93.05	582044.4177	1251909.9491
TS	28+31.78	581739.0383	1252056.5150
SC	29+31.78	581648.2561	1252098.4293
CS	31+32.09	581457.9253	1252160.0123
ST	32+32.09	581359.7967	1252179.2216
PC	34+92.58	581103.4357	1252225.4420
PT	38+47.37	580770.8908	1252344.3878
PC	42+07.50	580456.3518	1252519.7621
PT	45+65.90	580116.8743	1252626.7609
POT	46+06.18	580076.8070	1252630.8632

Y8-REV

TYPE	STATION	NORTH	EAST
POT	10+00.00	582112.5805	1250282.9417
PC	31+07.23	581026.0321	1252088.4453
PT	34+97.55	580748.6576	1252356.7841
POT	38+22.49	580464.8532	1252515.0220

Y8A

TYPE	STATION	NORTH	EAST
POT	33+00.00	581292.9645	1252191.2711
PC	33+30.33	581263.1171	1252196.6524
PT	35+58.07	581045.2928	1252152.2286
POT	36+08.71	581002.9477	1252124.4402

Y9

TYPE	STATION	NORTH	EAST
POT	10+00.00	584121.3710	1251402.6948
TS	29+91.21	582378.4196	1250439.8723
SC	31+71.21	582221.7882	1250351.1944
CS	36+74.49	581813.8587	1250057.5325
ST	38+54.49	581680.0614	1249937.1355
POT	39+05.43	581642.5545	1249902.6675

SEE SHEET 1C-1 FOR NOTES

8/24/15
4/14/2017
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PROJECT REFERENCE NO.	SHEET NO.
R-2707C	1C-5
Location and Surveys	

SURVEY CONTROL SHEET

Y9DET

TYPE	STATION	NORTH	EAST
PC	10+00.00	583497.8249	1251058.2421
PT	13+03.07	583265.3128	1250866.5405
PC	14+12.72	583194.9663	1250782.4276
PT	17+17.69	582960.7956	1250589.8122
PC	18+09.97	582879.9131	1250545.3754
PT	21+27.31	582579.4795	1250449.5076
PC	21+91.85	582515.3675	1250442.0769
PT	25+51.31	582178.5486	1250324.9846

Y10

TYPE	STATION	NORTH	EAST
POT	10+00.00	581149.5190	1255988.7290
PC	11+12.94	581072.6750	1255905.9651
PT	11+78.48	581026.2071	1255859.7718
PC	15+52.27	580750.7813	1255607.0684
PT	16+80.81	580652.2957	1255524.5301
PC	19+01.74	580476.7691	1255390.3555
PT	20+51.90	580359.0880	1255297.0967
PC	20+71.85	580343.6776	1255284.4399
PT	26+81.40	579884.9386	1254883.2016
POT	27+24.56	579853.3483	1254853.7920

Y11A

TYPE	STATION	NORTH	EAST
POT	10+00.00	581502.9750	1255522.8175
PC	10+89.03	581413.9968	1255519.7078
PT	16+55.71	580853.4064	1255585.9061
PC	18+68.36	580648.4644	1255642.6297
PT	20+29.96	580492.3715	1255684.4537
PC	36+87.36	578887.9635	1256100.2275
PT	40+02.45	578627.0560	1256267.3770
PC	40+17.01	578617.8447	1256278.6561
PT	42+74.73	578466.3832	1256487.0044
PC	43+15.65	578444.2202	1256521.4021
PT	45+71.97	578311.8966	1256740.8831
POT	48+44.95	578177.9846	1256978.7651

Y11B

TYPE	STATION	NORTH	EAST
POT	10+00.00	578182.1706	1256984.2764
PC	12+79.62	578055.2187	1257233.4115
PT	17+36.89	577781.4053	1257596.7477
PC	17+36.89	577781.4053	1257596.7477
PT	20+22.83	577545.9569	1257757.0364
PC	20+22.83	577545.9569	1257757.0364
PT	24+24.26	577161.0816	1257863.7323
POT	33+02.80	576286.5805	1257947.8535

Y11REV

TYPE	STATION	NORTH	EAST
POT	10+00.00	581502.9750	1255522.8175
PC	10+89.03	581413.9968	1255519.7078
PT	16+55.71	580853.4064	1255585.9061
PC	18+68.36	580648.4644	1255642.6297
PT	20+29.96	580492.3715	1255684.4537
TS	38+44.84	578735.5196	1256139.7326
SC	40+44.84	578544.0365	1256197.0855
CS	41+97.28	578407.0458	1256263.5243
ST	43+97.28	578243.4507	1256378.3799
POT	47+33.31	577975.8538	1256581.6244
POT	48+13.31	577906.0979	1256620.7921
POT	48+93.31	577836.8414	1256660.8363
TS	48+93.94	577836.3417	1256661.2158
SC	50+93.94	577682.6469	1256788.9514
CS	52+78.59	577568.5297	1256933.5338
ST	54+78.59	577479.9925	1257112.6975
TS	56+76.56	577400.1504	1257293.8563
SC	58+76.56	577312.7659	1257473.6322
CS	66+22.86	576725.3412	1257898.1542
ST	68+22.86	576527.2240	1257924.7055
POT	71+10.16	576241.2464	1257952.2146

Y12

TYPE	STATION	NORTH	EAST
POT	0+00.00	580263.9346	1255218.2379
PC	2+89.04	580029.3301	1255387.0717
PT	5+16.74	579955.6180	1255588.4612
POT	7+44.32	580010.8755	1255809.2308

Y13

TYPE	STATION	NORTH	EAST
POT	10+00.00	580006.4360	1257338.9770
PC	10+47.16	579971.9267	1257306.8299
PT	21+39.40	579422.7347	1256379.8995
POT	27+98.10	579260.4520	1255741.4975

Y14

TYPE	STATION	NORTH	EAST
POT	10+00.00	580048.9095	1259550.1115
TS	11+35.75	579984.4727	1259430.6326
SC	12+25.75	579941.3720	1259351.6251
CS	16+20.04	579728.0509	1259020.3359
ST	17+10.04	579673.9604	1258948.4049
PC	28+37.85	578991.8119	1258050.2708
PT	31+02.10	578823.0143	1257847.0780
PC	33+51.23	578655.6115	1257662.5705
PT	33+72.63	578643.0311	1257645.3100
POT	34+58.19	578600.3055	1257571.1768
PC	35+38.15	578568.5038	1257497.8118
PT	35+62.81	578556.0847	1257476.5815
PC	39+89.18	578298.1968	1257137.0397
PT	40+13.84	578285.7777	1257115.8093
POT	40+93.80	578253.9761	1257042.4443
PC	42+33.73	578169.3421	1256931.0130
PRC	43+33.32	578101.0962	1256858.7341
PT	44+64.81	578006.8043	1256767.2186
PC	45+04.94	577979.8427	1256737.5021
PT	45+25.58	577967.4829	1256721.0120
POT	46+43.10	577906.0973	1256620.7913
POT	48+89.23	577757.2279	1256424.7861
POT	54+69.23	577409.1472	1255960.8467
POT	56+60.02	577294.1229	1255808.6269

Y15

TYPE	STATION	NORTH	EAST
POT	10+00.00	578081.8790	1259340.4265
TS	20+25.30	578341.7705	1258348.6070
SC	21+75.30	578384.5007	1258204.8890
CS	22+82.29	578428.5274	1258107.4736
ST	24+32.29	578508.1648	1257980.4358
POT	27+94.59	578710.5335	1257679.9325

Y15REV

TYPE	STATION	NORTH	EAST
TS	17+65.30	578275.8641	1258600.1244
SC	19+65.30	578334.1710	1258408.9445
CS	23+22.85	578531.2266	1258113.8410
ST	25+22.85	578685.4654	1257986.7197
POT	27+28.37	578849.1307	1257862.4130

Y16

TYPE	STATION	NORTH	EAST
POT	10+00.00	578697.0097	1258647.7820
EQB	15+63.78	578871.5815	1259183.8573
EQA	0+00.00	578871.5815	1259183.8573
PT	4+13.96	579177.7833	1258923.0216
EQB	14+11.40	578357.1652	1258356.0319
EQA	14+87.57	578357.1652	1258356.0319

Y16A

TYPE	STATION	NORTH	EAST
POT	10+00.00	578713.7980	1258694.8337
POT	15+14.26	578891.1428	1259177.5447

Y16REV

TYPE	STATION	NORTH	EAST
POT	10+00.00	578655.6645	1259248.6670
PC	12+25.43	578871.5815	1259183.8573
PT	16+39.39	579177.7833	1258923.0216
PC	16+73.48	579192.6480	1258892.3492
PT	19+08.46	579340.1742	1258712.2319
POT	20+31.42	579438.0954	1258637.8590

Y17

TYPE	STATION	NORTH	EAST
POT	10+00.00	579538.5524	1233287.9810
PC	12+83.38	579524.6928	1233571.0219
PT	19+77.47	579777.1902	1234194.3471
PC	26+25.71	580250.5644	1234637.2107
PT	35+16.21	580714.5669	1235385.2229
POT	38+40.15	580807.7442	1235695.4730

Y18

TYPE	STATION	NORTH	EAST
POT	10+00.00	582923.7935	1244801.7210
PC	13+65.16	582772.9820	1245134.2821
PT	16+49.88	582811.5852	1245401.0840
POT	16+70.58	582825.1283	1245416.7411

RPA1

TYPE	STATION	NORTH	EAST
POT	0+00.00	581075.5952	1235763.3759
TS	3+34.56	581002.6126	1235436.8684
SC	5+74.56	580955.4275	1235201.5998
CS	13+05.67	580989.4569	1234476.1992
SRS	15+45.67	581058.4598	1234246.3811
SC	17+45.67	581111.6149	1234053.7380
PT	17+90.69	581118.3559	1234009.2304
POT	21+31.85	581159.2988	1233670.5369

RPA2

TYPE	STATION	NORTH	EAST
POT	0+00.00	582038.7714	1252591.3179
TS	3+34.56	582206.7135	1252301.9581
SC	5+74.56	582331.6949	1252097.1231
CS	12+06.93	582767.6746	1251643.4723
SRS	14+46.93	582967.3848	1251510.4552
SC	16+46.93	583131.1808	1251395.9662
PT	19+22.31	583305.1234	1251184.4716
POT	21+25.98	583403.6054	1251006.1944

RPA3

TYPE	STATION	NORTH	EAST
POT	0+00.00	577272.1759	1258544.1881
PC	15+08.38	578482.4303	1257643.9063
PT	15+70.98	578540.8798	1257624.7360
POT	16+50.98	578600.3055	1257571.1768

RPB2

TYPE	STATION	NORTH	EAST
POT	0+00.00	583362.9951	1249015.0723
TS	2+71.99	583338.4975	1249285.9568
SC	5+11.99	583322.1422	1249525.3524
CS	10+04.84	583376.6401	1250013.6703
SRS	12+44.84	583445.3703	1250243.5701
SC	14+44.84	583498.2967	1250436.2762
PT	18+26.82	583469.7925	1250813.0609
POT	20+30.98	583403.6054	1251006.1944

RPB3

TYPE	STATION	NORTH	EAST
TS	0+00.00	579284.6505	1256329.0884
SC	2+20.00	579147.4008	1256500.9802
CS	5+70.58	578968.2742	1256801.7170
ST	7+90.58	578882.4967	1257004.2671
POT	13+60.53	578670.8574	1257533.4617
POT	14+40.53	578600.3055	1257571.1768

SEE SHEET 1C-1 FOR NOTES

SURVEY CONTROL SHEET

RPC2

TYPE	STATION	NORTH	EAST
POT	0+00.00	583263.3688	1249069.1832
TS	1+00.00	583246.1448	1249167.6887
SC	3+20.00	583202.9242	1249383.3467
CS	9+55.06	582922.5696	1249947.7858
SRS	11+75.06	582776.8456	1250112.5309
SC	13+75.06	582647.4232	1250264.8026
PT	14+58.21	582603.2653	1250335.2153
POT	16+58.54	582506.3984	1250510.5690

RPC3

TYPE	STATION	NORTH	EAST
POT	0+00.00	579263.5567	1256207.4699
TS	1+20.00	579180.3830	1256293.9693
SC	3+40.00	579024.7596	1256449.4223
CS	3+83.18	578992.6603	1256478.3046
ST	6+03.18	578821.6963	1256616.7085
PC	11+74.48	578370.5106	1256967.1587
PT	12+37.38	578312.1669	1256987.5458
POT	13+17.38	578253.9761	1257042.4443

RPD1

TYPE	STATION	NORTH	EAST
TS	0+00.00	580891.2915	1235476.5050
SC	2+40.00	580817.2382	1235248.2642
CS	10+19.40	580398.6736	1234597.8463
SRS	12+59.40	580221.6216	1234435.8885
SC	14+59.40	580077.1491	1234297.8081
PT	22+15.98	579916.9748	1233589.9833
POT	24+04.31	579968.1525	1233408.7403

RPD2

TYPE	STATION	NORTH	EAST
TS	0+00.00	582165.8093	1252116.6877
SC	2+40.00	582266.2859	1251898.7837
CS	8+59.19	582399.5497	1251297.1550
SRS	10+99.19	582400.4904	1251057.2032
SC	12+99.19	582405.7618	1250857.4307
PT	14+60.35	582441.2908	1250700.5524
POT	16+61.18	582506.3984	1250510.5690

RPD3

TYPE	STATION	NORTH	EAST
CS	0+00.00	577187.6172	1258489.7621
SC	2+20.00	577359.6274	1258352.7480
CS	5+75.55	577593.7741	1258086.3125
ST	7+75.55	577699.3754	1257916.5120
PC	16+73.73	578156.4776	1257143.3482
PT	17+45.03	578181.8601	1257077.0748
POT	18+25.03	578253.9762	1257042.4443

LPA1

TYPE	STATION	NORTH	EAST
CS	0+00.00	580578.3827	1233975.3486
SC	1+60.00	580626.2177	1234127.2239
CS	7+04.81	581069.0710	1234109.1086
ST	8+64.81	581104.8969	1233953.9171
POT	11+52.63	581139.4392	1233668.1714

LPB2

TYPE	STATION	NORTH	EAST
TS	0+00.00	582992.8469	1250590.6614
SC	1+50.00	583061.4808	1250458.0474
CS	11+38.76	583199.3045	1250838.6807
ST	12+88.76	583061.6769	1250780.7521

LPC3

TYPE	STATION	NORTH	EAST
TS	0+00.00	578448.3811	1257187.2487
SC	1+60.00	578536.3423	1257054.5039
CS	6+49.87	578292.7012	1256721.9569
ST	8+09.87	578139.6168	1256765.8147
POT	9+11.58	578045.4558	1256804.2742

LPD1

TYPE	STATION	NORTH	EAST
TS	0+00.00	580410.5099	1233567.6993
SC	1+60.00	580421.0221	1233726.6250
CS	8+97.36	579923.9830	1233701.1088
ST	10+57.36	579950.7143	1233544.0950
POT	11+92.36	579987.3999	1233414.1752

SERV-B1

TYPE	STATION	NORTH	EAST
POT	10+00.00	578655.6645	1259248.6670
PC	13+24.42	578966.3848	1259155.4015
PT	17+06.75	579257.9063	1258922.5664
PC	18+95.50	579350.7907	1258758.2575
PT	19+97.18	579417.2135	1258682.1993
POT	20+40.63	579451.8132	1258655.9202

DR1

TYPE	STATION	NORTH	EAST
POT	10+00.00	577042.7645	1258049.8357
PC	12+03.79	577060.7517	1257846.8452
PT	12+71.69	577044.1996	1257782.3282
POT	12+88.45	577034.8628	1257768.4032

DR2

TYPE	STATION	NORTH	EAST
POT	10+00.00	576906.8318	1258027.0983
PC	11+41.12	576900.1677	1257886.1381
PT	11+76.55	576892.3256	1257851.7776
POT	11+82.43	576890.0253	1257846.3601

DR3

TYPE	STATION	NORTH	EAST
POT	10+00.00	583835.7669	1248801.5763
POT	12+00.00	583745.2806	1248979.9361

SEE SHEET 1C-1 FOR NOTES

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SURVEY CONTROL SHEET

ROW MARKER IRON PIN AND CAP

ALIGN	STATION	OFFSET	NORTH	EAST
L	383+96.02	-160.00	581354.2432	1236314.9744
L	384+94.82	160.00	581068.6843	1236489.9394
L	385+40.00	-160.00	581390.2233	1236457.4925
L	385+64.25	160.00	581084.7919	1236555.9784
L	388+00.00	-160.00	581448.3695	1236716.4780
L	389+00.00	-160.00	581468.3812	1236816.5910
L	393+07.22	270.00	581110.3440	1237285.6187
L	393+07.22	-250.00	581625.4402	1237214.3739
L	400+50.00	-160.00	581638.0565	1237962.4820
L	401+70.00	-200.00	581694.1202	1238075.8697
L	402+00.00	270.00	581232.6628	1238169.9813
L	403+26.00	160.00	581358.8885	1238279.7220
L	403+50.00	-200.00	581718.7820	1238254.1730
L	404+50.00	-160.00	581692.8600	1238358.7098
L	410+00.00	160.00	581451.2325	1238947.3660
L	412+40.00	-180.00	581820.9085	1239138.5198
L	413+00.00	240.00	581413.0898	1239255.4978
L	414+50.00	240.00	581433.6410	1239404.0832
L	415+50.00	160.00	581526.5875	1239492.1795
L	419+08.08	170.00	581565.7420	1239848.2528
L	419+08.08	-200.00	581932.2528	1239797.5595
L	421+58.08	-180.00	581948.4887	1240041.7215
L	421+58.08	200.00	581573.9773	1240106.0730
L	423+00.00	-160.00	581954.2885	1240178.6618
L	423+50.00	160.00	581652.1972	1240295.4367
L	423+50.53	-414.45	582212.8502	1240170.3032
L	423+70.14	-490.00	582290.3550	1240170.4449
L	424+78.28	-851.71	582662.8495	1240171.1257
L	425+00.00	160.00	581689.3511	1240447.2305
L	426+00.00	-160.00	582024.4338	1240457.3322
L	427+53.54	438.15	581502.1070	1240789.1873
L	427+84.00	314.80	581629.6390	1240780.8703
L	428+26.05	464.82	581503.6215	1240874.5320
L	428+50.00	160.00	581798.9898	1240794.8836
L	429+75.00	339.00	581679.8386	1240983.4750
L	430+00.00	-160.00	582151.5385	1240818.6959
L	430+00.00	160.00	581855.6383	1240940.5279
L	430+44.59	160.00	581873.5754	1240983.3806
L	430+44.59	-160.00	582168.0332	1240858.1030
L	432+94.59	200.00	581942.2928	1241232.8664
L	432+94.59	-195.00	582300.5101	1241066.4171
L	435+00.00	-220.00	582409.7400	1241242.1645
L	435+70.00	240.00	582022.0727	1241499.4857
L	437+50.00	-160.00	582460.6750	1241494.1678
L	439+70.00	240.00	582190.6291	1241862.2373
L	445+60.00	-160.00	582802.0012	1242228.7397
L	447+89.28	209.00	582563.9795	1242592.1628
L	447+89.28	-190.00	582925.8244	1242424.0279
L	448+70.00	210.00	582596.7028	1242665.1748
L	449+40.00	-160.00	582962.3783	1242575.3338
L	450+60.00	160.00	582716.8738	1242812.8635
L	451+00.00	-160.00	583027.9127	1242727.7057
L	462+90.19	-160.00	583310.1471	1243930.0625
L	462+90.19	160.00	582991.0410	1243953.9647
L	465+40.19	160.00	583003.9652	1244198.3719
L	465+40.19	-160.00	583323.6825	1244184.9233
L	467+00.00	160.00	583010.6815	1244358.0420
L	471+80.00	-188.21	583378.7566	1244822.9829
L	472+30.00	185.00	583007.9779	1244888.6236
L	472+34.84	-157.56	583350.4422	1244879.0597
L	473+50.00	163.60	583034.4066	1245007.6180
L	473+99.35	161.82	583038.2535	1245056.8518
L	474+50.00	160.00	583042.2015	1245107.3785
L	474+60.00	-160.00	583362.3392	1245103.9211
L	477+15.00	160.00	583053.3387	1245372.1445
L	483+70.00	190.00	583050.8928	1246027.8265
L	483+80.00	-200.00	583440.9685	1246021.4273
L	492+50.00	-160.00	583437.5673	1246892.3395
L	492+50.00	160.00	583117.8500	1246905.7882
L	500+00.00	-160.00	583469.0872	1247641.6770
L	500+00.00	160.00	583149.3700	1247655.1255

ROW MARKER IRON PIN AND CAP

ALIGN	STATION	OFFSET	NORTH	EAST
L	505+06.12	160.00	583170.6403	1248160.7935
L	505+06.12	-230.00	583560.2960	1248144.4077
L	507+06.12	160.00	583177.7900	1248357.8687
L	507+06.12	-215.00	583552.6767	1248348.6550
L	508+00.00	165.67	583173.6177	1248449.1698
L	511+40.00	-212.79	583544.4947	1248798.5560
L	513+00.00	-220.00	583540.8860	1248964.7108
L	553+50.00	230.00	581718.5278	1252615.9405
L	554+11.59	-200.00	582077.9510	1252859.8838
L	555+80.00	230.00	581618.2640	1252817.2805
L	556+22.00	-160.00	581945.1390	1253034.0747
L	557+20.00	160.00	581616.5502	1252970.6047
L	561+00.00	-160.00	581705.7285	1253459.2295
L	572+44.47	160.00	580782.3765	1254205.2860
L	572+44.47	-160.00	581028.3685	1254409.9512
L	583+20.50	160.00	580094.1660	1255032.4626
L	583+24.74	-160.00	580337.4454	1255240.3880
L	583+80.53	160.00	580055.7755	1255078.6051
L	583+84.74	-160.00	580299.0705	1255286.5116
L	590+80.00	-160.00	579854.3987	1255820.9732
L	592+51.81	-93.00	579693.0049	1255910.1999
L	593+15.00	160.00	579458.1056	1255796.9583
L	596+56.66	-93.00	579434.0751	1256221.4138
L	598+54.26	-198.00	579388.4101	1256440.4700
L	634+83.66	150.00	576617.1115	1258728.8353
L	636+60.99	-150.55	576597.3010	1259077.1853

ROW MARKER IRON PIN AND CAP

ALIGN	STATION	OFFSET	NORTH	EAST
Y2	22+40.00	-30.67	581898.3781	1236517.1314
Y2	22+40.00	29.34	581898.9890	1236457.1287
Y2	23+85.00	-80.00	581765.4375	1236575.1812
Y2	23+85.00	90.00	581741.4352	1236406.8843
Y2	25+50.00	130.00	581553.4062	1236409.6145
Y2	25+50.00	-70.00	581615.2650	1236599.8077
Y2	26+60.00	-115.00	581539.0993	1236677.7537
Y2	30+78.01	274.46	580951.3918	1236646.1492
Y2	31+33.70	64.07	581074.7462	1236828.6434
Y2	33+25.00	30.83	580999.1143	1237017.2253
Y2	33+25.00	-112.00	581128.0462	1237078.6768
Y2	33+75.00	-28.88	581033.3099	1237087.2126

ROW MARKER IRON PIN AND CAP

ALIGN	STATION	OFFSET	NORTH	EAST
Y3	16+15.00	-18.96	583281.2344	1242583.6813
Y3	16+15.00	-55.00	583289.2047	1242618.8326
Y3	17+25.00	21.03	583164.6968	1242572.7397
Y3	18+25.00	80.00	583050.5660	1242546.5185
Y3	25+54.00	70.00	582361.7785	1242778.5177
Y3	25+54.00	-80.00	582403.2673	1242922.6657
Y3	27+25.00	60.00	582203.5412	1242826.7570
Y3	27+25.00	-60.00	582226.2880	1242944.5813
Y3	27+25.00	19.33	582211.2495	1242866.6848
Y3	27+25.00	-20.67	582218.8318	1242905.9597

ROW MARKER IRON PIN AND CAP

ALIGN	STATION	OFFSET	NORTH	EAST
Y4REV	14+51.14	19.05	583986.0777	1244556.7384
Y4REV	14+51.14	-20.94	584001.9966	1244593.4237
Y4REV	15+02.00	50.00	583927.1007	1244548.5920
Y4REV	15+02.00	-50.00	583966.9077	1244640.3275
Y4REV	16+22.00	-60.00	583863.0339	1244697.6400
Y4REV	17+90.00	70.00	583653.5260	1244661.2065
Y4REV	19+60.00	60.04	583511.2892	1244764.8818
Y4REV	20+64.99	-55.00	583496.4733	1244919.9752
Y4REV	21+84.99	-60.00	583408.7840	1244999.4131
Y4REV	30+50.00	56.33	582675.2288	1245478.7182
Y4REV	31+25.00	-55.00	582703.3922	1245609.9570
Y4REV	33+56.31	55.00	582471.9832	1245719.2494
Y4REV	33+56.31	-55.00	582561.1517	1245783.6618
Y4REV	34+76.31	19.31	582432.3562	1245839.3675
Y4REV	34+76.31	45.00	582411.0672	1245824.9846
Y4REV	34+76.31	-20.68	582465.4929	1245861.7542
Y4REV	34+76.31	-50.00	582489.7857	1245878.1671

ROW MARKER IRON PIN AND CAP

ALIGN	STATION	OFFSET	NORTH	EAST
Y5	20+70.00	60.00	583120.0450	1248355.4103
Y5	20+70.00	25.00	583115.6419	1248390.1330

ROW MARKER IRON PIN AND CAP

ALIGN	STATION	OFFSET	NORTH	EAST
Y6A	10+00.00	9.81	583632.4894	1248197.2387
Y6A	10+00.00	-60.00	583698.5897	1248219.6791
Y6A	10+00.00	-14.19	583655.2156	1248204.9540
Y6A	10+93.66	-60.00	583668.4811	1248308.3668
Y6A	20+67.38	-60.00	584158.4866	1248742.4189
Y6A	20+67.38	-24.94	584173.6805	1248774.0147

ROW MARKER IRON PIN AND CAP

ALIGN	STATION	OFFSET	NORTH	EAST
Y8	25+00.00	-30.00	582051.1287	1251940.0045

ROW MARKER IRON PIN AND CAP

ALIGN	STATION	OFFSET	NORTH	EAST
Y8-REV	11+50.00	60.00	581983.8275	1250380.5260
Y8-REV	11+50.00	-60.00	582086.6450	1250442.4013
Y8-REV	25+00.00	60.00	581287.7295	1251537.2228
Y8-REV	28+00.00	-60.00	581235.8588	1251856.1419
Y8-REV	29+60.00	-100.00	581187.6308	1252013.8570
Y8-REV	31+07.23	83.00	580954.9182	1252045.6457
Y8-REV	33+50.00	45.00	580840.4833	1252238.4929
Y8-REV	33+50.00	-54.30	580904.8575	1252314.0938
Y8-REV	34+97.55	-50.00	580773.0065	1252400.4548
Y8-REV	35+84.00	-56.00	580700.4249	1252447.7930
Y8-REV	35+84.00	-30.00	580687.7634	1252425.0843
Y8-REV	35+84.00	30.00	580658.5445	1252372.6796

ROW MARKER IRON PIN AND CAP

ALIGN	STATION	OFFSET	NORTH	EAST
Y8A	33+00.00	-30.00	581298.2875	1252220.7951
Y8A	33+00.00	-60.00	581303.6105	1252250.3190
Y8A	33+00.00	30.00	581287.6415	1252161.7471
Y8A	34+10.00	-68.00	581177.8405	1252268.0145
Y8A	34+50.00	-58.12	581131.5512	1252250.8567

ROW MARKER IRON PIN AND CAP-E

ALIGN	STATION	OFFSET	NORTH	EAST
Y9	11+55.02	58.00	584013.7253	1251276.9691
Y9	11+72.19	-52.97	583945.0338	1251365.8045
Y9	13+60.00	70.00	583840.1020	1251167.3487
Y9	13+60.00	58.00	583834.2995	1251177.8528
Y9	15+20.00	75.00	583702.4678	1251085.6062
Y9	15+70.00	-52.97	583596.8213	1251173.4485
Y9	15+70.00	-75.00	583586.1710	1251192.7280
Y9	16+95.00	-75.00	583476.7560	1251132.2855
Y9	17+00.00	80.00	583547.3272	1250994.1930
Y9	30+50.00	70.00	582361.0415	1250350.2275
Y9	31+71.21	-80.00	582180.9225	1250419.9693
Y9	31+71.21	150.00	582298.4050	1250222.2375
Y9	32+50.00	150.00	582234.7483	1250183.2215
Y9	34+00.00	70.00	582070.4100	1250169.4678
Y9	34+50.00	-56.00	581956.2643	1250242.4967
Y9	36+00.00	39.62	581895.9806	1250074.7867
Y9	36+00.00	-40.80	581845.0511	1250137.0272

SEE SHEET 1C-1 FOR NOTES

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SURVEY CONTROL SHEET

ROW MARKER IRON PIN AND CAP

ALIGN	STATION	OFFSET	NORTH	EAST
Y11REV2	25·60.00	22.00	579973.7604	1255796.1223
Y11REV2	25·60.00	25.00	579973.0079	1255793.2182
Y11REV2	31·87.64	70.00	579354.1533	1255907.1046
Y11REV2	32·87.64	70.00	579257.3498	1255932.1908
Y11REV2	34·50.00	-70.00	579135.2982	1256108.4444
Y11REV2	38·44.84	70.00	578717.9635	1256071.9699
Y11REV2	38·44.84	-70.00	578753.0797	1256207.4943
Y11REV2	39·05.25	-70.00	578695.3551	1256222.6627
Y11REV2	39·91.03	-70.00	578616.3828	1256245.8096
Y11REV2	40·44.84	70.00	578518.9895	1256131.7201
Y11REV2	40·44.84	-70.00	578569.0835	1256262.4510
Y11REV2	41·97.28	70.00	578371.2242	1256203.3844
Y11REV2	41·97.28	-70.00	578442.8673	1256323.6643
Y11REV2	43·97.28	70.00	578201.1136	1256322.6343
Y11REV2	43·97.28	-70.00	578285.7919	1256434.1223
Y11REV2	46·00.00	-75.00	578127.3798	1256560.7177
Y11REV2	46·75.00	80.00	577973.9036	1256482.6469
Y11REV2	49·75.00	105.00	577706.8455	1256628.4826
Y11REV2	50·93.94	-90.00	577746.0151	1256852.8612
Y11REV2	50·93.94	105.00	577608.7172	1256714.3899
Y11REV2	52·78.59	105.00	577478.8338	1256878.9475
Y11REV2	52·78.59	-90.00	577645.4118	1256980.3220
Y11REV2	54·78.59	105.00	577383.9103	1257070.3512
Y11REV2	54·78.59	-100.00	577571.4994	1257153.0274
Y11REV2	56·76.56	-110.00	577500.8075	1257338.2201
Y11REV2	56·76.56	100.00	577308.6431	1257253.5274
Y11REV2	58·76.56	95.00	577230.6603	1257425.8444
Y11REV2	58·76.56	-110.00	577407.8350	1257528.9664
Y11REV2	61·80.00	80.00	577067.1380	1257644.1911
Y11REV2	62·48.66	-110.00	577129.4506	1257836.6355
Y11REV2	64·25.00	70.00	576883.7058	1257772.6457
Y11REV2	66·22.86	50.00	576715.0215	1257849.2308
Y11REV2	69·85.16	30.00	576362.7959	1257910.3838

ROW MARKER IRON PIN AND CAP

ALIGN	STATION	OFFSET	NORTH	EAST
Y16A	13·75.00	-30.08	578871.3497	1259036.4578
Y16A	13·75.00	29.93	578815.0293	1259057.1495

ROW MARKER IRON PIN AND CAP

ALIGN	STATION	OFFSET	NORTH	EAST
Y16REV	10·04.58	30.46	578668.8066	1259276.5299
Y16REV	10·13.82	-50.00	578654.5270	1259196.8046
Y16REV	10·15.23	-29.61	578661.7415	1259215.9259
Y16REV	11·60.00	-50.00	578794.5355	1259154.7796
Y16REV	12·25.43	35.00	578881.6399	1259217.3809
Y16REV	13·20.00	-75.00	578924.3707	1259081.7936
Y16REV	13·27.95	108.98	579017.9936	1259240.3728
Y16REV	14·00.00	110.00	579092.4864	1259193.9754
Y16REV	16·39.39	-65.00	579119.2903	1258894.6743
Y16REV	16·39.39	75.00	579245.2766	1258955.7316
Y16REV	16·73.48	80.00	579264.6404	1258927.2361
Y16REV	16·73.48	-70.00	579129.6566	1258861.8191
Y16REV	18·00.00	-84.00	579197.5553	1258732.2566
Y16REV	19·08.46	-75.00	579294.8112	1258652.5058
Y16REV	19·08.46	75.00	579385.5371	1258771.9579

ROW MARKER IRON PIN AND CAP

ALIGN	STATION	OFFSET	NORTH	EAST
Y14	12·25.75	-30.00	579915.1737	1259366.2419
Y14	12·25.75	30.00	579967.5676	1259337.0035
Y14	12·25.75	75.00	580006.8630	1259315.0747
Y14	12·25.75	-75.00	579875.8783	1259388.1707
Y14	16·20.04	-75.00	579667.6779	1259064.8342
Y14	16·20.04	75.00	579788.4239	1258975.8376
Y14	17·10.04	-85.00	579606.2692	1258999.8139
Y14	17·10.04	75.00	579733.6847	1258903.0397
Y14	19·50.00	-100.00	579449.1866	1258817.7950
Y14	21·00.00	75.00	579497.8215	1258592.4961
Y14	22·00.00	-100.00	579297.9787	1258618.7090
Y14	28·37.85	-130.00	578888.2893	1258128.9034
Y14	28·37.85	115.00	579083.3944	1257980.7176
Y14	31·02.10	-125.00	578730.4391	1257931.0710
Y14	31·02.10	135.00	578922.9955	1257756.3655
Y14	32·00.00	150.00	578868.3192	1257673.7793
Y14	32·35.24	-115.00	578648.3782	1257825.7432
Y14	32·94.57	-125.00	578601.1052	1257788.5222
Y14	42·00.00	-175.00	578050.3809	1257063.7186
Y14	42·27.84	157.13	578298.0348	1256840.6645
Y14	42·80.63	132.11	578235.7541	1256805.0558
Y14	43·85.00	145.00	578162.2227	1256718.7899
Y14	44·64.81	-145.00	577899.4171	1256864.6505
Y14	47·75.00	-80.00	577762.6126	1256564.1422
Y14	50·89.20	-70.00	577581.2276	1256306.8438
Y14	50·90.00	70.00	577692.7323	1256222.1835
Y14	55·11.97	-30.23	577359.2618	1255944.9746
Y14	55·22.62	29.78	577400.7195	1255900.3008

ROW MARKER IRON PIN AND CAP

ALIGN	STATION	OFFSET	NORTH	EAST
RPA2	0·70.00	160.00	582212.2910	1252611.0915
RPA2	3·34.56	100.00	582293.1995	1252352.1595
RPA2	5·74.56	125.00	582435.4365	1252166.8563
RPA2	12·06.93	125.00	582841.4725	1251744.3628
RPA2	14·46.93	125.00	583034.3760	1251615.9880
RPA2	16·46.93	125.00	583211.6070	1251491.6565
RPA2	17·13.00	160.00	583293.1447	1251464.2370
RPA2	19·22.31	125.00	583414.5390	1251244.9138

ROW MARKER IRON PIN AND CAP

ALIGN	STATION	OFFSET	NORTH	EAST
RPB2	0·00.00	-170.00	583532.3040	1249030.3838
RPB2	2·71.99	-125.00	583462.9895	1249297.2152
RPB2	5·11.99	-125.00	583447.1055	1249528.3841
RPB2	10·04.84	-125.00	583497.8605	1249983.1638
RPB2	12·44.84	-125.00	583564.3160	1250205.1393
RPB2	14·44.84	-125.00	583621.2955	1250413.9980
RPB2	18·26.82	-125.00	583588.0415	1250853.5847

ROW MARKER IRON PIN AND CAP

ALIGN	STATION	OFFSET	NORTH	EAST
RPC2	0·00.00	120.00	583145.1623	1249048.5145
RPC2	3·20.00	125.00	583081.7232	1249352.7633
RPC2	9·55.06	125.00	582824.9675	1249869.6908
RPC2	11·75.06	125.00	582685.2898	1250027.4278
RPC2	13·75.06	125.00	582545.3662	1250192.6265
RPC2	14·58.21	125.00	582493.8498	1250274.7733
RPC2	15·60.00	125.00	582444.6330	1250363.8683

ROW MARKER IRON PIN AND CAP

ALIGN	STATION	OFFSET	NORTH	EAST
RPD2	0·00.00	-113.00	582064.2575	1252067.1272
RPD2	1·85.00	-122.58	582132.5835	1251899.9907
RPD2	2·84.98	-125.02	582165.9363	1251812.5026
RPD2	8·59.19	-125.00	582274.6930	1251291.1725
RPD2	10·99.19	-125.00	582275.5108	1251059.4633
RPD2	12·99.19	-125.00	582281.5915	1250843.0530
RPD2	14·60.35	-125.00	582323.0417	1250660.0283
RPD2	15·70.00	-125.00	582358.5882	1250556.3044

ROW MARKER IRON PIN AND CAP

ALIGN	STATION	OFFSET	NORTH	EAST
RPA3	0·00.00	153.00	577363.4957	1258666.9468
RPA3	10·00.00	110.00	578140.1811	1258035.5950

ROW MARKER IRON PIN AND CAP

ALIGN	STATION	OFFSET	NORTH	EAST
RPB3	2·20.00	-170.00	579284.4130	1256601.6165
RPB3	6·50.00	-115.00	579041.4615	1256919.4981
RPB3	13·00.00	-100.00	578786.1838	1257514.3938

ROW MARKER IRON PIN AND CAP

ALIGN	STATION	OFFSET	NORTH	EAST
RPC3	0·50.00	130.00	579135.1934	1256153.4065
RPC3	3·40.00	130.00	578936.6657	1256353.8218
RPC3	3·83.18	130.00	578906.8591	1256380.6411
RPC3	6·03.18	130.00	578741.9522	1256514.0397
RPC3	9·25.00	100.00	578506.1969	1256735.1449

ROW MARKER IRON PIN AND CAP

ALIGN	STATION	OFFSET	NORTH	EAST
RPD3	0·00.00	-130.00	577110.8419	1258384.8548
RPD3	2·20.00	-125.00	577276.2596	1258259.6094
RPD3	5·75.55	-125.00	577490.6969	1258015.6011
RPD3	12·50.00	-85.00	577867.6644	1257464.8403

SEE SHEET 1C-1 FOR NOTES

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SURVEY CONTROL SHEET

PERMANENT EASEMENT MARKER IRON PIN AND CAP

ALIGN	STATION	OFFSET	NORTH	EAST
L	383+91.43	-175.00	581367.5568	1236306.6193
L	384+97.33	175.00	581054.7182	1236495.9352
L	385+25.00	-175.00	581401.1709	1236439.0499
L	385+70.02	175.00	581071.5130	1236564.9541
L	393+07.22	285.00	581095.4852	1237287.6737
L	395+15.00	270.00	581138.8117	1237491.4409
L	395+15.00	285.00	581123.9532	1237493.4960
L	452+00.00	-160.00	583065.9051	1242824.7175
L	452+00.00	-212.00	583114.5685	1242806.3906
L	452+85.00	-212.00	583145.2517	1242890.6964
L	453+00.00	160.00	582799.0281	1243027.5932
L	453+25.00	-160.00	583109.8031	1242947.3261
L	453+30.00	300.00	582675.7240	1243099.6395
L	454+30.00	160.00	582837.8496	1243145.9369
L	454+30.00	300.00	582704.1009	1243187.3046
L	500+62.00	-168.57	583480.2604	1247703.2618
L	500+62.00	-183.57	583495.2421	1247702.6316
L	500+62.00	175.00	583136.9889	1247717.7012
L	500+62.00	160.00	583151.9756	1247717.0708
L	504+99.62	-351.49	583681.4095	1248132.8041
L	505+00.05	-370.00	583699.9173	1248132.4624
L	505+22.06	-250.00	583580.9489	1248159.5202
L	507+05.08	174.97	583162.8036	1248357.2307
L	582+70.00	160.00	580126.4657	1254993.6404
L	582+70.00	175.00	580114.9349	1254984.0468
L	583+20.06	175.00	580082.9181	1255022.5288
L	583+80.09	175.00	580044.5259	1255068.6732
L	593+15.00	175.00	579446.5747	1255787.3647

ROW MARKER PERMANENT EASEMENT IRON PIN AND CAP

ALIGN	STATION	OFFSET	NORTH	EAST
Y2	22+40.00	45.00	581899.1483	1236441.4687
Y2	23+85.00	105.00	581739.3175	1236392.0345
Y2	25+50.00	145.00	581548.7669	1236395.3500
Y2	33+34.21	-98.00	581111.8878	1237080.1326

ROW MARKER PERMANENT EASEMENT IRON PIN AND CAP

ALIGN	STATION	OFFSET	NORTH	EAST
Y5	20+30.00	-20.00	583147.1269	1248441.5260
Y5	20+65.00	-20.00	583114.6883	1248435.4022
Y5	20+97.00	-145.00	583076.0989	1248557.0623
Y5	21+30.00	-130.00	583051.5195	1248541.1940

ROW MARKER PERMANENT EASEMENT IRON PIN AND CAP

ALIGN	STATION	OFFSET	NORTH	EAST
Y6A	10+00.00	-30.00	583670.1821	1248210.0350
Y6A	10+35.00	-60.00	583687.3382	1248252.8213
Y6A	10+35.00	-75.00	583701.5420	1248257.6433
Y6A	10+95.00	-75.00	583682.3335	1248314.2296
Y6A	12+50.00	-75.00	583665.0532	1248439.2926
Y6A	13+70.00	-75.00	583683.9428	1248535.4254
Y6A	15+25.00	-60.00	583735.9046	1248654.4528

ROW MARKER PERMANENT EASEMENT IRON PIN AND CAP

ALIGN	STATION	OFFSET	NORTH	EAST
Y8-REV	32+83.00	-103.00	580992.1690	1252299.2499
Y8-REV	34+97.55	-65.00	580780.3113	1252413.5560
Y8-REV	35+60.00	-65.00	580725.7696	1252443.9662

ROW MARKER PERMANENT EASEMENT IRON PIN AND CAP

ALIGN	STATION	OFFSET	NORTH	EAST
Y9	14+18.00	-77.77	583717.8792	1251268.6534
Y9	14+18.00	-52.97	583729.8704	1251246.9462
Y9	14+26.00	-77.81	583710.8606	1251264.8140
Y9	14+26.00	-52.97	583722.8679	1251243.0779
Y9	15+70.00	-90.00	583578.9179	1251205.8578
Y9	16+95.00	-90.00	583469.5025	1251145.4157
Y9	34+32.97	-72.00	581960.8945	1250265.6838
Y9	36+00.00	-65.00	581829.7255	1250155.7562

ROW MARKER PERMANENT EASEMENT IRON PIN AND CAP

ALIGN	STATION	OFFSET	NORTH	EAST
Y11REV2	31+87.55	88.49	579349.5978	1255889.1889
Y11REV2	43+97.28	85.00	578192.0410	1256310.6891
Y11REV2	46+62.00	95.00	577975.1836	1256462.8388
Y11REV2	49+37.19	121.99	577727.5733	1256590.7551
Y11REV2	50+00.00	124.00	577674.0820	1256630.4931
Y11REV2	50+00.00	103.92	577686.8099	1256646.0229
Y11REV2	52+78.59	130.00	577457.4777	1256865.9508
Y11REV2	54+78.59	130.00	577361.0320	1257060.2724
Y11REV2	56+76.56	120.00	577290.3417	1257245.4615
Y11REV2	58+76.56	125.00	577204.7324	1257410.7532
Y11REV2	60+24.00	125.00	577132.2094	1257514.5903
Y11REV2	62+00.00	125.00	577024.7795	1257620.8688
Y11REV2	63+60.00	125.00	576910.7364	1257697.5353
Y11REV2	65+05.00	125.00	576797.0527	1257748.4502
Y11REV2	65+05.00	66.93	576816.4118	1257803.1981

ROW MARKER PERMANENT EASEMENT IRON PIN AND CAP

ALIGN	STATION	OFFSET	NORTH	EAST
Y14	48+37.00	-77.80	577726.8669	1256513.4362
Y14	48+37.00	-120.00	577693.2586	1256538.9622
Y14	50+00.00	125.00	577790.7390	1256261.1664
Y14	50+00.00	86.37	577759.8402	1256284.3490
Y14	50+89.12	-90.00	577565.2742	1256318.9058
Y14	51+40.00	-65.24	577554.5492	1256263.3502
Y14	52+80.00	52.26	577564.5147	1256080.8505
Y14	52+80.00	65.00	577574.7063	1256073.2040
Y14	53+70.00	-43.68	577433.7638	1256066.4346
Y14	53+90.00	-90.00	577384.7072	1256078.2371
Y14	54+11.70	-50.00	577403.6774	1256036.8704
Y14	54+12.09	-90.00	577371.4515	1256060.5693
Y14	55+12.17	-49.96	577343.4004	1255956.7056
Y14	55+26.23	45.00	577410.6844	1255888.2392

ROW MARKER PERMANENT EASEMENT IRON PIN AND CAP

ALIGN	STATION	OFFSET	NORTH	EAST
Y16A	13+42.74	-30.11	578860.2527	1259006.1632
Y16A	13+43.88	-45.11	578874.7253	1259002.0624
Y16A	14+01.77	-45.10	578894.6794	1259056.4059

ROW MARKER PERMANENT EASEMENT IRON PIN AND CAP

ALIGN	STATION	OFFSET	NORTH	EAST
RPA3	0+93.00	165.00	577445.2751	1258621.0689
RPA3	0+93.00	149.00	577435.7261	1258608.2322
RPA3	7+30.00	137.00	577939.6612	1258218.4085
RPA3	7+30.00	121.61	577930.4757	1258206.0603

ROW MARKER PERMANENT EASEMENT IRON PIN AND CAP

ALIGN	STATION	OFFSET	NORTH	EAST
RPD3	13+90.00	-145.00	577887.2646	1257313.7912
RPD3	13+90.00	-99.97	577926.0298	1257336.7095
RPD3	14+35.00	-104.78	577944.7901	1257295.5246
RPD3	14+35.00	-145.00	577910.1661	1257275.0546

SEE SHEET 1C-1 FOR NOTES

8/24/15
8/4/2017
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mmadlin

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PROJECT REFERENCE NO.	SHEET NO.
R-2707C	2A-1
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 15869 ENGINEER — DocuSigned by: Julie A. Hunter — 26569A24EBB4B4... — 4/12/2017

PAVEMENT DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 022896 ENGINEER — DocuSigned by: Christopher L. Robinson — B0A110DD1B3B4... — 4/12/2017

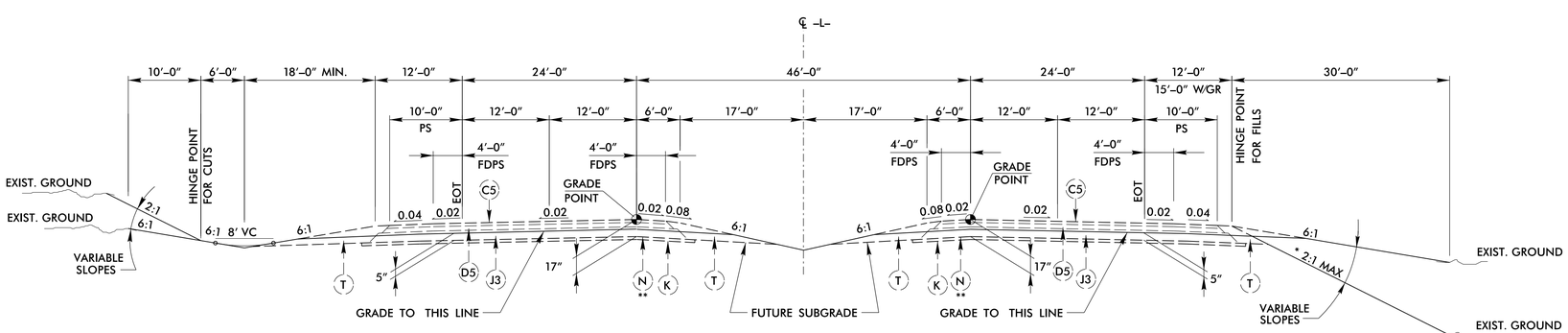
moffatt & nichol
4700 FALLS OF NEUSE ROAD, SUITE 300
RALEIGH, NORTH CAROLINA 27609
(919) 781-4626 VOICE (919) 781-4869 FAX
FB. IF-0-051

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

CODE	DESCRIPTION	CODE	DESCRIPTION	CODE	DESCRIPTION
A1	5″ CONCRETE DRIVEWAY	D5	PROP. APPROX. 4″ ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.	P	PRIME COAT AT THE RATE OF .35 GAL. PER SQ. YD.
A2	12″ CONCRETE TRUCK APRON	E1	PROP. APPROX. 4″ ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.	R1	2′-6″ CONCRETE CURB AND GUTTER
C1	PROP. APPROX. 1 1/2″ ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.	E2	PROP. APPROX. 5″ ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 570 LBS. PER SQ. YD.	R2	5″ MONOLITHIC CONCRETE ISLAND.
C2	PROP. APPROX. 2″ ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 224 LBS. PER SQ. YD.	E3	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1″ DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 3″ IN DEPTH OR GREATER THAN 5½″ IN DEPTH.	R3	CONCRETE SHOULDER BERM GUTTER
C3	PROP. APPROX. 3″ ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS	J1	PROP. 4″ AGGREGATE BASE COURSE.	R4	8″ x 18″ CONCRETE CURB
C4	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1″ OF DEPTH, TO BE PLACED IN LAYERS NOT TO EXCEED 2″ IN DEPTH.	J2	PROP. 8″ AGGREGATE BASE COURSE.	R5	9″ x 12″ CONCRETE CURB
C5	PROP. APPROX. 3″ ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS	J3	PROP. 10″ AGGREGATE BASE COURSE.	R6	4″ CONCRETE ISLAND COVER
D1	PROP. APPROX. 2½″ ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 285 LBS. PER SQ. YD.	J4	PROP. VAR. DEPTH AGGREGATE BASE COURSE.	T	EARTH MATERIAL
D2	PROP. APPROX. 3½″ ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 399 LBS. PER SQ. YD.	J5	PROP. 6″ AGGREGATE BASE COURSE.	U	EXISTING PAVEMENT
D3	PROP. APPROX. 4″ ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.	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 @ 50% EACH	W1	METHOD OF WEDGING 1 (W/O INTERMEDIATE PAVEMENT) SEE DETAILS ON SHEET 2A-4
D4	PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1″ DEPTH, TO BE PLACE IN LAYERS NOT LESS THAT 2½″ IN DEPTH OR GREATER THAN 4″ IN DEPTH.	N	GEOTEXTILE FOR PAVEMENT STABILIZATION	W2	METHOD OF WEDGING 2 (WITH INTERMEDIATE PAVEMENT) SEE DETAILS ON SHEET 2A-6

NOTES: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS OTHERWISE SHOWN



** USE GEOTEXTILE FOR SOIL STABILIZATION IN CONJUNCTION WITH TYPICAL SECTION 1 AT THE FOLLOWING LOCAITONS

–L–	364+50	TO	367+50
–L–	379+50	TO	383+18
–L–	385+69	TO	386+50
–L–	402+00	TO	407+75
–L–	413+50	TO	416+00
–L–	425+00	TO	427+00
–L–	451+00	TO	459+00
–L–	487+00	TO	497+50
–L–	501+00	TO	515+00
–L–	537+00	TO	559+00
–L–	562+50	TO	568+50
–L–	585+00	TO	591+88
–L–	597+92	TO	608+00

TYPICAL No. 1

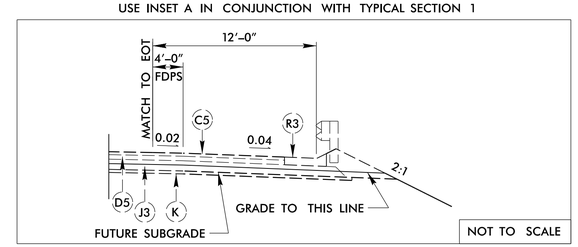
(–L–) US 74 (Shelby Bypass)

–L– (US 74) STA 386+46.04 (END BRIDGE WBL) TO STA 591+87.26 (BEGIN BRIDGE WBL)
–L– (US 74) STA 597+45.59 (END BRIDGE WBL) TO STA 610+91.33 (BEGIN BRIDGE WBL)
–L– (US 74) STA 611+83.33 (END BRIDGE WBL) TO STA 635+00.00

NOTE: * 4:1 MAX FILL SLOPE INSIDE INTERCHANGE.
ROCK INVESTIGATION PER CUT AS SPECIFIED IN NCDOT STANDARD SPECIFICATIONS SHALL BE FROM FUTURE SUBGRADE LINE

INSET A

USE INSET A IN CONJUNCTION WITH TYPICAL SECTION 1



–L– SHOULDER BERM GUTTER DETAIL

AT LOCATIONS WHERE INDICATED ON PLANS

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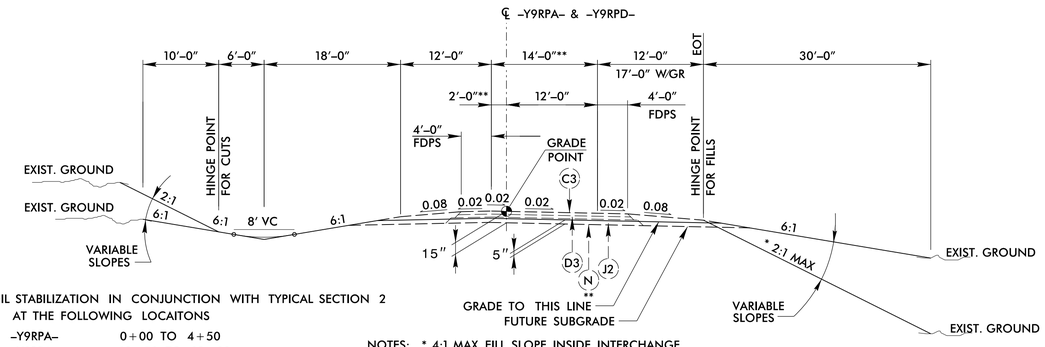


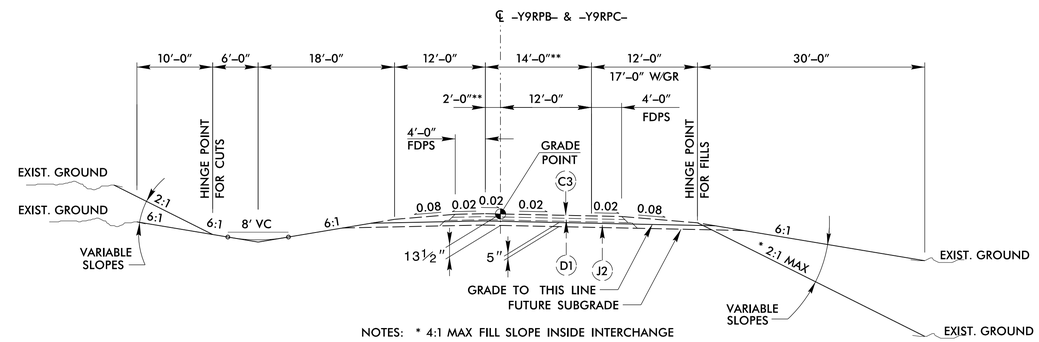
** USE GEOTEXTILE FOR SOIL STABILIZATION IN CONJUNCTION WITH TYPICAL SECTION 2
AT THE FOLLOWING LOCAITONS

–Y9RPA–	0+00 TO 4+50
–Y9RPA–	13+50 TO 19+00
–Y9RPD–	0+00 TO 13+00

NOTES: * 4:1 MAX FILL SLOPE INSIDE INTERCHANGE
** VARIES 2′–0″ TO 24′–0″
VARIES 14′–0″ TO 36′–0″

TYPICAL No. 2

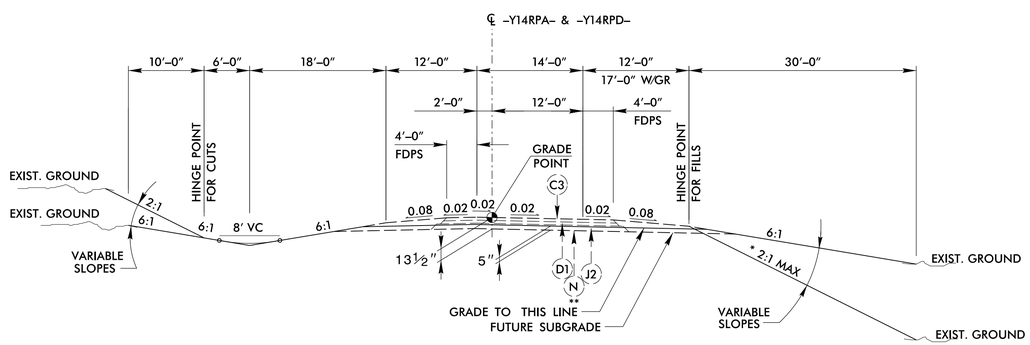
** –Y9RPA– STA 4+37.03 TO STA 19+44.42
–Y9RPD– STA 4+31.51 TO STA 14+90.63 (MIRROR TYPICAL)



NOTES: * 4:1 MAX FILL SLOPE INSIDE INTERCHANGE
** VARIES 2′–0″ TO 24′–0″
VARIES 14′–0″ TO 36′–0″

TYPICAL No. 3

–Y9RPB– STA 5+12.25 TO STA 18+60.43 (MIRROR TYPICAL)
** –Y9RPC– STA 4+45.74 TO STA 14+76.99



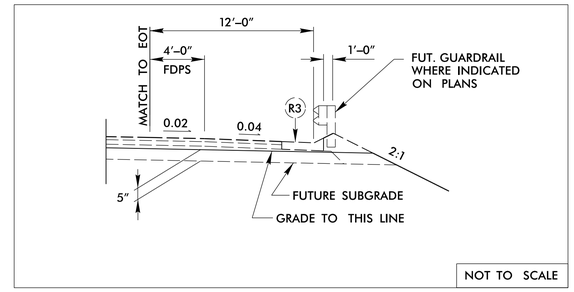
NOTES: * 4:1 MAX FILL SLOPE INSIDE INTERCHANGE

TYPICAL No. 4

–Y14RPA– STA 5+59.98 TO STA 14+78.99
–Y14RPD– STA 4+55.63 TO STA 16+33.93 (MIRROR TYPICAL)

INSET C

USE INSET C IN CONJUNCTION WITH TYPICAL No. 2



SHOULDER BERM GUTTER DETAIL
–Y9RPA– & –Y9RPD–

AT LOCATIONS WHERE INDICATED ON PLANS

** USE GEOTEXTILE FOR SOIL STABILIZATION IN CONJUNCTION WITH TYPICAL SECTION 4
AT THE FOLLOWING LOCAITONS

–Y14RPA–	11+00 TO 14+78.99
–Y14RPD–	9+00 TO 16+33.93

NOTE: ROCK INVESTIGATION PER CUT AS SPECIFIED IN
NCDOT STANDARD SPECIFICATIONS SHALL BE FROM FUTURE SUBGRADE LINE

PROJECT REFERENCE NO.	SHEET NO.
R-2707C	2A-2
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 15869 ENGINEER
DocuSigned by: Christopher R. Hedal
26569A2AEB8F4A0...
4/12/2017

PAVEMENT DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 022896 ENGINEER
DocuSigned by: Clarkson Morrison
B0A110DD1B5B4A0...
4/12/2017

moffatt & nichol
4700 FALLS OF NEUSE ROAD, SUITE 300
RALEIGH, NORTH CAROLINA 27609
(919) 781-4626 VOICE (919) 781-4869 FAX
FB. IF-0-051

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PAVEMENT SCHEDULE

CODE	DESCRIPTION
C3	3″ ACSC TYPE S9.5B
D1	2½″ ACIC TYPE I19.0B
D3	4″ ACIC TYPE I19.0B
J2	8″ ABC
N	GEOTEXTILE FOR PVMT STAB
R3	CONC. SHOULDER BERM GUTTER
T	EARTH MATERIAL

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PROJECT REFERENCE NO.	SHEET NO.
R-2707C	2A-3
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 15869 ENGINEER — 4/12/2017

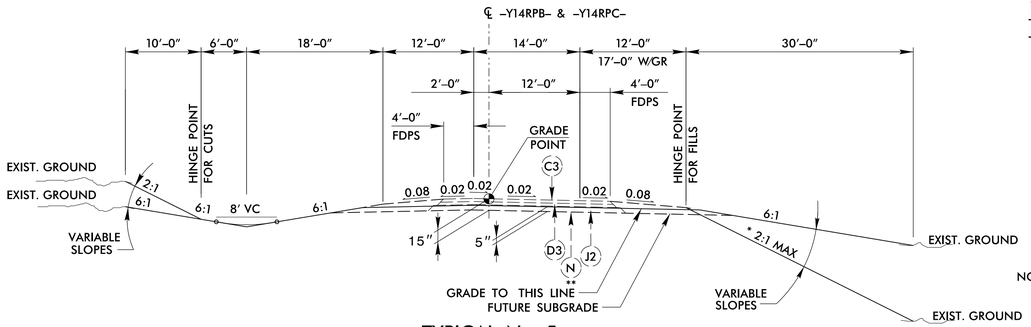
NORTH CAROLINA PROFESSIONAL SEAL 022896 ENGINEER — 4/12/2017

moffatt & nichol
4700 FALLS OF NEUSE ROAD, SUITE 300
RALEIGH, NORTH CAROLINA 27609
(919) 781-4626 VOICE (919) 781-4869 FAX
FIRM LICENSE # C-0205

UNLESS ALL SIGNATURES COMPLETED

** USE GEOTEXTILE FOR SOIL STABILIZATION IN CONJUNCTION WITH TYPICAL SECTION 5 AT THE FOLLOWING LOCAITONS

–Y14RPB– 4+22.74 TO 13+01.79
–Y14RPC– 3+80.68 TO 11+45.09



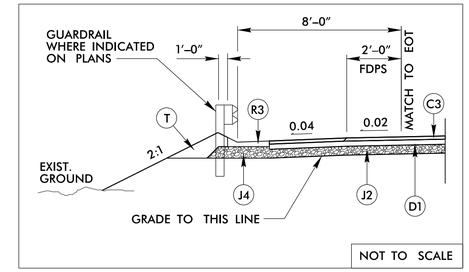
NOTES: * 4:1 MAX FILL SLOPE INSIDE INTERCHANGE

TYPICAL No. 5

–Y14RPB– STA 4+22.74 TO STA 13+01.79 (MIRROR TYPICAL)
–Y14RPC– STA 3+80.68 TO STA 11+45.09

INSET D

USE INSET D IN CONJUNCTION WITH TYPICAL SECTION 7



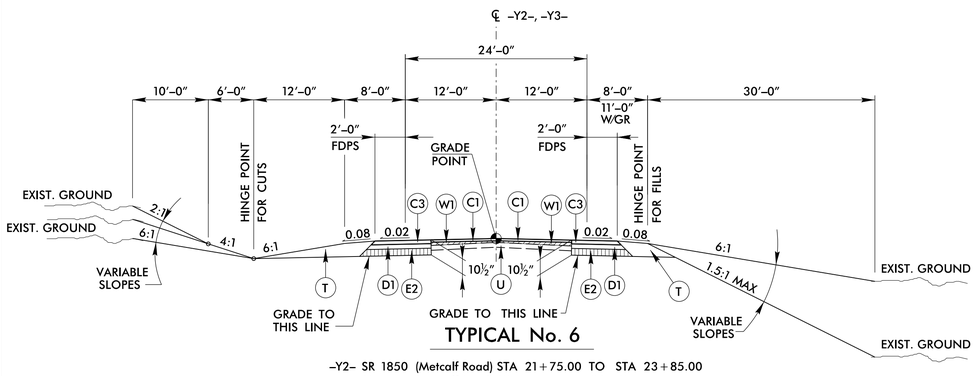
–Y2– /–Y3– SHLDR BERM GUTTER DETAIL

AT LOCATIONS WHERE INDICATED ON PLANS

PAVEMENT SCHEDULE

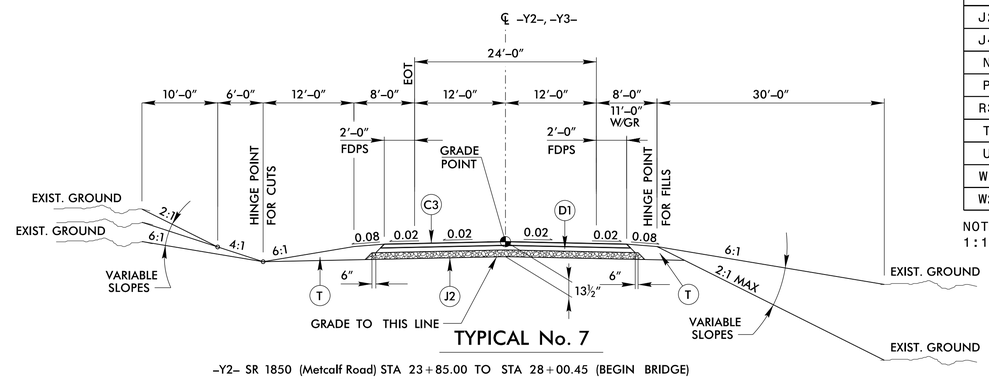
CODE	DESCRIPTION
C1	1½″ ACSC TYPE S9.5B
C3	3″ ACSC TYPE S9.5B
D1	2½″ ACIC TYPE I19.0B
D3	4″ ACIC TYPE I19.0B
E2	5″ ACBC TYPE B25.0B
J2	8″ ABC
J4	VAR ABC
N	GEOTEXTILE FOR PVMT STAB
P	PRIME COAT
R3	CONC. SHOULDER BERM GUTTER
T	EARTH MATERIAL
U	EXISTING PAVEMENT
W1	WEDGING W/O INTERMEDIATE
W2	WEDGING WITH INTERMEDIATE

NOTES: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS OTHERWISE SHOWN



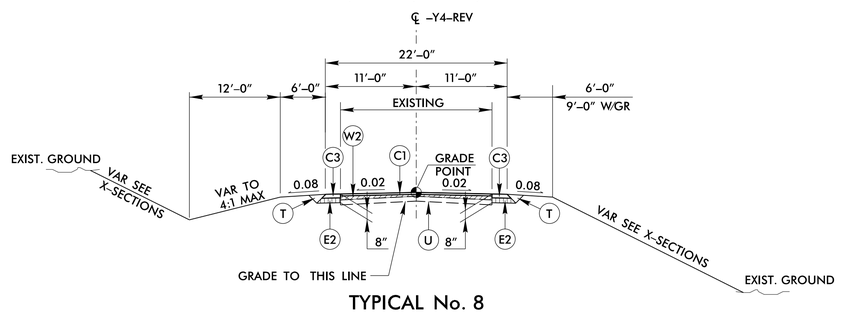
TYPICAL No. 6

–Y2– SR 1850 (Metcalf Road) STA 21+75.00 TO STA 23+85.00
–Y2– SR 1850 (Metcalf Road) STA 33+25.00 TO STA 33+75.00
–Y3– SR 1005 (North Lafayette Street) STA 16+15.00 TO STA 18+50.00
–Y3– SR 1005 (North Lafayette Street) STA 25+00.00 TO STA 27+25.00



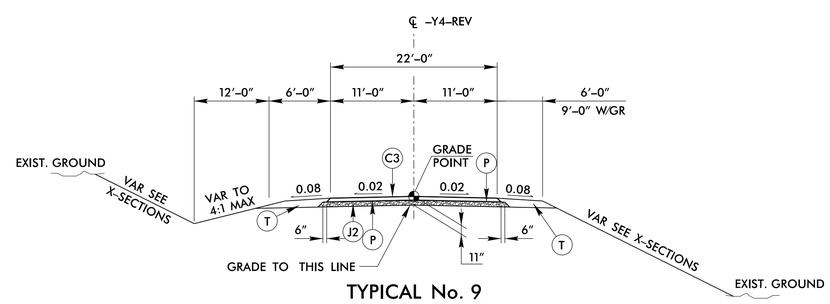
TYPICAL No. 7

–Y2– SR 1850 (Metcalf Road) STA 23+85.00 TO STA 28+00.45 (BEGIN BRIDGE)
–Y2– SR 1850 (Metcalf Road) STA 30+14.19 (END BRIDGE) TO STA 33+25.00
–Y3– SR 1005 (North Lafayette Street) STA 18+50.00 TO STA 19+77.23 (BEGIN BRIDGE)
–Y3– SR 1005 (North Lafayette Street) STA 21+63.23 (END BRIDGE) TO STA 25+00.00



TYPICAL No. 8

–Y4–REV SR 1827 (McBrayer Springs Rd) STA 15+02.00 TO STA 17+61.35
–Y4–REV SR 1827 (McBrayer Springs Rd) STA 32+00.00 TO STA 34+76.31

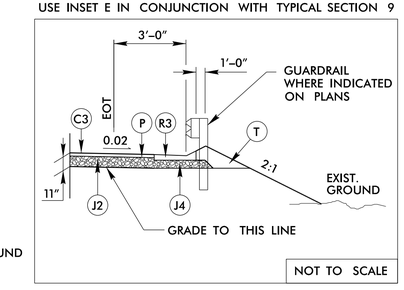


TYPICAL No. 9

–Y4–REV SR 1827 (McBrayer Springs Rd) STA 17+61.35 TO STA 22+82.50 (BEGIN BRIDGE)
–Y4–REV SR 1827 (McBrayer Springs Rd) STA 25+39.00 (END BRIDGE) TO STA 32+00.00

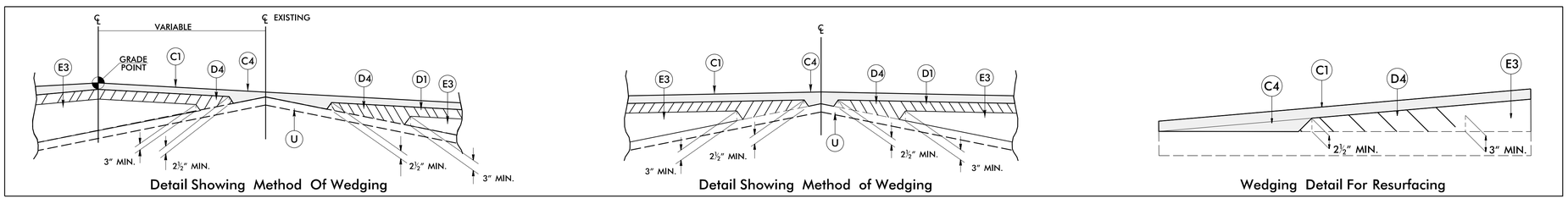
INSET E

USE INSET E IN CONJUNCTION WITH TYPICAL SECTION 9



–Y4–REV SHLDR BERM GUTTER DETAIL

AT LOCATIONS WHERE INDICATED ON PLANS



METHOD OF WEDGING 1 DETAILS

(Does Include Intermediate Pavement)

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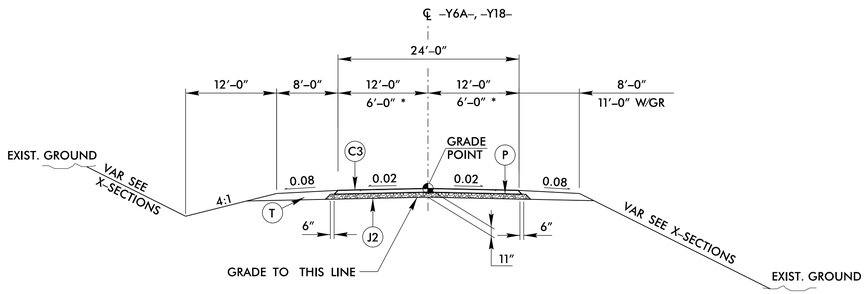
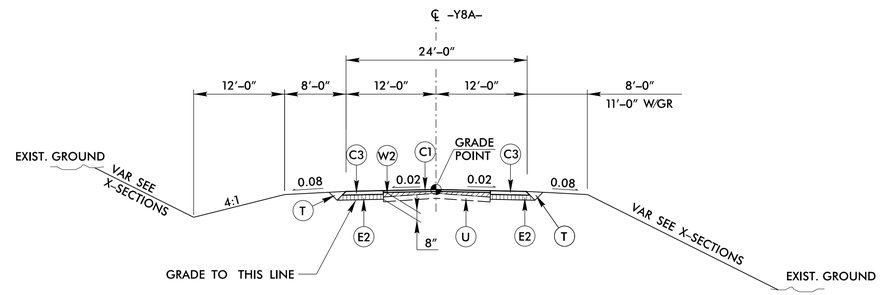


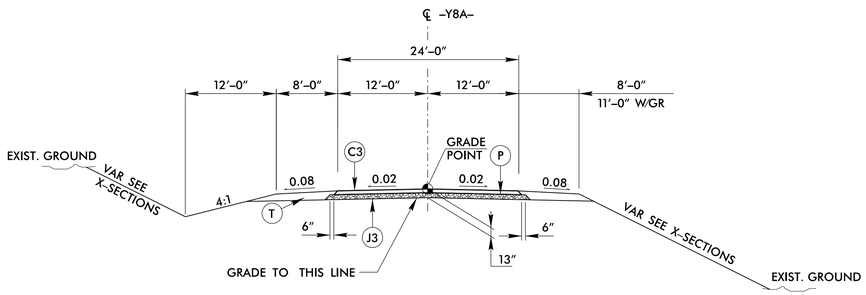
TYPICAL No. 10

–Y6A– SR 1843 (Spring Brook Drive) STA 10+00.00 TO STA 20+70.00
–Y18– (Service Road 1) STA 12+00.00 TO STA 16+58.58 *



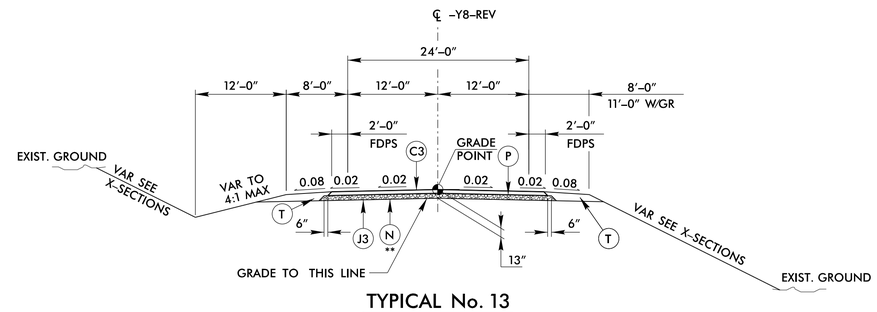
TYPICAL No. 11

–Y8A– (Carter Road Connector) STA 33+00.00 TO STA 34+39.59



TYPICAL No. 12

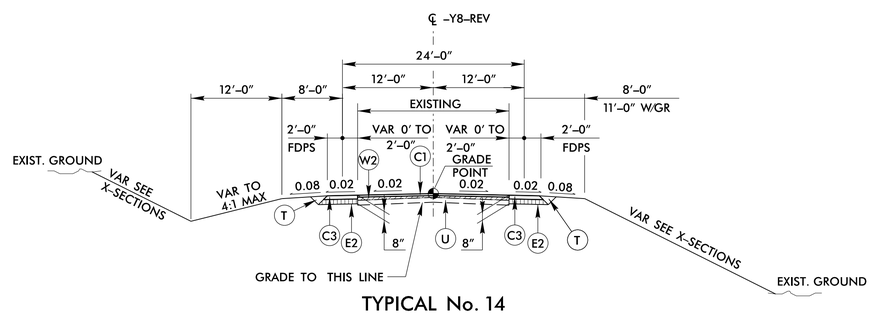
–Y8A– (Carter Road Connector) STA 34+39.59 TO STA 35+96.71



TYPICAL No. 13

–Y8–REV SR 1927 (Carter Road) 10+32.02 to STA 34+90.20

** USE GEOTEXTILE FOR SOIL STABILIZATION IN CONJUNCTION WITH TYPICAL SECTION 13
AT THE FOLLOWING LOCAITONS
–Y8–REV 29+00 TO 31+50

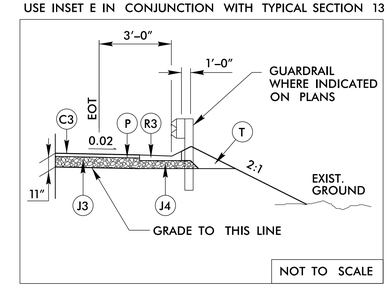


TYPICAL No. 14

–Y8–REV SR 1927 (Carter Road) STA 34+90.20 TO STA 36+00.00

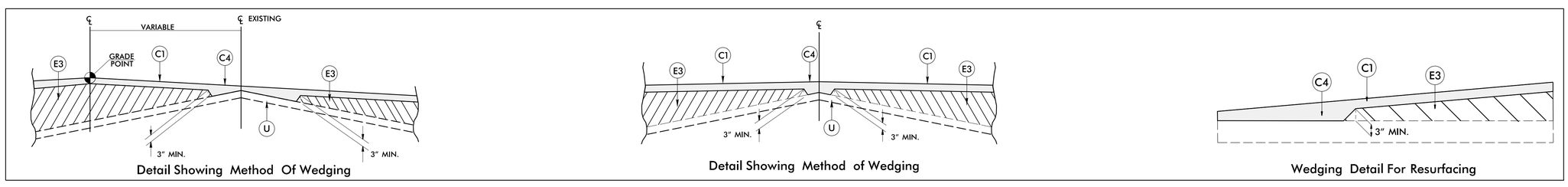
INSET F

USE INSET E IN CONJUNCTION WITH TYPICAL SECTION 13



–Y8–REV SHLDR BERM GUTTER DETAIL

AT LOCATIONS WHERE INDICATED ON PLANS



METHOD OF WEDGING 2 DETAILS

(Does Not Include Intermediate Pavement)

PROJECT REFERENCE NO.	SHEET NO.
R-2707C	2A-4
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 15869 ENGINEER

DocuSigned by: Jeremy R. Reid
26569A24A4B8B8...
4/12/2017

PAVEMENT DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 022896 ENGINEER

DocuSigned by: Christopher Robinson
B0A110DD1B5B4B...
4/12/2017

moffatt & nichol
4700 FALLS OF NEUSE ROAD, SUITE 300
RALEIGH, NORTH CAROLINA 27609
(919) 781-4626 VOICE (919) 781-4869 FAX
FIRM LICENSE # C-0205

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PAVEMENT SCHEDULE

CODE	DESCRIPTION
C1	1½″ ACSC TYPE S9.5B
C3	3″ ACSC TYPE S9.5B
C4	VAR. ACSC TYPE S9.5B
E2	5″ ACBC TYPE B25.0B
E3	VAR. TYPE B25.0B
J2	8″ ABC
J3	10″ ABC
J4	VAR ABC
P	PRIME COAT
R3	CONC. SHOULDER BERM GUTTER
T	EARTH MATERIAL
U	EXISTING PAVEMENT
W1	WEDGING DETAIL 1

NOTES: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS OTHERWISE SHOWN

DocuSign Envelope ID: 31A08C84-1864-4EE7-9F0B-6CB96988B043A

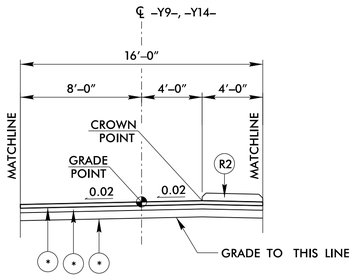
PROJECT REFERENCE NO.	SHEET NO.
R-2707C	2A-5
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER
SEAL 15869	SEAL 022896
4/12/2017	4/12/2017

moffatt & nichol
4700 FALLS OF NEUSE ROAD, SUITE 300
RALEIGH, NORTH CAROLINA 27609
(919) 781-4626 VOICE (919) 781-4869 FAX
FIRM LICENSE # C-0205

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

INSET G

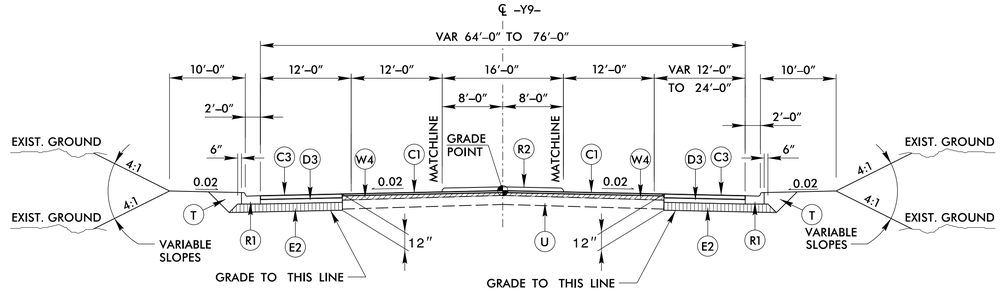
USE INSET G IN CONJUNCTION WITH TYPICAL SECTIONS 15, 16 & 20



* SEE CORRESPONDING TYPICAL SECTIONS FOR REQUIRED PAVEMENT

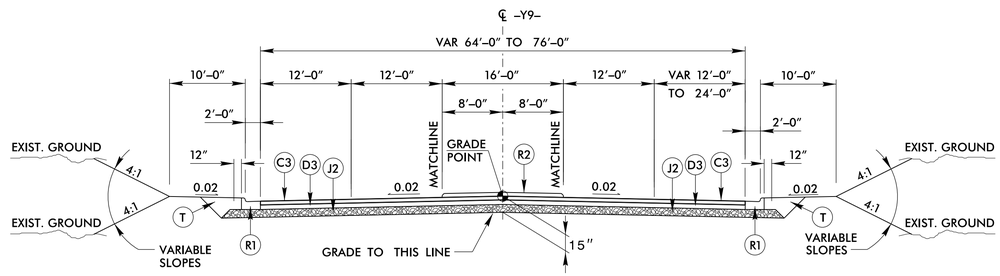
USE THIS DETAIL AT THE FOLLOWING LOCATIONS:

(–Y9–) NC 18 (Fallston Road) STA 11+51.02 TO STA 15+00.00
(–Y9–) NC 18 (Fallston Road) STA 18+72.40 TO STA 22+65.00
(–Y9–) NC 18 (Fallston Road) STA 23+65.00 TO STA 27+90.00 (FLIPVIEW)
(–Y9–) NC 18 (Fallston Road) STA 31+00.00 TO STA 32+59.88 (FLIPVIEW)
(–Y14–) NC 150 (Cherryville Road) STA 17+48.00 TO STA 20+56.02 (FLIPVIEW)



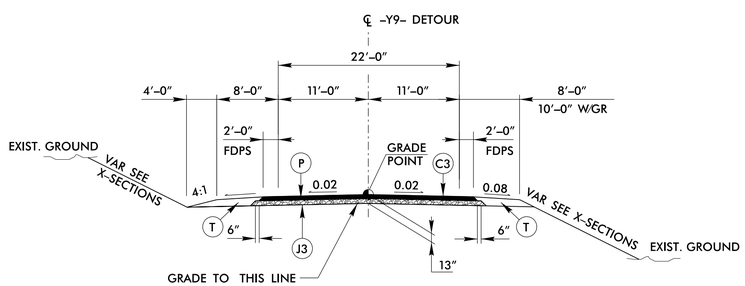
TYPICAL No. 15

(–Y9–) NC 18 (Fallston Road) STA 10+70.00 TO 19+66.80
(–Y9–) NC 18 (Fallston Road) STA 29+51.06 TO 36+00.00



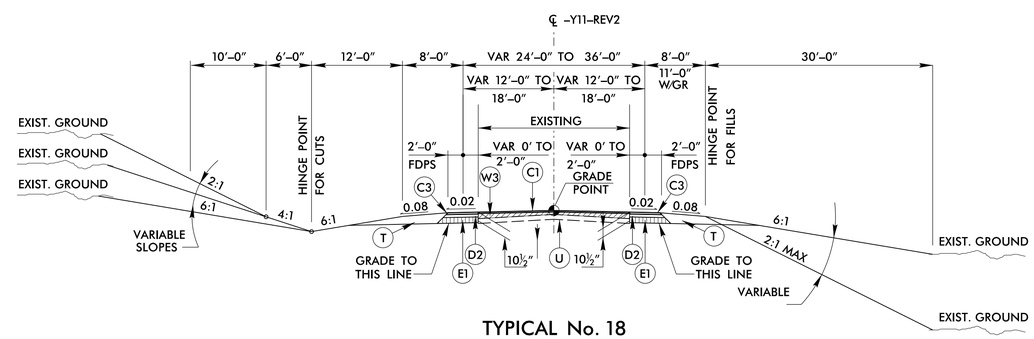
TYPICAL No. 16

(–Y9–) NC 18 (Fallston Road) STA 19+66.80 TO 23+03.49 (BEGIN BRIDGE)
(–Y9–) NC 18 (Fallston Road) STA 25+12.49 (END BRIDGE) TO 29+51.06



TYPICAL No. 17

–Y9– DETOUR STA 11+91.81 TO STA 23+25.74



TYPICAL No. 18

–Y11–REV2 NC 180 (North Post Road) STA 17+72.40 TO STA 23+31.64
–Y11–REV2 NC 180 (North Post Road) STA 66+64.00 TO STA 69+85.16

PAVEMENT SCHEDULE

CODE	DESCRIPTION
C1	1½" ACSC TYPE S9.5B
C3	3" ACSC TYPE S9.5B
D2	3½" ACIC TYPE I19.0B
D3	4" ACIC TYPE I19.0B
E1	4" ACBC TYPE B25.0B
E2	5" ACBC TYPE B25.0B
J2	8" ABC
J3	10" ABC
P	PRIME COAT
R1	2'-6" CURB AND GUTTER
R2	5" CONC. ISLAND
T	EARTH MATERIAL
U	EXISTING PAVEMENT
W2	WEDGING DETAIL 2

NOTES: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS OTHERWISE SHOWN

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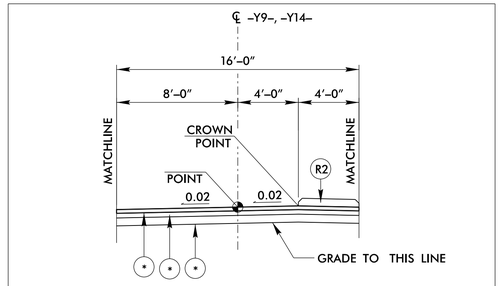
INSET H

USE INSET H IN CONJUNCTION WITH TYPICAL SECTIONS 15, 16 & 20



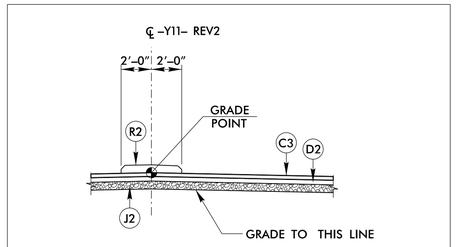
* SEE CORRESPONDING TYPICAL SECTIONS FOR REQUIRED PAVEMENT

USE THIS DETAIL AT THE FOLLOWING LOCATIONS:

(–Y9–) NC 18 (Fallston Road) STA 11+51.02 TO STA 15+00.00
(–Y9–) NC 18 (Fallston Road) STA 18+72.40 TO STA 22+65.00
(–Y9–) NC 18 (Fallston Road) STA 23+65.00 TO STA 27+90.00 (FLIPVIEW)
(–Y9–) NC 18 (Fallston Road) STA 31+00.00 TO STA 32+59.88 (FLIPVIEW)
(–Y14–) NC 150 (Cherryville Road) STA 17+48.00 TO STA 20+56.02 (FLIPVIEW)

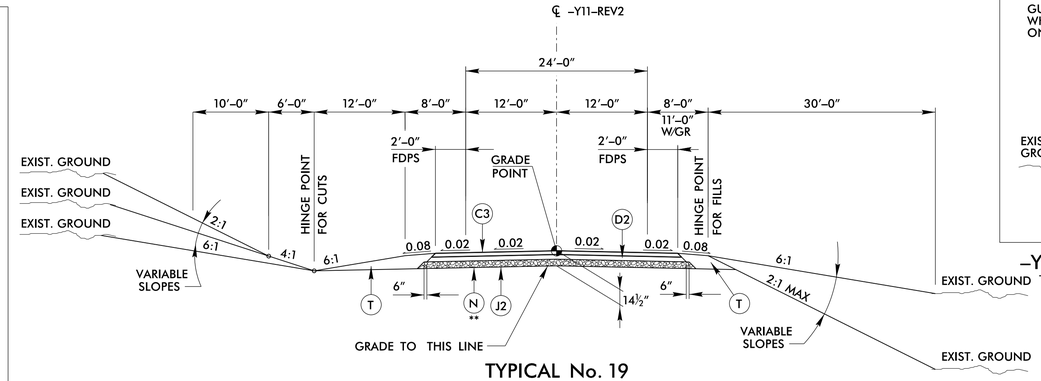
INSET I

USE INSET I IN CONJUNCTION WITH TYPICAL SECTION 19



USE THIS DETAIL AT THE FOLLOWING LOCATIONS:

–Y11–REV2 NC 180 (North Post Road) STA 46+28.00 TO STA 47+33.31
–Y11–REV2 NC 180 (North Post Road) STA 48+93.31 TO STA 51+82.39



TYPICAL No. 19

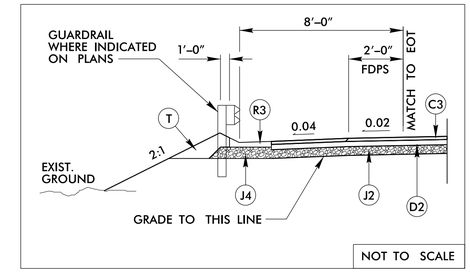
–Y11–REV2 NC 180 (North Post Road) STA 23+31.64 TO STA 31+71.96 (BEGIN BRIDGE)
–Y11–REV2 NC 180 (North Post Road) STA 32+94.71 (END BRIDGE) TO STA 47+33.31 (EP –Y14–)
–Y11–REV2 NC 180 (North Post Road) STA 48+93.31 (EP –Y14–) TO STA 66+64.00

** USE GEOTEXTILE FOR SOIL STABILIZATION IN CONJUNCTION WITH TYPICAL SECTION 19 AT THE FOLLOWING LOCAITONS

–Y11–REV2 45+00 TO 64+00

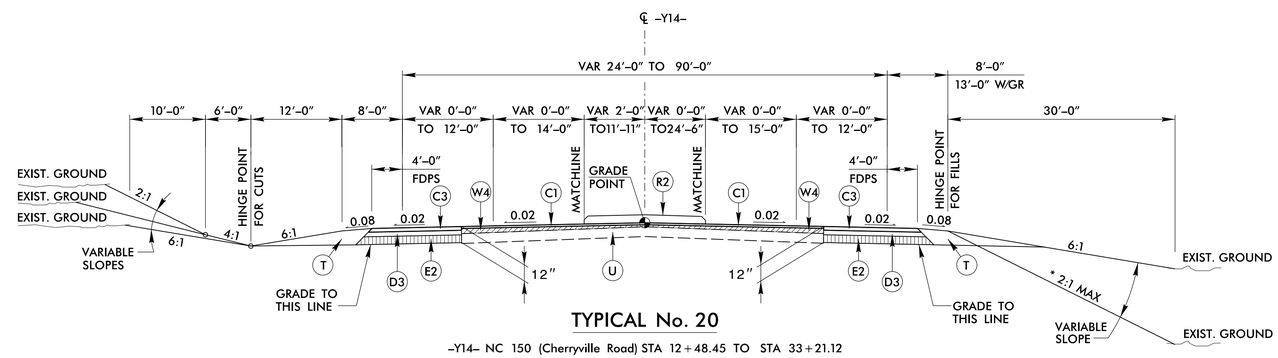
INSET J

USE INSET J IN CONJUNCTION WITH TYPICAL SECTION 19



–Y11–REV2 SHLDR BERM GUTTER DETAIL

AT LOCATIONS WHERE INDICATED ON PLANS



TYPICAL No. 20

–Y14– NC 150 (Cherryville Road) STA 12+48.45 TO STA 33+21.12
–Y14– NC 150 (Cherryville Road) STA 47+99.51 TO STA 55+00.00

PROJECT REFERENCE NO.	SHEET NO.
R-2707C	2A-6
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 15869 ENGINEER
Digitally signed by Julianne K. Reed
26569A24EB8E4F0...
4/12/2017

PAVEMENT DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 022896 ENGINEER
Digitally signed by Christopher L. Morrison
B0A110DD1B5B4A0...
4/12/2017

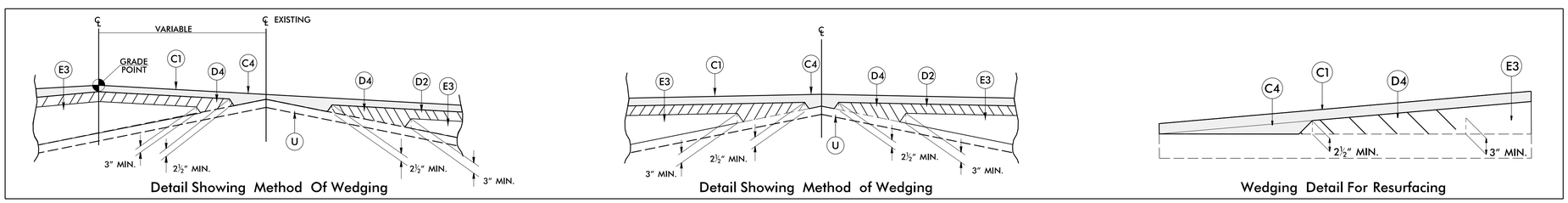
moffatt & nichol
4700 FALLS OF NEUSE ROAD, SUITE 300
RALEIGH, NORTH CAROLINA 27609
(919) 781-4626 VOICE (919) 781-4869 FAX
FIRM LICENSE # C-0301

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PAVEMENT SCHEDULE

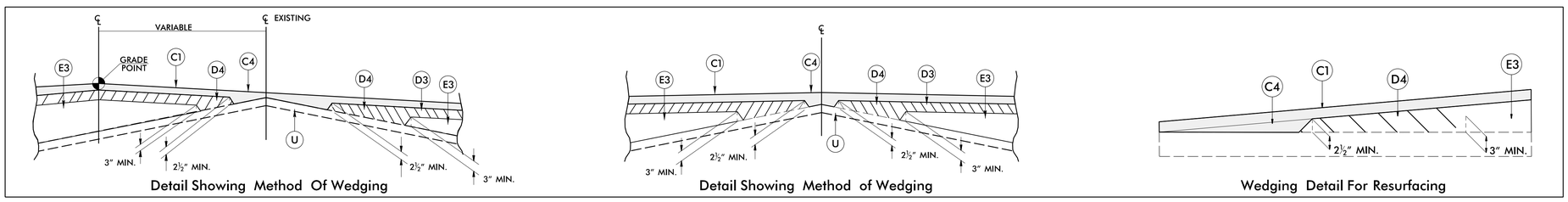
CODE	DESCRIPTION
C1	1½″ ACSC TYPE S9.5B
C3	3″ ACSC TYPE S9.5B
C4	VAR. ACSC TYPE S9.5B
D2	3½″ ACIC TYPE I19.0B
D3	4″ ACIC TYPE I19.0B
D4	VAR. ACIC TYPE I19.0B
E2	5″ ACBC TYPE B25.0B
E3	VAR. TYPE B25.0B
J2	8″ ABC
N	GEOTEXTILE FOR PVMT STAB
R2	5″ CONC. ISLAND
T	EARTH MATERIAL
U	EXISTING PAVEMENT
W2	WEDGING DETAIL 2

NOTES: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS OTHERWISE SHOWN



METHOD OF WEDGING 3 DETAILS

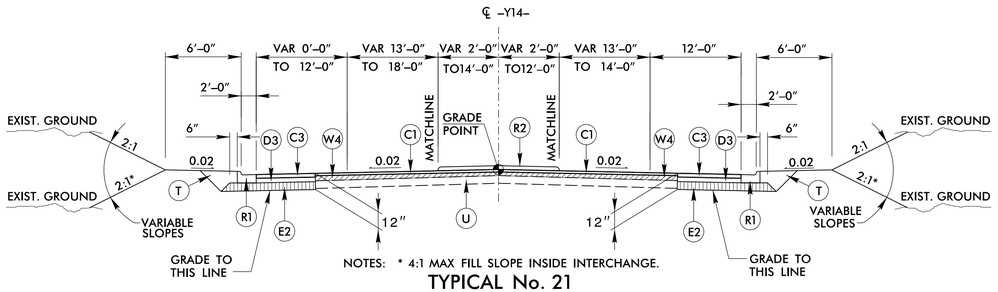
(Does Include Intermediate Pavement)



METHOD OF WEDGING 4 DETAILS

(Does Include Intermediate Pavement)

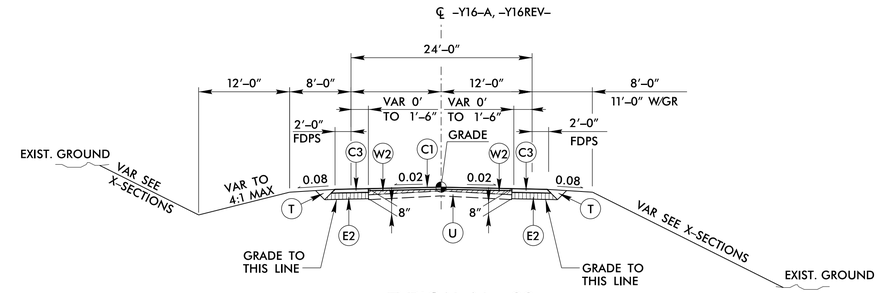
DocuSign Envelope ID: 31A08C84-1864-4EE7-9F0B-6CB96988D043A



NOTES: * 4:1 MAX FILL SLOPE INSIDE INTERCHANGE.

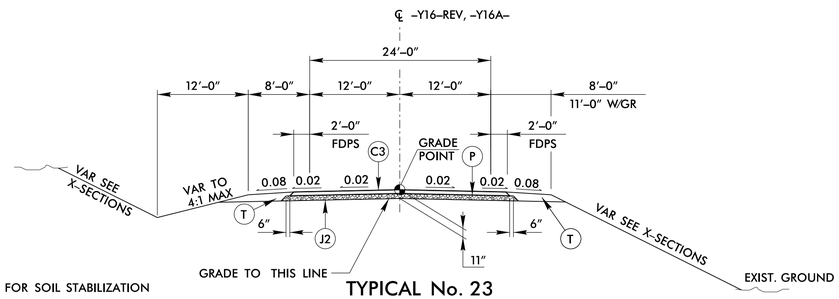
TYPICAL No. 21

–Y14– NC 150 (Cherryville Road) STA 33+21.12 TO STA 33+78.19
–Y14– NC 150 (Cherryville Road) STA 35+38.19 TO STA 40+13.80
–Y14– NC 150 (Cherryville Road) STA 41+73.80 TO STA 45+63.10
–Y14– NC 150 (Cherryville Road) STA 47+23.10 TO STA 47+99.51



TYPICAL No. 22

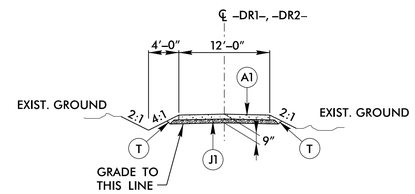
–Y16–REV SR 2155 (North LakeWood Drive) STA 10+00.00 TO STA 11+67.15
–Y16A– SR 2155 (North LakeWood Drive) STA 13+75.00 TO STA 14+43.85



** USE GEOTEXTILE FOR SOIL STABILIZATION IN CONJUNCTION WITH TYPICAL SECTION 23 AT THE FOLLOWING LOCAITONS
–Y16–REV 12+50 TO 16+00

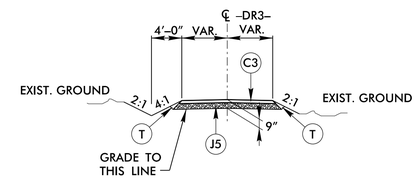
TYPICAL No. 23

–Y16–REV SR 2155 (North LakeWood Drive) STA 11+67.15 TO STA 19+93.31
–Y16A– SR 2155 (North LakeWood Drive) STA 14+43.85 TO STA 15+02.32



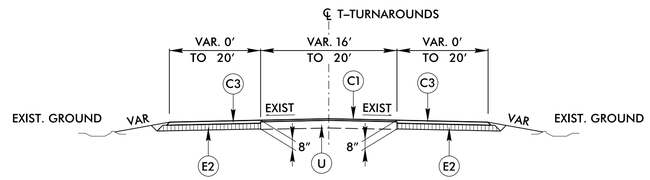
TYPICAL No. 24

–DR1– STA. 11+04.71 TO –DR1– STA. 12+60.00
–DR2– STA. 10+60.90 TO –DR2– STA. 11+68.42



TYPICAL No. 25

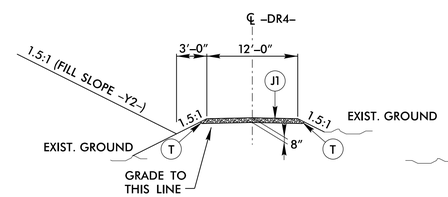
–DR3– STA. 10+12.00 TO –DR3– STA. 11+24.83



NOTE: SEE PLANS FOR TURNAROUND CONFIGURATION

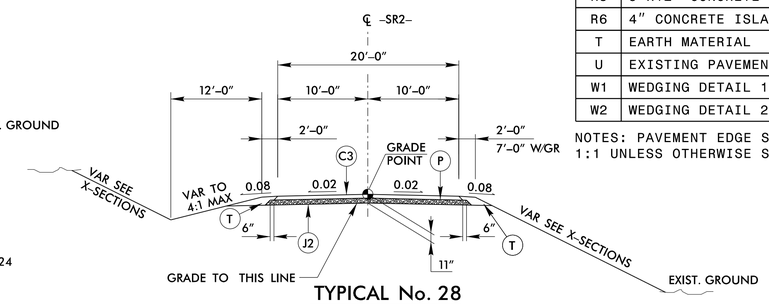
TYPICAL No. 26

–Y5– STA. 20+14.37 TO –Y5– STA. 20+76.37
–Y8– STA. 24+12.20 TO –Y8– STA. 24+84.19
–Y10– STA. 20+31.40 TO –Y10– STA. 20+71.85
–Y10– STA. 24+30.13 TO –Y10– STA. 24+70.57
–Y11A– STA. 46+10.59 TO –Y11A– STA. 46+51.82
–Y15– STA. 25+74.97 TO –Y15– STA. 26+16.24



TYPICAL No. 27

–DR4– STA. 10+16.41 TO –DR4– STA. 17+07.24

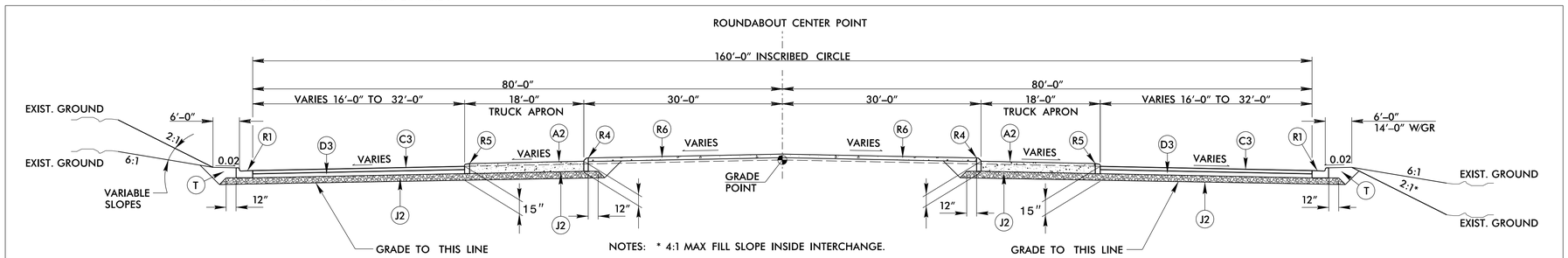


TYPICAL No. 28

–SR2– (Service Road 2) STA 10+18.00 TO STA 16+49.17

INSET 1

USE INSET 1 IN CONJUNCTION WITH TYPICAL SECTION 21



NOTES: * 4:1 MAX FILL SLOPE INSIDE INTERCHANGE.

USE THIS DETAIL AT THE FOLLOWING LOCATIONS:

–Y14– NC 150 (Cherryville Road) STA 34+58.19 (CENTER POINT)
–Y14– NC 150 (Cherryville Road) STA 40+93.80 (CENTER POINT)
–Y14– NC 150 (Cherryville Road) STA 46+43.10 (CENTER POINT)

PROJECT REFERENCE NO.	SHEET NO.
R-2707C	2A-7
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 15869 ENGINEER
DocuSigned by: Jeffrey K. Hecht
26569A2AEEB8488...
4/12/2017

PAVEMENT DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 022896 ENGINEER
DocuSigned by: Christopher M. Robinson
B0A110DD1B5B4A0...
4/12/2017

moffatt & nichol
4700 FALLS OF NEUSE ROAD, SUITE 300
RALEIGH, NORTH CAROLINA 27609
(919) 781-4626 VOICE (919) 781-4869 FAX
FIRM LICENSE # C-0205

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PAVEMENT SCHEDULE

CODE	DESCRIPTION
A1	5" CONCRETE DRIVEWAY
A2	12" CONCRETE TRUCK APRON
C1	1½" ACSC TYPE S9.5B
C2	2" ACSC TYPE S9.5B
C3	3" ACSC TYPE S9.5B
D3	4" ACIC TYPE I19.0B
E2	5" ACBC TYPE B25.0B
J1	4" ABC
J2	8" ABC
J5	6" ABC
N	GEOTEXTILE FOR PVMT STAB
P	PRIME COAT
R1	2'-6" CURB AND GUTTER
R2	5" CONC. ISLAND
R4	8"x18" CONCRETE CURB
R5	9"x12" CONCRETE CURB
R6	4" CONCRETE ISLAND COVER
T	EARTH MATERIAL
U	EXISTING PAVEMENT
W1	WEDGING DETAIL 1
W2	WEDGING DETAIL 2

NOTES: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS OTHERWISE SHOWN

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DETAIL FOR –Y9– DETOUR

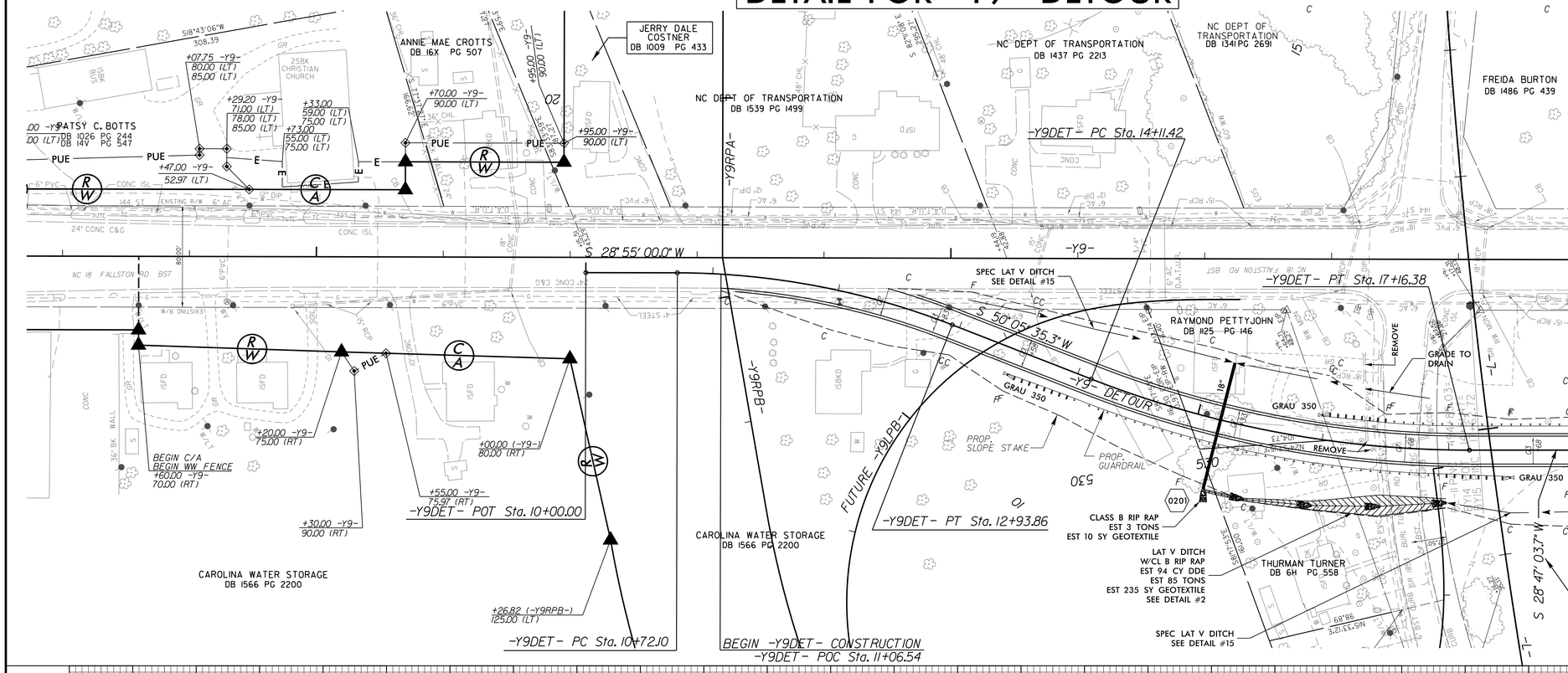
PROJECT REFERENCE NO.	SHEET NO.
R-2707C	2B-1
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 15869 ENGINEER — 4/12/2017

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 26971 ENGINEER — 4/12/2017

moffatt & nichol — 4700 FALLS OF NEUSE ROAD, SUITE 300, RALEIGH, NORTH CAROLINA 27609, (919) 781-4626 VOICE, (919) 781-4969 FAX

SDG Sungate Design Group, P.A. — Planning · Design · Engineering · Environmental · Transportation, 5-104 James Faircloth Blvd., Raleigh, N.C. 27606



-L-

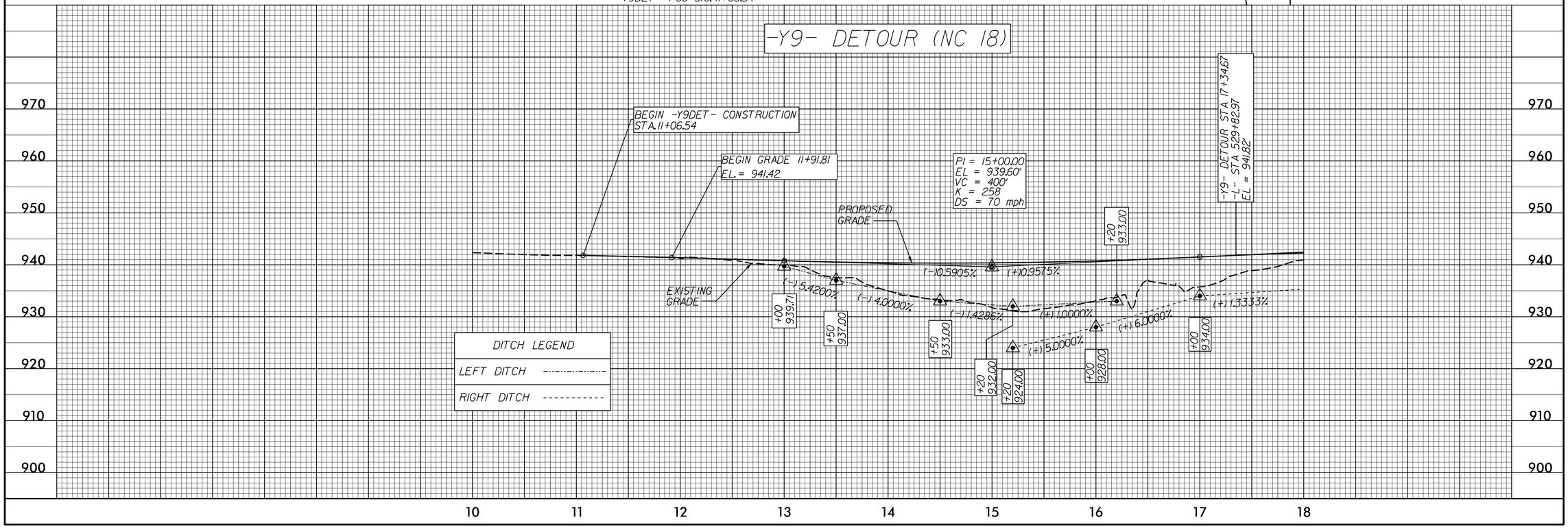
PI Sta 520+51.16
Δ = 26° 25' 21.1" (RT)
D = 1° 00' 00.0"
L = 2,642.25
T = 1,345.05'
R = 5,729.58'

-Y9- DETOUR

PI Sta 11+84.26
Δ = 21° 10' 35.3" (RT)
D = 9° 32' 57.5"
L = 221.76'
T = 112.16'
R = 600.00'
SE = .03

PI Sta 15+65.68
Δ = 21° 18' 31.6" (LT)
D = 6° 59' 14.2"
L = 304.96'
T = 154.26'
R = 820.00'
SE = .07
RO = 50'

FOR DITCH DETAILS SEE SHEETS 2D-1 THRU 2D-4
FOR PLAN VIEW SEE SHEET 16



DocuSign Envelope ID: 901BDDA9-B95D-4CD2-9EC6-1A37AA5CA05A

DETAIL FOR –Y9– DETOUR

PROJECT REFERENCE NO.	SHEET NO.
R-2707C	2B-2
R/W SHEET NO.	

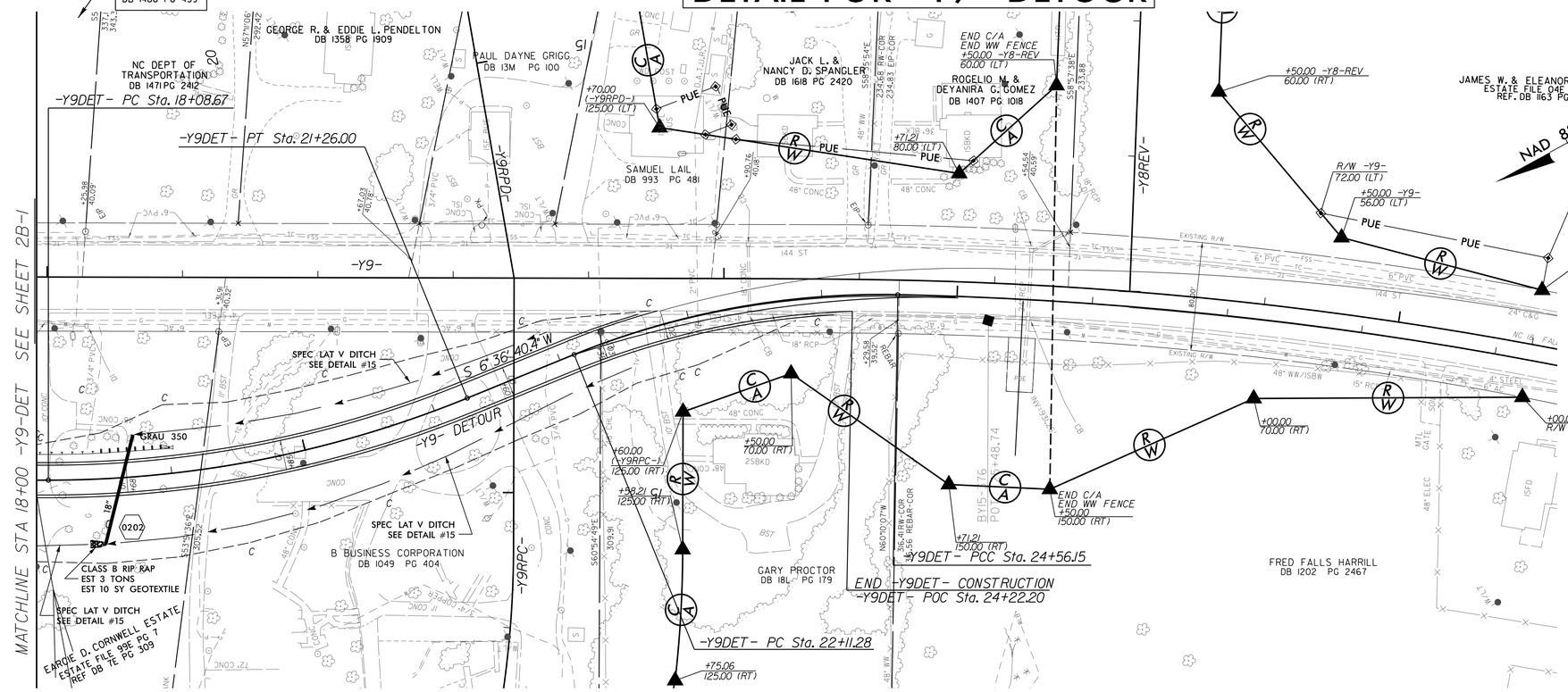
ROADWAY DESIGN ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 15869 ENGINEER — 4/12/2017

HYDRAULICS ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 26971 ENGINEER — 4/12/2017

moffatt & nichol — 4700 FALLS OF NEUSE ROAD, SUITE 300, RALEIGH, NORTH CAROLINA 27609, (919) 781-4626 VOICE, (919) 781-4865 FAX

SDG Sungate Design Group, P.A. Planning · Landscape Architecture · Environmental 5104 James Pringle Rd. Raleigh, N.C. 27606

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



-Y9-

PIs Sta 31+11.21
Θs = 1° 48' 00.0"
Ls = 180.00'
LT = 120.01'
ST = 60.01'

PI Sta 34+23.50
Δ = 10° 03' 56.4" (RT)
D = 2° 00' 00.0"
L = 503.28
T = 252.29'
R = 2,864.79'
SE = .04
RO = 90'

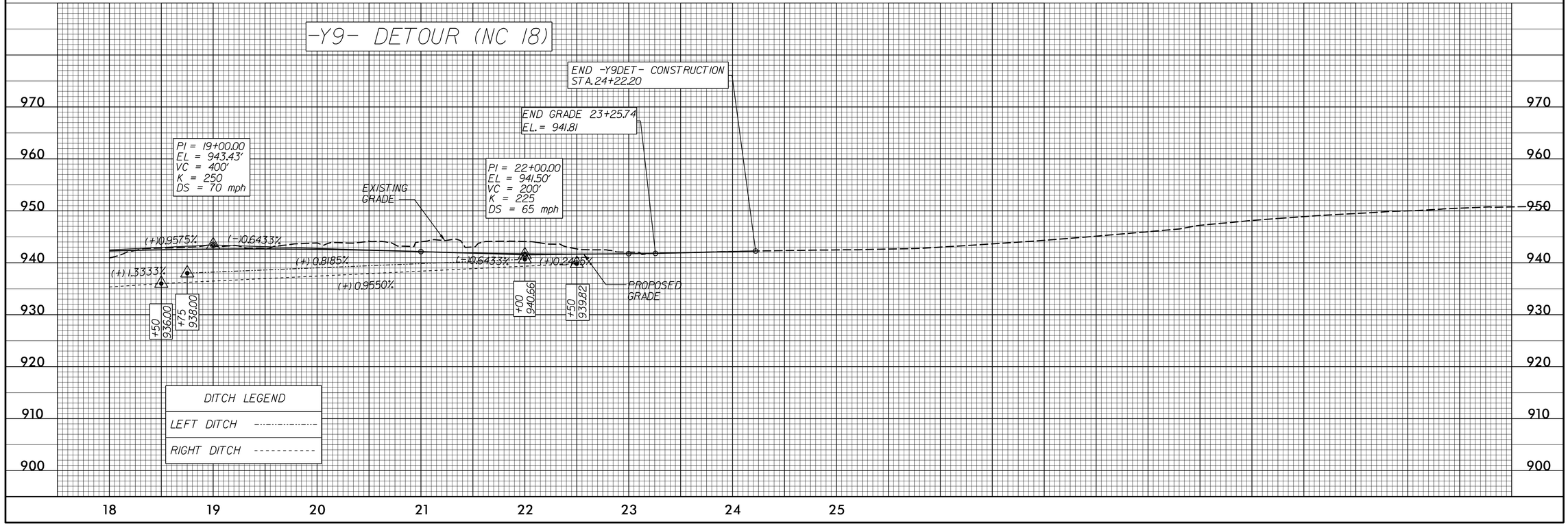
-Y9- DETOUR

PI Sta 19+69.35
Δ = 22° 10' 23.3" (LT)
D = 6° 59' 14.2"
L = 317.34'
T = 160.68'
R = 820.00'
SE = .07
RO = 50'

PI Sta 1+75.66
Δ = 32° 38' 08.8" (RT)
D = 9° 32' 57.5"
L = 341.76'
T = 175.66'
R = 600.00'
SE = .03

PI Sta 27+25.86
Δ = 11° 01' 23.8" (RT)
D = 2° 00' 29.8"
L = 548.90'
T = 275.30'
R = 2,853.00'

FOR DITCH DETAILS SEE SHEETS 2D-1 THRU 2D-4
FOR PLAN VIEW SEE SHEETS 16 & 32



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PROJECT REFERENCE NO.	SHEET NO.
R-2707C	2B-3
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 15869 ENGINEER JIMMY B. REID

DocuSigned by: Jimmy B. Reid 265B9A24E83411 4/12/2017

moffatt & nichol
4700 FALLS OF NEUSE ROAD, SUITE 300
RALEIGH, NORTH CAROLINA 27609
(919) 781-4626 VOICE (919) 781-4869 FAX
FIRM LICENSE # C-0193

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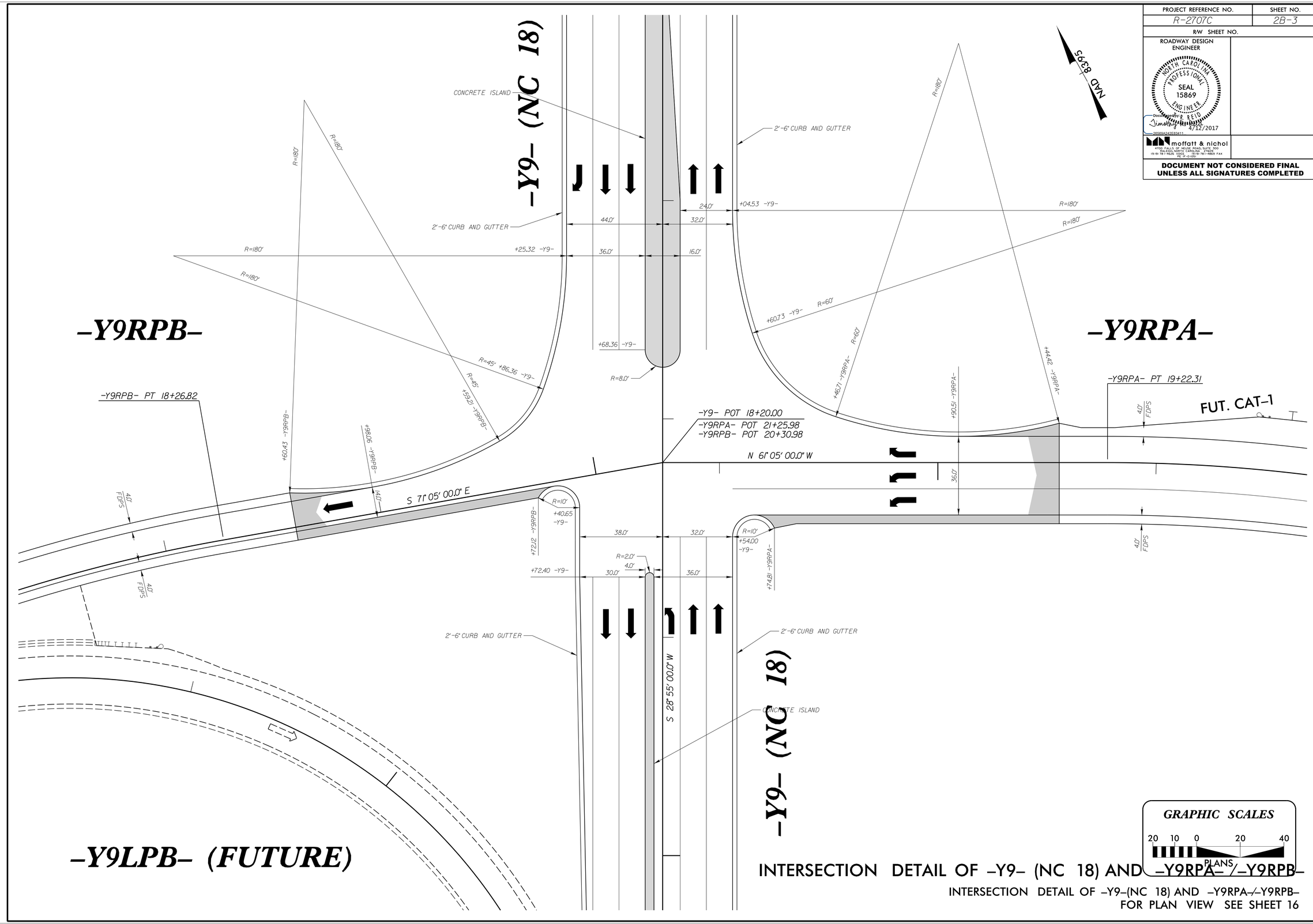

INTERSECTION DETAIL OF -Y9- (NC 18) AND -Y9RPA- / -Y9RPB-

INTERSECTION DETAIL OF -Y9-(NC 18) AND -Y9RPA-/-Y9RPB-
FOR PLAN VIEW SEE SHEET 16

DocuSign Envelope ID: 2418D1A4-2AB5-4148-942D-60C49AFF9ED4

PROJECT REFERENCE NO.	SHEET NO.
R-2707C	2B-4
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 15869 ENGINEER

DocuSigned by: Timothy R. Reid
265B9A24E63411
4/12/2017

moffatt & nichol
4700 FALLS OF NEUSE ROAD, SUITE 300
RALEIGH, NORTH CAROLINA 27609
(919) 781-4626 VOICE (919) 781-4869 FAX
FIRM LICENSE # C-0102

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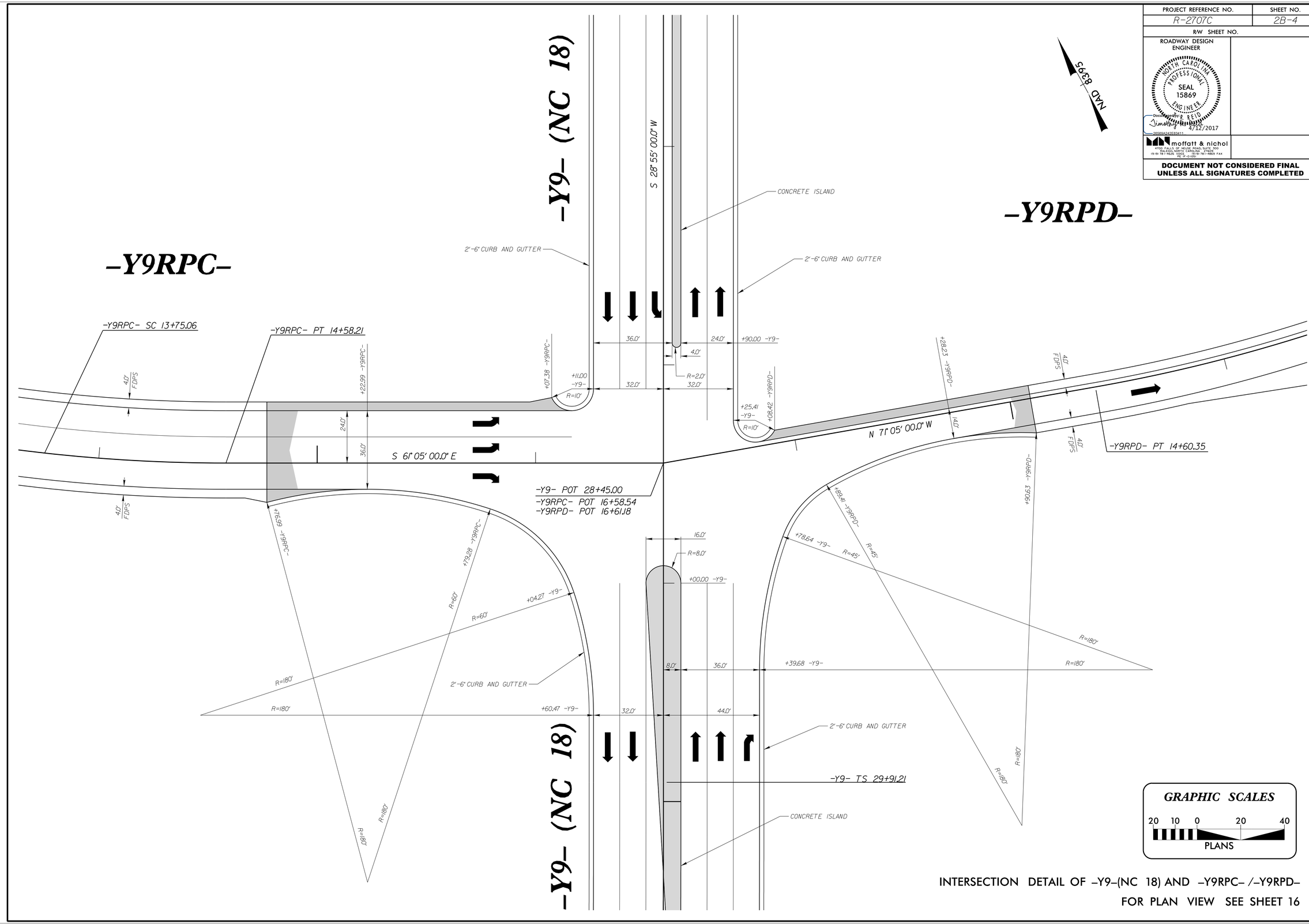

GRAPHIC SCALES

20 10 0 20 40

PLANS

INTERSECTION DETAIL OF –Y9–(NC 18) AND –Y9RPC– /–Y9RPD–

FOR PLAN VIEW SEE SHEET 16

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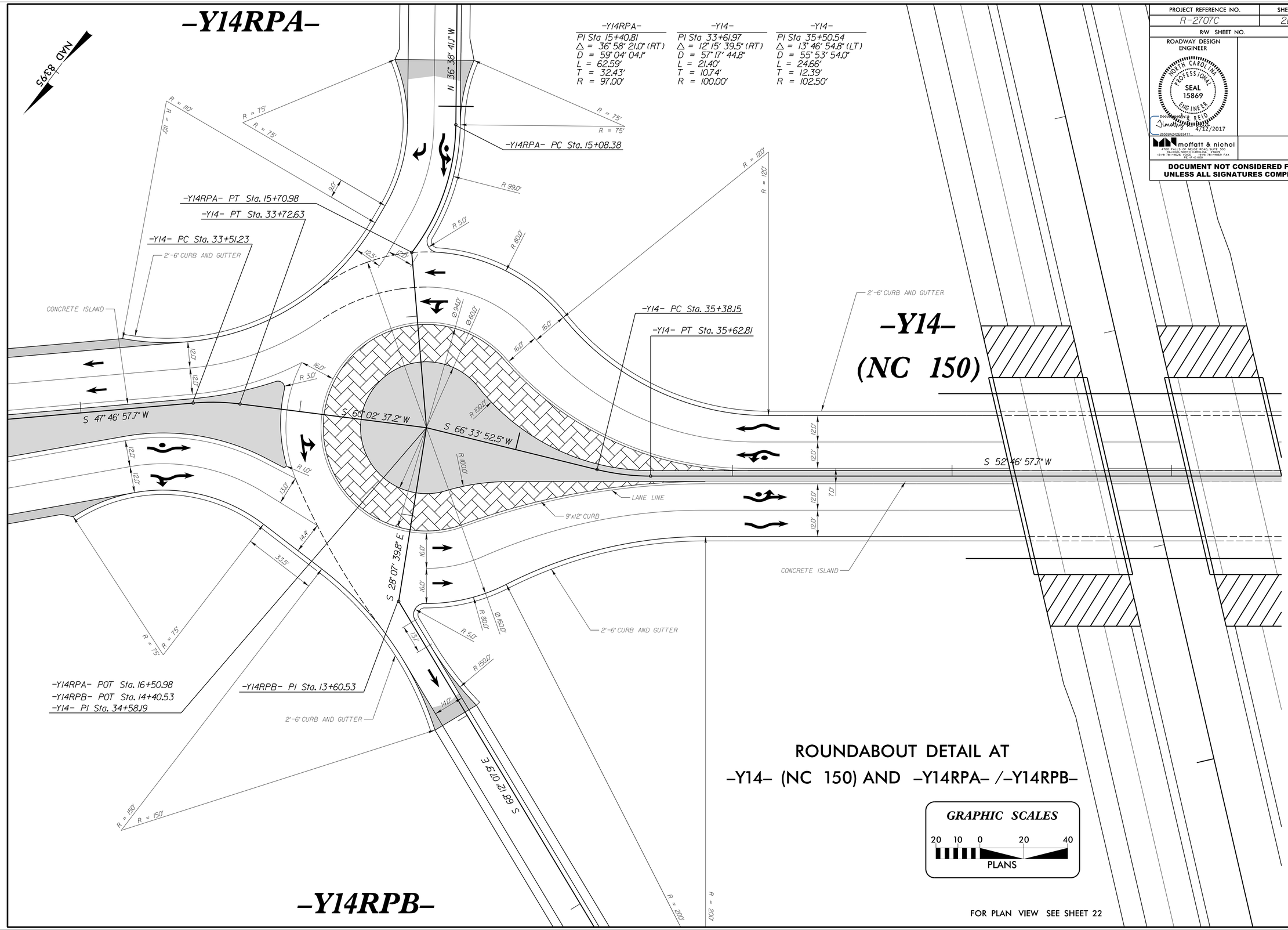

ROUNDABOUT DETAIL AT
-Y14- (NC 150) AND -Y14RPA- /-Y14RPB-

PROJECT REFERENCE NO.	SHEET NO.
R-2707C	2B-5
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 15869 ENGINEER JIMMY R. REID

Docu Signed by: Jimmy R. Reid 265B9A24E63411 4/12/2017

moffatt & nichol
4700 FALLS OF NEUSE ROAD, SUITE 300
RALEIGH, NORTH CAROLINA 27609
(919) 781-4626 VOICE (919) 781-4869 FAX
FIRM LICENSE # C-0193

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PROJECT REFERENCE NO.	SHEET NO.
R-2707C	2B-6
R/W SHEET NO.	

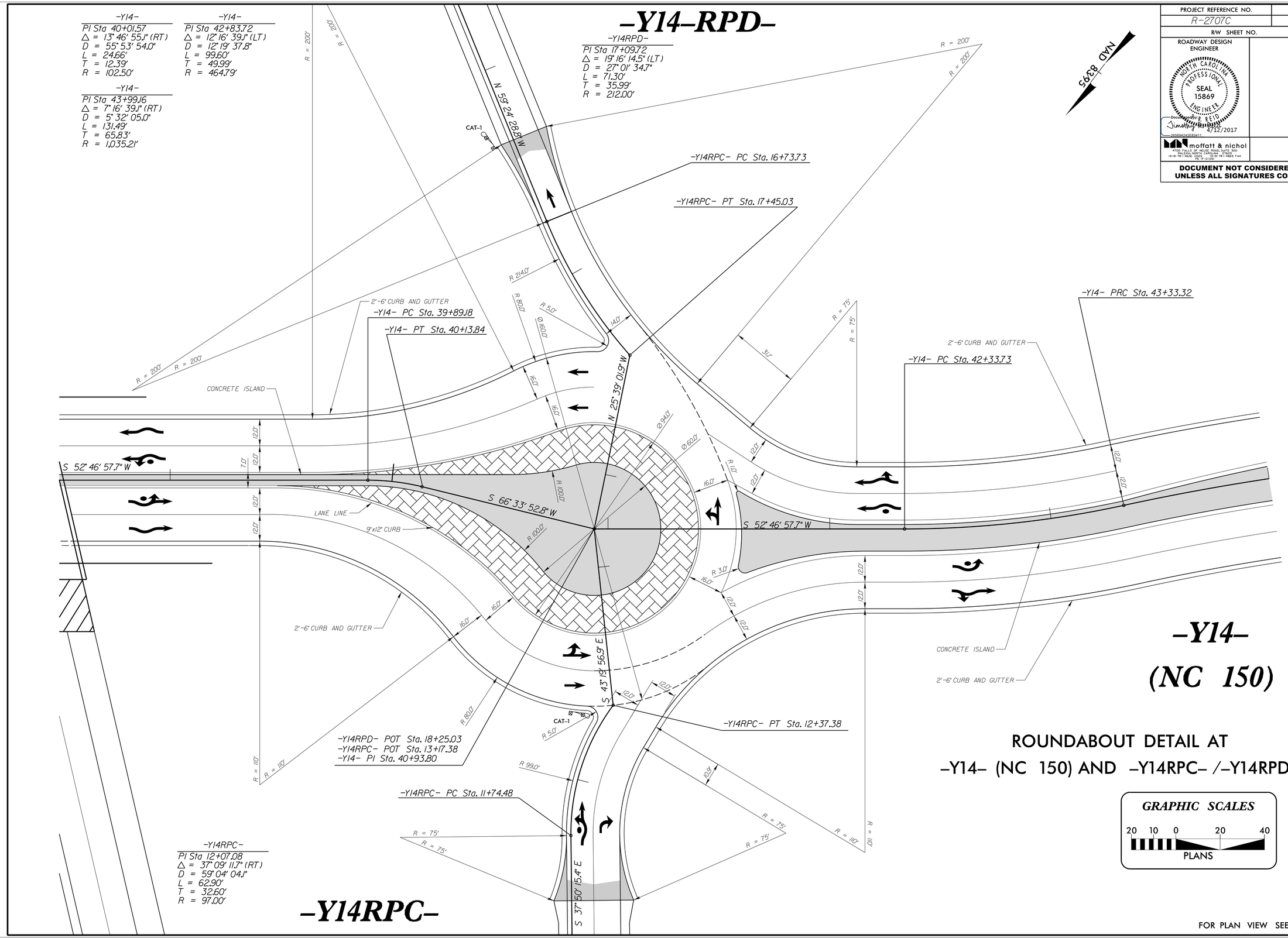
ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 15869 ENGINEER JIMMY B. REID

DocuSigned by: Jimmy B. Reid 4/12/2017
2656BA242E83411

moffatt & nichol
4700 FALLS OF NEUSE ROAD, SUITE 300
RALEIGH, NORTH CAROLINA 27609
(919) 781-4626 VOICE (919) 781-4869 FAX
FIRM LICENSE # C-0193

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



ROUNDABOUT DETAIL AT -Y14- (NC 150) AND -Y14RPC- /-Y14RPD-

FOR PLAN VIEW SEE SHEET 22

DocuSign Envelope ID: 2418D1A4-2AB5-4148-942D-60C49AFF9ED4

PROJECT REFERENCE NO.	SHEET NO.
R-2707C	2B-7
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 15869 ENGINEER

DocuSigned by: Jimmy R. Reid 265B9A24E63411 4/12/2017

moffatt & nichol
4700 FALLS OF NEUSE ROAD, SUITE 300
RALEIGH, NORTH CAROLINA 27609-3941
(919) 781-4626 VOICE (919) 781-4969 FAX
FIRM LICENSE # C-0193

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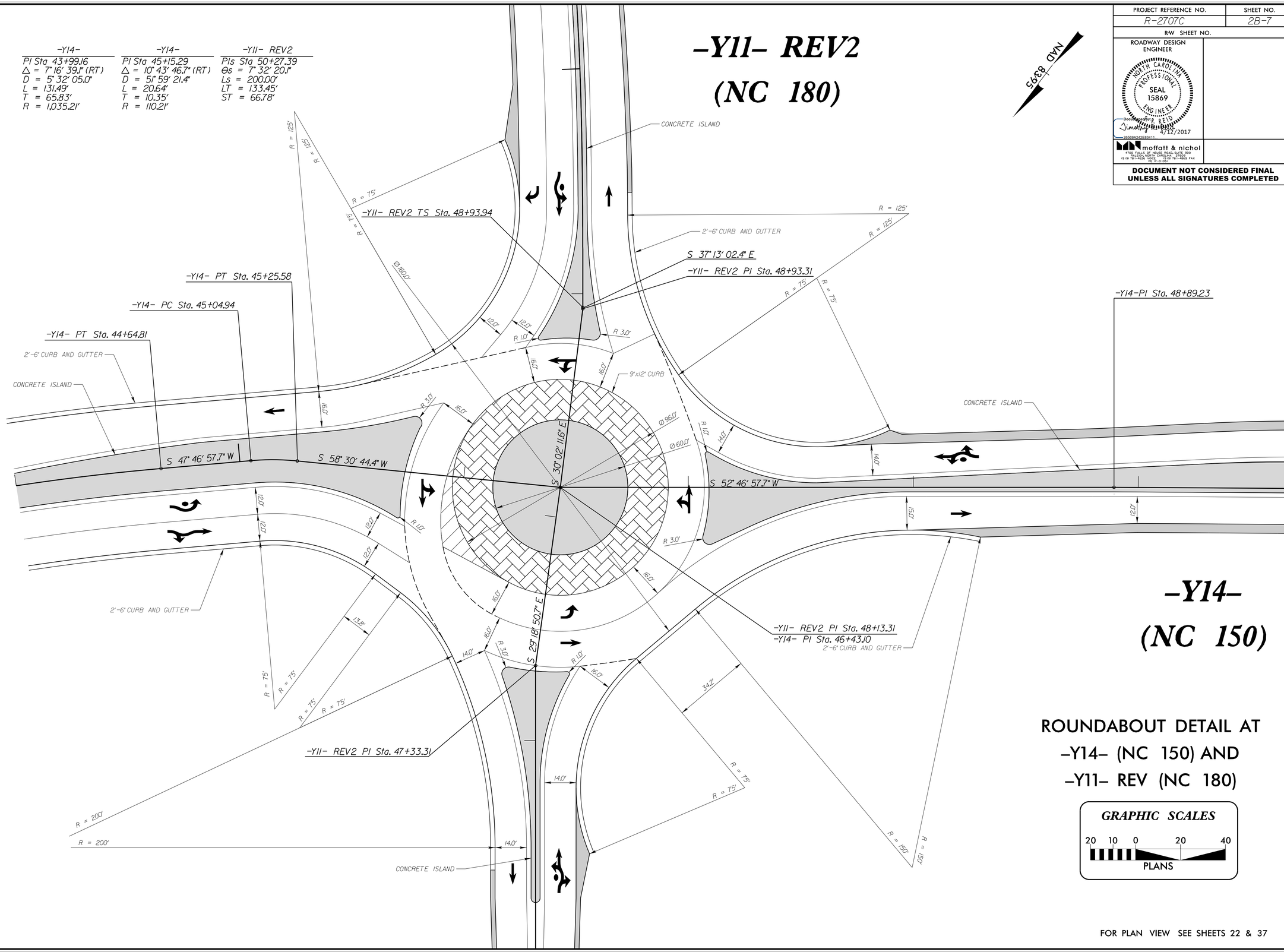

ROUNDABOUT DETAIL AT –Y14– (NC 150) AND –Y11– REV (NC 180)

FOR PLAN VIEW SEE SHEETS 22 & 37

DocuSign Envelope ID: 901BDDA9-B95D-4CD2-9EC6-1A37AA5CA05A

PROJECT REFERENCE NO.	SHEET NO.
R-2707C	2B-8
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 15869 ENGINEER	NORTH CAROLINA PROFESSIONAL SEAL 26971 ENGINEER
DocuSigned by: Jim Eason 26569A242E8341... 4/12/2017	DocuSigned by: Joshua Brumbalow 1089AD8C1258444... 4/12/2017
moffatt & nichol 4700 FALLS OF NEUSE ROAD, SUITE 300 RALEIGH, NORTH CAROLINA 27609 (919) 781-4626 VOICE (919) 781-4869 FAX FIRM LICENSE # C-0193	SDG Sungate Design Group, P.A. Engineers · Licensed Architects · Surveyors 5104 Jones Franklin Rd. Raleigh, N.C. 27606

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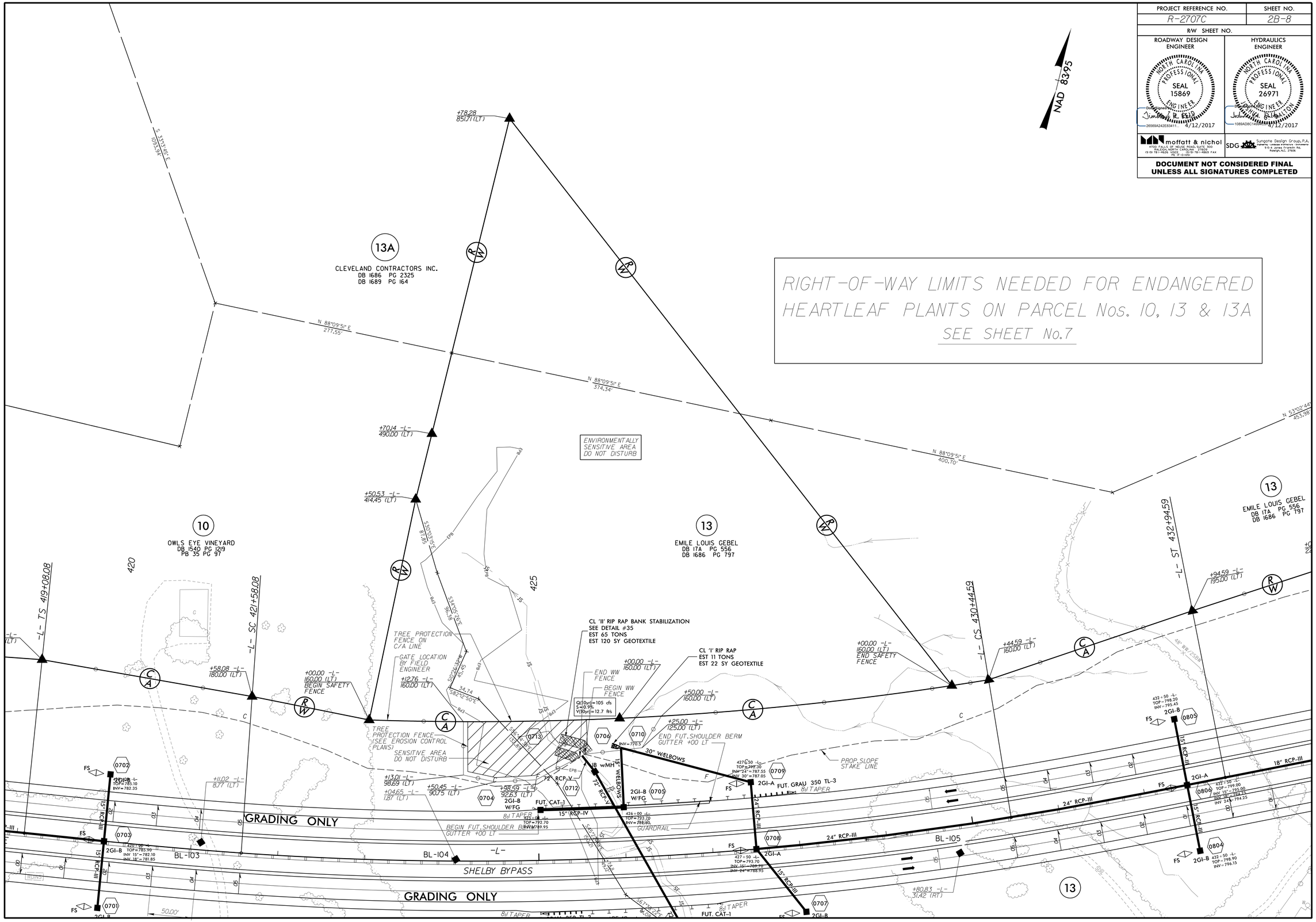

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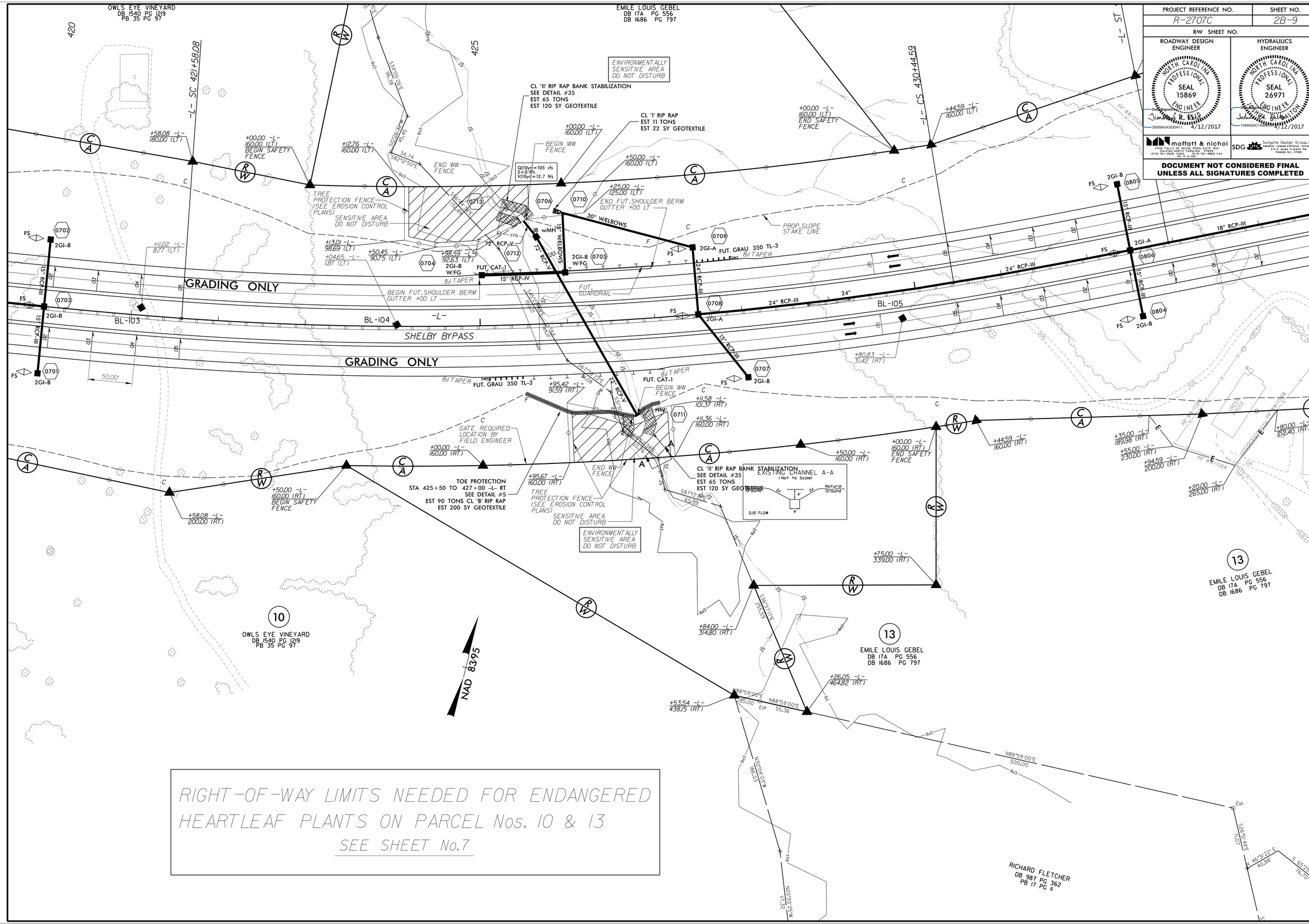

RIGHT-OF-WAY LIMITS NEEDED FOR ENDANGERED HEARTLEAF PLANTS ON PARCEL Nos. 10 & 13

SEE SHEET No.7

PROJECT REFERENCE NO.	SHEET NO.
R-2707C	2B-9

R/W SHEET NO.

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 15869 ENGINEER

DocuSigned by: Jim Bryant, P.E.
26569A242E8341...
4/12/2017

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 26971 ENGINEER

DocuSigned by: Jessica Blackwelder, P.E.
1089AD8C1E8B4...
4/12/2017

moffatt & nichol
4700 FALLS OF NEUSE ROAD, SUITE 300
RALEIGH, NORTH CAROLINA 27609
(919) 781-4626 VOICE (919) 781-4865 FAX
FIRM # P-0105

SDG Sungate Design Group, P.A.
Engineers · Landscape Architects · Surveyors
5-10 A James Forrester Rd.
Raleigh, N.C. 27606

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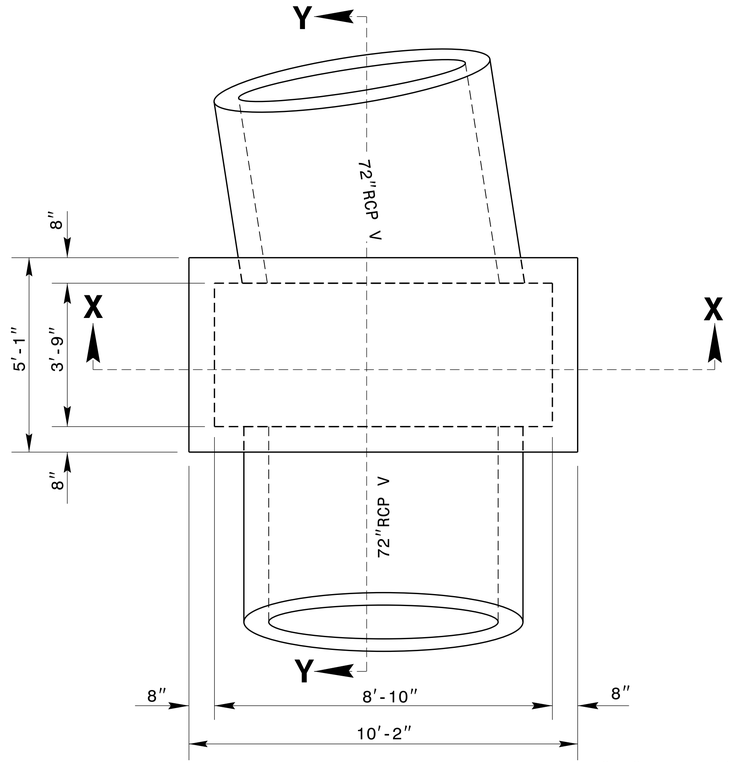
DocuSign Envelope ID: 678004ED-B2AF-4C17-8A1C-42D6F24F52F3

5/14/99

PROJECT REFERENCE NO.	SHEET NO.
R-2707C	2C-1



PLAN VIEW

GENERAL NOTES:

-USE FORMING FOR THE CONSTRUCTION OF THE BASE SLAB.

-SEE STD. DWG. 840.00 FOR CONSTRUCTION OF BASE SLAB

-CLASS 'B' CONCRETE TO BE USED THROUGHOUT.

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

-REINFORCING STEEL TO BE CUT, BENT OR RELOCATED TO POSITION PIPE AS DIRECTED BY THE ENGINEER.

-ALL EXPOSED CORNERS TO BE CHAMFERED 1".

-LOCATE MANHOLE AS DIRECTED BY THE ENGINEER.

-JUNCTION BOXES OVER 3'-6" IN DEPTH WITH MANHOLES,WILL REQUIRE STEPS TO BE PLACED ON 12" CTRS. SEE REFERENCE STD. NO. 840.66.

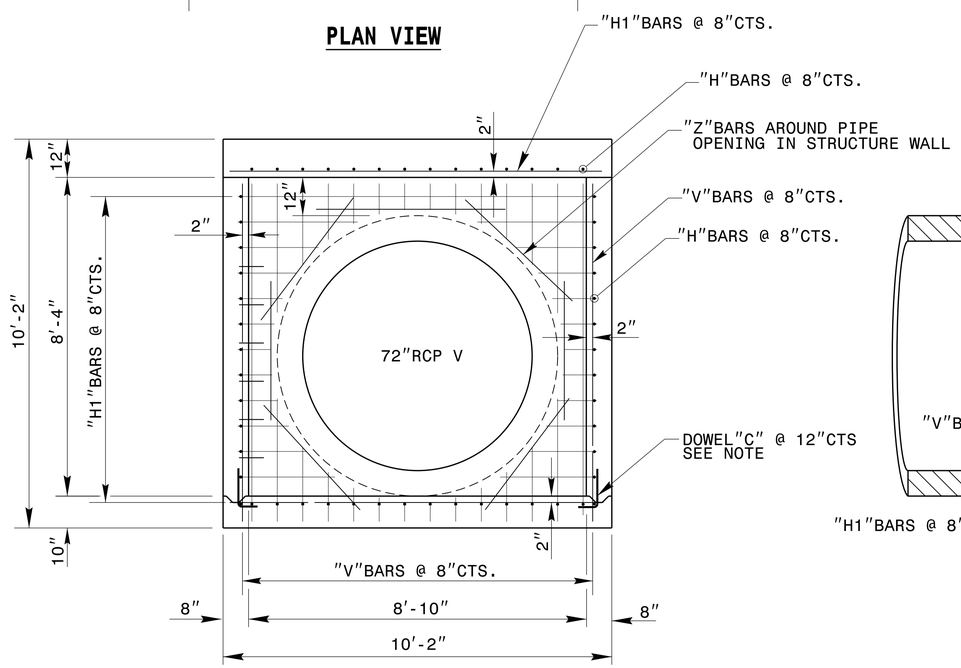
-MAINTAIN 2" MINIMUM CONCRETE COVERAGE ON ALL STEEL.

BILL OF MATERIAL

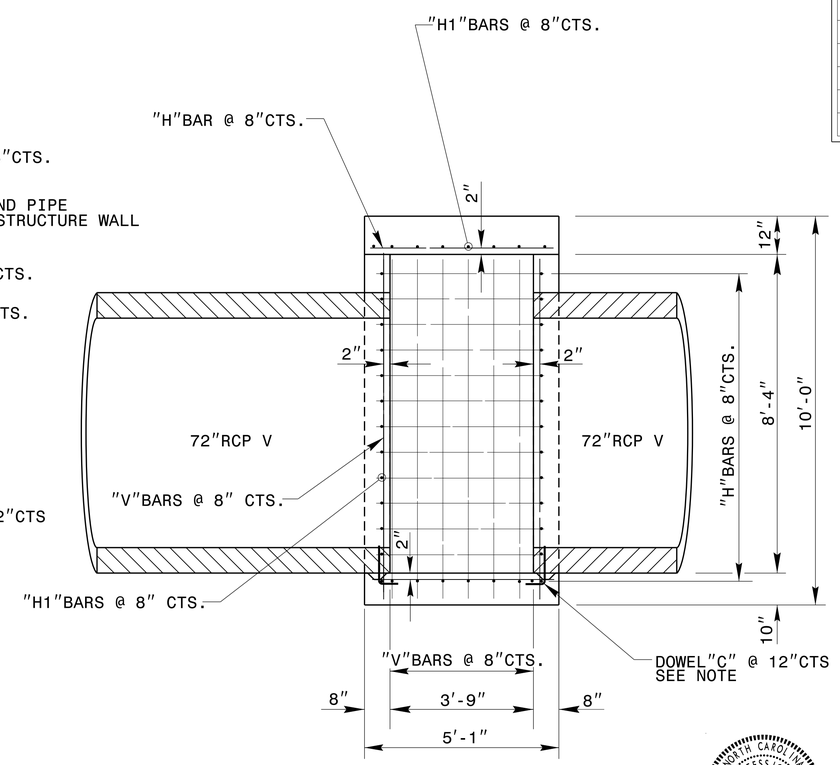
CODE	BAR#	LENGTH	LBS/FT.	QTY.	LBS
H	4	4'-9"	0.668	52	165
H1	4	9'-10"	0.668	40	263
V	4	8'-10"	0.668	44	260
C	4	1'-6"	0.668	26	26
		TOTAL WEIGHT STEEL			714

MASONARY QUANTITIES

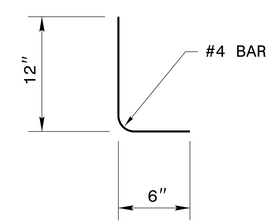
CLASS "B" CONCRETE	9.3 CU.YDS.
PIPE DEDUCTIONS	
2-72" RCP V	-2 CU.YD.
TOTAL CLASS "B" CONCRETE	9.1 CU.YDS.



SECTION X-X



SECTION Y-Y



DOWEL "C"

NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER Joel S. Howerton

DocuSigned by: Joel S. Howerton 873F3D17DCDC4... 4/12/2017

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

SPECIAL JB

ORIGINAL BY:	nbritt	DATE:	08/18/11
MODIFIED BY:	nbritt	DATE:	02/06/17
CHECKED BY:	jhowerton	DATE:	02/06/17
FILE SPEC.:	details/nbritt/english/interstate/i2304ad jb.dgn		

$$$$SYSTIME$$$$
$$$$TIME$$$$
$$$$DGN$$$$
$$$$DGNNAME$$$$

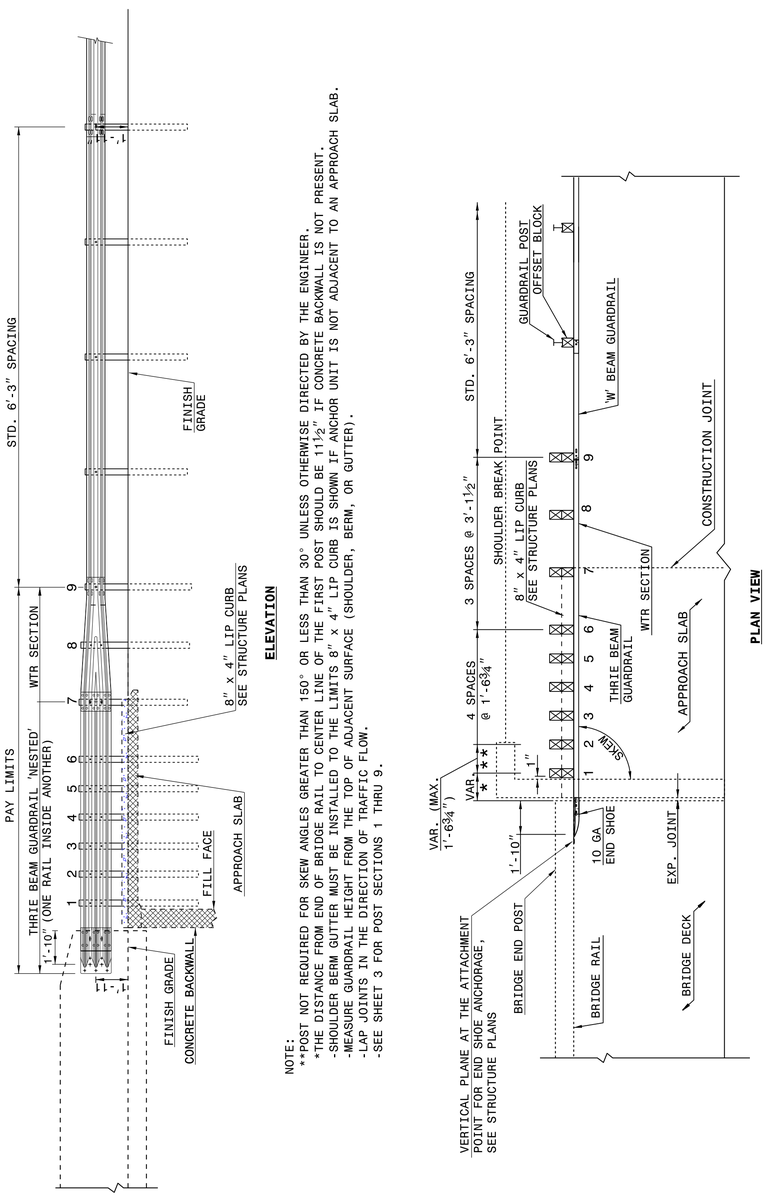
DocuSign Envelope ID: 678004ED-B2AF-4C17-8A1C-42D6F24F52F3

PROJECT REFERENCE NO.	SHEET NO.
R-2707C	2C-2

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

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

SHEET 2 OF 7
862d03



NOTE:
**POST NOT REQUIRED FOR SKEW ANGLES GREATER THAN 150° OR LESS THAN 30° UNLESS OTHERWISE DIRECTED BY THE ENGINEER.
*THE DISTANCE FROM END OF BRIDGE RAIL TO CENTER LINE OF THE FIRST POST SHOULD BE 1½" IF CONCRETE BACKWALL IS NOT PRESENT.
-SHOULDER BERM GUTTER MUST BE INSTALLED TO THE LIMITS 8" x 4" LIP CURB IS SHOWN IF ANCHOR UNIT IS NOT ADJACENT TO AN APPROACH SLAB.
-MEASURE GUARDRAIL HEIGHT FROM THE TOP OF ADJACENT SURFACE (SHOULDER, BERM, OR GUTTER).
-LAP JOINTS IN THE DIRECTION OF TRAFFIC FLOW.
-SEE SHEET 3 FOR POST SECTIONS 1 THRU 9.

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

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

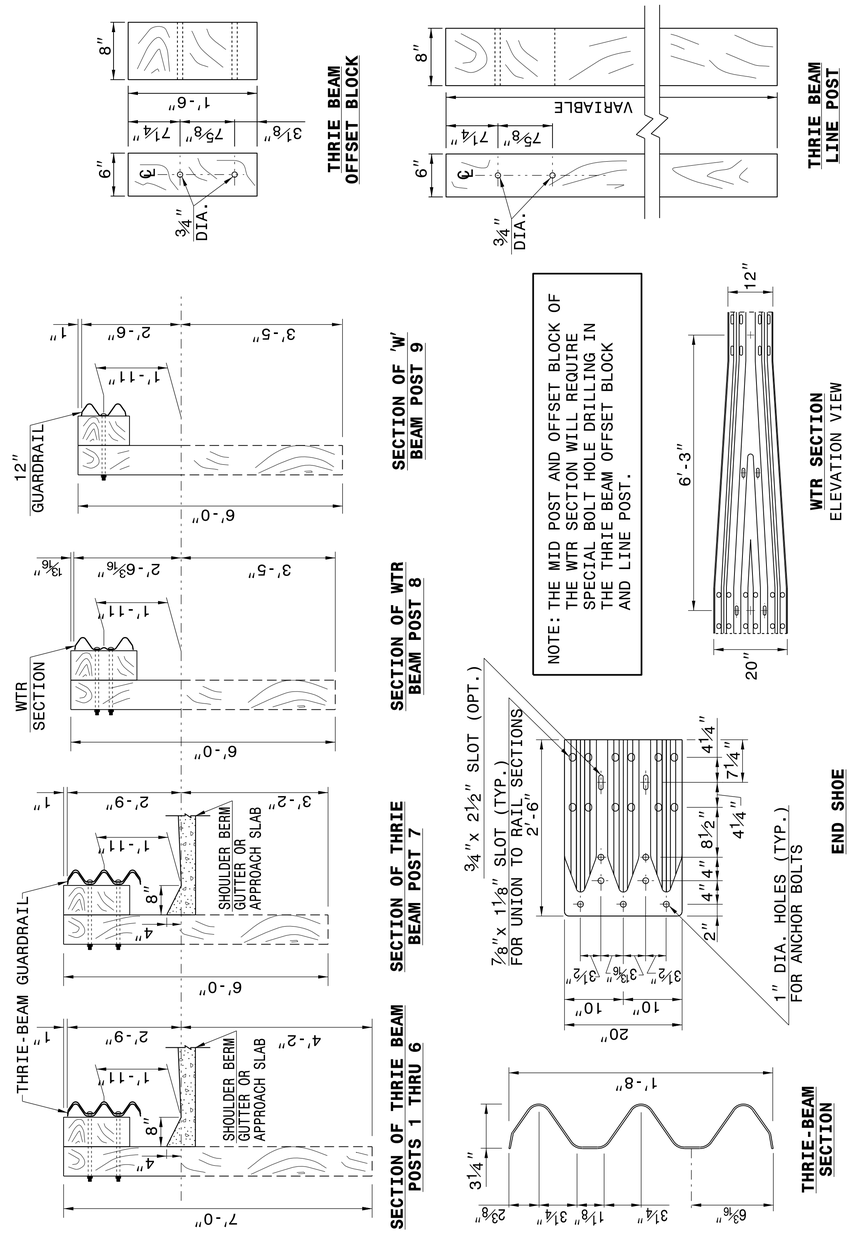
ENGLISH DETAIL DRAWING FOR
STRUCTURE ANCHOR UNITS
GUARDRAIL ANCHOR UNIT, TYPE III

SHEET 2 OF 7
862d03

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

ENGLISH DETAIL DRAWING FOR
STRUCTURE ANCHOR UNITS
GUARDRAIL ANCHOR UNIT, TYPE III

SHEET 3 OF 7
862d03



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

ENGLISH DETAIL DRAWING FOR
STRUCTURE ANCHOR UNITS
GUARDRAIL ANCHOR UNIT, TYPE III

SHEET 3 OF 7
862d03

NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER Joel S. Howerton

Joel S. Howerton
DocuSigned by: 873F3D17DC0B4A... 6/12/2017

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

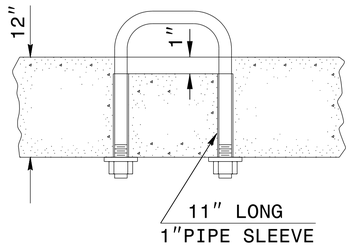
SEE TITLE BLOCK

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

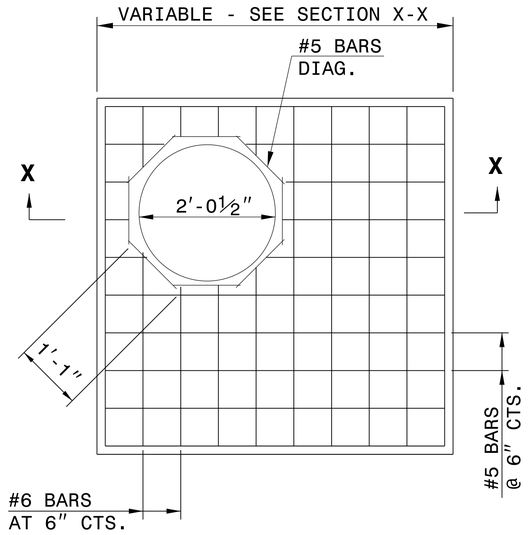
$$$$$$SYTME$$$$
$$$$$$ENAME$$$$
$$$$$$DGN$$$$$$

DocuSign Envelope ID: 678004ED-B2AF-4C17-8A1C-42D6F24F52F3

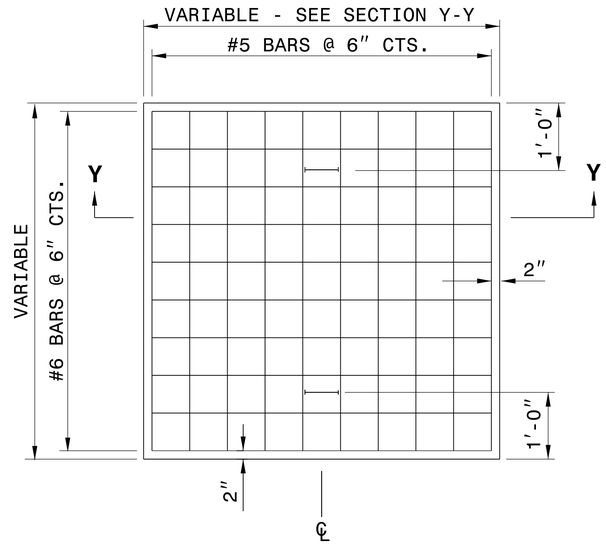
PROJECT REFERENCE NO.	SHEET NO.
R-2707C	2C-3



PARTIAL SECTION



PLAN



PLAN

GENERAL NOTES:

CONSTRUCT IN ACCORDANCE WITH SECTION 859 OF THE STANDARD SPECIFICATIONS.

FIELD VERIFY THE DIMENSIONS FOR THE EXISTING BOXES.

BILL OF MATERIALS

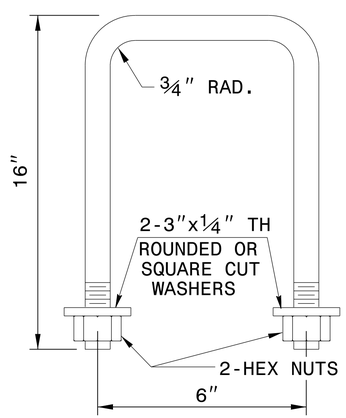
MASONRY	
TOP SLAB CONCRETE CLASS "A"	.037YDS^3 PER FT^2
BRICK MASONRY	.025YDS^3 PER FT^2
REINFORCING STEEL	7.64LBS PER FT^2

MANHOLE OPTION QUANTITIES

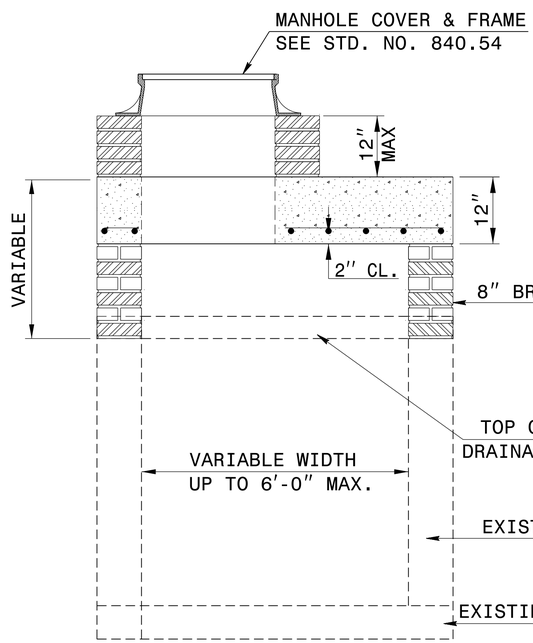
SIZE	QTY.	LENGTH	REINF. STEEL LBS.
#5 DIAG.	8	1'-1"	9.04

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

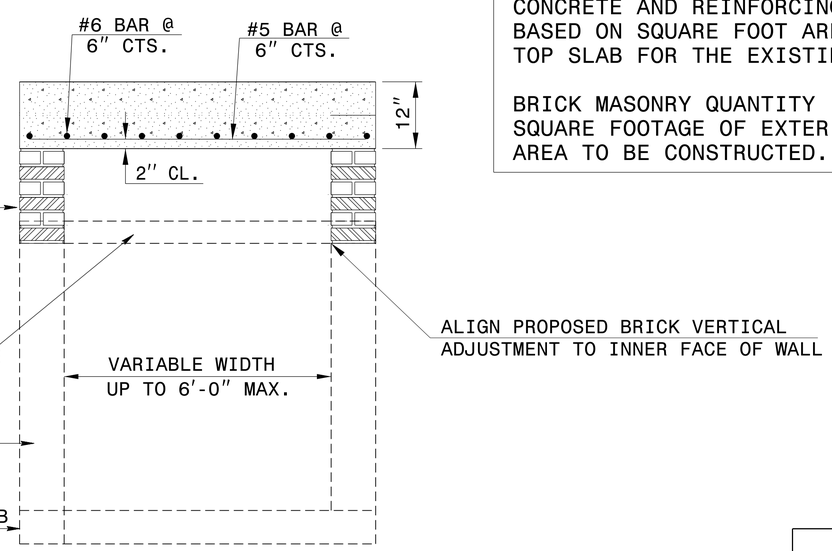
BRICK MASONRY QUANTITY IS BASED ON THE TOTAL SQUARE FOOTAGE OF EXTERIOR WALL SURFACE AREA TO BE CONSTRUCTED.



DETAIL OF HANDLE



SECTION X-X



SECTION Y-Y

NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER Joel S. Howerton

DocuSigned by: Joel S. Howerton 873F3D17DCDC4... 4/12/2017

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

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

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

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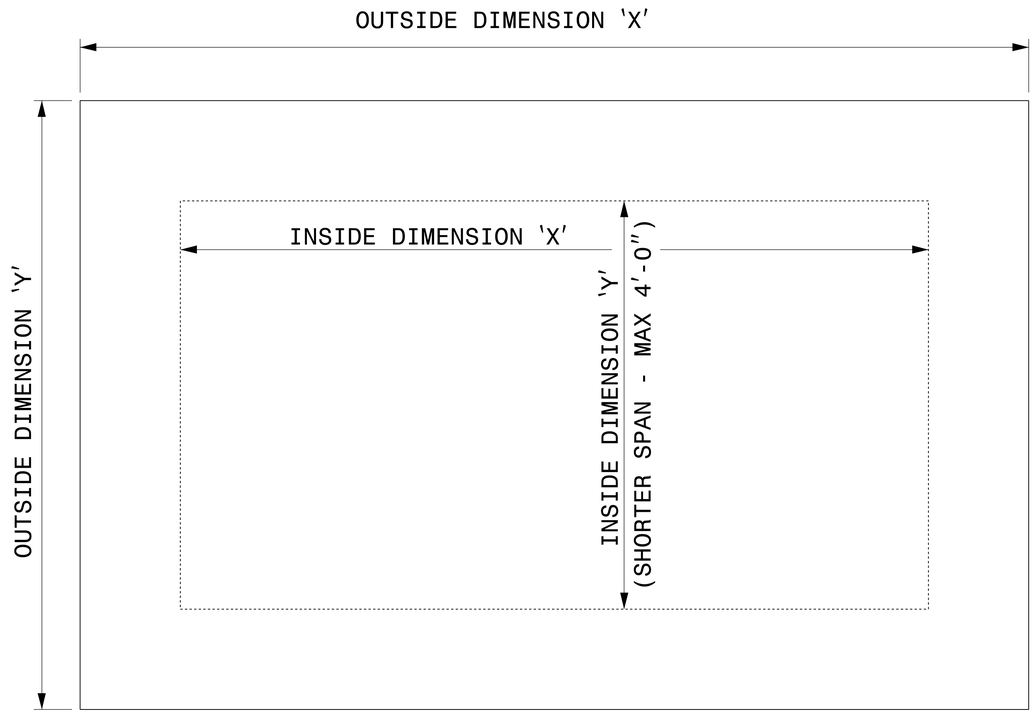
$$$$$SYSTIME$$$$$
$$$$$USERNAME$$$$$

DocuSign Envelope ID: 678004ED-B2AF-4C17-8A1C-42D6F24F52F3

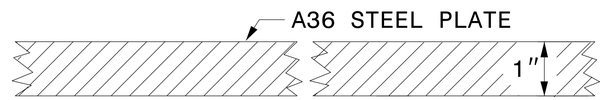
PROJECT REFERENCE NO.	SHEET NO.
R-2707C	2C-4



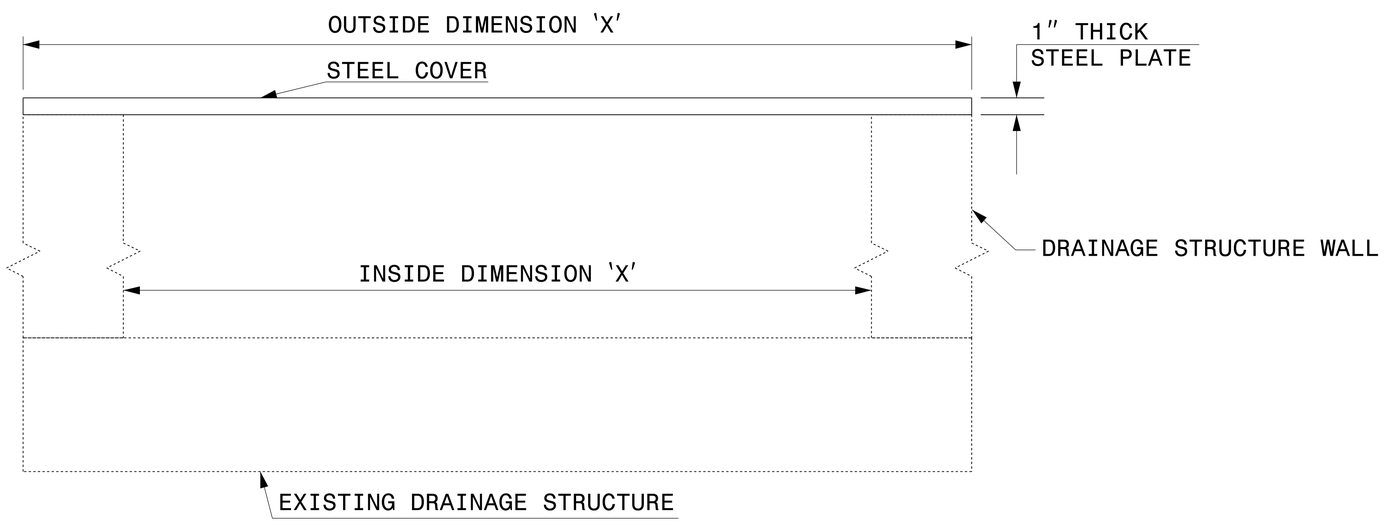
PLAN VIEWS

GENERAL NOTES:

-USE GRADE A36 STEEL
-STEEL COVERS ARE FOR TEMPORARY USE DURING PHASE CONSTRUCTION.
-FILL SHALL BE PLACED DIRECTLY OVER THE STEEL PLATES.
-SEE ROADWAY PLANS AND PROVISIONS FOR LOCATIONS
-QUANTITES TO BE PAID FOR AT THE UNIT PRICE BID PER EACH.



SECTION VIEW OF STEEL TOP PLATE



ELEVATION VIEWS

NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER Joel S. Howerton

DocuSigned by: Joel S. Howerton 873F3D17D4A12 6/12/2017

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

DETAIL OF TEMPORARY 1" STEEL COVER OVER DRAINAGE STRUCTURE

ORIGINAL BY: E.E. WARD DATE: 2-2-98
MODIFIED BY: DATE:
CHECKED BY: DATE:
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$$$$SYSTIME$$$$
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$$$$USERNAME$$$$

DocuSign Envelope ID: 901BDDA9-B95D-4CD2-9EC6-1A37AA5CA05A

PROJECT REFERENCE NO.	SHEET NO.
R-2707C	2D-1
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 15869 ENGINEER

DocuSigned by: Jimmy D. Reid
26568A242E8411... 4/12/2017

moffatt & nichol
1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 781-4626 VOICE (919) 781-4865 FAX

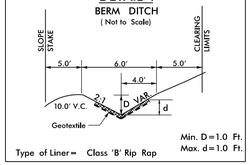
HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 26971 ENGINEER

DocuSigned by: Joshua D. Dalton
1089AD8C1698425... 4/12/2017

SUNGATE DESIGN GROUP, P.A.
119 EXECUTIVE CIRCLE, SUITE N
DAILY, NORTH CAROLINA 28209
(704) 332-7754 PHONE (704) 332-3101 FAX
NC FIRM LICENSE NO. C-0910

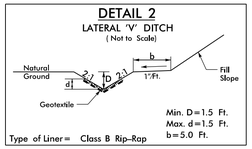
DETAIL 1
BERM DITCH
(Not to Scale)



Type of Liner= Class 'B' Rip Rap

FROM STA. 443+50 TO STA. 449+00 –L– RT
FROM STA. 463+80 TO STA. 469+50 –L– LT
FROM STA. 471+00 TO STA. 475+00 –L– RT
FROM STA. 484+00 TO STA. 487+50 –L– RT
FROM STA. 572+50 TO STA. 576+00 –L– LT

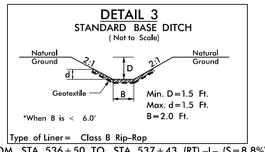
DETAIL 2
LATERAL 'V' DITCH
(Not to Scale)



Type of Liner= Class B Rip-Rap

FROM STA 6+00 TO STA 8+30 (RT) –Y9RPA–
FROM STA 8+30 TO STA 12+00 (RT) –Y9RPA–
FROM STA 15+20 TO STA 17+00 (RT) –Y9–DETOUR

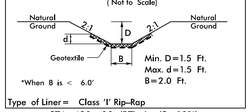
DETAIL 3
STANDARD BASE DITCH
(Not to Scale)



Type of Liner= Class B Rip-Rap

FROM STA 536+50 TO STA 537+43 (RT) –L– (S=8.8%)
STA 34+00 (LT) –Y11–REV2 (S=5.5%)

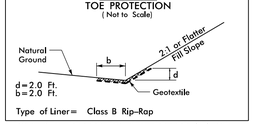
DETAIL 4
STANDARD BASE DITCH
(Not to Scale)



Type of Liner= Class 'I' Rip-Rap

STA 490+00 (RT) –L– (S=10%)
STA 23+50 (RT) –Y14– (S=13%)

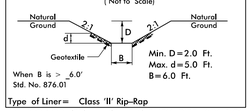
DETAIL 5
TOE PROTECTION
(Not to Scale)



Type of Liner= Class B Rip-Rap

FROM STA 25+00 TO STA 28+00 (LT) –Y2–
FROM STA 402+50 TO STA 404+00 (LT) –L–
FROM STA 403+50 TO STA 407+00 (RT) –L–
FROM STA 405+00 TO STA 406+50 (LT) –L–
FROM STA 413+65 TO STA 416+00 (LT) –L–
FROM STA 425+50 TO STA 427+00 (RT) –L–
FROM STA 438+50 TO STA 439+20 (LT) –L–
FROM STA 451+50 TO CULVERT (RT) –L–
FROM STA 451+50 TO CULVERT (LT) –L–
FROM CULVERT TO STA 454+50 (LT) –L–
FROM STA 475+75 TO STA 476+50 (LT) –L–
FROM STA 488+50 TO STA 493+00 (LT) –L–
FROM STA 490+50 TO STA 492+00 (RT) –L–
FROM STA 495+00 TO STA 495+50 (RT) –L–
FROM STA 508+20 TO STA 513+00 (RT) –L–
FROM STA 564+00 TO STA 567+70 (LT) –L–
FROM STA 567+95 TO STA 568+70 (LT) –L–
FROM STA 15+40 TO STA 18+50 (LT) –Y9RPA–
FROM STA 11+00 TO STA 15+50 (LT) –Y9RPD–
FROM STA 19+70 TO STA 20+50 (LT) –Y14–
FROM STA 14+00 TO STA 14+85 (LT) –Y16–REV

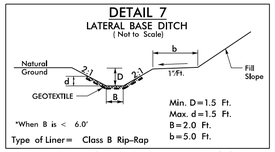
DETAIL 6
STANDARD BASE CHANNEL
(Not to Scale)



Type of Liner= Class 'II' Rip-Rap

STA 439+00 (RT) –L– (S=5%) BURY PIPE INV 1.0'

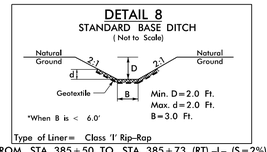
DETAIL 7
LATERAL BASE DITCH
(Not to Scale)



Type of Liner= Class B Rip-Rap

FROM STA 456+10 TO STA 457+75 (LT) –L–
FROM STA 488+50 TO STA 490+10 (RT) –L–
FROM STA 494+00 TO STA 496+00 (LT) –L–
FROM STA 584+50 TO STA 585+60 (RT) –L–
FROM STA 597+50 TO STA 598+75 (RT) –L–
FROM STA 601+15 TO STA 605+50 (RT) –L–
FROM STA 28+00 TO STA 31+75 (RT) –Y8–REV
FROM STA 11+60 TO STA 12+40 (RT) –DR1–

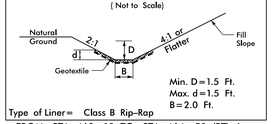
DETAIL 8
STANDARD BASE DITCH
(Not to Scale)



Type of Liner= Class 'I' Rip-Rap

FROM STA 385+50 TO STA 385+73 (RT) –L– (S=2%)
STA 460+00 (RT) –L– (S=8%)
FROM STA 635+00 TO STA 635+56 (RT) –L– (S=3.6%)

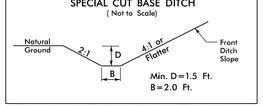
DETAIL 9
SPECIAL LATERAL BASE DITCH
(Not to Scale)



Type of Liner= Class B Rip-Rap

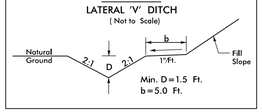
FROM STA 463+10 TO STA 464+50 (RT) –L–
FROM STA 487+50 TO STA 488+50 (RT) –L–
FROM STA 26+50 TO STA 28+00 (RT) –Y8–REV
FROM STA 27+60 TO STA 33+78.19 (RT) –Y14–
FROM STA 13+50 TO STA 13+62 (LT) –Y14RPB–

DETAIL 10
SPECIAL CUT BASE DITCH
(Not to Scale)



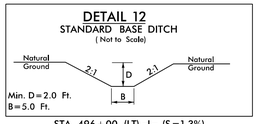
FROM STA 464+50 TO STA 465+00 (RT) –L–
FROM STA 583+75 TO STA 585+00 (LT) –L–
FROM STA 605+50 TO STA 607+50 (RT) –L–

DETAIL 11
LATERAL 'V' DITCH
(Not to Scale)



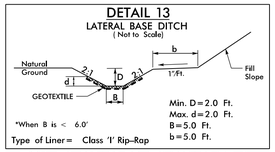
FROM STA 589+00 TO STA 589+70 (LT) –L–
FROM STA 25+50 TO STA 28+50 (RT) –Y4–REV
FROM STA 12+50 TO STA 17+10 (RT) –Y9RPA–

DETAIL 12
STANDARD BASE DITCH
(Not to Scale)



STA 496+00 (LT) –L– (S=1.3%)
STA 14+12 (LT) –Y14RPD– (S=0.3%)

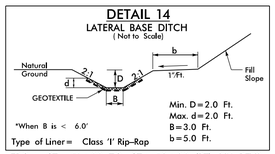
DETAIL 13
LATERAL BASE DITCH
(Not to Scale)



Type of Liner= Class 'I' Rip-Rap

FROM STA 505+00 TO STA 508+25 (RT) –L–

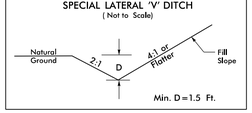
DETAIL 14
LATERAL BASE DITCH
(Not to Scale)



Type of Liner= Class 'I' Rip-Rap

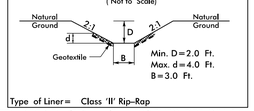
FROM STA 51+00 TO STA 59+20 (RT) –Y11–REV2

DETAIL 15
SPECIAL LATERAL 'V' DITCH
(Not to Scale)



FROM STA 535+00 TO STA 536+50 (RT) –L–
FROM STA 537+25 TO STA 542+74 (LT) –L–
FROM STA 616+00 TO STA 617+00 (LT) –L–
FROM STA 619+50 TO STA 621+50 (RT) –L–
FROM STA 15+00 TO STA 21+40 (RT) –Y4–REV
FROM STA 9+50 TO STA 11+50 (RT) –Y9RPD–
FROM STA 29+30 TO STA 30+50 (RT) –Y4–REV
FROM STA 32+00 TO STA 33+00 (LT) –Y8–REV
FROM STA 22+00 TO STA 26+00 (RT) –Y11–REV2
FROM STA 21+90 TO STA 31+50 (LT) –Y11–REV2
FROM STA 34+00 TO STA 40+00 (LT) –Y11–REV2
FROM STA 33+20 TO STA 38+00 (RT) –Y11–REV2
FROM STA 46+00 TO STA 47+37 (LT) –Y11–REV2
FROM STA 46+00 TO STA 47+50 (RT) –Y11–REV2
FROM STA 65+00 TO STA 70+00 (LT) –Y11–REV2
FROM STA 54+00 TO STA 55+00 (LT) –Y14–
FROM STA 12+50 TO STA 13+50 (LT) –Y14RPB–
FROM STA 9+00 TO STA 14+00 (RT) –Y14RPD–
FROM STA 9+00 TO STA 14+00 (LT) –Y14RPD–
FROM STA 14+00 TO STA 14+80 (RT) –Y16A–
FROM STA 13+65 TOP STA 15+50 (LT) –SR2–
FROM STA 13+80 TO STA 15+00 (RT) –SR2–
FROM STA 13+00 TO STA 16+20 (LT) –Y9–DETOUR
FROM STA 17+00 TO STA 22+50 (RT) –Y9–DETOUR
FROM STA 18+75 TO STA 22+00 (LT) –Y9–DETOUR

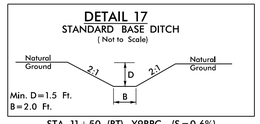
DETAIL 16
STANDARD BASE CHANNEL
(Not to Scale)



Type of Liner= Class 'II' Rip-Rap

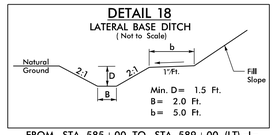
STA 495+75 (RT) –L– (S=1.3%) BURY PIPE INV 1.0'
STA 495+95 (LT) –L– (S=1.0%) BURY PIPE INV 1.0'
STA 537+00 (LT) –L– (S=2.2%) BURY PIPE INV 1.0'
STA 564+25 (RT) –L– (S=3.0%) BURY PIPE INV 1.0'
STA 567+80 (LT) –L– (S=1.6%) BURY PIPE INV 1.0
STA 17+15 (RT) –Y9RPA– (S=2.5%) BURY PIPE INV 1.0'

DETAIL 17
STANDARD BASE DITCH
(Not to Scale)



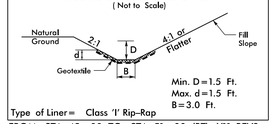
STA 11+50 (RT) –Y9RPC– (S=0.6%)
STA 54+00 (LT) –Y14– (S=2.4%)

DETAIL 18
LATERAL BASE DITCH
(Not to Scale)



FROM STA 585+00 TO STA 589+00 (LT) –L–
FROM STA 57+50 TO STA 62+50 (LT) –Y11–REV2

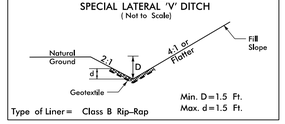
DETAIL 19
SPECIAL LATERAL BASE DITCH
(Not to Scale)



Type of Liner= Class 'I' Rip-Rap

FROM STA. 49+00 TO STA. 51+00 (RT) –Y11–REV2

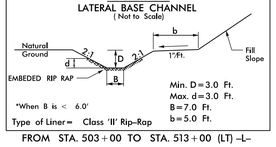
DETAIL 20
SPECIAL LATERAL 'V' DITCH
(Not to Scale)



Type of Liner= Class B Rip-Rap

FROM STA 578+50 TO STA 579+50 (RT) –L–
FROM STA 607+50 TO STA 608+70 (LT) –L–
FROM STA 615+50 TO STA 616+00 (LT) –L–
FROM STA 33+00 TO STA 35+80 (LT) –Y8–REV
FROM STA 35+00 TO STA 35+87.81 (LT) –Y14–
FROM STA 35+35 TO STA 36+50 (RT) –Y14–
FROM STA 13+00 TO STA 15+47 (LT) –Y14RPA–
FROM STA 10+50 TO STA 13+00 (RT) –Y14RPB–

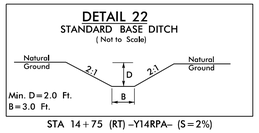
DETAIL 21
LATERAL BASE CHANNEL
(Not to Scale)



Type of Liner= Class 'II' Rip-Rap

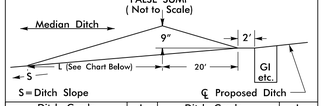
FROM STA. 503+00 TO STA. 513+00 (LT) –L–

DETAIL 22
STANDARD BASE DITCH
(Not to Scale)



STA 14+75 (RT) –Y14RPA– (S=2%)

DETAIL 23
FALSE SUMP
(Not to Scale)

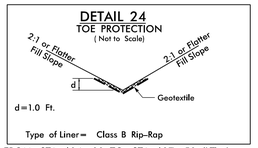


S=Ditch Slope ℄ Proposed Ditch

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'

STA. 382+24 –L–
STA. 392+76 –L–
STA. 403+76 –L–
STA. 416+26 –L–
STA. 432+26 –L–
STA. 443+26 –L–
STA. 454+76 –L–
STA. 469+76 –L–
STA. 484+26 –L–
STA. 497+76 –L–
STA. 511+26 –L–
STA. 523+26 –L–
STA. 542+99 –L–
STA. 558+76 –L–
STA. 572+16 –L–
STA. 588+76 –L–
STA. 610+74 –L–
STA. 622+74 –L–
STA. 387+76 –L–
STA. 395+26 –L–
STA. 409+26 –L–
STA. 419+76 –L–
STA. 434+76 –L–
STA. 446+26 –L–
STA. 459+76 –L–
STA. 477+26 –L–
STA. 488+76 –L–
STA. 502+26 –L–
STA. 514+76 –L–
STA. 527+26 –L–
STA. 547+24 –L–
STA. 562+76 –L–
STA. 578+26 –L–
STA. 599+24 –L–
STA. 616+24 –L–
STA. 626+24 –L–
STA. 634+24 –L–
STA. 389+76 –L–
STA. 397+76 –L–
STA. 412+26 –L–
STA. 427+26 –L–
STA. 440+26 –L–
STA. 451+26 –L–
STA. 464+82 –L–
STA. 480+76 –L–
STA. 493+76 –L–
STA. 507+76 –L–
STA. 520+26 –L–
STA. 536+24 –L–
STA. 551+74 –L–
STA. 567+76 –L–
STA. 585+91 –L–
STA. 602+76 –L–
STA. 620+74 –L–
STA. 630+24 –L–

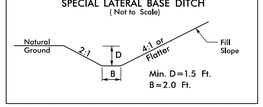
DETAIL 24
TOE PROTECTION
(Not to Scale)



Type of Liner= Class B Rip-Rap

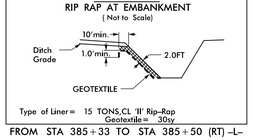
FROM STA 604+00 TO STA 607+50 (LT) –L–
FROM STA 604+00 TO STA 607+50 (RT) –L–

DETAIL 25
SPECIAL LATERAL BASE DITCH
(Not to Scale)



FROM STA 41+73.8 TO STA 45+50 (RT) –Y14–
FROM STA 14+00 TO STA 16+90 (RT) –Y14RPD–

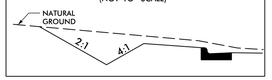
DETAIL 26
RIP RAP AT EMBANKMENT
(Not to Scale)



Type of Liner= 15 TONS,CL 'II' Rip-Rap
Geotextile= 30sy

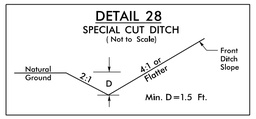
FROM STA 385+33 TO STA 385+50 (RT) –L–

DETAIL 27
SPECIAL BACK OF CURB CUT DITCH
(NOT TO SCALE)



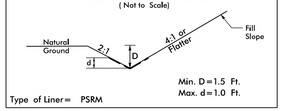
FROM STA. 14+00 TO STA. 15+50 (RT) –Y9–
FROM STA. 11+45.09 TO STA. 12+00 (LT) –Y14RPC–
FROM STA. 40+13.84 TO STA. 40+60 (RT) –Y14–

DETAIL 28
SPECIAL CUT DITCH
(Not to Scale)



FROM STA 23+58 TO STA 26+50 (RT) –Y14–
FROM STA 24+00 TO STA 26+50 (LT) –Y14–
FROM STA 26+50 TO STA 27+60 (RT) –Y14–
FROM STA 48+00 TO STA 51+00 (LT) –Y14–
FROM STA 50+00 TO STA 55+00 (RT) –Y14–
FROM STA 51+50 TO STA 53+50 (LT) –Y14–

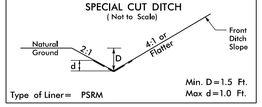
DETAIL 29
SPECIAL LATERAL 'V' DITCH
(Not to Scale)



Type of Liner= PSRM

FROM STA 19+00 TO STA 20+70 (RT) –Y14–

DETAIL 30
SPECIAL CUT DITCH
(Not to Scale)



Type of Liner= PSRM

FROM STA 15+50 TO STA 19+00 (RT) –Y14–
FROM STA 21+30 TO STA 22+50 (RT) –Y14–

DocuSign Envelope ID: 901BDDA9-B95D-4CD2-9EC6-1A37AA5CA05A

PROJECT REFERENCE NO.	SHEET NO.
R-2707C	2D-2
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 15869 ENGINEER
DocuSigned by: Jimmy Dixon
26568A242E8341... 4/12/2017

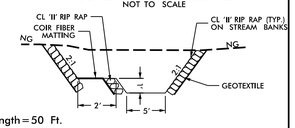
HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 26971 ENGINEER
DocuSigned by: Joshua Deloach
1089AD8C1498428... 4/12/2017

moffatt & nichol
1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 781-4626 VOICE (919) 781-4869 FAX

SUNGATE DESIGN GROUP, P.A.
119 EXECUTIVE CIRCLE, SUITE N
DANIELSVILLE, GEORGIA 30650
PHONE: (706) 795-5090 FAX: (706) 795-5091
CERTIFICATE OF AUTHORIZATION NO. C-0910

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

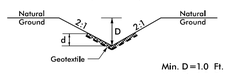
DETAIL 31
OUTLET CHANNEL DETAIL
NOT TO SCALE



Length = 50 Ft.
Est. = 110 Tons of Class 'II' Rip–Rap, 200 SY Geotextile

STA 554+00 (RT) –L– (S=1.2%)

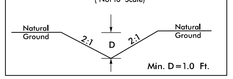
DETAIL 32
STANDARD 'V' DITCH
(Not to Scale)



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

STA. 583+35 (LT) –L– (S=6.4%)

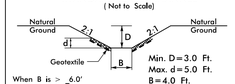
DETAIL 33
STANDARD 'V' DITCH
(Not to Scale)



Min. D=1.0 Ft.

STA. 583+30 (RT) –L– (S=0.6%)

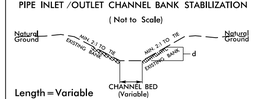
DETAIL 34
STANDARD BASE CHANNEL
(Not to Scale)



Min. D=3.0 Ft.
Max. d=5.0 Ft.
B=4.0 Ft.
When B is > 6.0'
Std. No. 876.01
Type of Liner= Class 'II' Rip–Rap

STA 405+25 (LT) –L– (S=1.3%) BURY PIPE INVERT 1.0'
STA 512+90 (RT) –L– (S=7.0%) BURY PIPE INV 1.0'
STA 30+00 (LT) –Y8–REV (S=2.5%) BURY PIPE INV 1.0'

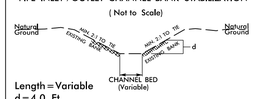
DETAIL 35
PIPE INLET /OUTLET CHANNEL BANK STABILIZATION
(Not to Scale)



Length = Variable
d = 5.0 Ft.
Type of Liner= Class 'II' Rip–Rap

STA 406+70 (RT) –L– (L=22') BURY PIPE INV 1.0'
STA 425+50 (LT) –L– (L=31') BURY PIPE INV 1.0'
STA 426+75 (RT) –L– (L=24') BURY PIPE INV 1.0'
STA 439+25 (LT) –L– (L=25') BURY PIPE INV 1.0'
STA 490+40 (LT) –L– (L=22') BURY PIPE INV 1.0'
STA 491+55 (RT) –L– (L=22') BURY PIPE INV 1.0'
STA 554+20 (RT) –L– (L=39')
STA 554+55 (LT) –L– (L=30') BURY PIPE INV 1.0'
STA 15+25 (LT) –Y9RPA– (L=20') BURY PIPE INV 1.0'
STA 6+45 (LT) –Y9RPD– (L=35') BURY PIPE INV 1.0'
STA 31+70 (RT) –Y8–REV (L=27') BURY PIPE INV 1.0'
STA 59+20 (RT) –Y11–REV2 (L=23') BURY PIPE INV 1.0'

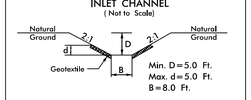
DETAIL 36
PIPE INLET /OUTLET CHANNEL BANK STABILIZATION
(Not to Scale)



Length = Variable
d = 4.0 Ft.
Type of Liner= Class 'II' Rip–Rap

STA 413+60 (LT) –L– (L=17') DO NOT BURY PIPE
STA 415+70 (RT) –L– (L=22') DO NOT BURY PIPE
STA 475+75 (LT) –L– (L=17') BURY PIPE INV 0.8'
STA 476+85 (RT) –L– (L=16') BURY PIPE INV 0.8'
STA 10+75 (LT) –Y9RPB– (L=17') BURY PIPE INV 0.6'
STA 14+20 (RT) –Y16–REV (L=20') BURY PIPE INV 1.0'
STA 14+85 (LT) –Y16–REV (L=20') BURY PIPE INV 1.0'

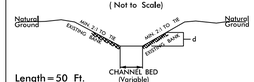
DETAIL 37
INLET CHANNEL
(Not to Scale)



Min. D=5.0 Ft.
Max. d=5.0 Ft.
B=8.0 Ft.
Type of Liner= Class 'II' Rip–Rap

STA 453+60 (RT) –L– (S=0.5%)

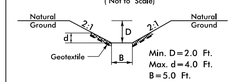
DETAIL 38
INLET & OUTLET CHANNEL BANK STABILIZATION
(Not to Scale)



Length = 50 Ft.
d = 5 Ft.
Est. = 100 Tons of Class 'II' Rip–Rap

STA 452+50 (LT) –L–

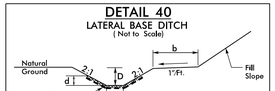
DETAIL 39
STANDARD BASE CHANNEL
(Not to Scale)



Min. D=2.0 Ft.
Max. d=4.0 Ft.
B=5.0 Ft.
Type of Liner= Class 'II' Rip–Rap

STA 503+10 (LT) –L– (S=0.5%) BURY PIPE INV 1.0'
STA 554+35 (RT) –L– (S=1.2%) BURY PIPE INV 1.0'

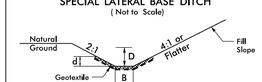
DETAIL 40
LATERAL BASE DITCH
(Not to Scale)



Min. D=2.0 Ft.
Max. d=2.0 Ft.
B=3.0 Ft.
b=5.0 Ft.
*When B is < 6.0'
Type of Liner= Class 'II' Rip–Rap

FROM STA 17+15 TO STA 19+50 (RT) –Y9RPA–
FROM STA 13+00 TO STA 14+10 (RT) –Y16–REV

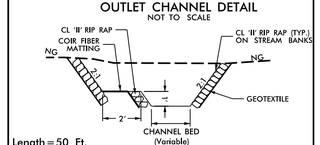
DETAIL 41
SPECIAL LATERAL BASE DITCH
(Not to Scale)



Min. D=1.5 Ft.
Max. d=1.5 Ft.
B=3.0 Ft.
Type of Liner= Class 'II' Rip–Rap

FROM STA. 19+50 TO STA. 20+50 (RT) –Y9RPA–

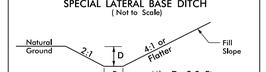
DETAIL 42
OUTLET CHANNEL DETAIL
NOT TO SCALE



Length = 50 Ft.
Est. = 110 Tons of Class 'II' Rip–Rap, 200 SY Geotextile

STA 552+50 (LT) –L– (S=1.2%)

DETAIL 43
SPECIAL LATERAL BASE DITCH
(Not to Scale)



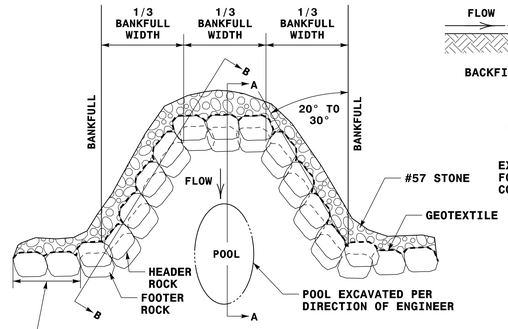
Min. D=2.0 Ft.
B=2.0 Ft.

FROM STA 47+15 TO STA 50+00 (RT) –Y14–

DETAIL 44
TOE PROTECTION
(Not to Scale)

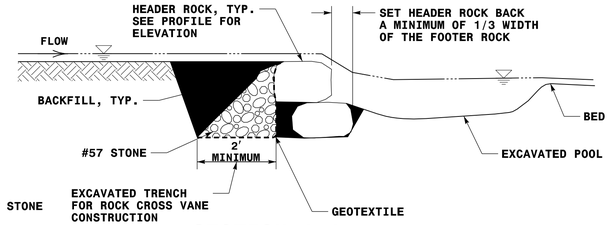
d=1.0 Ft.
Type of Liner= Class B Rip–Rap

FROM STA 10+40 TO STA 16+60 (LT) –DR4–

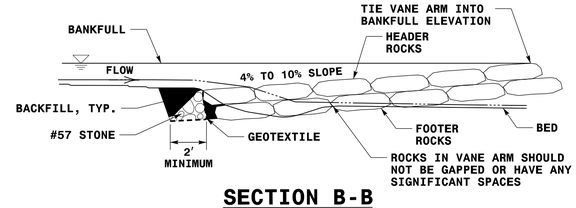


PLAN VIEW

	BOULDER DIMENSIONS (FT)		
STATION	HEIGHT	LENGTH	WIDTH
438+60	2.0'	3.0'	2.0'



SECTION A-A

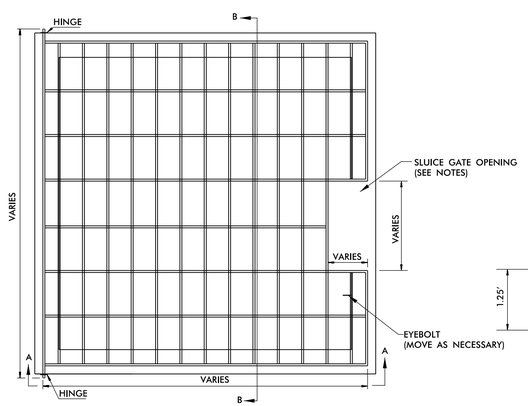


SECTION B-B

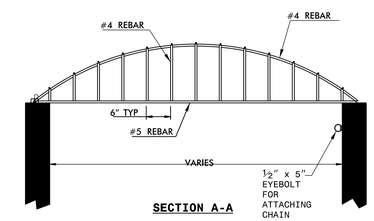
NOTES:
1) DEEPEST PART OF POOL TO BE IN LINE WITH WHERE VANE ARM TIES INTO BANKFULL.
2) DO NOT EXCAVATE POOL TOO CLOSE TO FOOTER BOULDERS.
3) CLASS "A" STONE CAN BE USED TO REDUCE VOIDS BETWEEN HEADERS AND FOOTERS.
4) COMPACT BACKFILL TO EXTENT POSSIBLE OR AT THE DIRECTION OF THE ENGINEER.
5) POOL DEPTH SHOULD BE 2 TO 3 TIMES BANKFULL DEPTH.

ROCK CROSS VANE DETAIL
NOT TO SCALE

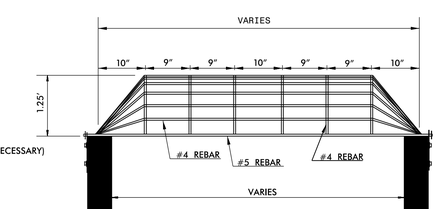
DETAIL #45
REMOVABLE ORIFICE TRASH RACK
NOT TO SCALE



PLAN



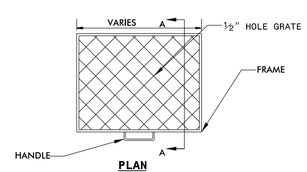
SECTION A-A



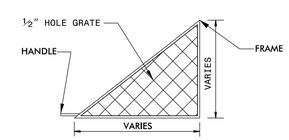
SECTION B-B

RISER TRASH RACK NOTES:
1. ALL JOINTS SHALL BE FULLY WELDED AROUND JOINT WITH A MINIMUM OF A 1/4" BEAD.
2. IF BOLTS ARE ANCHORED IN CONCRETE, FOLLOW STD. DWG. 862.03 AND 862.04 FOR ANCHORING PROCEDURE.
3. EYEBOLT FOR CHAIN CLOSURE SHALL BE INSTALLED BY THE SAME METHOD AS THE HINGE PLATE BOLTS.
4. RACK AND HARDWARE SHALL BE ALUMINUM OR REBAR AND GALVANIZED IN ACCORDANCE WITH ASTM A–153.
5. PROVIDE OPENING IN TRASH RACK TO ACCOMODATE SLUICE GATE ON THE OUTLET PIPE. ENSURE TRASH RACK OPENS FREELY AND WITHOUT INTERFERENCE WITH SLUICE GATES.

REBAR TRASH RACK
NOT TO SCALE



PLAN



SECTION A-A

ORIFICE TRASH RACK NOTES:
1. ALL JOINTS SHALL BE FULLY WELDED AROUND JOINT WITH A MINIMUM OF A *" BEAD.
2. IF BOLTS ARE ANCHORED IN CONCRETE, FOLLOW STD. DWG. 862.03 AND 862.04 FOR ANCHORING PROCEDURE.
3. REMOVEABLE ORIFICE TRASH RACK SHALL BE ATTACHED TO CONCRETE BOX BY HINGE OR SLIDE RAIL SYSTEM.
4. RACK AND HARDWARE SHALL BE ALUMINUM OR GALVANIZED IN ACCORDANCE WITH ASTM A–153.

DocuSign Envelope ID: 901BDDA9-B95D-4CD2-9EC6-1A37AA5CA05A

PROJECT REFERENCE NO.	SHEET NO.
R-2707C	2D-3
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 15869 ENGINEER

DocuSigned by: Jimmy Dixon, P.E. P.E. 26568A242E8341...

4/12/2017

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 26971 ENGINEER

DocuSigned by: Joshua D. Dalton, P.E. 1089AD8C1498428...

4/12/2017

moffatt & nichol
1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 781-4626 VOICE (919) 781-4869 FAX

SUNGATE DESIGN GROUP, P.A.
PLANNING & DESIGN CONSULTANTS
123 SOUTH WILMINGTON STREET
RALEIGH, NORTH CAROLINA 27601
(919) 821-1115 FAX (919) 821-1115

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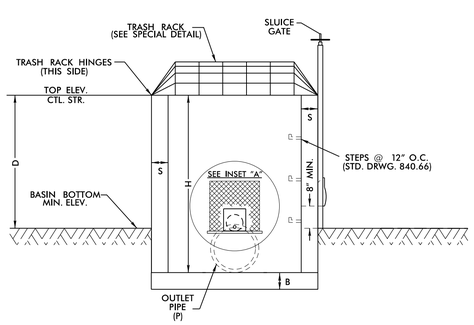
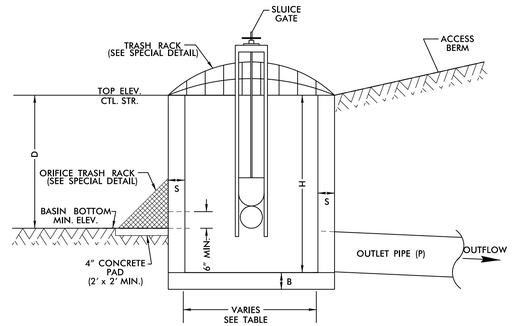
DETAIL #46

DRY DETENTION BASIN DRAWDOWN STRUCTURE

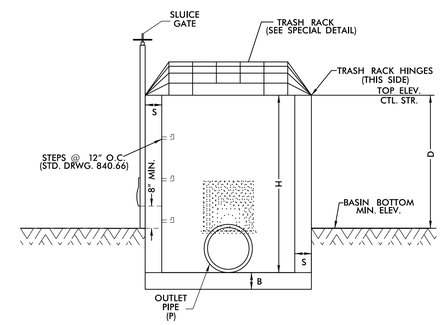
NOT TO SCALE



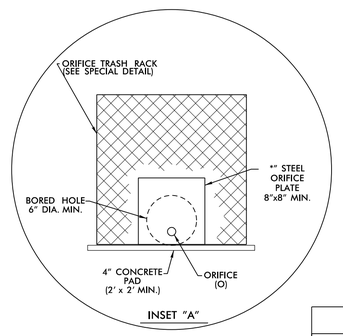
SIDE 1



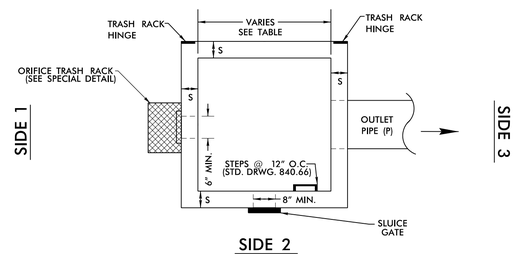
SIDE 2



SIDE 3



INSET "A"



SIDE 2

PLAN VIEW

TRASH RACK NOT SHOWN FOR CLARITY

NOTES:

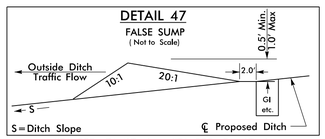
1. TOP ELEVATION OF CONTROL STRUCTURE (WEIR ELEVATION) SHOULD BE SET AT THE WQv ELEVATION.
2. 15" MINIMUM DIAMETER FOR OUTLET PIPE.
3. 2" MINIMUM DIAMETER ORIFICE. IF ORIFICE IS GREATER THAN 6", A STEEL PLATE IS NOT REQUIRED.
4. NO BEDDING MATERIAL TO BE USED. THEREFORE, DO NOT FOLLOW STANDARD DRAWINGS FOR METHOD OF PIPE INSTALLATION FOR OUTLET PIPE THROUGH EMBANKMENT.
5. SLUICE GATE IS FOR MAINTENANCE AND SHOULD REMAIN CLOSED DURING NORMAL OPERATION. A GATE VALVE MAY BE USED IN LIEU OF THE 8" SLUICE GATE.
6. SLUICE GATE SHALL PROVIDE WATERTIGHT SEAL. PROVIDE ADEQUATE CLEARANCE FOR GATE OPERATION AND FOR PROPER SEATING OF GATE OVER PIPE.
7. SELECT BOX STANDARD AS REQUIRED TO ACCOMMODATE SLUICE GATE AND ORIFICE TRASH RACK WIDTH.
8. ENSURE TRASH RACK OPENS FREELY AND WITHOUT INTERFERENCE WITH SLUICE GATE.
9. ADJUST FOOTER DIMENSIONS AS NEEDED FOR ANTI-FLOTATION.
10. PAYMENT OF TRASH RACKS ARE INCIDENTAL TO BASIN DRAWDOWN STRUCTURE.

MINIMUM DIMENSIONS FOR DRY DETENTION BASIN DRAWDOWN STRUCTURE

STATION	STRUCTURE NUMBER	S (INCHES) 6" MIN.	B (INCHES) 6" MIN.	BASIN BOTTOM MINIMUM ELEV.	TOP ELEVATION CONTROL STRUCTURE	MAX. STORAGE DEPTH(D) FEET	INV. ELEV. CTL. STR.	CTL. STR. DIMENSIONS (W x L x H)	ORIFICE DIAMETER (O) INCHES	ORIFICE INV. ELEV.	OUTLET PIPE DIAMETER(P) INCHES
586+98 –L– RT	2012	6"	18"	935.0	938.0	3.0'	933.0	5.0' X 5.0' X 5.0'	2"	935.0	24"
600+50 –L– RT	2113	6"	18"	925.0	929.0	4.0'	923.0	5.0' X 5.0' X 6.0'	2"	925.0	24"

DETAIL 47

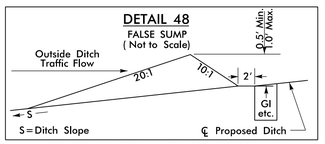
FALSE SUMP
(Not to Scale)



STA. 392+76 (LT) –L–
STA. 397+76 (LT) –L–
STA. 416+26 (LT) –L–
STA. 427+26 (LT) –L–
STA. 434+76 (LT) –L–
STA. 443+26 (LT) –L–
STA. 464+82 (LT) –L–
STA. 477+26 (LT) –L–
STA. 484+26 (LT) –L–
STA. 520+26 (LT) –L–
STA. 527+26 (LT) –L–
STA. 578+26 (LT) –L–
STA. 626+24 (RT) –L–
STA. 634+24 (RT) –L–
STA. 32+96 (LT) –Y4REV–
STA. 12+26 (RT) –Y9RPB–
STA. 17+86 (RT) –Y9RPB–
STA. 17+24 (RT) –Y8REV–
STA. 26+24 (RT) –Y8REV–
STA. 395+26 (LT) –L–
STA. 409+26 (LT) –L–
STA. 419+76 (LT) –L–
STA. 432+26 (LT) –L–
STA. 440+26 (LT) –L–
STA. 446+26 (LT) –L–
STA. 469+76 (LT) –L–
STA. 480+76 (LT) –L–
STA. 515+26 (LT) –L–
STA. 523+26 (LT) –L–
STA. 572+26 (LT) –L–
STA. 583+10 (LT) –L–
STA. 630+24 (RT) –L–
STA. 30+26 (LT) –Y4REV–
STA. 11+76 (LT) –Y9RPB–
STA. 15+76 (LT) –Y9RPB–
STA. 10+24 (LT) –Y14RPC–
STA. 21+74 (RT) –Y8REV–
STA. 16+26 (LT) –Y16REV–

DETAIL 48

FALSE SUMP
(Not to Scale)



STA. 390+36 (RT) –L–
STA. 395+36 (RT) –L–
STA. 400+36 (RT) –L–
STA. 412+36 (RT) –L–
STA. 419+86 (RT) –L–
STA. 432+36 (RT) –L–
STA. 440+36 (RT) –L–
STA. 446+36 (RT) –L–
STA. 477+36 (RT) –L–
STA. 484+36 (RT) –L–
STA. 514+86 (RT) –L–
STA. 523+36 (RT) –L–
STA. 536+14 (LT) –L–
STA. 626+14 (LT) –L–
STA. 634+14 (LT) –L–
STA. 11+16 (LT) –Y9RPC–
STA. 21+64 (LT) –Y8REV–
STA. 392+86 (RT) –L–
STA. 397+86 (RT) –L–
STA. 409+86 (RT) –L–
STA. 416+36 (RT) –L–
STA. 427+86 (RT) –L–
STA. 434+86 (RT) –L–
STA. 443+36 (RT) –L–
STA. 469+86 (RT) –L–
STA. 480+86 (RT) –L–
STA. 497+86 (RT) –L–
STA. 520+36 (RT) –L–
STA. 527+36 (RT) –L–
STA. 584+66 (LT) –L–
STA. 630+14 (LT) –L–
STA. 24+58 (RT) –Y3–
STA. 17+14 (LT) –Y8REV–
STA. 8+37 (RT) –Y14RPB–

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PROJECT REFERENCE NO.	SHEET NO.
R-2707C	2D-4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 15869 ENGINEER
DocuSigned by: 26568A242E8341... 4/12/2017

NORTH CAROLINA PROFESSIONAL SEAL 26971 ENGINEER
DocuSigned by: 1089AD8C1498425... 4/12/2017

moffatt & nichol
1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 781-4626 VOICE (919) 781-4869 FAX

SUNGATE DESIGN GROUP, P.A.
10 LEGACY STREET, SUITE 400
RALEIGH, NORTH CAROLINA 27603
(919) 789-9000 FAX (919) 789-9001
FIRM LICENSE NO. C-0910

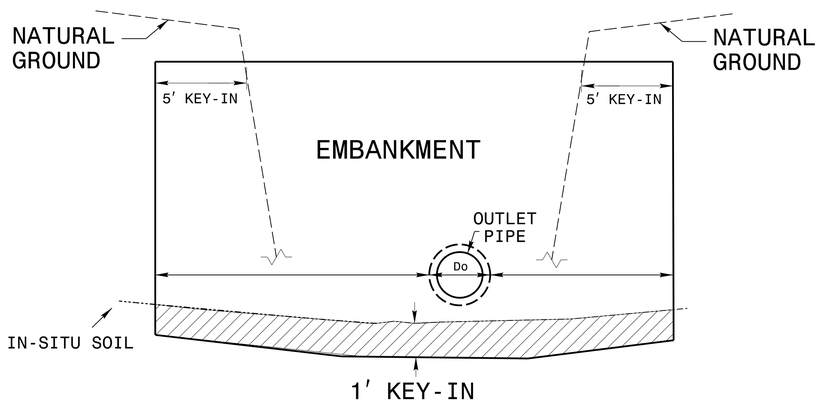
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

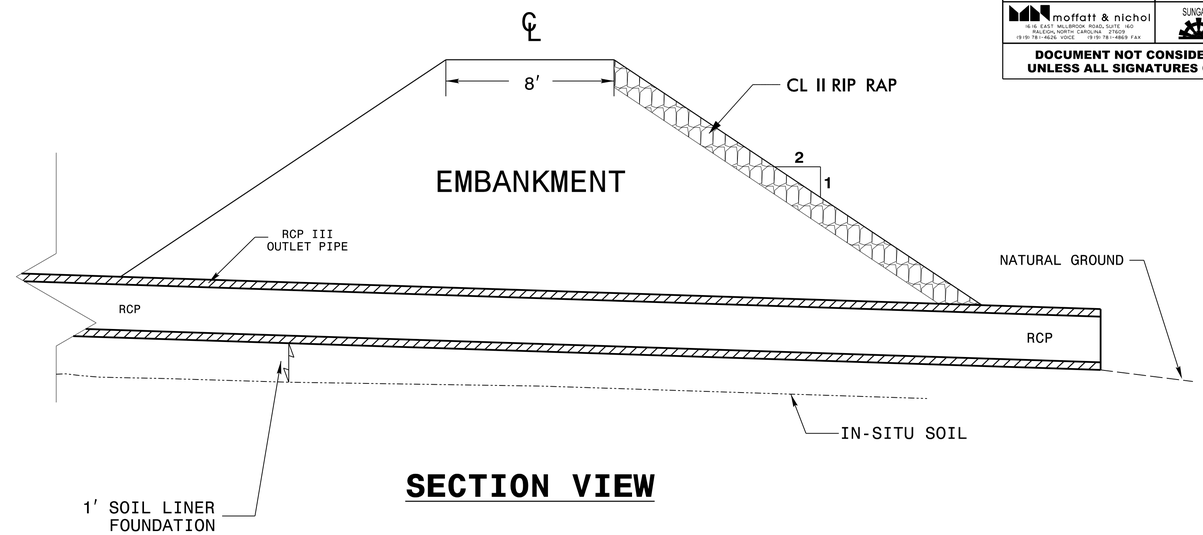
DETAIL #49

HAZARDOUS SPILL BASIN EMBANKMENT AND LINER

(NOT TO SCALE)

ELEVATION VIEW





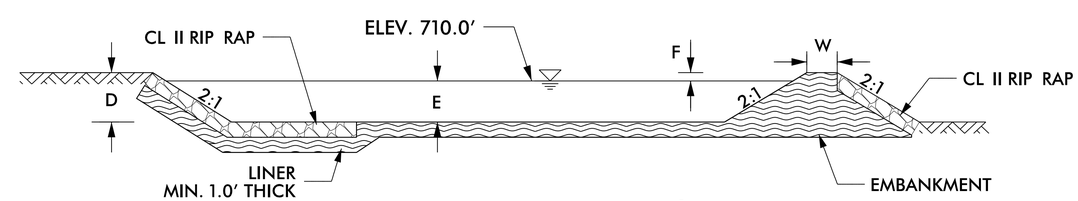
SECTION VIEW

EMBANKMENT NOTES
1. EMBANKMENT TO CONSIST OF A-5, A-6 OR A-7 NATURAL SOILS.
2. KEY IN EMBANKMENT A MINIMUM OF 1′ INTO IN-SITU SOIL FOUNDATION.

LINER FOR BASIN BOTTOM
1. LINER TO CONSIST OF A-5, A-6 OR A-7 NATURAL SOILS.
2. LINER MINIMUM 1.0 THICK.

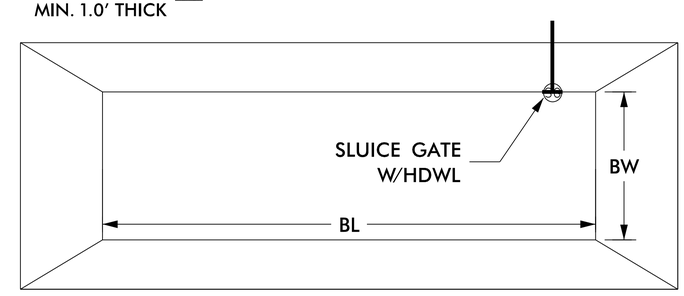
GENERAL NOTES
1. COMPACT BASIN EMBANKMENT AND LINER ACCORDING TO SECTION 235 OF STANDARD SPECS.

TOTAL CAPACITY REQUIRED: 516 CY
TOTAL CAPACITY PROVIDED: 517 CY
@ ELEV. 710.0 w/1.0 FT. FREEBOARD



DIMENSIONS

BASIN NO.	PROJECT STATION	DEPTH (D)	BERM WIDTH (W)	BERM ELEV.	BOTTOM LENGTH (BL)	BOTTOM WIDTH (BW)	BOTTOM ELEV.	DESIGN DEPTH (E)	FREE-BOARD (F)
1	-L- 386+00 (RT)	4.0′	8.0′	711.0′	113′	33′	707.0′	3.0′	1.0′



MODEL 20-10C SLUICE GATE

NOTES:
1. SHAPE OF BASIN MAY VARY DEPENDING ON SITE CONSTRAINTS.
2. ACCESS BERM SHOULD BE PROVIDED FOR MAINTENANCE.
3. RIP-RAP EXTENDS 20′ BEYOND PIPE AT BASIN INLET(SEE PLANS)
4. MINIMUM SLOPE OF THE BOTTOM OF THE BASIN SHOULD BE 0.3%.

PROJECT REFERENCE NO.	SHEET NO.
R-2707C	2G-1

GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 022246 ENGINEER SCOTT A. HIDDEN

DocuSigned by: Scott A. Hidden F760CAE806EC4D3... SIGNATURE 3/1/2017 DATE

ENGINEER

SIGNATURE DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

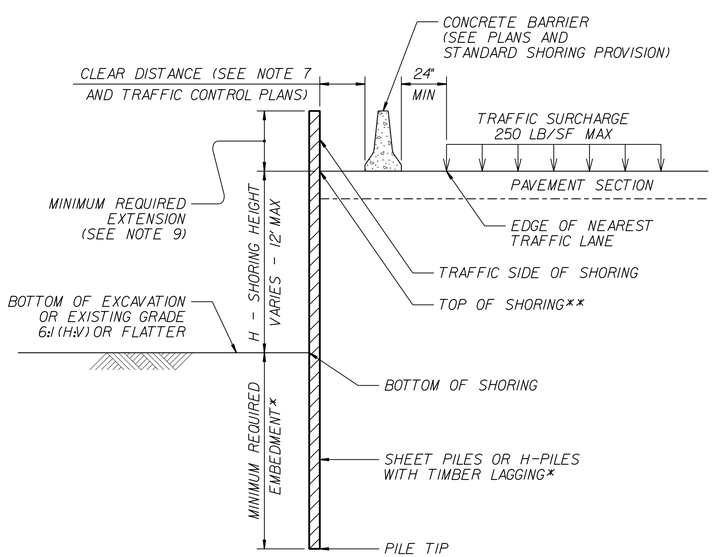
GROUNDWATER CONDITION (SEE NOTE 6)	H SHORING HEIGHT (FT)	SLOPE OR SURCHARGE CASE WITH NO TRAFFIC IMPACT					SURCHARGE CASE WITH TRAFFIC IMPACT				
		SHEET PILES		H-PILES WITH TIMBER LAGGING			SHEET PILES		H-PILES WITH TIMBER LAGGING		
		MINIMUM REQUIRED EMBEDMENT (FT)	MINIMUM REQUIRED SECTION MODULUS (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 "--".

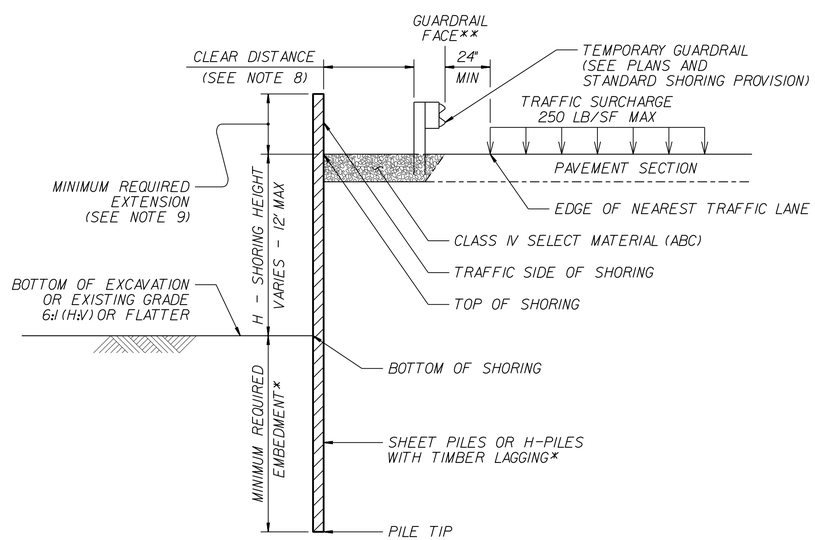
NOTES:

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



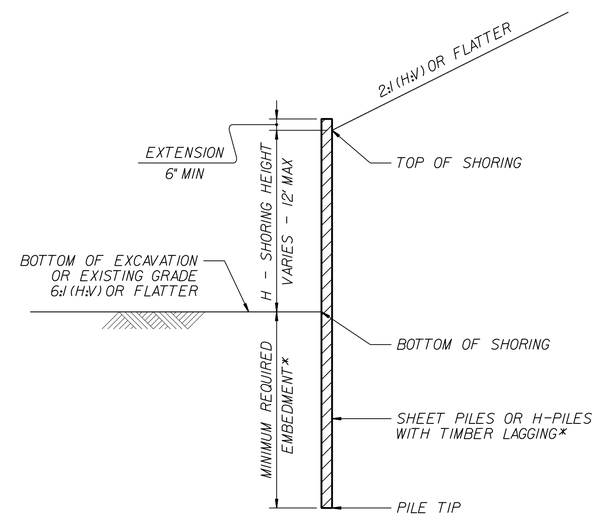
CONCRETE BARRIER

**TOP OF SHORING = EDGE OF PAVEMENT



TEMPORARY GUARDRAIL

**GUARDRAIL FACE = EDGE OF PAVEMENT



STANDARD TEMPORARY SHORING

(SLOPE CASE)
*SEE TABLE ABOVE.

STANDARD TEMPORARY SHORING

(SURCHARGE CASE)
*SEE TABLE ABOVE.

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS

GEOTECHNICAL ENGINEERING UNIT

STANDARD DETAIL NO. 1801.01

STANDARD TEMPORARY SHORING

DATE: 11-19-13

PROJECT REFERENCE NO.	SHEET
R-2707C	2H-1

GEOENVIRONMENTAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 31499 ENGINEER CYRUS F. PARKER

DocuSigned by: Cyrus Parker 2/23/2017
C96492AF5E824DF...
SIGNATURE DATE

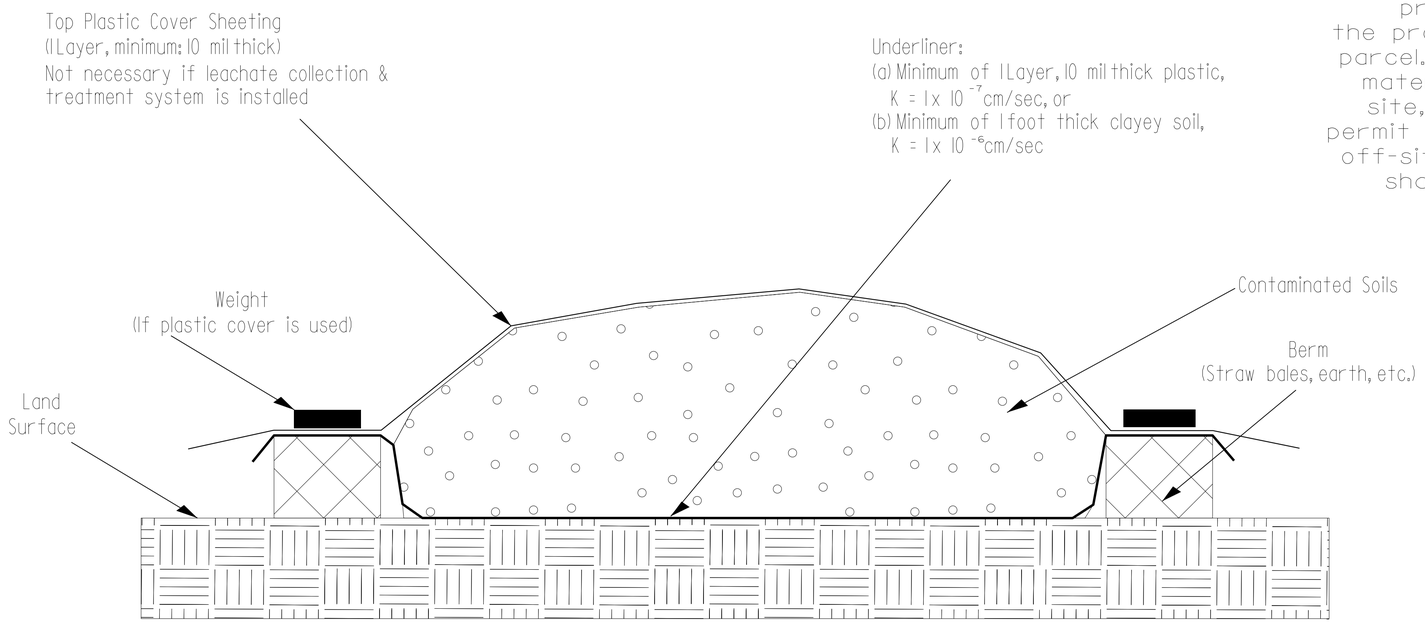
ENGINEER

SIGNATURE DATE

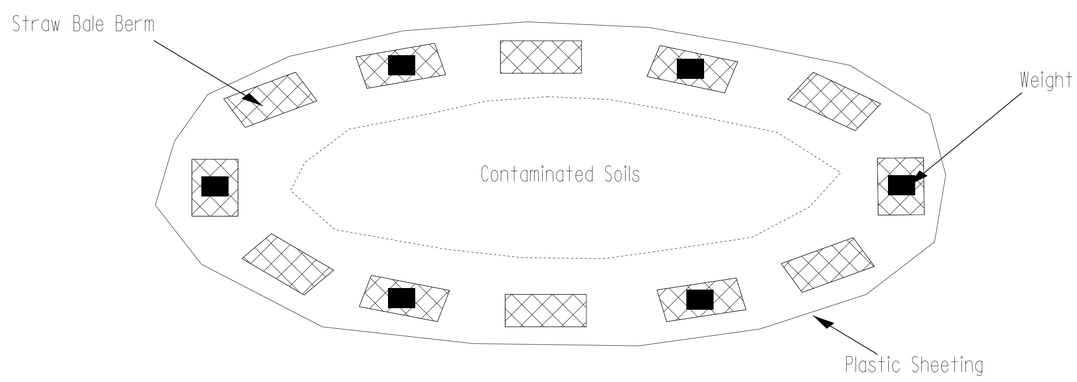
Detail for Temporary Containment of Contaminated Soil

Cross-Section View

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



Map View



PREPARED BY: _	DATE: _
REVIEWED BY: _	DATE: _

GEOTECHNICAL ENGINEERING UNIT

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

- ☐ 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	_	_

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

SUMMARY OF EARTHWORK

IN CUBIC YARDS

LOCATION		UNCLASSIFIED EXCAVATION	UNDERCUT	EMBT+%	BORROW	WASTE
-L- 382+00.00	-L- 382+50.00	0	0	0	0	0
	SUBTOTAL	0	0	0	0	0
-L- 386+50.00	-L- 416+00.00	909,138	0	78,330	0	830,808
-Y2- 21+75.00	-Y2- 28+00.45	688	0	11,552	10,864	0
-Y2- 30+14.49	-Y2- 33+75.00	4,856	0	137	0	4,719
	SUBTOTAL	914,682	0	90,019	10,864	835,527
-L- 416+00.00	-L- 444+50.00	616,275	0	26,162	0	590,113
	SUBTOTAL	616,275	0	26,162	0	590,113
-L- 444+50.00	-L- 470+00.00	303,705	0	171,834	0	131,871
-Y3- 16+15.00	-Y3- 19+77.23	922	0	1,082	160	0
-Y3- 21+63.23	-Y3- 27+25.00	3,666	0	1,610	0	2,056
	SUBTOTAL	308,293	0	174,526	160	133,927
-L- 470+00.00	-L- 495+00.00	339,141	0	99,795	0	239,346
	SUBTOTAL	339,141	0	99,795	0	239,346
-Y4-REV 15+02.00	-Y4-REV 22+82.50	742	0	2,482	1,740	0
-Y4-REV 25+39.00	-Y4-REV 34+76.31	1,602	0	13,931	12,329	0
-Y18- 12+00.00	-Y18- 16+50.00	855	0	764	0	91
	SUBTOTAL	3,199	0	17,177	14,069	91
-L- 495+00.00	-L- 520+00.00	44,775	1,500	329,635	284,860	1,500
	SUBTOTAL	44,775	1,500	329,635	284,860	1,500
-Y6A- 10+00.00	-Y6A- 20+70.00	3,376	0	2,537	0	839
-DR3- 10+20.00	-DR3- 11+20.00	42	0	18	0	24
	SUBTOTAL	3,418	0	2,555	0	863
-Y8-REV 10+50.00	-Y8-REV 36+00.00	3,196	0	20,761	17,565	0
-Y8A- 33+00.00	-Y8A- 35+50.00	464	0	500	36	0
-Y9- DET 12+00.00	-Y9- DET 23+50.00	4,640	0	5,793	1,153	0
	SUBTOTAL	8,300	0	27,054	18,754	0
-L- 520+00.00	-L- 545+00.00	198,410	0	151,448	0	46,962
-Y9- 11+50.00	-Y9- 23+00.00	1,121	0	9,044	7,923	0
-Y9- 25+17.80	-Y9- 36+00.00	607	0	11,434	10,827	0
-Y9RPA- 10+00.00	-Y9RPA- 20+50.00	1,012	0	49,785	48,773	0
-Y9RPD- 8+00.00	-Y9RPD- 16+00.00	128	0	43,479	43,351	0
	SUBTOTAL	201,278	0	265,190	110,874	46,962
-Y9RPB- 9+50.00	-Y9RPB- 19+50.00	20,169	0	3,225	0	16,944
-Y9RPC- 9+00.00	-Y9RPC- 16+00.00	7,491	0	2,026	0	5,465
	SUBTOTAL	27,660	0	5,251	0	22,409
-L- 545+00.00	-L- 574+50.00	287	6,000	393,746	393,459	6,000
	SUBTOTAL	287	6,000	393,746	393,459	6,000
-L- 575+00.00	-L- 592+50.00	19,552	0	141,459	121,907	0
-Y11-REV2 18+00.00	-Y11-REV2 31+50.00	2,110	0	6,647	4,537	0
	SUBTOTAL	21,662	0	148,106	126,444	0
-L- 597+50.00	-L- 610+50.00	3,332	0	474,916	471,584	0
-Y11-REV2 33+00.00	-Y11-REV2 47+33.31	15,517	0	1,099	0	14,418
-Y14RPB- 10+50.00	-Y14RPB- 13+01.79	7,685	0	0	0	7,685
-Y14RPC- 10+50.00	-Y14RPC- 11+74.48	2,580	0	0	0	2,580
	SUBTOTAL	29,114	0	476,015	471,584	24,683
-L- 612+00.00	-L- 635+00.00	90,779	0	138,268	47,489	0
-Y11-REV2 49+00.00	-Y11-REV2 69+50.00	782	0	46,963	46,181	0
-Y14RPA- 13+50.00	-Y14RPA- 15+08.38	400	0	2,515	2,115	0
-Y14- 13+00.00 LT	-Y14- 33+00.00 LT	3,946	0	8,923	4,977	0
-Y14- 33+00.00 LT	-Y14- 55+00.00 LT	1,456	0	2,976	1,520	0
-Y14- 13+00.00 RT	-Y14- 33+00.00 RT	3,654	0	1,737	0	1,917
-Y14- 33+00.00 RT	-Y14- 55+00.00 RT	5,385	0	1,114	0	4,271
-Y16-REV 10+00.00	-Y16REV 19+50.00	7,242	0	20,705	13,463	0
-Y16A- 13+75.00	-Y16A- 14+50.00	98	0	214	116	0
-SR2- 10+50.00	-SR2- 16+49.17	468	0	265	0	203
-DR1- 11+04.70	-DR1- 12+60.00	6	0	1,395	1,389	0
	SUBTOTAL	114,216	0	225,075	117,250	6,391
-Y14RPD- 9+00.00	-Y14RPD- 16+73.73	9,245	0	4,206	0	5,039
-DR2- 10+60.90	-DR2- 11+60.00	4	0	227	223	0
	SUBTOTAL	9,249	0	4,433	223	5,039
-Y9- DET 12+00.00 (REM)	-Y9- DET 23+50.00 (REM)	5,037	0	0	0	5,037
	SUBTOTAL	5,037	0	0	0	5,037
PROJECT TOTAL		2,646,586	7,500	2,284,477	1,548,541	1,918,150
					368	
LOSS DUE TO CLEARING & GRUBBING		-50,000			14,375	-50,000
FILL IN EXISTING CHANNEL				368	-213,308	
ADDITIONAL UNDERCUT			12,500	14,375	-53,327	12,500
ROCK WASTE TO REPLACE BORROW					-39,995	-213,308
ADJUST FOR ROCK SWELL				-53,327	-1,256,654	
ADJUST FOR ROCK WASTE				-39,995	0	
WASTE IN LIEU OF BORROW						-1,256,654
PROJECT TOTAL		2,596,586		2,205,898	0	410,688
			20,000			
EST. 5% TO REPLACE TOP SOIL ON BORROW PIT					0	
GRAND TOTAL		2,596,586	20,000	2,205,898		410,688
SAY		2,730,000		2,320,000		440,000

EARTHWORK QUANTITIES ARE CALCULATED BY THE ROADWAY DESIGN UNIT. THESE QUANTITIES ARE BASED IN PART ON SUBSURFACE DATA PROVIDED BY THE GEOTECHNICAL ENGINEERING UNIT.

PAVEMENT STRUCTURE VOLUME

-Y2-	1,510 CY
-Y3-	1,130 CY
-Y4-REV	2,300 CY
-Y6A-	1,240 CY
-Y9-	7,380 CY
-Y9- DETOUR	1,550 CY
-Y11- REV2	8,740 CY
-Y14-	11,000 CY

NOTE: VOLUMES SHOWN INCLUDE ADDITIONAL VOLUME OF 5" OVER SUBGRADE FOR "GRADING & STRUCTURES ONLY PLANS".

SHOULDER BORROW = 11,900 CY
EST DDE = 15,920 CY
CLASS IV SUBGRADE STABILIZATION = 32,000 TONS
SHALLOW UNDERCUT = 15,800 CY

COMPUTED BY: G. MODLIN DATE: 3/23/2017
CHECKED BY: T. HUFFMAN DATE: 3/23/2017

PROJECT REFERENCE NO. R-2707C
SHEET NO. 3B-1

COMPUTED BY: G. MODLIN DATE: 10 /07 /14
CHECKED BY: T. HUFFMAN DATE: 10 /07 /14

PROJECT REFERENCE NO.	SHEET NO.
R-2707C	3B-2

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

ASPHALT PAVEMENT REMOVAL SUMMARY

SURVEY LINE	STATION	STATION	LOCATION LT/RT/CL	YD^2
–Y2–	23+85	33+25	LT/RT	2223.44
–Y3–	18+50	25+00	LT/RT	1503.89
–Y4–REV	16+66	17+61	RT	34.22
–Y4–REV	17+61	32+00	LT/RT	2991.67
–Y4–REV	32+00	33+33	RT	70.44
–Y18–	12+00	14+56	LT	398.89
–Y6A–	14+76	20+70	RT	1732.78
–L–	507+71	508+19	RT	156.22
–L–	520+04	536+30	RT	5297.22
–L–	526+08	530+75	RT	758.78
–Y9–	27+82	29+29	LT	1718.33
–Y9–	29+43	30+95	RT	585.44
–Y9–DET	11+35	23+95	LT/RT	3270.00
–L–	540+39	541+05	LT	530.56
–RPA–Y9	11+48	11+72	LT	16.00
–RPA–Y9	11+64	11+91	RT	18.44
–RPA–Y9	11+92	12+53	RT	239.22
–RPD–Y9	1+99	3+46	LT	276.22
–Y8–REV	30+57	34+90	LT	1052.67
–L–	583+40	583+65	LT/RT	881.11
–L–	583+66	584+47	LT	184.44
–L–	588+31	589+02	LT	157.00
–Y14–	32+50	33+15	LT	356.00
–Y14–	33+93	35+26	LT/RT	327.56
–Y14–	40+29	41+61	LT/RT	523.22
–Y14–	45+76	47+11	LT/RT	408.78
–Y11–REV	20+85	23+32	LT	309.00
–Y11–REV	23+32	31+86	LT	2281.11
–Y11–REV	32+92	38+77	LT	1616.33
–Y11–REV	46+29	47+33	LT/RT	879.22
–Y11–REV	47+64	66+64	LT/RT	6463.67
			TOTAL:	37,261.89
			SAY:	37,270

SUMMARY OF EXISTING CONCRETE PAVEMENT REMOVAL

SURVEY LINE	STATION	STATION	LOCATION LT/RT/CL	YD^2
–Y9–	26+55	28+79	RT	1970.67
			TOTAL:	1970.67
			SAY:	1980

SUMMARY OF BREAKING EXISTING ASPHALT PAVEMENT

SURVEY LINE	STATION	STATION	LOCATION LT/RT/CL	YD^2
–L–	508+00	511+10	LT/RT	649.44
–Y9–	19+67	22+93	LT/RT	1746.67
–Y9–	25+12	29+51	LT/RT	2320.11
–L–	536+20	543+92	RT	1399.00
–L–	540+61	541+41	LT/RT	546.00
–RPA–Y9	10+93	12+35	LT/RT	613.56
–RPA–Y9	12+25	12+50	RT	14.89
–L–	584+43	588+55	LT/RT	1941.44
			TOTAL:	9231.11
			SAY:	9240

COMPUTED BY: G. MODLIN	DATE: 10 /07 /14
CHECKED BY: T. HUFFMAN	DATE: 10 /07 /14

PROJECT REFERENCE NO.	SHEET NO.
R-2707C	3B-3

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

WOVEN WIRE FENCE, 47" FABRIC

STATION TO STATION	LOC LT/RT	47" FABRIC LF	4" POSTS	5" POSTS
–L– Sta 386+31 to –Y2– 27+92	LT	68	1	7
–L– Sta 386+79 to –Y2– 30+37	RT	626	36	16
–Y2– Sta 28+08 to –L– 449+90	LT	6,411	380	142
–Y2– Sta 30+85 to–L– 406+55	RT	1,847	117	28
–L– Sta 406+61 to –L– 426+70	RT	2,167	131	43
–L– Sta 426+76 to –L– 438+75	RT	1,329	76	34
–L– Sta 438+81 to –L– 449+73	RT	1,181	72	22
–L– Sta 450+14 to –L– 453+51	RT	360	19	13
–L– Sta 450+33 to –L– 452+38	LT	2,440	167	13
–L– Sta 452+38 to –L– 473+52	LT	2,162	139	28
–L– Sta 453+78 to –L– 475+10	RT	2,114	132	34
–L– Sta 473+88 to –Y3– 13+60	LT	6,510	384	148
–L– Sta 475+46 to –L– 491+48	RT	1,624	101	28
–L– Sta 491+54 to –L– 495+72	RT	439	23	16
–L– Sta 495+78 to –L– 503+73	RT	812	51	13
–L– Sta 503+79 to –L– 512+85	RT	867	53	16
–L– Sta 512+91 to –Y9– 32+50	RT	1,956	124	28
–Y9– Sta 11+72 to –L– 536+05	LT	939	57	19
–Y9– Sta 32+37 to –L– 553+84	RT	2,643	164	46
–L– Sta 536+11 to –L– 552+46	LT	1,777	110	31
–L– Sta 552+71 to –L– 567+74	LT	1,584	100	25
–L– Sta 554+09 to –L– 593+10	RT	3,946	255	49
–L– Sta 567+78 to –L– 591+29	LT	2,387	155	28
–L– Sta 596+82 to –Y11REV2– 42+35	RT LT	2,069	129	34
–L– Sta 597+76 to –Y14– 21+85	LT	2,626	169	34
–Y11REV2– Sta 42+35 to –Y14– 50+90	RT RT	853	54	13
–Y14– Sta 50+90 to –Y11REV2– 54+79	LT RT	966	62	13
–Y11REV2– Sta 54+79 to –L– 635+01	LT RT	3,304	209	49
–Y14– Sta 21+75 to –L– 636+43	LT	3,520	228	43
	TOTAL:	59,527	3,699	1,013
	SAY:	59,530	3,699	1,013

RD223236

COMPUTED BY:	C.POWELL	DATE:	12-20-16
CHECKED BY:	T. HUFFMAN	DATE:	12-20-16

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA
GUARDRAIL SUMMARY

PROJECT REFERENCE NO.	SHEET NO.
R-2707C	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 BEGIN

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

SURVEY LINE	BEG. STA.	END STA.	LOCATION	LENGTH			WARRANT POINT		"N" DIST. FROM E.O.L.	TOTAL SHOUL WIDTH	FLARE LENGTH		W		ANCHORS								IMPACT ATTENUATOR TYPE 350			SINGLE FACED CONCRETE BARRIER	REMOVE EXISTING GUARDRAIL	REMOVE & STOCKPILE EXISTING GUARDRAIL	REMARKS
				STRAIGHT	SHOP CURVED	DOUBLE FACED	APPROACH END	TRAILING END			APPROACH END	TRAILING END	APPROACH END	TRAILING END	GRAU 350 TL-3	TYPE-III	CAT-1	Type B-77	TES				No.	PERMITTED G	PERMITTED NG				
-Y2-	23+06	27+93	RT	487.5			24+06		8	11	50		1		1	1													BRIDGE / FILL WARRANT
-Y2-	24+01	28+08	LT	412.5				25+00	8	11		50		1	1	1													BRIDGE / FILL WARRANT
-Y2-	30+01	31+64	RT	162.5				30+01	8	11		50		1	1	1													BRIDGE / FILL WARRANT
-Y2-	30+28	33+02	LT	275			30+28		8	11	50		1		1	1													BRIDGE / FILL WARRANT
-Y3-	16+94	19+75	LT	287.5				19+75	8	11		50		1	1			1											BRIDGE / FILL WARRANT
-Y3-	17+91	19+79	RT	187.5			19+79		8	11	50		1		1			1											BRIDGE / FILL WARRANT
-Y3-	21+61	26+53	LT	500			25+53		8	11	50		1		1			1											BRIDGE / FILL WARRANT
-Y3-	21+65	22+53	RT	87.5				21+65	8	11		50		1	1			1											BRIDGE / FILL WARRANT
-Y4REV-	20+04	22+72	RT	275			22+72		6	9	50		1		1			1											BRIDGE / FILL WARRANT
-Y4REV-	21+75	22+93	LT	125				22+93	6	9		50		1	1			1											BRIDGE / FILL WARRANT
-Y4REV-	25+28	28+36	RT	312.5				27+30	6	9		50		1	1			1											BRIDGE / FILL WARRANT
-Y4REV-	25+50	29+30	LT	387.5			28+30		6	9	50		1		1			1											BRIDGE / FILL WARRANT
-Y5-	20+13	20+12	LT/RT	25															2										ROAD CLOSURE
-Y5-	20+35	20+57	LT	25															2										ROAD CLOSURE
-Y8-	24+10	24+10	LT/RT	25															2										ROAD CLOSURE
-Y8-	24+35	24+59	LT	25															2										ROAD CLOSURE
-Y8REV-	25+50	31+00	LT	550			30+25	26+25	8	11	50	50	1	1	2														FILL WARRANT
-Y8REV-	28+00	33+00	RT	500			28+75	32+25	8	11	50	50	1	1	2														FILL WARRANT
-Y9-	20+82	23+07	RT	225			23+07		7.5	12	50		1		1	1													BRIDGE / FILL WARRANT
-Y9-	25+08	27+33	LT	225			25+08		7.5	12	50		1		1	1													BRIDGE / FILL WARRANT
-Y10-	20+74	20+74	LT/RT	62.5															2										ROAD CLOSURE
-Y10-	24+28	24+28	LT/RT	62.5															2										ROAD CLOSURE
-Y11A-	46+53	46+54	LT/RT	75															2										ROAD CLOSURE
-Y11REV2-	26+02	31+77	RT	200			26+83		8	11	50		1		1			3								379			CONCRETE BARRIER
-Y11REV2-	30+83	31+77	LT	100				31+77	8	11		50		1	1			1									172.2		BRIDGE / FILL WARRANT
-Y11REV2-	32+95	35+04	LT	212.5			32+95		8	11	50		1		1			1									157.9		BRIDGE / FILL WARRANT
-Y11REV2-	32+95	33+88	RT	100				32+95	8	11		50		1	1			1											BRIDGE / FILL WARRANT
-Y11REV2-	54+97	62+51	LT	762.5			61+50	56+00	8	11	50	50	1	1	2														FILL WARRANT
-Y11REV2-	54+97	64+60	RT	962.5			56+00	63+50	8	11	50	50	1	1	2														FILL WARRANT
-Y14-	16+53	20+50	LT	400			19+50	17+50	8	11	50	50	1	1	2														FILL WARRANT
-Y14-	32+29	32+90	LT	62.5															2										ROAD CLOSURE
-Y14-	36+19	39+36	RT	325			36+69	39+36	2	10	50		1		1		1												FUTURE BRIDGE MSE WALL WARRANT
-Y14-	36+04	39+89	LT	387.5			39+39	36+04	2	10	50		1		1		1												FUTURE BRIDGE MSE WALL WARRANT
-Y16REV-	12+00	15+50	RT	350			12+50	15+00	8	11	50	50	1	1	2														FILL WARRANT
-Y16REV-	13+00	16+00	LT	300			15+50	12+50	8	11	50	50	1	1	2														FILL WARRANT
SHEET TOTALS				9,463			55,869	50,975	195	289	950	750	19	15	34	6	2	14	16							379	330	0	
LESS ANCHOR DEDUCTIONS																													
GRAU-350 TL-3		34	@ 50.0	-1,700																									
	CAT-1	2	@ 6.25	-12.5																									
	TES	16	Each																										
	TYPE B-77	14	@ 18.75	-262.5																									
	TYPE III	6	@18.75	-112.5																									
GRAND TOTALS				7,375.0	0										34	6	2	14	16							379	330.1		
SAY				7,512.5	0										34	6	2	14	16							379	330.1		
ADDITIONAL GUARDRAIL POSTS = 10																													

TEMPORARY GUARDRAIL SUMMARY

-Y4- Ex.	22+08	24+78		275											2														
-Y9-DET	13+50	17+50		400			14+25	16+75	8	11	50	50	1	1	2														
-Y9-DET	15+95	19+00		312.5			16+70	18+25	8	11	50	50	1	1	2														
SHEET TOTALS				988											6														
LESS ANCHOR DEDUCTIONS																													
GRAU-350 TL-3		6	@ 50.0	-300																									
GRAND TOTALS				687.5											6														
SAY				700.0											6														

RA-1553

COMPUTED BY: BNE DATE: 2/22/2017

CHECKED BY: JGD DATE: 2/22/2017

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
R-2707C	3D-1

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

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

| STATION | LOCATION (LT, RT, OR CL) | STRUCTURE NO. FROM | STRUCTURE NO. TO | TOP ELEVATION | INVERT ELEVATION | INVERT ELEVATION | MIN. REQUIRED SLOPE | SIDE DRAIN PIPE (RCP, CSP, CAAP, HDPE, or PVC) 12" | 15" | 18" | 24" | 30" | 36" | 42" | 48" | DO NOT USE RCP | DO NOT USE CSP | DO NOT USE CAAP | DO NOT USE HDPE | C.S. PIPE 12" | 15" | 18" | 24" | 30" | 36" | 42" | 48" | R.C. PIPE CLASS III 12" | 15" | 18" | 24" | 30" | 36" | 42" | 48" | R.C. PIPE CLASS IV 12" | 15" | 18" | 24" | 30" | 36" | 42" | 48" | 24" R.C. PIPE (CLASS V) | 30" R.C. PIPE (CLASS V) | 36" R.C. PIPE (CLASS V) | 42" R.C. PIPE CULVERTS, CONTRACTOR DESIGN | | ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) R.C.P. | C.S.P. | QUANTITIES FOR DRAINAGE STRUCTURES *TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL. 'B') PER EACH (0' THRU 5.0') | LIN. FT. A 5.0' THRU 10.0' | LIN. FT. B 10.0' AND ABOVE | | C.B. STD. 840.01 OR STD. 840.02 | FRAME, GRATES, AND HOOD STANDARD 840.03 TYPE OF GRATE E | F | G | CONCRETE TRANSITIONAL SECTION DROP INLET | CATCH BASIN | | D.I. STD. 840.14 OR STD. 840.15 | D.I. FRAME AND GRATE STD. 840.16 | | G.D.I. TYPE "A" STD. 840.17 OR 840.26 | G.D.I. TYPE "B" STD. 840.18 OR 840.27 | G.D.I. TYPE "D" STD. 840.19 OR 840.28 | G.D.I. (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/ 2 GRATES STD. 840.24 | G.D.I. (N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29 | T.B.D.I. STD. 840.35 | T.B.J.B. STD. 840.34 | J.B. STD. 840.31 OR 840.32 | M.H. FRAME AND COVER STD. 840.54 | CONVERT EXISTING C.B. TO T.B.J.B. | 1" STEEL COVER | CONCRETE ENDWALL AND SLUICE GATE STD. 838.02 | 8" SLUICE GATE | 15" SIDE DRAIN PIPE ELBOWS | 18" SIDE DRAIN PIPE ELBOWS | 24" SIDE DRAIN PIPE ELBOWS | 30" SIDE DRAIN PIPE ELBOWS | 36" SIDE DRAIN PIPE ELBOWS | BERM DITCH OUTLET STD. 850.10 | BERM DITCH OUTLET STD. 850.11 | CONCRETE AND BRICK PIPE PLUG STD. 840.17 | CONC. COLLARS CL. "B" C.Y. STD. 840.72 | PIPE REMOVAL LIN. FT. | REMARKS |
|---|---|---

RA-1553

COMPUTED BY: BNE DATE: 2/22/2017

CHECKED BY: JGD DATE: 2/22/2017

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
R-2707C	3D-2

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

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

| STATION | LOCATION (LT, RT, OR CL)* | STRUCTURE NO. FROM | STRUCTURE NO. TO | TOP ELEVATION | INVERT ELEVATION | INVERT ELEVATION | MIN. REQUIRED SLOPE % | SIDE DRAIN PIPE (RCP, CSP, CAAP, HDPE, or PVC) SIZE 12" | 15" | 18" | 24" | 30" | 36" | 42" | 48" | DO NOT USE RCP | DO NOT USE CSP | DO NOT USE CAAP | DO NOT USE HDPE | C.S. PIPE SIZE 12" | 15" | 18" | 24" | 30" | 36" | 42" | 48" | R.C. PIPE CLASS III SIZE 12" | 15" | 18" | 24" | 30" | 36" | 42" | 48" | R.C. PIPE CLASS IV SIZE 12" | 15" | 18" | 24" | 30" | 36" | 42" | 48" | 24" R.C. PIPE (CLASS V) | 30" R.C. PIPE (CLASS V) | 36" R.C. PIPE (CLASS V) | 42" R.C. PIPE O/LVERTS, CONTRACTOR DESIGN | ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CU. YARDS R.C.P. | C.S.P. | QUANTITIES FOR DRAINAGE STRUCTURES *TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. "A" + (1.3 X COL. "B") PER EACH (0' THRU 5.0') | LIN. FT. A: 5.0' THRU 10.0' | LIN. FT. B: 10.0' AND ABOVE | C.B. STD. 840.01 OR STD. 840.02 | FRAME, GRATES, AND HOOD STANDARD 840.03 TYPE OF GRATE E | F | G | CONCRETE TRANSITIONAL SECTION DROP INLET | CATCH BASIN | D.I. STD. 840.14 OR STD. 840.15 | D.I. FRAME AND GRATE STD. 840.16 | G.D.I. TYPE "A" STD. 840.17 OR 840.26 | G.D.I. TYPE "B" STD. 840.18 OR 840.27 | G.D.I. TYPE "D" STD. 840.19 OR 840.28 | G.D.I. (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/ 2 GRATES STD. 840.24 | G.D.I. (N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29 | T.B.D.I. STD. 840.35 | T.B.J.B. STD. 840.34 | J.B. STD. 840.31 OR 840.32 | M.H. FRAME AND COVER STD. 840.54 | CONVERT EXISTING C.B. TO T.B.J.B. | 1" STEEL COVER | CONCRETE ENDWALL AND SLUICE GATE STD. 838.02 | 8" SLUICE GATE | 15" SIDE DRAIN PIPE ELBOWS | 18" SIDE DRAIN PIPE ELBOWS | 24" SIDE DRAIN PIPE ELBOWS | 30" SIDE DRAIN PIPE ELBOWS | 36" SIDE DRAIN PIPE ELBOWS | BERM DITCH OUTLET STD. 850.10 | BERM DITCH OUTLET STD. 850.11 | CONCRETE AND BRICK PIPE PLUG STD. 840.71 | CONC. COLLARS CL. "B" C.Y. STD. 840.72 | PIPE REMOVAL LIN. FT. | REMARKS |
|---|---|---

COMPUTED BY: BNE DATE: 2/22/2017

CHECKED BY: JGD DATE: 2/22/2017

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
R-2707C	3D-3

RA-1553

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

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

| STATION | LOCATION (LT, RT, OR CL)* | STRUCTURE NO. FROM | STRUCTURE NO. TO | TOP ELEVATION | INVERT ELEVATION | INVERT ELEVATION | MIN. REQUIRED SLOPE % | SIDE DRAIN PIPE (RCP, CSP, CAAP, HDPE, or PVC) SIZE 12" | 15" | 18" | 24" | 30" | 36" | 42" | 48" | DO NOT USE RCP | DO NOT USE CSP | DO NOT USE CAAP | DO NOT USE HDPE | C.S. PIPE SIZE 12" | 15" | 18" | 24" | 30" | 36" | 42" | 48" | C.S. PIPE THICKNESS OR GAUGE .064 | .064 | .064 | .064 | .079 | .079 | .109 | .109 | R.C. PIPE CLASS III SIZE 12" | 15" | 18" | 24" | 30" | 36" | 42" | 48" | R.C. PIPE CLASS IV SIZE 12" | 15" | 18" | 24" | 30" | 36" | 42" | 48" | 24" R.C. PIPE (CLASS V) | 30" R.C. PIPE (CLASS V) | 36" R.C. PIPE (CLASS V) | 42" R.C. PIPE CULVERTS, CONTRACTOR DESIGN | ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CU. YARDS R.C.P. | C.S.P. | QUANTITIES FOR DRAINAGE STRUCTURES PER EACH (0' THRU 5.0') | LIN. FT. 5.0' THRU 10.0' A | 10.0' AND ABOVE B | *TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. "A" + (1.3 X COL. "B") | C.B. STD. 840.01 OR STD. 840.02 | FRAME, GRATES, AND HOOD STANDARD 840.03 TYPE OF GRATE E | F | G | CONCRETE TRANSITIONAL SECTION DROP INLET | CATCH BASIN | D.I. STD. 840.14 OR STD. 840.15 | D.I. FRAME AND GRATE STD. 840.16 | G.D.I. TYPE "A" STD. 840.17 OR 840.26 | G.D.I. TYPE "B" STD. 840.18 OR 840.27 | G.D.I. TYPE "D" STD. 840.19 OR 840.28 | G.D.I. (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/ 2 GRATES STD. 840.24 | G.D.I. (N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29 | T.B.D.I. STD. 840.35 | T.B.J.B. STD. 840.34 | J.B. STD. 840.31 OR 840.32 | M.H. FRAME AND COVER STD. 840.54 | CONVERT EXISTING C.B. TO T.B.J.B. | 1" STEEL COVER | CONCRETE ENDWALL AND SLUICE GATE STD. 838.02 | 8" SLUICE GATE | 15" SIDE DRAIN PIPE ELBOWS | 18" SIDE DRAIN PIPE ELBOWS | 24" SIDE DRAIN PIPE ELBOWS | 30" SIDE DRAIN PIPE ELBOWS | 36" SIDE DRAIN PIPE ELBOWS | BERM DITCH OUTLET STD. 850.10 | BERM DITCH OUTLET STD. 850.11 | CONCRETE AND BRICK PIPE PLUG STD. 840.71 | CONC. COLLARS CL. "B" C.Y. STD. 840.72 | PIPE REMOVAL LIN. FT. | REMARKS |
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RA-1553

COMPUTED BY: BNE DATE: 2/22/2017

CHECKED BY: JGD DATE: 2/22/2017

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
R-2707C	3D-4

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

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

| STATION | LOCATION (LT, RT, OR CL)* | STRUCTURE NO. FROM | STRUCTURE NO. TO | TOP ELEVATION | INVERT ELEVATION | INVERT ELEVATION | MIN. REQUIRED SLOPE % | SIDE DRAIN PIPE (RCP, CSP, CAAP, HDPE, or PVC) SIZE 12" | 15" | 18" | 24" | 30" | 36" | 42" | 48" | DO NOT USE RCP | DO NOT USE CSP | DO NOT USE CAAP | DO NOT USE HDPE | C.S. PIPE SIZE 12" | 15" | 18" | 24" | 30" | 36" | 42" | 48" | R.C. PIPE CLASS III SIZE 12" | 15" | 18" | 24" | 30" | 36" | 42" | 48" | R.C. PIPE CLASS IV SIZE 12" | 15" | 18" | 24" | 30" | 36" | 42" | 48" | 24" R.C. PIPE (CLASS V) | 30" R.C. PIPE (CLASS V) | 36" R.C. PIPE (CLASS V) | 42" R.C. PIPE (CULVERTS, CONTRACTOR DESIGN | ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CU. YARDS R.C.P. | C.S.P. | QUANTITIES FOR DRAINAGE STRUCTURES *TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. "A" + (1.3 X COL. "B") PER EACH (0' THRU 5.0') | LIN. FT. A 5.0' THRU 10.0' | B 10.0' AND ABOVE | C.B. STD. 840.01 OR STD. 840.02 | FRAME, GRATES, AND HOOD STANDARD 840.03 TYPE OF GRATE E | F | G | CONCRETE TRANSITIONAL SECTION DROP INLET | CATCH BASIN | D.I. STD. 840.14 OR STD. 840.15 | D.I. FRAME AND GRATE STD. 840.16 | G.D.I. TYPE "A" STD. 840.17 OR 840.26 | G.D.I. TYPE "B" STD. 840.18 OR 840.27 | G.D.I. TYPE "D" STD. 840.19 OR 840.28 | G.D.I. (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/ 2 GRATES STD. 840.24 | G.D.I. (N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29 | T.B.D.I. STD. 840.35 | T.B.J.B. STD. 840.34 | J.B. STD. 840.31 OR 840.32 | M.H. FRAME AND COVER STD. 840.54 | CONVERT EXISTING C.B. TO T.B.J.B. | 1" STEEL COVER | CONCRETE ENDWALL AND SLUICE GATE STD. 838.02 | 8" SLUICE GATE | 15" SIDE DRAIN PIPE ELBOWS | 18" SIDE DRAIN PIPE ELBOWS | 24" SIDE DRAIN PIPE ELBOWS | 30" SIDE DRAIN PIPE ELBOWS | 36" SIDE DRAIN PIPE ELBOWS | BEERM DITCH OUTLET STD. 850.10 | BEERM DITCH OUTLET STD. 850.11 | CONCRETE AND BRICK PIPE PLUG STD. 840.71 | CONC. COLLARS CL. "B" C.Y. STD. 840.72 | PIPE REMOVAL LIN. FT. | REMARKS |
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RA-1553

COMPUTED BY: BNE DATE: 2/22/2017

CHECKED BY: JGD DATE: 2/22/2017

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
R-2707C	3D-5

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

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

STATION	LOCATION (LT, RT, OR CL)'	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	MIN. REQUIRED SLOPE %	SIDE DRAIN PIPE (RCP, CSP, CAAP, HDPE, or PVC) SIZE 12"	15"	18"	24"	30"	36"	42"	48"	DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE	C.S. PIPE SIZE 12" THICKNESS OR GAUGE .064	15" .064	18" .064	24" .064	30" .079	36" .079	42" .109	48" .109
		1202	1203		857.5	857.2																				
484+50 -L-	CL	1203		861.0																						
		1203	1206		856.9	852.3																				
481+00 -L-	RT	1204		855.7																						
		1204	1206		853.0	852.5																				
481+00 -L-	LT	1205		855.7																						
		1205	1206		853.0	852.5																				
481+00 -L-	CL	1206		856.5																						
		1206	1109		851.8	847.5																				
477+50 -L-	LT	1108		851.2																						
		1108	1109		848.5	848.2																				
477+50 -L-	CL	1109		852.9																						
		1109	1110		847.5	846.5																				
477+50 -L-	RT	1110		851.2																						
		1110	1112		846.5	844.4																				
476+83 -L-	RT	1111																								
		1111	1112		843.7	843.2																				
476+77 -L-	RT	1112		852.2																						
		1112	1113		843.2	837.6																				
475+88 -L-	LT	1113		844.0																						
		1113	1114		835.0	834.8																				
22+50 -Y4REV-	RT	1115		873.3																						
		1115	1116		870.8	870.6																				
22+68 -Y4REV-	LT	1116		874.0																						
		1116	1117		870.6	870.0			20																	
490+00 -L-	LT	1207		870.4																						
		1208	1208		867.7	866.4																				
489+00 -L-	LT	1208		869.1																						
		1208	1209		866.4	864.1																				
489+00 -L-	CL	1209		866.8																						
		1209	1211		864.1	863.7																				
490+00 -L-	RT	1210		870.4																						
		1210	1211		867.7	863.7																				
489+00 -L-	RT	1211		869.1																						
		1211	1212		863.5	863.0																				
488+00 -L-	RT	1212		867.8																						
		1212	1213		863.0	861.8				28																
490+10 -L-	RT	1301																								
		1301	1303		849.0	834.0																				
499+00 -L-	LT	1305		881.9																						
		1305	1306		879.2	878.0																				
498+00 -L-	LT	1306		880.7																						
		1306	1308		878.0	874.6																				
498+00 -L-	RT	1307		877.6																						
		1307	1308		874.9	874.6																				
498+00 -L-	CL	1308		878.4																						
		1308	1310		874.6	870.6																				
SHEET TOTALS									20	28																

| STATION | R.C. PIPE CLASS III SIZE 12" THICKNESS OR GAUGE | 15" | 18" | 24" | 30" | 36" | 42" | 48" | R.C. PIPE CLASS IV SIZE 12" | 15" | 18" | 24" | 30" | 36" | 42" | 48" | 24" R.C. PIPE (CLASS V) | 30" R.C. PIPE (CLASS V) | 36" R.C. PIPE (CLASS V) | 42" R.C. PIPE CULVERTS, CONTRACTOR DESIGN | ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CU. YARDS R.C.P. | C.S.P. | QUANTITIES FOR DRAINAGE STRUCTURES PER EACH (0' THRU 5.0') | 5.0' THRU 10.0' | 10.0' AND ABOVE | *TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. "A" + (1.3 X COL. "B") LIN. FT. A | B | C.B. STD. 840.01 OR STD. 840.02 | FRAME, GRATES, AND HOOD STANDARD 840.03 TYPE OF GRATE E | F | G | CONCRETE TRANSITIONAL SECTION DROP INLET | CATCH BASIN | D.I. STD. 840.14 OR STD. 840.15 | D.I. FRAME AND GRATE STD. 840.16 | G.D.I. TYPE "A" STD. 840.17 OR 840.26 | G.D.I. TYPE "B" STD. 840.18 OR 840.27 | G.D.I. TYPE "D" STD. 840.19 OR 840.28 | G.D.I. (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/ 2 GRATES STD. 840.24 | G.D.I. (N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29 | T.B.D.I. STD. 840.35 | T.B.J.B. STD. 840.34 | J.B. STD. 840.31 OR 840.32 | M.H. FRAME AND COVER STD. 840.54 | CONVERT EXISTING C.B. TO T.B.J.B. | 1" STEEL COVER | CONCRETE ENDWALL AND SLUICE GATE STD. 838.02 | 8" SLUICE GATE | 15" SIDE DRAIN PIPE ELBOWS | 18" SIDE DRAIN PIPE ELBOWS | 24" SIDE DRAIN PIPE ELBOWS | 30" SIDE DRAIN PIPE ELBOWS | 36" SIDE DRAIN PIPE ELBOWS | BERM DITCH OUTLET STD. 850.10 | BERM DITCH OUTLET STD. 850.11 | CONCRETE AND BRICK PIPE PLUG STD. 840.71 | CONC. COLLARS CL. "B" C.Y. STD. 840.72 | PIPE REMOVAL LIN. FT. | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---

RA-1553

COMPUTED BY: BNE DATE: 2/22/2017

CHECKED BY: JGD DATE: 2/22/2017

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
R-2707C	3D-6

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

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

| STATION | LOCATION (LT, RT, OR CL)' | STRUCTURE NO. FROM | STRUCTURE NO. TO | TOP ELEVATION | INVERT ELEVATION | INVERT ELEVATION | MIN. REQUIRED SLOPE % | SIDE DRAIN PIPE (RCP, CSP, CAAP, HDPE, or PVC) SIZE 12" | 15" | 18" | 24" | 30" | 36" | 42" | 48" | DO NOT USE RCP | DO NOT USE CSP | DO NOT USE CAAP | DO NOT USE HDPE | C.S. PIPE SIZE 12" THICKNESS OR GAUGE .064 | 15" .064 | 18" .064 | 24" .064 | 30" .079 | 36" .079 | 42" .109 | 48" .109 | R.C. PIPE CLASS III SIZE 12" | 15" | 18" | 24" | 30" | 36" | 42" | 48" | R.C. PIPE CLASS IV SIZE 12" | 15" | 18" | 24" | 30" | 36" | 42" | 48" | 24" R.C. PIPE (CLASS V) | 30" R.C. PIPE (CLASS V) | 36" R.C. PIPE (CLASS V) | 42" R.C. PIPE CULVERTS, CONTRACTOR DESIGN | ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CU. YARDS R.C.P. | C.S.P. | QUANTITIES FOR DRAINAGE STRUCTURES PER EACH (0' THRU 5.0') | LIN. FT. A 5.0' THRU 10.0' | LIN. FT. B 10.0' AND ABOVE | *TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. "A" + (1.3 X COL. "B") | C.B. STD. 840.01 OR STD. 840.02 | FRAME, GRATES, AND HOOD STANDARD 840.03 TYPE OF GRATE E | F | G | CONCRETE TRANSITIONAL SECTION DROP INLET | CATCH BASIN | D.I. STD. 840.14 OR STD. 840.15 | D.I. FRAME AND GRATE STD. 840.16 | G.D.I. TYPE "A" STD. 840.17 OR 840.26 | G.D.I. TYPE "B" STD. 840.18 OR 840.27 | G.D.I. TYPE "D" STD. 840.19 OR 840.28 | G.D.I. (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/ 2 GRATES STD. 840.24 | G.D.I. (N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29 | T.B.D.I. STD. 840.35 | T.B.J.B. STD. 840.34 | J.B. STD. 840.31 OR 840.32 | M.H. FRAME AND COVER STD. 840.54 | CONVERT EXISTING C.B. TO T.B.J.B. | 1" STEEL COVER | CONCRETE ENDWALL AND SLUICE GATE STD. 838.02 | 8" SLUICE GATE | 15" SIDE DRAIN PIPE ELBOWS | 18" SIDE DRAIN PIPE ELBOWS | 24" SIDE DRAIN PIPE ELBOWS | 30" SIDE DRAIN PIPE ELBOWS | 36" SIDE DRAIN PIPE ELBOWS | BERM DITCH OUTLET STD. 850.10 | BERM DITCH OUTLET STD. 850.11 | CONCRETE AND BRICK PIPE PLUG STD. 840.71 | CONC. COLLARS CL. "B" C.Y. STD. 840.72 | PIPE REMOVAL LIN. FT. | REMARKS |
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RA-1553

COMPUTED BY: BNE DATE: 2/22/2017

CHECKED BY: JGD DATE: 2/22/2017

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
R-2707C	3D-7

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

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

| STATION | LOCATION (LT, RT, OR CL)' | STRUCTURE NO. FROM | STRUCTURE NO. TO | TOP ELEVATION | INVERT ELEVATION | INVERT ELEVATION | MIN. REQUIRED SLOPE % | SIDE DRAIN PIPE (RCP, CSP, CAAP, HDPE, or PVC) SIZE | | | | | | | | DO NOT USE RCP | DO NOT USE CSP | DO NOT USE CAAP | DO NOT USE HDPE | C.S. PIPE THICKNESS OR GAUGE | | | | | | | | R.C. PIPE CLASS III SIZE | | | | | | | | R.C. PIPE CLASS IV SIZE | | | | | | | | 24" R.C. PIPE (CLASS V) | 30" R.C. PIPE (CLASS V) | 36" R.C. PIPE (CLASS V) | 42" R.C. PIPE CULVERTS, CONTRACTOR DESIGN | | ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CU. YARDS R.C.P. | ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CU. YARDS C.S.P. | QUANTITIES FOR DRAINAGE STRUCTURES PER EACH (0' THRU 5.0') | QUANTITIES FOR DRAINAGE STRUCTURES 5.0' THRU 10.0' | QUANTITIES FOR DRAINAGE STRUCTURES 10.0' AND ABOVE | *TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL. 'B') LIN. FT. A | *TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL. 'B') LIN. FT. B | C.B. STD. 840.01 OR STD. 840.02 | FRAME, GRATES, AND HOOD STANDARD 840.03 TYPE OF GRATE E | FRAME, GRATES, AND HOOD STANDARD 840.03 TYPE OF GRATE F | FRAME, GRATES, AND HOOD STANDARD 840.03 TYPE OF GRATE G | CONCRETE TRANSITIONAL SECTION DROP INLET | CONCRETE TRANSITIONAL SECTION CATCH BASIN | D.I. STD. 840.14 OR STD. 840.15 | D.I. FRAME AND GRATE STD. 840.16 | G.D.I. TYPE "A" STD. 840.17 OR 840.26 | G.D.I. TYPE "B" STD. 840.18 OR 840.27 | G.D.I. TYPE "D" STD. 840.19 OR 840.28 | G.D.I. (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/ 2 GRATES STD. 840.24 | G.D.I. (N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29 | T.B.D.I. STD. 840.35 | T.B.J.B. STD. 840.34 | J.B. STD. 840.31 OR 840.32 | M.H. FRAME AND COVER STD. 840.54 | CONVERT EXISTING C.B. TO T.B.J.B. | 1' STEEL COVER | CONCRETE ENDWALL AND SLUICE GATE STD. 838.02 | 8" SLUICE GATE | 15" SIDE DRAIN PIPE ELBOWS | 18" SIDE DRAIN PIPE ELBOWS | 24" SIDE DRAIN PIPE ELBOWS | 30" SIDE DRAIN PIPE ELBOWS | 36" SIDE DRAIN PIPE ELBOWS | BERM DITCH OUTLET STD. 850.10 | BERM DITCH OUTLET STD. 850.11 | CONCRETE AND BRICK PIPE PLUG STD. 840.71 | CONC. COLLAR'S CL. "B" C.Y. STD. 840.72 | PIPE REMOVAL LIN. FT. | REMARKS |
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COMPUTED BY: BNE DATE: 2/22/2017

CHECKED BY: JGD DATE: 2/22/2017

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
R-2707C	3D-8

BELAM

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

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

STATION	LOCATION (LT, RT, OR CL)*	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	MIN. REQUIRED SLOPE %	SIDE DRAIN PIPE (RCP, CSP, CAAP, HDPE, or PVC) SIZE 12"	15"	18"	24"	30"	36"	42"	48"	DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE	C.S. PIPE SIZE 12"	15"	18"	24"	30"	36"	42"	48"	THICKNESS OR GAUGE .064	.064	.064	.064	.079	.079	.109	.109
31+08 -Y9-	LT	3202		944.0																															
		3202	3203		941.8	939.5																													
30+73 -Y9-	LT	3203		943.3																															
		3203	3206		939.2	939.1																													
31+20 -Y9-	LT	3204		943.0																															
		3204	3205		939.8	939.7																													
30+90 -Y9-	LT	3205		942.9																															
		3205	3206		939.7	939.3																													
30+73 -Y9-	LT	3206		942.8																															
		3206	3207		939.1	938.5																													
30+73 -Y9-	RT	3207		941.8																															
		3207	3208		938.5	938.1																													
31+50 -Y9-	RT	3208		941.6																															
		3208	3214		938.1	934.4																													
33+50 -Y9-	LT	3209		944.7																															
		3209	3210		941.5	939.5																													
32+46 -Y9-	LT	3210		942.7																															
		3210	3211		939.5	938.6																													
32+26 -Y9-	LT	3211		945.0																															
		3211	3212		937.9	933.9																													
32+26 -Y9-	RT	3212		942.9																															
		3212	3214		933.9	933.9																													
34+00 -Y9-	RT	3213		944.9																															
		3213	3212		938.8	935.3																													
32+26 -Y9-	RT	3214		942.3																															
		3214	3215		933.9	930.9				60																									
13+78 -Y8REV-	LT	3215						40																											
20+50 -Y9-	RT	1638		943.1																															
		1638	1639		940.1	938.6																													
18+65 -Y9-	RT	1639		941.6																															
		1639	1641		938.6	937.6																													
20+50 -Y9-	LT	1640		943.0																															
		1640	1641		940.0	937.6																													
18+65 -Y9-	LT	1641		940.6																															
		1641	1645		937.3	937.0																													
17+50 -Y9-	RT	1642		941.8																															
		1642	1643		938.8	938.5																													
16+55 -Y9-	RT	1643		942.6																															
		1643	1644		938.2	937.9																													
12+93 -Y9-	RT	3101		946.0																															
		3101	3102		943.8	942.9		12																											
12+93 -Y9-	RT	3102		945.9																															
		3102	3104		942.9	940.6																													
15+50 -Y9-	RT	3103		943.0																															
SHEET TOTALS								52		60																									

| STATION | R.C. PIPE CLASS III 12" | 15" | 18" | 24" | 30" | 36" | 42" | 48" | R.C. PIPE CLASS IV 12" | 15" | 18" | 24" | 30" | 36" | 42" | 48" | 24" R.C. PIPE (CLASS V) | 30" R.C. PIPE (CLASS V) | 36" R.C. PIPE (CLASS V) | 42" R.C. PIPE CULVERTS, CONTRACTOR DESIGN | ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CU. YARDS R.C.P. | C.S.P. | QUANTITIES FOR DRAINAGE STRUCTURES *TOTALL.F. FOR PAY QUANTITY SHALL BE COL. "A" + (1.3 X COL."B") PER EACH (0' THRU 5.0') | LIN. FT. A 5.0' THRU 10.0' | B 10.0' AND ABOVE | C.B. STD. 840.01 OR STD. 840.02 | FRAME, GRATES, AND HOOD STANDARD 840.03 TYPE OF GRATE E | F | G | CONCRETE TRANSITIONAL SECTION DROP INLET | CATCH BASIN | D.I. STD. 840.14 OR STD. 840.15 | D.I. FRAME AND GRATE STD. 840.16 | G.D.I. TYPE "A" STD. 840.17 OR 840.26 | G.D.I. TYPE "B" STD. 840.18 OR 840.27 | G.D.I. TYPE "D" STD. 840.19 OR 840.28 | G.D.I. (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/ 2 GRATES STD. 840.24 | G.D.I. (N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29 | T.B.D.I. STD. 840.35 | T.B.J.B. STD. 840.34 | J.B. STD. 840.31 OR 840.32 | M.H. FRAME AND COVER STD. 840.54 | CONVERT EXISTING C.B. TO T.B.J.B. | 1" STEEL COVER | CONCRETE ENDWALL AND SLUICE GATE STD. 838.02 | 8" SLUICE GATE | 15" SIDE DRAIN PIPE ELBOW | 18" SIDE DRAIN PIPE ELBOW | 24" SIDE DRAIN PIPE ELBOW | 30" SIDE DRAIN PIPE ELBOW | 36" SIDE DRAIN PIPE ELBOW | BERM DITCH OUTLET STD. 850.10 | BERM DITCH OUTLET STD. 850.11 | CONCRETE AND BRICK PIPE PLUG STD. 840.71 | CONC. COLLARS CL. "B" C.Y. STD. 840.72 | PIPE REMOVAL LIN. FT. | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---

RA-1553

COMPUTED BY: BNE DATE: 2/22/2017

CHECKED BY: JGD DATE: 2/22/2017

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
R-2707C	3D-9

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

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

| STATION | LOCATION (LT, RT, OR CL)' | STRUCTURE NO. FROM | STRUCTURE NO. TO | TOP ELEVATION | INVERT ELEVATION | INVERT ELEVATION | MIN. REQUIRED SLOPE % | SIDE DRAIN PIPE (RCP, CSP, CAAP, HDPE, or PVC) SIZE 12" | 15" | 18" | 24" | 30" | 36" | 42" | 48" | DO NOT USE RCP | DO NOT USE CSP | DO NOT USE CAAP | DO NOT USE HDPE | C.S. PIPE SIZE 12" THICKNESS OR GAUGE .064 | 15" .064 | 18" .064 | 24" .064 | 30" .079 | 36" .079 | 42" .109 | 48" .109 | R.C. PIPE CLASS III SIZE 12" | 15" | 18" | 24" | 30" | 36" | 42" | 48" | R.C. PIPE CLASS IV SIZE 12" | 15" | 18" | 24" | 30" | 36" | 42" | 48" | 24" R.C. PIPE (CLASS V) | 30" R.C. PIPE (CLASS V) | 36" R.C. PIPE (CLASS V) | 42" R.C. PIPE CULVERTS, CONTRACTOR DESIGN | ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) | CU. YARDS R.C.P. | CU. YARDS C.S.P. | QUANTITIES FOR DRAINAGE STRUCTURES PER EACH (0' THRU 5.0') | *TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL. 'B') LIN. FT. A 5.0' THRU 10.0' | LIN. FT. B 10.0' AND ABOVE | C.B. STD. 840.01 OR STD. 840.02 | FRAME, GRATES, AND HOOD STANDARD 840.03 TYPE OF GRATE E | F | G | CONCRETE TRANSITIONAL SECTION DROP INLET | CATCH BASIN | D.I. STD. 840.14 OR STD. 840.15 | D.I. FRAME AND GRATE STD. 840.16 | G.D.I. TYPE "A" STD. 840.17 OR 840.26 | G.D.I. TYPE "B" STD. 840.18 OR 840.27 | G.D.I. TYPE "D" STD. 840.19 OR 840.28 | G.D.I. (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/ 2 GRATES STD. 840.24 | G.D.I. (N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29 | T.B.D.I. STD. 840.35 | T.B.J.B. STD. 840.34 | J.B. STD. 840.31 OR 840.32 | M.H. FRAME AND COVER STD. 840.54 | CONVERT EXISTING C.B. TO T.B.J.B. | 1" STEEL COVER | CONCRETE ENDWALL AND SLUICE GATE STD. 838.02 | 6" SLUICE GATE | 15" SIDE DRAIN PIPE ELBOW | 18" SIDE DRAIN PIPE ELBOW | 24" SIDE DRAIN PIPE ELBOW | 30" SIDE DRAIN PIPE ELBOW | 36" SIDE DRAIN PIPE ELBOW | BERM DITCH OUTLET STD. 850.10 | BERM DITCH OUTLET STD. 850.11 | CONCRETE AND BRICK PIPE PLUG STD. 840.71 | CONC. COLLARS CL. "B" C.Y. STD. 840.72 | PIPE REMOVAL LIN. FT. | REMARKS |
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RA-1553

COMPUTED BY: BNE DATE: 2/22/2017

CHECKED BY: JGD DATE: 2/22/2017

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
R-2707C	3D-10

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

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

STATION	LOCATION (LT, RT, OR CL)'	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	MIN. REQUIRED SLOPE %	SIDE DRAIN PIPE (RCP, CSP, CAAP, HDPE, or PVC) SIZE 12"	15"	18"	24"	30"	36"	42"	48"	DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE
								THICKNESS OR GAUGE											
568+00 -L-	CL	1902		926.1															
		1902	1903		923.4	923.0													
572+50 -L-	LT	1904																	
		1904	1905		935.3	930.8				20						X			
572+50 -L-	RT	1905		933.8															
		1905	1906		930.8	930.4													
572+40 -L-	CL	1906		933.4															
		1906	1907		930.4	926.2													
578+50 -L-	LT	1908																	
		1908	1909		949.9	939.6				24						X			
578+50 -L-	LT	1909		942.6															
		1909	1910		939.1	938.8													
578+50 -L-	CL	1910		943.5															
		1910	1911		938.8	938.0													
584+52 -L-	LT	2001																	
		2001	2002		950.6	949.8													
584+52 -L-	RT	2002		958.2															
		2002	2003		949.8	944.8				44						X			
589+00 -L-	RT	2004		868.5															
		2004	2006		965.8	963.6													
589+00 -L-	LT	2005		968.4															
		2005	2006		965.7	963.6													
589+00 -L-	CL	2006		966.4															
		2006	2009		963.6	957.3													
586+50 -L-	LT	2007		963.2															
		2007	2008		960.4	959.6													
586+15 -L-	LT	2008		962.3															
		2008	2009		959.6	957.3													
586+15 -L-	CL	2009		960.1															
		2009	2010		957.1	956.9													
586+15 -L-	RT	2010		962.3															
		2010	2011		956.9	936.0				68						X			
586+97 -L-	RT	2012		938.0															
		2012	2013		933.0	932.5													
583+33 -L-	CL	2014			951.0	950.2													
589+36 -L-	CL	2015			939.6	931.7													
20+60 -Y10-	RT	2016						36											
20+60 -Y10-	LT	2017						40											
24+42 -Y10-	RT	2018						36											
24+60 -Y10-	LT	2019						72											
23+03 -Y11REV2-	RT	2020						20											
23+78 -Y11REV2-	RT	2021						20											
25+18 -Y11REV2-	LT	2022								56									
SHEET TOTALS								224		212									

STATION	C.S. PIPE 12"	15"	18"	24"	30"	36"	42"	48"	.064	.064	.064	.064	.079	.079	.109	.109
568+00 -L-																
572+50 -L-																
572+50 -L-																
572+40 -L-																
578+50 -L-																
578+50 -L-																
584+52 -L-																
589+00 -L-																
589+00 -L-																
589+00 -L-																
586+50 -L-																
586+15 -L-																
586+15 -L-																
586+97 -L-																
583+33 -L-																
20+60 -Y10-																
24+42 -Y10-																
23+03 -Y11REV2-																
25+18 -Y11REV2-																
SHEET TOTALS																

STATION	R.C. PIPE CLASS III 12"	15"	18"	24"	30"	36"	42"	48"	R.C. PIPE CLASS IV 12"	15"	18"	24"	30"	36"	42"	48"	24" R.C. PIPE (CLASS V)	30" R.C. PIPE (CLASS V)	36" R.C. PIPE (CLASS V)	42" R.C. PIPE CULVERTS, CONTRACTOR DESIGN
568+00 -L-																				
572+50 -L-																				
572+50 -L-																				
572+40 -L-																				
578+50 -L-																				
578+50 -L-																				
584+52 -L-																				
589+00 -L-																				
589+00 -L-																				
589+00 -L-																				
586+50 -L-																				
586+15 -L-																				
586+15 -L-																				
586+97 -L-																				
583+33 -L-																				
589+36 -L-																	288			
20+60 -Y10-																				
24+42 -Y10-																				
23+03 -Y11REV2-																				
25+18 -Y11REV2-																				
SHEET TOTALS		372	324	248						200	232						288			

STATION	ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CU. YARDS R.C.P.	C.S.P.	QUANTITIES FOR DRAINAGE STRUCTURES PER EACH (0' THRU 5.0')	*TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL. 'B') LIN. FT. A: 5.0' THRU 10.0'	B: 10.0' AND ABOVE	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STANDARD 840.03 TYPE OF GRATE E	F	G	CONCRETE TRANSITIONAL SECTION DROP INLET	CATCH BASIN	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATE STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR 840.26	G.D.I. TYPE "B" STD. 840.18 OR 840.27	G.D.I. TYPE "D" STD. 840.19 OR 840.28	G.D.I. (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/ 2 GRATES STD. 840.24	G.D.I. (N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29	T.B.D.I. STD. 840.35	T.B.J.B. STD. 840.34	J.B. STD. 840.31 OR 840.32	M.H. FRAME AND COVER STD. 840.54	CONVERT EXISTING C.B. TO T.B.J.B.	1" STEEL COVER	CONCRETE ENDWALL AND SLUICE GATE STD. 838.02	6" SLUICE GATE	15" SIDE DRAIN PIPE ELBOW	18" SIDE DRAIN PIPE ELBOW	24" SIDE DRAIN PIPE ELBOW	30" SIDE DRAIN PIPE ELBOW	36" SIDE DRAIN PIPE ELBOW	BERM DITCH OUTLET STD. 850.10	BERM DITCH OUTLET STD. 850.11	CONCRETE AND BRICK PIPE PLUG STD. 840.71	CONC. COLLARS CL. "B" C.Y. STD. 840.72	PIPE REMOVAL LIN. FT.	REMARKS
568+00 -L-			1												1																													
572+50 -L-																																				1								
572+50 -L-			1												1																													
572+40 -L-			1												1																													
578+50 -L-																																				1								
578+50 -L-			1												1																													
584+52 -L-			1												1	3.4																												
589+00 -L-			1												1																													
589+00 -L-			1												1																													
589+00 -L-			1												1																													
586+50 -L-			1												1																													
586+15 -L-			1												1																													
586+15 -L-			1												1	0.4																												
586+97 -L-			1												1																													DRAWDOWN STRUCTURE, SEE SHEET 2D-3
583+33 -L-																																												
589+36 -L-																																												
20+60 -Y10-																																												
24+42 -Y10-																																												
23+03 -Y11REV2-																																												
25+18 -Y11REV2-																																												
SHEET TOTALS			14	3.8											13	6		7								1		4				2										

ABBREVIATIONS

C.A.A.	CORRUGATED ALUMINUM 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

RA-1553

COMPUTED BY: BNE DATE: 2/22/2017

CHECKED BY: JGD DATE: 2/22/2017

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
R-2707C	3D-11

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

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

| STATION | LOCATION (LT, RT, OR CL) | STRUCTURE NO. FROM | STRUCTURE NO. TO | TOP ELEVATION | INVERT ELEVATION | INVERT ELEVATION | MIN. REQUIRED SLOPE % | SIDE DRAIN PIPE (RCP, CSP, CAAP, HDPE, or PVC) 12" | 15" | 18" | 24" | 30" | 36" | 42" | 48" | DO NOT USE RCP | DO NOT USE CSP | DO NOT USE CAAP | DO NOT USE HDPE | C.S. PIPE 12" | 15" | 18" | 24" | 30" | 36" | 42" | 48" | R.C. PIPE CLASS III 12" | 15" | 18" | 24" | 30" | 36" | 42" | 48" | R.C. PIPE CLASS IV 12" | 15" | 18" | 24" | 30" | 36" | 42" | 48" | 24" R.C. PIPE (CLASS V) | 30" R.C. PIPE (CLASS V) | 36" R.C. PIPE (CLASS V) | 42" R.C. PIPE CULVERTS, CONTRACTOR DESIGN | | ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CU. YARDS R.C.P. | C.S.P. | QUANTITIES FOR DRAINAGE STRUCTURES PER EACH (0' THRU 5.0') | *TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. "A" + (1.3 X COL. "B") LIN. FT. A (5.0' THRU 10.0') | B (10.0' AND ABOVE) | C.B. STD. 840.01 OR STD. 840.02 | FRAME, GRATES, AND HOOD STANDARD 840.03 TYPE OF GRATE E | F | G | CONCRETE TRANSITIONAL SECTION DROP INLET | CATCH BASIN | D.I. STD. 840.14 OR STD. 840.15 | D.I. FRAME AND GRATE STD. 840.16 | G.D.I. TYPE "A" STD. 840.17 OR 840.26 | G.D.I. TYPE "B" STD. 840.18 OR 840.27 | G.D.I. TYPE "D" STD. 840.19 OR 840.28 | G.D.I. (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/ 2 GRATES STD. 840.24 | G.D.I. (N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29 | T.B.D.I. STD. 840.35 | T.B.J.B. STD. 840.34 | J.B. STD. 840.31 OR 840.32 | M.H. FRAME AND COVER STD. 840.54 | CONVERT EXISTING C.B. TO T.B.J.B. | 1" STEEL COVER | CONCRETE ENDWALL AND SLUICE GATE STD. 838.02 | 8" SLUICE GATE | 15" SIDE DRAIN PIPE ELBOW | 18" SIDE DRAIN PIPE ELBOW | 24" SIDE DRAIN PIPE ELBOW | 30" SIDE DRAIN PIPE ELBOW | 36" SIDE DRAIN PIPE ELBOW | BERM DITCH OUTLET STD. 850.10 | BERM DITCH OUTLET STD. 850.11 | CONCRETE AND BRICK PIPE PLUG STD. 840.71 | CONC. COLLARS CL. "B" C.Y. STD. 840.72 | PIPE REMOVAL LIN. FT. | REMARKS |
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RA-1553

COMPUTED BY: BNE DATE: 2/22/2017

CHECKED BY: JGD DATE: 2/22/2017

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
R-2707C	3D-12

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

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

| STATION | LOCATION (LT, RT, OR CL)' | STRUCTURE NO. FROM | STRUCTURE NO. TO | TOP ELEVATION | INVERT ELEVATION | INVERT ELEVATION | MIN. REQUIRED SLOPE % | SIDE DRAIN PIPE (RCP, CSP, CAAP, HDPE, or PVC) SIZE 12" | 15" | 18" | 24" | 30" | 36" | 42" | 48" | DO NOT USE RCP | DO NOT USE CSP | DO NOT USE CAAP | DO NOT USE HDPE | C.S. PIPE SIZE 12" THICKNESS OR GAUGE .064 | 15" .064 | 18" .064 | 24" .064 | 30" .079 | 36" .079 | 42" .109 | 48" .109 | R.C. PIPE CLASS III SIZE 12" | 15" | 18" | 24" | 30" | 36" | 42" | 48" | R.C. PIPE CLASS IV SIZE 12" | 15" | 18" | 24" | 30" | 36" | 42" | 48" | 24" R.C. PIPE (CLASS V) | 30" R.C. PIPE (CLASS V) | 36" R.C. PIPE (CLASS V) | 42" R.C. PIPE CULVERTS, CONTRACTOR DESIGN | | ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CU. YARDS R.C.P. | C.S.P. | QUANTITIES FOR DRAINAGE STRUCTURES PER EACH (0' THRU 5.0') | *TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL. 'B') LIN. FT. A 5.0' THRU 10.0' | B 10.0' AND ABOVE | C.B. STD. 840.01 OR STD. 840.02 | FRAME, GRATES, AND HOOD STANDARD 840.03 TYPE OF GRATE E | F | G | CONCRETE TRANSITIONAL SECTION DROP INLET | CATCH BASIN | D.I. STD. 840.14 OR STD. 840.15 | D.I. FRAME AND GRATE STD. 840.16 | G.D.I. TYPE "A" STD. 840.17 OR 840.26 | G.D.I. TYPE "B" STD. 840.18 OR 840.27 | G.D.I. TYPE "D" STD. 840.19 OR 840.28 | G.D.I. (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/ 2 GRATES STD. 840.24 | G.D.I. (N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29 | T.B.D.I. STD. 840.35 | T.B.J.B. STD. 840.34 | J.B. STD. 840.31 OR 840.32 | M.H. FRAME AND COVER STD. 840.54 | CONVERT EXISTING C.B. TO T.B.J.B. | 1" STEEL COVER | CONCRETE ENDWALL AND SLUICE GATE STD. 838.02 | 8" SLUICE GATE | 15" SIDE DRAIN PIPE ELBOW | 18" SIDE DRAIN PIPE ELBOW | 24" SIDE DRAIN PIPE ELBOW | 30" SIDE DRAIN PIPE ELBOW | 36" SIDE DRAIN PIPE ELBOW | BERM DITCH OUTLET STD. 850.10 | BERM DITCH OUTLET STD. 850.11 | CONCRETE AND BRICK PIPE PLUG STD. 840.71 | CONC. COLLARS CL. "B" C.Y. STD. 840.72 | PIPE REMOVAL LIN. FT. | REMARKS |
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RA-1553

COMPUTED BY: BNE DATE: 2/22/2017

CHECKED BY: JGD DATE: 2/22/2017

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
R-2707C	3D-13

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

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

| STATION | LOCATION (LT, RT, OR CL)* | STRUCTURE NO. FROM | STRUCTURE NO. TO | TOP ELEVATION | INVERT ELEVATION | INVERT ELEVATION | MIN. REQUIRED SLOPE % | SIDE DRAIN PIPE (RCP, CSP, CAAP, HDPE, or PVC) SIZE 12" | 15" | 18" | 24" | 30" | 36" | 42" | 48" | DO NOT USE RCP | DO NOT USE CSP | DO NOT USE CAAP | DO NOT USE HDPE | C.S. PIPE THICKNESS OR GAUGE 12" | 15" | 18" | 24" | 30" | 36" | 42" | 48" | R.C. PIPE CLASS III 12" | 15" | 18" | 24" | 30" | 36" | 42" | 48" | R.C. PIPE CLASS IV 12" | 15" | 18" | 24" | 30" | 36" | 42" | 48" | 24" R.C. PIPE (CLASS V) | 30" R.C. PIPE (CLASS V) | 36" R.C. PIPE (CLASS V) | 42" R.C. PIPE CULVERTS, CONTRACTOR DESIGN | ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CU. YARDS R.C.P. | C.S.P. | QUANTITIES FOR DRAINAGE STRUCTURES PER EACH (0' THRU 5.0') | *TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. "A" + (1.3 X COL. "B") LIN. FT. A 5.0' THRU 10.0' | B 10.0' AND ABOVE | C.B. STD. 840.01 OR STD. 840.02 | FRAME, GRATES, AND HOOD STANDARD 840.03 TYPE OF GRATE E | F | G | CONCRETE TRANSITIONAL SECTION DROP INLET | CATCH BASIN | D.I. STD. 840.14 OR STD. 840.15 | D.I. FRAME AND GRATE STD. 840.16 | G.D.I. TYPE "A" STD. 840.17 OR 840.26 | G.D.I. TYPE "B" STD. 840.18 OR 840.27 | G.D.I. TYPE "D" STD. 840.19 OR 840.28 | G.D.I. (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/ 2 GRATES STD. 840.24 | G.D.I. (N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29 | T.B.D.I. STD. 840.35 | T.B.J.B. STD. 840.34 | J.B. STD. 840.31 OR 840.32 | M.H. FRAME AND COVER STD. 840.54 | CONVERT EXISTING C.B. TO T.B.J.B. | 1" STEEL COVER | CONCRETE ENDWALL AND SLUICE GATE STD. 838.02 | 8" SLUICE GATE | 15" SIDE DRAIN PIPE ELBOW | 18" SIDE DRAIN PIPE ELBOW | 24" SIDE DRAIN PIPE ELBOW | 30" SIDE DRAIN PIPE ELBOW | 36" SIDE DRAIN PIPE ELBOW | BERM DITCH OUTLET STD. 850.10 | BERM DITCH OUTLET STD. 850.11 | CONCRETE AND BRICK PIPE PLUG STD. 840.71 | CONC. COLLARS CL. "B" C.Y. STD. 840.72 | PIPE REMOVAL LIN. FT. | REMARKS |
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RA-1553

COMPUTED BY: BNE DATE: 2/22/2017

CHECKED BY: JGD DATE: 2/22/2017

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
R-2707C	3D-14

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

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

| STATION | LOCATION (LT, RT, OR CL)' | STRUCTURE NO. FROM | STRUCTURE NO. TO | TOP ELEVATION | INVERT ELEVATION | INVERT ELEVATION | MIN. REQUIRED SLOPE % | SIDE DRAIN PIPE (RCP, CSP, CAAP, HDPE, or PVC) SIZE 12" | 15" | 18" | 24" | 30" | 36" | 42" | 48" | DO NOT USE RCP | DO NOT USE CSP | DO NOT USE CAAP | DO NOT USE HDPE | C.S. PIPE SIZE 12" THICKNESS OR GAUGE .064 | 15" .064 | 18" .064 | 24" .064 | 30" .079 | 36" .079 | 42" .109 | 48" .109 | R.C. PIPE CLASS III SIZE 12" | 15" | 18" | 24" | 30" | 36" | 42" | 48" | R.C. PIPE CLASS IV SIZE 12" | 15" | 18" | 24" | 30" | 36" | 42" | 48" | 24" R.C. PIPE (CLASS V) | 30" R.C. PIPE (CLASS V) | 36" R.C. PIPE (CLASS V) | 42" R.C. PIPE CULVERTS, CONTRACTOR DESIGN | ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CU. YARDS R.C.P. | C.S.P. | QUANTITIES FOR DRAINAGE STRUCTURES PER EACH (0' THRU 5.0') | LIN. FT. A 5.0' THRU 10.0' | B 10.0' AND ABOVE | *TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' * (1.3 X COL. 'B') | C.B. STD. 840.01 OR STD. 840.02 | FRAME, GRATES, AND HOOD STANDARD 840.03 TYPE OF GRATE E | F | G | CONCRETE TRANSITIONAL SECTION DROP INLET | CATCH BASIN | D.I. STD. 840.14 OR STD. 840.15 | D.I. FRAME AND GRATE STD. 840.16 | G.D.I. TYPE "A" STD. 840.17 OR 840.26 | G.D.I. TYPE "B" STD. 840.18 OR 840.27 | G.D.I. TYPE "D" STD. 840.19 OR 840.28 | G.D.I. (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/ 2 GRATES STD. 840.24 | G.D.I. (N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29 | T.B.D.I. STD. 840.35 | T.B.J.B. STD. 840.34 | J.B. STD. 840.31 OR 840.32 | M.H. FRAME AND COVER STD. 840.54 | CONVERT EXISTING C.B. TO T.B.J.B. | 1" STEEL COVER | CONCRETE ENDWALL AND SLUICE GATE STD. 838.02 | 8" SLUICE GATE | 15" SIDE DRAIN PIPE ELBOW | 18" SIDE DRAIN PIPE ELBOW | 24" SIDE DRAIN PIPE ELBOW | 30" SIDE DRAIN PIPE ELBOW | 36" SIDE DRAIN PIPE ELBOW | BERM DITCH OUTLET STD. 850.10 | BERM DITCH OUTLET STD. 850.11 | CONCRETE AND BRICK PIPE PLUG STD. 840.71 | CONC. COLLARS CL. "B" C.Y. STD. 840.72 | PIPE REMOVAL LIN. FT. | REMARKS |
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RA-1553

COMPUTED BY: BNE DATE: 2/22/2017

CHECKED BY: JGD DATE: 2/22/2017

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
R-2707C	3D-15

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

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

| STATION | LOCATION (LT, RT, OR CL) | STRUCTURE NO. FROM | STRUCTURE NO. TO | TOP ELEVATION | INVERT ELEVATION | INVERT ELEVATION | MIN. REQUIRED SLOPE % | SIDE DRAIN PIPE (RCP, CSP, CAAP, HDPE, or PVC) 12" | 15" | 18" | 24" | 30" | 36" | 42" | 48" | DO NOT USE RCP | DO NOT USE CSP | DO NOT USE CAAP | DO NOT USE HDPE | C.S. PIPE 12" .064 | 15" .064 | 18" .064 | 24" .064 | 30" .079 | 36" .079 | 42" .109 | 48" .109 | R.C. PIPE CLASS III 12" | 15" | 18" | 24" | 30" | 36" | 42" | 48" | R.C. PIPE CLASS IV 12" | 15" | 18" | 24" | 30" | 36" | 42" | 48" | 24" R.C. PIPE (CLASS V) | 30" R.C. PIPE (CLASS V) | 36" R.C. PIPE (CLASS V) | 42" R.C. PIPE CULVERTS, CONTRACTOR DESIGN | ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CU. YARDS R.C.P. | C.S.P. | QUANTITIES FOR DRAINAGE STRUCTURES *TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. "A" + (1.3 X COL. "B") PER EACH (0' THRU 5.0') | LIN. FT. A 5.0' THRU 10.0' | B 10.0' AND ABOVE | C.B. STD. 840.01 OR STD. 840.02 | FRAME, GRATES, AND HOOD STANDARD 840.03 TYPE OF GRATE E | F | G | CONCRETE TRANSITIONAL SECTION DROP INLET | CATCH BASIN | D.I. STD. 840.14 OR STD. 840.15 | D.I. FRAME AND GRATE STD. 840.16 | G.D.I. TYPE "A" STD. 840.17 OR 840.26 | G.D.I. TYPE "B" STD. 840.18 OR 840.27 | G.D.I. TYPE "D" STD. 840.19 OR 840.28 | G.D.I. (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/ 2 GRATES STD. 840.24 | G.D.I. (N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29 | T.B.D.I. STD. 840.35 | T.B.J.B. STD. 840.34 | J.B. STD. 840.31 OR 840.32 | M.H. FRAME AND COVER STD. 840.54 | CONVERT EXISTING C.B. TO T.B.J.B. | 1" STEEL COVER | CONCRETE ENDWALL AND SLUICE GATE STD. 838.02 | 8" SLUICE GATE | 15" SIDE DRAIN PIPE ELBOW | 18" SIDE DRAIN PIPE ELBOW | 24" SIDE DRAIN PIPE ELBOW | 30" SIDE DRAIN PIPE ELBOW | 36" SIDE DRAIN PIPE ELBOW | BERM DITCH OUTLET STD. 850.10 | BERM DITCH OUTLET STD. 850.11 | CONCRETE AND BRICK PIPE PLUG STD. 840.71 | CONC. COLLARS CL. "B" C.Y. STD. 840.72 | PIPE REMOVAL LIN. FT. | REMARKS |
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RA-1553

COMPUTED BY: BNE DATE: 2/22/2017

CHECKED BY: JGD DATE: 2/22/2017

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
R-2707C	3D-16

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

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

| STATION | LOCATION (LT, RT, OR CL)' | STRUCTURE NO. FROM | STRUCTURE NO. TO | TOP ELEVATION | INVERT ELEVATION | INVERT ELEVATION | MIN. REQUIRED SLOPE % | SIDE DRAIN PIPE (RCP, CSP, CAAP, HDPE, or PVC) SIZE 12" | 15" | 18" | 24" | 30" | 36" | 42" | 48" | DO NOT USE RCP | DO NOT USE CSP | DO NOT USE CAAP | DO NOT USE HDPE | C.S. PIPE THICKNESS OR GAUGE 12" | 15" | 18" | 24" | 30" | 42" | 48" | R.C. PIPE CLASS III SIZE 12" | 15" | 18" | 24" | 30" | 36" | 42" | 48" | R.C. PIPE CLASS IV SIZE 12" | 15" | 18" | 24" | 30" | 36" | 42" | 48" | 24" R.C. PIPE (CLASS V) | 30" R.C. PIPE (CLASS V) | 36" R.C. PIPE (CLASS V) | 42" R.C. PIPE CULVERTS, CONTRACTOR DESIGN | ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CU. YARDS R.C.P. | C.S.P. | QUANTITIES FOR DRAINAGE STRUCTURES PER EACH (0' THRU 5.0') | *TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. "A" + (1.3 X COL. "B") LIN. FT. A: 5.0' THRU 10.0' | B: 10.0' AND ABOVE | C.B. STD. 840.01 OR STD. 840.02 | FRAME, GRATES, AND HOOD STANDARD 840.03 TYPE OF GRATE E | F | G | CONCRETE TRANSITIONAL SECTION DROP INLET | CATCH BASIN | D.I. STD. 840.14 OR STD. 840.15 | D.I. FRAME AND GRATE STD. 840.16 | G.D.I. TYPE "A" STD. 840.17 OR 840.26 | G.D.I. TYPE "B" STD. 840.18 OR 840.27 | G.D.I. TYPE "D" STD. 840.19 OR 840.28 | G.D.I. (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/ 2 GRATES STD. 840.24 | G.D.I. (N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29 | T.B.D.I. STD. 840.35 | T.B.J.B. STD. 840.34 | J.B. STD. 840.31 OR 840.32 | M.H. FRAME AND COVER STD. 840.54 | CONVERT EXISTING C.B. TO T.B.J.B. | 1" STEEL COVER | CONCRETE ENDWALL AND SLUICE GATE STD. 838.02 | 8" SLUICE GATE | 15" SIDE DRAIN PIPE ELBOW | 18" SIDE DRAIN PIPE ELBOW | 24" SIDE DRAIN PIPE ELBOW | 30" SIDE DRAIN PIPE ELBOW | 36" SIDE DRAIN PIPE ELBOW | BERM DITCH OUTLET STD. 850.10 | BERM DITCH OUTLET STD. 850.11 | CONCRETE AND BRICK PIPE PLUG STD. 840.71 | CONC. COLLARS CL. "B" C.Y. STD. 840.72 | PIPE REMOVAL LIN. FT. | REMARKS |
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COMPUTED BY: BNE DATE: 2/22/2017

CHECKED BY: JGD DATE: 2/22/2017

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
R-2707C	3D-17

RA-1553

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

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

| STATION | LOCATION (LT, RT, OR CL) | STRUCTURE NO. FROM | STRUCTURE NO. TO | TOP ELEVATION | INVERT ELEVATION | INVERT ELEVATION | MIN. REQUIRED SLOPE % | SIDE DRAIN PIPE (RCP, CSP, CAAP, HDPE, or PVC) SIZE 12" | 15" | 18" | 24" | 30" | 36" | 42" | 48" | DO NOT USE RCP | DO NOT USE CSP | DO NOT USE CAAP | DO NOT USE HDPE | C.S. PIPE SIZE 12" | 15" | 18" | 24" | 30" | 36" | 42" | 48" | THICKNESS OR GAUGE | .064 | .064 | .064 | .064 | .079 | .079 | .109 | .109 | R.C. PIPE CLASS III SIZE 12" | 15" | 18" | 24" | 30" | 36" | 42" | 48" | R.C. PIPE CLASS IV SIZE 12" | 15" | 18" | 24" | 30" | 36" | 42" | 48" | 24" R.C. PIPE (CLASS V) | 30" R.C. PIPE (CLASS V) | 36" R.C. PIPE (CLASS V) | 42" R.C. PIPE CULVERTS, CONTRACTOR DESIGN | ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CU. YARDS R.C.P. | C.S.P. | QUANTITIES FOR DRAINAGE STRUCTURES *TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. "A" + (1.3 X COL. "B") PER EACH (0' THRU 5.0') | LIN. FT. A 5.0' THRU 10.0' | B 10.0' AND ABOVE | C.B. STD. 840.01 OR STD. 840.02 | FRAME, GRATES, AND HOOD STANDARD 840.03 TYPE OF GRATE E | F | G | CONCRETE TRANSITIONAL SECTION DROP INLET | CATCH BASIN | D.I. STD. 840.14 OR STD. 840.15 | D.I. FRAME AND GRATE STD. 840.16 | G.D.I. TYPE "A" STD. 840.17 OR 840.26 | G.D.I. TYPE "B" STD. 840.18 OR 840.27 | G.D.I. TYPE "D" STD. 840.19 OR 840.28 | G.D.I. (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/ 2 GRATES STD. 840.24 | G.D.I. (N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29 | T.B.D.I. STD. 840.35 | T.B.J.B. STD. 840.34 | J.B. STD. 840.31 OR 840.32 | M.H. FRAME AND COVER STD. 840.54 | CONVERT EXISTING C.B. TO T.B.J.B. | 1" STEEL COVER | CONCRETE ENDWALL AND SLUICE GATE STD. 838.02 | 8" SLUICE GATE | 15" SIDE DRAIN PIPE ELBOW | 18" SIDE DRAIN PIPE ELBOW | 24" SIDE DRAIN PIPE ELBOW | 30" SIDE DRAIN PIPE ELBOW | 36" SIDE DRAIN PIPE ELBOW | BERM DITCH OUTLET STD. 850.10 | BERM DITCH OUTLET STD. 850.11 | CONCRETE AND BRICK PIPE PLUG STD. 840.71 | CONC. COLLARS CL. "B" C.Y. STD. 840.72 | PIPE REMOVAL LIN. FT. | REMARKS |
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RA-1553

COMPUTED BY: BNE DATE: 2/22/2017

CHECKED BY: JGD DATE: 2/22/2017

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
R-2707C	3D-18

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

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

| STATION | LOCATION (LT, RT, OR CL)' | STRUCTURE NO. FROM | STRUCTURE NO. TO | TOP ELEVATION | INVERT ELEVATION | INVERT ELEVATION | MIN. REQUIRED SLOPE % | SIDE DRAIN PIPE (RCP, CSP, CAAP, HDPE, or PVC) SIZE 12" | 15" | 18" | 24" | 30" | 36" | 42" | 48" | DO NOT USE RCP | DO NOT USE CSP | DO NOT USE CAAP | DO NOT USE HDPE | C.S. PIPE THICKNESS OR GAUGE 12" | 15" | 18" | 24" | 30" | 36" | 42" | 48" | R.C. PIPE CLASS III 12" | 15" | 18" | 24" | 30" | 36" | 42" | 48" | R.C. PIPE CLASS IV 12" | 15" | 18" | 24" | 30" | 36" | 42" | 48" | 24" R.C. PIPE (CLASS V) | 30" R.C. PIPE (CLASS V) | 36" R.C. PIPE (CLASS V) | 42" R.C. PIPE CULVERTS, CONTRACTOR DESIGN | | ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CU. YARDS R.C.P. | C.S.P. | QUANTITIES FOR DRAINAGE STRUCTURES *TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. "A" + (1.3 X COL. "B") PER EACH (0' THRU 5.0') | LIN. FT. A 5.0' THRU 10.0' | B 10.0' AND ABOVE | C.B. STD. 840.01 OR STD. 840.02 | FRAME, GRATES, AND HOOD STANDARD 840.03 TYPE OF GRATE E | F | G | CONCRETE TRANSITIONAL SECTION DROP INLET | CATCH BASIN | D.I. STD. 840.14 OR STD. 840.15 | D.I. FRAME AND GRATE STD. 840.16 | G.D.I. TYPE "A" STD. 840.17 OR 840.26 | G.D.I. TYPE "B" STD. 840.18 OR 840.27 | G.D.I. TYPE "D" STD. 840.19 OR 840.28 | G.D.I. (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/ 2 GRATES STD. 840.24 | G.D.I. (N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29 | T.B.D.I. STD. 840.35 | T.B.J.B. STD. 840.34 | J.B. STD. 840.31 OR 840.32 | M.H. FRAME AND COVER STD. 840.54 | CONVERT EXISTING C.B. TO T.B.J.B. | 1" STEEL COVER | CONCRETE ENDWALL AND SLUICE GATE STD. 838.01 | 8" SLUICE GATE | 15" SIDE DRAIN PIPE ELBOW | 18" SIDE DRAIN PIPE ELBOW | 24" SIDE DRAIN PIPE ELBOW | 30" SIDE DRAIN PIPE ELBOW | 36" SIDE DRAIN PIPE ELBOW | BERM DITCH OUTLET STD. 850.10 | BERM DITCH OUTLET STD. 850.11 | CONCRETE AND BRICK PIPE PLUG STD. 840.71 | CONC. COLLARS CL. "B" C.Y. STD. 840.72 | PIPE REMOVAL LIN. FT. | REMARKS |
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RA-1553

COMPUTED BY: BNE	DATE: 2/22/2017
CHECKED BY: JGD	DATE: 2/22/2017

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
R-2707C	3D-19

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

LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 54" & OVER)

STATION	LOCATION (LT, RT, OR CL)'	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	CLASS III R.C. PIPE (UNLESS NOTED OTHERWISE) 54" R.C. PIPE (CLASS III)	54" R.C. PIPE (CLASS IV)	54" R.C. PIPE (CLASS V)	54" R.C. PIPE (CONTRACTOR DESIGN)	60" R.C. PIPE (CLASS V)	66" R.C. PIPE (CLASS III)	66" R.C. PIPE (CLASS V)	66" R.C. PIPE (CONTRACTOR DESIGN)	72" R.C. PIPE (CLASS V)	BITUMINOUS COATED C.S. PIPE TYPE B (UNLESS NOTED OTHERWISE) 54" SHOP ELON-GATED .109	54" .138	54" .168	54" .138	54" .168	60" .138	60" .168	66" .138	66" .168	72" .139	72" .168	STRUCTURAL PLATE PIPE 60" 12	60" 10	66" 12	66" 10	72" 12	72" 10	REINFORCED ENDWALLS WITH R.C. - C.Y.	WITH C.S. - C.Y.	MASONRY DRAINAGE STRUCTURES CUBIC YARDS	C.B. STD. 840.01 OR 840.02	FRAMES, GRATES & HOOD STANDARD 840.03 TYPE OF GRATE E	F	G	CONCRETE TRANSITIONAL SECTION DROP INLET	CATCH BASIN	J.B. STD. 840.31 OR 840.32	M.H. FRAME AND COVER STD. 840.54	SEE SPECIAL JB DETAIL	REINF. CONC. FLARED END SECTIONS NO. & SIZE	CORR. STEEL FLARED END SECTIONS NO. & Size	CORR. STEEL ELBOWS NO. & SIZE	CONC. COLLARS CL. "B" C.Y. STD. 840.72	PIPE REMOVAL LIN. FT.	REMARKS
406+58 -L-	RT	606																																	6.3																		
		606	514		730.0	720.6								292																																					
405+30 -L-	LT	514		728.5																																7.15							1	1									
		514	515		717.1	717.0								12																																					
426+72 -L-	RT	711																																	7.1																		
		711	712		767.3	764.5										236																																			
425+68 -L-	LT	712		773.0																																9.1									1								
		712	713		759.6	759.4										24																																			
438+78 -L-	RT	807																																	6.3																		
		807	808		789.0	783.1							204																																						REMOVE EXTG. 24" CMP
439+17 -L-	LT	808		791.0																																8.53							1	1									
		808	809		779.2	779.0							24																																						
491+51 -L-	RT	1302																																	6.3																		
		1302	1303		837.2	834.0								240																																					
490+40 -L-	LT	1303		841.3																																6.97							1										
		1303	1304		830.0	829.6								56																																					
495+75 -L-	RT	1313																																	5.0																		
		1313	1314		846.7	844.6				232																																									
495+85 -L-	LT	1314		851.5																																5.54							1	1									
		1314	1315		841.1	841.0				16																																									
503+76 -L-	RT	1406																																	5.0																		
		1406	1408		846.7	846.2					12																																								
503+74 -L-	RT	1408		855.0																																6.08							1	1									
		1408	1409		843.0	838.2					284																																								
503+14 -L-	LT	1409		845.5																																5.55							1	1									
		1409	1417		835.1	835.0					16																																								
512+84 -L-	RT	1501																																	7.1																		
		1501	1502		869.4	862.1										264																																			REMOVE EXTG. 30" RCP
512+10 -L-	LT	1502																																																	
537+26 -L-	LT	1615																																	6.3																		
		1615	1616		895.5	879.0								504																																					
540+90 -L-	RT	1616																																																	
17+09 -Y9RPA-	RT	1632																																	5.6																		
		1632	1633		906.2	899.8						292																																							
15+35 -Y9RPA-	LT	1633																																																	
SHEET TOTALS										248	312	292	228	1104		524																			55		48.92							6	5		1								

ABBREVIATIONS

C.A.A.	CORRUGATED ALUMINUM 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: BNE DATE: 2/22/2017

CHECKED BY: JGD DATE: 2/22/2017

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
R-2707C	3D-20

RA-1553

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

LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 54" & OVER)

STATION	LOCATION (LT, RT, OR CL)'	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	CLASS III R.C. PIPE (UNLESS NOTED OTHERWISE) 54" R.C. PIPE (CLASS III)	54" R.C. PIPE (CLASS IV)	54" R.C. PIPE (CLASS V)	54" R.C. PIPE (CONTRACTOR DESIGN)	60" R.C. PIPE (CLASS V)	66" R.C. PIPE (CLASS III)	66" R.C. PIPE (CLASS V)	66" R.C. PIPE (CONTRACTOR DESIGN)	72" R.C. PIPE (CLASS V)		
SIZE								54"	54"	54"	54"	60"	66"	66"	66"	72"		
THICKNESS OR GAUGE																		
554+55 -L-	LT	1711																
		1711	1712		865.4	861.5									312			
567+76 -L-	LT	1901																
		1901	1812		898.5	887.6						412						
564+48 -L-	RT	1812		895.0														
		1812	1813		883.7	883.5						24						
30+07 -Y8REV-	LT	3401																
		3401	3402		862.5	859.2							192					
57+45 -Y11REV2-	LT	3905																
		3905	3906		907.2	903.6		208										
14+85 -Y16REV-	LT	4104																
		4104	4105		840.8	837.0			160									
SHEET TOTALS								208	160			436	192		312			
GRAND TOTALS								208	160	248	312	728	420	1104	312	524		

STATION	BITUMINOUS COATED C.S. PIPE TYPE B (UNLESS NOTED OTHERWISE) 54" .109	54" .138	54" .168	54" SHOP ELON-GATED .138	54" SHOP ELON-GATED .168	60" .138	60" .168	66" .138	66" .168	72" .139	72" .168			STRUCTURAL PLATE PIPE 60" 12	60" 10		66" 12	66" 10		72" 12	72" 10				
THICKNESS OR GAUGE																									
554+55 -L-																									
567+76 -L-																									
564+48 -L-																									
30+07 -Y8REV-																									
57+45 -Y11REV2-																									
14+85 -Y16REV-																									
SHEET TOTALS																									
GRAND TOTALS																									

STATION	REINFORCED ENDWALLS WITH R.C. - C.Y.	REINFORCED ENDWALLS WITH C.S. - C.Y.	MASONRY DRAINAGE STRUCTURES CUBIC YARDS	C.B. STD. 840.01 OR 840.02	FRAMES, GRATES & HOOD STANDARD 840.03 TYPE OF GRATE E	F	G		CONCRETE TRANSITIONAL SECTION DROP INLET	CATCH BASIN	J.B. STD. 840.31 OR 840.32	M.H. FRAME AND COVER STD. 840.54		SEE SPECIAL JB DETAIL						REINF. CONC. FLARED END SECTIONS NO. & SIZE	CORR. STEEL FLARED END SECTIONS NO. & Size	CORR. STEEL ELBOWS NO. & SIZE	CONC. COLLARS CL. "B" C.Y. STD. 840.72		PIPE REMOVAL LIN. FT.	REMARKS
THICKNESS OR GAUGE																										
554+55 -L-	6.3																									
567+76 -L-	5.6																									
564+48 -L-			6.53								1	1														
30+07 -Y8REV-	6.3																									
57+45 -Y11REV2-	5.0																									
14+85 -Y16REV-	5.0																									
SHEET TOTALS	28.2		6.53								1	1														
GRAND TOTALS	83.2		55.45								7	6		1												

ABBREVIATIONS

C.A.A.	CORRUGATED ALUMINUM 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: G. MODLIN DATE: 2/21/2017
CHECKED BY: T. HUFFMAN DATE: 2/21/2017

PROJECT NO.	SHEET NO.
R-2707C	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-	358+00	361+00		SD	1200
-L-	421+50	422+50		SD	1200
-L-	467+50	471+00		SD	1200
-L-	481+00	485+00		SD	1200
-L-	525+00	531+00		SD	1200
CONTINGENCY				SD	4000
				TOTAL LF:	10000

***UD = Underdrain**

***BD = Blind Drain**

***SD = Subsurface Drain**

SUMMARY OF GEOTEXTILE FOR PAVEMENT STABILIZATION

LINE	Station	Station	SY
-Y8-REV	25+00	28+00	1100
-Y11-REV2	10+40	16+60	9900
-Y16-	31+70	31+85	1550
CONTINGENCY			
		TOTAL SY:	12550

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					15800	32000	47000		
			TOTAL CY/TONS/SY:		15800	32000	47000**	0	0

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

SUMMARY OF BRIDGE WAITING PERIODS

Bridge Description	End Bent/ Bent No.	MONTHS
BRIDGES 472 & 473	EB1	1
BRIDGES 472 & 473	EB2	2
BRIDGES 474 & 475	EB1	2
BRIDGES 474 & 475	EB2	1

Note:
1) See structure foundation notes on plans for embankment constructio
2) See Roadway Standard Special Provision SP02-R65

PROJ. REFERENCE NO.	SHEET NO.
R-2707C	3P-1

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PARCEL INDEX SHEET

PARCEL No.	SHEET No.	PROPERTY OWNER NAME
1	4,5,25	OLIVIA WITHROW HEIRS C/O CALVIN LOWE
1A	25	LEONARD L. MCSWAIN, JR.
1Z	4,5,25	OLIVIA WITHROW HEIRS C/O CALVIN LOWE
2	4	ELSIE LOGAN
2Z	4	ELSIE LOGAN
3	4	CAROLYN ESKRIDGE LAURY
4	4	CHARLES W. & BEVERLY C. BROWNING
5	4,5	ESSIE B. SHIPP
6	4,5	OMAR MOLETTE
7	4,25	DEBBIE ANN WEBBER
8	4	OLIVIA WITHROW HEIRS C/O CALVIN LOWE
9	4,5	OWLS EYE VINEYARD
9Z	4,5	OWLS EYE VINEYARD
10	5,6,7	DIANE L. BLANTON
11	5	FRANCES LEDFORD
12	7	NOT USED
13	7,8,9	EMILE LOUIS GEBEL
13A	2P	CLEVELAND CONSTRUCTION INC.
13B	27	EMILE LOUIS GEBEL
14	8,9,27	DR. GARY L. MANGUM
15	9,26,27	MINOR LEE MELTON
16	9,10,11	DR. GARY L. MANGUM
17	10,11,28,29	CITY OF SHELBY
17A	11,28	BOYCE J. HANNA
18	11,12,29	CHESTER PEELER
19	11,28	BRIDGETTE M. EPPS
20	12,13,29	LOU DEAN D. HAMRICK
21	13	HAL DEDMON
22	13,14	NCDOT
23	13,14	NCDOT
23A	13,14	ROY FRANKLIN WRAY
23B	14	J C CAUSEY
23Z	13,14	NCDOT
24	14	LORA PASSMORE WALKER
25	14	MARY J. MISLE
26	14,15,16,30	CAROLINA WATER STORAGE
26Z	14,15,16,30	CAROLINA WATER STORAGE
27	14	D. WAYNE ALLEN
28	14,15	CINDY C. EDWARDS & CAROLYN A. CODY
29	14,15	CINDY C. EDWARDS & CAROLYN A. CODY
29Z	14,15	CINDY C. EDWARDS & CAROLYN A. CODY
30	15,16,26	B BUSINESS CORPORATION
31	15,16	JEAN P. WILSON & BOYD D. PARKER
32	16	TERRY R. & JERRY D. PENDELTON
32A	16	TERRY R. PENDELTON AND WIFE, LISA D. PENDELTON
33	16	JERRY PENDLETON
34	16	MAXINE LAIL NANNEY
35	16	ELIZABETH BULLMAN
36	16,31	CAROLINA WATER STORAGE
36Z	16,31	CAROLINA WATER STORAGE
37	16	DONALD TURNER
38	16	ANDREW MARK BRADLEY
39	16	RAYMOND PETTYJOHN
40	16	NOT USED
41	16,32	FRED FALLS HARRILL
42	16,32	GARY PROCTOR
43	16,32,33,34	SAMUEL LAIL
43Z	16,32,33,34	SAMUEL LAIL
45	16	GEORGE R. & EDDIE PENDELTON
46	16	NCDOT

PARCEL No.	SHEET No.	PROPERTY OWNER NAME
47	16	FREIDA BURTON
48	16	NCDOT
49	16	NCDOT
50	16	NCDOT
50A	16	MARY J. IZOKOVIC
51	16	JERRY DALE COSTNER
52	16,31	RYAN B. CASH
53	16,17	ROXANNA B. CHAMPION
54	16	NCDOT
55	16,17	FREIDA H. BURTON
56	17	BOBBY HULL
57	17	MATTHEW PAUL MALKMUS
58	17	NCDOT
59	17	DONNA LYNN LOVELACE
60	17,18,19,20	HENRY B. EDWARDS, JR. ESTATE
61	17,18	MARVIN GLENN QUEEN
62	19,20	BROAD RIVER HOLDINGS
63	20	JAMES MICHAEL YARBORO & WIFE, RITA E. YARBORO
64	20	LINDA JONES COOK
65	20,21	CHITTY-YOUNG FAMILY LIMITED PARNERSHIP
66	20,21	EUNICE W. POSTON
67	20,21	BOBBY SPAKE
68	21,37	NELLIE M. SKIPPER
69	21,22	NCDOT
70	21,37	ROBERT D. & IRIS H. MALONEY
71	22	CITY OF SHELBY SATELLITE ANNEXATION
72	22	STRICKLAND & BLANTON A NC PARTNERSHIP
73	22,36	ROGER TESSNEER
74	22	GARY BEAM
75	22,37	ANN B. TAYLOR TRUST H.R. ROYSTER, HEIRS
76	22,39	NCDOT
77	22,23	NCDOT
78	22,23,24	JOHN M. GAMBLE & WILLIAM M. BOWMAN
79	22,36	DONALD R. BRIDGES
80	22,23	SPAKE INVESTMENTS, LLC
81	23,40	THOMAS M. CURRY, JR. & WIFE VIRGINIA C. CURRY
82	24,40	EDWIN T. VANHOY & BETTY VANHOY
83	24,40	NOT USED
84	28	DWAYNE DOVER
85	31	PATRICIA B. SCHMOUTZ & STEPHEN D. SCHMOUTZ
85A	31	NORRIS E. AND SANDRA D. BOGGS
85Z	31	PATRICIA B. SCHMOUTZ & STEPHEN D. SCHMOUTZ
86	32	JACK L. & NANCY D. SPANGLER
86Z	32	JACK L. & NANCY D. SPANGLER
87	32	ROGELIO M. & DEYANIRA G. GOMEZ
87Z	32	ROGELIO M. & DEYANIRA G. GOMEZ
88	32,33,34	JAMES W. & ELEANOR A. MORGAN
89	34	BOBBY J. HULL
90	34	CHARLES R. & CATHERINE P. PRICE
91	35,36,41	THOMAS JEREMY GARDNER
91A	35,36	STEPHEN W. JONES
92	35	VERONICA A. SIMPSON TRUSTEE OF THE BARBARA T.
		SIMPSON REVOCABLE TRUST DATED JULY 4. 1997
93	36	BRENDA HORD MAUNEY
94	36	JAMES RICKY SHRUM
95	36	VERONICA A. SIMPSON
96	37,38	B. DALTON LIMITED PARTNERSHIP
97	37	DAVID WAYNE ALLEN
98	37,38	REBECCA P. & BRYAN K. DALTON
99	37	CARL CLAY SLOAN, SR.

PROJ. REFERENCE NO.	SHEET NO.
R-2707C	3P-2

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PARCEL INDEX SHEET

PARCEL No.	SHEET No.	PROPERTY OWNER NAME
100	37,39	J. MORGAN COMPANY
101	37,38	A. V. DEDMON TRUCKING
102	38	BREEDEN ENTERPRISES
103	38	CHRISTOPHER EDWARDS
104	38	JOEL D. BLANTON & RACHEL B. CANIPE
105	38	REBECCA P. & BRYAN K. DALTON
106	39,40	MARY RUTH DEDMON HORD & BETTY SUE DEDMON DOVER,
		CO-EXECUTORS FOR THE ESTATE OF LIZZIE K. DEDMON
106A	39	CHARLES E. DEDMON AND WIFE, DORIS H. DEDMON
107	39,40	BILLY WRAY WILLIAMSON
108	40	WILLIAM G. SPAKE
109	40	THOMAS M. CURRY, III & WIFE, DEBORAH W. CURRY
110	40	HAZEL D. MCNEELY
110A	40	CECIL M. BURTON FUNERAL HOME, WILLIAM BARRY QUEEN
		& WIFE, LAURA L. QUEEN, AND SHELLEY LYNETTE QUEEN
111	40	RACHEL L. SMITH
111A	40	LELIA B. YARBOROUGH
112	41	BARBARA HARRIS
113	41	ESTATE OF SHARON G. WHISNANT
114	41	RUSSEL A. BRITT
115	41	CHERYL D. BERMAN
116	41	MARGARET D. DURHAM & MELVIN D. DURHAM
117	41	TRACY L. RANDALL
118	41	EUGENE TALLENT
119	41	GILBERT KEITH RANDALL
120	42	JERRY R. & JUDY H. GREENE
121	42	JANE G. RECCA B. GREENE
122	42	JANE G. COOPER
123	20,42	ANNIE LAURA GREEN
124	20	UNKNOWN OWNERSHIP
125	36	JOSEPH PHILLIPS
904	16	NCDOT

PARCEL No.	SHEET No.	PROPERTY OWNER NAME

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PROJECT REFERENCE NO.	SHEET NO.
R-2707C	4
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 15869 ENGINEER — 26568A242EB3411... 4/12/2017

HYDRAULICS ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 26971 ENGINEER — 1089AD8C1688488... 4/12/2017

moffatt & nichol — 4700 FALLS OF NEUSE ROAD, SUITE 300, RALEIGH, NORTH CAROLINA 27609, (919) 781-4626 VOICE (919) 781-4865 FAX

SDG Sungate Design Group, P.A. — Highway Design • Hydraulics • Bridge Engineering, 915 Jones Franklin Rd., Raleigh, N.C. 27606, PH 919.300.

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

-L-
PI Sta 387+18.94
△ = 8° 50' 30.4" (RT)
D = 0° 45' 00.0"
L = 1,178.90'
T = 590.62'
R = 7,639.44'
SE = .03
RO = 150'

-DR4-
PI Sta 12+14.82
△ = 20° 20' 22.3" (LT)
D = 6° 05' 43.1"
L = 333.69'
T = 168.62'
R = 940.00'

PI Sta 16+20.18
△ = 23° 36' 51.2" (LT)
D = 38° 11' 49.9"
L = 61.82'
T = 31.36'
R = 150.00'

-Y2-
PI Sta 31+27.15
△ = 96° 06' 18.7" (LT)
D = 6° 00' 00.0"
L = 1,601.75
T = 1,062.52'
R = 954.93'**
SE = .06
RO = 150'

NAD 83/95

MATCHLINE STA 25+00 -Y2- SEE SHEET 25

MATCHLINE STA 394+00 SEE SHEET 5

EQUATION:
-L- STA. 382+00.17 BK
END TIP PROJECT R-2707B
-L- STA. 382+00.00 AH
BEGIN TIP PROJECT R-2707C

GRADING ONLY

SHELBY BYPASS

-L- PT 393+07.22

-DR4- PT 13+79.90

-DR4- PT +50.85

-L- POC 387+54.08

-Y2- POC 29+07.16
△ = 62° 34' 38.2"

PC Sta. 15+88.82

-Y2- POC 33+25.00

END CONSTRUCTION
-DR4- POT 17+07.24
-DR4- POT 17+26.25

END CONSTRUCTION
END OVERLAY

END GRADE

N 82° 07' 30.7" E

TOE PROTECTION STA 25+00 TO STA 28+00 LT -Y2-
SEE DETAIL #5
CL 'B' RIP RAP
EST 180 TONS
EST 400 SY GEOTEXTILE

TOE PROTECTION STA 10+40 TO STA 16+60 RT -DR4-
CL 'B' RIP RAP
SEE DETAIL #44
EST 178 TONS
EST 540 SY GEOTEXTILE
24" RCP-IV

CL 'B' RIP RAP
EST 1 TON
EST 5 SY GEOTEXTILE

CL 'B' RIP RAP
EST 3 TONS
EST 11 SY GEOTEXTILE
CL 'II' RIP RAP
TO TOP OF BERM
STRUCTURE PAY ITEM

CL 'II' RIP RAP
TO TOP OF BERM
STRUCTURE PAY ITEM

SHOULDER BERM GUTTER
STA 386+75 TO 387+20 -L- MED

SHOULDER BERM GUTTER
STA 387+05 TO 389+50 -L- RT

SHOULDER BERM GUTTER
STA 386+75 TO 388+88 -L- LT

END SHOULDER BERM GUTTER AT BRIDGE

3' BASE DITCH
W/CL 'I' RIP RAP
SEE DETAIL #8
EST 29 TONS
EST 50 SY GEOTEXTILE
EST 15 CY DDE

CL 'B' RIP RAP
EST 310 TONS
EST 575 SY GEOTEXTILE

CL 'B' RIP RAP
EST 3 TONS
EST 11 SY GEOTEXTILE

HAZARDOUS SPILL BASIN
W/EMBANKMENT AND LINER
SEE DETAIL #49
MIN. CAPACITY = 516 CY
TOTAL CAPACITY @ ELEV. 710.0
W/1.0FT FREEBOARD = 517 CY
EST. EXCAVATION = 840 CY
EST. EMBANKMENT = 120 CY

MSE RETAINING WALL #1

BANK STABILIZATION
SEE DETAIL #26

HW W/ SLUICE GATE

REMOVE 96' EX 15" PIPE

COLLAR AND EXTEND

RETAIN

BY10-363

BY10-364

BEGIN WW FENCE AT BRIDGE

END C/A & WW FENCE AT BRIDGE

BEGIN C/A & WW FENCE AT MSE WALL

END C/A & WW FENCE AT MSE WALL

FUTURE GREENWAY

FUTURE GUARDRAIL

FUTURE CABLE GUIDERAIL

PROP. GUARDRAIL

FUT. GUARDRAIL

FUT. TYPE M350

FUT. TYPE B-77

FUT. GRAU 350 TL-3

FUT. CAT-1

GRAU 350 TL-3

15" RCP-IV

24" RCP-III

30" RCP-III

36" RCP-III

15" RCP-III

15" RCP

W/ELBOWS

GRADE TO DRAIN

1 1Z OLIVIA A. WITHROW HEIRS C/O CALVIN LOWE ESTATE FILE 09E PG 810 REF. DB 1065 PG 243

2 2Z ELSIE LOGAN DB 15G PG 523

3 CAROLYN ESKRIDGE LAURY DB 94E PG 121 — STACEY SEWELL DB 1444 PG 175, DB 1449 PG 2403

4 CHARLES W. & BEVERLY C. BROWNING DB 1277 PG 1713

5 ESSIE B. SHIPP DB 1524 PG 430

6 OMAR MOLETTE DB 1171 PG 150

7 DEBBIE ANN WEBBER DB 1240 PG 632

8 OLIVIA A. WITHROW HEIRS C/O CALVIN LOWE ESTATE FILE 09E PG 810 REF. DB 1065 PG 243

9 9Z FRANK TOMS, JR. DB 1269 PG 538

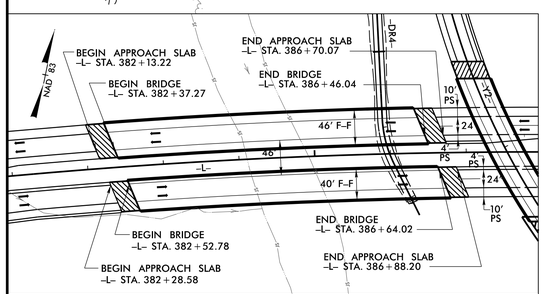
33 C. CLAY CABANISS DB 1095 PG 1480

41 CHARLES A. HORN DB 1162 PG 1897

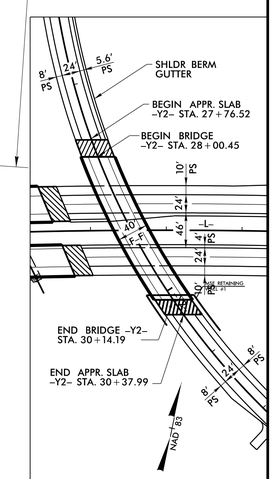
DIANE L. BLANTON ESTATE FILE 02E PG 99 REF. DB 187 PG 364

DESIGN EXCEPTION NEEDED FOR SIGHT DISTANCE ON -Y2-

FOR DITCH DETAILS SEE SHEETS 2D-1 AND 2D-2
FOR -L- PROFILE SEE SHEET 43
FOR -Y2- PROFILE SEE SHEET 56
FOR WALL PLANS SEE
FOR STRUCTURE PLANS SEE



SKETCH SHOWING BRIDGE RELATIVE TO PROPOSED PAVEMENT



SKETCH SHOWING BRIDGE RELATIVE TO PROPOSED PAVEMENT

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PROJECT REFERENCE NO.	SHEET NO.
R-2707C	5
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 15869 ENGINEER — 4/12/2017

HYDRAULICS ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 26971 ENGINEER — 4/12/2017

moffatt & nichol — 4700 FALLS OF NEUSE ROAD, SUITE 300, RALEIGH, NORTH CAROLINA 27609, (919) 781-4626 VOICE, (919) 781-8865 FAX

SDG Sungate Design Group, P.A. — 510-A James Faircloth Blvd, Raleigh, N.C. 27606

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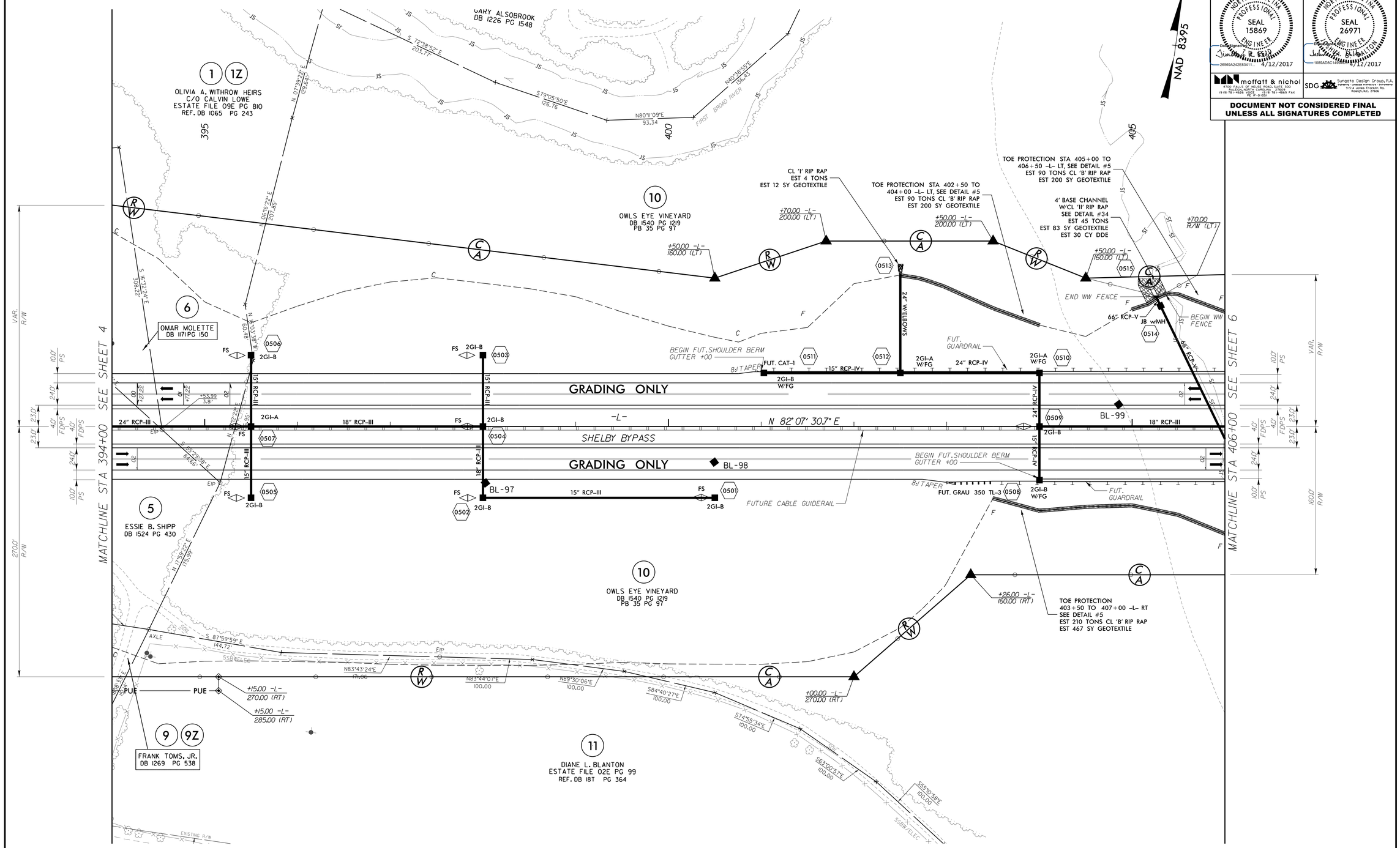

FOR DITCH DETAILS SEE SHEETS 2D-1 AND 2D-2
FOR -L- PROFILE SEE SHEET 44

DocuSign Envelope ID: 901BDDA9-B95D-4CD2-9EC6-1A37AA5CA05A

PROJECT REFERENCE NO.	SHEET NO.
R-2707C	6
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 15869 ENGINEER

DocuSigned by: Jim Bass, P.E.
26569A242E8341...
4/12/2017

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 26971 ENGINEER

DocuSigned by: Joshua Brittain
1089AD8C1E8B4A4...
4/12/2017

moffatt & nichol
4700 FALLS OF NEUSE ROAD, SUITE 300
RALEIGH, NORTH CAROLINA 27609
(919) 781-4626 VOICE (919) 781-8865 FAX
P2 1010-100

SDG Sungate Design Group, P.A.
Engineers · Licensed architects · Surveyors
5104 James Faircloth Rd.
Raleigh, N.C. 27606

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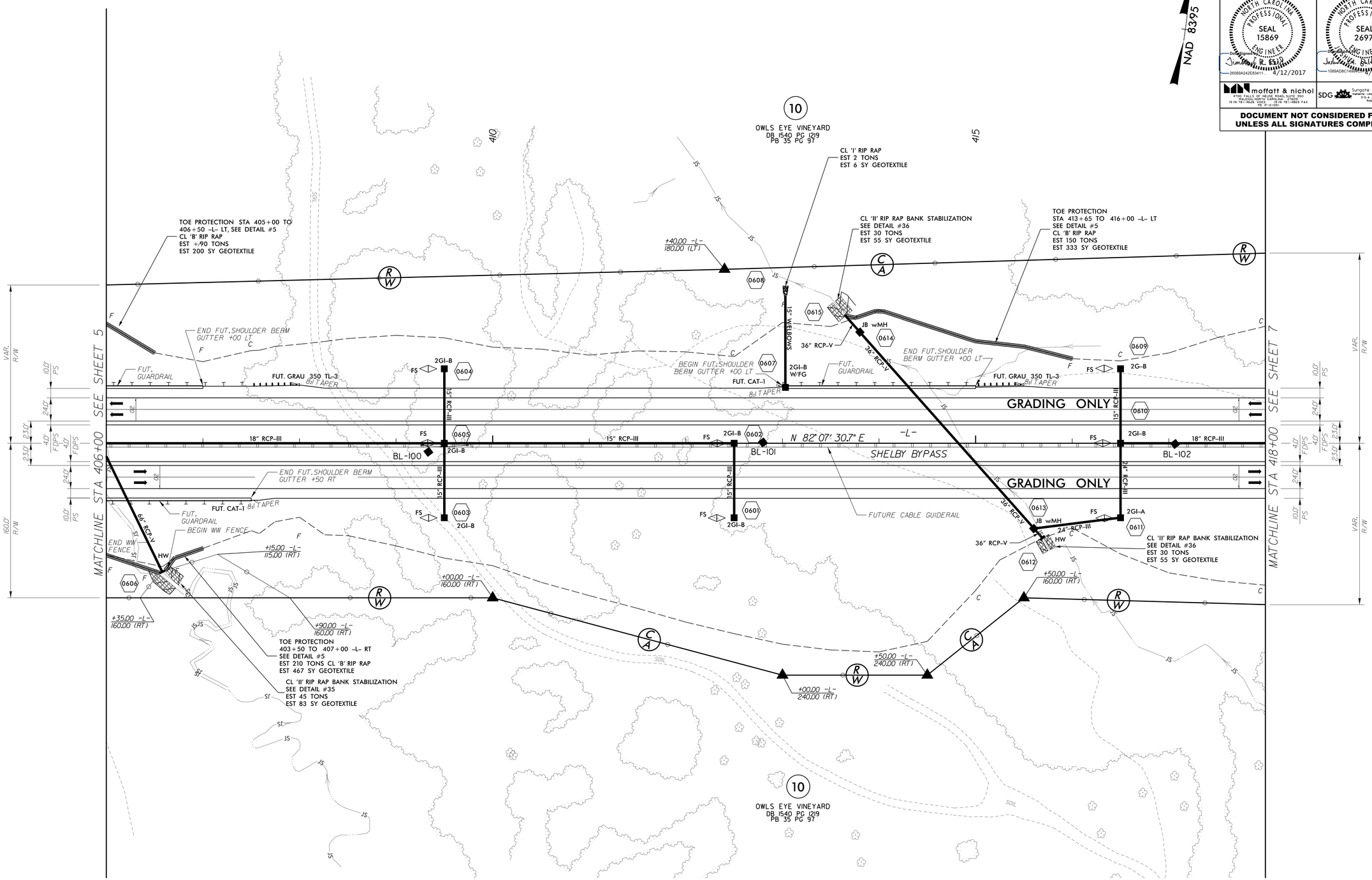

FOR DITCH DETAILS SEE SHEETS 2D-1 AND 2D-2
FOR -L- PROFILE SEE SHEET 44

DocuSign Envelope ID: 901BDDA9-B95D-4CD2-9EC6-1A37AA5CA05A

PROJECT REFERENCE NO.	SHEET NO.
R-2707C	7
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 15869 ENGINEER
DocuSigned by: Jimmy R. Estep
26569A242E8341... 4/12/2017

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 26971 ENGINEER
DocuSigned by: Joshua Brandon Walton
1089AD8C1C5B4A... 4/12/2017

moffatt & nichol
4700 FALLS OF NEUSE ROAD, SUITE 300
RALEIGH, NORTH CAROLINA 27609
(919) 781-4626 VOICE (919) 781-8865 FAX
PE 0-10-050

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Engineers | Landscape Architects | Surveyors
5-104 James Faircloth Blvd.
Raleigh, N.C. 27606

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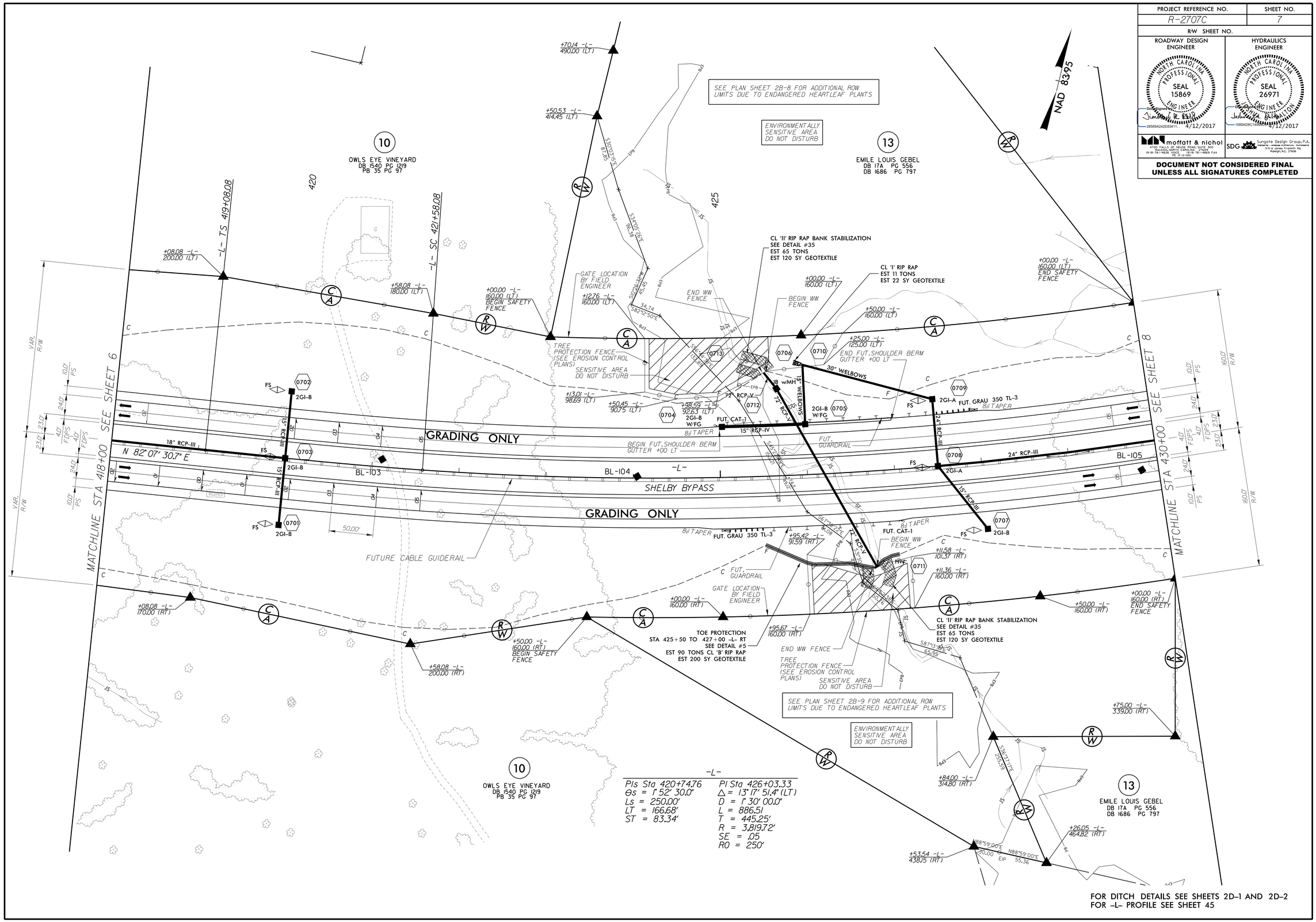

FOR DITCH DETAILS SEE SHEETS 2D-1 AND 2D-2
FOR -L- PROFILE SEE SHEET 45

DocuSign Envelope ID: 901BDDA9-B95D-4CD2-9EC6-1A37AA5CA05A

PROJECT REFERENCE NO.	SHEET NO.
R-2707C	8
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 15869 ENGINEER
DocuSigned by: Jinchao Yu, P.E.
26569A242E8341... 4/12/2017

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 26971 ENGINEER
DocuSigned by: Joshua Brian Walton, P.E.
1089AD8C1428B4A... 4/12/2017

moffatt & nichol
4700 FALLS OF NEUSE ROAD, SUITE 300
RALEIGH, NORTH CAROLINA 27609
(919) 781-4626 VOICE (919) 781-8865 FAX
FIRM LICENSE # C-0205

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Engineers · Licensed architects · Surveyors
5101-A James Pringle Rd.
Raleigh, N.C. 27606

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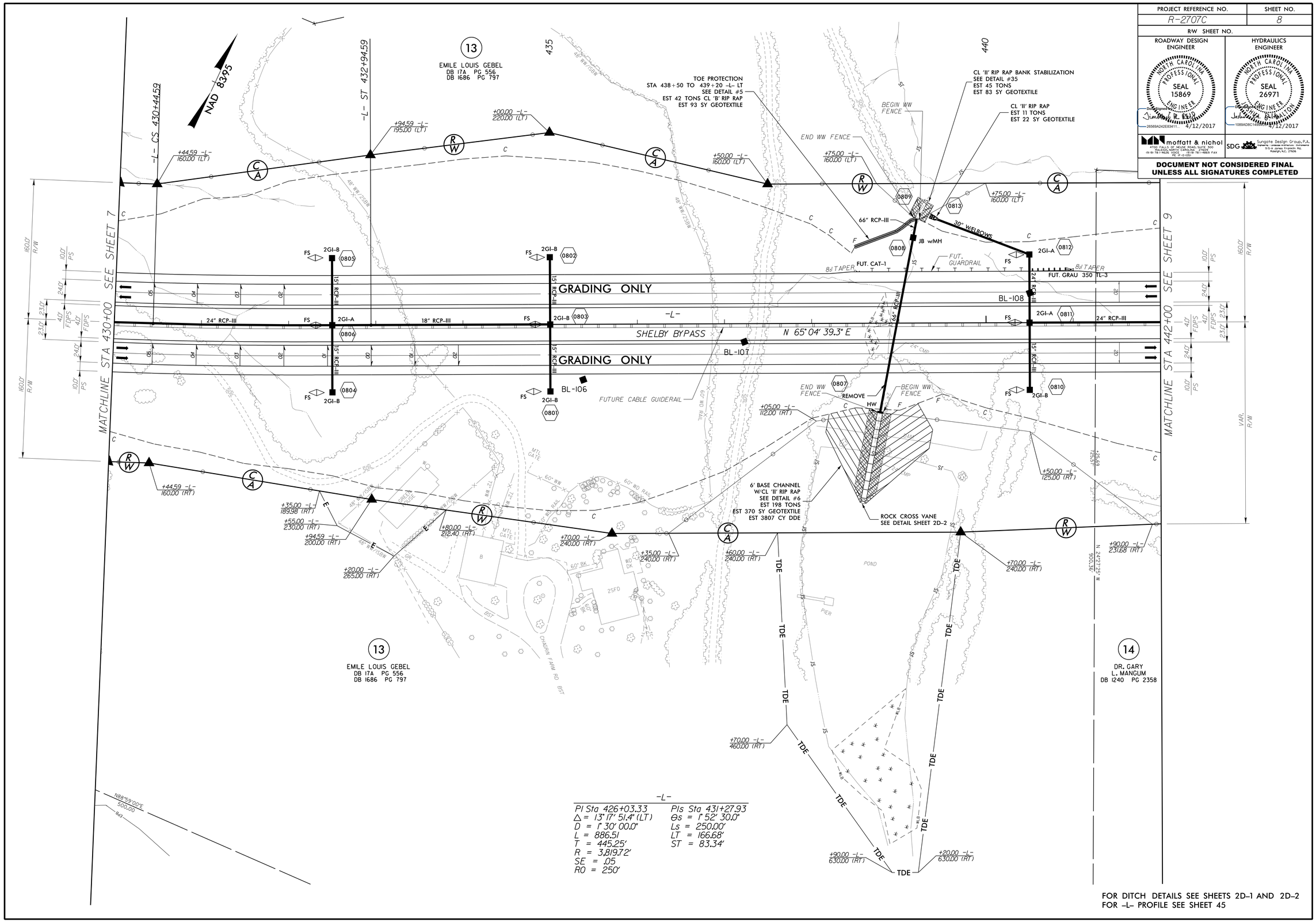

-L-

PI Sta 426+03.33	PIs Sta 431+27.93
Δ = 13° 17' 51.4" (LT)	θs = 1° 52' 30.0"
D = 1° 30' 00.0"	Ls = 250.00'
L = 886.51	LT = 166.68'
T = 445.25'	ST = 83.34'
R = 3,819.72'	
SE = .05	
R0 = 250'	

FOR DITCH DETAILS SEE SHEETS 2D-1 AND 2D-2
FOR -L- PROFILE SEE SHEET 45

DocuSign Envelope ID: 901BDDA9-B95D-4CD2-9EC6-1A37AA5CA05A

PROJECT REFERENCE NO.	SHEET NO.
R-2707C	9
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 15869 ENGINEER — Digitally signed by Jinchao R. Esco — 26569A242E8341... — 4/12/2017

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 26971 ENGINEER — Digitally signed by Joshua B. Dalton — 1089AD8C1E8B4... — 4/12/2017

moffatt & nichol — 4700 FALLS OF NEUSE ROAD, SUITE 300, RALEIGH, NORTH CAROLINA 27609 — (919) 781-4626 VOICE (919) 781-8865 FAX — NC 10-10-054

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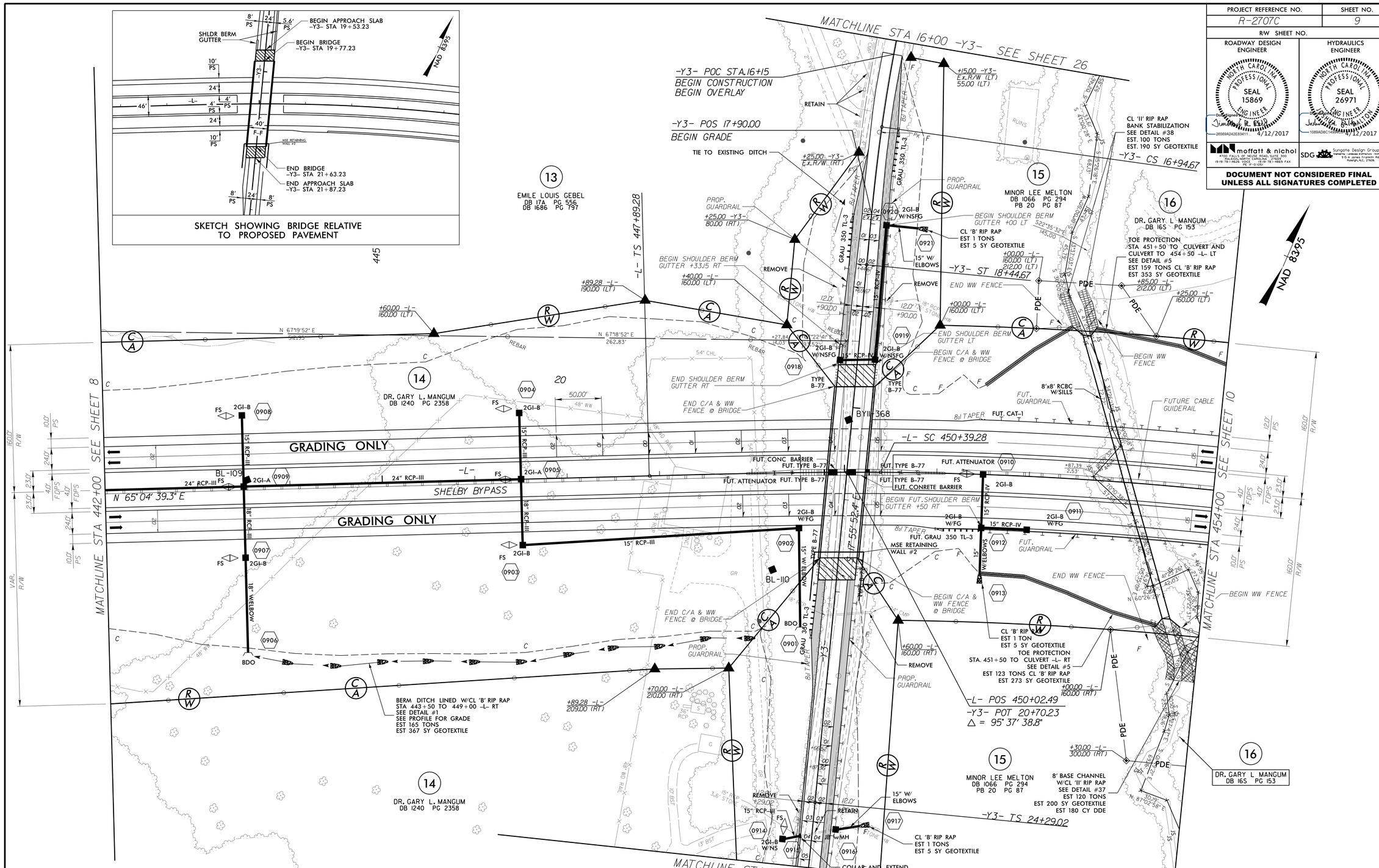

-Y3-

PI Sta 16+18.88	PIs Sta 17+44.68	PIs Sta 25+12.36
Δ = 5° 03' 21.5" (LT)	Θs = 2° 30' 00.0"	Θs = 1° 52' 30.0"
D = 3° 20' 00.0"	Ls = 150.00'	Ls = 125.00'
L = 151.68	LT = 100.01'	LT = 83.34'
T = 75.89'	ST = 50.01'	ST = 41.67'
R = 1,718.87'		

-L-

PIs Sta 449+55.95	PI Sta 456+70.39
Θs = 1° 52' 30.0"	Δ = 18° 45' 49.5" (RT)
Ls = 250.00'	D = 1° 30' 00.0"
LT = 166.68'	L = 1,250.92
ST = 83.34'	T = 631.11'
	R = 3,819.72'
	SE = .05
	RO = 250'

FOR DITCH DETAILS SEE SHEETS 2D-1 AND 2D-2
FOR -L- PROFILE SEE SHEET 46
FOR -Y3- PROFILE SEE SHEET 56
FOR WALL PLANS SEE
FOR STRUCTURE PLANS SEE

DocuSign Envelope ID: 901BDDA9-B95D-4CD2-9EC6-1A37AA5CA05A

PROJECT REFERENCE NO.	SHEET NO.
R-2707C	10
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 15869 ENGINEER — Designed by: Jim Reid — 26569A242E8341... — 4/12/2017

HYDRAULICS ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 26971 ENGINEER — Designed by: Jessica Blackwelder — 1089AD8C1258B4... — 4/12/2017

moffatt & nichol — 4700 FALLS OF NEUSE ROAD, SUITE 300, RALEIGH, NORTH CAROLINA 27609, (919) 781-4626 VOICE, (919) 781-8865 FAX, PE 0-10-050

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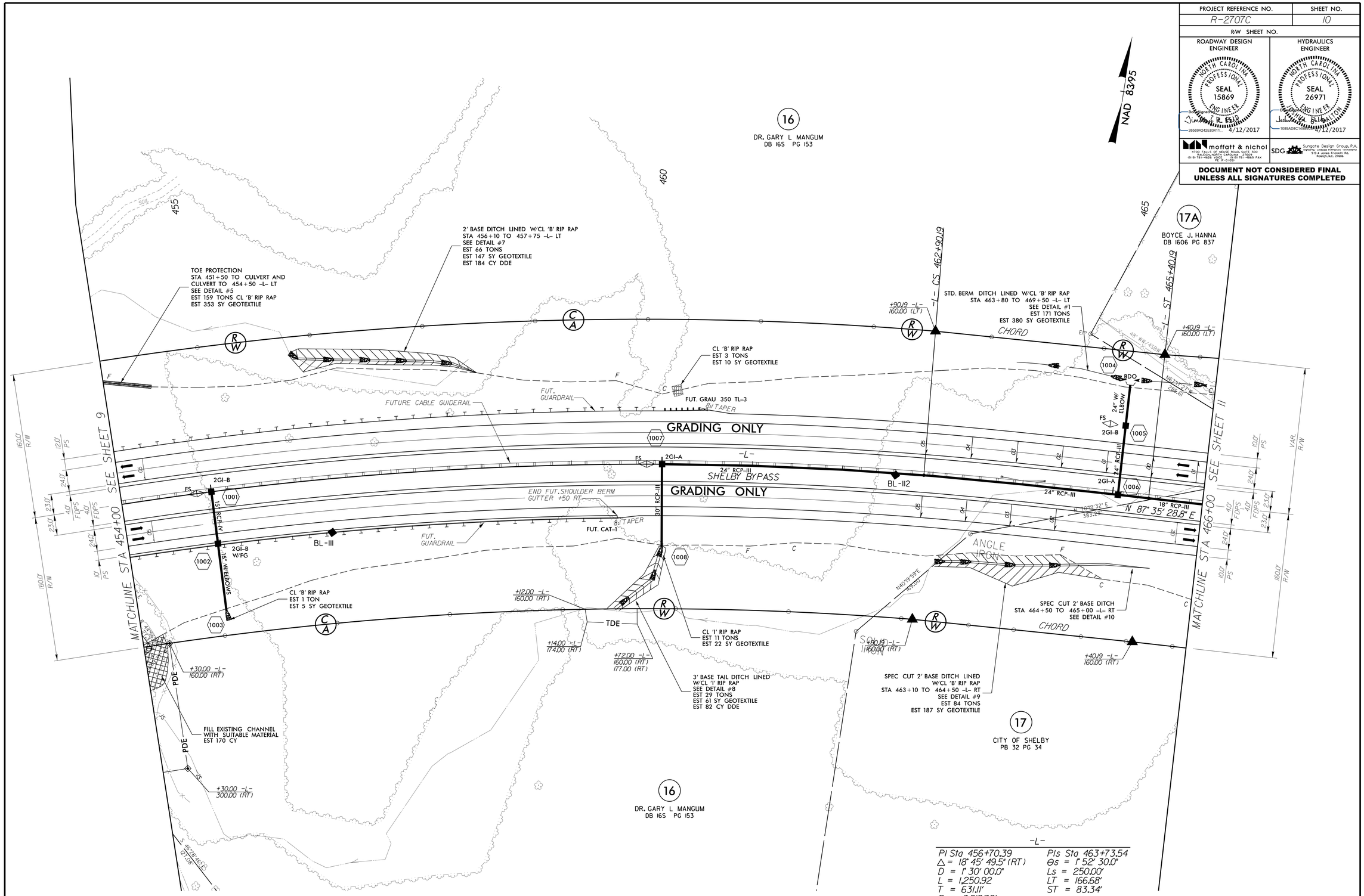

-L-

PI Sta 456+70.39	PIs Sta 463+73.54
△ = 18° 45' 49.5" (RT)	θs = 1° 52' 30.0"
D = 1° 30' 00.0"	Ls = 250.00'
L = 1,250.92	LT = 166.68'
T = 631.11'	ST = 83.34'
R = 3,819.72'	
SE = .05	
RO = 250'	

FOR DITCH DETAILS SEE SHEETS 2D-1 AND 2D-2
FOR -L- PROFILE SEE SHEET 46

DocuSign Envelope ID: 901BDDA9-B95D-4CD2-9EC6-1A37AA5CA05A

PROJECT REFERENCE NO.	SHEET NO.
R-2707C	11
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 15869 ENGINEER — Jim Eppes — 26569A242E8341... — 4/12/2017

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 26971 ENGINEER — Jessica Buffkin Dalton — 1089A08C1588488... — 4/12/2017

moffatt & nichol — 4700 FALLS OF NEUSE ROAD, SUITE 300, RALEIGH, NORTH CAROLINA 27609, (919) 781-4626 VOICE (919) 781-4865 FAX, NC F-0163

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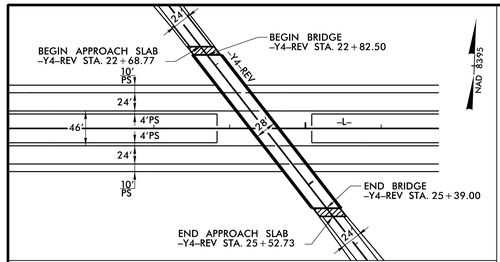
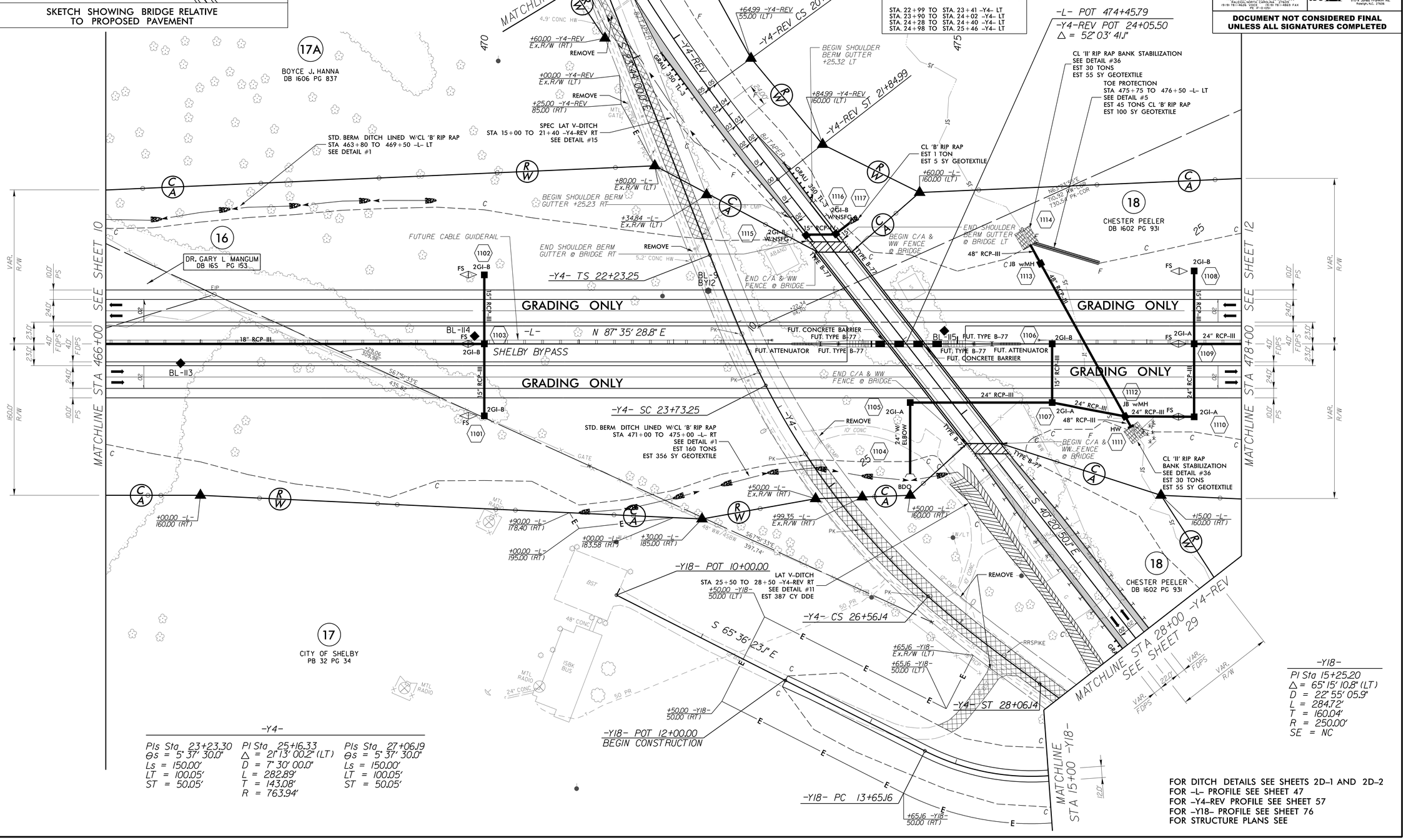


SKETCH SHOWING BRIDGE RELATIVE TO PROPOSED PAVEMENT



-Y4-

PIs Sta 23+23.30	PI Sta 25+16.33	PIs Sta 27+06.19
Θs = 5° 37' 30.0"	Δ = 21° 13' 00.2" (LT)	Θs = 5° 37' 30.0"
Ls = 150.00'	D = 7° 30' 00.0"	Ls = 150.00'
LT = 100.05'	L = 282.89'	LT = 100.05'
ST = 50.05'	T = 143.08'	ST = 50.05'
	R = 763.94'	

-Y18-

PI Sta 15+25.20
Δ = 65° 15' 10.8" (LT)
D = 22° 55' 05.9"
L = 284.72'
T = 160.04'
R = 250.00'
SE = NC

FOR DITCH DETAILS SEE SHEETS 2D-1 AND 2D-2
FOR -L- PROFILE SEE SHEET 47
FOR -Y4-REV PROFILE SEE SHEET 57
FOR -Y18- PROFILE SEE SHEET 76
FOR STRUCTURE PLANS SEE

DocuSign Envelope ID: 901BDDA9-B95D-4CD2-9EC6-1A37AA5CA05A

PROJECT REFERENCE NO.	SHEET NO.
R-2707C	12
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 15869 ENGINEER — Designed by: Jimmy J. R. Estep — 26569A242E8341... — 4/12/2017

HYDRAULICS ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 26971 ENGINEER — Designed by: Jessica Brittain Dalton — 1089AD8C1E8B4A... — 4/12/2017

moffatt & nichol — 4700 FALLS OF NEUSE ROAD, SUITE 300, RALEIGH, NORTH CAROLINA 27609, (919) 781-4626 VOICE (919) 781-8865 FAX, PE 0-10-050

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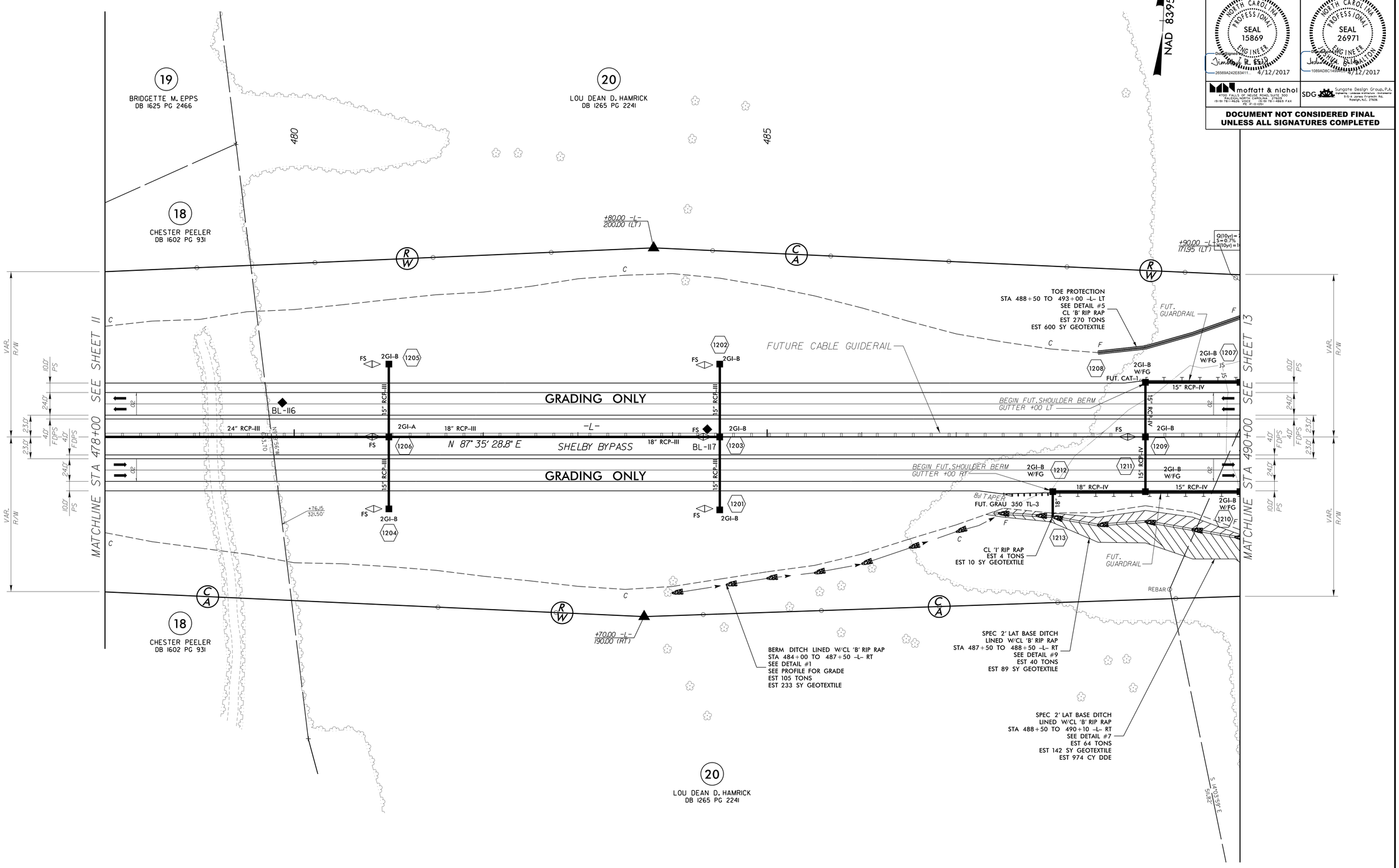

FOR DITCH DETAILS SEE SHEETS 2D-1 AND 2D-2
FOR -L- PROFILE SEE SHEET 47

DocuSign Envelope ID: 901BDDA9-B95D-4CD2-9EC6-1A37AA5CA05A

PROJECT REFERENCE NO.	SHEET NO.
R-2707C	13
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 15869 ENGINEER — 4/12/2017

HYDRAULICS ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 26971 ENGINEER — 4/12/2017

moffatt & nichol — 4700 FALLS OF NEUSE ROAD, SUITE 300, RALEIGH, NORTH CAROLINA 27609, (919) 781-4626 VOICE, (919) 781-8865 FAX

SDG Sungate Design Group, P.A. — 515-A James Faircloth Rd., Raleigh, N.C. 27606

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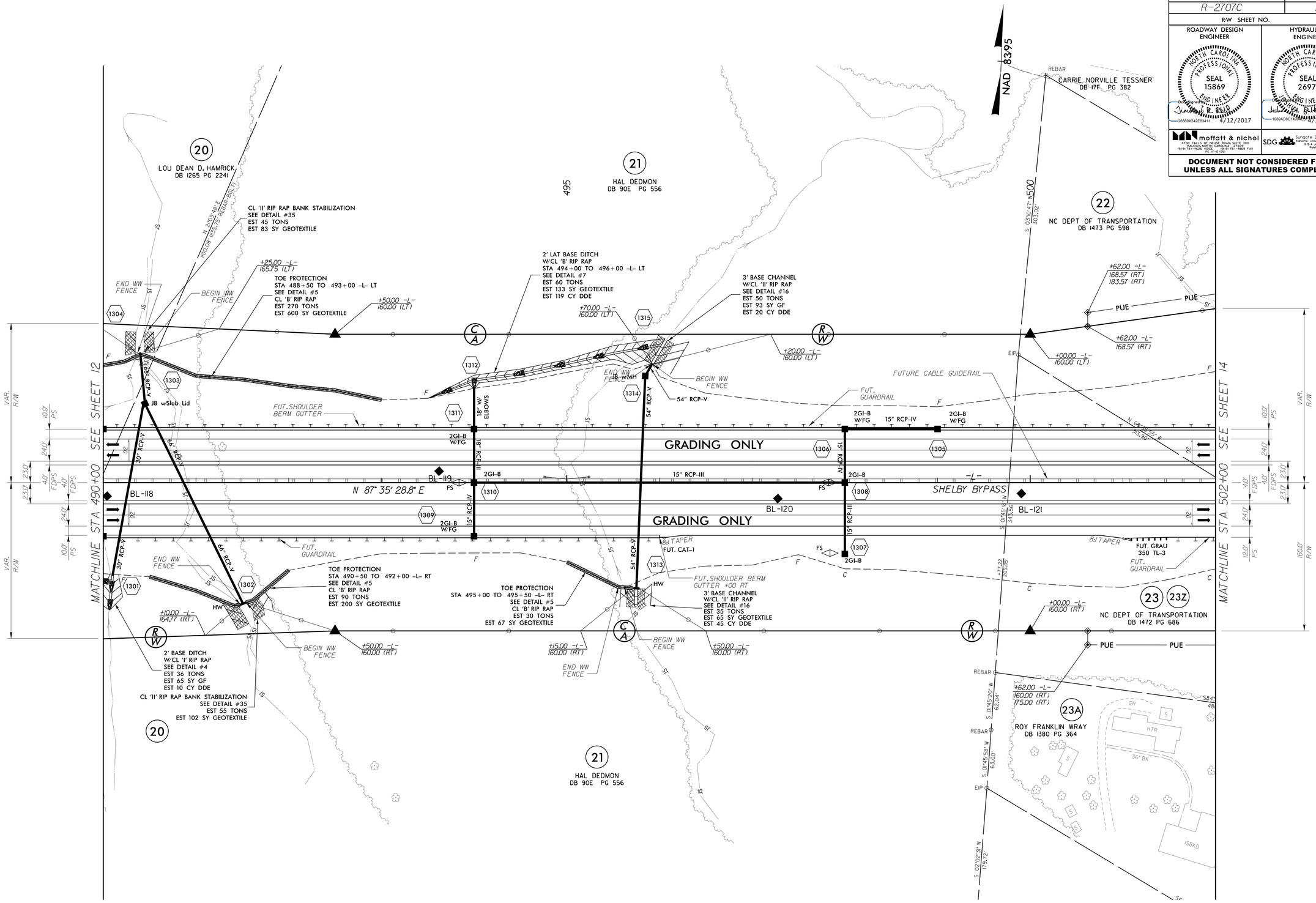
NAD 83/95
20
LOU DEAN D. HAMRICK
DB 1265 PG 2241
21
HAL DEDMON
DB 90E PG 556
22
NC DEPT OF TRANSPORTATION
DB 1473 PG 598
CARRIE NORVILLE TESSNER
DB 17F PG 382
23
23Z
NC DEPT OF TRANSPORTATION
DB 1472 PG 686
23A
ROY FRANKLIN WRAY
DB 1380 PG 364
CL 'II' RIP RAP BANK STABILIZATION
SEE DETAIL #35
EST 45 TONS
EST 83 SY GEOTEXTILE
TOE PROTECTION
STA 488+50 TO 493+00 -L- LT
SEE DETAIL #5
CL 'B' RIP RAP
EST 270 TONS
EST 600 SY GEOTEXTILE
2' LAT BASE DITCH
W/CL 'B' RIP RAP
STA 494+00 TO 496+00 -L- LT
SEE DETAIL #7
EST 60 TONS
EST 133 SY GEOTEXTILE
EST 119 CY DDE
3' BASE CHANNEL
W/CL 'II' RIP RAP
SEE DETAIL #16
EST 50 TONS
EST 93 SY GF
EST 20 CY DDE
TOE PROTECTION
STA 490+50 TO 492+00 -L- RT
SEE DETAIL #5
CL 'B' RIP RAP
EST 90 TONS
EST 200 SY GEOTEXTILE
2' BASE DITCH
W/CL 'I' RIP RAP
SEE DETAIL #4
EST 36 TONS
EST 65 SY GF
EST 10 CY DDE
CL 'II' RIP RAP BANK STABILIZATION
SEE DETAIL #35
EST 55 TONS
EST 102 SY GEOTEXTILE
TOE PROTECTION
STA 495+00 TO 495+50 -L- RT
SEE DETAIL #5
CL 'B' RIP RAP
EST 30 TONS
EST 67 SY GEOTEXTILE
3' BASE CHANNEL
W/CL 'II' RIP RAP
SEE DETAIL #16
EST 35 TONS
EST 65 SY GEOTEXTILE
EST 45 CY DDE
GRADING ONLY
GRADING ONLY
SHELBY BYPASS
N 87° 35' 28.8" E
MATCHLINE STA 490+00
MATCHLINE STA 502+00
SEE SHEET 12
SEE SHEET 14
JB w/Slab Lid
54" RCP-V
30" RCP-V
24" RCP-V
18" RCP-III
15" RCP-IV
15" RCP-III
15" RCP-IV
15" RCP-III
15" RCP-IV
15

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PROJECT REFERENCE NO.	SHEET NO.
R-2707C	14
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 15869 ENGINEER — Designed by: Jim R. Eslip — 26569A242E8341... — 4/12/2017

NORTH CAROLINA PROFESSIONAL SEAL 26971 ENGINEER — Designed by: Joshua B. Hamilton — 1089A08C1C8B4... — 4/12/2017

moffatt & nichol — 4700 FALLS OF NEUSE ROAD, SUITE 300, RALEIGH, NORTH CAROLINA 27609, (919) 781-4626 VOICE (919) 781-4865 FAX, PE 0-10-050

SDG Sungate Design Group, P.A. — Planners · Landscape Architects · Environmental — 5104 James Franklin Rd. Raleigh, N.C. 27606

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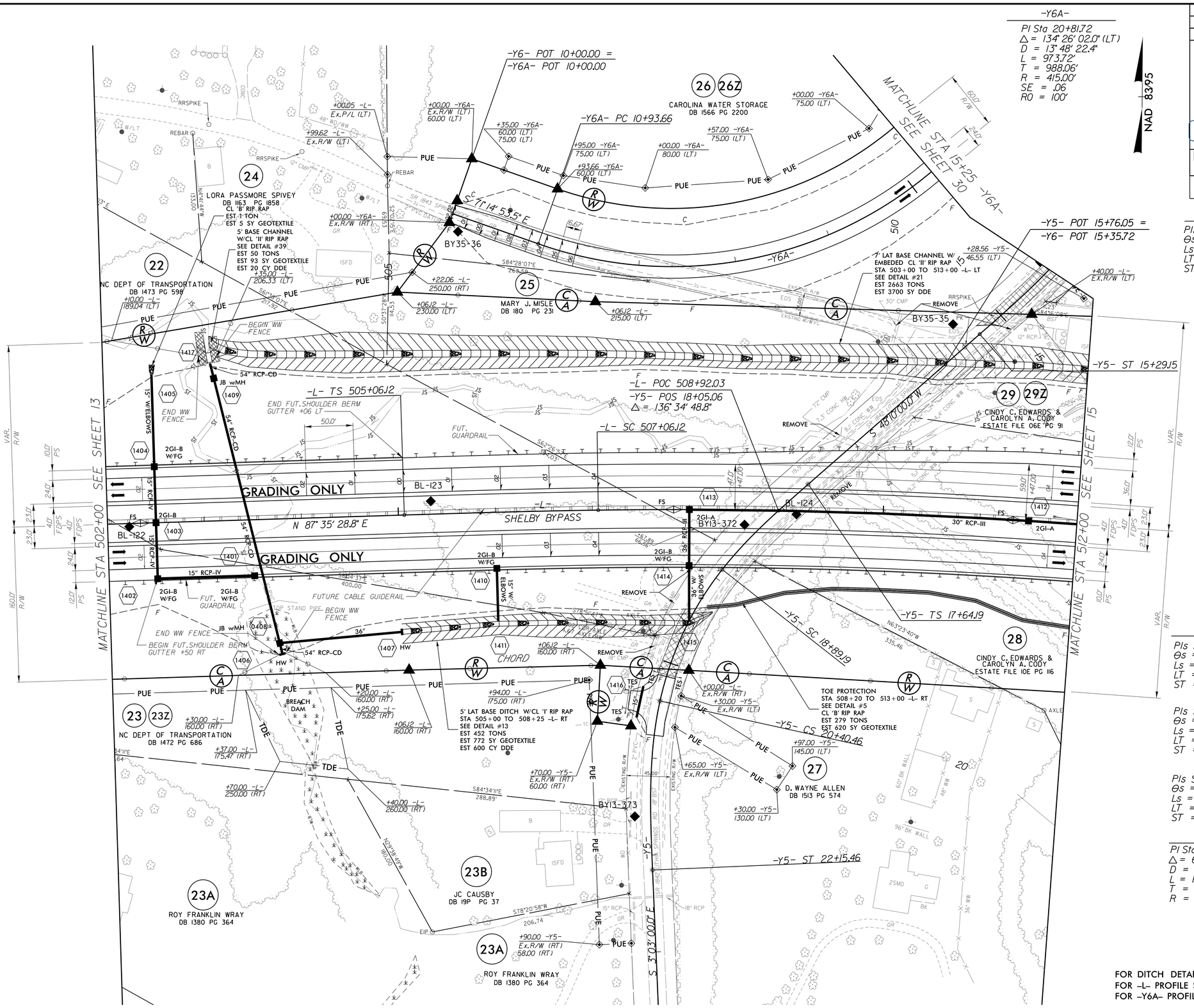

-L-

PIs Sta 506+39.45
Θs = 1° 00' 00.0"
Ls = 200.00'
LT = 133.34'
ST = 66.67'

PI Sta 520+51.16
Δ = 26° 25' 21.1" (RT)
D = 1° 00' 00.0"
L = 2,642.25'
T = 1,345.05'
R = 5,729.58'
SE = .04
RO = 200'

-Y5-

PIs Sta 13+96.72
Θs = 21° 30' 00.0"
Ls = 200.00'
LT = 134.33'
ST = 67.57'

PI Sta 14+85.71
Δ = 30° 39' 00.8" (RT)
D = 38° 11' 49.9"
L = 80.24'
T = 41.11'
R = 150.00'

PIs Sta 18+47.67
Θs = 10° 37' 30.0"
Ls = 125.00'
LT = 83.48'
ST = 41.80'

PI Sta 19+66.12
Δ = 25° 43' 00.0" (LT)
D = 17° 00' 00.0"
L = 151.27
T = 76.93'
R = 337.03'

PIs Sta 20+99.17
Θs = 14° 52' 30.0"
Ls = 175.00'
LT = 117.08'
ST = 58.71'

-Y6-

PI Sta 11+13.95
Δ = 6° 23' 59.7" (LT)
D = 5° 43' 46.5"
L = 111.70'
T = 55.91'
R = 1,000.00'

PI Sta 14+85.71
Δ = 30° 39' 00.8" (RT)
D = 38° 11' 49.9"
L = 80.24'
T = 41.11'
R = 150.00'

FOR DITCH DETAILS SEE SHEETS 2D-1 AND SHEET 2D-2
FOR -L- PROFILE SEE SHEET 48
FOR -Y6A- PROFILE SEE SHEET 58