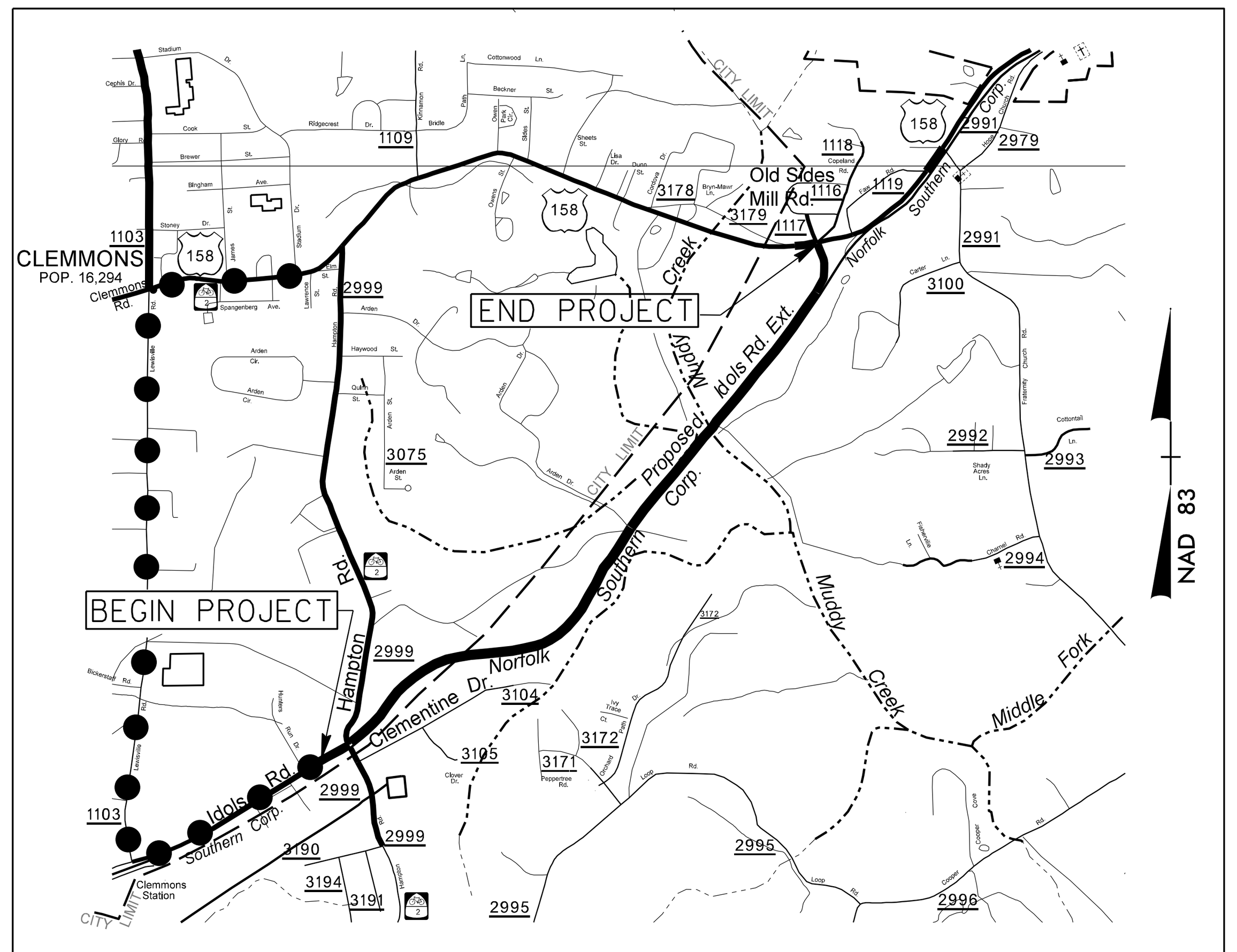
This electronic collection of documents is provided for the convenience of the user and is Not a Certified Document –

The documents contained herein were originally issued and sealed by the individuals whose names and license numbers appear on each page, on the dates appearing with their signature on that page.
This file or an individual page shall not be considered a certified document.

TIP PROJECT: U-2707

CONTRACT: C203725

SEE SHEET 1-A FOR INDEX OF SHEETS
SEE SHEET 1-B FOR CONVENTIONAL SYMBOLS



VICINITY MAP
FORSYTH COUNTY, NC

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

FORSYTH COUNTY

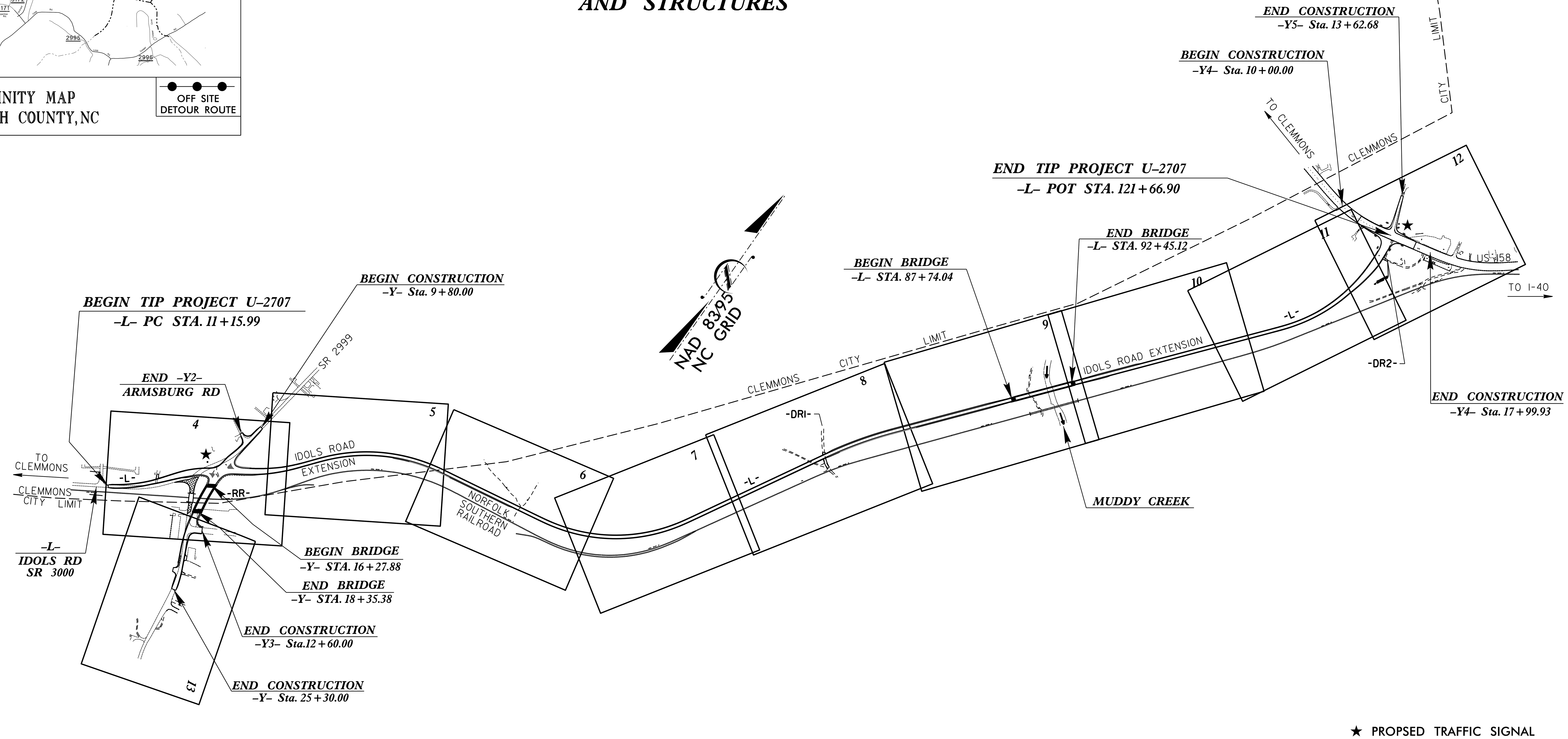
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U-2707	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
34845.1.1	STP-3000(1)	P.E.
34845.2.2	STP-3000(1)	R/W & UTIL.
34845.3.3		CONST.

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

LOCATION: CLEMMONS - SR 3000 (IDOLS ROAD), FROM SR 2999 (HAMPTON ROAD) TO US 158 (CLEMMONS ROAD)

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



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 2016 = 11,140
ADT 2036 = 17,840
K = 12 %
D = 60 %
T = 4 % *
V = 50 MPH
* TTST = 1% DUAL 3%
FUNC CLASS = URBAN COLLECTOR SUB REGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT U-2707 = 2.004 MI

LENGTH STRUCTURE TIP PROJECT U-2707 = 0.089 MI

TOTAL LENGTH TIP PROJECT U-2707 = 2.093 MI

Prepared In the Office of:

SEPI ENGINEERING & CONSTRUCTION
1025 Wade Avenue
Raleigh, NC 27605
Tel:919-789-9977
Fax:919-789-9591
License: C-2197

MULKEY ENGINEERS & CONSULTANTS

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
FEBRUARY 22, 2005

LETTING DATE:
APRIL 19, 2016

STEVE SCOTT, PE
PROJECT ENGINEER

BEN CRAWFORD, PE
PROJECT DESIGN ENGINEER

REKHA PATEL, PE
PROJECT ENGINEER
ENGINEERING COORDINATION

HYDRAULICS ENGINEER
3/8/2016
DocuSigned by: David P. Becker
SIGNATURE: P.E.
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 29984 DAVID P. BECKER

ROADWAY DESIGN ENGINEER
3/9/2016
DocuSigned by: Steve Scott
SIGNATURE: P.E.
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 22568 STEVEN L. SCOTT

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

3/8/2016
...\Roadway\Proj\U2707_Rdy_tsh.dgn
USER:mcopple

8/17/99

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-5	SURVEY CONTROL SHEETS
1C-6	CENTERLINE COORDINATE LIST
2A-1 THRU 2A-4	PAVEMENT SCHEDULE, TYPICAL SECTIONS, AND WEDGING DETAILS
2C-1	CONCRETE ENDWALL FOR SINGLE 48" RCP AND EXISTING 24" RCP
2C-2	COAL COMBUSTION PRODUCT PLACEMENT
2C-3	STRUCTURE ANCHOR UNITS
3B-1	SUMMARY OF EARTHWORK, SUMMARY OF EXISTING ASPHALT PAVEMENT REMOVAL, SHOULDER BERM GUTTER SUMMARY, AND 2'-6" CURB & GUTTER SUMMARY
3B-2	GUARDRAIL SUMMARY SHEET
3D-1 THRU 3D-3	DRAINAGE SUMMARY SHEETS
3G-1	SUMMARY OF SUBSURFACE DRAINAGE, AGGREGATE SUBGRADE/STABILIZATION, AND GEOTEXTILE FOR PAVEMENT STABILIZATION
3P-1	PARCEL INDEX SHEET
4 THRU 13	PLAN SHEETS
14 THRU 19	PROFILE SHEETS
NS-1 THRU NS-17	NATURAL STREAM DESIGN PLANS
TMP-1 THRU TMP-9	TRAFFIC MANAGEMENT PLANS
PMP-1 THRU PMP-6	PAVEMENT MARKING PLANS
EC-1 THRU EC-25A	EROSION CONTROL PLANS
RF-1 THRU RF-3	REFORESTATION PLANS
SIGN-1 THRU SIGN-14	SIGNING PLANS
SIG-1 THRU SIG-M9	SIGNAL PLANS
UC-1 THRU UC-8	UTILITIES CONSTRUCTION PLANS
UO-1 THRU UO-6	UTILITIES BY OTHERS PLANS
X-1	INDEX OF CROSS-SECTION SHEETS
X-2	CROSS-SECTION SUMMARY
X-3 THRU X-109	CROSS-SECTIONS
S1-01 THRU S1-42	STRUCTURE NO.1 PLANS
S2-01 THRU S2-44	STRUCTURE NO.2 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. 225.04 USING THE RATE OF SUPERELEVATION AND RUNOFF SHOWN ON THE PLANS. SUPERELEVATION IS TO BE REVOLVED ABOUT THE GRADE POINTS SHOWN ON THE TYPICAL SECTIONS.

SHOULDER CONSTRUCTION:

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

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 AS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER.

UNDERDRAINS:

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

STREET TURNOUT:

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

GUARDRAIL:

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

TEMPORARY SHORING:

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

SUBSURFACE PLANS:

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

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: City of Winston-Salem, Duke Energy, AT&T, Time Warner Cable

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

RIGHT-OF-WAY MARKERS:

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

CURB RAMPS:

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

PROJECT REFERENCE NO.	SHEET NO.
U-2707	1A

ROADWAY DESIGN ENGINEER
2/23/2016
NORTH CAROLINA PROFESSIONAL SEAL 22568 ENGINEER STEVEN I SCOTT
DocuSigned by: Steve Scott
D8C49FE84CFB4C8...

2012 ROADWAY ENGLISH STANDARD DRAWINGS

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

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

STD. NO. TITLE

DIVISION 2 - EARTHWORK
200.03 Method of Clearing - Method III
225.02 Guide for Grading Subgrade - Secondary and Local
225.04 Method of Obtaining Superelevation - Two Lane Pavement
225.06 Method of Grading Sight Distance at Intersections
240.01 Guide for Berm Ditch Construction

DIVISION 3 - PIPE CULVERTS
300.01 Method of Pipe Installation
310.10 Driveway Pipe Construction

DIVISION 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

DIVISION 6 - ASPHALT BASES AND PAVEMENTS
654.01 Pavement Repairs

DIVISION 8 - INCIDENTALS
806.01 Concrete Right-of-Way Marker
806.02 Granite Right-of-Way Marker
815.03 Pipe Underdrain and Blind 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
838.45 Notes for Reinforced Concrete Endwall - Std. Dwg 838.21 thru 838.40
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
840.22 Frames and Wide 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
840.45 Precast Drainage Structure
840.66 Drainage Structure Steps
840.71 Concrete and Brick Pipe Plug
840.72 Pipe Collar
846.01 Concrete Curb, Gutter and Curb & Gutter
848.04 Street Turnout
848.05 Curb Ramp - Proposed Curb & Gutter
850.01 Concrete Paved Ditches
850.10 Guide for Berm Drainage Outlet - 15" and 18" Pipe
852.01 Concrete Islands
852.06 Method for Placement of Drop Inlets in Concrete Islands
862.01 Guardrail Placement
862.02 Guardrail Installation
876.01 Rip Rap in Channels
876.02 Guide for Rip Rap at Pipe Outlets
876.04 Drainage Ditches with Class 'B' Rip Rap

2/22/2016
U-2707_Rdy_psh_1A.dgn
USER:mlcopple

04/06/15

PROJECT REFERENCE NO.	SHEET NO.
U-2707	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
- 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
- Potential Contamination Area: Soil
- Known Contamination Area: Water
- Potential Contamination Area: Water
- 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:

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

ROADS AND RELATED FEATURES:

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

VEGETATION:

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

EXISTING STRUCTURES:

MAJOR:

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

MINOR:

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

UTILITIES:

POWER:

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

TELEPHONE:

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

WATER:

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

TV:

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

GAS:

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

SANITARY SEWER:

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

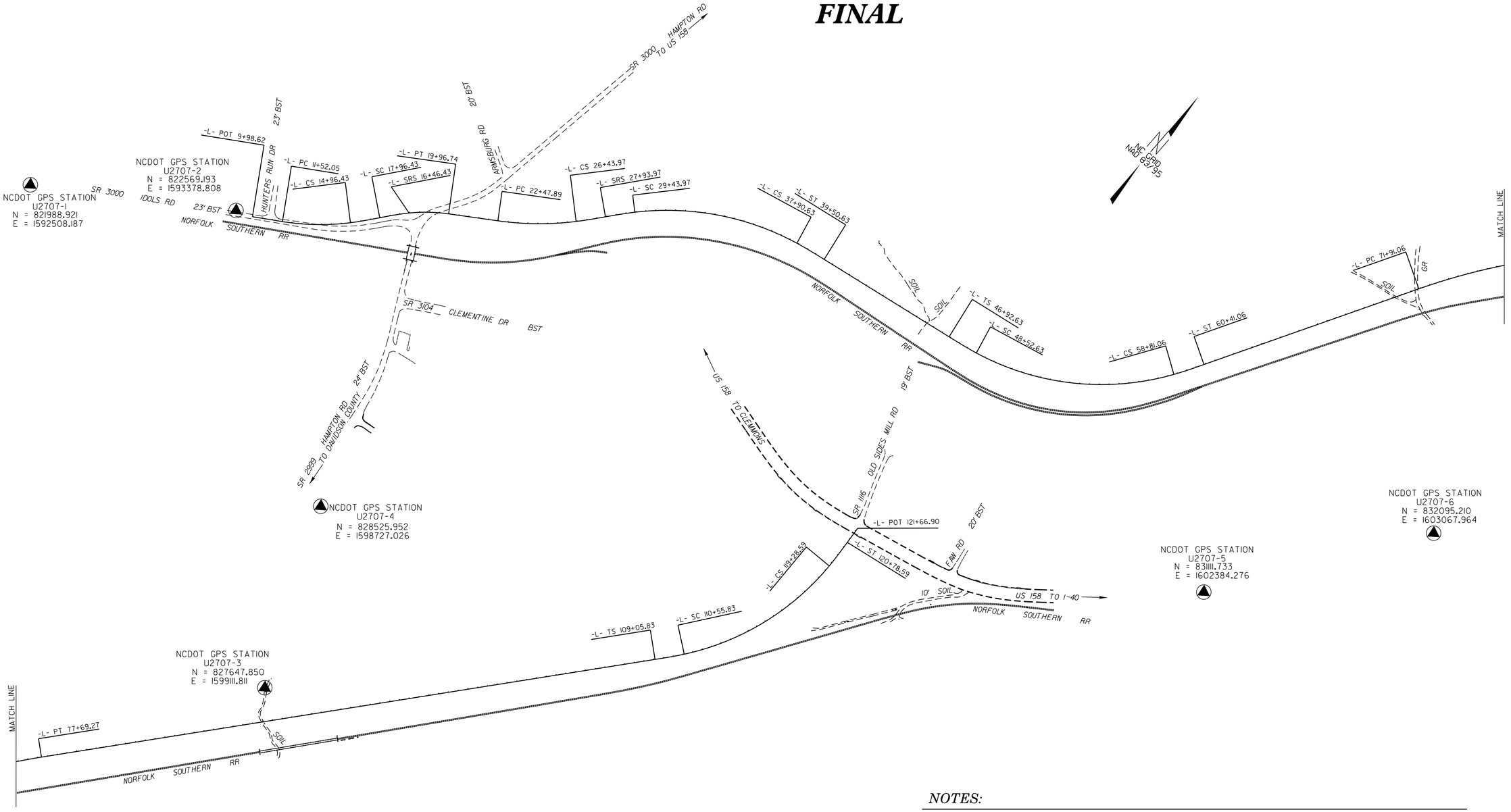
MISCELLANEOUS:

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

6/2/99

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

SURVEY CONTROL SHEET U-2707
FINAL



DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "U2707-1" WITH HARN-NAD 1983/95 STATE PLANE GRID COORDINATES OF NORTHING: 821988.921(ft) EASTING: 1592508.187(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99992463
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "U2707-1" TO -L- STATION 9+98.62 IS N 57°22'10.75" E 1132.65'
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

NOTES:

THE CONTROL DATA FOR THIS PROJECT CAN BE FOUND ELECTRONICALLY BY SELECTING PROJECT CONTROL DATA AT:

HTTP:\WWW.DOH.DOT.STATE.NC.US/PRECONSTRUCT/HIGHWAY/LOCATION/PROJECT

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

▲ INDICATES GEODETIC CONTROL MONUMENTS USED OR SET FOR HORIZONTAL PROJECT CONTROL BY THE NCDOT LOCATION AND SURVEYS UNIT.

PROJECT CONTROL ESTABLISHED USING GLOBAL POSITIONING SYSTEM.

SEE GPS COORDINATE SHEET FOR HORIZONTAL AND VERTICAL COORDINATE VALUES.

NOTE: DRAWING NOT TO SCALE

04-FEB-2016 14:18
K:\Projects\U-2707\Ls\u2707_Ls_lc-1.dgn
$$$$USERNAME$$$$

6/2/99

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

SURVEY CONTROL SHEET U-2707
FINAL

BL

POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
BL1	U2707-1	821988.9210	1592508.1870	802.26	OUTSIDE PROJECT LIMITS	
BL2	U2707-2	822569.1930	1593378.8080	814.31	OUTSIDE PROJECT LIMITS	
BL10	BL-10	823025.2220	1594138.6930	821.68	17+79.79	137.96 RT
BL11	BL-11	823481.6760	1594594.4000	814.31	24+43.46	37.19 RT
BL12	BL-12	823800.5770	1594851.1460	784.73	28+47.68	7.67 RT
BL13	BL-13	824159.6330	1595262.7900	779.62	33+98.34	2.04 LT
BL14	BL-14	824333.0610	1595735.0070	770.45	39+00.56	18.20 LT
BL15	BL-15	824394.3720	1596234.3850	768.74	44+03.27	0.40 LT
BL16	BL-16	824424.6320	1596456.8630	771.40	46+27.74	4.58 RT
BL17	BL-17	824579.0450	1597006.3360	761.28	51+99.62	7.32 RT
BL18	BL-18	824844.3420	1597337.6370	757.38	56+25.77	8.42 LT
BL19	BL-19	825205.5740	1597599.7920	752.39	60+75.15	2.93 LT
BL20	BL-20	825724.8000	1597914.8570	728.16	66+82.30	12.57 RT
BL21	BL-21	826129.3100	1598147.0520	724.91	71+48.71	13.14 RT
BL22	BL-22	826604.1110	1598354.3250	693.10	76+54.24	77.11 LT
BL23	BL-23	827158.2660	1598996.7150	688.91	84+89.25	58.86 RT
BL24	BL-24	827576.7880	1599301.6170	698.79	90+05.76	22.15 RT
BL25	BL-25	827882.2340	1599576.4780	705.52	94+16.45	35.36 RT
BL26	BL-26	828334.2680	1599962.9410	728.28	100+11.16	39.40 RT
BL27	BL-27	828687.5920	1600250.2620	742.78	104+66.49	31.28 RT
BL28	BL-28	829163.1170	1600634.0590	751.32	110+75.91	22.34 RT
BL29	BL-29	829678.1770	1600838.1630	758.07	116+29.02	0.69 LT
BL30	BL-30	830169.5320	1600859.9890	750.99	121+22.48	5.29 RT

BY1

POINT	DESC.	NORTH	EAST	ELEVATION	Y STATION	OFFSET
BY1-31	BY1-31	824353.2460	1594402.2310	811.25	OUTSIDE PROJECT LIMITS	
BY1-32	BY1-32	823561.5260	1594314.2890	815.31	11+99.77	17.80 LT
BL-10	BL-10	823025.2220	1594138.6930	821.68	17+26.65	130.43 RT
BY1-33	BY1-33	822249.9980	1594531.4390	829.60	25+60.72	23.78 LT
BY1-34	BY1-34	821581.4540	1594613.4780	831.37	OUTSIDE PROJECT LIMITS	

BY2

POINT	DESC.	NORTH	EAST	ELEVATION	Y4 STATION	OFFSET
BY2-35	BY2-35	830224.8010	1600061.8290	734.81	OUTSIDE PROJECT LIMITS	
BL-30	BL-30	830169.5320	1600859.9890	750.99	14+58.61	44.73 RT
BY2-36	BY2-36	830419.2870	1601646.2560	773.17	OUTSIDE PROJECT LIMITS	
U2707-5	U2707-5	831111.7330	1602384.2760	797.79	OUTSIDE PROJECT LIMITS	
U2707-6	U2707-6	832095.2100	1603067.9640	784.84	OUTSIDE PROJECT LIMITS	

****
BM-1 ELEVATION = 815.54'
R/R SPIKE IN BASE OF 18" RED OAK
N 822514 E 1593556
L STATION 10+34 122 RIGHT
****

****
BM-2 ELEVATION = 809.75'
R/R SPIKE IN BASE OF 24" WHITE OAK
N 823666 E 1594534
L STATION 25+24 141 LEFT
****

****
BM-3 ELEVATION = 811.83'
R/R SPIKE IN BASE OF 18" WHITE OAK
N 824600 E 1594553
Y STATION 9+80
N 15° 10' 58.9" E DIST 848.22
****

****
BM-4 ELEVATION = 781.34'
R/R SPIKE IN BASE OF 24" WHITE OAK
N 824513 E 1595716
L STATION 39+11 199 LEFT
****

****
BM-5 ELEVATION = 718.74'
R/R SPIKE IN BASE OF 18" FORKED OAK
N 824827 E 1597748
L STATION 58+47 321 RIGHT
****

****
BM-6 ELEVATION = 715.26'
R/R SPIKE IN BASE OF 44" OAK
N 826844 E 1597862
L STATION 75+58 614 LEFT
****

****
BM-7 ELEVATION = 693.90'
R/R SPIKE IN BASE OF 18" ELM
N 827892 E 1599239
L STATION 92+06 229 LEFT
****

****
BM-8 ELEVATION = 751.53'
R/R SPIKE IN BASE OF 24" BEECH
N 829540 E 1600304
L STATION 112+47 459 LEFT
****

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "U2707-1" WITH HARN-NAD 1983/95 STATE PLANE GRID COORDINATES OF NORTHING: 821988.921(ft) EASTING: 1592508.187(ft) THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99992463 THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "U2707-1" TO -L- STATION 9+98.62 IS N 57°22'10.75" E 1132.65' ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES VERTICAL DATUM USED IS NAVD 88

NOTES:

THE CONTROL DATA FOR THIS PROJECT CAN BE FOUND ELECTRONICALLY BY SELECTING PROJECT CONTROL DATA AT:

HTTP:\WWW.DOH.DOT.STATE.NC.US/PRECONSTRUCT/HIGHWAY/LOCATION/PROJECT

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

▲ *INDICATES GEODETIC CONTROL MONUMENTS USED OR SET FOR HORIZONTAL PROJECT CONTROL BY THE NCDOT LOCATION AND SURVEYS UNIT.*

PROJECT CONTROL ESTABLISHED USING GLOBAL POSITIONING SYSTEM.

SEE GPS CALIBRATION SHEET FOR HORIZONTAL AND VERTICAL COORDINATE VALUES.

NOTE: DRAWING NOT TO SCALE

04-FEB-2016 14:19
C:\Projects\U-2707_Ls\U-2707_Ls_lc-2.dgn
$$$$USERNAME$$$$

6/2/99

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

SURVEY CONTROL SHEET U-2707
FINAL

L

TYPE	STATION	NORTH	EAST
POT	9+98.62	822599.6623	1593462.0630
PC	11+52.05	822680.1241	1593592.7055
CS	14+96.43	822900.0404	1593856.1884
SRS	16+46.43	823015.6956	1593951.6664
SC	17+96.43	823130.4554	1594048.1758
PT	19+96.74	823257.9245	1594202.0748
PC	22+47.89	823393.8295	1594413.2719
CS	26+43.97	823649.4017	1594714.3575
SRS	27+93.97	823763.9588	1594811.1649
SC	29+43.97	823878.3666	1594908.1438
CS	37+90.63	824294.9138	1595629.9201
ST	39+50.63	824323.0435	1595787.4035
TS	46+92.63	824439.3250	1596520.2354
SC	48+52.63	824467.5577	1596677.6987
CS	58+81.06	825037.3140	1597503.1560
ST	60+41.06	825174.5311	1597585.3948
PC	71+91.06	826172.5919	1598156.6869
PT	77+69.27	826645.8003	1598487.5794
TS	109+05.83	829043.6247	1600509.5754
SC	110+55.83	829160.0966	1600604.0624
CS	119+28.59	829975.6355	1600866.8225
ST	120+78.59	830125.3601	1600858.1018
POT	121+66.90	830213.4110	1600851.2916

Y

TYPE	STATION	NORTH	EAST
POT	9+80.00	823781.3919	1594330.8493
PC	13+32.26	823433.4110	1594276.1168
PT	18+32.49	822935.7231	1594284.3225
PC	19+39.58	822830.5373	1594304.4406
PT	21+63.42	822617.6428	1594371.8839
PC	23+24.93	822470.4810	1594438.4161
PT	26+27.78	822179.4556	1594517.4597

Y2

TYPE	STATION	NORTH	EAST
POT	10+00.00	823669.2773	1594164.0058
POT	11+57.55	823591.4004	1594300.9663

Y3

TYPE	STATION	NORTH	EAST
POT	10+00.00	822767.2017	1594318.8146
POT	12+90.56	822908.8670	1594572.4995

Y4

TYPE	STATION	NORTH	EAST
PC	10+00.00	830182.3292	1600395.9791
CS	12+27.70	830176.0367	1600623.1218
ST	14+77.70	830217.2270	1600869.5360
POT	17+99.93	830283.2865	1601184.9203

Y5

TYPE	STATION	NORTH	EAST
POT	10+00.00	830213.4100	1600851.2917
POT	13+62.68	830556.1287	1600732.6147

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "U2707-1" WITH HARN-NAD 1983/95 STATE PLANE GRID COORDINATES OF NORTHING: 821988.921(ft) EASTING: 1592508.187(ft) THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99992463 THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "U2707-1" TO -L- STATION 9+98.62 IS N 57°22'10.75" E 1132.65' ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES VERTICAL DATUM USED IS NAVD 88

NOTES:

THE CONTROL DATA FOR THIS PROJECT CAN BE FOUND ELECTRONICALLY BY SELECTING PROJECT CONTROL DATA AT:

HTTP:\WWW.DOH.DOT.STATE.NC.US/PRECONSTRUCT/HIGHWAY/LOCATION/PROJECT

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

INDICATES GEODETIC CONTROL MONUMENTS USED OR SET FOR HORIZONTAL PROJECT CONTROL BY THE NCDOT LOCATION AND SURVEYS UNIT.

PROJECT CONTROL ESTABLISHED USING GLOBAL POSITIONING SYSTEM.

SEE GPS CALIBRATION SHEET FOR HORIZONTAL AND VERTICAL COORDINATE VALUES.

NOTE: DRAWING NOT TO SCALE

04-FEB-2016 14:20
R:\Projects\NAVFILE\U2707_Ls_1c-3.dgn
$$$$USERNAME$$$$

6/2/99

PROJECT REFERENCE NO.	SHEET NO.
U-2707	1C-4
Location and Surveys	

SURVEY CONTROL SHEET U-2707 FINAL

ROW MARKER CONCRETE OR GRANITE

ALIGN	STATION	OFFSET	NORTH	EAST
L	11+15.99	-30.30	822687.0131	1593546.1119
L	12+25.00	-50.00	822761.1452	1593624.8604
L	14+08.47	-50.00	822872.8555	1593760.4156
L	15+44.33	-53.17	822970.4166	1593846.8249
L	16+11.80	-172.04	823095.7500	1593795.5850
L	16+53.05	-56.69	823056.0700	1593911.3218
L	17+96.43	-65.00	823175.1933	1594001.0215
L	18+08.67	-65.00	823184.7000	1594010.1745
L	19+85.58	-65.00	823306.0061	1594156.8255
L	23+73.53	-110.00	823553.3595	1594448.9020
L	26+43.97	-110.00	823723.1625	1594632.7526
L	29+43.97	-110.00	823952.4975	1594826.8750
L	37+90.63	-110.00	824402.3684	1595606.3934
L	39+50.63	-110.00	824431.6839	1595770.1625
L	46+92.63	-110.00	824547.9655	1596502.9944
L	48+52.63	-110.00	824574.9653	1596653.9582
L	58+81.06	-110.00	825097.5994	1597411.1469
L	60+41.06	-110.00	825229.1766	1597489.9282
L	72+05.48	-110.03	826240.1807	1598068.6332
L	72+26.26	-110.00	826258.7367	1598079.4813
L	72+54.87	-517.18	826493.4728	1597745.2987
L	74+92.89	-365.64	826637.8101	1598019.9379
L	77+69.27	-110.00	826716.7122	1598403.4872
L	77+81.21	-291.58	826842.8977	1598272.3722
L	82+18.49	-252.37	827151.9077	1598584.2405
L	84+68.25	-253.49	827343.5656	1598744.3932
L	88+36.22	-267.53	827633.9265	1598970.8707
L	89+51.75	-110.00	827620.6871	1599165.7757
L	109+05.83	-110.00	829114.5365	1600425.4833
L	110+55.83	-110.00	829226.0997	1600516.0647
L	116+78.87	175.00	829697.4270	1601020.6727
L	117+04.47	109.90	829735.8065	1600960.9342
L	117+57.90	90.00	829795.3960	1600948.6533
L	119+28.59	90.00	829977.4495	1600956.8043
L	119+28.59	-110.00	829973.4186	1600756.8448
L	120+78.59	90.00	830132.3052	1600947.8334
L	120+78.59	-110.00	830116.8825	1600748.4290

ROW MARKER PERMANENT EASEMENT-E

ALIGN	STATION	OFFSET	NORTH	EAST
L	18+99.90	-65.00	823251.1432	1594082.5926
L	78+46.67	-296.40	826896.0474	1598310.8865
L	82+19.30	-282.37	827171.8693	1598561.8292
L	84+67.61	-283.49	827362.4181	1598721.0469
L	88+43.05	-297.82	827658.6705	1598952.1206
L	89+42.72	-211.82	827679.4235	1599082.1132
L	89+57.24	-238.08	827707.4525	1599071.3990
L	120+72.27	-110.12	830110.5832	1600748.7956

ROW MARKER CONCRETE OR GRANITE

ALIGN	STATION	OFFSET	NORTH	EAST
Y	9+80.00	60.00	823790.7144	1594271.5779
Y	9+80.00	30.01	823786.0547	1594301.2037
Y	9+80.00	-29.99	823776.7321	1594360.4750
Y	9+80.00	-60.00	823772.0693	1594390.1206
Y	10+69.15	-60.00	823684.0020	1594376.2688
Y	10+85.00	60.00	823686.9895	1594255.2635
Y	12+30.00	50.00	823542.1968	1594242.6126
Y	17+56.38	-75.12	823021.0416	1594346.4139
Y	18+80.00	-65.00	822901.2711	1594357.0901
Y	19+94.91	50.00	822764.2940	1594267.9303
Y	20+53.00	-51.00	822736.1537	1594380.9322
Y	21+63.42	50.00	822597.0450	1594326.3238
Y	22+00.00	-35.77	822599.0496	1594419.5458
Y	23+24.93	50.00	822449.8794	1594392.8576
Y	25+20.00	30.55	822279.1086	1594470.2102
Y	25+20.00	50.00	822274.8781	1594451.2258

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "U2707-1" WITH HARN-NAD 1983/95 STATE PLANE GRID COORDINATES OF NORTHING: 821988.921(ft) EASTING: 1592508.187(ft) THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99992463 THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "U2707-1" TO -L- STATION 9+98.62 IS N 57°22'10.75" E 1132.65' ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES VERTICAL DATUM USED IS NAVD 88

NOTES:

THE CONTROL DATA FOR THIS PROJECT CAN BE FOUND ELECTRONICALLY BY SELECTING PROJECT CONTROL DATA AT:

HTTP:\WWW.DOH.DOT.STATE.NC.US/PRECONSTRUCT/HIGHWAY/LOCATION/PROJECT

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

INDICATES GEODETIC CONTROL MONUMENTS USED OR SET FOR HORIZONTAL PROJECT CONTROL BY THE NCDOT LOCATION AND SURVEYS UNIT.

PROJECT CONTROL ESTABLISHED USING GLOBAL POSITIONING SYSTEM.

SEE GPS CALIBRATION SHEET FOR HORIZONTAL AND VERTICAL COORDINATE VALUES.

NOTE: DRAWING NOT TO SCALE

04-FEB-2016 14:21
R:\Roadway\U2707_Ls_lc-4.dgn
$$$$USERNAME$$$$

6/2/99

PROJECT REFERENCE NO.	SHEET NO.
U-2707	1C-5
Location and Surveys	

SURVEY CONTROL SHEET U-2707 FINAL

ROW MARKER PERMANENT EASEMENT-E

ALIGN	STATION	OFFSET	NORTH	EAST
Y	11+96.51	70.10	823578.4031	1594227.9602
Y	13+73.84	92.70	823404.0196	1594178.2964
Y	16+36.23	-263.29	823144.5065	1594523.5032
Y	17+80.51	-83.70	822999.7102	1594358.1952
Y	18+47.28	155.62	822891.9634	1594134.2513
Y	18+67.40	105.51	822881.6152	1594187.2488
Y	19+12.36	-87.69	822873.7497	1594385.4552
Y	21+43.35	59.71	822612.5766	1594308.8930
Y	21+45.19	-72.36	822662.8663	1594431.0272
Y	21+45.61	-82.10	822666.3551	1594440.1291
Y	21+54.56	-81.73	822658.7088	1594443.0540
Y	21+54.20	-71.63	822654.9387	1594433.6782
Y	22+62.32	-36.92	822542.7371	1594446.2668
Y	22+73.95	-73.80	822547.3328	1594484.6630
Y	23+83.28	66.10	822393.1222	1594399.0193
Y	23+90.49	61.85	822388.3221	1594405.3627
Y	23+93.50	81.24	822378.9897	1594388.1399
Y	23+99.93	50.00	822384.0485	1594419.5431
Y	24+00.82	76.98	822374.1378	1594394.4356

ROW MARKER CONCRETE OR GRANITE

ALIGN	STATION	OFFSET	NORTH	EAST
Y2	10+55.00	-34.65	823672.2125	1594228.9442
Y2	10+60.00	15.64	823626.2802	1594208.5785

ROW MARKER CONCRETE OR GRANITE

ALIGN	STATION	OFFSET	NORTH	EAST
Y3	11+15.00	-44.30	822861.9485	1594397.6213
Y3	11+15.00	35.75	822792.0577	1594436.6505

ROW MARKER PERMANENT EASEMENT-E

ALIGN	STATION	OFFSET	NORTH	EAST
Y3	10+78.05	46.29	822764.8467	1594409.5298

ROW MARKER CONCRETE OR GRANITE

ALIGN	STATION	OFFSET	NORTH	EAST
Y4	10+87.00	45.33	830128.6709	1600480.0991
Y4	11+78.14	66.00	830107.1246	1600575.9839
Y4	13+05.00	-45.57	830230.2000	1600693.1503
Y4	15+90.00	45.05	830196.1558	1600988.6841
Y4	16+80.00	-45.11	830302.8516	1601058.2890

ROW MARKER PERMANENT EASEMENT-E

ALIGN	STATION	OFFSET	NORTH	EAST
Y4	11+45.54	57.52	830114.9330	1600541.2538
Y4	11+46.80	78.55	830093.9085	1600542.6818

ROW MARKER CONCRETE OR GRANITE

ALIGN	STATION	OFFSET	NORTH	EAST
Y5	11+35.00	35.00	830352.4307	1600840.1905
Y5	11+40.00	-55.00	830327.7058	1600753.5090
Y5	12+90.00	-55.00	830469.4482	1600704.4263
Y5	13+50.00	24.65	830552.2080	1600760.0584
Y5	13+50.00	-25.38	830535.8373	1600712.7826

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "U2707-1" WITH HARN-NAD 1983/95 STATE PLANE GRID COORDINATES OF NORTHING: 821988.921(ft) EASTING: 1592508.187(ft) THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99992463 THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "U2707-1" TO -L- STATION 9+98.62 IS N 57°22'10.75" E 113.265' ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES VERTICAL DATUM USED IS NAVD 88

NOTES:

THE CONTROL DATA FOR THIS PROJECT CAN BE FOUND ELECTRONICALLY BY SELECTING PROJECT CONTROL DATA AT:

HTTP:\WWW.DOH.DOT.STATE.NC.US/PRECONSTRUCT/HIGHWAY/LOCATION/PROJECT

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

▲ *INDICATES GEODETIC CONTROL MONUMENTS USED OR SET FOR HORIZONTAL PROJECT CONTROL BY THE NCDOT LOCATION AND SURVEYS UNIT.*

PROJECT CONTROL ESTABLISHED USING GLOBAL POSITIONING SYSTEM.

SEE GPS CALIBRATION SHEET FOR HORIZONTAL AND VERTICAL COORDINATE VALUES.

NOTE: DRAWING NOT TO SCALE

04-FEB-2016 14:22
R:\Projects\U-2707\U2707_ls_lc-5.dgn
$$$$USERNAME$$$$

PROJ. REFERENCE NO.	SHEET NO.
U-2707	1C-6

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CENTERLINE COORDINATE LIST

Point #	Chain	Station	Northing (Y)	Easting (X)
1	L	11+00.00	822652.8284	1593548.3866
2	L	11+50.00	822679.0489	1593590.9599
3	L	12+00.00	822706.0784	1593633.0199
4	L	12+50.00	822734.8349	1593673.9186
5	L	13+00.00	822765.2701	1593713.5839
6	L	13+50.00	822797.3312	1593751.9470
7	L	14+00.00	822830.9624	1593788.9413
8	L	14+50.00	822866.1054	1593824.5027
9	L	15+00.00	822902.6991	1593858.5693
10	L	15+50.00	822940.5884	1593891.1908
11	L	16+00.00	822979.3391	1593922.7867
12	L	16+50.00	823018.4946	1593953.8808
13	L	17+00.00	823057.5803	1593985.0621
14	L	17+50.00	823095.9890	1594017.0710
15	L	18+00.00	823133.0393	1594050.6377
16	L	18+50.00	823168.1081	1594086.2668
17	L	19+00.00	823200.9818	1594123.9308
18	L	19+50.00	823231.5426	1594163.4945
19	L	20+00.00	823259.6864	1594204.8128
20	L	20+50.00	823286.7433	1594246.8594
21	L	21+00.00	823313.8003	1594288.9061
22	L	21+50.00	823340.8573	1594330.9527
23	L	22+00.00	823367.9142	1594372.9994
24	L	22+50.00	823394.9724	1594415.0452
25	L	23+00.00	823422.7835	1594456.5941
26	L	23+50.00	823451.9639	1594497.1930
27	L	24+00.00	823482.4812	1594536.7969
28	L	24+50.00	823514.3013	1594575.3618
29	L	25+00.00	823547.3890	1594612.8447
30	L	25+50.00	823581.7076	1594649.2041
31	L	26+00.00	823617.2188	1594684.3995
32	L	26+50.00	823653.8832	1594718.3921
33	L	27+00.00	823691.5755	1594751.2425
34	L	27+50.00	823729.9462	1594783.2993
35	L	28+00.00	823768.6287	1594814.9799
36	L	28+50.00	823807.2611	1594846.7214
37	L	29+00.00	823845.4583	1594878.9843
38	L	29+50.00	823882.8128	1594912.2173
39	L	30+00.00	823918.9814	1594946.7362
40	L	30+50.00	823953.8711	1594982.5473
41	L	31+00.00	823987.4359	1595019.6031
42	L	31+50.00	824019.6312	1595057.8546
43	L	32+00.00	824050.4146	1595097.2514
44	L	32+50.00	824079.7454	1595137.7413
45	L	33+00.00	824107.5848	1595179.2707
46	L	33+50.00	824133.8959	1595221.7848
47	L	34+00.00	824158.6440	1595265.2274
48	L	34+50.00	824181.7963	1595309.5410
49	L	35+00.00	824203.3223	1595354.6670
50	L	35+50.00	824223.1935	1595400.5457
51	L	36+00.00	824241.3836	1595447.1166
52	L	36+50.00	824257.8686	1595494.3180
53	L	37+00.00	824272.6266	1595542.0875
54	L	37+50.00	824285.6382	1595590.3619
55	L	38+00.00	824296.8867	1595639.0774
56	L	38+50.00	824306.5113	1595688.1406
57	L	39+00.00	824315.0116	1595737.4121
58	L	39+50.00	824322.9443	1595786.7787
59	L	40+00.00	824330.7800	1595836.1610
60	L	40+50.00	824338.6157	1595885.5432
61	L	41+00.00	824346.4514	1595934.9254
62	L	41+50.00	824354.2871	1595984.3076
63	L	42+00.00	824362.1228	1596033.6898
64	L	42+50.00	824369.9584	1596083.0720
65	L	43+00.00	824377.7941	1596132.4542
66	L	43+50.00	824385.6298	1596181.8364
67	L	44+00.00	824393.4655	1596231.2186
68	L	44+50.00	824401.3012	1596280.6008
69	L	45+00.00	824409.1369	1596329.9830
70	L	45+50.00	824416.9725	1596379.3652
71	L	46+00.00	824424.8082	1596428.7474
72	L	46+50.00	824432.6439	1596478.1296
73	L	47+00.00	824440.4799	1596527.5118
74	L	47+50.00	824448.4613	1596576.8705
75	L	48+00.00	824457.1071	1596626.1165
76	L	48+50.00	824466.9921	1596675.1276
77	L	49+00.00	824478.6010	1596723.7582
78	L	49+50.00	824492.0295	1596771.9182
79	L	50+00.00	824507.2586	1596819.5394
80	L	50+50.00	824524.2668	1596866.5546
81	L	51+00.00	824543.0300	1596912.8973
82	L	51+50.00	824563.5218	1596958.5020
83	L	52+00.00	824585.7132	1597003.3044
84	L	52+50.00	824609.5727	1597047.2410
85	L	53+00.00	824635.0668	1597090.2498
86	L	53+50.00	824662.1594	1597132.2700
87	L	54+00.00	824690.8121	1597173.2422
88	L	54+50.00	824720.9846	1597213.1086
89	L	55+00.00	824752.6341	1597251.8128
90	L	55+50.00	824785.7160	1597289.3001
91	L	56+00.00	824820.1834	1597325.5175
92	L	56+50.00	824855.9878	1597360.4138
93	L	57+00.00	824893.0784	1597393.9398
94	L	57+50.00	824931.4029	1597426.0481
95	L	58+00.00	824970.9071	1597456.6932
96	L	58+50.00	825011.5352	1597485.8319
97	L	59+00.00	825053.2269	1597513.4275
98	L	59+50.00	825095.7989	1597539.6470
99	L	60+00.00	825138.9231	1597564.9503
100	L	60+50.00	825182.2901	1597589.8361
101	L	61+00.00	825225.6840	1597614.6748
102	L	61+50.00	825269.0780	1597639.5136
103	L	62+00.00	825312.4719	1597664.3524
104	L	62+50.00	825355.8659	1597689.1912
105	L	63+00.00	825399.2598	1597714.0300
106	L	63+50.00	825442.6538	1597738.8688
107	L	64+00.00	825486.0477	1597763.7076
108	L	64+50.00	825529.4417	1597788.5463
109	L	65+00.00	825572.8356	1597813.3851
110	L	65+50.00	825616.2295	1597838.2239
111	L	66+00.00	825659.6235	1597863.0627
112	L	66+50.00	825703.0174	1597887.9015
113	L	67+00.00	825746.4114	1597912.7403
114	L	67+50.00	825789.8053	1597937.5791
115	L	68+00.00	825833.1993	1597962.4178
116	L	68+50.00	825876.5932	1597987.2566
117	L	69+00.00	825919.9872	1598012.0954
118	L	69+50.00	825963.3811	1598036.9342
119	L	70+00.00	826006.7751	1598061.7730
120	L	70+50.00	826050.1690	1598086.6118
121	L	71+00.00	826093.5630	1598111.4505
122	L	71+50.00	826136.9569	1598136.2893
123	L	72+00.00	826180.3447	1598161.1390
124	L	72+50.00	826223.4723	1598186.4363
125	L	73+00.00	826266.1994	1598212.4044
126	L	73+50.00	826308.5156	1598239.0370
127	L	74+00.00	826350.4104	1598266.3274
128	L	74+50.00	826391.8738	1598294.2691
129	L	75+00.00	826432.8955	1598322.8553
130	L	75+50.00	826473.4656	1598352.0788
131	L	76+00.00	826513.5741	1598381.9327
132	L	76+50.00	826553.2113	1598412.4097
133	L	77+00.00	826592.3675	1598443.5022
134	L	77+50.00	826631.0331	1598475.2027
135	L	78+00.00	826669.2941	1598507.3909
136	L	78+50.00	826707.5179	1598539.6236
137	L	79+00.00	826745.7416	1598571.8562
138	L	79+50.00	826783.9654	1598604.0889
139	L	80+00.00	826822.1891	1598636.3216
140	L	80+50.00	826860.4129	1598668.5542
141	L	81+00.00	826898.6366	1598700.7869
142	L	81+50.00	826936.8604	1598733.0196
143	L	82+00.00	826975.0841	1598765.2522
144	L	82+50.00	827013.3079	1598797.4849
145	L	83+00.00	827051.5317	1598829.7176
146	L	83+50.00	827089.7554	1598861.9502
147	L	84+00.00	827127.9792	1598894.1829
148	L	84+50.00	827166.2029	1598926.4156
149	L	85+00.00	827204.4267	1598958.6482
150	L	85+50.00	827242.6504	1598990.8809
151	L	86+00.00	827280.8742	1599023.1136
152	L	86+50.00	827319.0979	1599055.3462
153	L	87+00.00	827357.3217	1599087.5789
154	L	87+50.00	827395.5454	1599119.8116
155	L	88+00.00	827433.7692	1599152.0442
156	L	88+50.00	827471.9929	1599184.2769
157	L	89+00.00	827510.2167	1599216.5096
158	L	89+50.00	827548.4404	1599248.7422
159	L	90+00.00	827586.6642	1599280.9749
160	L	90+50.00	827624.8879	1599313.2076
161	L	91+00.00	827663.1117	1599345.4402
162	L	91+50.00	827701.3354	1599377.6729
163	L	92+00.00	827739.5592	1599409.9056
164	L	92+50.00	827777.7829	1599442.1382
165	L	93+00.00	827816.0067	1599474.3709
166	L	93+50.00	827854.2304	1599506.6036
167	L	94+00.00	827892.4542	1599538.8362
168	L	94+50.00	827930.6779	1599571.0689
169	L	95+00.00	827968.9017	1599603.3016
170	L	95+50.00	828007.1255	1599635.5342
171	L	96+00.00	828045.3492	1599667.7669
172	L	96+50.00	828083.5730	1599699.9996
173	L	97+00.00	828121.7967	1599732.2322
174	L	97+50.00	828160.0205	1599764.4649
175	L	98+00.00	828198.2442	1599796.6976
176	L	98+50.00	828236.4680	1599828.9302
177	L	99+00.00	828274.6917	1599861.1629
178	L	99+50.00	828312.9155	1599893.3956
179	L	100+00.00	828351.1392	1599925.6282
180	L	100+50.00	828389.3630	1599957.8609
181	L	101+00.00	828427.5867	1599990.0936
182	L	101+50.00	828465.8105	1600022.3262
183	L	102+00.00	828504.0342	1600054.5589
184	L	102+50.00	828542.2580	1600086.7916
185	L	103+00.00	828580.4817	1600119.0242
186	L	103+50.00	828618.7055	1600151.2569
187	L	104+00.00	828656.9292	1600183.4896
188	L	104+50.00	828695.1530	1600215.7222
189	L	105+00.00	828733.3767	1600247.9549
190	L	105+50.00	828771.6005	1600280.1876
191	L	106+00.00	828809.8242	1600312.4202
192	L	106+50.00	828848.0480	1600344.6529
193	L	107+00.00	828886.2717	1600376.8856
194	L	107+50.00	828924.4955	1600409.1182
195	L	108+00.00	828962.7192	1600441.3509
196	L	108+50.00	829000.9430	1600473.5836
197	L	109+00.00	829039.1668	1600505.8162
198	L	109+50.00	829077.4374	1600537.9932
199	L	110+00.00	829116.0655	1600569.7391
200	L	110+50.00	829155.4393	1600600.5532
201	L	111+00.00	829195.8690	1600629.9665
202	L	111+50.00	829237.3875	1600657.8217
203	L	112+00.00	829279.9348	1600684.0786
204	L	112+50.00	829323.4495	1600708.6990
205	L	113+00.00	829367.8687	1600731.6476
206	L	113+50.00	829413.1282	1600752.8910
207	L	114+00.00	829459.1624	1600772.3986
208	L	114+50.00	829505.9050	1600790.1421
209	L	115+00.00	829553.2882	1600806.0960
210	L	115+50.00	829601.2437	1600820.2371
211	L	116+00.00	829649.7021	1600832.5450
212	L	116+50.00	829698.5933	1600843.0020
213	L	117+00.00	829747.8467	1600851.5929
214	L	117+50.00	829797.3910	1600858.3052
215	L	118+00.00	829847.1547	1600863.1294
216	L	118+50.00	829897.0658	1600866.0584
217	L	119+00.00	829947.0522	1600867.0879
218	L	119+50.00	829997.0419	1600866.2248
219	L	120+00.00	830046.9793	1600863.7528
220	L	120+50.00	830096.8586	1600860.2864
221	L	121+00.00	830146.7112	1600856.4504
222	L	121+50.00	830196.5623	1600852.5948
223	L	121+66.90	830213.4110	1600851.2916
224	Y	10+00.00	823761.6348	1594327.7418
225	Y	10+50.00	823712.2420	1594319.9730
226	Y	11+00.00	823662.8492	1594312.2042
227	Y	11+50.00	823613.4564	1594304.4354
228	Y	12+00.00	823564.0637	1594296.6666
229	Y	12+50.00	823514.6709	1594288.8978
230	Y	13+00.00	823465.2781	1594281.1290
231	Y	13+50.00	823415.8689	1594273.4675
232	Y	14+00.00	823366.2711	1594267.1582
233	Y	14+50.00	823316.4852	1594262.5625
234	Y	15+00.00	823266.5705	1594259.6859
235	Y	15+50.00	823216.5863	1594258.5319
236	Y	16+00.00	823166.5920	1594259.1019
237	Y	16+50.00	823116.6471	1594261.3951
238	Y	17+00.00	823066.8110	1594265.4089
239	Y	17+50.00	823017.1428	1594271.1384
240	Y	18+00.00	822967.7018	1594278.5768
241	Y	18+50.00	822918.5262	1594287.6117
242	Y	19+00.00	822869.4164	1594297.0045
243	Y	19+50.00	822820.3175	1594306.4534
244	Y	20+00.00	822771.5975	1594317.6689
245	Y	20+50.00	822723.5350	1594331.4318
246	Y	21+00.00	822676.2631	1594347.7041
247	Y	21+50.00	822629.9127	1594366.4408
248	Y	22+00.00	822584.3139	1594386.9520
249	Y	22+50.00	822538.7537	1594407.5499
250	Y	23+00.00	822493.1935	1594428.1477
251	Y	23+50.00	822447.4997	1594448.4428
252	Y	24+00.00	822400.9230	1594466.6096
253	Y	24+50.00	822353.4551	1594482.3010
254	Y	25+00.00	822305.2274	1594495.4735
255	Y	25+50.00	822256.3735	1594506.0906
256	Y4	10+00.00	830182.3292	1600395.9791
257	Y4	10+50.00	830176.6021	1600445.6450
258	Y4	11+00.00	830173.3156	1600495.5319
259	Y4	11+50.00	830172.4774	1600545.5198
260	Y4	12+00.00	830174.0897	1600595.4888
261	Y4	12+50.00	830178.1413	1600645.3195
262	Y4	13+00.00	830184.3993	1600694.9230
263	Y4	13+50.00	830192.3818	1600744.2798
264	Y4	14+00.00	830201.5978	1600793.4223
265	Y4	14+50.00	830211.5614	1600842.4192
266	Y4	15+00.00	830221.7983	1600891.3601
267	Y4	15+50.00	830232.0487	1600940.2981
268	Y4	16+00.00	830242.2991	1600989.2361
269	Y4	16+50.00	830252.5495	1601038.1741
270	Y4	17+00.00	830262.7999	1601087.1121
271	Y5	10+00.00	830213.4100	1600851.2917
272	Y5	10+50.00	830260.6574	1600834.9308
273	Y5	11+00.00	830307.9049	1600818.5699
274	Y5	11+50.00	830355.1523	1600802.2090
275	Y5	12+00.00	830402.3998	1600785.8481
276	Y5	12+50.00	830449.6472	1600769.4872
277	Y5	13+00.00	830496.8946	1600753.1263
278	Y5	13+50.00	830544.1421	1600736.7655

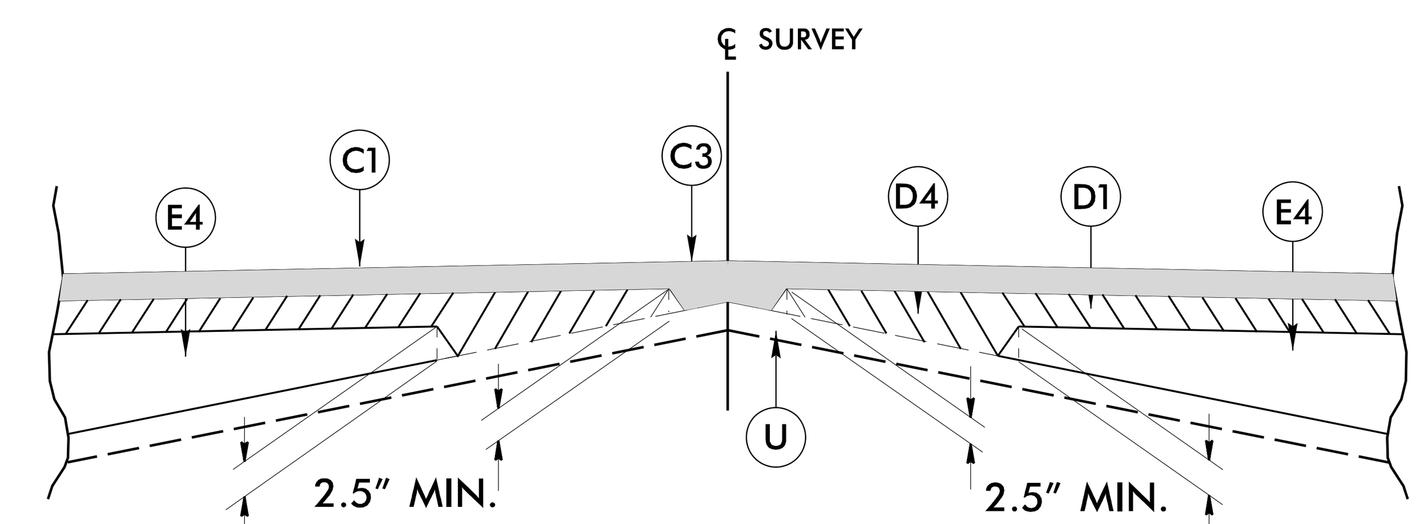
SEPI
ENGINEERING & CONSTRUCTION
1025 Wade Avenue
Raleigh, NC 27605
Tel:919-789-9977
Fax:919-789-9591
License: C-2197

PROJECT REFERENCE NO.	SHEET NO.
U-2707	2A-1
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER
2/10/2016 NORTH CAROLINA PROFESSIONAL SEAL 22568 ENGINEER STEVEN L. SCOTT DocuSigned by: Steve Scott D8C49FE84CFB4C8...	2/12/2016 NORTH CAROLINA PROFESSIONAL SEAL 031484 ENGINEER VLADIMIR G. MITCHEV DocuSigned by: Vladimir G. Mitchev A9CBEF463EA947E...

PAVEMENT SCHEDULE

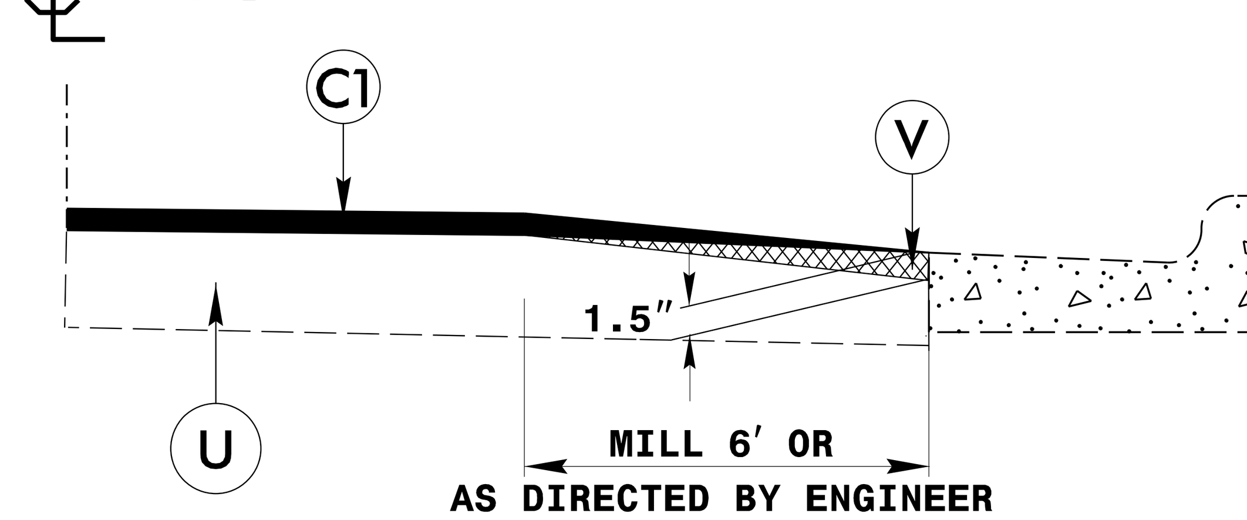
C1	PROP. APPROX. 1.5 ″ ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
C2	PROP. APPROX. 3.0″ ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
C3	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1″ DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 1.5″ IN DEPTH OR GREATER THAN 2.0″ IN DEPTH.
D1	PROP. APPROX. 2.5″ ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 285 LBS. PER SQ. YD.
D2	PROP. APPROX. 3.5″ ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 399 LBS. PER SQ. YD.
D3	PROP. APPROX. 4.0″ ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
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 PLACED IN LAYERS NOT LESS THAN 2.5″ IN DEPTH OR GREATER THAN 4.0″ IN DEPTH.
E1	PROP. APPROX. 4.0″ ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
E2	PROP. APPROX. 4.5″ ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 513 LBS. PER SQ. YD.
E3	PROP. APPROX. 5.5″ ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 627 LBS. PER SQ. YD.
E4	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 3.0″ IN DEPTH OR GREATER THAN 5.5″ IN DEPTH.
J1	PROP. 8.0″ AGGREGATE BASE COURSE.
K	BASE TO BE TREATED WITH LIME TO A DEPTH OF 8″, AT A RATE OF 20LBS. 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.
N	GEOTEXTILE FOR PAVEMENT STABILIZATION
P	PRIME COAT AT THE RATE OF 0.35 GAL. PER SQ. YD.
R	2′-6″ CONCRETE CURB AND GUTTER.
U	EXISTING PAVEMENT.
T	EARTH MATERIAL.
W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE WEDGING DETAIL)
V	0-1.5″ MILLING ASPHALT PAVEMENT (SEE MILLING DETAIL)

NOTE: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS OTHERWISE NOTED.
SHOULDER DRAINS NOT REQUIRED.



Detail Showing Method of Wedging

℄ -Y4-



CURB & GUTTER MILLING DETAIL

-Y4- STA. 11+73.04 TO 13+39.76
-Y4- STA. 15+87.07 TO 16+65.00

6/2/99
1/28/2016
...\Roadway\Proj\U2707_Rdy_typ.dgn

SEPI ENGINEERING & CONSTRUCTION
1025 Wade Avenue
Raleigh, NC 27605
Tel:919-789-9977
Fax:919-789-9591
License: C-2197

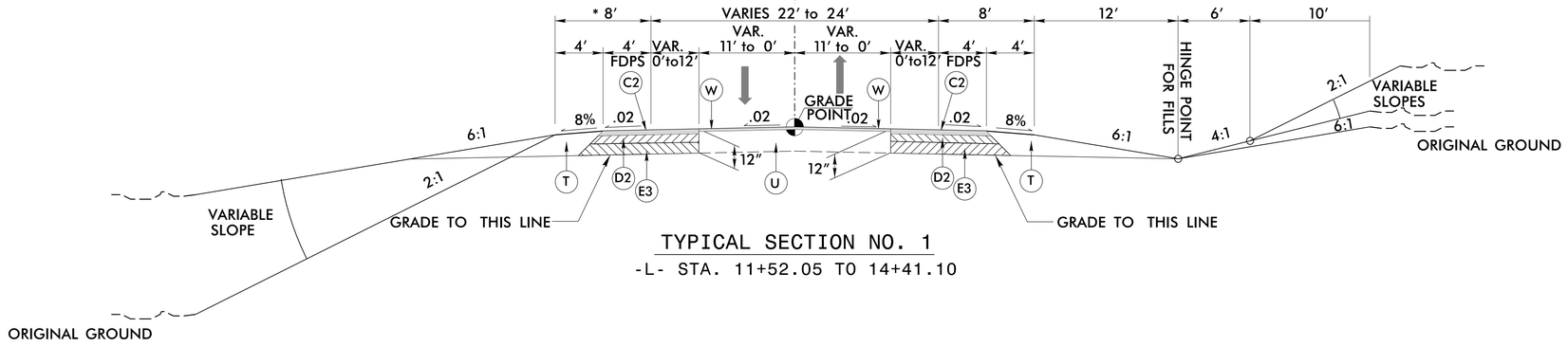
PROJECT REFERENCE NO.	SHEET NO.
U-2707	2A-2

ROADWAY DESIGN ENGINEER
2/10/2016
NORTH CAROLINA PROFESSIONAL SEAL 22568 ENGINEER STEVEN L. SCOTT
Steve Scott

PAVEMENT DESIGN ENGINEER
2/12/2016
NORTH CAROLINA PROFESSIONAL SEAL 031484 ENGINEER VLADIMIR G. MITCHEV
Vladimir Mitchev

℄ –L– IDOLS ROAD

* SHOULDER WIDTH WILL BE 11′ IF GUARDRAIL IS REQUIRED

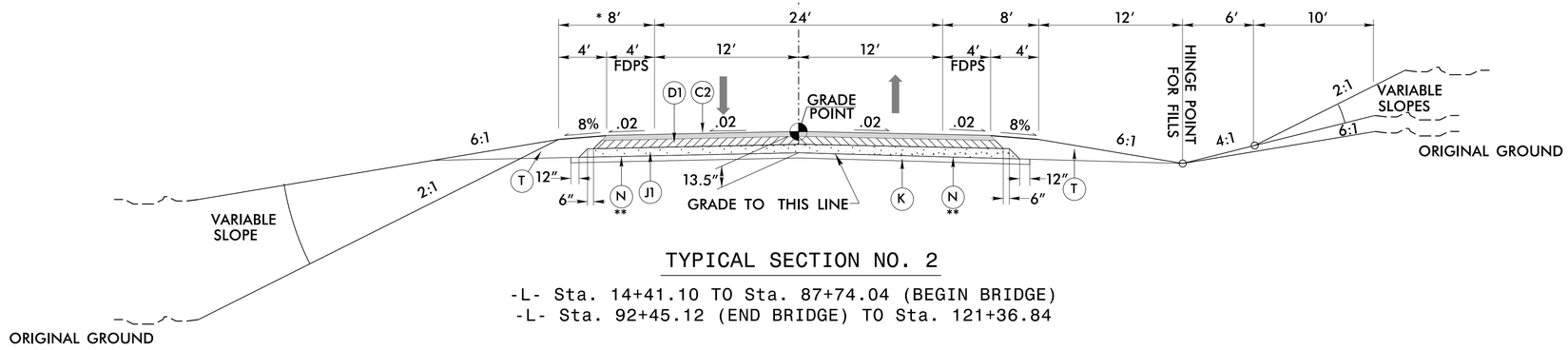


TYPICAL SECTION NO. 1

-L- STA. 11+52.05 TO 14+41.10

℄ –L– IDOLS ROAD

* SHOULDER WIDTH WILL BE 11′ IF GUARDRAIL IS REQUIRED



TYPICAL SECTION NO. 2

-L- Sta. 14+41.10 TO Sta. 87+74.04 (BEGIN BRIDGE)
-L- Sta. 92+45.12 (END BRIDGE) TO Sta. 121+36.84

**SEE SHEET 3G-1 FOR STATION RANGES. THESE LOCATIONS TO BE INVESTIGATED DURING CONSTRUCTION

PAVEMENT SCHEDULE	
C1	1.5 ″ S9.5B
C2	3.0″ S9.5B
C3	VAR. DEPTH S9.5B
D1	2.5″ I19.0B
D2	3.5″ I19.0B
D3	4.0″ I19.0B
D4	VAR. DEPTH I19.0B
E1	4.0″ B25.0B
E2	4.5″ B25.0B
E3	5.5″ B25.0B
E4	VAR. DEPTH B25.0B
J1	8.0″ ABC
K	LIME OR CEMENT STABILIZATION
N	GEOTEXTILE FOR PVMT. STAB.
P	PRIME COAT
R	2′–6″ CONCRETE CURB AND GUTTER
T	EARTH MATERIAL
U	EXISTING PAVEMENT
W	WEDGING
V	0–1.5″ MILLING

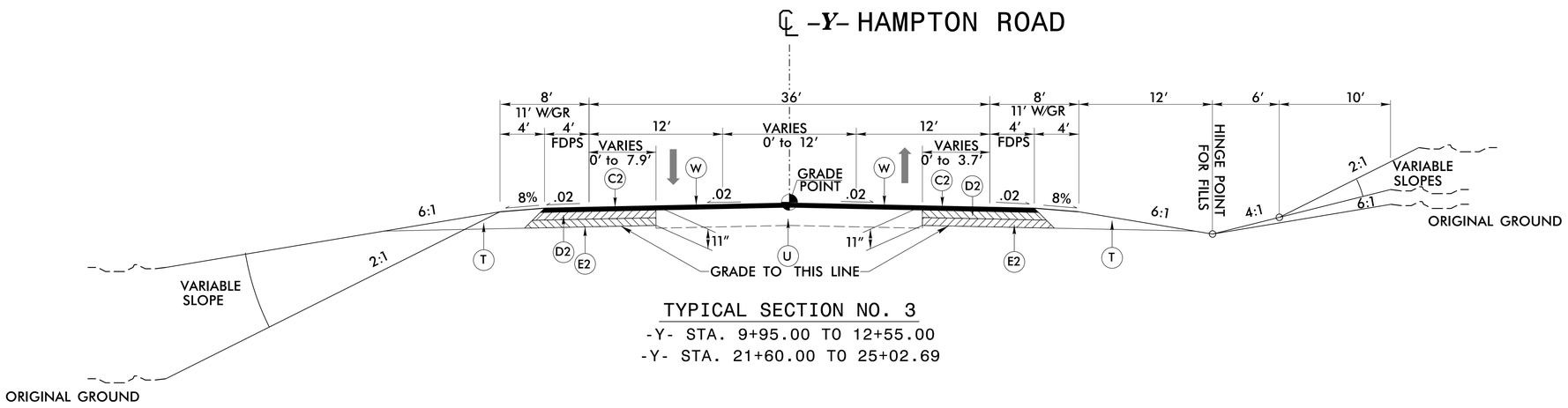
NOTE: PAVEMENT EDGE SLOPE ARE 1:1 UNLESS OTHERWISE NOTED. SHOULDER DRAINS NOT REQUIRED.

SEPI ENGINEERING & CONSTRUCTION
1025 Wade Avenue
Raleigh, NC 27605
Tel:919-789-9977
Fax:919-789-9591
License: C-2197

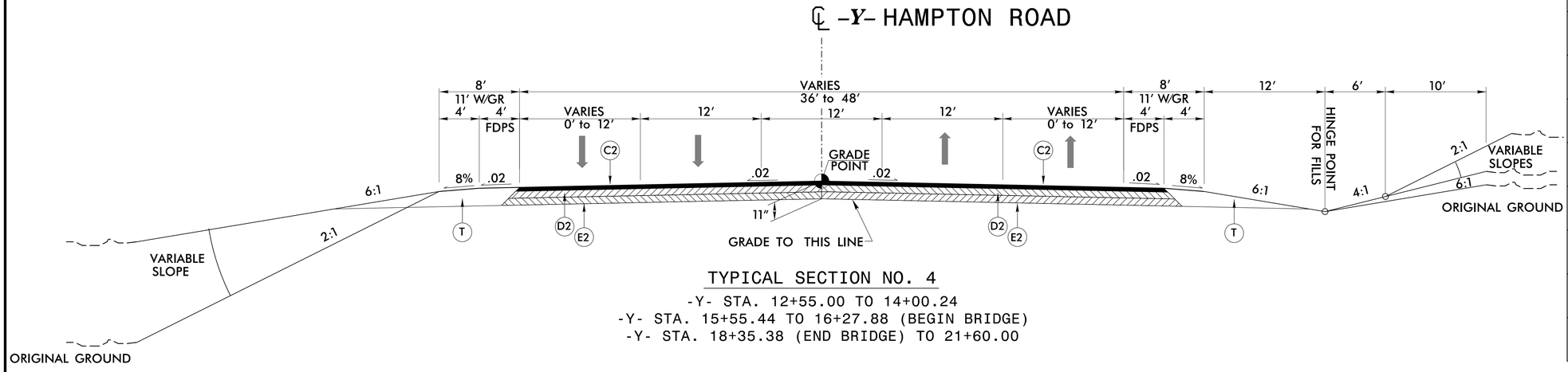
PROJECT REFERENCE NO.	SHEET NO.
U-2707	2A-3

ROADWAY DESIGN ENGINEER
2/10/2016
NORTH CAROLINA PROFESSIONAL SEAL 22568 ENGINEER STEVEN D. SCOTT
Steve Scott

PAVEMENT DESIGN ENGINEER
2/12/2016
NORTH CAROLINA PROFESSIONAL SEAL 031484 ENGINEER VLADIMIR G. MITCHEV
Vladimir Mitchev



TYPICAL SECTION NO. 3
-Y- STA. 9+95.00 TO 12+55.00
-Y- STA. 21+60.00 TO 25+02.69



TYPICAL SECTION NO. 4
-Y- STA. 12+55.00 TO 14+00.24
-Y- STA. 15+55.44 TO 16+27.88 (BEGIN BRIDGE)
-Y- STA. 18+35.38 (END BRIDGE) TO 21+60.00

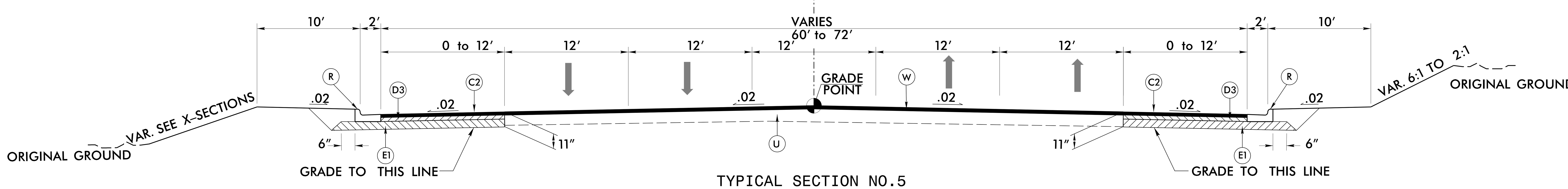
PAVEMENT SCHEDULE	
C1	1.5 ″ S9.5B
C2	3.0″ S9.5B
C3	VAR. DEPTH S9.5B
D1	2.5″ I19.0B
D2	3.5″ I19.0B
D3	4.0″ I19.0B
D4	VAR. DEPTH I19.0B
E1	4.0″ B25.0B
E2	4.5″ B25.0B
E3	5.5″ B25.0B
E4	VAR. DEPTH B25.0B
J1	8.0″ ABC
K	LIME OR CEMENT STABILIZATION
N	GEOTEXTILE FOR PVMT. STAB.
P	PRIME COAT
R	2′–6″ CONCRETE CURB AND GUTTER
T	EARTH MATERIAL
U	EXISTING PAVEMENT
W	WEDGING
V	0–1.5″ MILLING

NOTE: PAVEMENT EDGE SLOPE ARE 1:1 UNLESS OTHERWISE NOTED. SHOULDER DRAINS NOT REQUIRED.

SEPI ENGINEERING & CONSTRUCTION
1025 Wade Avenue
Raleigh, NC 27605
Tel:919-789-9977
Fax:919-789-9591
License: C-2197

PROJECT REFERENCE NO.	SHEET NO.
U-2707	2A-4
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER
2/10/2016	2/12/2016
NORTH CAROLINA PROFESSIONAL SEAL 22568 ENGINEER STEVEN L. SCOTT	NORTH CAROLINA PROFESSIONAL SEAL 031484 ENGINEER VLADIMIR G. MITCHEV

℄ -Y4- US 158 - CLEMMONS RD

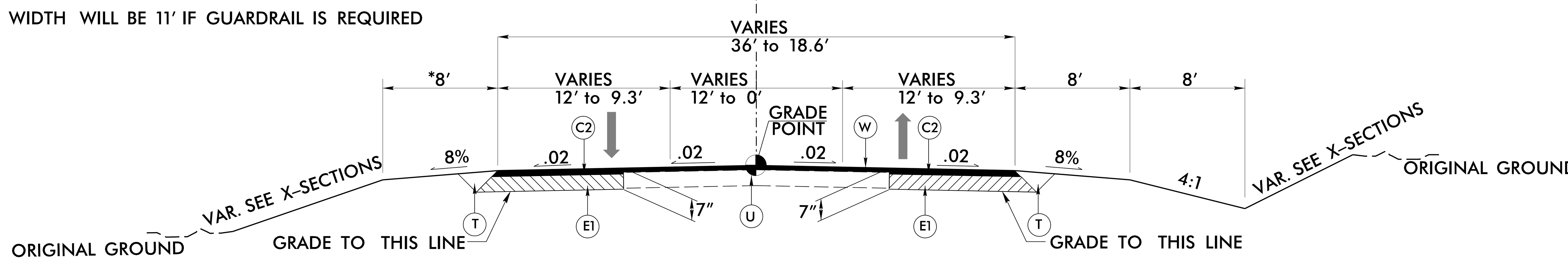


TYPICAL SECTION NO.5

-Y4- STA. 11+73.04 TO 16+65.00

℄ -Y5- SR 1117 - OLD SIDES MILL RD

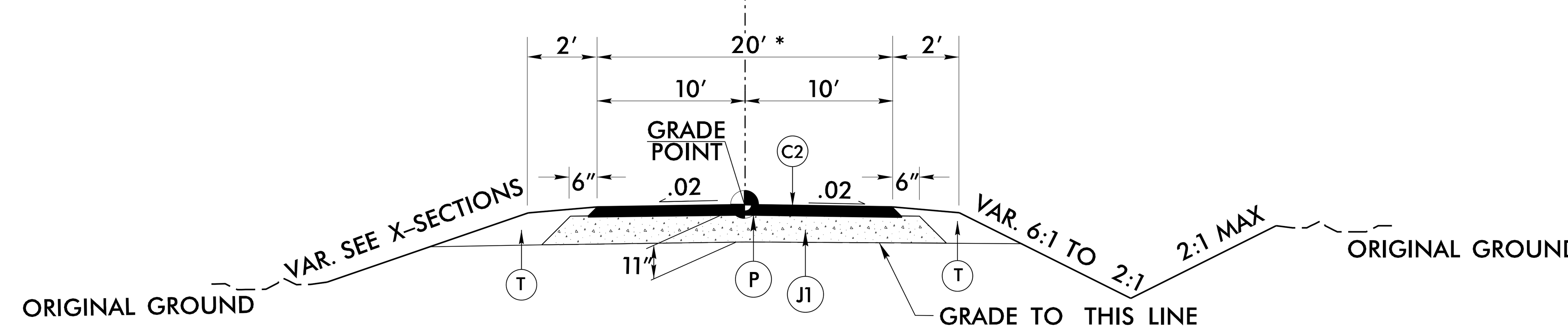
* SHOULDER WIDTH WILL BE 11' IF GUARDRAIL IS REQUIRED



TYPICAL SECTION NO. 6

-Y5- STA. 10+83.19 TO 13+28.79

℄ -DR1- & -DR2-



TYPICAL SECTION NO. 7

-DR1- STA. 11+00.00 TO 11+67.31

-DR2- STA. 10+40.00 TO 10+80.00

* DR2 CLEAR ROADWAY WIDTH 10'

PAVEMENT SCHEDULE	
C1	1.5 " S9.5B
C2	3.0" S9.5B
C3	VAR. DEPTH S9.5B
D1	2.5" I19.0B
D2	3.5" I19.0B
D3	4.0" I19.0B
D4	VAR. DEPTH I19.0B
E1	4.0" B25.0B
E2	4.5" B25.0B
E3	5.5" B25.0B
E4	VAR. DEPTH B25.0B
J1	8.0" ABC
K	LIME OR CEMENT STABILIZATION
N	GEOTEXTILE FOR PVMT. STAB.
P	PRIME COAT
R	2'-6" CONCRETE CURB AND GUTTER
T	EARTH MATERIAL
U	EXISTING PAVEMENT
W	WEDGING
V	0-1.5" MILLING

NOTE: PAVEMENT EDGE SLOPE ARE 1:1 UNLESS OTHERWISE NOTED.
SHOULDER DRAINS NOT REQUIRED.

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

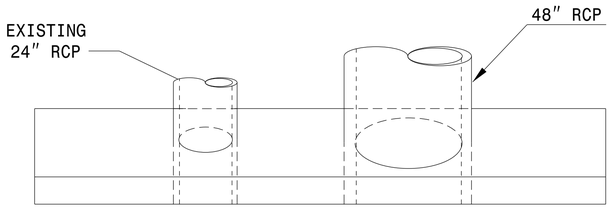
STATE OF
NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ENGLISH DETAIL DRAWING FOR

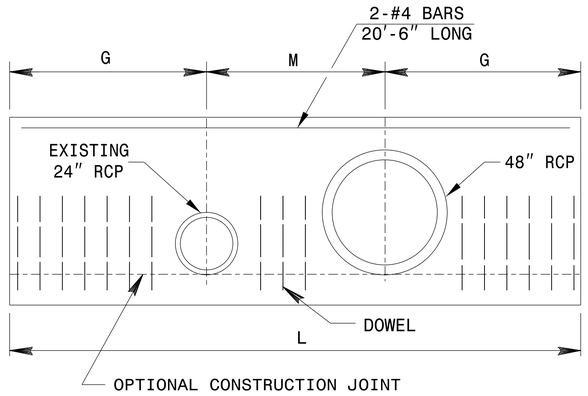
CONCRETE ENDWALL FOR SINGLE 48″ RCP AND EXISTING 24″ RCP

SHEET 1 OF 1

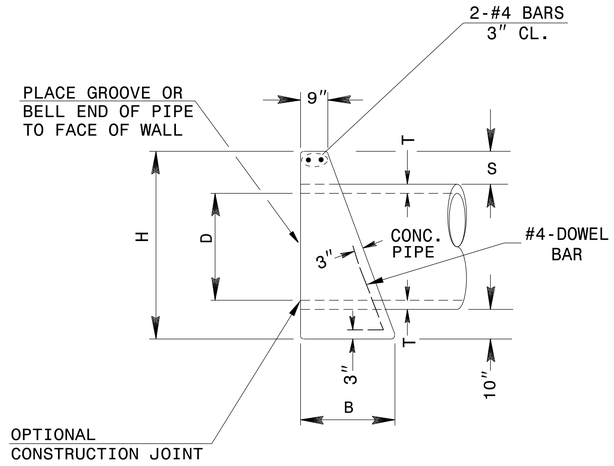
838D01



PLAN

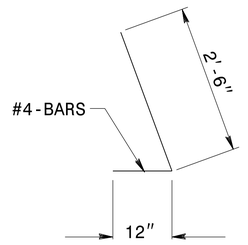


ELEVATION



END ELEVATION

* 24″ RCP NOT SHOWN FOR CLARITY



DOWEL

DIMENSIONS AND CONCRETE QUANTITIES									
USING CONCRETE PIPE									
	COMMON DIMENSIONS					DOUBLE PIPE			
D	H	B	G	T	S	M	L	YD^3	REINF. STEEL
48″	6′-9″	3′-5″	7′-2″	5¾″	11½″	6′-8″	21′-0″	8.0	60.0

GENERAL NOTES:

CONSTRUCT ENDWALL IN ACCORDANCE WITH SECTION 838 OF THE STANDARD SPECIFICATIONS AND THIS DETAIL.

FORMS ARE TO BE USED FOR THE CONSTRUCTION OF THE BASE.

WHEN THE CONTRACTOR ELECTS TO USE A CONSTRUCTION JOINT AT THE BOTTOM OF THE PIPE, DOWELS SHALL BE PLACED IN THE BASE AS SHOWN ON PLANS. SPACING OF BARS IS TO BE APPROXIMATELY 12″ CENTERS UNLESS OTHERWISE DIRECTED BY THE ENGINEER.

CLASS "B" CONCRETE SHALL BE USED.

MITRE HEADWALL FOR 24″ RCP AS SHOWN IN STANDARD DRAWING 838.01.

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

ENGLISH DETAIL DRAWING FOR

CONCRETE ENDWALL FOR SINGLE 48″ RCP AND EXISTING 24″ RCP

SHEET 1 OF 1

838D01

2/9/2016

NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER Joel S Howerton

DocuSigned by: Joel Howerton 873F3D17DCDC45F...

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

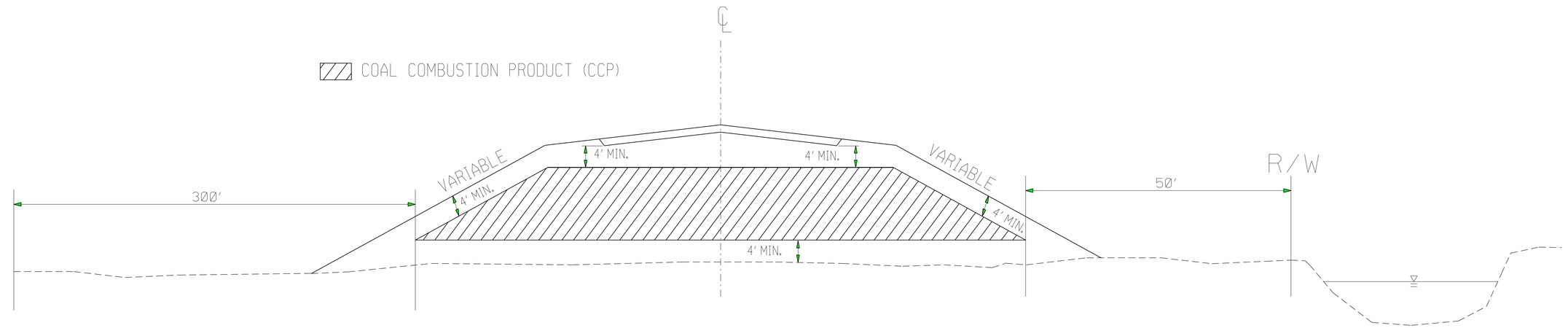
CONTRACT STANDARDS AND DEVELOPMENT UNIT
Office 919-707-6950 FAX 919-250-4119

SEE PLATE FOR TITLE

ORIGINAL BY: STD.838.01 & 838.11 DATE:
MODIFIED BY: T.S.S. DATE: NOV.1997
CHECKED BY: DATE:
FILE SPEC.: s:usr/details/standard/838d01e.dgn

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

COAL COMBUSTION PRODUCT PLACEMENT



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

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

PLACE AT LOCATIONS AS APPROVED BY THE ENGINEER

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

2/9/2016

NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER Joel S. Howerton

DocuSigned by: Joel Howerton 873F3D17DCDC45F...

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

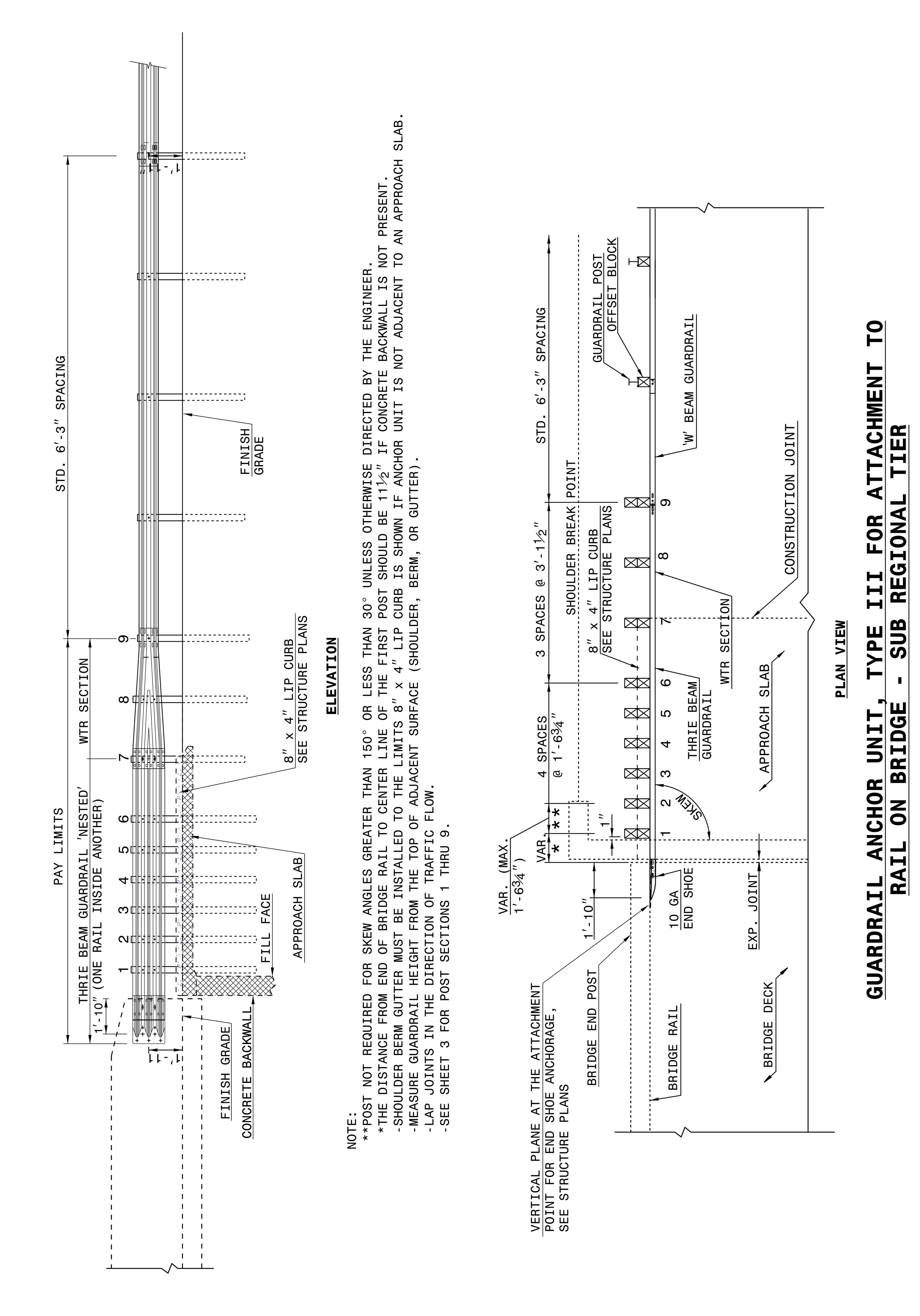
COAL COMBUSTION PRODUCT PLACEMENT DETAIL

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

$$$$SYSTIME$$$$
$$$$FILENAME$$$$
$$$$USERNAME$$$$

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

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

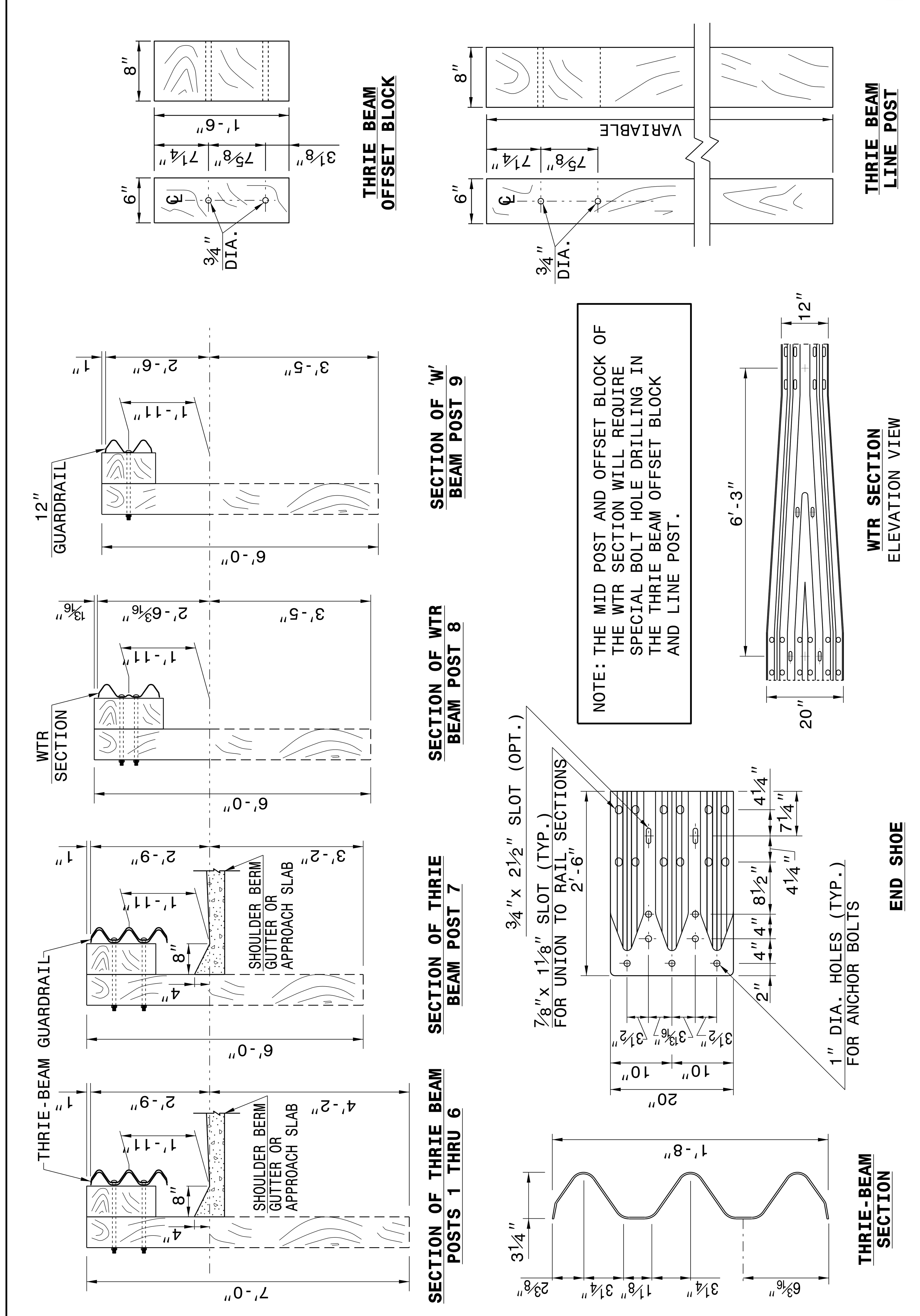


STATE OF
NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

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**

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**

2/9/2016

NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER Joel S. Howerton

DocuSigned by: Joel Howerton 873F3D17DCDC45F...

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

SEE TITLE BLOCK

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

COMPUTED BY: Tony Harris DATE: 9/30/2015
CHECKED BY: Davidian Byrd DATE: 12/31/2015

PROJECT NO.	SHEET NO.
U-2707	3B-1

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SUMMARY OF EARTHWORK
(IN CUBIC YARDS)

Station	Station	Uncl. Excav.	Embank. +%	Borrow	Waste
-L- STA 12+00	-L- STA 20+50	607	6712	6105	
-Y- STA 10+00	-Y- STA 16+27.88	817	6880	6063	
	(BEGIN BRIDGE)				
SUBTOTALS: (SUMMARY #1)		**1424**	**13592**	**12168**	
-L- STA 21+00	-L- STA 50+00	4864	62664	57800	
SUBTOTALS: (SUMMARY #2)		4864	62664	57800	
-L- STA 50+50	-L STA 87+74.04	26701	93480	66779	
	(BEGIN BRIDGE)				
SUBTOTALS: (SUMMARY #3)		26701	93480	66779	
-L- STA 92+45.12	-L- STA 121+00	35977	22987		12990
(END BRIDGE)					
-Y4- STA 12+00	-Y4- STA 16+50	598	978	380	
-Y5- STA 11+00	-Y5- STA 13+00	473	102		371
SUBTOTALS: (SUMMARY #4)		37048	24067	380	13361
-Y- STA 18+35.38	-Y- STA 25+02.69	1271	2663	1392	
(END BRIDGE)					
SUBTOTALS: (SUMMARY #5)		1271	2663	1392	
SUBTOTALS SUMMARIES (1-5):		71308	196466	138519	13361
MATERIAL FOR SHOULDER CONSTRUCTION			6828	6828	
LOSS DUE TO CLEARING & GRUBBING		-1000		1000	
WASTE TO BE USED IN LIEU OF BORROW				-13361	-13361
PROJECT SUBTOTAL:		70308	203294	132986	
ESTIMATE 5% TO REPLACE TOP SOIL IN BORROW PIT				6649	
GRAND TOTAL		70308	203294	139635	
SAY		**71000**		**140000**	
PAVEMENT STRUCTURE VOLUME = 7800					

GEOTEXTILE FOR SOIL STABILIZATION = 5000 SQUARE YARDS
CLASS IV SUBGRADE STABILIZATION = 1600 TON
EST. SHALLOW UNDERCUT = 850 CUBIC YARDS
SELECT GRANULAR MATERIAL = 3500 CUBIC YARDS
PER GEOTECH RECOMMENDATION, ESTIMATED 1,000 CUBIC YARDS OF UNDERCUT TO BE USED AT THE DISCRETION OF THE RESIDENT ENGINEER.

SUMMARY OF EXISTING ASPHALT PAVEMENT REMOVAL

LINE	Station	Station	LOC LT/RT/CL	YD^2
-L-	16+84	18+78	RT	845.4
-Y-	17+99	19+00	RT	239.49
			TOTAL:	1084.89
			SAY:	**1090**

SHOULDER BERM GUTTER SUMMARY

LINE	Station	Station	LOC LT/RT/CL	LENGTH (FEET)
-L-/-Y-	18+45	16+21	RT	169
-Y-	18+58	19+00	LT	42
-Y-/-L-	15+81	21+69	LT	166
-Y-/-L-	12+70	22+96	LT	204
-L-	36+00	39+45	RT	345
-L-	73+05	79+50	RT	645
-L-	87+70	87+80	LT	10
-L-	87+70	87+80	RT	10
			TOTAL:	1591
			SAY:	**1630**

2'-6" CURB AND GUTTER

LINE	Station	Station	LOC LT/RT/CL	LENGTH (FEET)
-L-/-Y4-	120+46	15+87	RT/LT	160
-L-/Y4-	120+08	11+73	RT	303
-Y4-/-Y5-	13+40	10+89	LT	114
-Y4-/-Y5-	10+83	16+65	LT	211
-Y-	23+66	23+98	RT	63
-Y-	22+83	23+28	RT	49
			TOTAL:	900
			SAY:	**900**

COMPUTED BY: *Tony Harris* **DATE:** *1-25-05*

CHECKED BY: *Davidian Byrd* **DATE:** *10/26/2015*

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

GUARDRAIL SUMMARY

PROJECT REFERENCE NO.	SHEET NO.
U-2707	*3B-2*

"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	XI MOD	XI	GRAU 350	M-350	TYPE III	CAT-1	VI MOD	BIC		G	NG				
-L-/-Y-	17+70.60 -L-	16+42.76 -Y-	RT/RT	212.5	37.5		18+75 -L-		8	11	50	-	1	-			1		1										
-Y-/-L-	16+27.88 -Y-	23+27.36 -L-	LT/RT	225	50			22+00 -L-	8	11	-	50	-	1			1		1										
-L-	34+75.00	44+75.00	RT	1000			35+75.00	43+75.00	8	11	50	50	1	1			2												
-L-	72+11.54	87+74.04	RT	1562.5			87+74.04	92+45.00	8	11	50	-	1	-			1		1										
-L-	72+61.54	87+74.04	LT	1512.5			92+45.00	87+74.04	8	11	50	-	1	-			1		1										
-L-	92+45.12	95+32.62	RT	287.5			92+57.50	94+25.00	8	11	-	50	-	1			1		1										
-L-	92+45.12	97+82.62	LT	537.5			92+57.50	96+75.00	8	11	-	50	-	1			1		1										
-Y-	18+45.59	19+70.59	RT	125				18+59.59	8	11	-	50	-	1			1		1										
-Y-/-Y3-	18+20.33	11+71.36 -Y3-	LT	150	75		18+20.33		8	11	-	50	-	1			1		1										
PROJECT TOTAL				**5612.50**	**162.50**																								
LESS ANCHOR UNIT DEDUCTIONS																													
GRAU 350		10 @50.00'		500.00																									
TYPE III		8 @18.75'		150.00													**10**		**8**										
TOTAL				**4962.50**	**162.50**																								
SAY				**4987.50**	**162.50**																								
ADDITIONAL GUARDRAIL POSTS				**10.00**																									

W224L

COMPUTED BY:	MULKEY/SEPI	DATE:	1/6/2016
CHECKED BY:	DPB	DATE:	1/6/2016

PROJECT NO.	SHEET NO.
U-2707	3D-1

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

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

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

STATION	LOCATION (LT, RT, OR CL)'	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION		INVERT ELEVATION	SLOPE CRITICAL	DRAINAGE 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
14+00 -L-	RT	1		816.8																
		1	1A		814.0		806.0													
18+47 -L-	RT	2		822.9																
		2	2A		820.1		820.0			16										
12+70 -Y-	LT	3		817.8																
		3	3A		815.1		813.8			32										
13+10-Y-	LT	2A																		
13+78 -Y-	LT	4		821.0																
		4	4A		818.2		813.8			88										
22+96 -L-	LT	5		814.5																
		5	5A		811.8		810.9			20										
21+65 -L-	RT	6		821.6																
		6	6A		818.9		812.2													
15+54-Y-	LT	6A																		
15+55 -Y-	LT	7		825.6																
		7	7A		822.9		815.3													
		8	8A		819.9		799.1													
18+66 -Y-	LT	9		826.2																
		9	9A		823.4		820.2													
		10	10A		782.8		775.8						156							
		11	11A		773.4		772.9													
38+00 -L-	RT	12		780.6																
		12	12A		777.8		763.8													
39+45 -L-	RT	13		779.3																
		13	12		776.6		775.9													
		14	14A		766.4		755.9									144				
		15	15A		755.9		751.3													
		16	16A		752.3		749.6						128							
		17	17A		746.9		744.6													
		18	18A		739.8		732.0					128								
66+00 -L-	LT	19		734.5																
		19	19A		731.8		728.0			52										
		20	20A		713.8		709.8									144				
		21	21A		709.3		702.5									128				
70+00 -L-	RT	22		713.9																
		22	22A		711.1		710.6			52										
75+50 -L-	RT	23		705.5																
		23	23A		702.7		690.6													
77+16 -L-	RT	24		704.1																
		24	24A		701.3		689.4													
78+00 -L-	RT	25		704.5																
		25	25A		701.8		688.7													
		26	26A		686.9		686.9						164							
87+40 -L-	LT	27		710.0																
		27	27A		707.3		689.2													
87+40 -L-	RT	28		710.0																
		28	28A		707.3		690.4													
		29	29B		682.9		680.4						28							
		30	30A		742.4		739.5				88									
SHEET TOTALS										260	88	128	476			416				

STATION	FROM	TO	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"	** " R.C. PIPE (CLASS V)	***" RC PIPE CULVERTS, CONTRACTOR DESIGN	***" RC PIPE CULVERTS, CONTRACTOR DESIGN	15" SIDE DRAIN PIPE	18" SIDE DRAIN PIPE
14+00 -L-	1																														
	1	1A		40																											
18+47 -L-	2																														
	2	2A																													
12+70 -Y-	3																														
	3	3A																													
13+10-Y-	2A																														
13+78 -Y-	4																														
	4	4A																													
22+96 -L-	5																														
	5	5A																													
21+65 -L-	6																														
	6	6A		32																											
15+54-Y-	6A																														
15+55 -Y-	7																														
	7	7A		28																											
	8	8A				40																									
18+66 -Y-	9																														
	9	9A		20																											
	10	10A																													
	11	11A																													
38+00 -L-	12																														
	12	12A		44																											
39+45 -L-	13																														
	13	12																		144											
	14	14A																													
	15	15A																													
	16	16A																													
	17	17A																													
	18	18A																													
66+00 -L-	19																														
	19	19A																													
	20	20A																													
	21	21A																													
70+00 -L-	22																														
	22	22A																													
75+50 -L-	23																														
	23	23A		44																											
77+16 -L-	24																														
	24	24A		44																											
78+00 -L-	25																														
	25	25A		48																											
	26	26A																													
87+40 -L-	27																														
	27	27A		52																											
87+40 -L-	28																														
	28	28A		52																											
	29	29B																													
	30	30A																													
SHEET TOTALS				404		40														144											

STATION	FROM	TO	ENDWALLS STD. 838.01, 838.11 OR STD. 838.80 (UNLESS NOTED OTHERWISE) CU. YARDS R.C.P.	C.S.P.	QUANTITIES FOR DRAINAGE STRUCTURES PER EACH (0' THRU 5.0')	*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 GRATES STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR 840.26	G.D.I. TYPE "B" STD. 840.18 OR 840.27	G.D.I. TYPE "D" STD. 840.19 OR 840.28	G.D.I. FRAME WITH GRATE STD. 840.22	G.D.I. FRAME WITH TWO GRATES STD. 840.22	G.D.I. (N.S.) FRAME WITH GRATE STD. 840.24	G.D.I. (N.S.) FRAME WITH TWO FLAT GRATES STD. 840.29	J.B. STD. 840.31 OR 840.32	BERM DRAINAGE OUTLET, STD. 850.10 OR 850.11	PREFORMED SCOUR HOLE	36" WELDED STEEL PIPE, 0.50" THICK, GRADE B (UNDER RR)	48" WELDED STEEL PIPE, 0.625" THICK, GRADE B (UNDER RR)
14+00 -L-	1				1												1					1					
	1	1A																									
18+47 -L-	2				1													1				1					
	2	2A																									
12+70 -Y-	3				1												1					1					
	3	3A																							1		
13+10-Y-	2A																								1		
13+78 -Y-	4				1							1		1	1												
	4	4A																							1		
22+96 -L-	5				1												1					1					
	5	5A																									
21+65 -L-	6				1												1					1					
	6	6A																									
15+54-Y-	6A																								1		
15+55 -Y-	7				1												1					1					
	7	7A																							1		
	8	8A		2.8																							
18+66 -Y-	9				1												1					1					
	9	9A																							1		
	10	10A																									
	11	11A	3.4																							70	
38+00 -L-	12				1												1					1					
	12	12A																							1		
39+45 -L-	13				1												1					1					
	13	12																									
	14	14A	6																								
	15	15A	6																								64
	16	16A																									
	17	17A	3.4																							60	
	18	18A																									
66+00 -L-	19				1												1					1					
	19	19A																									
	20	20A	6																								
	21	21A	8																								56
70+00 -L-	22				1												1					1					
	22	22A																									
75+50 -L-	23				1												1					1					
	23	23A																									
77+16 -L-	24				1												1					1					
	24	24A																									
78+00 -L-	25				1												1					1					
	25	25A																									
	26	26A																									
87+40 -L-	27				1												1					1					
	27	27A																							1		
87+40 -L-	28				1												1					1					
	28	28A																									
	29	29B																									
	30	30A																									
SHEET TOTALS			32.8	2.8	17							1		1	1		15	1				16			8	130	120

STATION	FROM	TO	C.S. PIPE ELBOWS NO. & SIZE	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	CONC. COLLARS CL. "B" C.Y. STD. 840.72	PIPE REMOVAL LIN. FT.	REMARKS
14+00 -L-	1						
	1	1A	2 @ 15"				
18+47 -L-	2						
	2	2A					
12+70 -Y-	3						
	3	3A					
13+10-Y-	2A						
13+78 -Y-	4						
	4	4A					
22+96 -L-	5						
	5	5A					
21+65 -L-	6						
	6	6A	2 @ 15"				
15+54-Y-	6A						
15+55 -Y-	7						
	7	7A	2 @ 15"				
	8	8A	2 @ 24"				
18+66 -Y-	9						
	9	9A	2 @ 15"				
	10	10A					
	11	11A					
38+00 -L-	12						
	12	12A	2 @ 15"				
39+45 -L-	13						
	13	12					
	14	14A					
	15	15A					
	16	16A					
	17	17A					
	18	18A					
66+00 -L-	19						
	19	19A					
	20	20A					
	21	21A			1.0126		SPECIAL HW DETAIL, SEE SHEET 2C-1
70+00 -L-	22						
	22	22A					
75+50 -L-	23						
	23	23A	2 @ 15"				
77+16 -L-	24						
	24	24A	2 @ 15"				
78+00 -L-	25						
	25	25A	2 @ 15"				
	26	26A					
87+40 -L-	27						
	27	27A	2 @ 15"				
87+40 -L-	28						
	28	28A	2 @ 15"				
	29	29B					REMOVE EXIST 2-15" RCP & PLACE PROP 30" PIPE IN TRENCH
	30	30A					
SHEET TOTALS			20 @ 15" 2 @ 24"		1.0126		

ABBREVIATIONS

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

COMPUTED BY: MULKEY/SEPI DATE: 10/21/2015

CHECKED BY: DPB DATE: 10/21/2015

W224L

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
U-2707	3D-2

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

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

STATION	LOCATION (LT, RT, OR CL)'	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION		INVERT ELEVATION	SLOPE CRITICAL	DRAINAGE 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
12+30 -Y4-	RT	32		743.0																
		32	31		739.8		730.0			144								X	X	
10+96 -Y4-	RT	31		737.5																
119+75 -L-	LT	33		744.7																
		33	34		742.0		741.0			104								X	X	
119+49 -L-	RT	34		748.6																
		34	35B		741.0		740.4			124								X	X	
		35A	35		752.5		739.5													
121+09 -L-	RT	35		749.9																
		35	40		739.5		738.3			116								X	X	
17+70 -Y4-	LT	38		757.8																
		38	39		752.7		750.5					100						X	X	
16+65 -Y4-	LT	39		754.3																
		39	40		750.5		738.3					152						X	X	
15+21 -Y4-	LT	40		748.1																
		40	36		738.3		734.0					148						X	X	
13+75 -Y4-	LT	36		742.9																
		36	37		734.0		730.0					52						X	X	
11+35 -Y5-	CL	41	41A		737.3		731.5					96								
10+26 -Y3-	RT	43		821.2																
		43	42		818.4		812.9			68								X	X	
10+90 -Y3-	RT	42		815.6																
		42	42A		812.9		811.2			160								X	X	
		44	44A																	
120+70 -L-	RT	35B		749.3																
		35B	35		740.4		740.2			44								X	X	
SHEET TOTALS										760		548								
SHEET 3D-1 TOTALS										260	88	128	476			416				
SHEET 3D-2 TOTALS										760		548								
PROJECT TOTALS										1020	88	676	476			416				

STATION	FROM	TO	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"
	35A	35		40																						
SHEET TOTALS				40																						
SHEET 3D-1 TOTALS				404		40														144						
SHEET 3D-2 TOTALS				40																						
PROJECT TOTALS				444		40														144						

STATION	FROM	TO	** " R.C. PIPE (CLASS V)	***" RC PIPE CULVERTS, CONTRACTOR DESIGN	***" RC PIPE CULVERTS, CONTRACTOR DESIGN	15" SIDE DRAIN PIPE	18" SIDE DRAIN PIPE	ENDWALLS STD. 838.01 838.11 OR STD. 838.80 (UNLESS NOTED OTHERWISE) CU. YARDS R.C.P.	C.S.P.	QUANTITIES FOR DRAINAGE STRUCTURES PER EACH (0' THRU 5.0')	*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
12+30 -Y4-	32									1								
10+96 -Y4-	31									1	2.5							
119+75 -L-	33									1								
119+49 -L-	34									1	2.6							
121+09 -L-	35									1	5	0.4	1		1			
17+70 -Y4-	38									1	0.1		1		1			
16+65 -Y4-	39									1			1		1			
15+21 -Y4-	40									1	4.8		1		1			
13+75 -Y4-	36									1	3.9		1		1			
10+26 -Y3-	43									1								
10+90 -Y3-	42									1								
	44	44A					88											
120+70 -L-	35B									1	3.9		1		1			
SHEET TOTALS							88			12	22.8	0.4	6		6			
SHEET 3D-1 TOTALS								32.8	2.8	17							1	
SHEET 3D-2 TOTALS							88			12	22.8	0.4	6		6			
PROJECT TOTALS							88	32.8	2.8	29	22.8	0.4	6		6		1	
											say	23.32						

STATION	FROM	TO	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATES STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR 840.26	G.D.I. TYPE "B" STD. 840.18 OR 840.27	G.D.I. TYPE "D" STD. 840.19 OR 840.28	G.D.I. FRAME WITH GRATE STD. 840.22	G.D.I. FRAME WITH TWO GRATES STD. 840.22	G.D.I. (N.S.) FRAME WITH GRATE STD. 840.24	G.D.I. (N.S.) FRAME WITH TWO FLAT GRATES STD. 840.29	J.B. STD. 840.31 OR 840.32	BERM DRAINAGE OUTLET, STD. 850.10 OR 850.11	PREFORMED SCOUR HOLE	36" WELDED STEEL PIPE, 0.50" THICK, GRADE B (UNDER RR)	48" WELDED STEEL PIPE, 0.625" THICK, GRADE B (UNDER RR)	C.S. PIPE ELBOWS NO. & SIZE	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	CONC. COLLARS CL. "B" C.Y. STD. 840.72	PIPE REMOVAL LIN. FT.	REMARKS
12+30 -Y4-	32		1	1																	
10+96 -Y4-	31				1			1	1												
119+75 -L-	33					1					1										
119+49 -L-	34					1					1										
	35A	35											1				2 @ 15"				
	38	39																		272	REMOVE EXIST 18" RCP & EXIST DI
	40	36																		108	REMOVE EXIST 24" RCP & EXIST DI
	36	37																0.09		24	
11+35 -Y5-	41	41A																		52	REMOVE EXIST 18" RCP & EXIST DI
10+26 -Y3-	43					1					1										
10+90 -Y3-	42					1					1										
	44	44A																		92	REMOVE EXIST 18" RCP
SHEET TOTALS			1	1	1	4		1	1		4		1				2 @ 15"	0.09		548	
SHEET 3D-1 TOTALS			1	1		15	1				16			8	130	120	20 @ 15" 2 @ 24"		1.0126		
SHEET 3D-2 TOTALS			1	1	1	4		1	1		4		1				2 @ 15"	0.09		548	
PROJECT TOTALS			2	2	1	19	1	1	1		20		1	8	130	120	22 @ 15" 2 @ 24"	0.09	1.0126	548	

ABBREVIATIONS

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

COMPUTED BY:	MULKEY/SEPI	DATE:	2/22/2016
CHECKED BY:	DPB	DATE:	2/22/2016

W224L

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
U-2707	3D-3

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

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

STATION	LOCATION (LT, RT, OR CL)'	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION		INVERT ELEVATION	SLOPE CRITICAL	CLASS IV R.C. PIPE (UNLESS NOTED OTHERWISE) 54"	60"	66"	72"	78"	84"	C.A.A. PIPE (UNLESS NOTED OTHERWISE) 54" .138	54" .168	60" .138	60" .168	72" .138	72" .168	95" X 67" .138	95" X 67" .168	TRENCHLESS CONSTRUCTION SMOOTH WALL STEEL PIPE 60" .875	66" .875	72" 1.000	** " R.C. PIPE (CLASS V)	***" RC PIPE CULVERTS, CONTRACTOR DESIGN	***" RC PIPE CULVERTS, CONTRACTOR DESIGN	REINFORCED ENDWALLS STD. 838.01 838.11 OR STD. 838.80 (UNLESS NOTED OTHERWISE) CU. YARDS R.C.P.	C.S.P.	QUANTITIES FOR DRAINAGE STRUCTURES PER EACH (0' THRU 5.0')	*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	PIPE REMOVAL LIN. FT.	REMARKS
SIZE / THICKNESS OR GAUGE																																										
89+00 -L-	LT	29A	29C		682.5		682.2															36																				SPECIAL 95" x 67" CAAP W/ BAFFLES & HDWLS, SEE SHEET NS-10
PROJECT TOTALS																						36																				

ABBREVIATIONS

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

COMPUTED BY: SC DATE: 04-17-12
CHECKED BY: PJS DATE: 12-29-15

PROJECT NO.	SHEET NO.
U-2707	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
				UD	3000
CONTINGENCY					
				TOTAL LF:	3000

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

SUMMARY OF AGGREGATE SUBGRADE/STABILIZATION

LINE	Station	Station	Aggregate Type ASU/AST	Aggregate Thickness INCHES	Shallow Undercut CY	Class IV Subgrade Stabilization TONS	Geotextile for Soil Stabilization SY	Stabilizer Aggregate TONS	Class IV Aggregate Stabilization TONS
			AST					500	
			ASU		850	1600	2500		
CONTINGENCY									
			TOTAL CY/TONS/SY:		850	1600	2500*	500	

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 GEOTEXTILE FOR PAVEMENT STABILIZATION

LINE	Station	Station	SY
L	25+75	30+00	2200
L	36+50	43+00	3150
L	67+00	69+00	950
L	73+50	98+50	7200
CONTINGENCY			
		TOTAL SY:	13500

PROJ. REFERENCE NO.	SHEET NO.
U-2707	3P-1

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PARCEL INDEX SHEET

PARCEL No.	SHEET No.	PROPERTY OWNER NAME
1	4	NCDOT, FORMERLY SUSANNE T. SCHIESS
2	4	NCDOT, FORMERLY GUY THOMAS TUTTEROW, III
3	4	AVA KATRINA ROBERSON (WIDOW)
4	4	NCDOT, FORMERLY DEANNA R. POWELL
5	4	NCDOT, FORMERLY PAULINE BARBER PRATT
5Z	4	PAULINE BARBER PRATT
6	4	NCDOT, FORMERLY BETTY W. PHILLIPS
6Z	4	BETTY W. PHILLIPS
7	4	NCDOT, FORMERLY JAMES L. LINDSEY, JR.AND WIFE CATHY F. LINDSEY
7Z	4	JAMES L. LINDSEY, JR.AND WIFE CATHY F. LINDSEY
8	4	NCDOT, FORMERLY LARRY W. MILLER
8Z	4	LARRY W. MILLER
9	4,5	NCDOT, FORMERLY JOANN K. BEAUCHAMP
10	4,5	NCDOT, FORMERLY AUSTIN D. McGUIRE, JR
11	13	NCDOT, FORMERLY FRISBY ACQUISITION CORPORATION
11Z	4,13	FRISBY ACQUISITION CORPORATION
12	4,13	NCDOT, FORMERLY BROOKSTOWN WAREHOUSES, INC. BROOKSTOWN WAREHOUSES, INC.
12Z	4	BROOKSTOWN WAREHOUSES, INC. BROOKSTOWN WAREHOUSES, INC.
13	4-12	NORFOLK SOUTHERN RR
14	5	NCDOT, FORMERLY S. RAY DANIELS AND WIFE PAULINE T. DANIELS
15	5	NCDOT, FORMERLY ROY LEE CORNATZER AND WIFE JO ANN CORNATZER
16	5	NCDOT, FORMERLY MINNIE C. HUTCHINS
17	5	NCDOT, FORMERLY JAMES R. BRANNOCK AND WIFE JEAN C. BRANNOCK
18	5	NCDOT, FORMERLY OPAL B. WILSON
19	5,6	NCDOT, FORMERLY CLARK S. GENTRY AND WIFE LINDA C. GENTRY
20	5	NATIONAL TEXTILES, LLC 20-A LENTZ PROPERTY MANAGEMENT, LLC
20-A	5,6	LENTZ PROPERTY MANAGEMENT,LLC
20-B	6	HUBBARD REALITY & McGUIRE CONSTRUCTION
21	6	NCDOT, FORMERLY OPAL B. WILSON
22	6-9	NCDOT, FORMERLY EDNA W. BINGHAM
22Z	8-9	EDNA W. BINGHAM
23	7-9	KEITH HAROLD HASTINGS PATRICK OMAR DODSON
26	9-12	NCDOT, FORMERLY JOSEPH C. GOODMAN AND WIFE MARY ANN HARRIS GOODMAN
26Z	12	JOSEPH C. GOODMAN AND WIFE MARY ANN HARRIS GOODMAN
27	12	NCDOT, FORMERLY CHARLES L. KIRKMAN, III AND WIFE RHONDA KIRKMAN
27Z	12	CHARLES L. KIRKMAN, III AND WIFE RHONDA KIRKMAN
28	12	NCDOT, FORMERLY J. B. INGRAM AND WIFE VIRGINIA S. INGRAM
29	11,12	NCDOT, FORMERLY CAROL PAGE ARMSTRONG
29Z	12	CAROL PAGE ARMSTRONG
30	12	NCDOT, FORMERLY DEWEY O. SMITH
31	12	NCDOT, FORMERLY BLUE DOLPHIN DIVE SHOP, INC.
32	13	NCDOT, FORMERLY BROOKSTOWN WAREHOUSES, INC.
32Z	13	BROOKSTOWN WAREHOUSES, INC.
33	13	DUKE POWER COMPANY

PARCEL No.	SHEET No.	PROPERTY OWNER NAME

8/17/99

REVISIONS

BRIDGE/ROADWAY SKETCH

END APPROACH SLAB
-Y- STA. 18+59.31

BEGIN APPROACH SLAB
-Y- STA. 16+04.02

GRAU 350

TYPE III

69°

CL OF ROADWAY

48'

118'

9'

12'

END BRIDGE
-Y- STA. 18+35.38

BEGIN BRIDGE
-Y- STA. 16+27.88

NOT TO SCALE

-L-

PI Sta 13+25.43
△ = 16° 26' 34.70" (LT)
D = 4° 46' 28.73"
L = 344.38'
T = 173.38'
R = 1,200.00'
SE = 0.06
RUNOFF = 150'

PIs Sta 15+46.45
Es = 3° 34' 51.6"
Ls = 150.00'
LT = 100.02'
ST = 50.02'

PIs Sta 17+46.47
Es = 5° 08' 46.8"
Ls = 150.00'
LT = 100.04'
ST = 50.04'

PI Sta 18+97.07
△ = 13° 44' 42.1" (RT)
D = 6° 51' 42.4"
L = 200.31'
T = 100.64'
R = 835.00'
SE = 0.06
RUNOFF = 150'

PI Sta 24+47.09
△ = 15° 07' 44.9" (LT)
D = 3° 49' 11.0"
L = 396.08'
T = 199.20'
R = 1,500.00'
SE = 0.06
RUNOFF = 150'

-Y-

PI Sta 15+84.89
△ = 19° 45' 58.9" (LT)
D = 3° 57' 05.2"
L = 500.23'
T = 252.63'
R = 1,450.00'
SE = 0.03
RUNOFF = see plans

PREFORMED SCOUR HOLE

*NOT TO SCALE

PLAN VIEW

Reinforced Rip Rap Energy Dissipator (PSH)

INSTALL LEVEL AND FLUSH WITH NATURAL GROUND

Pipe or Ditch Outlet

Square Preformed Scour Hole (PSH)

(Rip Rap in basin not shown for clarity)

Outlet velocities dependent on site conditions

B = 4'
D = 1'
W = 4'

SECTION A-A

PIPE (d = 15" OR 18")

FILL SLOPE

D

PSRM

INFLOW

NATURAL GROUND

B

LINER: CLASS B RIPRAP WITH GEOTEXTILE

MIN. 1' TUCK

DETAIL 4D

308

-L- STA. 18+47 RT
-L- STA. 21+65 RT
-Y- STA. 12+70 LT
-Y- STA. 13+10 LT
-Y- STA. 15+54 LT
-Y- STA. 18+66 LT

DETAIL 4C
DITCH CLEAN OUT
(Not to Scale)

Natural Ground

2H

D

4d or Flatter

Front Ditch Slope

DDE = 10 CY

Min. D = 1.0 Ft.

-Y2- STA. 9+80 TO 11+00 LT

DETAIL 4A
CUT DITCH
(Not to Scale)

Natural Ground

2H

D

4d or Flatter

Front Ditch Slope

Min. D = 1.0 Ft.

-Y- STA. 12+00 TO STA. 14+00 RT
-L- STA. 14+00 TO STA. 15+00 RT
-L- STA. 22+96 TO STA. 23+50 LT.

DETAIL 4B
CUT DITCH
(Not to Scale)

Natural Ground

2H

D

4d or Flatter

Front Ditch Slope

Min. D = 1.5 Ft.

-Y- STA. 14+00 TO -Y2- STA. 20+50 RT
-Y- STA. 18+00 TO STA. 10+90 RT

2 NCDOT
3 AVA KATRINA ROBERSON (WIDOW) DB 1511 PG 646 DB 1887 PG 3848 PB 37 PG 137
4 NCDOT
5 NCDOT
6 NCDOT
7 NCDOT
8 NCDOT
9 NCDOT

HAMPTON ROAD SR 2599

IDOLS ROAD EXTENSION SR 3000

1/2 1/2

85/134 42/57 29/36 31/48 42/68 118/168

2016 ADT IN HUNDREDS
2036 ADT IN HUNDREDS

SEPI ENGINEERING & CONSTRUCTION
1025 Wade Avenue
Raleigh, NC 27605
Tel:919-789-9977
Fax:919-789-9591
License: C-2197

MULKEY ENGINEERS & CONSULTANTS
PO Box 33127
Raleigh, N.C. 27636
(919) 851-1918
(919) 851-1918 (FAX)
WWW.MULKEYINC.COM

PROJECT REFERENCE NO.	SHEET NO.
U-2707	4
RW SHEET NO.	

ROADWAY DESIGN ENGINEER
2/10/2016
NORTH CAROLINA PROFESSIONAL SEAL 22568 ENGINEER STEPHEN L SCOTT
Steve Scott
DocuSigned by: 5E0A1F5D4AF84AD...

HYDRAULICS ENGINEER
2/11/2016
NORTH CAROLINA PROFESSIONAL SEAL 29984 ENGINEER DAVID P BROOKS
David P. Brooks
DocuSigned by: 03CE41B0DCE64DF...

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

POT Sta. 10+00.00 -Y2- DITCH CLEANOUT SEE DETAIL 4C

BEGIN CONSTRUCTION -Y2-
POT Sta.10+68.50

POT Sta.11+72.33 -Y- =
POT Sta.11+57.55 -Y2-
△ = 110°41'03.05"

PC Sta. 13+32.26

POT Sta.20+67.02 -L- =
POC Sta.14+70.58 -Y-
△ = 126°14'02.86"

PT Sta. 19+96.74

SC Sta. 17+96.43

CHARLES HARRIS AND WIFE ANN HARRIS DB 2563 PG 2100 DB 2647 PG 95 PB 52 PG 20

FRANCIS A. MILLER DB 1941 PG 1838 PB 37 PG 137

DEANNA R. POWELL DB 2026 PG 2657 DB 2672 PG 3927 PB 37 PG 137

LARRY W. MILLER DB 1941 PG 1872 DB 2660 PG 1432 PB 37 PG 137

JAMES L. LINDSEY, JR. DB 2631 PG 2990 DB 2663 PG 1531 PB 37 PG 137

PAULINE BARBER PRATT DB 1977 PG 1902 2598 PG 4000 PB 37 PG 137

BETTY W. RHILLIPS DB 1931 PG 2292 DB 2694 PG 441 PB 37 PG 137

TIE TO EXIST DITCH

SPEC GRADE CUT DITCH SEE DETAIL 4A

RETAIN

10+85.00 -Y- 60.00

10+60.00 -Y2- 15.64

12+30.00 -Y- 250.00

+73.84 -Y- 92.70'

+99.90 -Y- 65.00

17+96.43 -L- 65.00

18+08.67 -L- 65.00

19+85.58 -L- 65.00

SPEC GRADE CUT DITCH SEE DETAIL 4A
BEGIN SHLD BERM GUTTER 12+00.01 LT -Y-
END SHLD BERM GUTTER 22+95.98 LT -L-

P.S.H. SEE DETAIL 4D
CL "B" RIP RAP W/GEOTEXTILE LINER EST. 1 TONS
EST. 5 SY GEOTEXTILE

300' TRANSITION

160'-351'-160' 9' OFFSET

4' FDPS

5.67' FDPS

15" CSP W/ 2 ELBOWS

3-CENTER RADIUS 200'-100'-200' 3' OFFSET

BEGIN SHLD BERM GUTTER 18+45.00 RT -L-
END SHLD BERM GUTTER 16+20.58 RT -Y-
BEGIN SHLD BERM GUTTER 15+80.58 LT -Y-
END SHLD BERM GUTTER 18+44.61 LT -Y-
END SHLD BERM GUTTER 19+00.00 LT -Y-

BEGIN APPROACH SLAB -Y- STA.16+04.02

BEGIN BRIDGE -Y- STA.16+27.88

END APPROACH SLAB -Y- STA 18+59.31

END BRIDGE -Y- STA 18+35.38

PC Sta. 19+39.58

PT Sta. 18+32.49 -Y-

POC Sta.17+34.88 -Y- =
POS Sta.16+06.03 -RR-
△ = 65°37'30.33"

-RR- SCSta. 18+59.97

-RR- POT Sta.10+00.00

-RR- POT Sta. 15+13.12

BEGIN CONSTRUCTION -L- Sta.11+52.05

REMOVE EXIST. STRUCTURE (STRUCTURE ITEM)

SPEC GRADE CUT DITCH SEE DETAIL 4A

SPEC GRADE CUT DITCH SEE DETAIL 4B

SPECIAL GRADE CUT DITCH SEE DETAIL 13A ON SHEET 13

CL "B" RIP RAP W/GEOTEXTILE LINER EST. 2 TONS EST. 7 SY GEOTEXTILE

CL "B" RIP RAP W/GEOTEXTILE LINER EST. 5 TONS EST. 14 SY GEOTEXTILE

ENDWALL 24" CSP W/ 2 ELBOWS

HEADWALL

RETAIN

SRS Sta. 16+46.43

BEGIN TIP PROJECT U-2707
-L- PC Sta.11+15.99

CS Sta. 14+96.43

SHANE OLIVER AND WIFE LAURA OLIVER DB 3113 PG 597 PB 31PG 45

RICHARD R. MAYS DB 2606 PG 1123 PB 31PG 45

TORIN TORGERSEN AND WIFE JANICE TORGERSEN DB 2730 PG 42 DB 2669 PG 874 DB 269 PG 876 PB 31PG 45

GUY THOMAS TUTTEROW, III DB 2022 PG 129 PB 37 PG 157

JAMES L. SMITH AND WIFE JEAN T. SMITH DB 2162 PG 2289

BM #1

STEPHEN MARCUS SHELTON DB 2948 PG 414 DB 2825 PG 4061

TRIUMPH ACTUATION SYSTEMS, LLC DB 1987 PG 2388 DB 2388 PG 2029 DB 2794 PG 3848

NCDOT FORMERLY AUSTIN D. MCGUIRE, JR DB 2148 PG 3252

NORFOLK SOUTHERN RR

-RR- N. 58° 49' 04.3" E

-BL- 10
-BYI-

-BY1- 32

-Y2- S 60° 22' 37.6" E

S 56° 18.9' W

N 58° 22' 17.0" E

S 10° 28' 40.0" E

N 5° 14' 19.6" E

S 28° 47' 30" E 230.71'

MATCH LINE -L- STA 23+50 SEE SHEET 5

MATCH LINE -Y- STA 19+50 SEE SHEET 13

★ = PROPOSED TRAFFIC SIGNAL

NAD 83/95

SEE SHEET 14 FOR -L- GRADE
SEE SHEET 18 FOR -Y- & -Y2- GRADE
SEE SHEET 19 FOR -RR- GRADE
FOR STRUCTURES PLANS SEE SHEETS S2-01 THRU S2-44

2/9/2016
U-2707_Rdy_psh_04.dgn
mcfarlane

SEPI ENGINEERING & CONSTRUCTION
1025 Wade Avenue
Raleigh, NC 27605
Tel:919-789-9977
Fax:919-789-9591
License: C-2197

MULKEY ENGINEERS & CONSULTANTS
PO Box 33127
Raleigh, N.C. 27636
(919) 851-1918
(919) 851-1918 (FAX)
WWW.MULKEYINC.COM

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

ROADWAY DESIGN ENGINEER
2/10/2016
NORTH CAROLINA PROFESSIONAL SEAL 22568 ENGINEER Steven L. Scott
Steve L. Scott
DocuSigned by: DBC49FE94CFB4CB...

HYDRAULICS ENGINEER
2/11/2016
NORTH CAROLINA PROFESSIONAL SEAL 29984 ENGINEER David P. Bocker
David P. Bocker
DocuSigned by: 85C7A1B3E2E0497...

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

8/17/99

REVISIONS

MATCH LINE -L- STA 23+50 SEE SHEET 4

MATCH LINE -L- STA 37+50 SEE SHEET 6

NAD 83/95

BEAUCHAMP PROPERTIES, LLC
DB 2596 PG 1816
PB 52 PG 20

DB 3127 PG 2801
PB 58 PG 14

TIMOTHY R. QUEEN AND WIFE LISA G. QUEEN
DB 1726 PG 1922

CHARLES HARRIS AND WIFE ANN HARRIS
DB 2563 PG 2100
DB 2647 PG 95
PB 52 PG 20

ROY LEE CORNATZER AND WIFE JO ANN CORNATZER
DB 2107 PG 123
DB 1164 PG 1370
DB 2645 PG 3156

STEPHANIE L. ANDERSON
DB 2962 PG 411
DB 2660 PG 1214

JAMES R. BRANNOCK AND WIFE JEAN C. BRANNOCK
DB 1671PG 3279
DB 2614 PG 3337

WF INVESTMENTS OG DAVIE COUNTY, LLC
DB 2927 PG 1620
DB 2679 PG 1440

CLARK S. GENTRY AND WIFE LINDA C. GENTRY
DB 1620 PG 697
DB 1620 PG 702
DB 2645 PG 3153

S. RAY DANIELS AND WIFE PAULINE T. DANIELS
DB 1649 PG 3223
DB 2645 PG 3184

AI PROPERTIES, LLC
DB 3056 PG 2307

ELIZABETH L. SHELTON
DB 2222 PG 2544

AUSTIN D. McGUIRE, JR
DB 2148 PG 3252

WINSTON-SALEM INDUSTRIES FOR THE BLIND, INC.
DB 2952 PG 4203

NORFOLK SOUTHERN RR

BEGIN CONSTRUCTION -Y- Sta.09+80.00

BEGIN RESURFACING -Y- Sta.09+95.00

SC Sta. 29+43.97

SRS Sta. 27+93.97

CS Sta. 26+43.97

BM #2

-BL- 13

-BL- 12

-BL- 11

-L-

SPEC GRADE CUT DITCH SEE DETAIL 4A

SPEC GRADE CUT DITCH SEE DETAIL 5H

STD. BASE DITCH W/CLASS "B"RIP RAP
EST. 35 TONS
EST. 65 SY GEOTEXTILE
EST. 70 CY DDE
SEE DETAIL 5B

SPEC. LAT "V" DITCH SEE DETAIL 5A

SPEC. LAT "V" DITCH W/CLASS "B" RIP RAP
EST. 113 TONS
EST. 125 S.Y. GEOTEXTILE
SEE DETAIL 5D

SPEC. LAT BASE DITCH SEE DETAIL 5E

SPEC. LAT BASE DITCH W/CLASS "B"RIP RAP
EST. 188 TONS
EST. 346 SY GEOTEXTILE
SEE DETAIL 5F

SPEC. LAT BASE DITCH W/CLASS "B"RIP RAP
EST. 170 TONS
EST. 680 SY GEOTEXTILE
SEE DETAIL 5G

STD. BASE DITCH W/CLASS "I"RIP RAP
EST. 40 TONS
EST. 60 SY GEOTEXTILE
EST. 150 CY DDE
SEE DETAIL 5C

CL. "B" RIP RAP W/GEOTEXTILE LINER
EST. 11 TONS
EST. 28 SY GEOTEXTILE

TRENCHLESS INSTALLATION
36" WELDED STEEL PIPE
0.50" THICK, GRADE B, (UNDER RR)

HEADWALL

RETAIN

EXISTING PERMANENT DRAINAGE EASEMENT

EXISTING R/W

EXISTING R/R RIGHT OF WAY

EXISTING RIGHT OF WAY

BEGIN SHLD BEGIN GUTTER 36+00.00 RT

9 NCDOT

10 NCDOT FORMERLY AUSTIN D. McGUIRE, JR DB 2148 PG 3252

14 NCDOT

15 NCDOT

16 NCDOT

17 NCDOT

18 NCDOT

19 NCDOT

20 WINSTON-SALEM INDUSTRIES FOR THE BLIND, INC. DB 2952 PG 4203

20-A

9+80.00 -Y- 60.00 30.0T

9+80.00 -Y- 29.99

9+80.00 -Y- 60.00

10+69.15 -Y- 60.00

23+73.53 -L- 110.00

26+43.97 -L- 110.00

28+05.00 -L- 135.00 109.64

28+55.00 -L- 135.00 108.94

29+43.97 -L- 110.00

29+25.00 -L- 82.68

29+55.00 -L- 120.00

30+20.00 -L- 83.24

30+30.00 -L- 200.00

29+70.00 -L- 200.00

300' TRANSITION

100' BAY TAPER

8:1 TAPER

4' FDPS

5.67' FDPS

DETAIL 5A
SPECIAL LATERAL 'V' DITCH
(Not to Scale)
Natural Ground, 2:1, D, 4:1 or Flatter, Fill Slope
Min. D = 1.0 Ft.
-L- STA. 28+75 TO -L- STA. 30+00 LT

DETAIL 5B
STANDARD BASE DITCH
(Not to Scale)
Natural Ground, 2:1, D, d, B, Filter Fabric
Min. D = 1.0 Ft.
Max. d = 1.0 Ft.
B = 3.0 Ft.
* When B Is < 6.0'
Type of Liner = CLASS "B" RIP RAP
-L- STA. 28+50 LT

DETAIL 5C
STANDARD BASE DITCH
(Not to Scale)
Natural Ground, 2:1, D, d, B, Filter Fabric
Min. D = 2.0 Ft.
Max. d = 2.0 Ft.
B = 4.0 Ft.
* When B Is < 6.0'
Type of Liner = CLASS "I" RIP RAP
-L- STA. 29+70 RT

DETAIL 5D
SPECIAL LATERAL 'V' DITCH
(Not to Scale)
Natural Ground, 2:1, D, d, 4:1 or Flatter, Fill Slope, Filter Fabric
Min. D = 1.0 Ft.
Max. d = 1.0 Ft.
Type of Liner = CLASS "B" RIP RAP
-L- STA. 25+00 TO -L- STA. 28+75 LT

DETAIL 5E
SPECIAL LATERAL BASE DITCH
(Not to Scale)
Natural Ground, 2:1, D, d, B, 4:1 or Flatter, Fill Slope
Min. D = 2.0 Ft.
B = 3.0 Ft.
-L- STA. 30+00 TO -L- STA. 33+50 LT

DETAIL 5F
SPECIAL LATERAL BASE DITCH
(Not to Scale)
Natural Ground, 2:1, D, d, B, 4:1 or Flatter, Fill Slope, Filter Fabric
Min. D = 2.0 Ft.
Max. d = 2.0 Ft.
B = 3.0 Ft.
Type of Liner = CLASS "B" RIP RAP
-L- STA. 33+50 TO -L- STA. 36+00 LT

DETAIL 5G
SPECIAL LATERAL BASE DITCH
(Not to Scale)
Natural Ground, 2:1, D, d, B, 4:1 or Flatter, Fill Slope, Filter Fabric
Min. D = 2.0 Ft.
Max. d = 2.0 Ft.
B = 5.0 Ft.
Type of Liner = CLASS "B" RIP RAP
-L- STA. 36+00 TO -L- STA. 38+00 LT

DETAIL 5H
CUT DITCH
(Not to Scale)
Natural Ground, 2:1, D, 4:1 or Flatter, Front Ditch Slope
Min. D = 1.0 Ft.
-L- STA. 23+50 TO STA. 25+00 LT.

-L-

PI Sta 24+47.09
△ = 15° 07' 44.9" (LT)
D = 3° 49' 11.0"
L = 396.08'
T = 199.20'
R = 1,500.00'
SE = 0.06
RUNOFF = 150'

PIs Sta 26+93.98
Θs = 2° 51' 53.2"
Ls = 150.00'
LT = 100.01'
ST = 50.01'

PIs Sta 28+93.99
Θs = 3° 07' 30.8"
Ls = 150.00'
LT = 100.02'
ST = 50.01'

PI Sta 33+81.20
△ = 35° 16' 48.5" (RT)
D = 4° 10' 01.1"
L = 846.66'
T = 437.23'
R = 1,375.00'
SE = 0.06
RUNOFF = 150'

SEE SHEET 14 FOR -L- GRADE

SEE SHEET 18 FOR -Y- GRADE

I:\28.2016\8.U2707_Rdy_psh_05.dgn
USER:default

SEPI ENGINEERING & CONSTRUCTION
1025 Wade Avenue
Raleigh, NC 27605
Tel:919-789-9977
Fax:919-789-9591
License: C-2197

MULKEY ENGINEERS & CONSULTANTS
PO Box 33127
Raleigh, N.C. 27636
(919) 851-1918
(919) 851-1918 (FAX)
www.mulkeyinc.com

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

ROADWAY DESIGN ENGINEER
2/10/2016
NORTH CAROLINA PROFESSIONAL SEAL 22568 ENGINEER STEVEN L. SCOTT
Documents Signed By: Steve Scott
DocuSigned by: 08C40FE5A6C846C8...

HYDRAULICS ENGINEER
2/11/2016
NORTH CAROLINA PROFESSIONAL SEAL 29984 ENGINEER DAVID T. BOCKER
Documents Signed By: David T. Bocker
DocuSigned by: 93C7A1B94E666497...

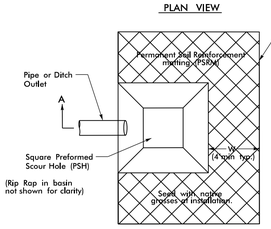
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS 8/17/99

NAD 83/95

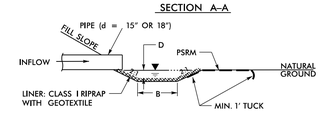
PREFORMED SCOUR HOLE
*NOT TO SCALE

PLAN VIEW



B = 4.0'
D = 1.0'
W = 4.0'

SECTION A-A



DETAIL 6I 308

-L- STA. 38+00 RT

CLARK S. GENTRY
AND WIFE
LINDA C. GENTRY
DB 1620 PG 697
DB 1620 PG 702
DB 2645 PG 3153

WF INVESTMENTS OF DAVIE COUNTY, LLC
DB 2927 PG 1620
DB 269 PG 1446

EDNA W. BINGHAM HEIRS
DB 786 PG 441
DB 2684 PG 2181

MATCH LINE -L- STA 37+50 SEE SHEET 5

MATCH LINE -L- STA 51+50 SEE SHEET 7

SPEC. LAT BASE DITCH
SEE DETAIL 6B

SPEC. LAT BASE DITCH
W/CLASS "B"RIP RAP
EST. 170 TONS
EST. 680 SY GEOTEXTILE
SEE DETAIL 6A

37+90.63 -L-
110.00

-BL- 14

39+50.63 -L-
110.00

SPEC. LAT "V" DITCH
SEE DETAIL 6D

-BL- 15

SPEC. LAT "V" DITCH
SEE DETAIL 6D

-BL- 16

46+92.63 -L-
110.00

48+52.63 -L-
110.00

50+35.00 -L-
110.00

51+05.00 -L-
110.00

51+05.00 -L-
160.00

CUT DITCH
SEE DETAIL 6H

EXISTING PERMANENT DRAINAGE EASEMENT

50+60.00 -L-
165.00

STD. BASE DITCH
W/CLASS "B"RIP RAP
EST. 20 TONS
EST. 50 SY GEOTEXTILE
EST. 225 CY DDE
SEE DETAIL 6G

BM #4

N 18°18'25.50" W 1782.88'

N 58°58'40.0" W 5946.58'

19 NCDOT

CS Sta. 37+90.63

ST Sta. 39+50.63

21 NCDOT

22 NCDOT

SC Sta. 48+52.63

TS Sta. 46+92.63

HEADWALL

48"

14

4' FDPS

-L- N 80° 59' 01.7" E

15" RCP IV

20'

15" CSP W/ 2 ELBOWS

5.67' FDPS

P.S.H.
SEE DETAIL 6I

12

12A

13

HEADWALL

14A

15

15A

16

16A

17

17A

CL. "I" RIP RAP W/GEOTEXTILE LINER
EST. 49 S.Y.
EST. 26 TONS
EST. 50 SY GEOTEXTILE

RETAIN

38+25.00 -L-
85.00
64.35

39+15.00 -L-
85.00
59.80

39+70.00 -L-
85.00
58.86

TRENCHLESS INSTALLATION
48" WELDED STEEL PIPE
0.625" THICK
GRADE B, (UNDER RR)

40+90.00 -L-
145.00
60.88

40+40.00 -L-
165.00
59.55

40+65.00 -L-
215.00

37+70.00 -L-
85.00
67.56

41+00.00 -L-
185.00

STANDARD BASE DITCH
W/CLASS "I"RIP RAP
EST. 1 TONS
EST. 2 SY GEOTEXTILE
SEE DETAIL 6C

CL. "I" RIP RAP W/GEOTEXTILE LINER
EST. 49 S.Y.
EST. 26 TONS
EST. 50 SY GEOTEXTILE

SPEC. GRADE DITCH
-L- STA. 44+00 TO 47+00

GRAU-350

8:1 TAPER

CL. "B" RIP RAP W/GEOTEXTILE LINER
EST. 2 TONS
EST. 7 SY GEOTEXTILE

49+70.00 -L-
93.50

50+55.00 -L-
97.07

CL. "B" RIP RAP W/GEOTEXTILE LINER
EST. 5 TONS
EST. 16 SY GEOTEXTILE

TRENCHLESS INSTALLATION
36" WELDED STEEL PIPE
0.50" THICK, GRADE B (UNDER RR)

STD. BASE DITCH
EST. 115 CY DDE
SEE DETAIL 6E

CL. "B" RIP RAP W/GEOTEXTILE LINER
EST. 7 TONS
EST. 22 SY GEOTEXTILE

49+50.00 -L-
230.00

49+95.00 -L-
235.00

NORFOLK SOUTHERN RR

EXISTING RIGHT OF WAY

EXISTING R/R RIGHT OF WAY

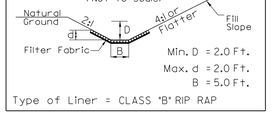
END SOD BERM GUTTER 35+50.00 RT -L-

20-A
LENTZ PROPERTY MANAGEMENT, LLC
DB 2103 PG 2072
DB 2647 PG 3525

20-B
HUBBARD REALITY & McGUIRE CONSTRUCTION
DB 16411 PG 1137

STD. BASE DITCH
W/CLASS "I"RIP RAP
EST. 12 TONS
EST. 15 SY GEOTEXTILE
EST. 220 CY DDE
SEE DETAIL 6F

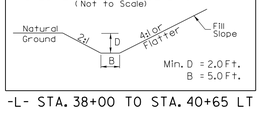
DETAIL 6A
SPECIAL LATERAL BASE DITCH
(Not to Scale)



Min. D = 2.0 Ft.
Max. d = 2.0 Ft.
B = 5.0 Ft.
Type of Liner = CLASS "B" RIP RAP

-L- STA. 36+00 TO -L- STA. 38+00 LT

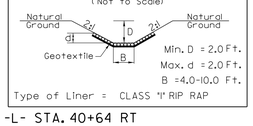
DETAIL 6B
SPECIAL LATERAL BASE DITCH
(Not to Scale)



Min. D = 2.0 Ft.
B = 5.0 Ft.
Type of Liner = CLASS "B" RIP RAP

-L- STA. 38+00 TO STA. 40+65 LT

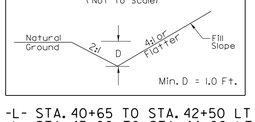
DETAIL 6C
STANDARD BASE DITCH
(Not to Scale)



Min. D = 2.0 Ft.
Max. d = 2.0 Ft.
B = 4.0-10.0 Ft.
Type of Liner = CLASS "I" RIP RAP

-L- STA. 40+64 RT

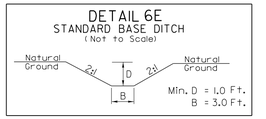
DETAIL 6D
SPECIAL LATERAL "V" DITCH
(Not to Scale)



Min. D = 1.0 Ft.

-L- STA. 40+65 TO STA. 42+50 LT
-L- STA. 43+00 TO STA. 44+00 LT
-L- STA. 48+50 TO STA. 50+60 LT

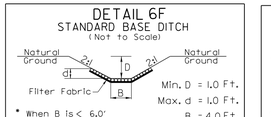
DETAIL 6E
STANDARD BASE DITCH
(Not to Scale)



Min. D = 1.0 Ft.
B = 3.0 Ft.

-L- STA. 50+15 RT

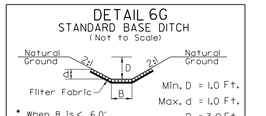
DETAIL 6F
STANDARD BASE DITCH
(Not to Scale)



Min. D = 1.0 Ft.
Max. d = 1.0 Ft.
B = 4.0 Ft.
* When B is < 6.0'
Type of Liner = CLASS "I" RIP RAP

-L- STA. 49+75 RT

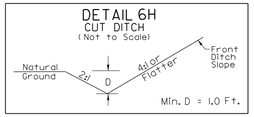
DETAIL 6G
STANDARD BASE DITCH
(Not to Scale)



Min. D = 1.0 Ft.
Max. d = 1.0 Ft.
B = 3.0 Ft.
* When B is < 6.0'
Type of Liner = CLASS "B" RIP RAP

-L- STA. 50+60 LT

DETAIL 6H
CUT DITCH
(Not to Scale)



Min. D = 1.0 Ft.

-L- STA. 50+60 TO STA. 51+50 LT

-L-

PIs Sta 38+43.98	PIs Sta 47+99.32	PI Sta 53+94.10
Θs = 3° 20' 00.9"	Θs = 3° 26' 46.9"	Δ = 44° 18' 15.0" (LT)
Ls = 160.00'	Ls = 160.00'	D = 4° 18' 28.6"
LT = 106.69'	LT = 106.69'	L = 1,028.43
ST = 53.35'	ST = 53.35'	T = 541.47'
		R = 1,330.00'
		SE = 0.06
		RUNOFF = 160'

SEE SHEET 15 FOR -L- GRADE

1/28/2016
U2707_Rdy_psh_06.dgn
USERNAME\$

SEPI ENGINEERING & CONSTRUCTION
1025 Wade Avenue
Raleigh, NC 27605
Tel:919-789-9977
Fax:919-789-9591
License: C-2197

MULKEY ENGINEERS & CONSULTANTS
PO Box 33127
Raleigh, N.C. 27636
(919) 851-1918
(919) 851-1918 (FAX)
www.mulkeyinc.com

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

ROADWAY DESIGN ENGINEER
2/10/2016
NORTH CAROLINA PROFESSIONAL SEAL 22568 ENGINEER STEVEN L. SCOTT
Steve Scott
DBC49FE84CFB4CB...

HYDRAULICS ENGINEER
2/11/2016
NORTH CAROLINA PROFESSIONAL SEAL 29984 ENGINEER DAVID P. BROOKS
David P. Brooks
97C7A1B9AEF6A87...

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

8/17/99
REVISIONS

NAD 83/95

EDNA W. BINGHAM HEIRS
DB 786 PG 441
DB 2684 PG 2181

MATCH LINE -L- STA 51+50 SEE SHEET 6

-BL- 17
-BL- 18
-BL- 19

CUT DITCH
SEE DETAIL 7A

SPECIAL GRADE DITCH
SEE PROFILE SHEET No. 15

SPECIAL GRADE CUT DITCH
SEE DETAIL 7A

STANDARD BASE DITCH
SEE DETAIL 7B
DDE = 20 CY

SPEC. GRADE CUT DITCH
SEE DETAIL 7A

22
NCDOT

18

18A

58+81.06 -L-
110.00

60+41.06 -L-
110.00

CS Sta. 58+81.06

ST Sta. 60+41.06

N 29° 47' 12.9" E

4' FDPS

EXISTING R/W

EXISTING RIGHT OF WAY

EXISTING R/R RIGHT OF WAY

NORFOLK SOUTHERN RR

CL. "B" RIP RAP
W/GEOTEXTILE LINER
EST. 2 TONS
EST. 7 SY FABRIC

CL. "B" RIP RAP
W/GEOTEXTILE LINER
EST. 2 TONS
EST. 7 SY GEOTEXTILE

62+25.00 -L-
53.21

62+70.00 -L-
54.50

CL. "B" RIP RAP
W/GEOTEXTILE LINER
EST. 2 TONS
EST. 7 SY GEOTEXTILE

62+45.00 -L-
97.00

62+95.00 -L-
97.00

CL. "B" RIP RAP
W/GEOTEXTILE LINER
EST. 5 TONS
EST. 14 SY GEOTEXTILE

WW

395.53'
S58°50'40"E

MATCH LINE -L- STA 65+00 SEE SHEET 8

HUBBARD REALITY &
McGUIRE CONSTRUCTION
DB 1641 PG 1137

-L-

PI Sta 53+94.10
Δ = 44° 18' 15.0" (LT)
D = 4° 18' 28.6"
L = 1,028.43'
T = 541.47'
R = 1,330.00'
SE = 0.06
RUNOFF = 160'

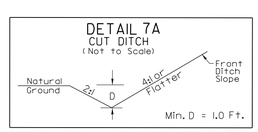
PIs Sta 59+34.41
θs = 3° 26' 46.9"
Ls = 160.00'
LT = 106.69'
ST = 53.35'

BM =5

23

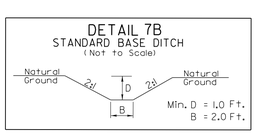
KEITH HAROLD HASTINGS
PATRICK OMAR DODSON
DB 1448 PG 773
DB 2128 PG 4653
DB 2179 PG 2174

DETAIL 7A
CUT DITCH
(Not to Scale)



-L- STA. 51+50 TO -L- STA. 52+50 LT
-L- STA. 59+50 TO -L- STA. 62+00 LT
-L- STA. 62+00 TO -L- STA. 63+00 LT

DETAIL 7B
STANDARD BASE DITCH
(Not to Scale)



-L- STA. 61+85 LT

SEE SHEET 15 FOR -L- GRADE

1/28/2016
U2707_Rdy_psh_07.dgn
USER:dfaulk

8/17/99

REVISIONS

SEPI ENGINEERING & CONSTRUCTION
1025 Wade Avenue
Raleigh, NC 27605
Tel:919-789-9977
Fax:919-789-9591
License: C-2197

MULKEY ENGINEERS & CONSULTANTS
PO Box 33127
Raleigh, N.C. 27636
(919) 851-1918
(919) 851-1918 (FAX)
WWW.MULKEYINC.COM

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

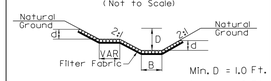
ROADWAY DESIGN ENGINEER
2/10/2016
NORTH CAROLINA PROFESSIONAL SEAL 22568 ENGINEER STEVEN L SCOTT
Steve Scott
DocuSigned by: 93C7A1B94E66497...

HYDRAULICS ENGINEER
2/11/2016
NORTH CAROLINA PROFESSIONAL SEAL 29984 ENGINEER DAVID P BOCKER
David P Bocker
DocuSigned by: 93C7A1B94E66497...

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83/95

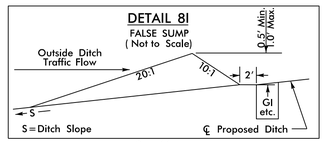
DETAIL 8B
INLET / OUTLET TYPICAL
(Not to Scale)



Min. D = 1.0 Ft.
Max. d = 1.0 Ft.
B = 5.0 Ft.
* When B Is < 6.0'
Type of Liner = CLASS "I" RIP RAP

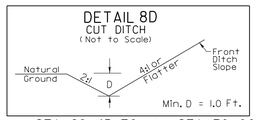
-L- STA. 68+50 RT

DETAIL 8I
FALSE SUMP
(Not to Scale)



-L- STA. 66+15 LT
-L- STA. 69+85 RT

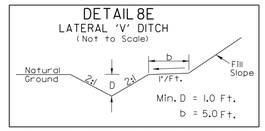
DETAIL 8D
CUT DITCH
(Not to Scale)



Min. D = 1.0 Ft.

-L- STA. 68+45 TO -L- STA. 70+00 LT
-L- STA. 70+00 TO -L- STA. 71+50 RT

DETAIL 8E
LATERAL 'V' DITCH
(Not to Scale)



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

-L- STA. 68+58 TO -L- STA. 69+50 RT
-L- STA. 74+50 TO -L- STA. 79+00 LT

-DRI-

PI Sta 11+20.93
△ = 36°00'35.0" (RT)
D = 28°06'14.7"
L = 128.13'
T = 66.26'
R = 203.87'
SE = NC

PI Sta 12+50.65
△ = 8°19'40.8" (RT)
D = 6°08'51.4"
L = 135.47'
T = 67.85'
R = 932.00'
SE = NC

EDNA W. BINGHAM HEIRS
DB 786 PG 441
DB 2684 PG 2181

EDNA W. BINGHAM HEIRS
DB 786 PG 441
DB 2684 PG 2181

72+54.87 -L-
517.18

74+92.89 -L-
365.64

77+81.21 -L-
291.58

+46.67 -L-
296.40'

-BL- 20

-BL- 22

-BL- 21

EXISTING PERMANENT DRAINAGE EASEMENT

68+05.00 -L-
160.00

67+85.00 -L-
110.00

68+50.00 -L-
110.00

67+70.00 -L-
135.00

67+00.00 -L-
61.25

68+15.00 -L-
85.00

70+45.00 -L-
66.91

68+65.00 -L-
315.00

69+05.00 -L-
305.00

72+05.48 -L-
110.03

72+26.26 -L-
110.00

77+69.27 -L-
110.00

STD. BASE DITCH
W/CLASS "I" RIP RAP
EST. 65 TONS
EST. 100 SY GEOTEXTILE
EST. 175 CY DDE
SEE DETAIL 8C

LAT BASE DITCH
W/CLASS 'B' RIPRAP
EST. 105 TONS
EST. 148 SY GEOTEXTILE
EST. 137 CY DDE
SEE DETAIL 8H

CUT DITCH
SEE DETAIL 8D

CL. "B" RIP RAP
W/GEOTEXTILE LINER
EST. 2 TONS
EST. 7 SY GEOTEXTILE

CL. "I" RIP RAP
W/GEOTEXTILE LINER
EST. 26 TONS
EST. 50 SY GEOTEXTILE

RIP RAP TOE PROTECTION
W/CLASS "B" RIP RAP
EST. 48 TONS
EST. 53 SY GEOTEXTILE
SEE DETAIL 8F

SPECIAL HEADWALL
SEE 2C-1

RETAIN

COLLAR

STD. BASE DITCH
W/CLASS "I" RIP RAP
EST. 14 TONS
EST. 25 SY GEOTEXTILE
EST. 20 CY DDE
SEE DETAIL 8B

SPEC. LAT "V" DITCH
EST. 176 CY DDE
SEE DETAIL 8E

TRENCHLESS INSTALLATION
48" WELDED STEEL PIPE
0.625" THICK, GRADE B (UNDER RR)

RIP RAP AT EMBANKMENT
W/CLASS "I" RIP RAP
EST. 33 TONS
EST. 62 SY GEOTEXTILE
SEE DETAIL 8G

FALSE SUMP
SEE DETAIL 8I

HEADWALL

SPEC. GRADE CUT DITCH
SEE DETAIL 8D

LAT "V" DITCH
EST. 187 CY DDE
SEE DETAIL 8E
EXISTING R/W

LAT BASE DITCH
EST. 245 CY DDE
SEE DETAIL 8A

15" CSP W/ 2 ELBOWS

CL. "B" RIP RAP
W/GEOTEXTILE LINER
EST. 2 TONS
EST. 7 SY GEOTEXTILE

CL. "I" RIP RAP
W/GEOTEXTILE LINER
EST. 60 SY
EST. 26 TONS

POT Sta. 71+78.03 -L- =
POT Sta. 11+98.07 -DRI-
Δ = 106°11'41.92"

PT Sta. 13+18.27

PC Sta. 71+91.06

PT Sta. 77+69.27

PC Sta. 11+82.80 73+05.00 -L-

END CONSTRUCTION
STA. 11+67.31 -DRI-

PC Sta. 10+54.67

BEGIN CONSTRUCTION
STA. 11+00.00 -DRI-

POT Sta. 10+00.00

BEGIN SHLD BERM GUTTER

N 29°47'12.9" E

N 40°08'22.9" E

N 80°57'59.8" W

-L-

PI Sta 74+80.95
△ = 10°21'10.0" (RT)
D = 1°47'25.8"
L = 578.21'
T = 289.89'
R = 3,200.00'
SE = 0.04
RUNOFF = 100'

NORFOLK SOUTHERN RR

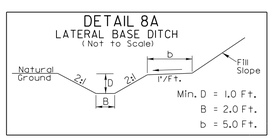
HANES HOUSE
HISTORIC PROPERTY
DO NOT DISTURB

KEITH HAROLD HASTINGS
PATRICK OMAR DODSON
DB 1448 PG 773
DB 2128 PG 4653
DB 2179 PG 2174

MATCH LINE -L- STA 65+00 SEE SHEET 7

MATCH LINE -L- STA 79+00 SEE SHEET 9

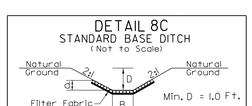
DETAIL 8A
LATERAL BASE DITCH
(Not to Scale)



Min. D = 1.0 Ft.
B = 2.0 Ft.
b = 5.0 Ft.

-L- STA. 73+00 TO -L- STA. 79+00 RT

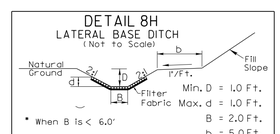
DETAIL 8C
STANDARD BASE DITCH
(Not to Scale)



Min. D = 1.0 Ft.
Max. d = 1.0 Ft.
B = 5.0 Ft.
* When B Is < 6.0'
Type of Liner = CLASS "I" RIP RAP

-L- STA. 68+45 LT

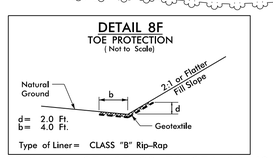
DETAIL 8H
LATERAL BASE DITCH
(Not to Scale)



Min. D = 1.0 Ft.
Max. d = 1.0 Ft.
B = 2.0 Ft.
b = 5.0 Ft.
* When B Is < 6.0'
Type of Liner = CLASS "B" RIP RAP

-L- STA. 66+50 TO -L- STA. 68+45 LT

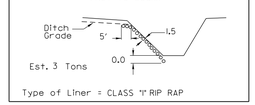
DETAIL 8F
TOE PROTECTION
(Not to Scale)



d= 2.0 Ft.
b= 4.0 Ft.
Type of Liner = CLASS "B" Rip-Rap

FROM -L- STA.67+20 TO STA. 68+40 RT

DETAIL 8G
RIP RAP AT EMBANKMENT
(Not to Scale)



Type of Liner = CLASS "I" RIP RAP

-L- STA. 90+90 RT

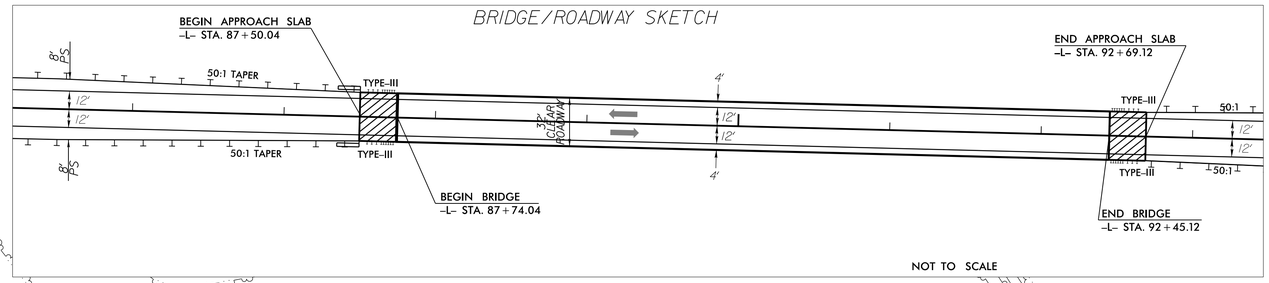
SEE SHEET 16 FOR -L- GRADE
SEE SHEET 19 FOR -DR1- GRADE
SEE THE NATURAL STREAM PLANS FOR STREAM RELOCATION

2/9/2016
C:\Projects\U2707_Rdy.psh_08.dgn
USER:Mwangle

8/17/99

REVISIONS

BRIDGE/ROADWAY SKETCH



NOT TO SCALE

SEPI ENGINEERING & CONSTRUCTION
1025 Wade Avenue
Raleigh, NC 27605
Tel:919-789-9977
Fax:919-789-9591
License: C-2197

MULKEY ENGINEERS & CONSULTANTS
PO Box 33127
Raleigh, N.C. 27636
(919) 851-1918
(919) 851-1918 (FAX)
WWW.MULKEYINC.COM

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

ROADWAY DESIGN ENGINEER
2/23/2016
NORTH CAROLINA PROFESSIONAL SEAL 22568 ENGINEER STEVEN L SCOTT
Steve Scott
DocuSigned by: DEC45EEFACF84CA...

HYDRAULICS ENGINEER
2/23/2016
NORTH CAROLINA PROFESSIONAL SEAL 29984 ENGINEER DAVID P BOCKER
David P. Bocker
DocuSigned by: 8509A1B42E0497...

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83/95

MATCH LINE SEE SHEET 8
-L- STA 79+00

MATCH LINE SEE SHEET 10
-L- STA 93+00

EDNA W. BINGHAM HEIRS
DB 786 PG 441
DB 2684 PG 2181

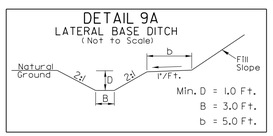
JOSEPH C. GOODMAN AND WIFE
MARY ANN HARRIS GOODMAN
DB 2226 PG 4675
DB 1629 PG 3747
DB 2688 PG 1080

KEITH HAROLD HASTINGS
PATRICK OMAR DODSON
DB 1448 PG 773
DB 2128 PG 4653
DB 2179 PG 2174

HANES HOUSE
HISTORIC PROPERTY
DO NOT DISTURB

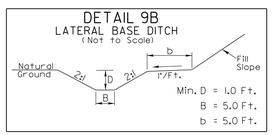
PUE
+19.30 -L- 282.37'
+67.61 -L- 283.49'
+43.05 -L- 297.82'
+57.24 -L- 238.08'
+42.72 -L- 211.82'
82+18.49 -L- 252.37
84+68.25 -L- 253.49
88+36.22 -L- 267.53
89+51.75 -L- 110.00
RW
22Z
22
23
26
27A
28
28A
29
29A
29B
29C
NCDOT
BEGIN BRIDGE -L- STA 87+74.04
BEGIN APPROACH SLAB -L- STA 87+50.04
END APPROACH SLAB -L- STA 92+69.12
END BRIDGE -L- STA 92+45.12
BM #7
MUDDY CREEK
NORFOLK SOUTHERN RR
N 40° 08' 22.9" E
POWER LINE EASEMENT
EXISTING R/R RIGHT OF WAY
-BL- 23
-BL- 24
NOTE: HEADWALLS & BAFFLES TO BE FABRICATED WITH 95"X67" CAAP SEE SHEET NS-10
LAT "V" DITCH EST. 187 CY DDE SEE DETAIL 9C
LAT GRASSED SWALE EST. 411 CY DDE SEE DETAIL 9D
CLASS "II" RIP RAP SLOPE PROTECTION SEE DETAIL 9I
15" CSP W/ 2 ELBOWS EXISTING R/W
BEGIN SHLD BERM GUTTER 87+35.37 LT -L-
P.S.H. SEE DETAIL 9J
ALUMINUM HW 18" CONC.
REMOVE ALUMINUM HW
CL. "I" RIP RAP W/GEOTEXTILE LINER EST. 96 TONS EST. 174 SY GEOTEXTILE
STANDARD BASE GRASSED SWALE EST. 121 CY DDE SEE DETAIL 9E
50:1 TAPER
TYPE-II
TYPE-III
2GI
END SHLD BERM GUTTER 79+50.00 RT -L-
BEGIN SHLD BERM GUTTER 89+35.37 RT -L-
END SHLD BERM GUTTER 89+51.63 LT/RT -L-
RETAIN EXISTING CHANNEL
LAT BASE DITCH EST. 245 CY DDE SEE DETAIL 9A
LAT BASE DITCH EST. 195 CY DDE SEE DETAIL 9B
CL. "B" RIP RAP W/GEOTEXTILE LINER EST. 8 TONS EST. 21 SY GEOTEXTILE
CL. "B" RIP RAP W/GEOTEXTILE LINER EST. 2 TONS EST. 7 SY GEOTEXTILE
15" CSP W/ 2 ELBOWS
REMOVE
RIP RAP OUTLET W/CLASS "II" RIP RAP SEE DETAIL 9F
STANDARD BASE GRASSED SWALE EST. 178 CY DDE SEE DETAIL 9E
GRASS SWALE WITH ROCK CHECK DAM EST. 342 CY DDE SEE DETAIL 9G & 9H

DETAIL 9A
LATERAL BASE DITCH
(Not to Scale)



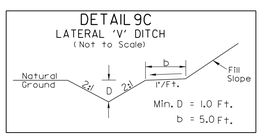
-L- STA. 79+00 TO -L- STA. 80+50 RT

DETAIL 9B
LATERAL BASE DITCH
(Not to Scale)



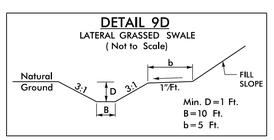
-L- STA. 80+50 TO -L- STA. 83+70 RT

DETAIL 9C
LATERAL 'V' DITCH
(Not to Scale)



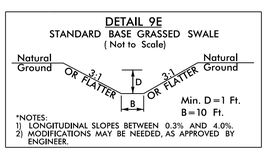
-L- STA. 79+00 TO -L- STA. 82+65 LT

DETAIL 9D
LATERAL GRASSED SWALE
(Not to Scale)



-L- STA. 92+06 TO -L- STA. 93+50 RT

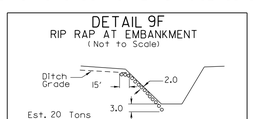
DETAIL 9E
STANDARD BASE GRASSED SWALE
(Not to Scale)



*NOTES:
1) LONGITUDINAL SLOPES BETWEEN 0.3% AND 4.0%.
2) MODIFICATIONS MAY BE NEEDED, AS APPROVED BY ENGINEER.

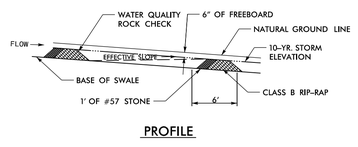
-L- STA. 92+06 LT & RT
-L- STA. 91+00 TO STA. 92+06 RT

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

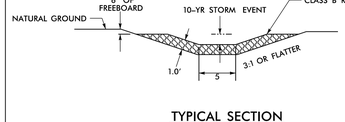


-L- STA. 90+90 RT

DETAIL 9G
TRAPEZOIDAL GRASSED SWALE
w/ROCK CHECK DAM
(Not to Scale)



PROFILE

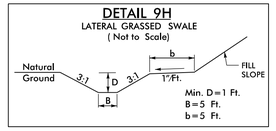


TYPICAL SECTION

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

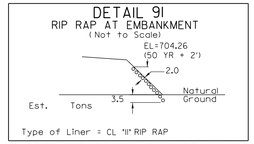
-L- STA 92+06 TO 93+50 RT

DETAIL 9H
LATERAL GRASSED SWALE
(Not to Scale)



-L- STA 92+06 TO 93+50 RT

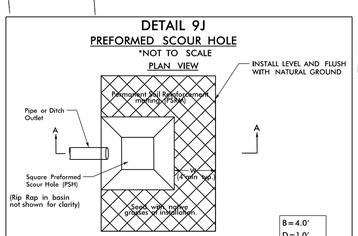
DETAIL 9I
RIP RAP AT EMBANKMENT
(Not to Scale)



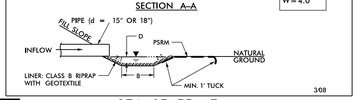
-L- STA. 87+00 TO STA. 88+00 LT
-L- STA 92+50 TO STA 93+00 LT

DETAIL 9J
PREFORMED SCOUR HOLE
*NOT TO SCALE

PLAN VIEW



SECTION A-A



-L- STA. 87+35 LT

All Stream Mitigation Work must be performed by Contractor on NCDOT's Approved Pre-Qualified List for Stream Restoration and Construction (Work Code 1601)

Proposed culvert to be placed outside of Sanitary Sewer Easement. Exact stake-out and location to be determined and approved by Engineer prior to Installation.

SEE THE NATURAL STREAM PLANS FOR STREAM RELOCATION

SEE SHEET 16 FOR -L- GRADE

FOR STRUCTURES PLANS SEE SHEETS S1-01 THRU S1-42

2/23/2016
U-2707_Rdy_psh_09.dgn
USER:Rmcginnis

8/17/99

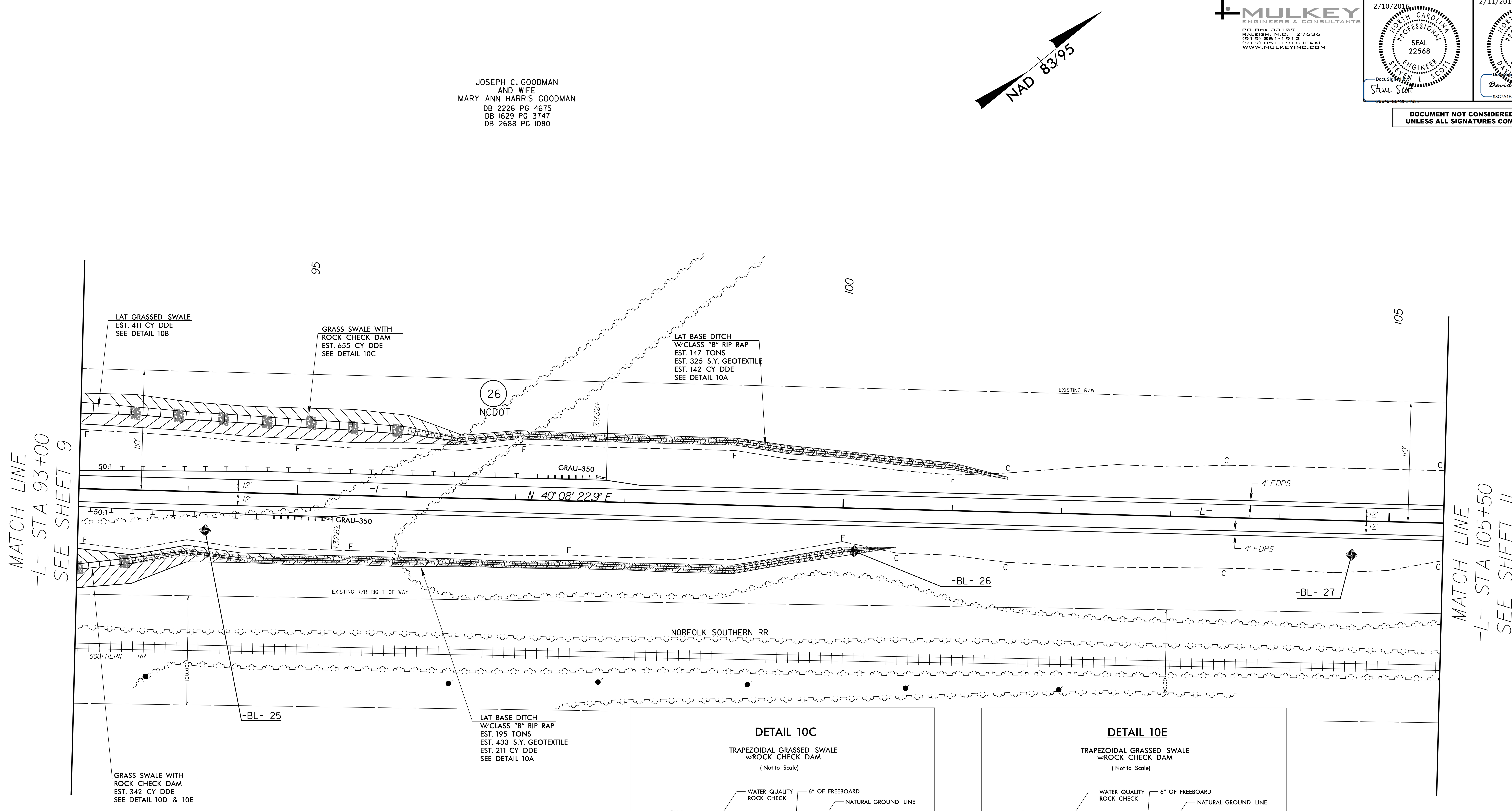
REVISIONS

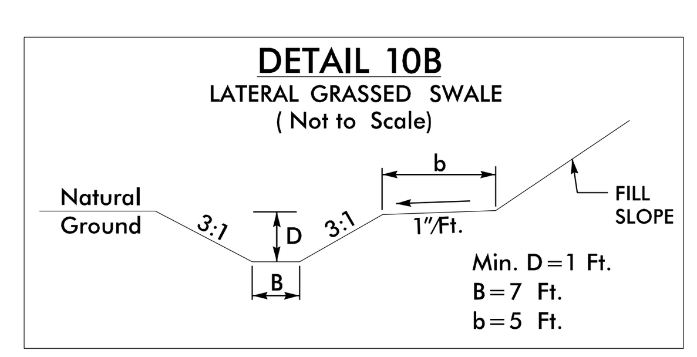
SEPI ENGINEERING & CONSTRUCTION
1025 Wade Avenue
Raleigh, NC 27605
Tel:919-789-9977
Fax:919-789-9591
License: C-2197

MULKEY ENGINEERS & CONSULTANTS
PO Box 33127
Raleigh, N.C. 27636
(919) 851-1912
(919) 851-1918 (FAX)
WWW.MULKEYINC.COM

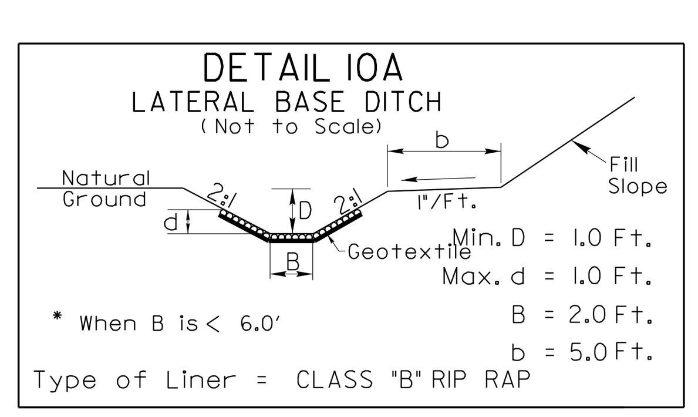
PROJECT REFERENCE NO.	SHEET NO.
U-2707	10
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
2/10/2016 NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 22568 STEVEN L. SCOTT — Steve Scott	2/11/2016 NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 29984 DAVID BOCKER — David Bocker

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

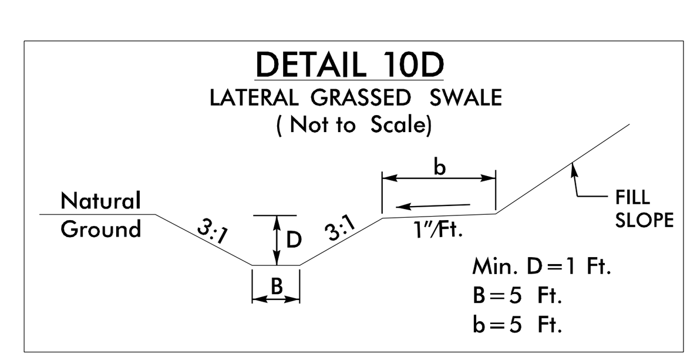




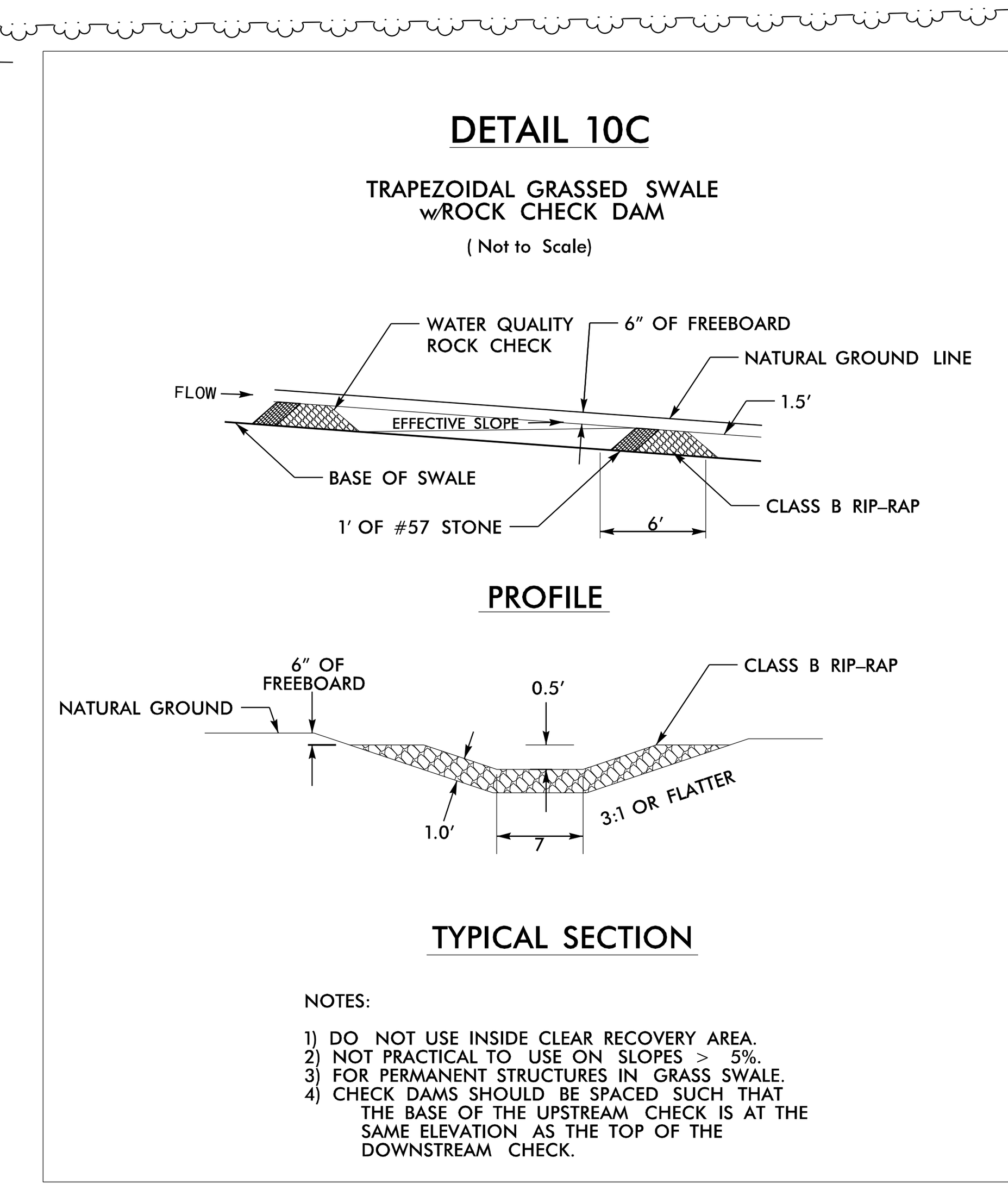
-L- STA. 92+06 TO -L- STA. 93+50 LT



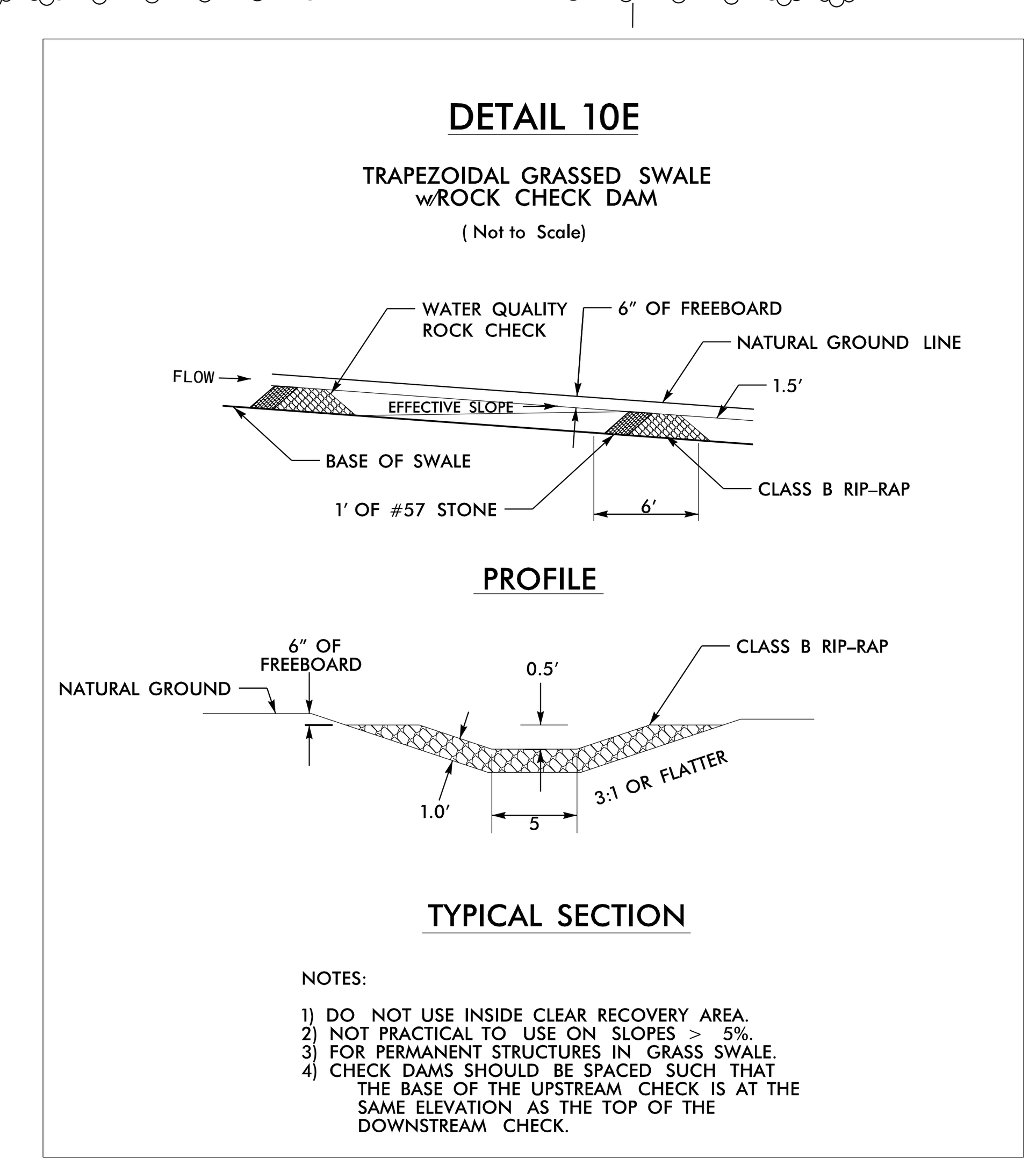
-L- STA. 96+00 TO -L- STA. 101+50 LT
-L- STA 93+50 RT TO STA 100+50 RT



-L- STA. 92+06 TO -L- STA. 93+50 RT



-L- STA. 93+50 TO STA. 96+00 LT



-L- STA. 92+06 TO STA. 93+50 RT

SEE SHEET 17 FOR -L- GRADE

1/28/2016 ...\U2707_Rdy_psh_10.dgn

SEPI ENGINEERING & CONSTRUCTION
1025 Wade Avenue
Raleigh, NC 27605
Tel:919-789-9977
Fax:919-789-9591
License: C-2197

MULKEY ENGINEERS & CONSULTANTS
PO Box 33127
Raleigh, N.C. 27636
(919) 851-1918
(919) 851-1918 (FAX)
www.mulkeyinc.com

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

ROADWAY DESIGN ENGINEER
2/10/2016
NORTH CAROLINA PROFESSIONAL SEAL 22568 ENGINEER STEVEN L SCOTT
Steve Scott
DBC49FE84CFB4C8...

HYDRAULICS ENGINEER
2/11/2016
NORTH CAROLINA PROFESSIONAL SEAL 29984 ENGINEER DAVID P BOCKER
David P Bocker
93C7A1B94E66497...

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS

8/17/99

NAD 83/95

BM #8

JOSEPH C. GOODMAN
AND WIFE
MARY ANN HARRIS GOODMAN
DB 2226 PG 4675
DB 1629 PG 3747
DB 2688 PG 1080

MATCH LINE -L- STA 105+50 SEE SHEET 10

SPEC GRADE CUT DITCH SEE DETAIL 11A

109+05.83 -L- 110.00

110+55.83 -L- 110.00

FALSE SUMP SEE DETAIL 11B

26 NCDOT

F.S. 30

TS Sta. 109+05.83

SC Sta. 110+55.83

-L- N 40° 08' 22.9" E

12' 12' 18'

4' FDPS

30A

CL "B" RIP RAP W/GEOTEXTILE LINER EST. 3 TONS EST. 10 SY GEOTEXTILE

CL "B" RIP RAP W/GEOTEXTILE LINER EST. 2 TONS EST. 7 SY GEOTEXTILE

SPEC GRADE CUT DITCH SEE DETAIL 11A

110+50.00 -L- 55.41

-BL- 28

111+40.00 -L- 62.00

112+75.00 -L- 59.25

EXISTING R/R RIGHT OF WAY

NORFOLK SOUTHERN RR

100' MIN.

SPEC GRADE DITCH SEE PROFILE SHEET NO. 17

SPEC GRADE DITCH SEE PROFILE SHEET NO. 17

-BL- 29

EXISTING R/W

200' BAY TAPER

600' TRANSITION

300' TRANSITION

29 NCDOT

117+04.47 -L- 109.90

117+57.90 -L- 90.00

116+78.87 -L- 175.00

CAROL PAGE ARMSTRONG DB 2066 PG 670

MATCH LINE -L- STA 117+75 SEE SHEET 12

-L-

PIs Sta 110+05.85	PI Sta 115+08.96
Θs = 3° 16' 04.1"	Δ = 38° 01' 36.1" (LT)
Ls = 150.00'	D = 4° 21' 25.5"
LT = 100.02'	L = 872.75
ST = 50.01'	T = 453.13'
	R = 1,315.00'
	SE = 0.06
	RUNOFF = 150'

DETAIL 11A
CUT DITCH
(Not to Scale)
Natural Ground, 2H, D, 4:1 or Flatter, Front Ditch Slope
Min. D = 1.5 Ft.

-L- STA. 106+75 TO -L- STA. 108+00 LT
-L- STA. 107+50 TO -L- STA. 110+00 RT

DETAIL 11B
SPECIAL FALSE SUMP
(Not to Scale)
Outside Ditch Traffic Flow, 20:1, 20:1, 2.0', 2.0', Cross Pipe
S
S = Ditch Slope
℄ Proposed Ditch

-L- STA. 106+60 LT

SEE SHEET 17 & 18 FOR -L- GRADE

1/28/2016
U-2707_Rdy_psh_11.dgn
USER:Paul.Smith

8/17/99

REVISIONS

SEPI ENGINEERING & CONSTRUCTION
1025 Wade Avenue
Raleigh, NC 27605
Tel:919-789-9977
Fax:919-789-9591
License: C-2197

MULKEY ENGINEERS & CONSULTANTS
PO Box 33127
Raleigh, N.C. 27636
(919) 851-1918
(919) 851-1918 (FAX)
WWW.MULKEYINC.COM

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

ROADWAY DESIGN ENGINEER
3/9/2016
NORTH CAROLINA PROFESSIONAL SEAL 22568 ENGINEER STEVEN L. SCOTT
Steve Scott
DocuSigned by: DBC4CFE5E7CE42C8...

HYDRAULICS ENGINEER
3/8/2016
NORTH CAROLINA PROFESSIONAL SEAL 29984 ENGINEER DAVID P. BOCKER
David P. Bocker
DocuSigned by: B02AFBB71E3ABB...

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83/95

10

BEGIN CONSTRUCTION
-Y4- Sta. 10+00.00

BEGIN RESURFACING
-Y4- Sta. 11+73.04

END CONSTRUCTION
-Y5- Sta. 13+62.68

END RESURFACING
-Y5- Sta. 13+28.79

END TIP PROJECT U-2707
POT Sta. 121+66.90 -L- =
POS Sta. 14+59.06 -Y4- =
POT Sta. 10+00.00 -Y5-
Δ = 82°41'27.42" -Y5-
Δ = 97°22'05.88" -L-

J. B. INGRAM
AND WIFE
VIRGINIA S. INGRAM
DB 690 PG 391
DB735 PG 79
DB 1141 PG 842
DB 2599 PG 4406
PB 12 PG 81

JOSEPH C. GOODMAN
AND WIFE
MARY ANN HARRIS GOODMAN
DB 2226 PG 4675
DB 1629 PG 3747
DB 2688 PG 1080

CHARLES L. KIRKMAN, III
AND WIFE
RHONDA KIRKMAN
DB 2213 PG 5259
DB 2707 PG 1407

DEWEY O. SMITH
DB 1446 PG 375
DB 2660 PG 1972

MASON D. SMITH
AND WIFE
LARAE A. SMITH
DB 2589 PG 2551

BLUE DOLPHIN DIVE SHOP, INC.
DB 1682 PG 3382
DB 1760 PG 2851

CAROL PAGE ARMSTRONG, TRUSTEE
CAROL PAGE ARMSTRONG REVOCABLE TRUST
DB 2066 PG 670
DB 2684 PG 3361

BARRY G. LAWSON
AND WIFE
SANDRA T. LAWSON
DB 1698 PG 291

MATCH LINE
-L- STA. 117+75
SEE SHEET 11

★ = PROPOSED TRAFFIC SIGNAL

-Y4-

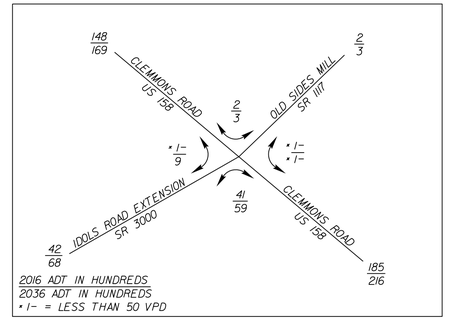
PI Sta 11+14.33
Δ = 12° 47' 26.0" (LT)
D = 5° 37' 02.0"
L = 227.70
T = 114.33'
R = 1,020.00'
SE = EXIST.

PIs Sta 13+11.15
Θs = 7° 01' 17.5"
Ls = 250.00'
LT = 166.80'
ST = 83.45'
SE = EXIST.

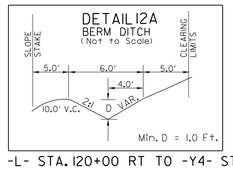
-L-

PI Sta 115+08.96
Δ = 38° 01' 36.1" (LT)
D = 4° 21' 25.5"
L = 872.75
T = 453.13'
R = 1,315.00'
SE = 0.06

PIs Sta 119+78.60
Θs = 3° 16' 04.1"
Ls = 150.00'
LT = 100.02'
ST = 50.01'

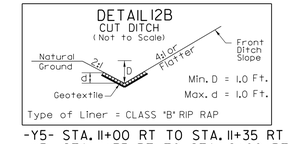


DETAIL 12A
BERM DITCH
(Not to Scale)



-L- STA. 120+00 RT TO -Y4- STA. 15+85 RT
-Y4- STA. 12+30 TO STA. 13+00 RT

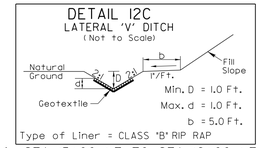
DETAIL 12B
CUT DITCH
(Not to Scale)



Type of Liner = CLASS 'B' RIP RAP

-Y5- STA. 11+00 RT TO STA. 11+35 RT
-Y5- STA. 11+35 RT TO STA. 12+00 RT

DETAIL 12C
LATERAL 'V' DITCH
(Not to Scale)



Type of Liner = CLASS 'B' RIP RAP

-Y4- STA. 15+00 LT TO STA. 16+00 LT

SEE SHEET 18 FOR -L- GRADE
SEE SHEET 19 FOR -Y4- GRADE
SEE SHEET 19 FOR -Y5- GRADE

3/8/2016
U:\2707\Roadway\sheets\U2707_Rdy_psh_12.dgn
USER:mcoble

SEPI ENGINEERING & CONSTRUCTION
1025 Wade Avenue
Raleigh, NC 27605
Tel:919-789-9977
Fax:919-789-9591
License: C-2197

MULKEY ENGINEERS & CONSULTANTS
PO Box 33127
Raleigh, N.C. 27636
(919) 851-1918
(919) 851-1918 (FAX)
www.mulkeyinc.com

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

ROADWAY DESIGN ENGINEER
3/9/2016
NORTH CAROLINA PROFESSIONAL SEAL 22568 ENGINEER STEVEN L. SCOTT
Steve Scott

HYDRAULICS ENGINEER
3/8/2016
NORTH CAROLINA PROFESSIONAL SEAL 29984 ENGINEER DAVID P. BOCKER
David P. Bocker

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

8/17/99

REVISIONS

MATCH LINE -Y- STA 19+50
SEE SHEET 4

-Y-

PI Sta 24+77.65
Δ = 18°15'54.9" (RT)
D = 6°01'52.1"
L = 302.85'
T = 152.72'
R = 950.00'
SE = 0.04
RUNOFF = SEE PLANS

PI Sta 20+52.02
Δ = 13°30'00.2" (LT)
D = 6°01'52.1"
L = 223.84'
T = 112.44'
R = 950.00'
SE = 0.04
RUNOFF = SEE PLANS

POT 12+90.56 -Y3-

END CONSTRUCTION
POT Sta.12+60.00 -Y3-

12+60.00 -Y3-
44.00

RETAIN

6" CONC.

6TCB

42A

N 60° 49' 10.9" E

ATLANTIS FOODS HOLDINGS, LLC
DB 3098 PG 3605
DB 2827 PG 2735

PT Sta. 21+63.42

+54.56 -Y-
81.73'

MAINTAIN EXISTING DITCH
RETAIN AND ADJUST ROOF
DRAINS AS NECESSARY

MTLBUS

11+15.00 -Y3-
44.30

+45.61 -Y-
82.10'

11+15.00 -Y3-
35.75

10+80.00 -Y3-
45.73

+45.19 -Y-
72.36'

+78.05 -Y3-
46.29'

+53.00 -Y-
51.00'

AUE

42

32Z

32

2GI

43

NCDOT

4" FDPS

+73.95 -Y-
73.80'

BST

34' DRIVE

+54.02 -Y-
71.63'

AUE

BST

22+00.00 -Y-
35.77

15' R

PROP. MON.

C

REDUS ONE, LLC
DB 3099 PG 1017

O EIP

300.09'
N 83°10'47" E

+62.32 -Y-
36.92'

23+82.00 -Y-
43.00

23+77.00 -Y-
60.00

23+25.00 -Y-
35.18

23+50.00 -Y-
60.00

24+50.00 -Y-
50.00

16' DRIVE

10' R

E F E

BST

S 23°19'40.1" E

REMOVE

18" CONC. 18"

44A

44

II

NCDOT

4" FDPS

PUE

SPECIAL GRADE
CUT DITCH
SEE DETAIL 13B

SPECIAL GRADE
CUT DITCH
SEE DETAIL 13A

19+94.91 -Y-
50.00

ISMTLBUS

IIZ

REPLACE CBG ON DRIVEWAY TURNOUT

+83.28 -Y-
66.10'

+93.50 -Y-
81.24'

BST PARKING

21+63.42 -Y-
50.00

+43.35 -Y-
59.71'

FRISBY ACQUISITION CORPORATION
DB 1987 PG 2388

POC Sta.20+04.54 -Y- =
POT Sta.10+00.00 -Y3-
Δ = 75°33'54.76"

PC Sta. 23+24.93

33

DUKE POWER COMPANY
DB 851PG 332

25

END CONSTRUCTION
POC Sta.25+30.00 -Y-

25+30.00 -Y-
29.41

25+00.00 -Y-
50.00

24+50.00 -Y-
50.00

16' DRIVE

10' R

25+20.00 -Y-
30.55

25+20.00 -Y-
50.00

+99.93 -Y-
50.00'

+90.49 -Y-
61.85'

+00.82 -Y-
76.98'

15" RCP

BST PARKING

PT Sta. 26+27.78

END RESURFACING
POC Sta.25+02.69 -Y-

-BYI- 33

246.76'
N 82°54'46" E

100.24'
S 07°22'28" E

54.88'
N 83°13'48" E

EIP

THOMAS M. DOWD
MICHAEL DOWD
DB 1307 PG 214

100.02'
N 82°54'20" E

45.07'
N 82°54'34" E

75.17'
S 07°22'28" E

254.06'
N 82°54'34" E

25.15'
N 82°38'25" E

NAD 83/95

2016 ADT IN HUNDREDS
2036 ADT IN HUNDREDS

118
168

HAMPTON ROAD
SR 2999

2
3

CLEMENTINE DRIVE
SR 3104

4
5

HAMPTON ROAD
SR 2999

120
170

WELLINGTON ASSOCIATES, LLC
DB 2127 PG 3342

MARGARET E. HEATH
DB 3156 PG 1635
73-E-III

109.16'
S 82°08'39" E

SR 2999 HAMPTON RD 24' BST

NATURAL AREA

89.49'
S 89°54'44" W

479.14'
S 23°23'44" E

72.95'
S 10°32'38" W

349.32'
S 10°32'39" W

VERNON L. MOORE
88-E-1763
DB 1143 PG 915

ROBERT L. THOMPSON
AND WIFE
BILLIE THOMPSON
DB 1108 PG 683
PB 38 PG 165

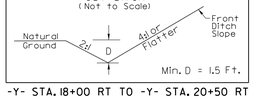
EUNICE E. COPE
AND HUSBAND
WALTER L. COPE, JR.
DB 1858 PG 2099

S 07°22'22" E 96.55'

S 07°41'12" W 325.57'

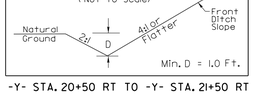
NOTE: NEW ENTRANCE MUST BE CONSTRUCTED BEFORE OBSTRUCTING THE EXISTING TRUCK ENTRANCE IN ANY WAY.

DETAIL 13A
CUT DITCH
(Not to Scale)



-Y- STA. 18+00 RT TO -Y- STA. 20+50 RT

DETAIL 13B
CUT DITCH
(Not to Scale)



-Y- STA. 20+50 RT TO -Y- STA. 21+50 RT

SEE SHEET 18 FOR -Y- GRADE
SEE SHEET 18 FOR -Y3- GRADE

3/8/2016
...\U2707_Rdy_psh_13.dgn
USER:bpeople

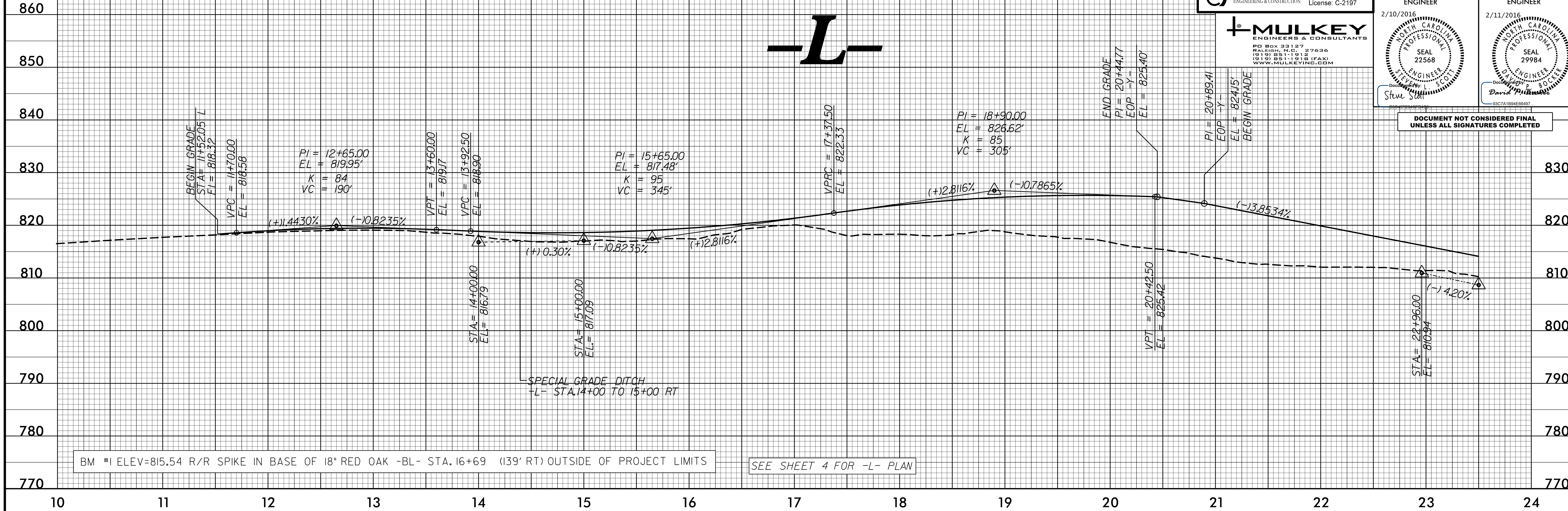
SEPI ENGINEERING & CONSTRUCTION
1025 Wade Avenue
Raleigh, NC 27605
Tel:919-789-9977
Fax:919-789-9591
License: C-2197

MULKEY ENGINEERS & CONSULTANTS
PO Box 33127
Raleigh, N.C. 27636
(919) 851-1912
(919) 851-1918 (FAX)
WWW.MULKEYINC.COM

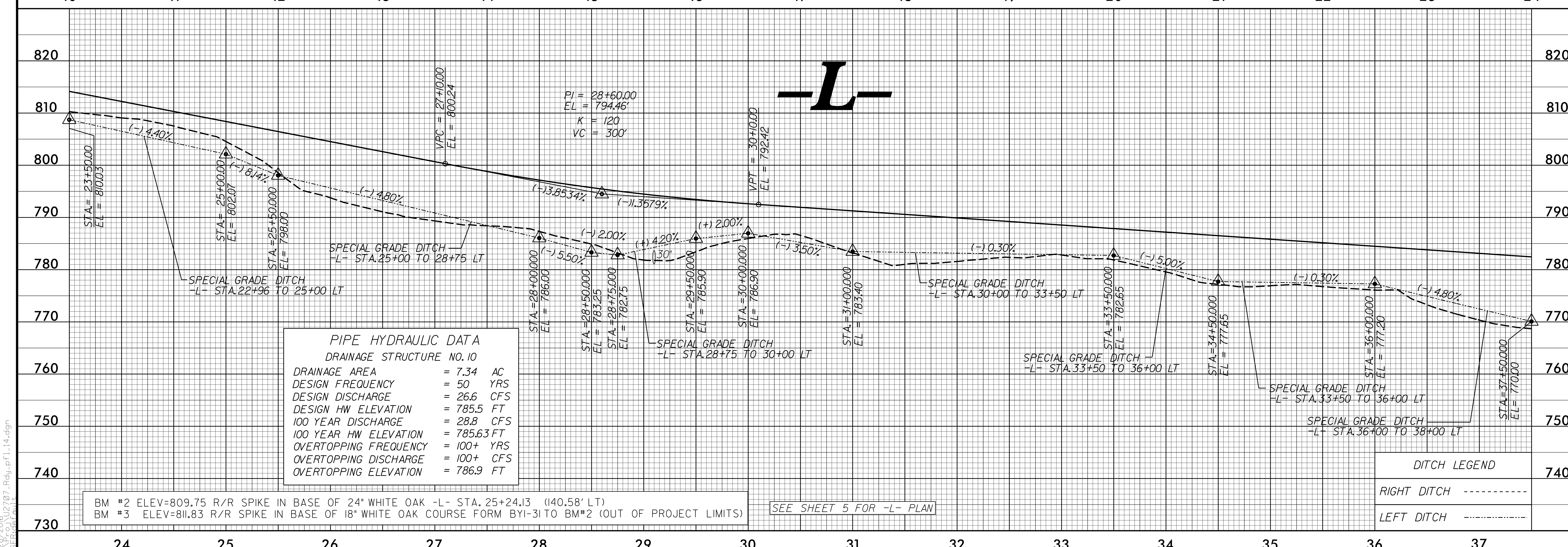
PROJECT REFERENCE NO.	SHEET NO.
U-2707	14
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
2/10/2016	2/11/2016
SEAL 22568	SEAL 29984

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

-L-



-L-



PIPE HYDRAULIC DATA

DRAINAGE STRUCTURE NO. 10

DRAINAGE AREA	= 7.34	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 26.6	CFS
DESIGN HW ELEVATION	= 785.5	FT
100 YEAR DISCHARGE	= 28.8	CFS
100 YEAR HW ELEVATION	= 785.63	FT
OVERTOPPING FREQUENCY	= 100+	YRS
OVERTOPPING DISCHARGE	= 100+	CFS
OVERTOPPING ELEVATION	= 786.9	FT

BM #2 ELEV=809.75 R/R SPIKE IN BASE OF 24" WHITE OAK -L- STA. 25+24.13 (140.58' LT)
BM #3 ELEV=811.83 R/R SPIKE IN BASE OF 18" WHITE OAK COURSE FORM BYI-31 TO BM#2 (OUT OF PROJECT LIMITS)

SEE SHEET 5 FOR -L- PLAN

DITCH LEGEND

RIGHT DITCH	------------
LEFT DITCH	-··-··-··-··-

5/28/99

1/28/2016
...U2707_Rdy_pfl_14.dgn

PROJECT REFERENCE NO.	SHEET NO.
U-2707	15
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

SEPI ENGINEERING & CONSTRUCTION
1025 Wade Avenue
Raleigh, NC 27605
Tel:919-789-9977
Fax:919-789-9591
License: C-2197

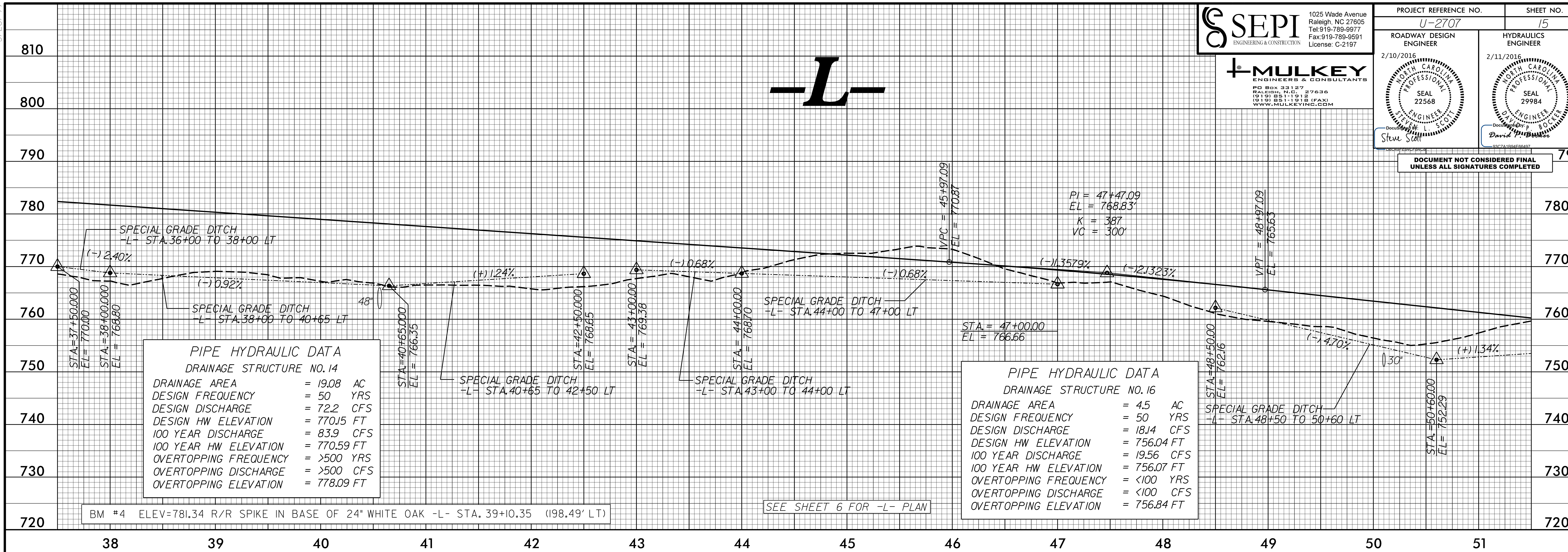
MULKEY ENGINEERS & CONSULTANTS
PO Box 33127
Raleigh, N.C. 27636
(919) 851-1912
(919) 851-1918 (FAX)
WWW.MULKEYINC.COM

2/10/2016 — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 22568 — STEVEN L. SCOTT — Steve Scott

2/11/2016 — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 29984 — DAVID P. BOCKER — David P. Bocker

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

-L-



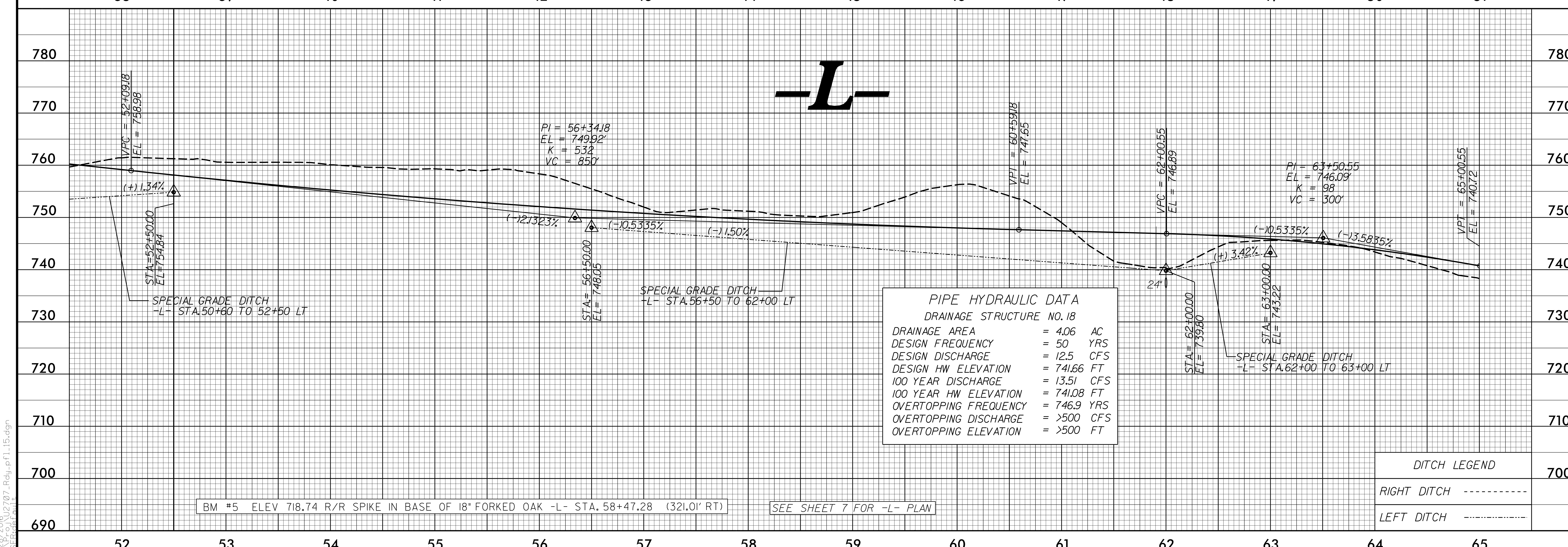
PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO. 14

DRAINAGE AREA	= 19.08	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 72.2	CFS
DESIGN HW ELEVATION	= 770.15	FT
100 YEAR DISCHARGE	= 83.9	CFS
100 YEAR HW ELEVATION	= 770.59	FT
OVERTOPPING FREQUENCY	= >500	YRS
OVERTOPPING DISCHARGE	= >500	CFS
OVERTOPPING ELEVATION	= 778.09	FT

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO. 16

DRAINAGE AREA	= 4.5	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 18.14	CFS
DESIGN HW ELEVATION	= 756.04	FT
100 YEAR DISCHARGE	= 19.56	CFS
100 YEAR HW ELEVATION	= 756.07	FT
OVERTOPPING FREQUENCY	= <100	YRS
OVERTOPPING DISCHARGE	= <100	CFS
OVERTOPPING ELEVATION	= 756.84	FT

-L-



PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO. 18

DRAINAGE AREA	= 4.06	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 12.5	CFS
DESIGN HW ELEVATION	= 741.66	FT
100 YEAR DISCHARGE	= 13.51	CFS
100 YEAR HW ELEVATION	= 741.08	FT
OVERTOPPING FREQUENCY	= 746.9	YRS
OVERTOPPING DISCHARGE	= >500	CFS
OVERTOPPING ELEVATION	= >500	FT

DITCH LEGEND	
RIGHT DITCH	- - - - - - - - - -
LEFT DITCH	-·-·-·-·-·-·-

5/28/99

1/28/2016 ...\U2707_Rdy_pfl_15.dgn

SEPI ENGINEERING & CONSTRUCTION
1025 Wade Avenue
Raleigh, NC 27605
Tel:919-789-9977
Fax:919-789-9591
License: C-2197

MULKEY ENGINEERS & CONSULTANTS
PO Box 33127
RALEIGH, N.C. 27636
(919) 851-1912
(919) 851-1918 (FAX)
WWW.MULKEYINC.COM

PROJECT REFERENCE NO.	SHEET NO.
U-2707	16

ROADWAY DESIGN ENGINEER
2/10/2016
NORTH CAROLINA PROFESSIONAL SEAL 22568 ENGINEER STEVEN L. SCOTT
Steve Scott

HYDRAULICS ENGINEER
2/11/2016
NORTH CAROLINA PROFESSIONAL SEAL 29984 ENGINEER DAVID B. BOWLES
David Bowles

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

5/28/99

SPECIAL GRADE DITCH -L- STA.68+45 TO 70+00 LT

STA.= 70+00.00 EL.= 720.8

STA.= 66+50.00 EL.= 728.00

(-) 8.86%

SPECIAL GRADE DITCH -L- STA.66+50 TO 68+45 LT

STA.= 67+50.00 EL.= 719.14

(-) 5.60%

(+) 4.10%

18"

(+) 0.83%

STA.= 68+45.00 EL.= 713.82

STA.= 68+45.00 EL.= 709.75

STA.= 69+50.00 EL.= 710.22

STA.= 70+00.00 EL.= 713.87

(+) 0.50%

STA.= 71+50.00 EL.= 714.62

VPC = 72+00.22 EL.= 715.65

SPECIAL GRADE DITCH -L- STA.70+00 TO 71+50 RT

SPECIAL GRADE DITCH -L- STA.68+45 TO 69+50 RT

PI = 75+25.22
EL = 704.00'
K = 158
VC = 650'

STA.= 74+00.00 EL.= 693.61

(-) 13.5835%

(+) 10.5286%

VPT = 78+50.22 EL.= 705.72

SPECIAL GRADE DITCH -L- STA.74+50 TO 82+65 LT

(-) 4.78%

(-) 0.92%

(-) 0.77%

(-) 0.48%

STA.= 73+00.00 EL.= 696.56

STA.= 74+00.00 EL.= 691.78

STA.= 78+50.00 EL.= 688.32

STA.= 79+00.00 EL.= 688.08

SPECIAL GRADE DITCH -L- STA.73+00 TO 79+00 RT

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO. 20

DRAINAGE AREA	= 26.53	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 96.2	CFS
DESIGN HW ELEVATION	= 718.26	FT
100 YEAR DISCHARGE	= 111.8	CFS
100 YEAR HW ELEVATION	= 719.5	FT
OVERTOPPING FREQUENCY	= >100	YRS
OVERTOPPING DISCHARGE	= >100	CFS
OVERTOPPING ELEVATION	= 728.55	FT

SEE SHEET 8 FOR -L- PLAN

BM #6 ELEV=715.26 R/R SPIKE IN BASE OF 44" OAK -L- STA. 75+58.48 (614.79' LT)

DITCH LEGEND
RIGHT DITCH ----------
LEFT DITCH -·-·-·-·-·-

BEGIN BRIDGE -L- STA.87+74.04 ELEV.710.76'

END BRIDGE -L- STA.92+45.12 ELEV.713.09'

VPC = 92+92.71 EL = 713.34

(+) 10.5286%

STA.= 80+00.00 EL.= 687.96

STA.= 80+50.00 EL.= 686.96

(-) 0.92%

(-) 0.20%

(-) 0.9%

30"

SPECIAL GRADE DITCH -L- STA.80+50 TO 83+70 RT

STA.= 82+65.00 EL.= 687.43

STA.= 83+70.00 EL.= 686.35

(+) 4.46%

(+) 2.00%

STA.= 92+15.00 EL.= 693.90

STA.= 92+45.00 EL.= 693.13

STA.= 91+00.00 EL.= 688.00

SPECIAL GRADE DITCH -L- STA.92+15 TO 100+50 RT

SPECIAL GRADE DITCH -L- STA.91+00 TO 92+15 RT

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO. 26

DRAINAGE AREA	= 6.73	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 19.97	CFS
DESIGN HW ELEVATION	= 689.13	FT
100 YEAR DISCHARGE	= 21.58	CFS
100 YEAR HW ELEVATION	= 689.28	FT
OVERTOPPING FREQUENCY	= >500	YRS
OVERTOPPING DISCHARGE	= >500	CFS
OVERTOPPING ELEVATION	= 710.74	FT

BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE	= 18000	CFS
DESIGN FREQUENCY	= 50	YRS
DESIGN HW ELEVATION	= 702.2	FT
BASE DISCHARGE	= 19000	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 702.6	FT
OVERTOPPING DISCHARGE	= 26000	CFS
OVERTOPPING FREQUENCY	= 100+	YRS
OVERTOPPING ELEVATION	= 704.8	FT
DATE OF SURVEY	= 10-2-03	
W.S.ELEVATION AT DATE OF SURVEY	= 679.9	FT

SEE SHEET 9 FOR -L- PLAN

BM #7 ELEV=693.90 R/R SPIKE IN BASE OF 18" ELM -L- STA. 92+06.11 (228.64' LT)

1/28/2016
U2707_Rdy_pf1_16.dgn
USER:rpaul

5/28/99

SEPI ENGINEERING & CONSTRUCTION
1025 Wade Avenue
Raleigh, NC 27605
Tel:919-789-9977
Fax:919-789-9591
License: C-2197

MULKEY ENGINEERS & CONSULTANTS
PO Box 33127
Raleigh, N.C. 27636
(919) 851-1912
(919) 851-1918 (FAX)
WWW.MULKEYINC.COM

PROJECT REFERENCE NO.	SHEET NO.
U-2707	17

ROADWAY DESIGN ENGINEER
2/10/2016
NORTH CAROLINA PROFESSIONAL SEAL 22568 ENGINEER
Steve Smith

HYDRAULICS ENGINEER
2/11/2016
NORTH CAROLINA PROFESSIONAL SEAL 29984 ENGINEER
David Bowden

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

-L-

PI = 94+67.31
EL = 714.27'
K = 148
VC = 350'

VPT = 96+42.31
EL = 718.32

STA= 93+50.000
EL= 695.83

STA= 94+00.00
EL= 697.60

STA= 94+50.000
EL= 703.83

STA= 95+50.00
EL= 704.35

STA= 96+50.00
EL= 706.35

STA=97+00.000
EL= 708.83

STA=97+50.000
EL= 710.58

STA= 98+50.00
EL= 717.35

STA=99+00.000
EL= 718.46

STA=99+50.000
EL= 722.46

STA= 100+50.00
EL= 728.46

STA= 101+00.00
EL= 728.60

STA= 101+50.000
EL= 731.34

VPC = 102+27.49
EL = 736.22

(+)10.5286%
(+)2.8885%
(+) 8.00%
(+) 4.50%
(+) 2.00%
(+) 2.00%
(+) 3.50%
(+) 5.50%
(+) 5.25%
(+) 8.00%
(+) 6.00%
(+) 5.49%

SPECIAL GRADE DITCH
-L- STA.92+15 TO 100+50 RT

SPECIAL GRADE DITCH
-L- STA.92+15 TO 101+50 LT

SPECIAL GRADE DITCH
-L- STA.92+15 TO 101+50 LT

SEE SHEET 10 FOR -L- PLAN

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO. 29

DRAINAGE AREA	= 2.4	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 7.95	CFS
DESIGN HW ELEVATION	= 744.63	FT
100 YEAR DISCHARGE	= 8.58	CFS
100 YEAR HW ELEVATION	= 744.78	FT
OVERTOPPING FREQUENCY	= 100+	YRS
OVERTOPPING DISCHARGE	= 100+	CFS
OVERTOPPING ELEVATION	= 744.98	FT

-L-

STA.=108+00.000
EL = 743.35

PI = 109+02.49
EL = 755.72'
K = 380
VC = 1,350'

VPT = 115+77.49
EL = 751.23

STA= 117+50.00
EL= 749.59

(+)2.8885%
(-)10.665/%
(+) 0.68%
(+) 0.30%
(+) 0.30%
(+) 0.30%
(+) 0.30%
(+) 0.30%
(+) 5.00%
(+) 0.76%
(+) 2.00%
18"

STA= 106+75.00
EL= 742.40

STA= 107+50.00
EL= 740.00

STA.=108+50.000
EL = 742.00

STA.=109+50.000
EL = 747.00

STA.=110+00.000
EL = 747.34

STA= 117+50.000
EL= 746.20

SPECIAL GRADE CUT DITCH
-L- STA.106+75 TO 108+00 LT

SPECIAL GRADE CUT DITCH
-L- STA.107+50 TO 110+00 RT

SPECIAL GRADE DITCH
-L- STA.110+00 TO 117+50 RT

SPECIAL GRADE DITCH
-L- STA.108+00 TO 117+50 LT

BM #8 ELEV=751.53 R/R SPIKE IN BASE OF 24" BEECH -L- STA. 112+47.56 (458.24' LT)

SEE SHEET 11 FOR -L- PLAN

DITCH LEGEND
RIGHT DITCH ----------
LEFT DITCH -·-·-·-·-·-

1/28/2016
C:\Projects\U2707_Rdy_pf1_17.dgn
User: Paul

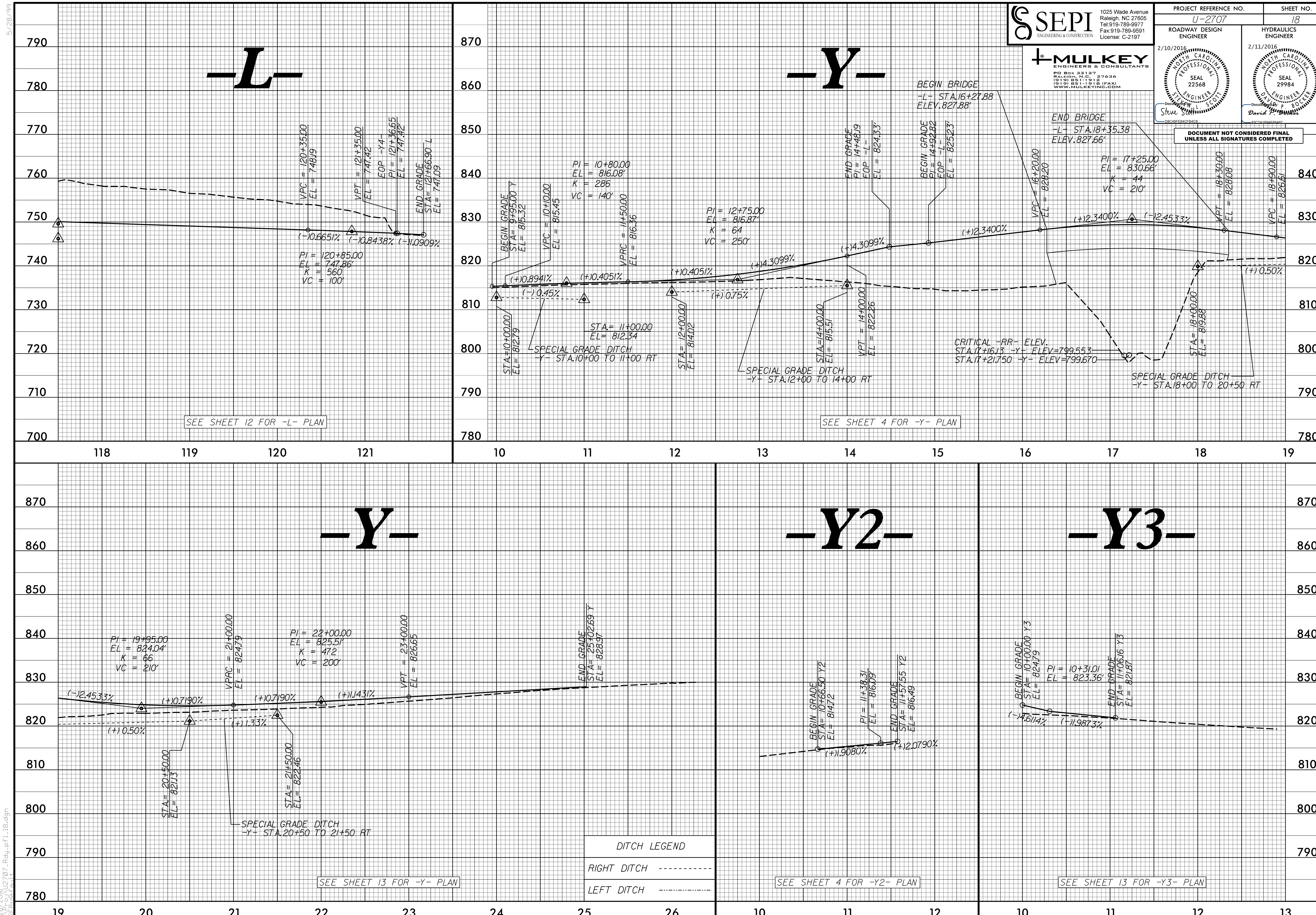
SEPI ENGINEERING & CONSTRUCTION
1025 Wade Avenue
Raleigh, NC 27605
Tel:919-789-9977
Fax:919-789-9591
License: C-2197

MULKEY ENGINEERS & CONSULTANTS
PO Box 33127
Raleigh, N.C. 27636
(919) 851-1912
(919) 851-1918 (FAX)
WWW.MULKEYINC.COM

PROJECT REFERENCE NO.	SHEET NO.
U-2707	18

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
2/10/2016	2/11/2016
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 22568 STEVEN L. SCOTT	NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 29984 DAVID P. BOCKER
DocuSigned by: Steve Scott D8C49FE84CFB4C8...	DocuSigned by: David P. Bocker 93C7A1B94F66497...

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

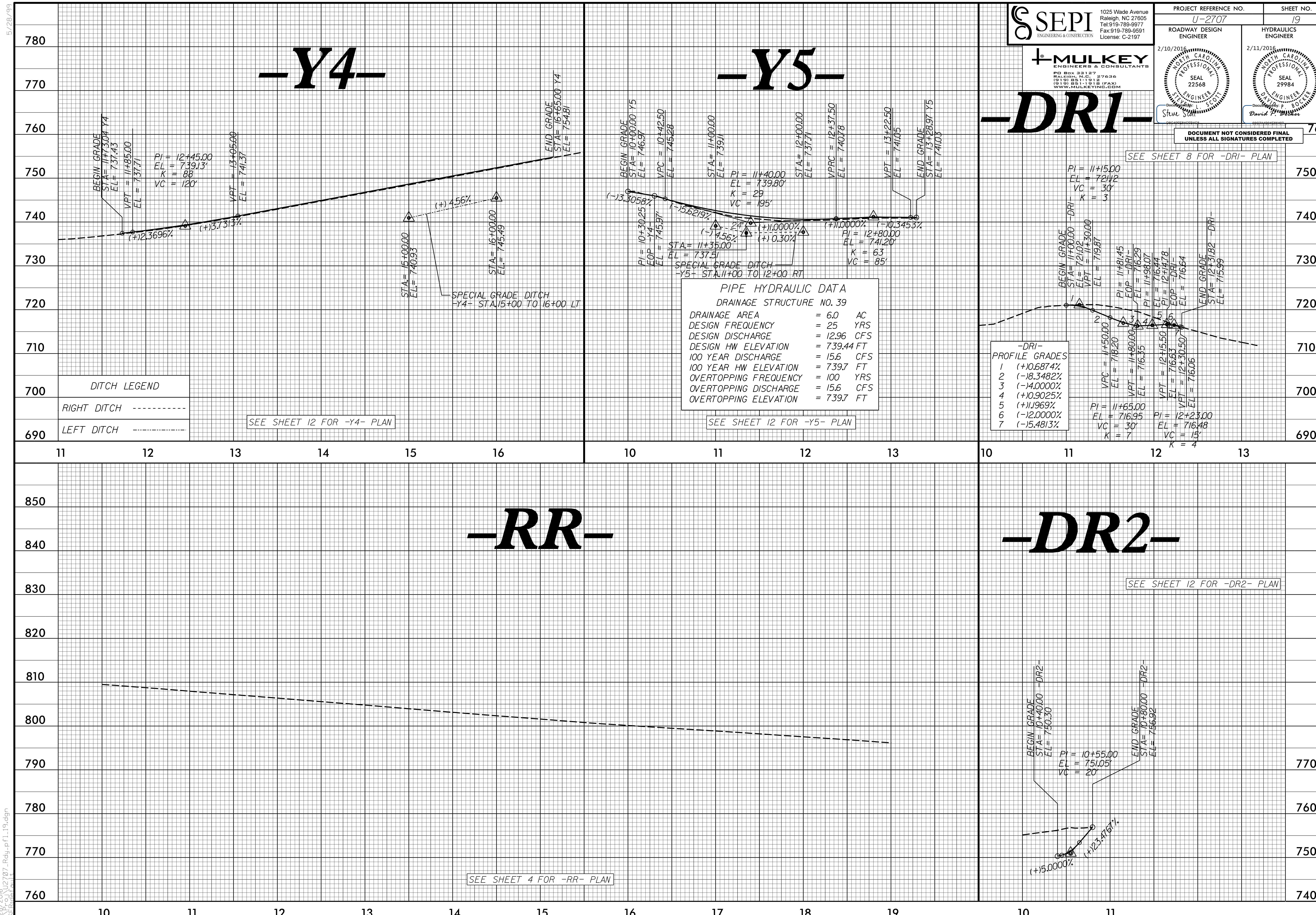


SEPI ENGINEERING & CONSTRUCTION
1025 Wade Avenue
Raleigh, NC 27605
Tel:919-789-9977
Fax:919-789-9591
License: C-2197

MULKEY ENGINEERS & CONSULTANTS
PO Box 33127
Raleigh, N.C. 27636
(919) 851-1912
(919) 851-1918 (FAX)
WWW.MULKEYINC.COM

PROJECT REFERENCE NO.	SHEET NO.
U-2707	19
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



PIPE HYDRAULIC DATA

DRAINAGE STRUCTURE NO. 39

DRAINAGE AREA	= 6.0	AC
DESIGN FREQUENCY	= 25	YRS
DESIGN DISCHARGE	= 12.96	CFS
DESIGN HW ELEVATION	= 739.44	FT
100 YEAR DISCHARGE	= 15.6	CFS
100 YEAR HW ELEVATION	= 739.7	FT
OVERTOPPING FREQUENCY	= 100	YRS
OVERTOPPING DISCHARGE	= 15.6	CFS
OVERTOPPING ELEVATION	= 739.7	FT

1/28/2016 U2707_Rdy_pfl_19.dgn