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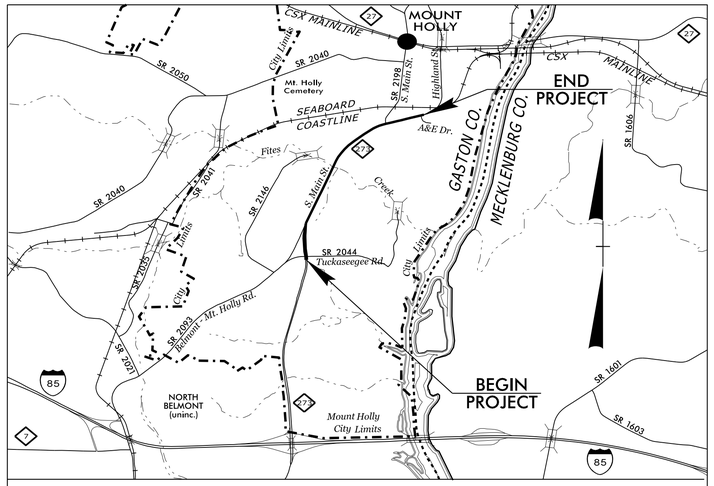
09/08/99

TIP PROJECT: U-3633

CONTRACT: C203831

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



VICINITY MAP

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

GASTON COUNTY

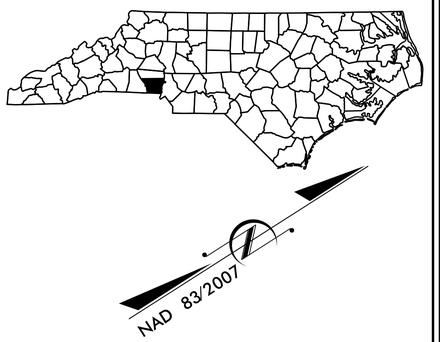
LOCATION: MOUNT HOLLY – NC 273 (SOUTH MAIN STREET) FROM TUCKASEEGE ROAD AT BEATTY DRIVE TO HIGHLAND STREET AT A&E DRIVE

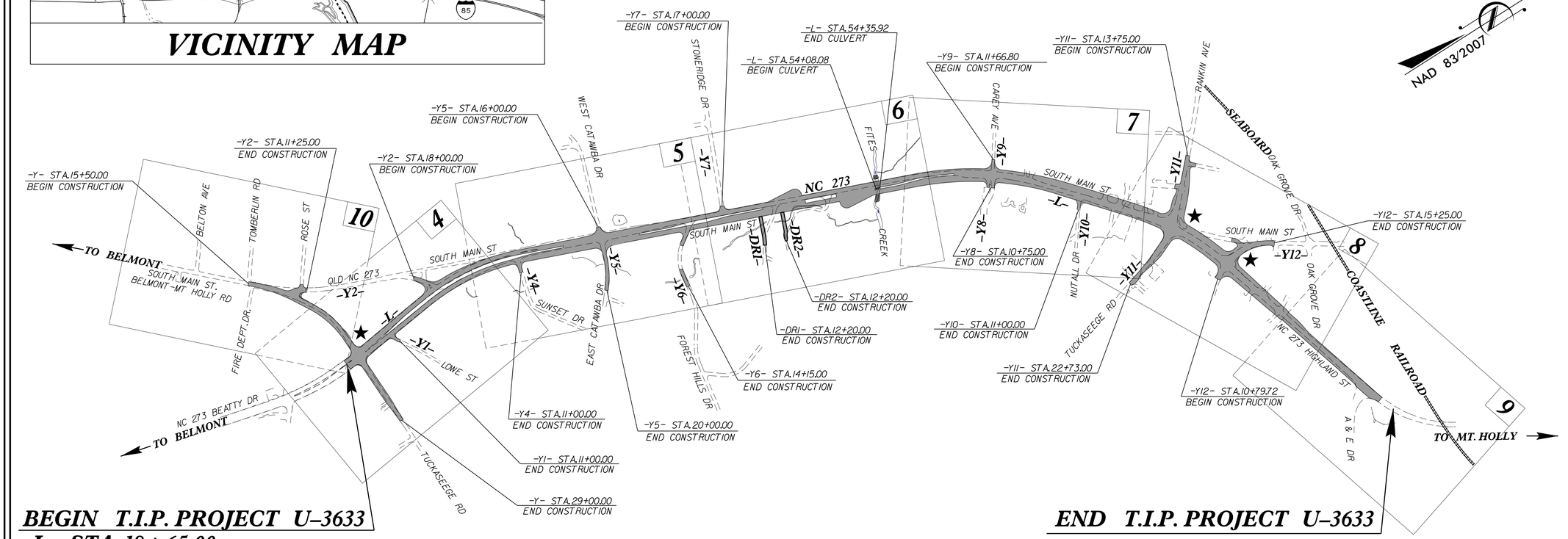
TYPE OF WORK: GRADING, DRAINAGE, PAVING, CULVERT, AND SIGNALS

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U-3633	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
37649.1.1	STP-0273(1)	PE
37649.2.FRI	STP-0273(1)	R/W
37649.2.FRUI	STP-0273(1)	UTIL
37649.2.RU2		UTIL
37649.3.3	STP-0273(1)	CONST.

★ SIGNAL



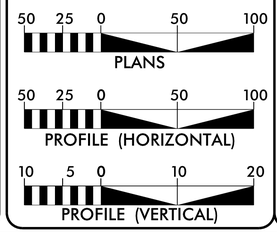


BEGIN T.I.P. PROJECT U-3633
-L- STA. 18+65.00

END T.I.P. PROJECT U-3633
-L- STA. 91+00.00

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

GRAPHIC SCALES



DESIGN DATA

ADT 2016 = 28,276
ADT 2035 = 42,300
K = 10 %
D = 55 %
T = 4 % *
V = 50 MPH
* TTST = 2 DUAL 2
FUNC CLASS = URBAN COLLECTOR
REGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY T.I.P. PROJECT U-3633 = 1.365 MI

LENGTH STRUCTURE T.I.P. PROJECT U-3633 = 0.005 MI

TOTAL LENGTH OF T.I.P. PROJECT U-3633 = 1.370 MI

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

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: NOVEMBER 25, 2014

LETTING DATE: JUNE 20, 2017

JASON MOORE, PE
PROJECT ENGINEER

VACANT
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER
4/13/2017
DocuSigned by: Stephen R. Morgan
SIGNATURE:
NORTH CAROLINA PROFESSIONAL SEAL 022100 ENGINEER STEPHEN R. MORGAN P.E.

ROADWAY DESIGN ENGINEER
4/17/2017
DocuSigned by: Jason Moore
SIGNATURE:
NORTH CAROLINA PROFESSIONAL SEAL 022007 ENGINEER Andrew Jason Moore P.E.

STATE OF NORTH CAROLINA • DEPARTMENT OF TRANSPORTATION •

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ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 022007 ENGINEER Andrew Jason Moore
DocuSigned by: Jason Moore 11/18/2016

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-6	SURVEY CONTROL SHEETS
2A-1 THRU 2A-4	TYPICAL SECTIONS, PAVEMENT SCHEDULE, AND WEDGING DETAILS
2B-1	TRAFFIC DIAGRAM
2C-1	DETAIL OF CONCRETE ENDWALL AND SLUICE GATE
2C-2	DETAIL OF TRAFFIC BEARING JUNCTION BOX
2C-3	DETAIL TO CONVERT EXISTING DI, CB, OTCB OR GI TO JUNCTION BOX
2C-4	DETAIL TO CONVERT EXISTING CATCH BASIN OR JUNCTION BOX TO DI OR 2-GI
2C-5	DETAIL OF CURB RAMPS (MEDIAN OR TURN LANE ISLANDS)
2C-6	DETAIL OF COAL COMBUSTION PRODUCT PLACEMENT
2G-1 THRU 2G-3	STANDARD TEMPORARY WALL DETAILS
2H-1	DETAIL FOR TEMPORARY CONTAINMENT OF CONTAMINATED SOIL
3B-1 THRU 3B-2	GUARDRAIL SUMMARY, SUMMARY OF EXISTING PAVEMENT REMOVAL, AND SUMMARY OF EARTHWORK
3D-1 THRU 3D-8	SUMMARY OF PIPES 48" AND UNDER AND SUMMARY OF PIPES 54" AND OVER
3G-1	GEOTECHNICAL SUMMARIES
3P-1	PARCEL INDEX SHEET
4 THRU 10	PLAN SHEETS
11 THRU 17	PROFILE SHEETS
TMP-1 THRU TMP-7C	TRANSPORTATION MANAGEMENT PLANS
PMP-1 THRU PMP-9	PAVEMENT MARKING PLANS
EC-1 THRU EC-20	EROSION CONTROL PLANS
RF-1 THRU RF-3	REFORESTATION PLANS
SIGN-1 THRU SIGN-11	SIGNING PLANS
SIG-1 THRU SIG-42	SIGNAL PLANS
SIG-M1 THRU SIG-M8	SIGNAL METAL POLE PLANS
SIG-P1 THRU SIG-P3	PEDESTRIAN PUSHBUTTON LOCATIONS PLANS
SCP-1 THRU SCP-3	SYSTEM COMMUNICATION PLANS
UC-1 THRU UC-13	UTILITY CONSTRUCTION PLANS
UO-1 THRU UO-8	UTILITIES BY OTHERS PLANS
X-0	CROSS SECTION INDEX SHEET
X-1A THRU X-1B	CROSS SECTION SUMMARY SHEETS
X-2 THRU X-88	CROSS SECTIONS
C-1 THRU C-13	CULVERT PLANS

2012 ROADWAY ENGLISH STANDARD DRAWINGS

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

STD.NO.	TITLE
DIVISION 2 - EARTHWORK	
200.03	Method of Clearing - Method III
225.02	Guide for Grading Subgrade - Secondary and Local
225.04	Method of Obtaining Superelevation - Two Lane Pavement
225.06	Method of Grading Sight Distance at Intersections
DIVISION 3 - PIPE CULVERTS	
300.01	Method of Pipe Installation
310.10	Driveway Pipe Construction
DIVISION 5 - SUBGRADE, BASES AND SHOULDERS	
560.01	Method of Shoulder Construction - High Side of Superelevated Curve - Method I
DIVISION 6 - ASPHALT BASES AND PAVEMENTS	
654.01	Pavement Repairs
DIVISION 8 - INCIDENTALS	
815.03	Pipe Underdrain and Blind Drain
838.01	Concrete Endwall for Single and Double Pipe Culverts - 15" thru 48" Pipe 90 Skew
838.02	Concrete Endwall and Sluice Gate - 15" thru 36" Pipe 90 Skew
838.11	Brick Endwall for Single and Double Pipe Culverts - 15" thru 48" Pipe 90 Skew
838.21	Reinforced Concrete Endwall - for Single 54" Pipe 90 Skew
838.27	Reinforced Concrete Endwall - for Single 60" Pipe 90 Skew
838.51	Reinforced Brick Endwall - for Single 54" Pipe 90 Skew
838.57	Reinforced Brick Endwall - for Single 60" 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
840.24	Frames and Narrow Slot Sag Grates
840.25	Anchorage for Frames - Brick or Concrete or Precast
840.26	Brick Grated Drop Inlet Type 'A' - 12" thru 72" Pipe
840.27	Brick Grated Drop Inlet Type 'B' - 12" thru 36" Pipe
840.29	Frames and Narrow Slot Flat Grates
840.31	Concrete Junction Box - 12" thru 66" Pipe
840.32	Brick Junction Box - 12" thru 66" Pipe
840.34	Traffic Bearing Junction Box - for Use with Pipes 42" and Under
840.35	Traffic Bearing Grated Drop Inlet - for Cast Iron Double Frame and Grates
840.45	Precast Drainage Structure
840.46	Traffic Bearing Precast Drainage Structure
840.54	Manhole Frame and Cover
840.66	Drainage Structure Steps
840.72	Pipe Collar
846.01	Concrete Curb, Gutter and Curb & Gutter
848.01	Concrete Sidewalk
848.02	Driveway Turnout - Radius Type
848.04	Street Turnout
848.05	Curb Ramp - Proposed Curb & Gutter
850.01	Concrete Paved Ditches
850.10	Guide for Berm Drainage Outlet - 15" and 18" Pipe
852.01	Concrete Islands
852.05	Median Curb for Catch Basin - for Use with 1'-6" Curb and Gutter
852.06	Method for Placement of Drop Inlets in Concrete Islands
862.01	Guardrail Placement
862.02	Guardrail Installation
862.03	Structure Anchor Units
876.01	Rip Rap in Channels
876.02	Guide for Rip Rap at Pipe Outlets
876.04	Drainage Ditches with Class 'B' Rip Rap

GENERAL NOTES:

EFFECTIVE: 01-17-12
2012 SPECIFICATIONS
REVISED: 07/30/12

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.

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

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

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

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

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

UTILITIES:
UTILITY OWNERS ON THIS PROJECT ARE DUKE ENERGY - POWER TRANSMISSION, DUKE ENERGY - POWER DISTRIBUTION, AT&T TELECOMMUNICATIONS, PSNC - NATURAL GAS, CATV - CHARTER / TIME WARNER CABLE, CITY OF MOUNT HOLLY WATER, AND CITY OF MOUNT HOLLY SANITARY SEWER.

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

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

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

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04/06/15

PROJECT REFERENCE NO.	SHEET NO.
U-3633	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:

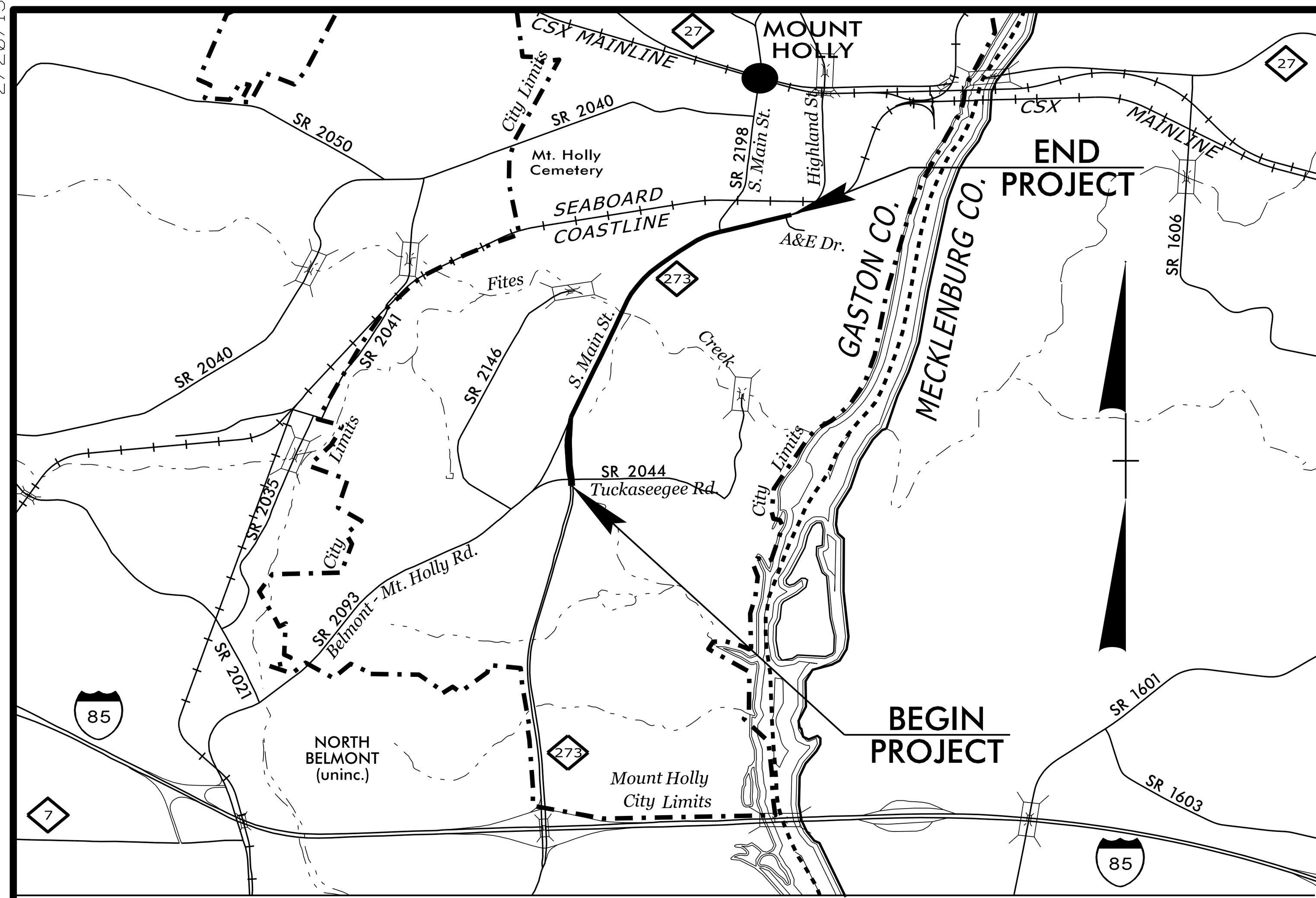
- Sanitary Sewer Manhole
- Sanitary Sewer Cleanout
- U/G Sanitary Sewer Line — SS
- Above Ground Sanitary Sewer — A/G Sanitary Sewer
- SS Forced Main Line LOS B (S.U.E.*) — FSS
- SS Forced Main Line LOS C (S.U.E.*) — FSS
- SS Forced Main Line LOS D (S.U.E.*) — FSS

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.

PROJECT REFERENCE NO.	SHEET NO.
U-3633	1C-1
Location and Surveys	

SURVEY CONTROL SHEET



VICINITY MAP

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NGS FOR MONUMENT "MADORA"
WITH NAD 83/NSRS 2007 STATE PLANE GRID COORDINATES OF
NORTHING: 566623.601(ft) EASTING: 1395742.464(ft)
ELEVATION: 654.06(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.999846
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "MADORA" TO -L- STATION 19+51.40 PT IS
S 3°38'08.0" W 5128.693'
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

NOTES:

1. THE CONTROL DATA FOR THIS PROJECT CAN BE FOUND ELECTRONICALLY BY SELECTING PROJECT CONTROL DATA AT: HTTPS://CONNECT.NCDOT.GOV/RESOURCES/LOCATION/

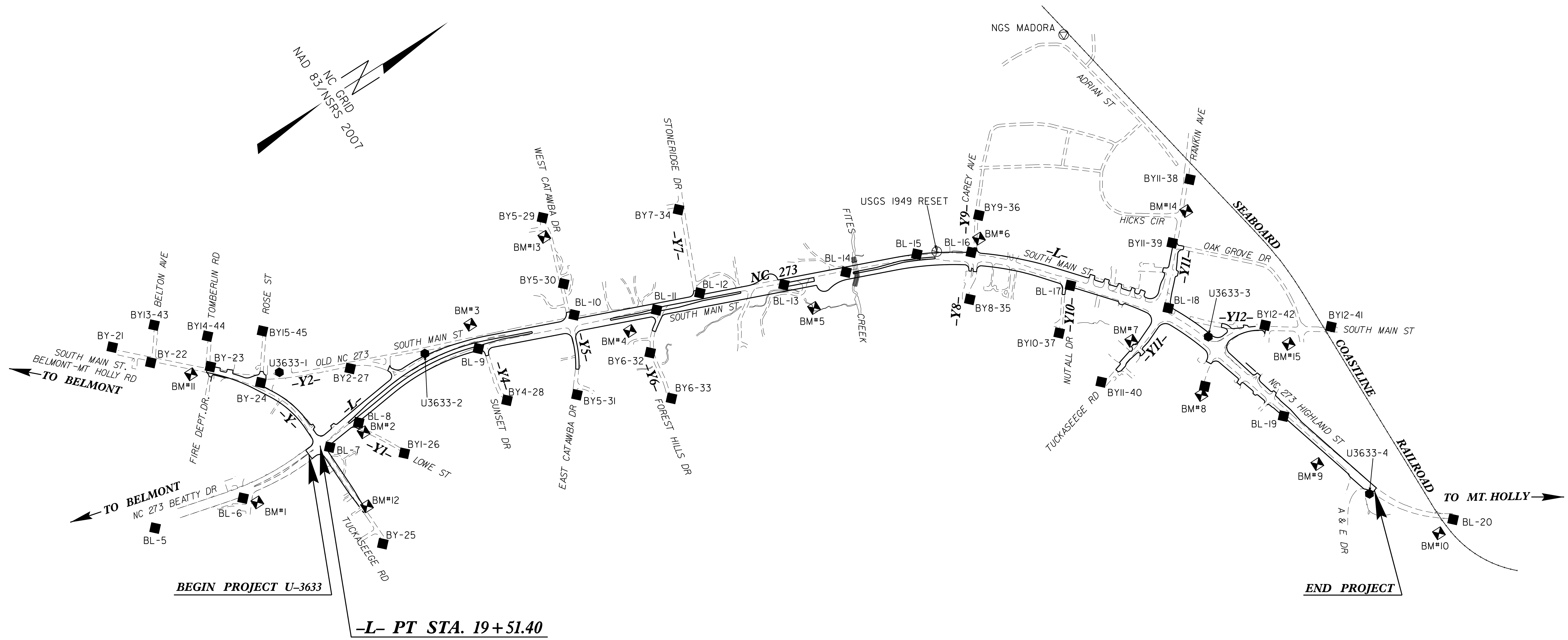
   THE FILES TO BE FOUND ARE AS FOLLOWS:
   U3633_LS_CONTROL.TXT
   U3633_LS_LOCAL.TXT

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

3. PROJECT CONTROL ESTABLISHED USING GLOBAL POSITIONING SYSTEM, UTILIZING THE NCGS RTN SYSTEM (VRS).

   MONUMENTS USED OR SET FOR PROJECT CONTROL BY THE NCDOT LOCATION AND SURVEYS UNIT:

- ⬢ INDICATES GEODETIC CONTROL MONUMENTS FOR HORIZONTAL CONTROL
- ■ INDICATES BASELINE MONUMENTS FOR HORIZONTAL PROJECT CONTROL
- ⧓ INDICATES BENCHMARKS FOR VERTICAL CONTROL
- ◎ INDICATES NGS GEODETIC MONUMENTS USED FOR HORIZONTAL CONTROL
- ⊕ INDICATES USGS BENCHMARKS



BEGIN PROJECT U-3633

END PROJECT

-L- PT STA. 19+51.40

NOTE: DRAWING NOT TO SCALE

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PROJECT REFERENCE NO.	SHEET NO.
U-3633	1C-2
Location and Surveys	

SURVEY CONTROL SHEET

BL

POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
5	BL-5	560397.5710	1395300.3440	670.44	95+08.32	7835.71 RT
6	BL-6	560942.5860	1395433.8060	687.50	13+93.57	38.61 RT
7	BL-7	561549.0820	1395456.1290	694.87	19+90.24	43.88 RT
8	BL-8	561776.1890	1395425.3580	695.47	22+19.40	40.75 RT
2	U3633-2	562337.2300	1395289.4640	685.12	27+82.39	58.82 LT
9	BL-9	562625.6830	1395437.6960	668.44	30+92.39	26.50 RT
10	BL-10	563222.3620	1395577.3550	660.28	36+99.84	62.66 LT
11	BL-11	563657.5480	1395819.8480	662.23	41+93.86	1.62 RT
12	BL-12	563933.1220	1395874.7130	650.81	44+70.18	49.37 LT
13	BL-13	564387.9160	1396105.6860	617.68	49+78.16	3.05 LT
14	BL-14	564744.2370	1396243.3920	609.84	53+60.14	6.94 LT
15	BL-15	565163.2230	1396381.8480	618.59	57+97.91	38.57 LT
47	USGS 1949 RESET	565272.7730	1396434.0140	623.51	59+16.62	43.35 LT
16	BL-16	565446.6100	1396549.6610	627.63	61+21.01	39.55 LT
17	BL-17	565843.1440	1397040.4640	647.09	67+46.84	33.36 RT
18	BL-18	566267.5970	1397473.0800	672.10	73+44.98	42.72 LT
3	U3633-3	566377.6880	1397749.2900	674.90	76+35.73	32.38 LT
19	BL-19	566502.9220	1398397.4780	651.61	82+91.93	27.56 RT
4	U3633-4	566687.3860	1399072.0340	624.08	89+89.77	36.84 RT
20	BL-20	567030.2580	1399473.6460	626.32	95+08.32	20.93 RT

BY

POINT	DESC.	NORTH	EAST	ELEVATION	Y STATION	OFFSET
21	BY-21	560767.2200	1394240.8290	726.25	OUTSIDE PROJECT LIMITS	
22	BY-22	560913.5190	1394444.3260	720.06	12+08.53	19.55 RT
23	BY-23	561203.5970	1394658.7320	712.55	15+66.20	27.17 LT
24	BY-24	561407.8380	1394903.7480	706.95	18+78.25	33.89 LT
EQ7	BL-7	561549.0820	1395456.1290	694.87	24+40.62	40.84 LT
25	BY-25	561505.5080	1396119.7930	677.25	31+03.01	19.07 RT

BY1

POINT	DESC.	NORTH	EAST	ELEVATION	Y1 STATION	OFFSET
EQ8	BL-8	561776.1890	1395425.3580	695.47	10+56.76	26.67 LT
26	BY1-26	561908.4570	1395729.5240	699.56	13+91.78	8.61 RT

BY2

POINT	DESC.	NORTH	EAST	ELEVATION	Y2 STATION	OFFSET
EQ24	BY-24	561407.8380	1394903.7480	706.95	10+86.76	32.91 RT
1	U3633-1	561535.8700	1394911.7570	704.37	12+00.50	26.19 LT
27	BY2-27	561908.6890	1395122.1820	696.89	16+28.10	23.03 RT
EQ2	U3633-2	562337.2300	1395289.4640	685.12	OUTSIDE PROJECT LIMITS	

BY4

POINT	DESC.	NORTH	EAST	ELEVATION	Y4 STATION	OFFSET
EQ9	BL-9	562625.6830	1395437.6960	668.44	10+23.67	39.45 RT
28	BY4-28	562603.3930	1395793.5510	662.25	13+76.65	11.22 RT

BY5

POINT	DESC.	NORTH	EAST	ELEVATION	Y5 STATION	OFFSET
29	BY5-29	563377.0310	1394980.2080	697.48	OUTSIDE PROJECT LIMITS	
30	BY5-30	563270.2720	1395385.3660	680.03	14+27.23	13.09 LT
EQ10	BL-10	563222.3620	1395577.3550	660.28	16+24.15	32.52 LT
31	BY5-31	562977.0360	1395992.9630	665.61	21+03.10	16.78 LT

BY6

POINT	DESC.	NORTH	EAST	ELEVATION	Y6 STATION	OFFSET
EQ11	BL-11	563657.5480	1395819.8480	662.23	10+26.38	35.20 RT
32	BY6-32	563486.3280	1396016.8950	638.03	12+79.08	14.74 RT
33	BY6-33	563446.3560	1396318.3420	648.79	15+77.72	15.78 LT

BY7

POINT	DESC.	NORTH	EAST	ELEVATION	Y7 STATION	OFFSET
34	BY7-34	564095.2940	1395381.2180	686.78	12+20.95	22.89 RT
EQ12	BL-12	563933.1220	1395874.7130	650.81	17+38.34	23.38 LT

BY8

POINT	DESC.	NORTH	EAST	ELEVATION	Y8/Y9 STATION	OFFSET
36	BY9-36	565605.1020	1396385.3590	625.17	Y9 10+02.38	12.86 LT
EQ16	BL-16	565446.6100	1396549.6610	627.63	Y9 12+27.83	23.03 RT
35	BY8-35	565286.0250	1396783.9600	622.54	Y8 12+53.94	25.27 LT

BY10

POINT	DESC.	NORTH	EAST	ELEVATION	Y10 STATION	OFFSET
EQ17	BL-17	565843.1440	1397040.4640	647.09	10+40.36	35.45 LT
37	BY10-37	565631.3120	1397245.6210	651.83	13+32.75	10.55 RT

BY11

POINT	DESC.	NORTH	EAST	ELEVATION	Y11 STATION	OFFSET
48	MADORA	566623.6010	1395742.4640	654.06	OUTSIDE PROJECT LIMITS	
38	BY11-38	566795.3500	1396889.1030	676.36	10+11.36	24.12 LT
39	BY11-39	566498.9060	1397154.6060	675.17	14+07.11	18.90 RT
EQ18	BL-18	566267.5970	1397473.0800	672.10	17+96.20	41.42 LT
40	BY11-40	565686.2720	1397631.4590	668.26	23+86.93	28.33 RT

BY12

POINT	DESC.	NORTH	EAST	ELEVATION	Y12 STATION	OFFSET
41	BY12-41	567034.3570	1398096.7270	638.60	OUTSIDE PROJECT LIMITS	
42	BY12-42	566704.0710	1397875.3870	657.91	15+22.59	18.87 LT
EQ3	U3633-3	566377.6880	1397749.2900	674.90	12+16.39	95.32 LT
46	BY12-46	566198.8050	1397989.4640	674.88	OUTSIDE PROJECT LIMITS	

BY13

POINT	DESC.	NORTH	EAST	ELEVATION	Y13 STATION	OFFSET
43	BY13-43	561051.4090	1394264.5530	733.23	OUTSIDE PROJECT LIMITS	
EQ22	BY-22	560913.5190	1394444.3260	720.06	OUTSIDE PROJECT LIMITS	

BY14

POINT	DESC.	NORTH	EAST	ELEVATION	Y14A STATION	OFFSET
44	BY14-44	561287.5870	1394494.2120	723.23	10+27.31	15.43 RT
EQ23	BY-23	561203.5970	1394658.7320	712.55	12+09.20	16.80 LT

BY15

POINT	DESC.	NORTH	EAST	ELEVATION	Y15 STATION	OFFSET
45	BY15-45	561584.4640	1394646.7920	707.59	10+04.33	13.19 RT
EQU24	BY-24	561407.8380	1394903.7480	706.95	OUTSIDE PROJECT LIMITS	

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NGS FOR MONUMENT "MADORA"
WITH NAD 83/NSRS 2007 STATE PLANE GRID COORDINATES OF
NORTHING: 566623.601(ft) EASTING: 1395742.464(ft)
ELEVATION: 654.06(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.999846
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "MADORA" TO -L- STATION 19+51.40 PT IS S 3°38'08.0" W 5128.693'
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

BM1 ELEVATION - 689.01
N 561081 E 1395502
L STATION 14+61 95 RIGHT
RR SPIKE IN 15" SWEET GUM

BM2 ELEVATION - 699.74
N 561770 E 1395491
L STATION 22+05 125 RIGHT
RR SPIKE IN 24" OAK

BM3 ELEVATION - 671.08
N 562662 E 1395290
L STATION 30+81 125 LEFT
RR SPIKE IN 16" OAK

BM4 ELEVATION - 651.54
N 563454 E 1395841
L STATION 40+12 97 RIGHT
RR SPIKE IN 20" OAK

BM5 ELEVATION - 599.61
N 564465 E 1396322
L STATION 51+30 169 RIGHT
RR SPIKE IN 22" OAK

BM6 ELEVATION - 633.32
N 565530 E 1396505
Y9 STATION 11+44 19 LEFT
RR SPIKE IN 30" OAK

BM7 ELEVATION - 669.40
N 565973 E 1397520
Y11 STATION 20+78 56 RIGHT
RR SPIKE IN 10" MAPLE

BM8 ELEVATION - 674.36
N 566154 E 1398023
L STATION 78+36 260 RIGHT
RR SPIKE IN 12" OAK

BM9 ELEVATION - 649.05
N 566519 E 1398751
L STATION 86+36 109 RIGHT
RR SPIKE IN 27" OAK

BM10 ELEVATION - 619.71
N 566913 E 1399498
L STATION 94+31 106 RIGHT
RR SPIKE IN 32" OAK

BM11 ELEVATION - 709.83
N 561080 E 1394635
Y STATION 14+61 41 RIGHT
RR SPIKE IN 28" OAK

BM12 ELEVATION - 689.57
N 561547 E 1395878
Y STATION 28+62 28 LEFT
RR SPIKE IN POWER POLE

BM13 ELEVATION - 697.44
N 563324 E 1395084
Y5 STATION 10+00
S 66°26'30.7" W DIST 54.71
RR SPIKE IN 20" OAK

BM14 ELEVATION - 676.08
N 566674 E 1397038
Y11 STATION 12+03 31 LEFT
RR SPIKE IN 28" OAK

BM15 ELEVATION - 660.66
N 566764 E 1398047
Y12 STATION 16+68 90 RIGHT
RR SPIKE IN 30" OAK

SEE SHEET 1C-1 FOR NOTES.

PROJECT REFERENCE NO.	SHEET NO.
U-3633	1C-3
Location and Surveys	

SURVEY CONTROL SHEET – FINAL –

Design Alignments

L

TYPE	STATION	NORTH	EAST
POT	10+00.00	560567.8683	1395302.5370
PC	13+11.78	560870.3769	1395378.0072
PT	19+51.40	561505.2292	1395417.2542
PC	24+93.44	562043.3016	1395351.8245
PT	31+63.42	562700.8190	1395437.1093
PC	56+58.06	565018.4489	1396360.0618
PT	65+85.34	565764.0701	1396895.7537
PC	70+26.60	566049.6073	1397232.1708
PT	77+05.60	566367.7126	1397826.2862
PC	89+61.77	566714.1361	1399033.7466
PT	95+08.32	567040.7987	1399455.5664
POT	95+08.32	567040.7936	1399455.5634

Y

TYPE	STATION	NORTH	EAST
POT	10+00.00	560776.8456	1394285.6265
PC	15+68.71	561186.5610	1394680.0412
PT	19+02.18	561391.7943	1394941.5111
PC	19+63.97	561422.8454	1394994.9306
PT	22+65.11	561503.9308	1395281.6761
EQB	31+05.27	561524.6241	1396121.5813
EQA	13+98.52	561524.6241	1396121.5813

Y1

TYPE	STATION	NORTH	EAST
POT	10+00.00	561723.9488	1395390.6578
PC	11+88.58	561821.7346	1395551.9005
PT	13+58.70	561903.4992	1395701.0277
PC	13+61.49	561902.2658	1395698.5251
PT	14+44.30	561941.9033	1395771.2004
POT	15+55.63	561999.2119	1395866.6516

Y2

TYPE	STATION	NORTH	EAST
POT	10+00.00	561342.9628	1394864.4089
PC	10+20.81	561363.5054	1394861.0679
PT	10+81.73	561421.7235	1394873.4912
PC	10+91.53	561429.9121	1394878.8760
PT	13+51.07	561659.7338	1394998.5015
PC	16+34.71	561923.3307	1395103.2186
PT	18+53.55	562092.4503	1395237.1868
POT	19+82.07	562165.9765	1395342.5959

Y3

TYPE	STATION	NORTH	EAST
POT	10+00.00	561927.6968	1395104.9524
POT	19+59.13	562819.0664	1395459.0578

Y4

TYPE	STATION	NORTH	EAST
POT	10+00.00	562669.9783	1395425.2659
POT	12+17.58	562612.6247	1395635.1512
PC	12+87.32	562595.9543	1395702.8674
PT	13+65.28	562607.1949	1395778.0360
POT	13+77.71	562613.5660	1395788.7067

Y5

TYPE	STATION	NORTH	EAST
POT	11+65.00	563346.1164	1395133.9977
PC	17+81.67	563138.7701	1395714.7621
PT	20+32.03	563011.8067	1395928.7459
PC	21+29.31	562947.0697	1396001.3637
PT	22+20.34	562876.2874	1396057.9190
POT	22+20.35	562876.2874	1396057.9190

Y6

TYPE	STATION	NORTH	EAST
POT	10+00.00	563698.9844	1395834.6099
PC	11+19.58	563599.3223	1395900.6863
PT	13+46.25	563482.9919	1396087.2103
PC	14+30.65	563472.0548	1396170.8942
PT	16+95.74	563371.2228	1396412.7137
POT	16+95.74	563371.2228	1396412.7137

Y7

TYPE	STATION	NORTH	EAST
POT	12+00.00	564124.6084	1395371.0332
POT	17+88.38	563891.8536	1395911.4164

Y8

TYPE	STATION	NORTH	EAST
POT	10+00.00	565435.9174	1396590.7511
PC	10+60.89	565400.8870	1396640.5596
PT	11+30.72	565351.6624	1396689.5782
PC	11+82.49	565309.1881	1396719.1850
PT	12+77.02	565254.9652	1396794.4278
POT	13+20.43	565242.6852	1396836.0593

Y9

TYPE	STATION	NORTH	EAST
POT	10+00.00	565595.9196	1396376.0467
POT	12+67.83	565442.5859	1396595.6424

Y10

TYPE	STATION	NORTH	EAST
POT	10+00.00	565841.4460	1396986.9171
PC	10+11.41	565834.1479	1396995.6837
PT	14+29.61	565586.1083	1397332.0888
POT	14+29.61	565586.1083	1397332.0888

Y11

TYPE	STATION	NORTH	EAST
POT	10+00.00	566784.5471	1396864.7274
PC	10+91.05	566724.9615	1396933.5708
PT	16+05.01	566374.1636	1397309.0322
PC	18+06.16	566231.3527	1397450.6858
PT	19+21.18	566136.3384	1397514.2522
PC	20+11.35	566053.2157	1397549.1931
PT	21+07.19	565962.8935	1397581.0914
POT	24+00.00	565681.5735	1397662.3048

Y12

TYPE	STATION	NORTH	EAST
POT	10+00.00	566209.1217	1397932.4647
PC	11+13.90	566307.9892	1397875.9192
PT	11+73.92	566363.1582	1397852.6286
PC	12+33.59	566420.5136	1397836.1722
PT	14+95.68	566671.2048	1397875.9581
POT	17+85.56	566911.4049	1398038.2502

Y13

TYPE	STATION	NORTH	EAST
POT	10+00.00	561061.5057	1394273.5588
POT	12+07.60	560936.4139	1394439.2358

Y14A

TYPE	STATION	NORTH	EAST
POT	10+00.00	561316.3692	1394481.7369
POT	12+34.55	561174.9054	1394668.8208

Y14B

TYPE	STATION	NORTH	EAST
POT	10+00.00	561192.8507	1394686.1403
POT	11+48.48	561090.0908	1394793.3136

Y15

TYPE	STATION	NORTH	EAST
POT	10+00.00	561597.6228	1394651.2200
POT	12+82.87	561428.3135	1394877.8248

DR1

TYPE	STATION	NORTH	EAST
POT	10+00.00	564100.4979	1395994.5051
PC	11+50.58	564044.7878	1396134.3990
PT	12+33.34	564006.4591	1396207.5859
POT	12+33.35	564006.4638	1396207.5788

DR2

TYPE	STATION	NORTH	EAST
POT	10+00.00	564228.8915	1396045.6354
PC	11+53.07	564172.2582	1396187.8475
PRC	11+71.29	564162.6209	1396203.1819
PT	11+87.31	564153.8350	1396216.5067
POT	12+47.75	564129.0476	1396271.6225

DR3

TYPE	STATION	NORTH	EAST
POT	10+00.00	565534.3757	1396464.1863
PC	10+31.05	565508.9180	1396446.4104
PT	10+46.57	565495.8599	1396438.0268
POT	11+40.02	565415.3195	1396390.6260

DATUM DESCRIPTION

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WITH NAD 83/NSRS 2007 STATE PLANE GRID COORDINATES OF NORTHING: 566623.601(ft) EASTING: 1395742.464(ft)
ELEVATION: 654.06(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.999846
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "MADORA" TO -L- STATION 19+51.40 PT IS S 3°38'08.0" W 5128.693'
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

SEE SHEET 1C-1 FOR NOTES.

8/17/16

PROJECT REFERENCE NO.	SHEET NO.
U-3633	1C-4
Location and Surveys	

SURVEY CONTROL SHEET *– FINAL –*

Right of Way and Permanent Easement Monuments

ROW MARKER IRON PIN AND CAP

ALIGN	STATION	OFFSET	NORTH	EAST
L	18+65.00	-50.00	561415.66041	1395375.69048
L	18+65.00	50.00	561422.81780	1395475.43401
L	20+12.00	-60.00	561558.14412	1395350.37774
L	20+30.00	60.00	561590.49782	1395467.32747
L	21+75.00	60.00	561734.43753	1395449.82437
L	22+25.00	60.00	561784.07192	1395443.78882
L	24+93.44	-60.00	562036.05895	1395292.26321
L	24+93.44	60.00	562050.54427	1395411.38573
L	25+16.61	-60.00	562060.11484	1395289.54885
L	30+70.00	60.00	562594.63472	1395462.75276
L	31+90.00	60.00	562703.31692	1395502.68672
L	36+05.00	-73.26	563138.17083	1395532.42487
L	36+10.00	60.00	563093.51467	1395658.07563
L	37+30.00	-60.00	563249.39657	1395590.98738
L	37+40.00	60.00	563214.29017	1395706.17219
L	41+10.00	60.00	563558.03581	1395843.06242
L	42+50.00	60.00	563688.10173	1395894.85872
L	44+00.00	-60.00	563871.85490	1395838.86968
L	45+10.00	-60.00	563974.04955	1395879.56678
L	47+21.77	-60.00	564170.79283	1395957.91608
L	48+96.00	-111.00	564351.52852	1395974.99542
L	49+35.00	-111.00	564387.76117	1395989.42439
L	49+80.00	-60.00	564410.69942	1396053.45436
L	51+35.00	60.00	564510.30414	1396222.28534
L	51+90.00	110.00	564542.90279	1396289.08600
L	52+40.00	110.00	564589.35490	1396307.58468
L	53+45.00	75.00	564699.85341	1396313.91543
L	53+45.00	98.00	564691.34402	1396335.28340
L	53+75.00	-60.00	564777.67112	1396199.59393
L	53+75.00	-125.00	564801.71940	1396139.20618
L	54+21.50	134.00	564749.09671	1396397.03190
L	54+55.00	60.00	564807.59767	1396340.67689
L	54+65.00	-125.00	564885.33320	1396172.50380
L	54+65.00	-60.00	564861.28494	1396232.89156
L	56+58.06	60.00	564996.25044	1396415.80430
L	56+58.06	-60.00	565040.64727	1396304.31923
L	60+75.00	60.00	565352.04333	1396604.98686
L	61+00.00	-60.00	565440.85578	1396520.50777
L	61+75.00	-60.00	565503.30747	1396566.16827
L	62+00.00	60.73	565449.29772	1396676.99229
L	62+45.67	60.00	565484.24028	1396704.10031
L	65+85.34	-55.00	565806.00247	1396860.16321
L	65+85.34	-60.00	565809.81450	1396856.92772
L	65+85.34	60.00	565718.32580	1396934.57962
L	66+73.00	60.00	565775.04924	1397001.41062
L	67+65.00	60.74	565834.01745	1397072.03143
L	72+08.00	-55.00	566204.59831	1397346.20478
L	73+80.00	-70.00	566308.79850	1397492.06881
L	74+37.65	-70.00	566335.77186	1397545.84929
L	74+39.69	60.00	566219.38581	1397603.80168
L	76+75.00	60.00	566301.64680	1397814.60191
L	78+10.00	60.00	566338.83046	1397943.18444
L	78+61.22	-60.00	566468.30363	1397959.32943
L	80+88.00	50.00	566425.10801	1398207.64648
L	80+88.00	60.00	566415.49646	1398210.40405
L	81+35.00	60.00	566428.45798	1398255.58147
L	81+35.00	50.00	566438.06949	1398252.82391
L	83+90.09	-60.00	566614.15192	1398467.68415
L	86+22.03	60.00	566562.76909	1398723.72330

ROW MARKER IRON PIN AND CAP

ALIGN	STATION	OFFSET	NORTH	EAST
Y	15+90.68	35.00	561177.5190	1394720.1900
Y	19+02.18	35.00	561361.5349	1394959.1000
Y	19+20.00	-37.62	561433.2763	1394938.0143
Y	19+63.97	35.00	561392.5860	1395012.5195
Y	21+96.49	-35.00	561532.9893	1395208.4804
Y	22+65.11	35.00	561468.9414	1395282.5381
Y	22+65.11	-35.00	561538.9202	1395280.8140
Y	23+15.00	-35.00	561540.1491	1395330.6931
Y	23+20.00	35.00	561470.2935	1395337.4157
Y	24+80.00	40.00	561469.2358	1395497.4903
Y	24+85.00	-40.00	561549.3347	1395500.5184
Y	29+12.87	-30.00	561549.8752	1395928.5025
Y	29+12.93	-40.00	561559.8747	1395928.3190
Y	29+21.39	40.00	561480.1073	1395938.7453
Y	29+21.68	30.00	561490.1105	1395938.7928

ROW MARKER IRON PIN AND CAP

ALIGN	STATION	OFFSET	NORTH	EAST
Y1	10+75.00	10.00	561754.2894	1395459.9719
Y1	10+90.00	-10.00	561779.1686	1395462.4267

ROW MARKER IRON PIN AND CAP

ALIGN	STATION	OFFSET	NORTH	EAST
Y2	10+60.00	-34.72	561413.01609	1394831.08722
Y2	11+35.00	-30.66	561482.59195	1394875.96013
Y2	11+35.00	29.34	561451.35255	1394927.18694

ROW MARKER IRON PIN AND CAP

ALIGN	STATION	OFFSET	NORTH	EAST
Y4	11+05.00	17.50	562625.4178	1395521.9390
Y4	11+08.47	-17.50	562658.2648	1395534.5143

ROW MARKER IRON PIN AND CAP

ALIGN	STATION	OFFSET	NORTH	EAST
Y5	15+65.00	30.00	563183.3686	1395500.6217
Y5	16+00.00	-30.00	563228.1070	1395553.7581
Y5	17+81.67	-17.50	563155.2514	1395720.6463
Y5	17+81.67	17.50	563122.2892	1395708.8780

ROW MARKER IRON PIN AND CAP

ALIGN	STATION	OFFSET	NORTH	EAST
Y6	10+80.00	-30.00	563648.8844	1395903.8189
Y6	11+30.00	30.00	563573.2018	1395882.2817

ROW MARKER IRON PIN AND CAP

ALIGN	STATION	OFFSET	NORTH	EAST
Y7	17+00.00	30.00	563899.2589	1395818.3785
Y7	17+00.00	-30.00	563954.3646	1395842.1138

ROW MARKER IRON PIN AND CAP

ALIGN	STATION	OFFSET	NORTH	EAST
Y8	10+70.00	50.00	565355.9341	1396617.2911
Y8	10+70.00	-50.00	565435.0270	1396678.4820

ROW MARKER IRON PIN AND CAP

ALIGN	STATION	OFFSET	NORTH	EAST
Y9	11+90.00	20.00	565470.7438	1396520.3767
Y9	11+90.00	-20.00	565503.5399	1396543.2767

ROW MARKER IRON PIN AND CAP

ALIGN	STATION	OFFSET	NORTH	EAST
Y10	11+00.00	-25.00	565797.9279	1397079.9819
Y10	11+00.00	25.00	565758.7146	1397048.9606

ROW MARKER IRON PIN AND CAP

ALIGN	STATION	OFFSET	NORTH	EAST
Y11	14+44.29	-65.00	566533.7768	1397239.5477
Y11	14+65.00	-50.00	566508.4793	1397244.1725
Y11	15+39.53	55.00	566381.3209	1397224.0226
Y11	15+40.00	-60.00	566462.7605	1397305.2188
Y11	15+40.13	25.00	566402.2346	1397245.5397
Y11	16+05.01	55.00	566335.4313	1397269.9835
Y11	16+05.01	-70.00	566423.4593	1397358.7307
Y11	17+20.00	55.00	566253.7919	1397350.9612
Y11	17+45.00	-70.00	566324.0705	1397457.3140
Y11	19+39.86	-45.00	566136.5569	1397562.9744
Y11	19+48.26	35.00	566097.8075	1397492.4823
Y11	20+11.35	-45.00	566070.6536	1397590.6771
Y11	20+11.35	35.00	566039.6529	1397516.9278
Y11	21+07.19	-45.00	565975.3747	1397624.3258
Y11	21+07.19	35.00	565953.1858	1397547.4645
Y11	21+25.23	25.00	565938.6275	1397562.0757
Y11	21+25.29	35.00	565935.7960	1397552.4848
Y11	21+71.00	-25.00	565908.5229	1397622.8083
Y11	21+95.00	-25.00	565885.4645	1397629.4650
Y11	22+20.88	-40.00	565864.7564	1397651.0557
Y11	22+45.86	25.00	565822.7316	1397595.5334
Y11	22+45.89	20.00	565824.0916	1397600.3449

ROW MARKER IRON PIN AND CAP

ALIGN	STATION	OFFSET	NORTH	EAST
Y12	10+90.00	45.00	566309.5877	1397926.8450
Y12	11+05.00	-40.00	566280.4087	1397845.6134
Y12	13+42.00	-51.87	566532.0521	1397773.8507
Y12	14+30.00	-35.00	566626.0387	1397812.8512
Y12	14+95.68	-35.00	566690.7994	1397846.9572
Y12	15+25.00	-30.00	566712.2973	1397867.5168

ROW MARKER IRON PIN AND CAP

ALIGN	STATION	OFFSET	NORTH	EAST
Y15	12+24.00	15.00	561451.5329	1394821.6862
Y15	12+24.00	-15.00	561475.5656	1394839.6425

PERMANENT EASEMENT MARKER IRON PIN AND CAP

ALIGN	STATION	OFFSET	NORTH	EAST
L	16+56.00	68.50	561207.10555	1395496.47420
L	16+59.00	50.00	561211.07171	1395478.13999
L	16+66.00	70.00	561217.42337	1395498.43966
L	16+69.00	50.00	561221.34780	1395478.58441
L	18+00.00	-63.00	561352.16177	1395366.04730
L	18+00.00	-50.00	561352.61007	1395379.03936
L	18+12.00	-67.00	561363.55608	1395361.61216
L	18+20.00	60.00	561377.07236	1395488.14267
L	18+20.00	50.00	561376.61330	1395478.15298
L	18+25.00	-50.00	561376.87453	1395378.02850
L	20+16.70	-70.00	561561.60264	1395339.88352
L	20+77.00	-75.00	561620.85815	1395327.64121
L	21+45.00	76.00	561706.58828	1395469.32870
L	21+45.00	60.00	561704.65690	1395453.44570
L	21+50.00	-80.00	561692.72080	1395313.86587
L	21+50.00	-75.00	561693.32435	1395318.82931
L	22+10.00	-60.00	561754.69628	1395326.47696
L	22+10.00	-80.00	561752.28206	1395306.62321
L	23+08.00	85.00	561869.48277	1395458.58700
L	24+28.00	-80.00	561968.68798	1395280.30821
L	24+28.00	-60.00	561971.10220	1395300.16196
L	24+53.15	-60.00	561996.06829	1395297.12608
L	24+53.15	-85.03	561993.04690	1395272.27910
L	26+02.00	80.00	562154.68339	1395423.03321
L	26+22.00	88.50	562173.69225	1395430.91900
L	26+22.00	73.00	562173.30382	1395415.42386
L	26+37.00	60.00	562187.30362	1395402.14906
L	26+37.00	71.50	562187.46310	1395413.64795
L	27+15.00	125.00	562258.91071	1395468.22018
L	27+35.00	60.00	562280.87059	1395404.27330

SEE SHEET 1C-1 FOR NOTES.

SURVEY CONTROL SHEET — FINAL —

Right of Way and Permanent Easement Monuments

PERMANENT EASEMENT MARKER IRON PIN AND CAP

ALIGN	STATION	OFFSET	NORTH	EAST
L	27+80.00	130.00	562317.23934	1395477.23780
L	28+00.00	60.00	562342.73765	1395409.45247
L	31+65.00	-72.89	562729.25572	1395369.97927
L	31+70.00	-90.00	562740.23211	1395355.93091
L	31+90.00	-90.00	562758.81295	1395363.33038
L	32+00.00	-72.92	562761.78306	1395382.90108
L	36+05.00	60.00	563088.86946	1395656.22576
L	37+07.39	-78.00	563235.05001	1395565.89934
L	37+51.50	-82.00	563277.50640	1395578.50129
L	40+22.00	60.00	563476.28009	1395810.50474
L	40+22.00	95.00	563463.33101	1395843.02122
L	40+32.00	95.00	563472.62144	1395846.72096
L	40+32.00	105.00	563468.92170	1395856.01138
L	40+35.00	-81.00	563540.52391	1395684.31944
L	40+52.00	105.00	563487.50255	1395863.41085
L	40+52.00	100.00	563489.35241	1395858.76564
L	41+20.00	100.00	563552.52729	1395883.92384
L	43+46.00	-94.00	563834.26572	1395787.30367
L	43+46.00	-89.00	563832.41585	1395791.94888
L	43+56.00	-94.00	563843.55614	1395791.00341
L	43+56.00	-88.00	563841.33630	1395796.57766
L	44+88.00	-91.00	563965.07980	1395842.62705
L	44+88.00	-85.00	563962.85996	1395848.20130
L	45+75.00	60.00	563990.04047	1396015.10013
L	45+75.00	140.00	563960.44258	1396089.42352
L	46+53.80	-80.00	564115.04530	1395914.18813
L	46+53.80	-93.00	564119.85496	1395902.11058
L	46+70.00	-93.00	564134.90544	1395908.10416
L	46+70.00	-60.00	564122.69631	1395938.76255
L	46+90.00	85.00	564087.63099	1396080.87315
L	46+90.00	60.00	564096.88033	1396057.64710
L	47+00.00	-79.00	564157.59708	1395932.20996
L	47+00.00	-93.00	564162.77671	1395919.20336
L	47+00.00	-60.00	564150.56758	1395949.86176
L	47+14.00	60.00	564119.17734	1396066.52646
L	47+14.00	88.00	564108.81808	1396092.53965
L	47+75.00	100.00	564161.04998	1396126.25654
L	47+77.55	-76.35	564228.66249	1395963.36118
L	47+80.00	74.00	564175.31450	1396103.95131
L	47+86.00	82.00	564177.92897	1396113.60349
L	47+99.00	60.00	564198.14594	1396097.97422
L	48+16.00	60.00	564213.93965	1396104.26377
L	48+75.00	85.00	564259.50381	1396149.31827
L	49+70.16	-71.15	564405.68237	1396039.44973
L	50+65.00	95.00	564432.32211	1396228.90367
L	50+75.00	115.00	564434.21306	1396251.18425
L	51+00.00	115.00	564457.43911	1396260.43359
L	51+45.00	-71.50	564568.24609	1396103.81602
L	51+50.00	180.00	564479.84294	1396339.32002
L	52+00.00	185.00	564524.44519	1396362.46391
L	53+00.00	-82.00	564716.13236	1396151.40698
L	53+75.00	-80.00	564785.07059	1396181.01308
L	53+75.00	185.00	564687.02759	1396427.20928
L	54+00.00	-125.00	564824.94546	1396148.45552
L	54+25.00	-150.00	564857.42085	1396134.47880
L	54+50.00	170.00	564762.25536	1396441.02167
L	54+65.00	-76.50	564867.38948	1396217.56235
L	54+85.00	-76.50	564885.97033	1396224.96182
L	55+70.00	-86.31	564968.56751	1396247.29782
L	55+70.00	-150.00	564992.13198	1396188.12497
L	56+42.45	183.00	564936.24390	1396524.30223
L	56+53.71	60.00	564992.21165	1396414.19593
L	56+54.00	-102.00	565052.41280	1396263.79678
L	56+54.00	-96.00	565050.19296	1396269.37104
L	56+65.00	-95.40	565060.50916	1396274.13942
L	56+65.00	-102.00	565062.97337	1396268.01670
L	57+61.00	60.00	565087.82043	1396455.17631
L	57+61.00	90.00	565075.22823	1396482.40564
L	57+92.00	-84.63	565177.80380	1396337.73785
L	57+92.00	-76.00	565174.05581	1396345.50720
L	57+95.00	60.00	565117.58057	1396469.26345

PERMANENT EASEMENT MARKER IRON PIN AND CAP

ALIGN	STATION	OFFSET	NORTH	EAST
L	57+95.00	90.00	565104.50315	1396496.26310
L	58+04.00	-80.00	565187.03974	1396347.37347
L	58+04.00	-69.71	565182.50964	1396356.61447
L	59+36.00	-65.00	565300.83142	1396425.14058
L	59+36.00	-60.00	565298.32421	1396429.46654
L	59+75.00	60.00	565270.63151	1396552.56221
L	59+75.00	74.00	565263.36420	1396564.52825
L	59+88.30	71.00	565275.84107	1396568.64831
L	59+88.30	79.31	565271.48036	1396575.71647
L	62+53.00	-81.50	565580.01324	1396599.67789
L	62+53.00	-60.00	565566.29449	1396616.23222
L	62+63.00	-82.50	565588.66718	1396605.58779
L	62+63.00	-60.00	565574.21760	1396622.83481
L	62+70.00	95.00	565479.76566	1396745.92767
L	62+70.00	100.20	565476.41154	1396749.90132
L	62+81.50	95.00	565488.09276	1396752.99977
L	62+81.50	100.20	565484.71465	1396756.95304
L	63+80.00	95.00	565557.62545	1396815.60588
L	64+47.50	-60.00	565713.95024	1396751.94887
L	64+47.50	-74.10	565724.01053	1396742.06957
L	64+58.00	-70.20	565728.83514	1396752.59168
L	64+58.00	-75.85	565732.89016	1396748.65340
L	64+74.00	93.24	565622.14542	1396877.41945
L	64+74.00	87.60	565626.22338	1396873.52507
L	64+86.00	76.21	565642.39003	1396874.01354
L	64+86.00	91.00	565631.62912	1396884.16084
L	64+98.00	75.00	565651.15105	1396881.59473
L	64+98.00	60.00	565662.12901	1396871.37297
L	65+55.00	-71.10	565797.71746	1396825.91003
L	65+55.00	-76.50	565801.77812	1396822.35039
L	65+65.00	-76.50	565808.61483	1396830.19092
L	65+65.00	-71.30	565804.68657	1396833.59809
L	66+75.40	-72.80	565877.84977	1396917.30562
L	66+75.40	-77.60	565881.50932	1396914.19954
L	66+85.80	-72.80	565884.57961	1396925.23464
L	66+85.80	-78.20	565888.69660	1396921.74031
L	67+72.00	60.68	565838.59301	1397077.32934
L	68+11.80	-70.00	565963.97936	1397023.10966
L	68+11.80	-80.81	565972.22097	1397016.11451
L	68+24.50	-77.00	565977.53436	1397028.26252
L	68+24.50	-67.00	565969.91031	1397034.73351
L	68+40.00	-55.00	565970.79147	1397054.31599
L	69+80.00	62.63	565971.70119	1397237.17309
L	69+91.39	72.00	565971.93326	1397251.92171
L	69+92.59	78.00	565968.13504	1397256.71885
L	70+08.00	82.55	565974.63521	1397271.40866
L	70+08.00	76.00	565979.62897	1397267.17016
L	72+15.00	78.00	566097.80741	1397425.78441
L	74+16.50	77.23	566194.18566	1397591.38025
L	74+57.30	-96.50	566368.55928	1397553.24457
L	74+57.30	-75.63	566349.62547	1397562.03332
L	74+72.00	-119.26	566395.78572	1397558.02072
L	74+72.00	-102.20	566380.24872	1397565.05996
L	74+77.20	60.00	566234.56293	1397636.55946
L	74+77.20	82.21	566214.30520	1397645.65825
L	74+82.30	-98.59	566381.44450	1397576.52273
L	74+82.30	-118.70	566399.81166	1397568.34335
L	74+90.75	-85.93	566373.47588	1397589.81811
L	74+90.75	-97.50	566384.07059	1397585.16690
L	78+23.32	88.00	566315.58884	1397963.70703
L	78+23.32	60.00	566342.50305	1397955.98527
L	83+46.00	60.00	566486.64692	1398458.39924
L	83+46.00	83.00	566464.53883	1398464.74211
L	83+82.00	90.20	566467.54600	1398501.33170
L	83+82.00	60.00	566496.57490	1398493.00322
L	85+39.00	60.00	566539.87188	1398643.91502
L	85+39.00	72.00	566528.33722	1398647.22434
L	86+60.00	84.42	566549.76787	1398766.95731
L	86+69.10	89.20	566547.68280	1398777.02264
L	86+72.00	84.50	566553.00029	1398778.51403
L	87+35.25	108.28	566547.58858	1398845.86835

PERMANENT EASEMENT MARKER IRON PIN AND CAP

ALIGN	STATION	OFFSET	NORTH	EAST
Y	16+55.00	35.00	561220.50123	1394765.47507
Y	18+98.50	54.50	561342.90757	1394965.86776
Y	19+00.00	60.00	561338.88013	1394969.87653
Y	19+20.00	55.00	561353.20062	1394984.55987
Y	19+20.50	60.00	561349.12912	1394987.50485
Y	20+00.00	55.00	561390.88440	1395051.34522
Y	21+63.00	35.00	561458.42565	1395187.08201
Y	22+40.00	-45.00	561547.68821	1395253.60899
Y	22+40.00	-35.00	561537.71030	1395254.27326
Y	22+55.00	-45.00	561548.55812	1395269.71009
Y	22+55.00	-35.00	561538.56672	1395270.12473
Y	22+75.00	-35.00	561539.16388	1395290.70526
Y	24+74.27	-54.00	561563.06617	1395489.44635
Y	24+74.94	50.00	561459.11430	1395492.68092
Y	24+86.02	-40.00	561549.35983	1395501.53809
Y	24+86.02	-54.00	561563.35559	1395501.19327
Y	28+59.00	-40.00	561558.54642	1395874.40494
Y	28+59.00	-50.00	561568.54339	1395874.15864
Y	28+64.44	-53.61	561572.28477	1395879.50639
Y	28+77.00	-40.00	561558.98977	1395892.39948

PERMANENT EASEMENT MARKER IRON PIN AND CAP

ALIGN	STATION	OFFSET	NORTH	EAST
Y4	10+81.15	-40.00	562687.1719	1395514.0925
Y4	11+11.34	-40.00	562679.2156	1395543.2088

PERMANENT EASEMENT MARKER IRON PIN AND CAP

ALIGN	STATION	OFFSET	NORTH	EAST
Y5	15+73.00	-30.00	563237.18541	1395528.33007
Y5	15+73.00	-40.00	563246.60310	1395531.69240
Y5	15+84.00	-40.00	563242.90450	1395542.05196
Y5	15+84.00	-30.00	563233.48681	1395538.68963
Y5	17+84.00	68.00	563074.02374	1395693.86297
Y5	18+00.00	55.00	563081.10804	1395711.99099
Y5	18+25.00	17.50	563106.79903	1395748.08632
Y5	18+25.00	55.00	563072.40068	1395733.15282
Y5	18+50.00	55.00	563062.88605	1395753.96418
Y5	18+60.89	-66.00	563166.65635	1395817.14873
Y5	18+63.00	17.50	563091.09102	1395781.55514
Y5	18+68.00	-17.50	563119.99282	1395801.91852
Y5	18+69.00	-87.00	563181.25519	1395834.75653
Y5	18+91.00	-76.00	563159.82973	1395851.33477

PERMANENT EASEMENT MARKER IRON PIN AND CAP

ALIGN	STATION	OFFSET	NORTH	EAST
Y6	11+76.00	30.00	563534.4697	1395915.6805
Y6	13+25.00	-30.00	563515.9275	1396072.5292
Y6	13+25.00	30.00	563457.2476	1396060.0127
Y6	13+46.25	50.00	563433.4135	1396080.7306
Y6	13+50.00	-50.00	563532.0845	1396097.4068
Y6	13+70.00	50.00	563430.3359	1396104.2789
Y6	13+80.00	-50.00	563528.1967	1396127.1538
Y6	13+90.00	30.00	563447.5757	1396126.7021
Y6	14+00.00	-30.00	563505.7738	1396144.3933

PERMANENT EASEMENT MARKER IRON PIN AND CAP

ALIGN	STATION	OFFSET	NORTH	EAST
Y7	16+96.00	-30.00	563955.9470	1395838.4401

PERMANENT EASEMENT MARKER IRON PIN AND CAP

ALIGN	STATION	OFFSET	NORTH	EAST
Y8	10+87.00	-50.00	565421.3257	1396694.7167
Y8	10+87.60	-29.00	565405.4013	1396681.0079
Y8	11+62.00	-22.00	565338.5786	1396725.5155
Y8	11+62.00	-42.00	565350.0154	1396741.9229

SEE SHEET 1C FOR NOTES.

8/17/16

PROJECT REFERENCE NO.	SHEET NO.
U-3633	1C-6
Location and Surveys	

SURVEY CONTROL SHEET *–FINAL–*

Right of Way and Permanent Easement Monuments

PERMANENT EASEMENT MARKER IRON PIN AND CAP

ALIGN	STATION	OFFSET	NORTH	EAST
Y9	11+52.00	20.00	565492.4993	1396489.2207
Y9	11+60.00	40.00	565471.5232	1396484.3312
Y9	11+73.00	20.00	565480.4765	1396506.4384
Y9	11+78.00	35.00	565465.3177	1396501.9520

PERMANENT EASEMENT MARKER IRON PIN AND CAP

ALIGN	STATION	OFFSET	NORTH	EAST
Y10	11+12.00	-25.00	565790.5510	1397089.3393

PERMANENT EASEMENT MARKER IRON PIN AND CAP

ALIGN	STATION	OFFSET	NORTH	EAST
Y11	12+90.02	-30.00	566614.64835	1397102.37078
Y11	13+21.60	25.00	566552.80328	1397088.29234
Y11	13+23.90	38.00	566541.71437	1397081.13136
Y11	13+31.90	25.00	566545.82112	1397095.81272
Y11	13+33.90	36.20	566536.26416	1397089.64256
Y11	13+98.45	-40.00	566547.59594	1397188.87417
Y11	13+98.45	-46.00	566551.94946	1397193.00295
Y11	14+04.43	-46.00	566547.80306	1397197.37117
Y11	15+08.00	-72.00	566493.97944	1397290.60813
Y11	15+08.00	-55.63	566482.28364	1397279.15041
Y11	15+08.00	25.00	566424.68858	1397222.72777
Y11	15+30.00	-74.00	566479.81819	1397307.86989
Y11	15+30.00	-94.00	566494.05937	1397321.91229
Y11	15+39.97	33.00	566396.65753	1397239.80169
Y11	15+40.00	-94.00	566486.93520	1397329.12662
Y11	15+40.00	-111.60	566499.44914	1397341.50246
Y11	15+50.00	-111.60	566492.29599	1397348.72474
Y11	15+50.00	-94.00	566479.80037	1397336.33041
Y11	15+60.00	-63.01	566450.68218	1397321.66445
Y11	15+60.00	-94.00	566472.65489	1397343.52363
Y11	16+24.00	55.00	566321.94978	1397283.35570
Y11	17+14.00	79.13	566241.05754	1397329.60279
Y11	17+14.00	84.00	566237.62928	1397326.14652
Y11	17+26.00	82.00	566230.51800	1397336.01717
Y11	17+26.00	87.60	566226.57434	1397332.04129
Y11	17+45.00	85.10	566214.84429	1397347.19545
Y11	19+33.00	-52.90	566145.94178	1397567.60032
Y11	19+33.00	-66.00	566151.01769	1397579.67564
Y11	19+45.00	-58.00	566136.85522	1397576.95083
Y11	19+45.00	-65.00	566139.56779	1397583.40389
Y11	19+46.00	57.00	566091.36973	1397471.32380
Y11	20+72.64	-45.00	566010.17282	1397613.48075
Y11	20+72.95	-53.00	566012.39995	1397621.17154
Y11	21+25.41	54.00	565930.41613	1397534.26197
Y11	22+57.00	-38.00	565829.50269	1397659.15132
Y11	22+57.00	-20.00	565824.51019	1397641.85750
Y11	22+67.50	-20.00	565814.42215	1397644.76979
Y11	22+67.50	-38.00	565819.41465	1397662.06361
Y11	22+78.00	40.00	565787.69248	1397590.03616
Y11	22+78.00	20.00	565793.23968	1397609.25144

PERMANENT EASEMENT MARKER IRON PIN AND CAP

ALIGN	STATION	OFFSET	NORTH	EAST
Y12	10+78.00	50.00	566301.6534	1397937.1429

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NGS FOR MONUMENT "MADORA"
WITH NAD 83/NSRS 2007 STATE PLANE GRID COORDINATES OF
NORTHING: 566623.601(ft) EASTING: 1395742.464(ft)
ELEVATION: 654.06(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.999846
THE N.C. LAMBERT GRID BEARING AND
LOCALIZED HORIZONTAL GROUND DISTANCE FROM
"MADORA" TO -L- STATION 19+51.40 PT IS
S 3°38'08.0" W 5128.693'
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

SEE SHEET 1C-1 FOR NOTES.

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 022007 ENGINEER Andrew Jason Moore
DocuSigned by: Jason Moore 11/14/2016
4066E1A4EEE94E7...

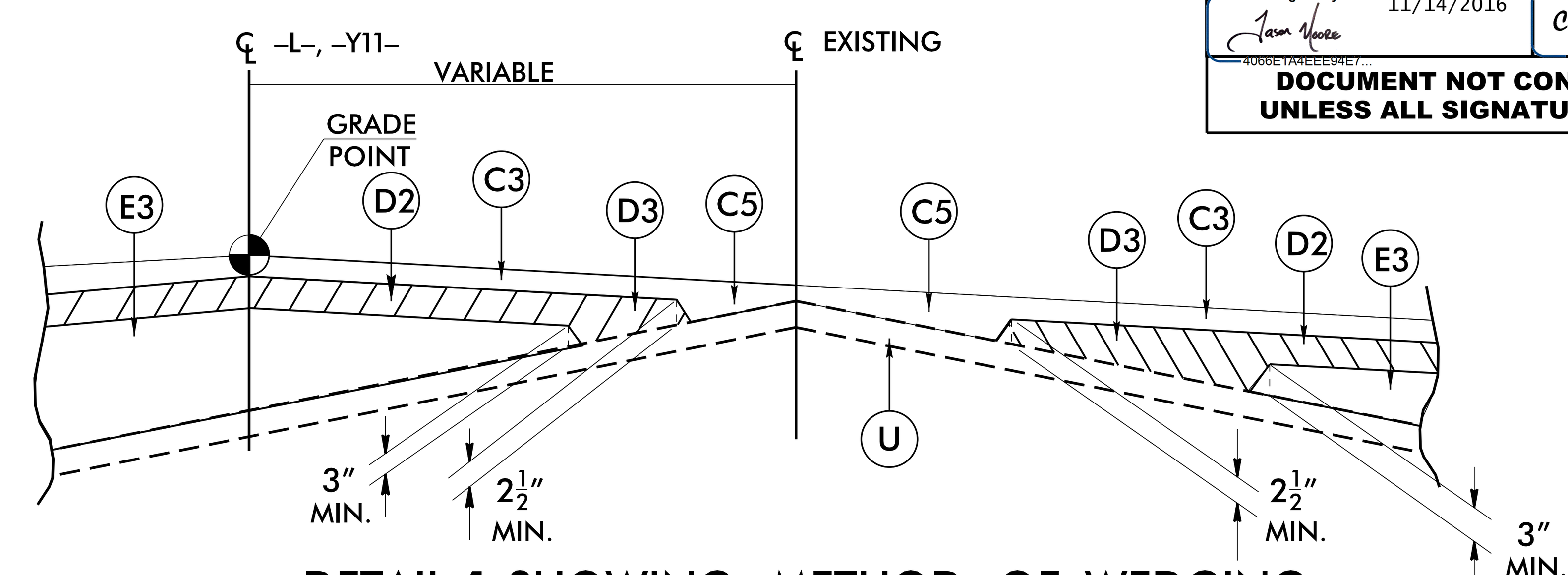
PAVEMENT DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 022896 ENGINEER CLARK S. MORRISON
DocuSigned by: Clark Morrison 11/14/2016
B0A110DD1E004C4...

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

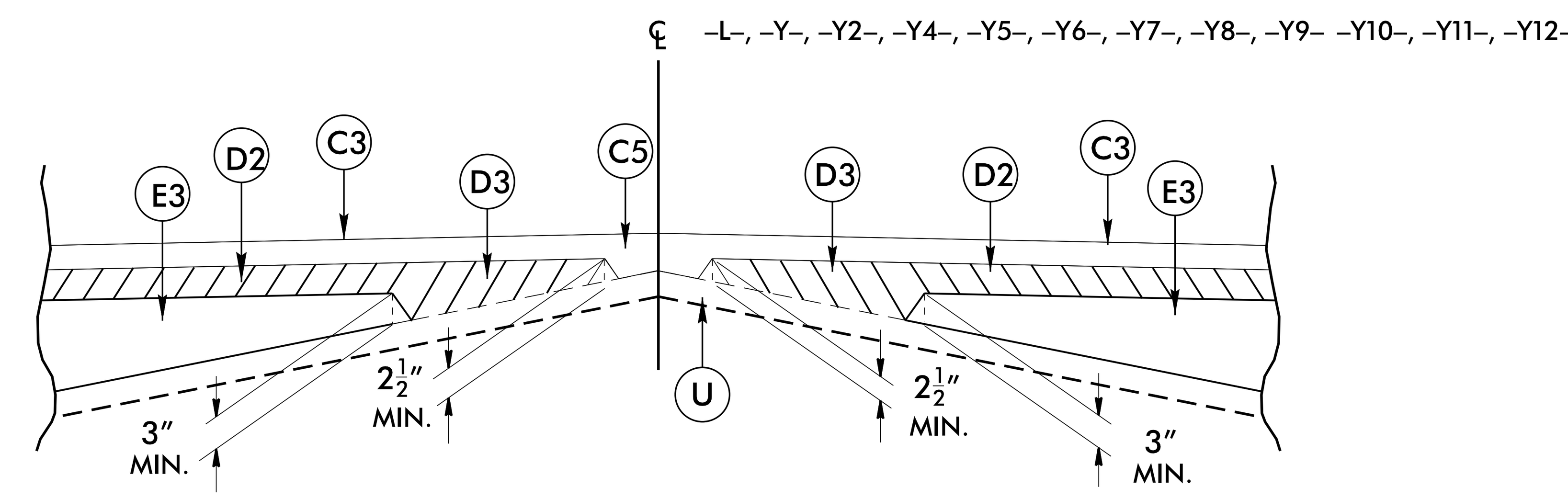
PAVEMENT SCHEDULE
(FINAL PAVEMENT DESIGN)

C1	PROP. APPROX. 1½" ASPHALT CONCRETE SURFACE COURSE TYPE SF9.5A, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD.	E3	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 3" IN DEPTH OR GREATER THAN 5½" IN DEPTH.
C2	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE TYPE SF9.5A, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.	R1	1'-6" CONCRETE CURB AND GUTTER.
C3	PROP. APPROX. 1½" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.	R2	2'-6" CONCRETE CURB AND GUTTER.
C4	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.	R3	5" MONOLITHIC CONCRETE ISLAND (KEYED IN).
C5	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 TO EXCEED 2" IN DEPTH.	S	4" CONCRETE SIDEWALK.
D1	PROP. APPROX. 2½" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 285 LBS. PER SQ. YD.	T	EARTH MATERIAL.
D2	PROP. APPROX. 4" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.	U	EXISTING PAVEMENT.
D3	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 2½" IN DEPTH OR GREATER THAN 4" IN DEPTH.	V	MILLING ASPHALT PAVEMENT. (MILL 2½")
E1	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.	W	WEDGING (SEE DETAIL 1 AND DETAIL 2)
E2	PROP. APPROX. 5" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 570 LBS. PER SQ. YD.		

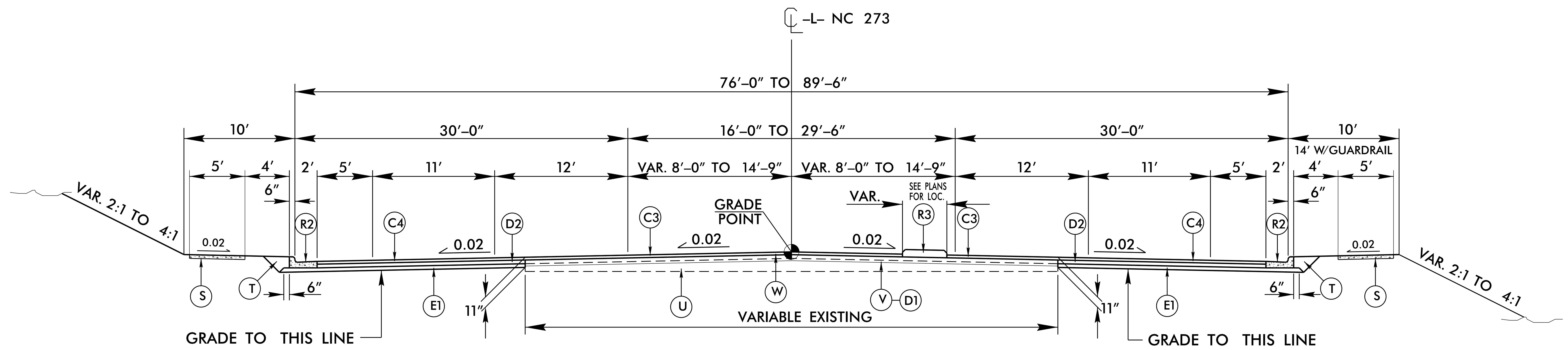
NOTE: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.



DETAIL 1 SHOWING METHOD OF WEDGING



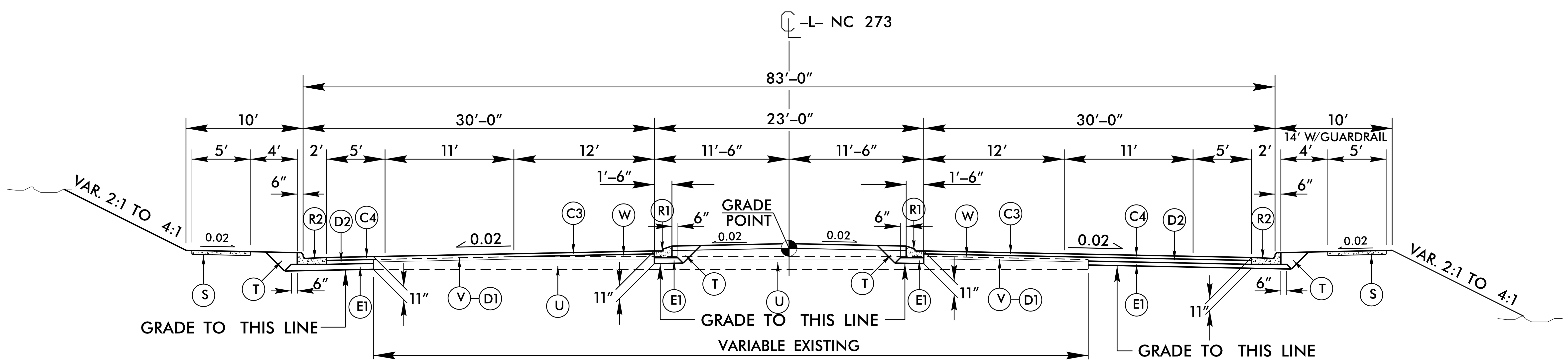
DETAIL 2 SHOWING METHOD OF WEDGING



TYPICAL SECTION NO. 1

USE TYPICAL SECTION NO. 1

-L- STA. 18+65.00 TO 21+72.00
-L- STA. 59+04.45 TO 82+10.00



TYPICAL SECTION NO. 2

USE TYPICAL SECTION NO. 2

-L- STA. 21+72.00 TO 59+04.45

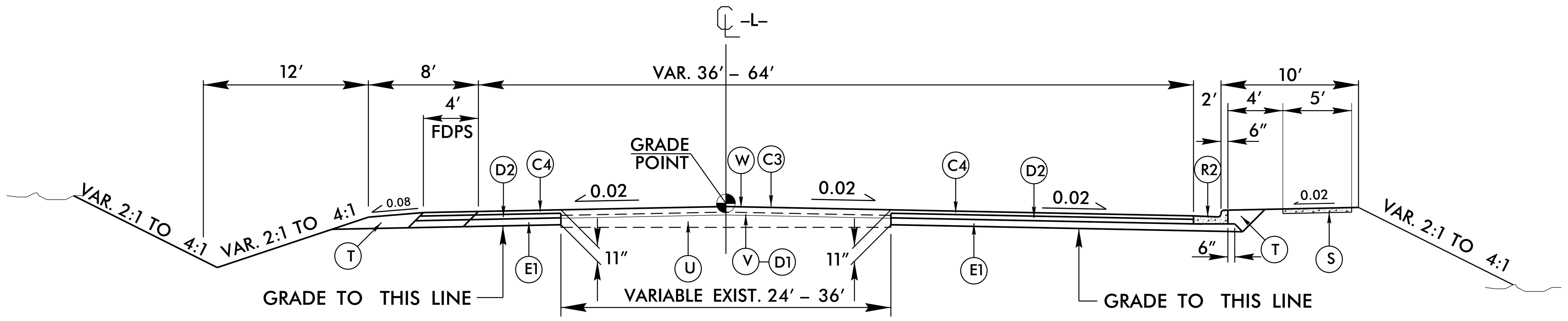
6/2/99
08-NOV-2016 08:47
R:\Roadway\Proj\u-3633_rdy_typ.dgn
$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
U-3633	2A-2

ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 022007 ENGINEER Andrew Jason Moore	NORTH CAROLINA PROFESSIONAL SEAL 022896 ENGINEER CLARK S. MORRISON
DocuSigned by: Jason Moore 4/13/2017 4066E1A4EEE94E7...	DocuSigned by: Clark Morrison 4/13/2017 B0A110DD1E004C4...

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

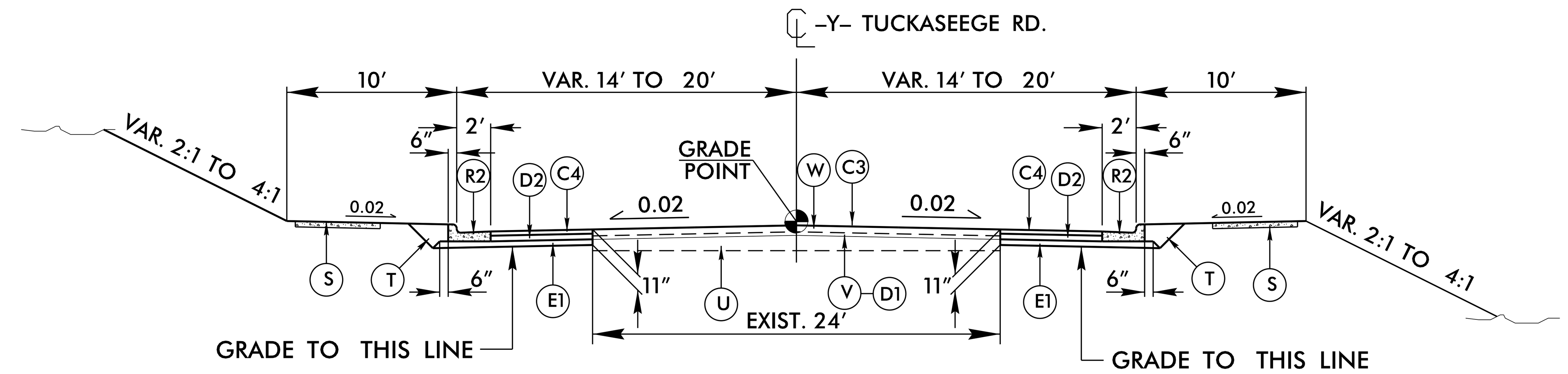
PAVEMENT SCHEDULE (FINAL PAVEMENT DESIGN)	
C1	1½″ SF9.5A
C2	3″ SF9.5A
C3	1½″ S9.5B
C4	3″ S9.5B
C5	VAR. DEPTH S9.5B
D1	2½″ I19.0B
D2	4″ I19.0B
D3	VAR. DEPTH I19.0B
E1	4″ B25.0B
E2	5″ B25.0B
E3	VAR. DEPTH B25.0B
R1	1′-6″ C & G
R2	2′-6″ C & G
R3	5″ CONC. ISLAND
S	4″ CONC. SIDEWALK
T	EARTH MATERIAL
U	EXIST. PAVEMENT
V	2½″ MILLING
W	WEDGING



TYPICAL SECTION NO. 3

USE TYPICAL SECTION NO. 3

-L- STA 82+10.00 TO 90+00.00



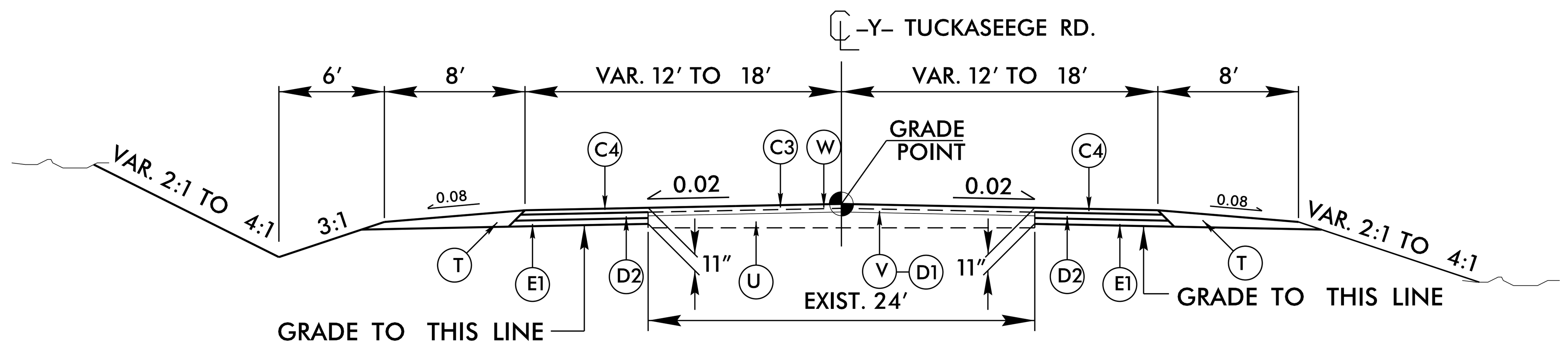
TYPICAL SECTION NO. 4

USE TYPICAL SECTION NO. 4

-Y- STA 16+00.00 TO 23+64.31

-Y- STA 24+36.65 TO 24+74.10

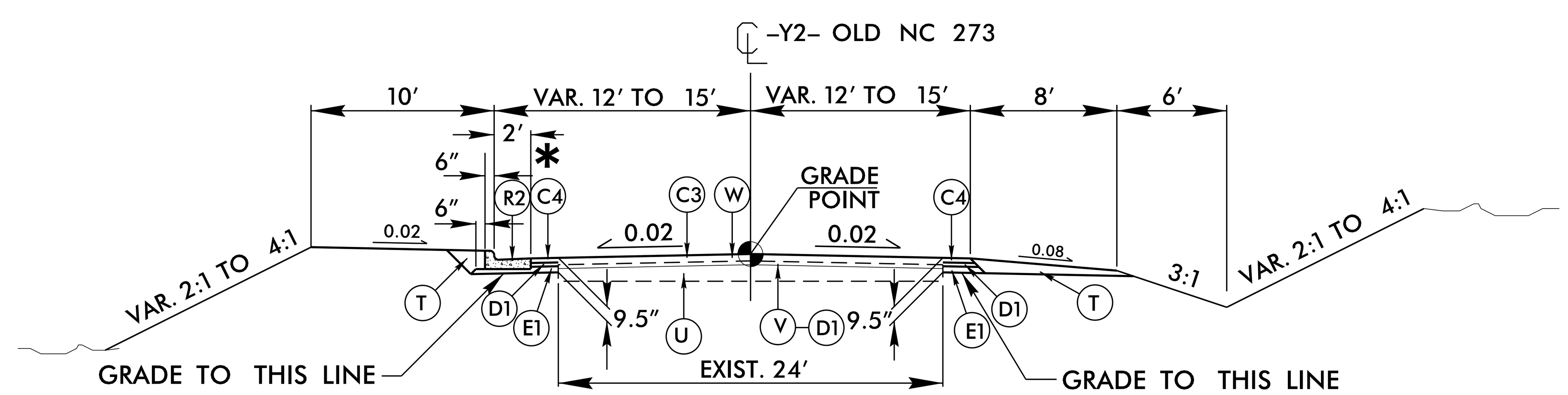
NOTE: -Y- STA. 15+50.00 TO 16+00.00 TO BE MILLED AND OVERLAIN WITH (C3)



TYPICAL SECTION NO. 5

USE TYPICAL SECTION NO. 5

-Y- STA. 24+74.10 TO 28+82.00



TYPICAL SECTION NO. 6

USE TYPICAL SECTION NO. 6

-Y2- STA. 10+22.61 TO 10+75.00

-Y2- STA. 18+25.00 TO 19+35.15

-Y2- STA. 10+75.00 TO 11+25.00 (ASPHALT OVERLAY)

-Y2- STA. 18+00.00 TO 18+25.00 (ASPHALT OVERLAY)

6/2/99

12-APR-2017 09:13
R:\Roadway\Proj\u-3633_rdy_typ.dgn
$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
U-3633	2A-3

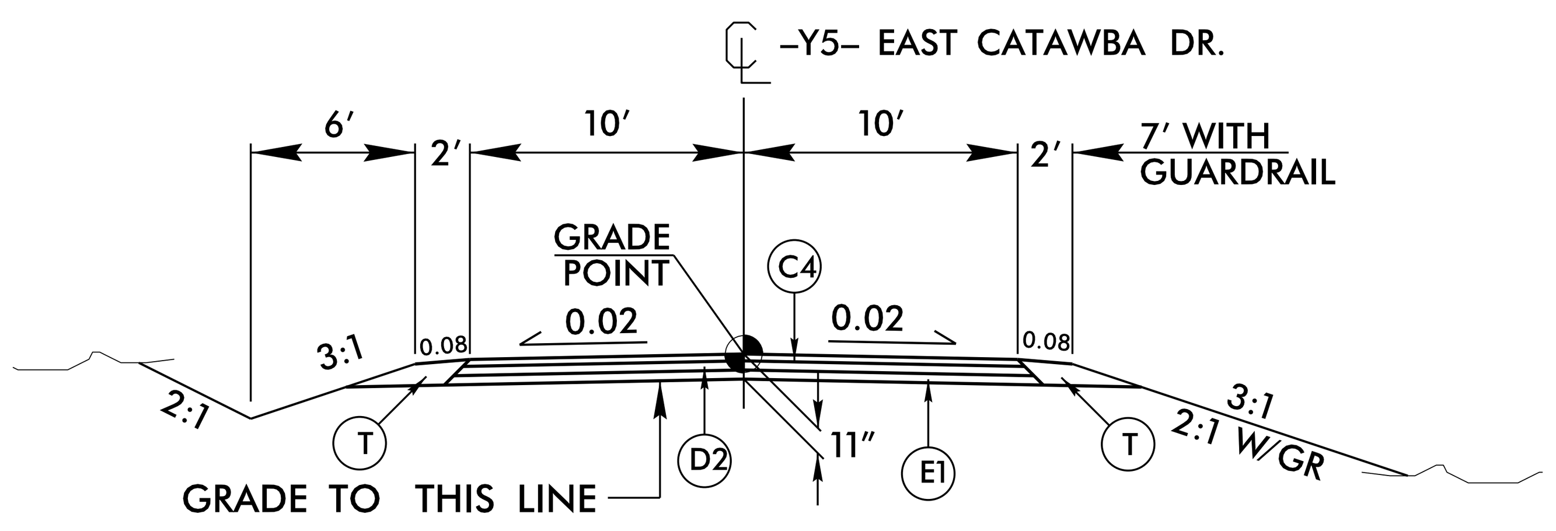
ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 022007 Andrew Jason Moore — DocuSigned by: Jason Moore 11/14/2016

PAVEMENT DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 022896 CLARK S. MORRISON — DocuSigned by: Clark Morrison 11/14/2016

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PAVEMENT SCHEDULE
FINAL PAVEMENT DESIGN

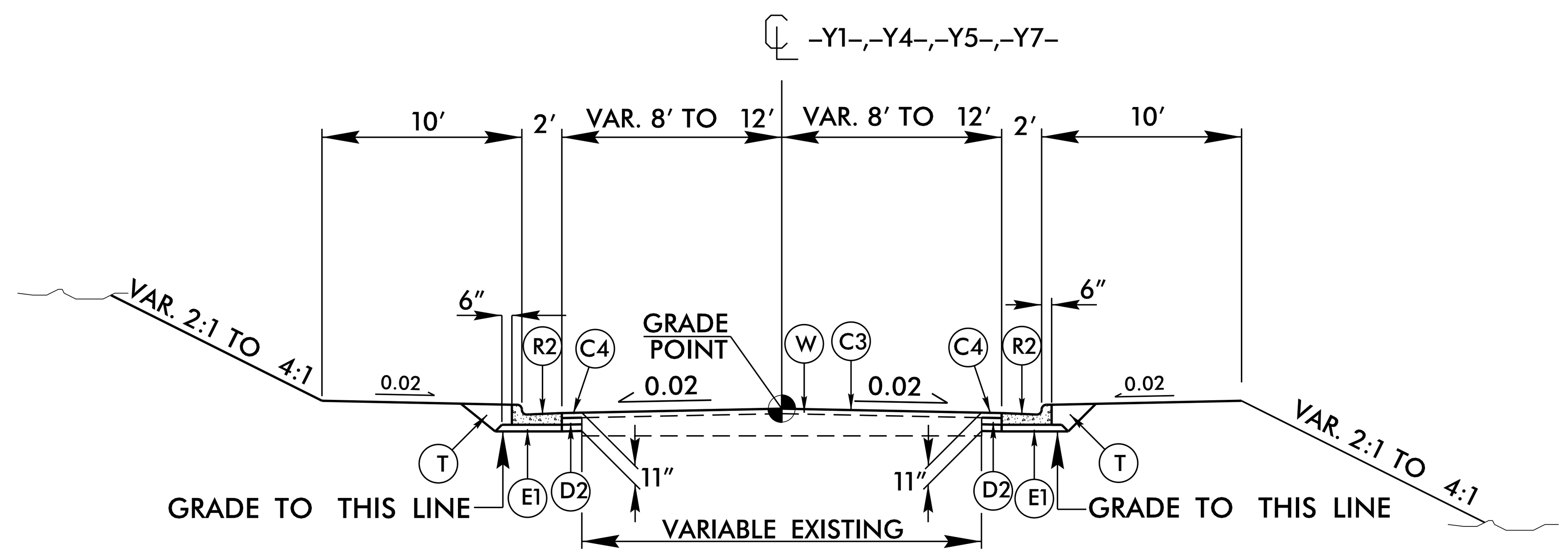
C1	1½" SF9.5A
C2	3" SF9.5A
C3	1½" S9.5B
C4	3" S9.5B
C5	VAR. DEPTH S9.5B
D1	2½" I19.0B
D2	4" I19.0B
D3	VAR. DEPTH I19.0B
E1	4" B25.0B
E2	5" B25.0B
E3	VAR. DEPTH B25.0B
R1	1'-6" C & G
R2	2'-6" C & G
R3	5" CONC. ISLAND
S	4" CONC. SIDEWALK
T	EARTH MATERIAL
U	EXIST. PAVEMENT
V	2½" MILLING
W	WEDGING



TYPICAL SECTION NO. 7

USE TYPICAL SECTION NO. 7

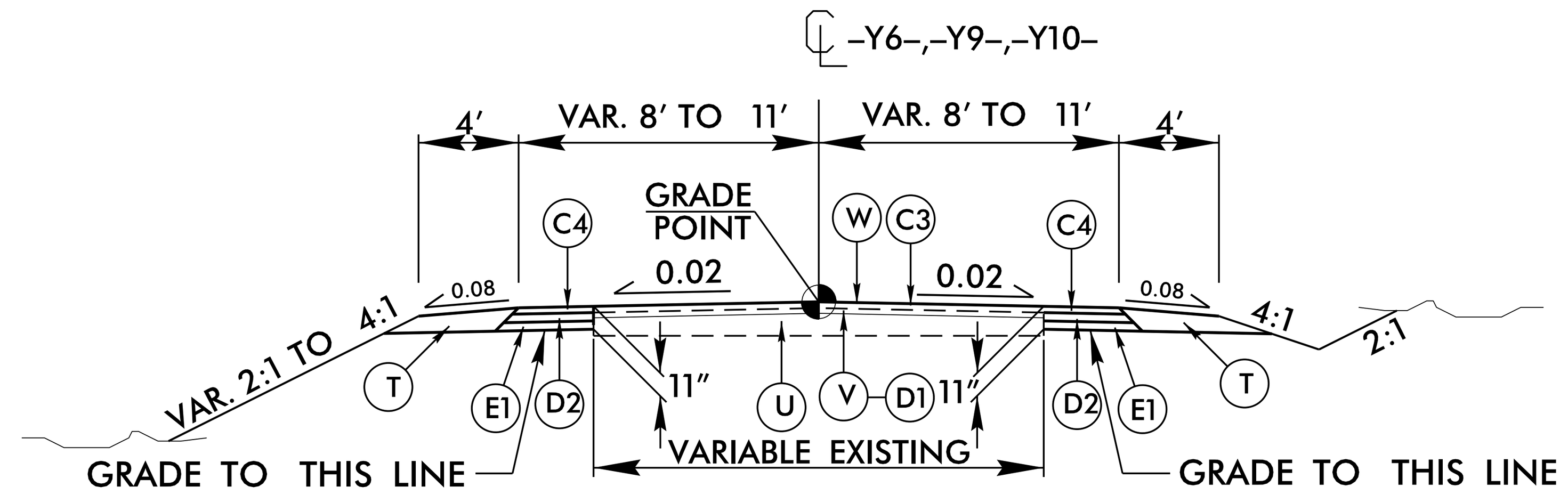
-Y5- STA. 17+25.21 TO 19+50.00
-Y5- STA. 19+50.00 TO 20+00.00 (ASPHALT OVERLAY)



TYPICAL SECTION NO. 8

USE TYPICAL SECTION NO. 8

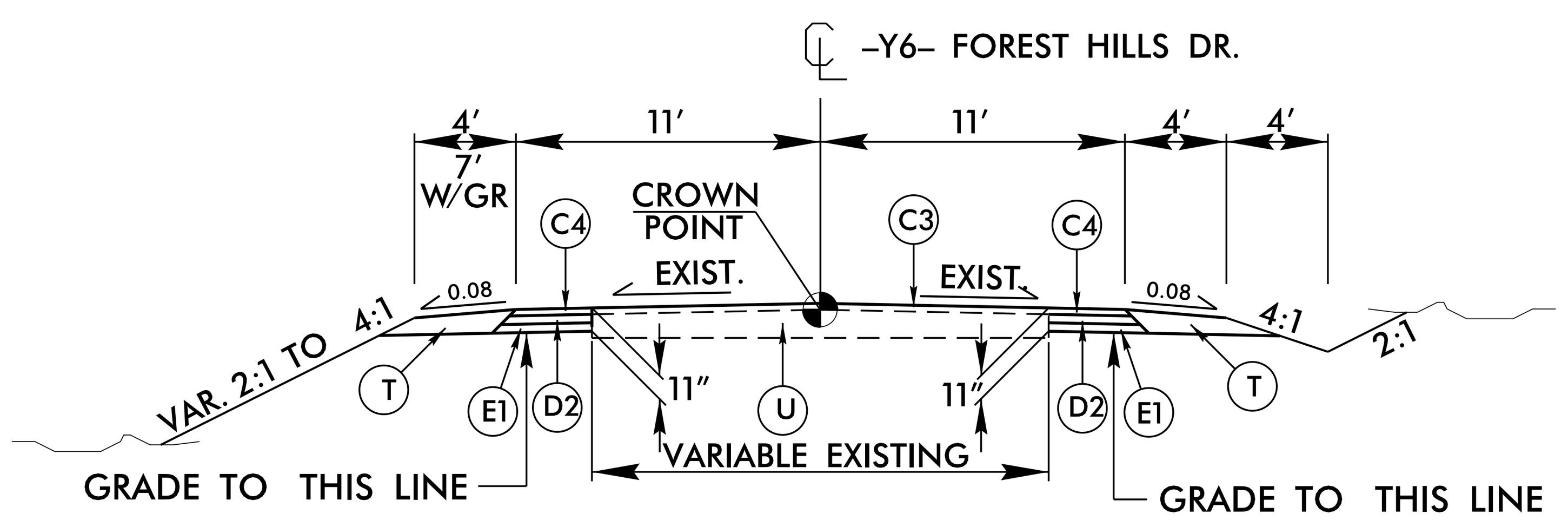
-Y1- STA. 10+41.70 TO 11+00.00
-Y4- STA. 10+39.66 TO 11+00.00
-Y5- STA. 16+00.00 TO 16+46.16
-Y7- STA. 17+00.00 TO 17+48.86



TYPICAL SECTION NO. 9

USE TYPICAL SECTION NO. 9

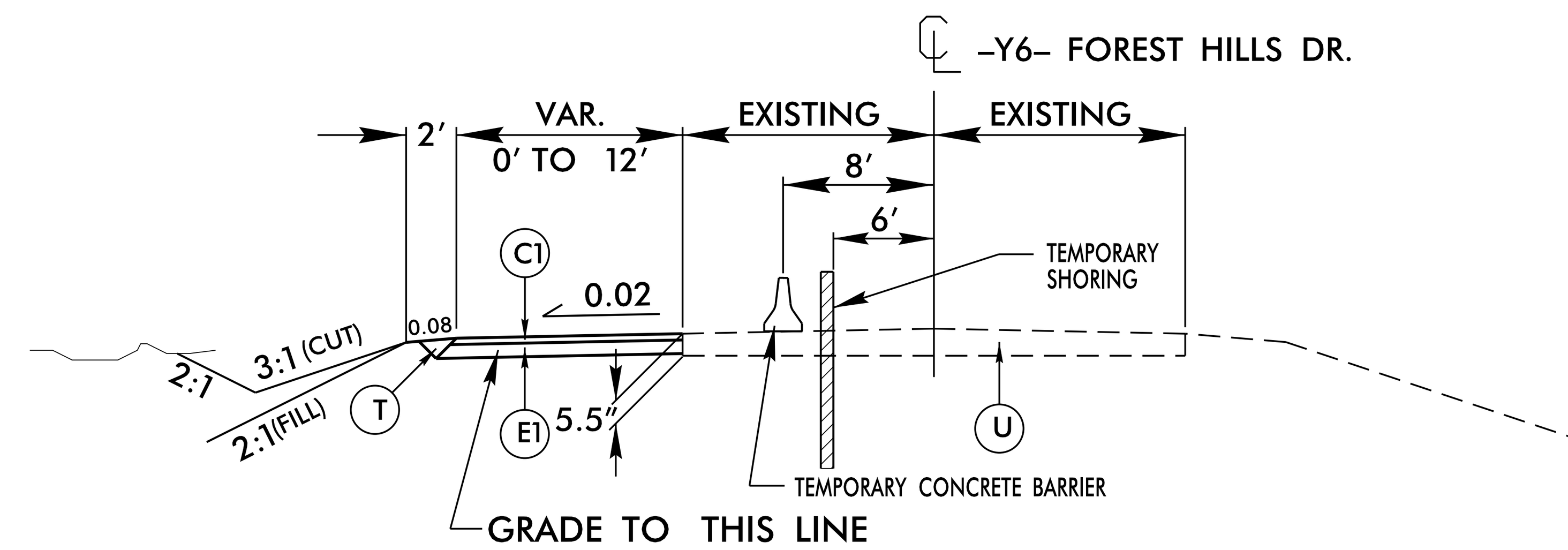
-Y6- STA. 10+48.07 TO 11+50.00
-Y9- STA. 11+66.80 TO 12+28.32
-Y10- STA. 10+43.42 TO 11+00.00



TYPICAL SECTION NO. 10

USE TYPICAL SECTION NO. 10

-Y6- STA. 13+00.00 TO 14+15.00



TYPICAL SECTION NO. 11

USE TYPICAL SECTION NO. 11

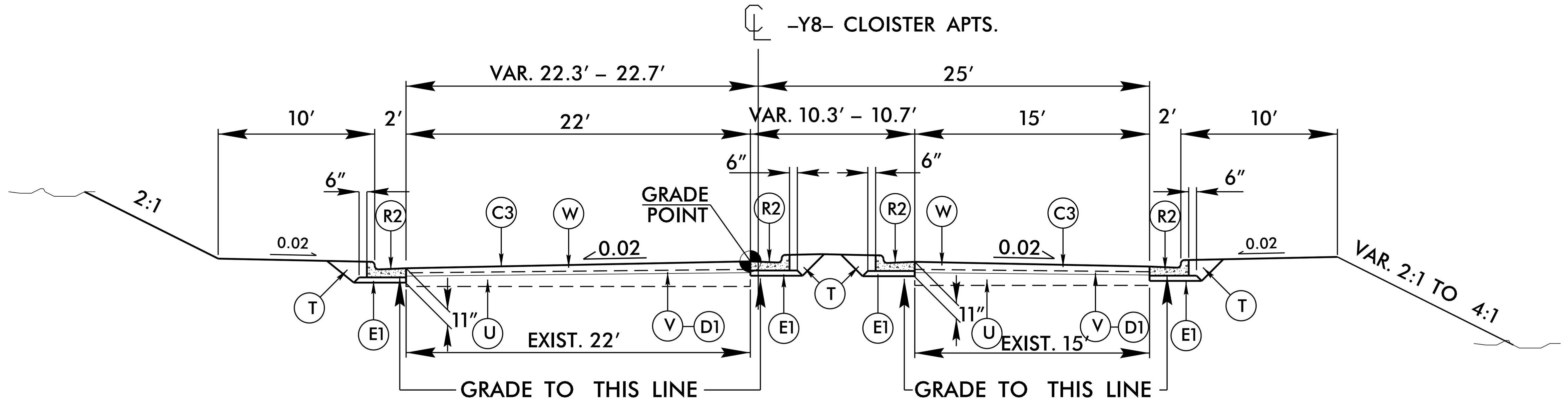
-Y6- STA. 12+26.00 TO 14+89.00 (TEMPORARY PAVEMENT)

SEE TMP PLANS FOR INSTALLATION OF 54" RCP

PROJECT REFERENCE NO.	SHEET NO.
U-3633	2A-4

ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 022007 ENGINEER Andrew Jason Moore	NORTH CAROLINA PROFESSIONAL SEAL 022896 ENGINEER CLARK S. MORRISON
DocuSigned by: Jason Moore 11/14/2016	DocuSigned by: Clark Morrison 11/14/2016

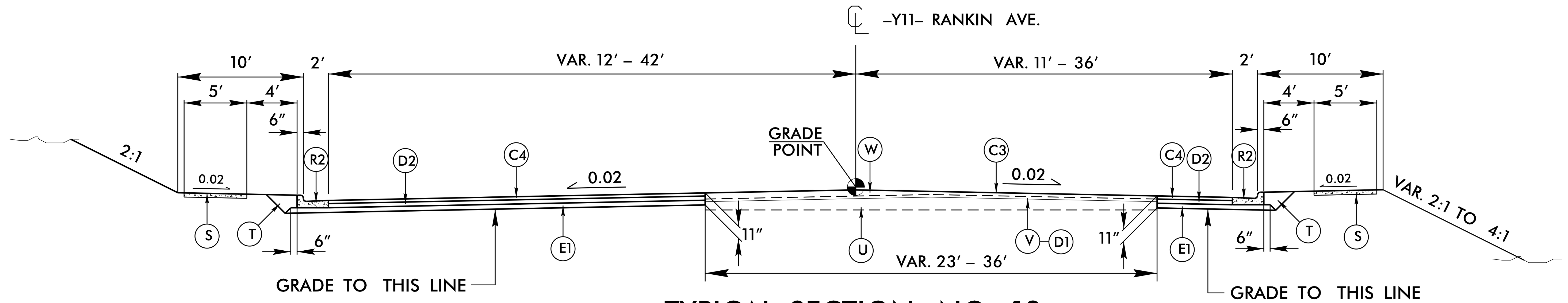
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



TYPICAL SECTION NO. 12

USE TYPICAL SECTION NO. 12

-Y8- STA. 10+39.51 TO 10+75.00

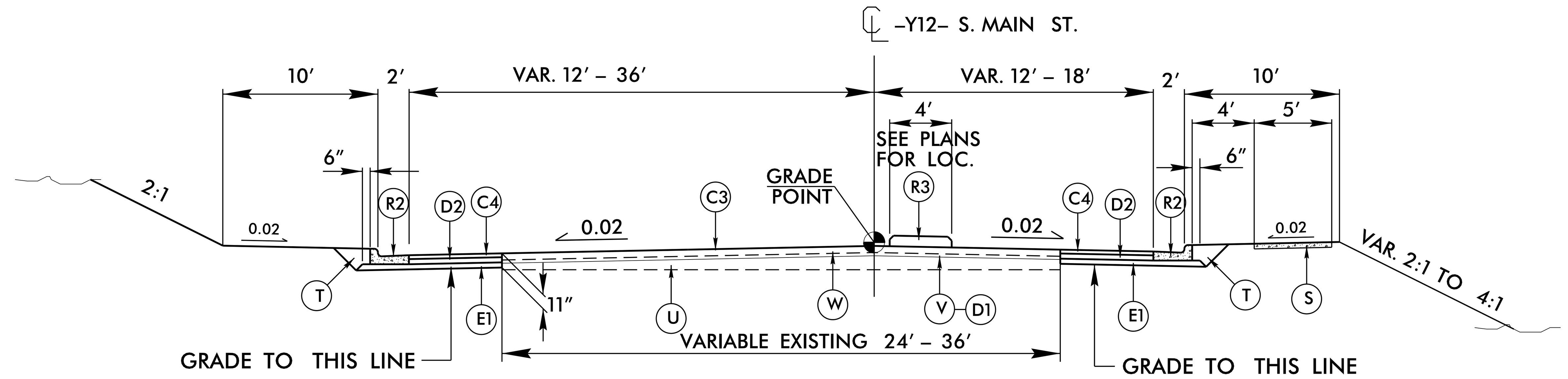


TYPICAL SECTION NO. 13

USE TYPICAL SECTION NO. 13

-Y11- STA. 13+75.00 TO 14+25.00 (ASPHALT OVERLAY)
-Y11- STA. 14+25.00 TO 17+84.99
-Y11- STA. 18+72.00 TO 22+25.00
-Y11- STA. 22+25.00 TO 22+73.00 (ASPHALT OVERLAY)

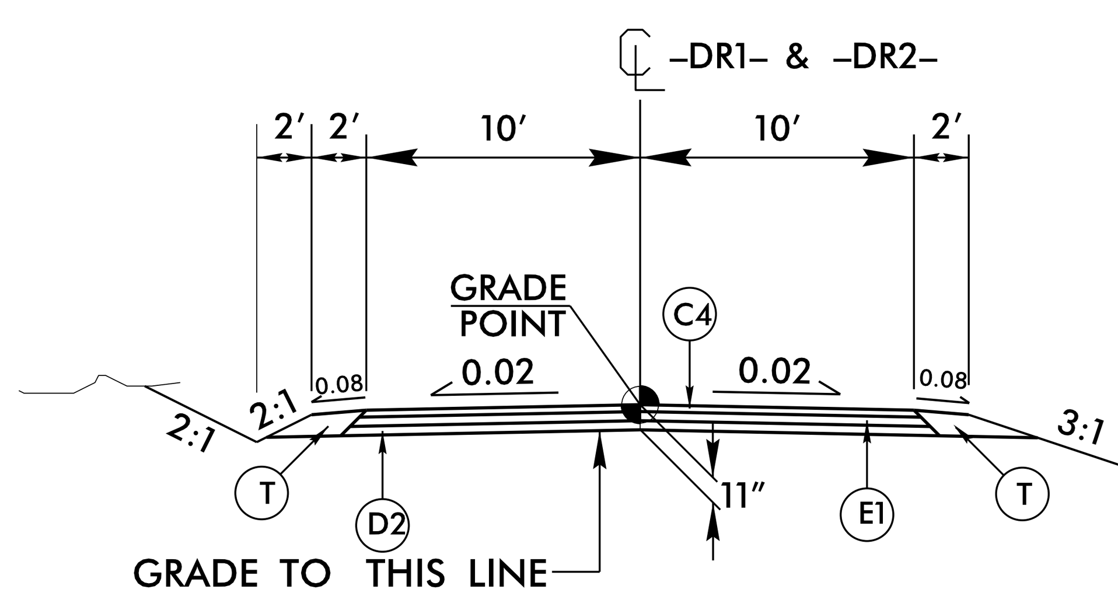
NOTE: RETAIN EXIST. C&G RT. -Y11- STA. 14+00.00 TO 15+63.00



TYPICAL SECTION NO. 14

USE TYPICAL SECTION NO. 14

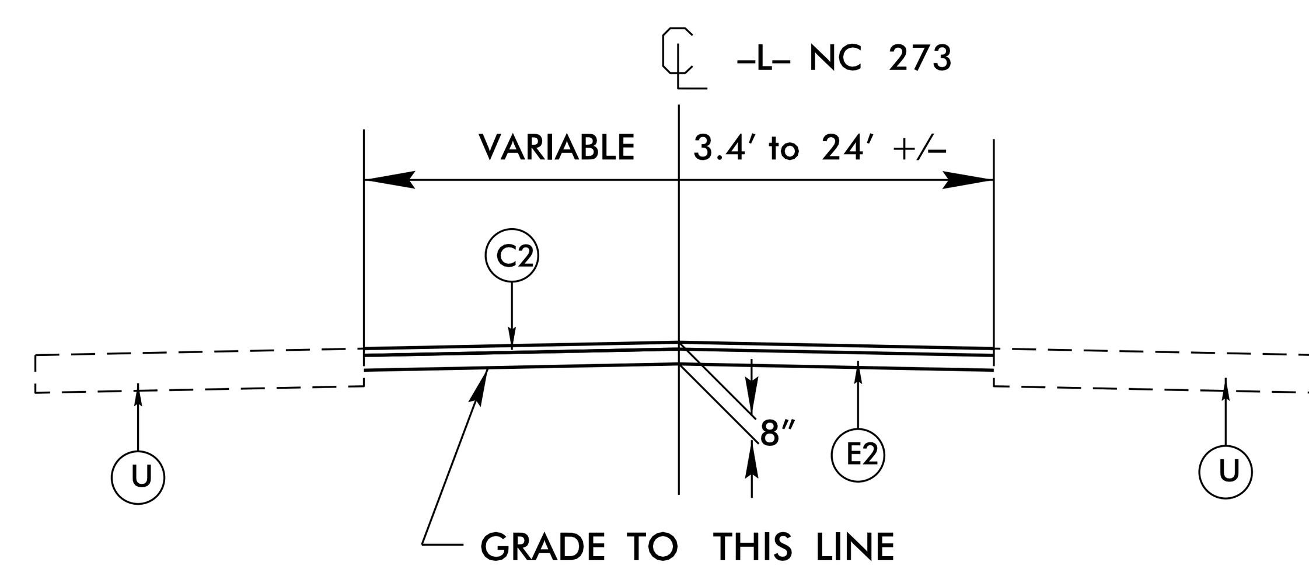
-Y12- STA. 10+79.72 TO 11+00.00 (ASPHALT OVERLAY)
-Y12- STA. 11+00.00 TO 11+42.73
-Y12- STA. 12+28.32 TO 14+75.00
-Y12- STA. 14+75.00 TO 15+25.00 (ASPHALT OVERLAY)



TYPICAL SECTION NO. 15

USE TYPICAL SECTION NO. 15

-DR1- STA. 10+51.50 TO 12+00.00
-DR1- STA. 12+00.00 TO 12+20.00 (ASPHALT OVERLAY)
-DR2- STA. 10+51.50 TO 12+10.00
-DR2- STA. 12+10.00 TO 12+20.00 (ASPHALT OVERLAY)



TYPICAL SECTION NO. 16

USE TYPICAL SECTION NO. 16

-L- STA. 20+04.00 TO 26+49.00
-L- STA. 26+57.00 TO 31+01.00
-L- STA. 31+61.00 TO 32+79.00

NOTE: SEE TMP PLANS FOR TEMPORARY PAVEMENT LOCATIONS

PAVEMENT SCHEDULE FINAL PAVEMENT DESIGN	
C1	1½" SF9.5A
C2	3" SF9.5A
C3	1½" S9.5B
C4	3" S9.5B
C5	VAR. DEPTH S9.5B
D1	2½" I19.0B
D2	4" I19.0B
D3	VAR. DEPTH I19.0B
E1	4" B25.0B
E2	5" B25.0B
E3	VAR. DEPTH B25.0B
R1	1'-6" C & G
R2	2'-6" C & G
R3	5" CONC. ISLAND
S	4" CONC. SIDEWALK
T	EARTH MATERIAL
U	EXIST. PAVEMENT
V	2½" MILLING
W	WEDGING

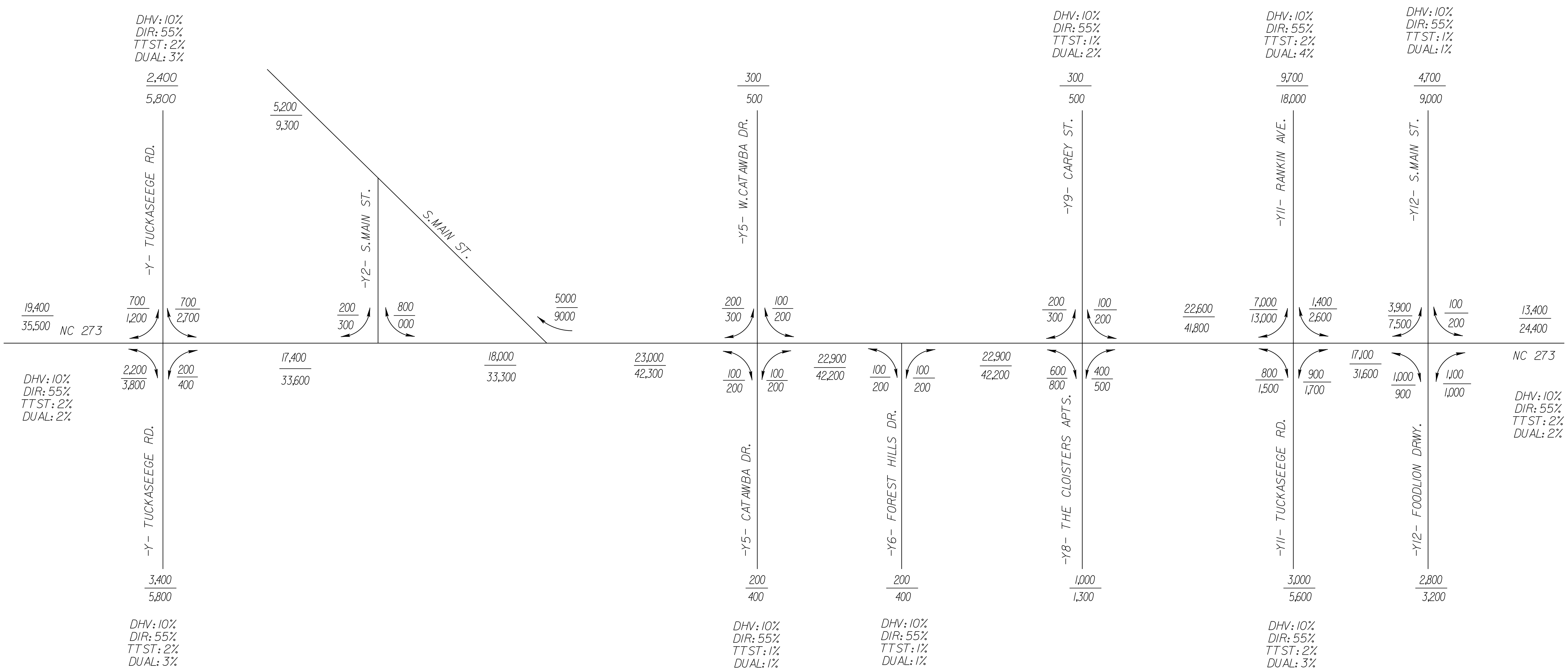
6/2/99
08-NOV-2016 10:54
R:\Roadway\Proj\u-3633_rdy_typ.dgn
$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
U-3633	2B-1

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 022007 ENGINEER Andrew Jason Moore
DocuSigned by: 11/14/2016

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

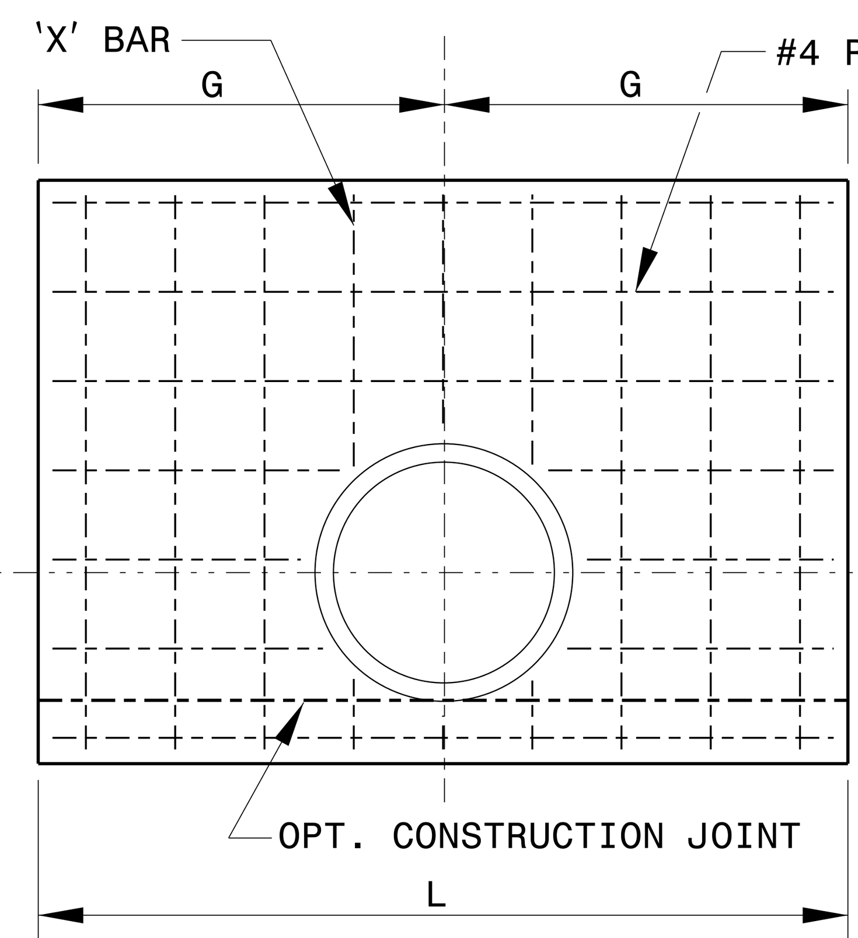
U-3633 TRAFFIC FORECAST 2009 / 2035



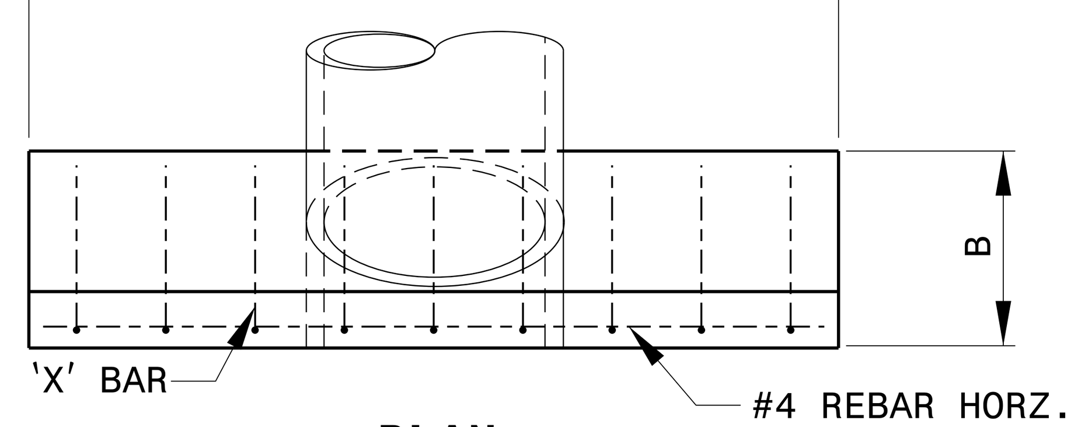
STATE OF
NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ENGLISH DETAIL DRAWING FOR
CONCRETE ENDWALL AND SLUICE GATE
15" THRU 48" PIPE - 90° SKEW

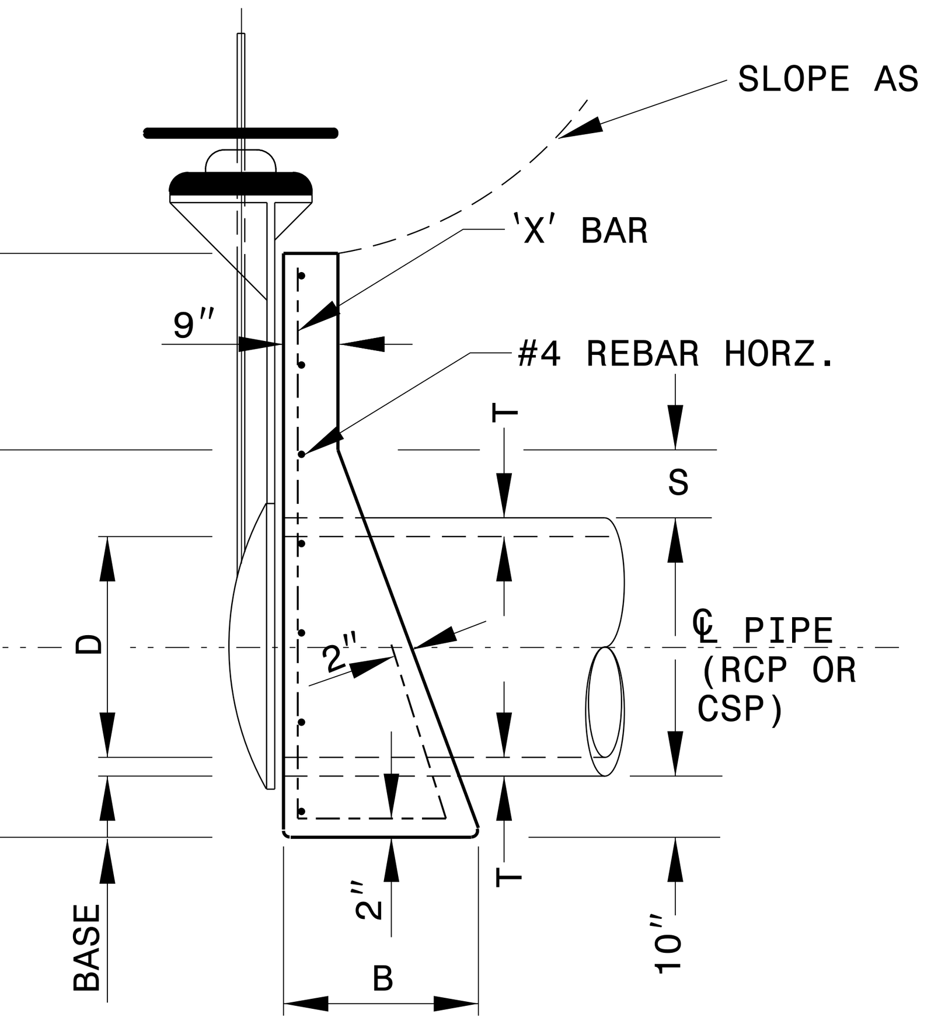
SHEET 1 OF 1
838D02



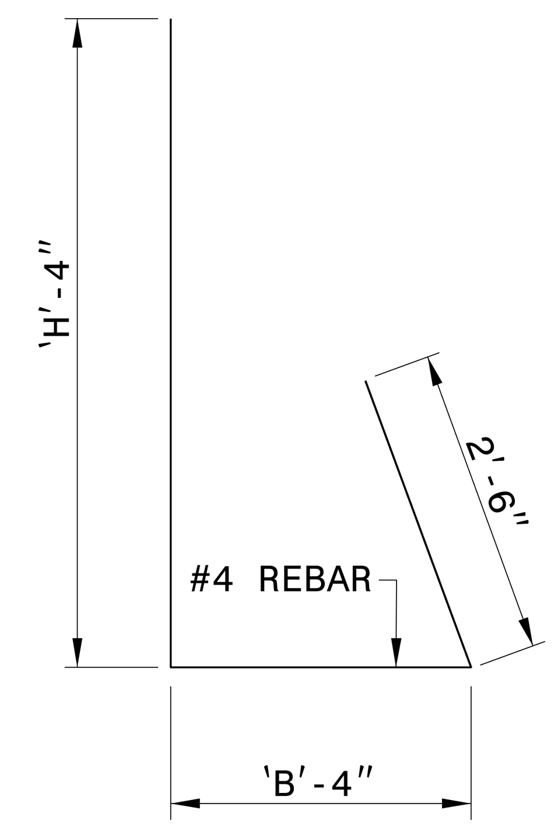
ELEVATION



PLAN



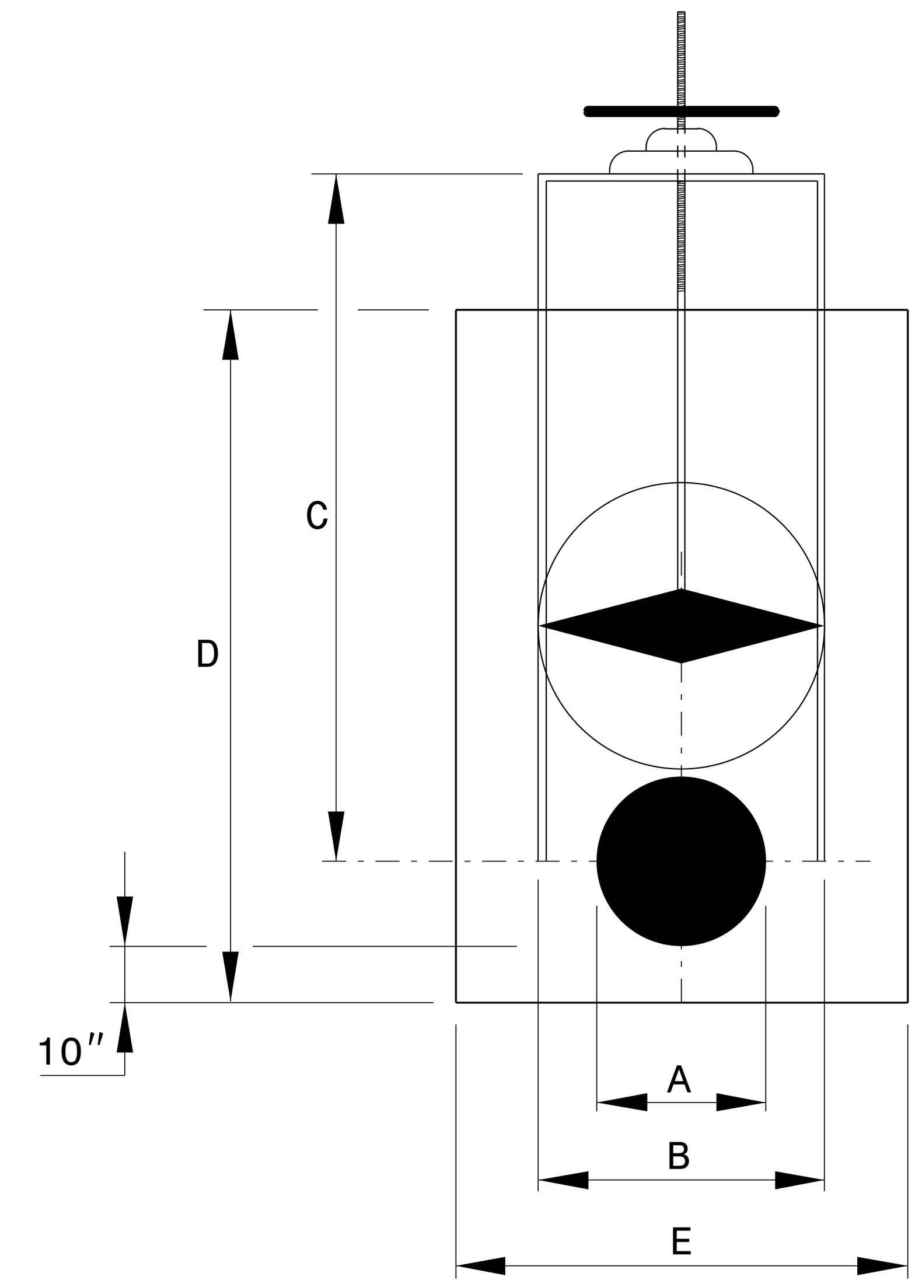
END ELEVATION



DOWEL 'X' BAR

GENERAL NOTES:

1. LIMIT VARIABLE HEIGHT DIMENSION (H) TO FRAME HEIGHT OF SLUICE GATE, 3' ABOVE THE H^1 DIMENSION OR 10' WHICHEVER IS LESS.
2. ATTACHMENT OF GATE MAY REQUIRE SPECIFIC POSTIONING OF PIPE AND/OR MODIFICATION OF ENDWALL. CONFIRMATION OF GATE DIMENSIONS AND ATTACHMENT METHOD IS RECOMMENDED PRIOR TO CONSTRUCTION OF ENDWALL.
3. PLACE NO. 4 REBAR ON 12" HORIZONTAL AND VERTICAL CENTERS WITH 2" MINIMUM CONCRETE COVERAGE.
4. CONSTRUCT 1" CHAMFER OR RADIUS ON ALL EXTERIOR CORNERS.
5. USE FORMS TO CONSTRUCT THE BOTTOM SLAB.
6. WALL THICKNESS (T) IS USED TO COMPUTE QUANTITIES, NOT TO INFER SIZE.
7. WHEN THE BASE IS POURED SEPARATELY, LEAVE THE POUR ROUGH.
8. USE CLASS 'B' CONCRETE.
9. CUT OR BEND REBARS AS NEEDED TO ACCOMMODATE PIPE.



DIMENSIONS AND QUANTITIES FOR RCP OR CSP

CALCULATIONS BASED ON CONCRETE PIPE

PIPE DIA.	H^1 MINIMUM DIMENSIONS						
D	H^1	B	G	T	S	L	CONC YD^3
15"	3'-3"	1'-8"	2'-9"	2¼"	9½"	5'-6"	0.7
18"	3'-7"	1'-10"	3'-2"	2½"	10"	6'-4"	1.0
24"	4'-2"	2'-1"	4'-0"	3"	10"	8'-0"	1.5
30"	5'-0"	2'-6"	4'-7"	4¼"	11½"	9'-2"	2.3
36"	5'-8"	2'-8"	5'-6"	4¾"	11½"	11'-0"	3.4
42"	6'-2"	3'-1"	6'-4"	5¼"	11½"	12'-8"	4.5
48"	6'-9"	3'-5"	7'-2"	5¾"	11½"	14'-4"	6.0

H^2 QUANTITES

PIPE DIA.	PER 1' ADDTIONAL HEIGHT	
D	STEEL LBS.	CONC YD^3
15"	7.5	0.2
18"	8.7	0.2
24"	11.1	0.2
30"	12.6	0.3
36"	15.1	0.3
42"	17.6	0.4
48"	19.1	0.4

REBAR IN ENDWALL (H^1 MIN.)

USE WITH RC OR CS PIPE	PIPE DIA.						
	15"	18"	24"	30"	36"	42"	48"
	QTY	QTY	QTY	QTY	QTY	QTY	QTY
'X' BARS	6	7	9	10	12	14	15
HORZ BARS	4	4	5	6	7	7	8
TOTAL LBS.	41	50	74	112	131	161	195

NOTE:
-THIS STANDARD FOR THE SLUICE GATE PROVIDES ONLY BASIC INFORMATION FOR PLACEMENT.
-INSTALL THE SLUICE GATE IN ACCORDANCE WITH THE MANUFACTURER'S DIMENSIONS AND SPECIFICATIONS.
-SEE PLANS FOR LOCATIONS AND PIPE SIZES

SLUICE GATE DIMENSIONS

PIPE DIAMETER	A	15"	18"	24"	30"	36"	42"	48"
GATE DIAMETER	B	22"	25"	32"	38¾"	46"	52"	60"
FRAME HEIGHT, MIN.	C	36"	36"	48"	60"	72"	84"	96"
H. W. HEIGHT, MIN.	D	4'-5½"	4'-7"	5'-10"	7'-1"	8'-4"	9'-2"	9'-9"
H. W. WIDTH	E	5'-6"	6'-4"	8'-0"	9'-2"	11'-0"	12'-8"	14'-4"

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

ENGLISH DETAIL DRAWING FOR
CONCRETE ENDWALL AND SLUICE GATE
15" THRU 48" PIPE - 90° SKEW

SHEET 1 OF 1
838.02

NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER Joel S. Howerton
DocuSigned by: Joel Howerton
873F3D17DCDC45F...
11/1/2016

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

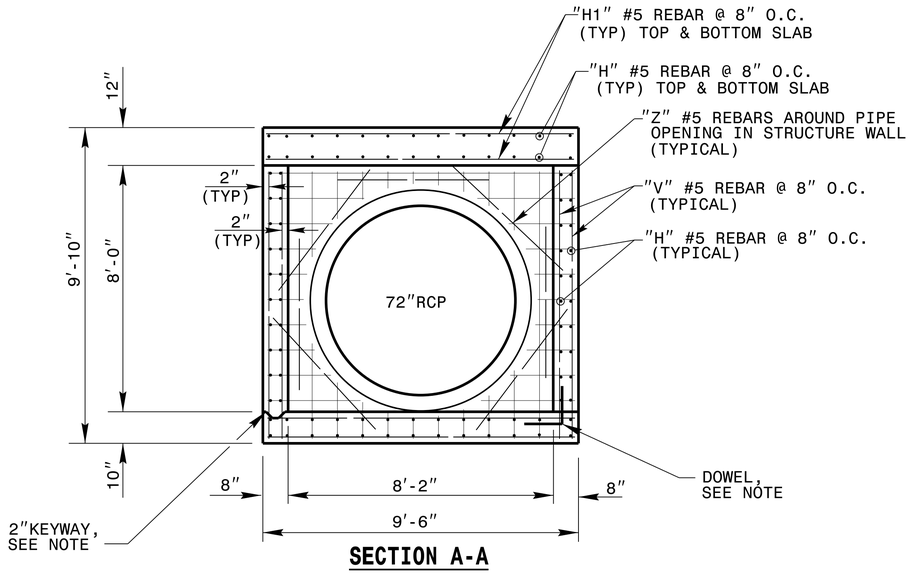
SEE TITLE BLOCK

ORIGINAL BY: E.E.WARD DATE: 12-99
MODIFIED BY: T.S.Spell DATE: 1-4-05
CHECKED BY: DATE:
FILE SPEC.: w:jhowerton\handrail adjacent to sidewalk.dgn

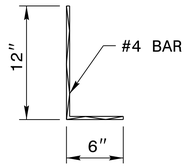
$$$$$$SYSTIME$$$$
$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$
$$$$$$USERNAME$$$$

5/14/99

PROJECT REFERENCE NO.	SHEET NO.
U-3633	2C-2



SECTION A-A



DOWEL

GENERAL NOTES:

USE CLASS "AA" CONCRETE THROUGHOUT.

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

USE FORMS FOR THE CONSTRUCTION OF THE BOTTOM SLAB.

INSTALL MANHOLE IN POSITION AS DIRECTED BY THE ENGINEER. CUT AND BEND ALL REBAR CROSSING THIS OPENING TO ALLOW 2" MINIMUM CONCRETE COVERAGE.

CHAMFER ALL EXPOSED CORNERS 1".

2" MINIMUM CONCRETE COVERAGE ON ALL REBAR.

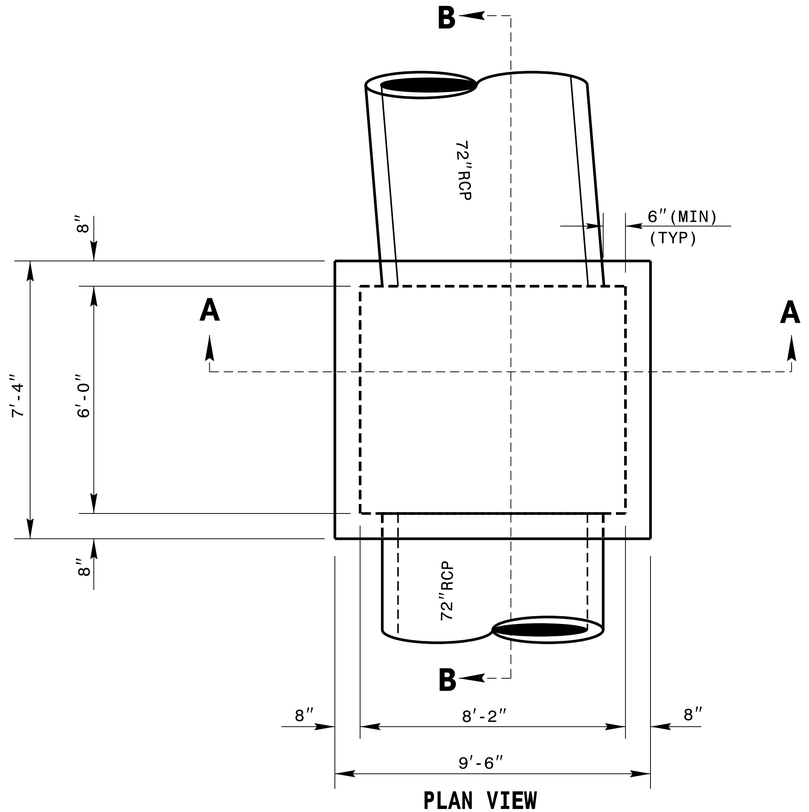
HEIGHT DIMENSIONS MAY BE ADJUSTED DOWN FOR SMALLER PIPES AS DIRECTED BY THE ENGINEER.

BILL OF MATERIALS

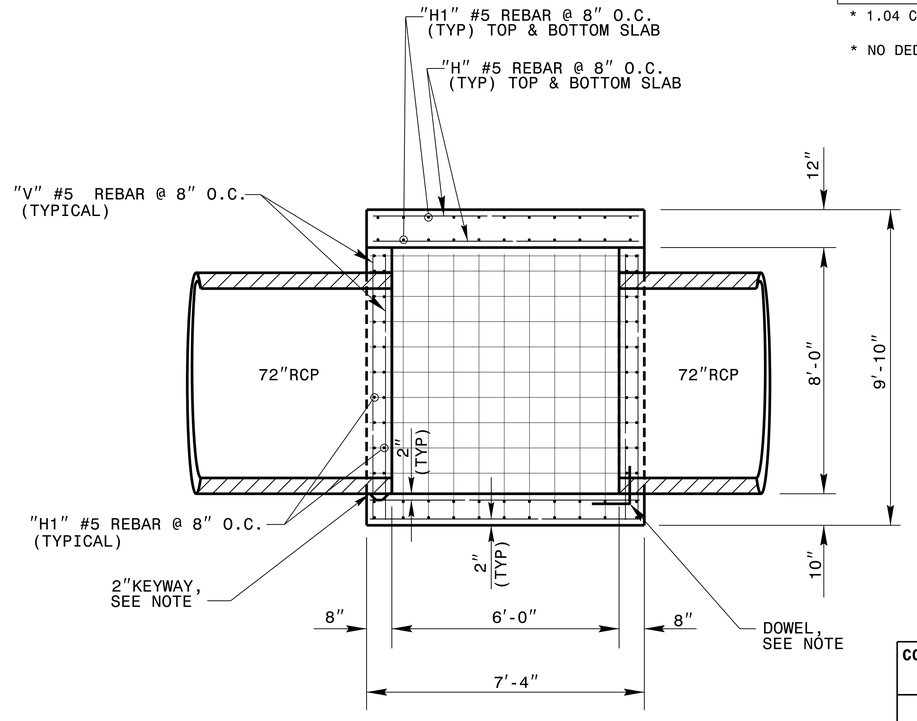
BAR	NO.	SIZE	LENGTH	WEIGHT
H	94	#5	7'-8"	752
H1	86	#5	9'-2"	823
V	94	#5	8'-6"	734
Z	14	#5	4'-0"	59
TOTAL REINF. STEEL (LBS.)				2368
TOTAL CL."AA" CONC.(CU.YDS.)				10.4

* 1.04 CU. YD. DEDUCTION FOR 1-72" RC PIPE

* NO DEDUCTION HAS BEEN MADE FOR PIPES



PLAN VIEW



SECTION B-B

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 022966 Joel S. Howerton

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

4/12/2017

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

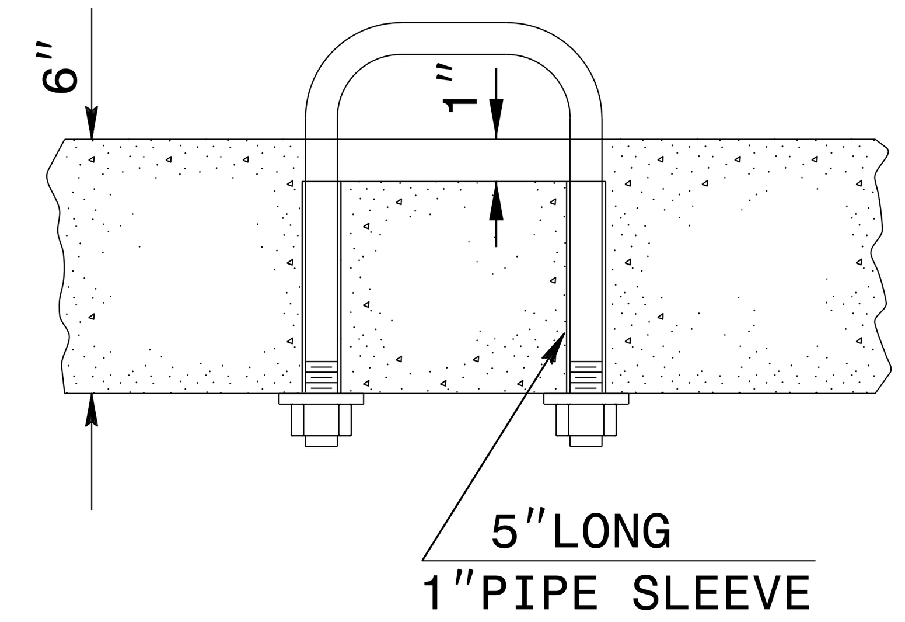
DRAWING NOT TO SCALE

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

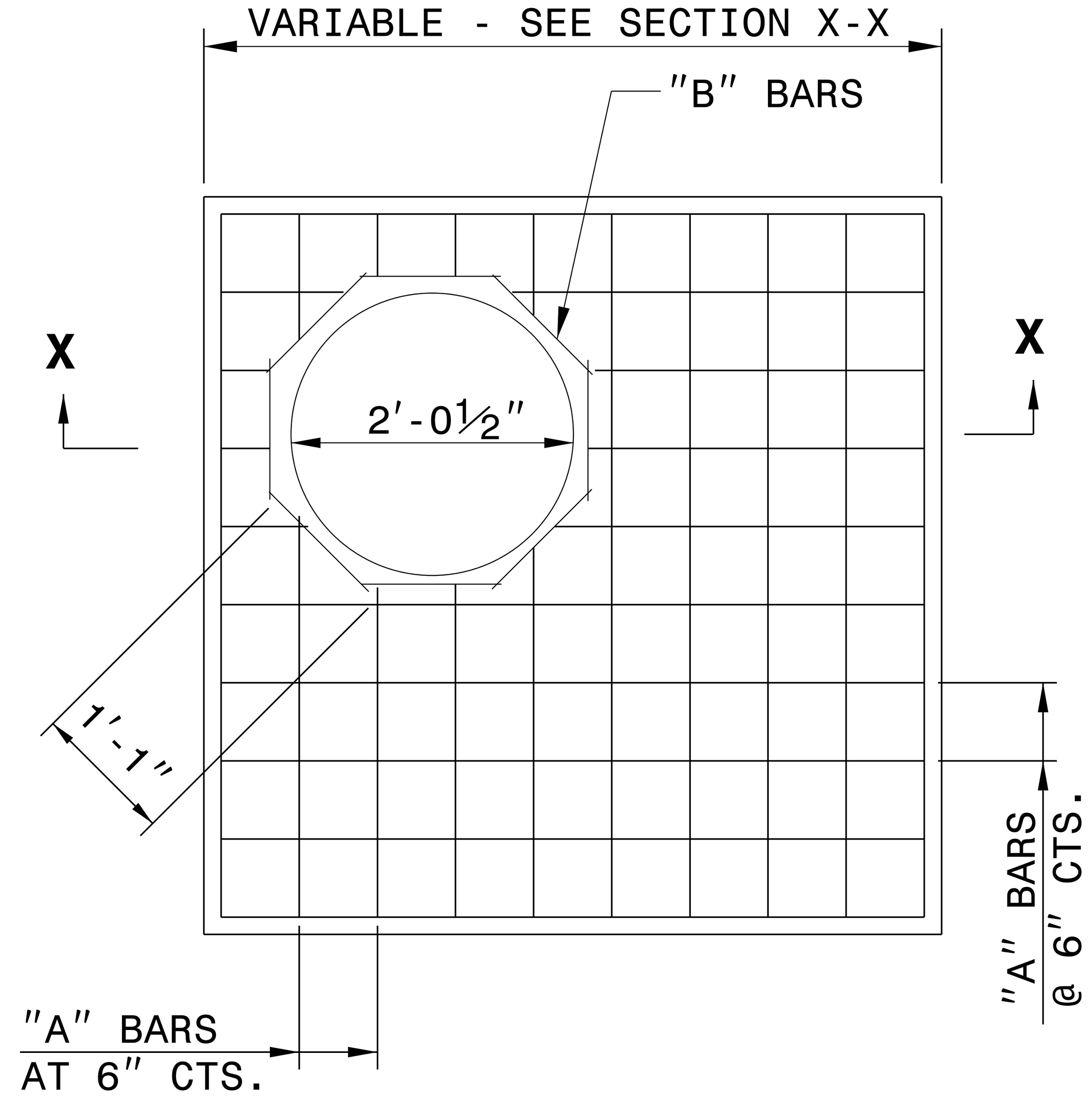
TRAFFIC BEARING JUNCTION BOX

ORIGINAL BY: _____ DATE: _____
MODIFIED BY: nbritt DATE: 04/22/08
CHECKED BY: _____ DATE: _____
FILE SPEC.: detail/nbritt/english/hydro/66 tbjb.dgn

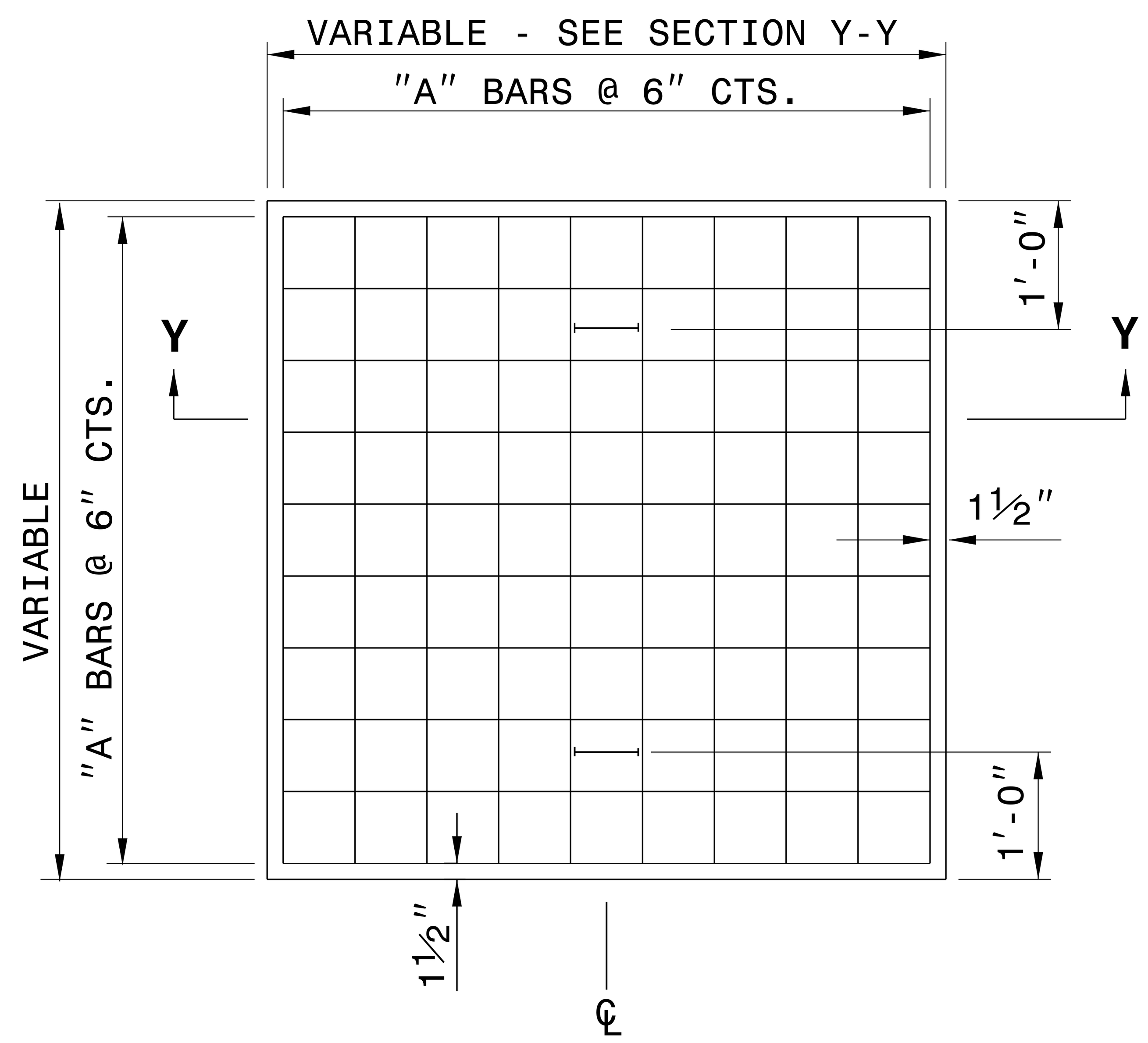
06-APR-2017 10:26
S:\Contracts\Contracts\Special Details\nbritt\english\hydro\72 tbjb.dgn
jhowerton
AT CSD-292595



PARTIAL SECTION



PLAN



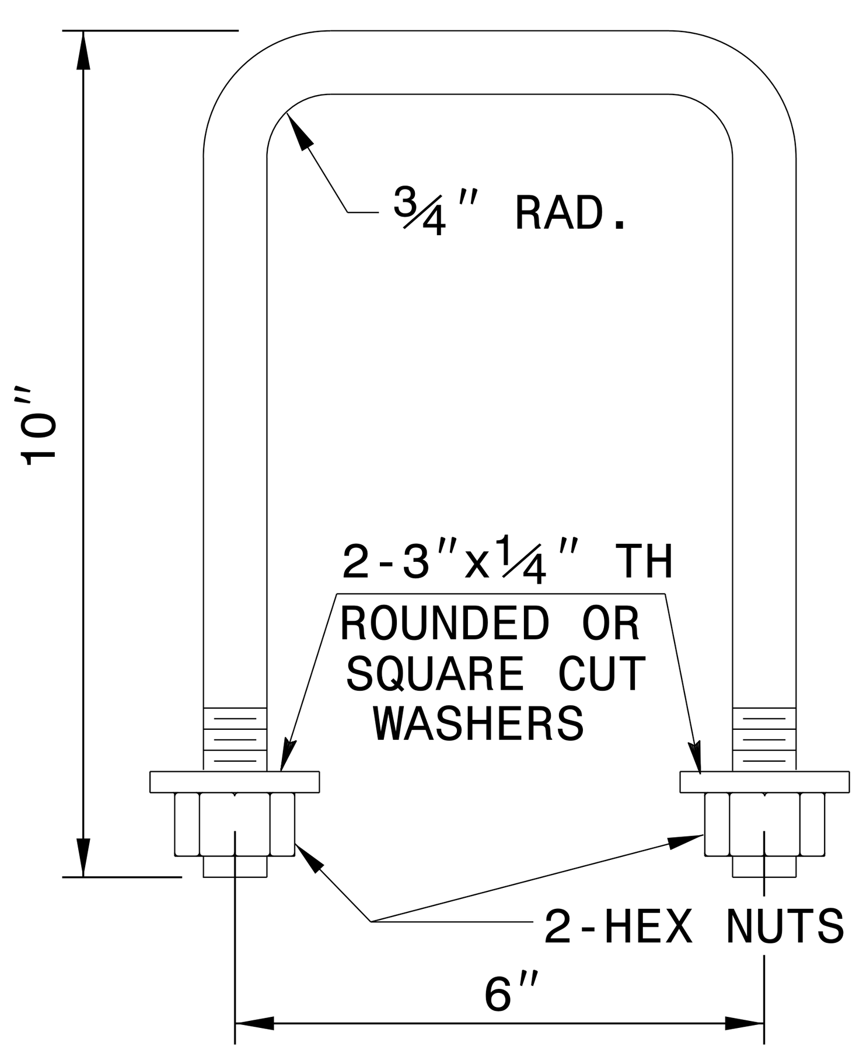
PLAN

GENERAL NOTES:

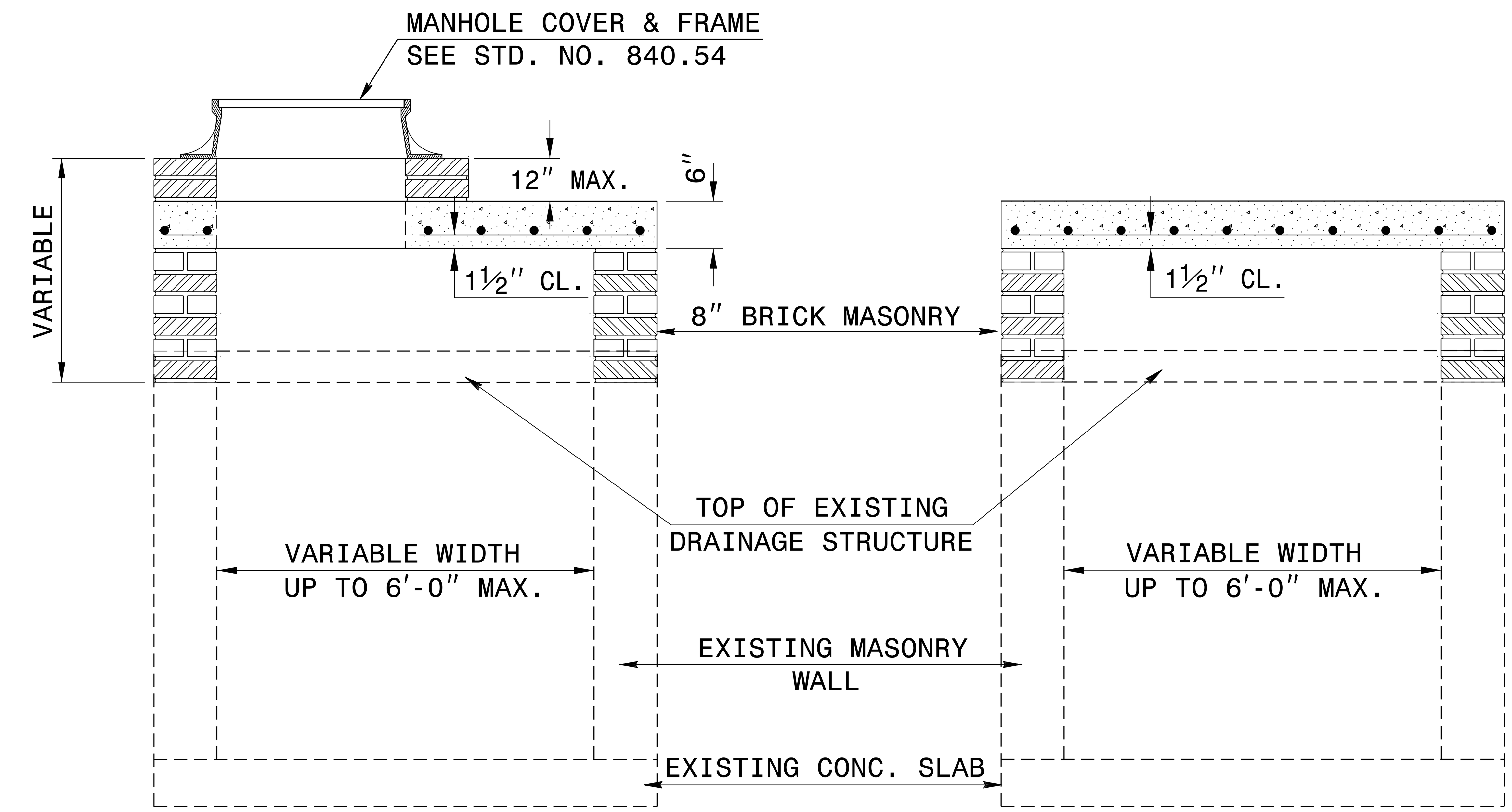
CONSTRUCT IN ACCORDANCE WITH SECTION 859 OF THE STANDARD SPECIFICATIONS.

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

DETAIL INTENDED FOR NON-TRAFFIC BEARING DRAINAGE STRUCTURES.



DETAIL OF HANDLE



SECTION X-X

SECTION Y-Y

BILL OF MATERIALS

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

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

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

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER Joel S. Howerton

DocuSigned by: Joel Howerton

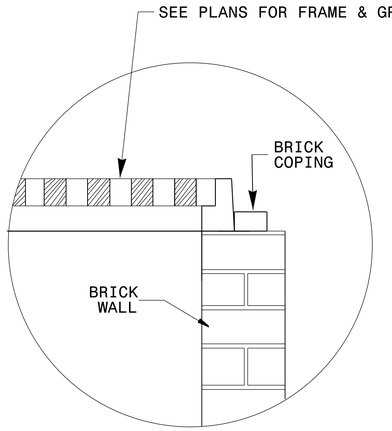
11/1/2016

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

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

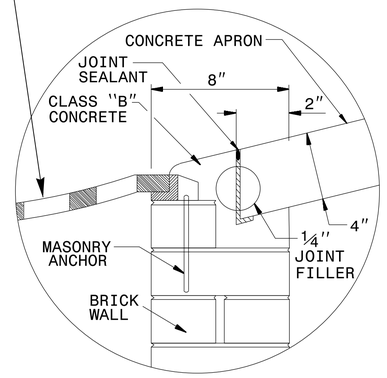
ORIGINAL BY: T.S.S. DATE: NOV.1997
MODIFIED BY: T.S.S. DATE: FEB.2000
CHECKED BY: DATE:
FILE SPEC.: ds174:/usr/details/stand/boxtojbe.dgn

PROJECT REFERENCE NO.	SHEET NO.
U-3633	2C-4



GRATE PLACEMENT DETAIL

FOR DROP INLETS



GRATE PLACEMENT DETAIL

FOR GRATED DROP INLETS

GENERAL NOTES:

-CONSTRUCT IN ACCORDANCE WITH SECTION 859 OF THE STANDARD SPECIFICATIONS.

-USE CLASS B CONCRETE.

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

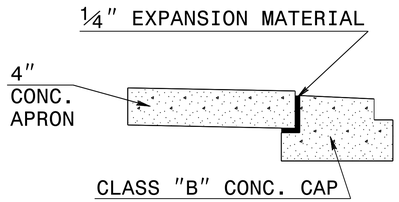
-JUMBO CONCRETE BRICK WILL BE PERMITTED. 4″ CONCRETE BRICK OR 8″ SOLID CONCRETE BLOCK ARE REQUIRED FOR DRAINAGE STRUCTURE.

-INCLUDE 18″ CONCRETE APRON IN UNIT PRICE BID PER EACH, CONVERT EXISTING CATCH BASIN TO DROP INLET.

-SPECIAL DESIGN IS REQUIRED FOR USE UNDER PAVEMENT.

-CONFIRM DIMENSIONS ON EACH INDIVIDUAL FRAME & GRATE PROPOSAL.

-SEE STD. DRAWING 840.25 FOR MASONRY ANCHORAGE.



EXPANSION JOINT DETAIL

TYPICAL SECTION

TYPICAL SECTION

NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER Joel S. Howerton

DocuSigned by: Joel Howerton 873F3D17DCDC45F...

11/1/2016

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

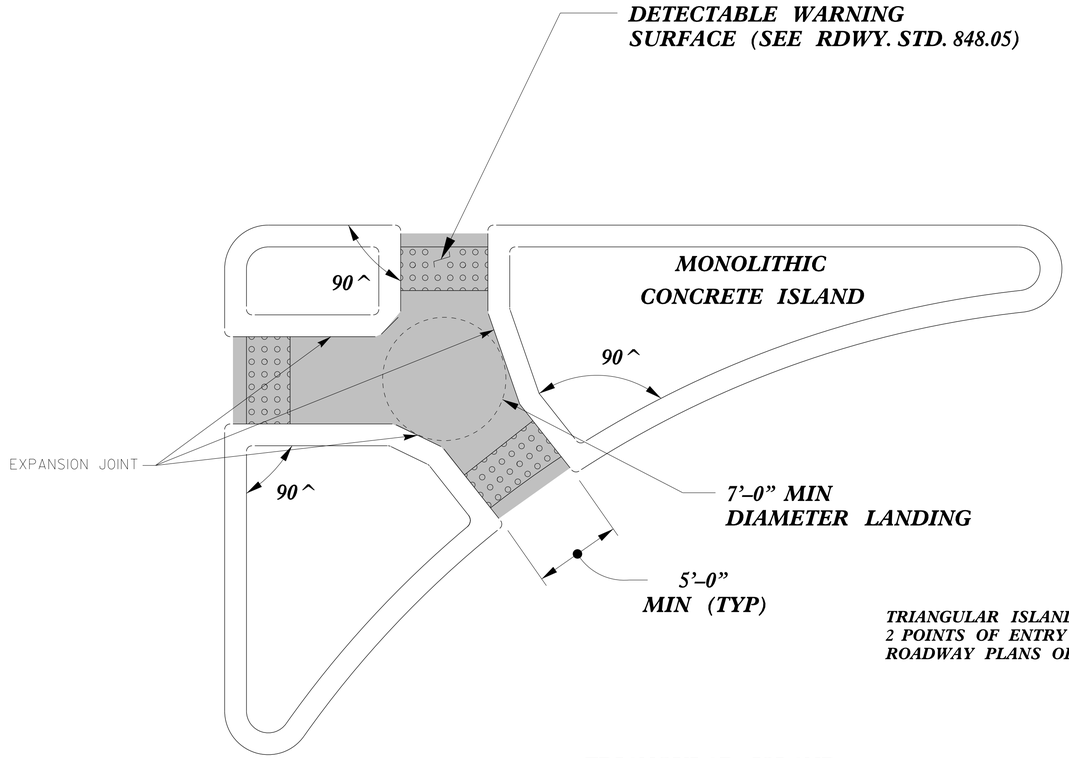
DETAIL TO CONVERT EXISTING CATCH BASIN OR JUNCTION BOX TO DI OR 2-GI

ORIGINAL BY:	T.S.S.	DATE:	NOV.1997
MODIFIED BY:	T.S.S.	DATE:	FEB.2000
CHECKED BY:		DATE:	
FILE SPEC.:	s:usr/details/stand/cbtodi02.dgn		

$$$$USERNAME$$$$ $$$$DGNFILE$$$$ $$$$SYSTIME$$$$

5/14/99

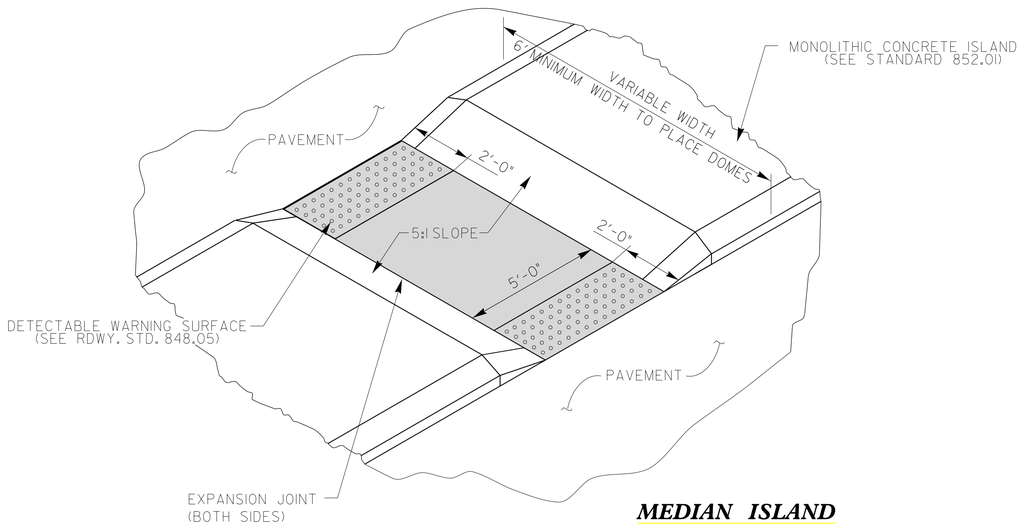
PROJECT REFERENCE NO.	SHEET NO.
U-3633	2C-5



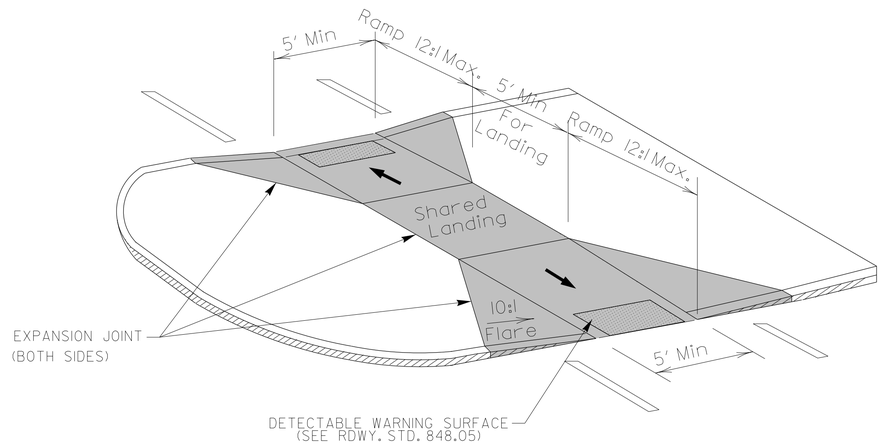
PAY LIMITS FOR 2 OR 3 CURB RAMPS (CALCULATE BASED ON NUMBER OF SETS OF TRUNCATED DOMES)

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

TRIANGULAR ISLAND WITH CUT THROUGH



MEDIAN ISLAND WITH CUT THROUGH



MEDIAN ISLAND CURB RAMPS

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER Joel S. Howerton

DocuSigned by: Joel Howerton 873F3D17DCDC45F...

11/1/2016

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

CURB RAMPS

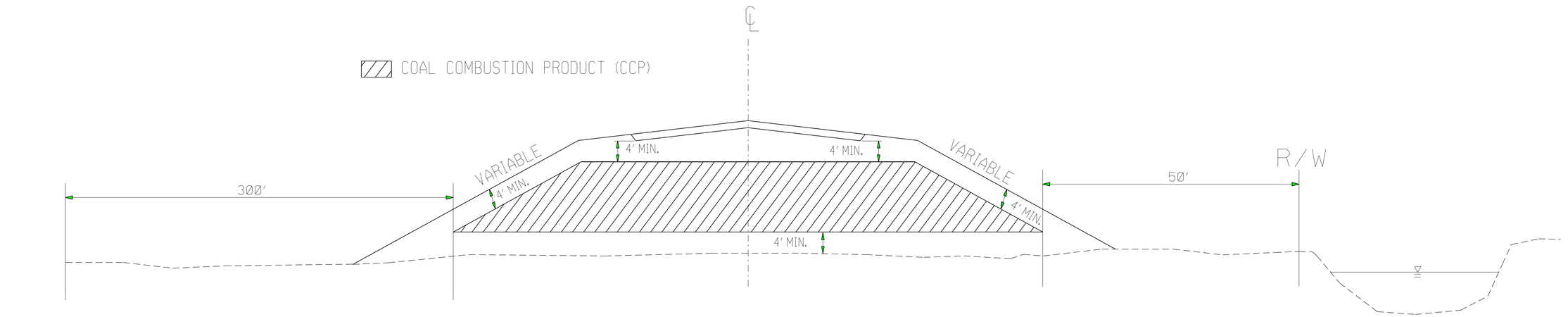
Median or Turn Lane Islands

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

$$$$ SYSTEM $$$$
$$$$ USERNAME $$$$

PROJECT REFERENCE NO.	SHEET NO.
U-3633	2C-6

COAL COMBUSTION PRODUCT PLACEMENT



*(OBTAIN PERMISSION FROM ARMY CORPS OF ENGINEERS)

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

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

NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER Joel S. Howerton

DocuSigned by: Joel Howerton 873F3D17DCDC45F...

11/1/2016

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

PROJECT REFERENCE NO.	SHEET NO.
U-3633	2G-1

GEOTECHNICAL ENGINEER

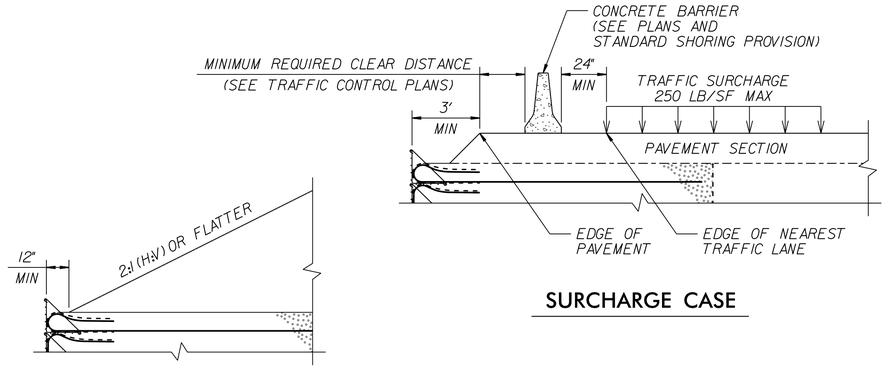
NORTH CAROLINA PROFESSIONAL SEAL 022246 ENGINEER SCOTT A. HIDDEN

DocuSigned by: Scott A. Hidden F760CAE89EC4D3... 10/10/2016 SIGNATURE DATE

ENGINEER

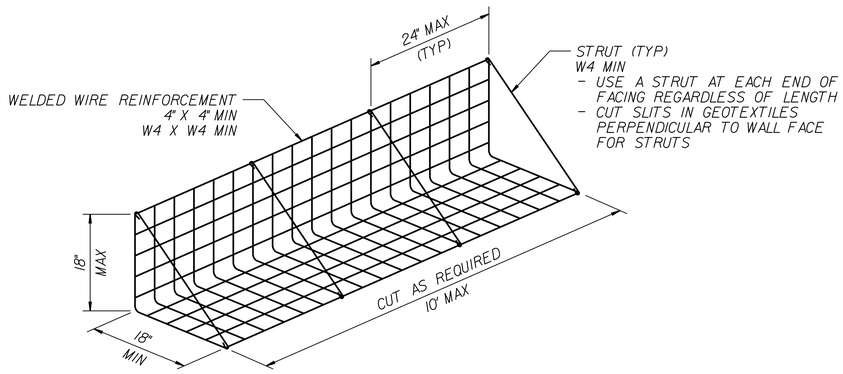
SIGNATURE DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

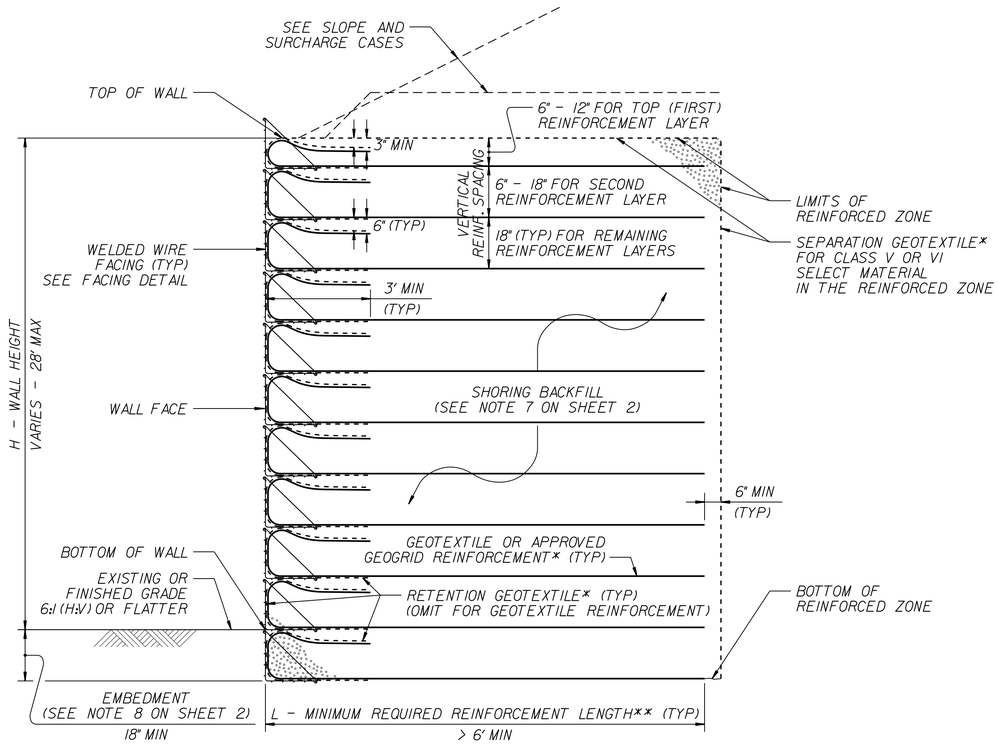


SURCHARGE CASE

SLOPE CASE

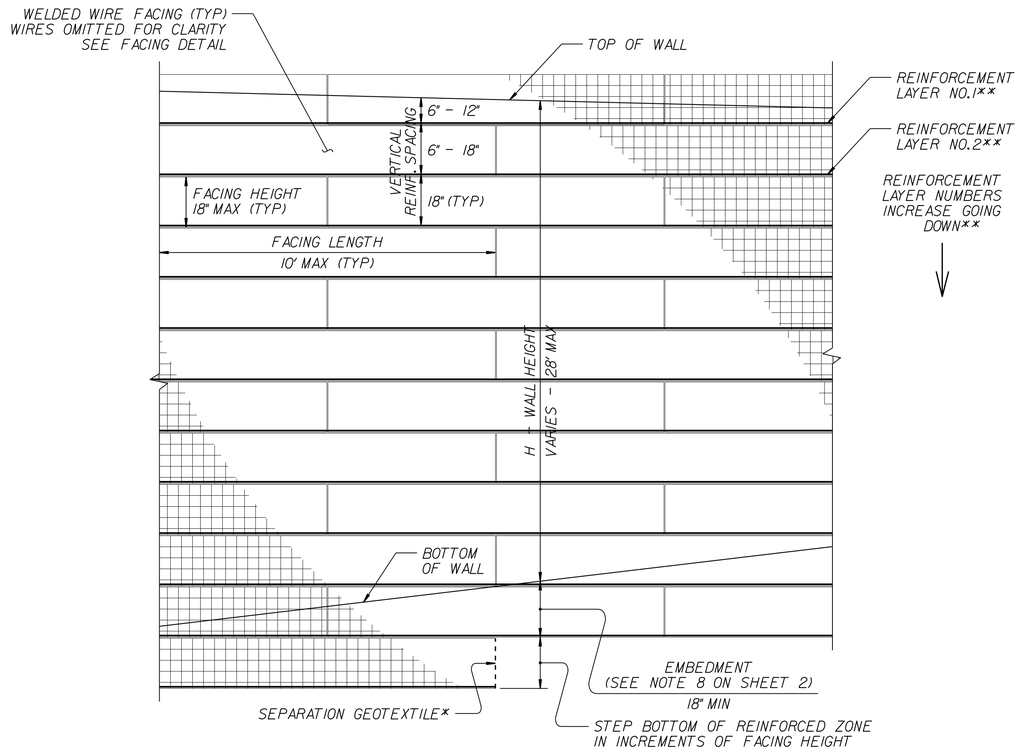


FACING DETAIL



STANDARD TEMPORARY WALL

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



STANDARD TEMPORARY WALL – PARTIAL ELEVATION

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

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

GEOTECHNICAL ENGINEERING UNIT

STANDARD DETAIL NO. 1801.02

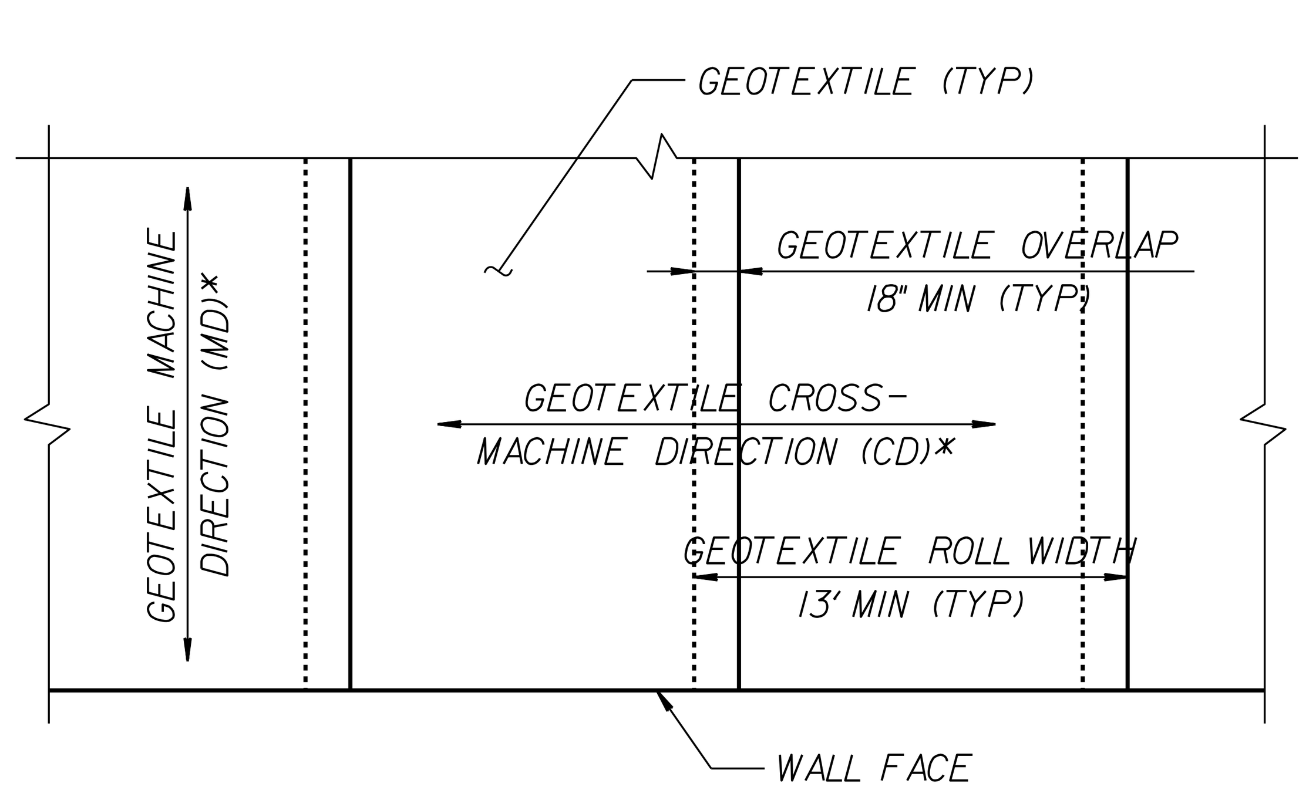
STANDARD
TEMPORARY WALL
SHEET 1 OF 3

DATE: 11-19-13

GEOTECHNICAL ENGINEER — SEAL 022246, NORTH CAROLINA PROFESSIONAL ENGINEER, SCOTT A. HIDDEN — DocuSigned by: Scott A. Hidden 10/10/2016 — SIGNATURE DATE

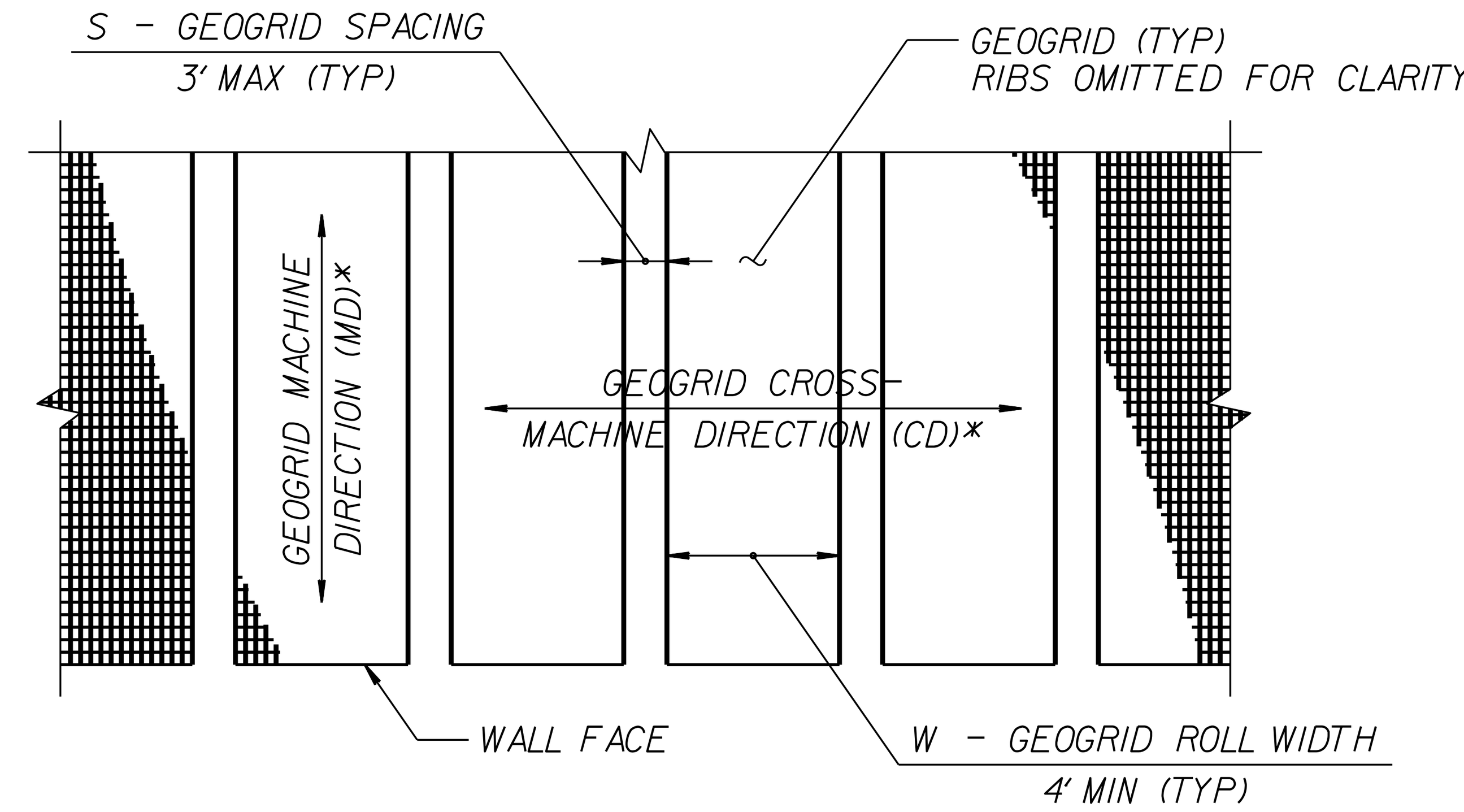
ENGINEER — SIGNATURE DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



GEOTEXTILE PLACEMENT

(100% COVERAGE MIN FOR GEOTEXTILE REINFORCEMENT)



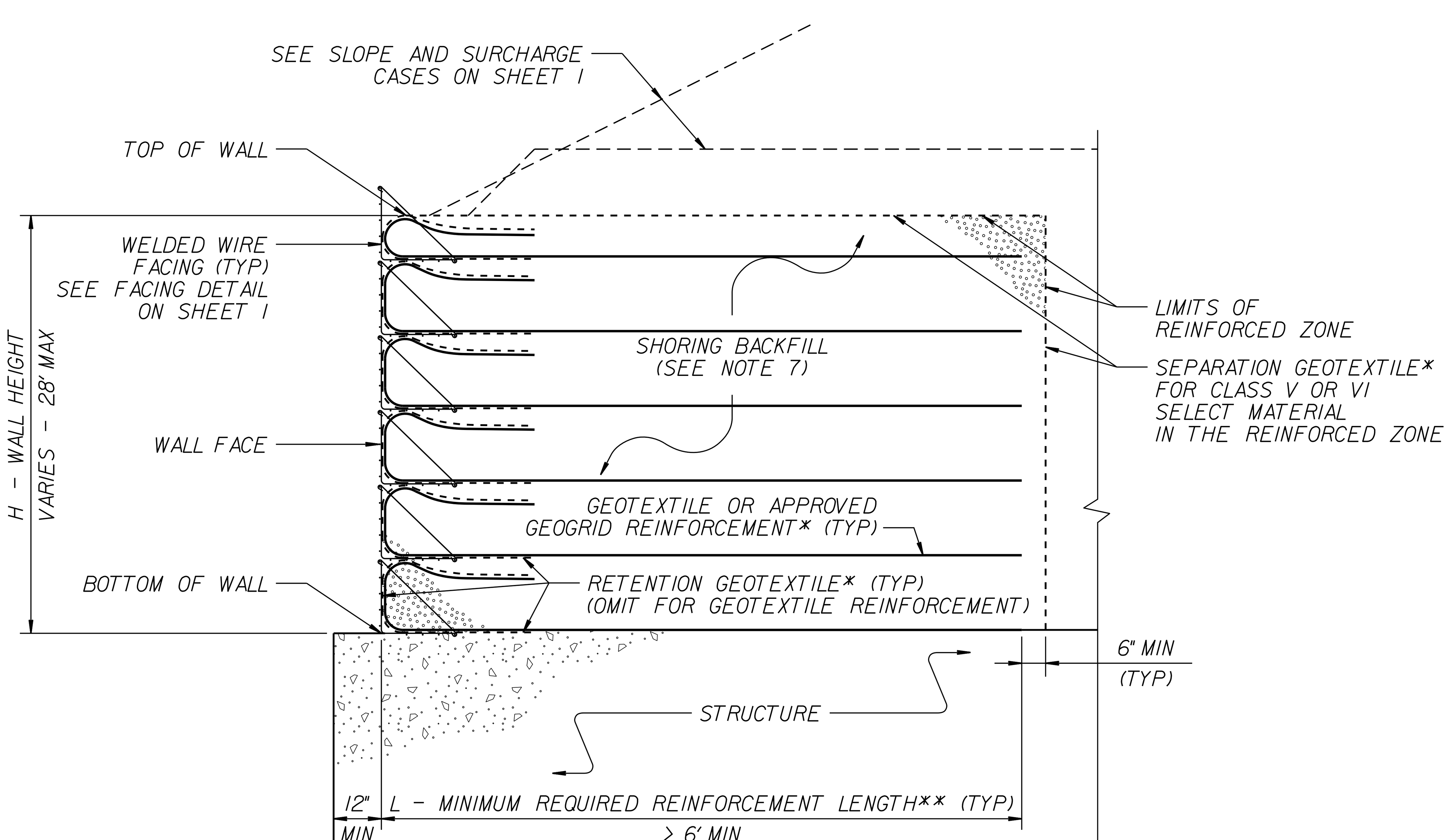
GEOGRID PLACEMENT

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

GEOSYNTHETIC PLACEMENT DETAILS

(PLAN VIEW)

*SEE NOTE 12.



TEMPORARY WALL ON STRUCTURE DETAIL

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

NOTES:

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

MATERIAL TYPE	SHORING BACKFILL
BORROW	A-2-4 SOIL
FINE AGGREGATE	CLASS II, TYPE 1 OR CLASS III SELECT MATERIAL
COARSE AGGREGATE	CLASS V OR VI SELECT MATERIAL

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

PROJECT REFERENCE NO.	SHEET NO.
U-3633	2G-3

GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 022246 ENGINEER SCOTT A. HIDDEN

DocuSigned by: Scott A. Hidden F760CAEB96EC4D3... 10/10/2016 SIGNATURE DATE

ENGINEER

SIGNATURE DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

L – MINIMUM REQUIRED REINFORCEMENT LENGTH (FT)

(FOR ALL REINFORCEMENT TYPES)

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

GEOTEXTILE REINFORCEMENT
ULTIMATE TENSILE STRENGTH (LB/FT)

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

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

(SEE NOTE 10 ON SHEET 2.)

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

*BASED ON VERTICAL REINFORCEMENT SPACING SHOWN ON SHEET 1.

MINIMUM REQUIRED REINFORCEMENT STRENGTH IN MD

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

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

GEOTECHNICAL ENGINEERING UNIT

STANDARD DETAIL NO. 1801.02

STANDARD TEMPORARY WALL
SHEET 3 OF 3

DATE: 11-19-13

PROJECT REFERENCE NO.	SHEET
U-3633	2H-1

GEOENVIRONMENTAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 31499 ENGINEER CYRUS F. PARKER

DocuSigned by: Cyrus Parker 6/24/2015 C96492AF5E824DF...

SIGNATURE DATE

ENGINEER

SIGNATURE DATE

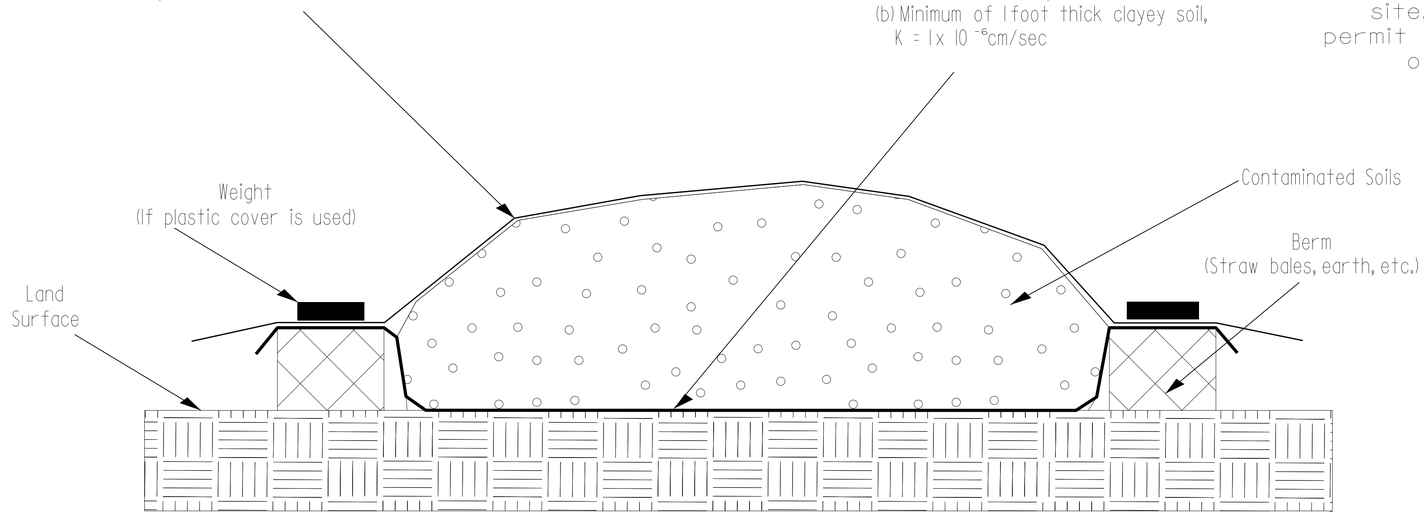
Detail for Temporary Containment of Contaminated Soil

Cross-Section View

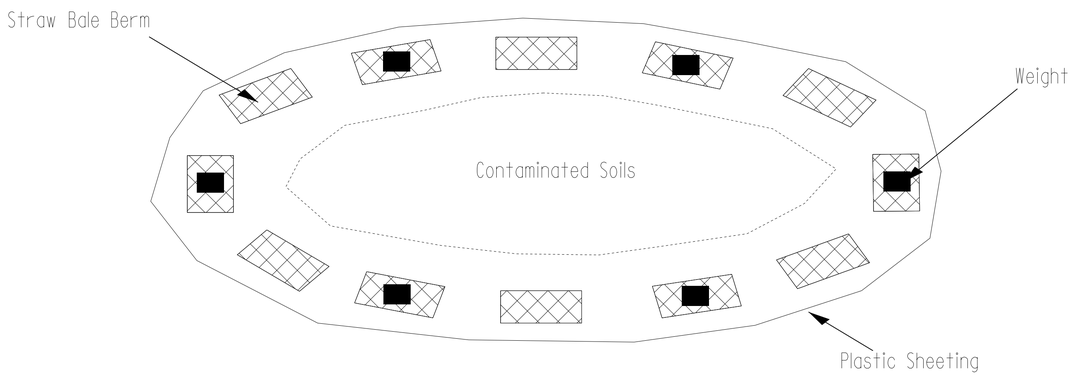
Top Plastic Cover Sheeting
(1 Layer, minimum: 10 mil thick)
Not necessary if leachate collection & treatment system is installed

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

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



Map View



PREPARED BY:	DATE:
REVIEWED BY:	DATE:

GEOTECHNICAL ENGINEERING UNIT

☐ EASTERN REGIONAL OFFICE
☐ WESTERN REGIONAL OFFICE
☒ CONTRACT OFFICE

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STOCKPILE CONTAINMENT DETAIL

REVISIONS

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

COMPUTED BY: HLE DATE: 10/20/2015
CHECKED BY: SKR DATE: 9/27/2016

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PROJECT REFERENCE NO.	SHEET NO.
U-3633	3B-1

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

GUARDRAIL SUMMARY

SURVEY LINE	BEG. STA.	END STA.	LOCATION	LENGTH			WARRANT POINT		"N" DIST. FROM E.O.L.	TOTAL SHOUL. WIDTH	FLARE LENGTH		W		ANCHORS									IMPACT ATTENUATOR TYPE 350			SINGLE FACED GUARDRAIL	REMOVE EXISTING GUARDRAIL	REMOVE AND STOCKPILE EXISTING GUARDRAIL	REMARKS
				STRAIGHT	SHOP CURVED	DOUBLE FACED	APPROACH END	TRAILING END			APPROACH END	TRAILING END	APPROACH END	TRAILING END	AT-1	GRAU 350 TL-3	GRAU 350 TL-2	CAT-1	TYPE III	M-350	VI MOD	BIC		EA	G	NG				
-L-	26+50.00	29+00.00	RT	250.00'			27+50.00	29+00.00	10' BERM	14' BERM	50'		1'			1		1												
-L- /-Y5-	32+00.00	18+60.00	RT /RT	480.00'	75'		33+00.00	18+00.00	10' BERM	14' BERM	50'	37.50'	1'	0.75'		1	1													
-Y5-	18+12.50	19+00.00	LT	87.50'			18+50.00		2'	7'	37.50'	37.50'	0.75'	0.75'			2													
-Y5- /-L-	17+88.00	41+40.00	LT /RT	412.50'	62.50'		17+88.00	41+40.00	10' BERM	14' BERM					1			1												
-Y6-	13+15.00	14+15.00	LT	100.00'			13+65.00		4'	7'	37.50'	37.50'	0.75'	0.75'			2													
-Y6-	13+15.00	14+15.00	RT	100.00'			13+65.00		4'	7'	37.50'	37.50'	0.75'	0.75'			2													
-L-	43+00.00	46+50.00	RT	350.00'			44+00.00		10' BERM	14' BERM	50'		1'			1		1												
-L-	46+87.50	47+87.50	RT	100.00'					10' BERM	14' BERM	50'		1'			1		1												
-L-	48+23.50	57+50.00	RT	837.50'	112.50'			57+50.00	10' BERM	14' BERM	50'		1'			1		1												
-L-	53+12.50	57+00.00	LT	387.50'			56+00.00	53+12.50	10' BERM	14' BERM	50'		1'			1		1												
-L-	74+81.00	74+94.00	LT						10' BERM	14' BERM																		38'		
				———	———										———	———	———	———										———		
			TOTAL	3105.00'	250.00'										1	6	7	6										38'		
			LESS DEDUCTION FOR ANCHOR UNITS																											
			(TYPE AT-1) 1 @ 6.25' =	-6.25'																										
			(GRAU 350 TL-3) 6 @ 50.00' =	-300.00'																										
			(GRAU 350 TL-2) 7 @ 25.00' =	-175.00'																										
			(TYPE CAT-1) 6 @ 6.25' =	-37.50'																										
				———	———																							———		
			GRAND TOTAL	2586.25'	250.00'																							38'		
ADDITIONAL GUARDRAIL POSTS 10 EACH			SAY	2600.00'	250.00'																							40'		

SUMMARY OF EXISTING ASPHALT PAVEMENT REMOVAL

SURVEY LINE	STATION	STATION	LOCATION LT/RT/CL	YD^2
-Y1-	10+34.81	11+00.00	CL	123.90
-L-	26+07.02	34+31.37	CL	2005.5
-L-	28+39.00	36+37.55	LT	1103.10
-Y-	17+03.45	18+42.97	LT	15.50
-Y4-	10+15.76	10+75.00	CL	207.80
-Y5-	16+89.91	19+25.00	CL	680.10
-L-	36+82.50	41+07.08	LT	294.30
-Y6-	10+00.00	10+57.00	CL	262.10
-Y6-	13+00.00	14+15.00	CL	247.00
-L-	50+00.00	54+00.00	LT	1122.40
-L-	56+77.23	59+04.45	CL	158.20
-Y8-	10+16.24	10+43.01	CL	171.00
-Y9-	12+24.82	12+40.87	CL	55.70
-Y10-	10+26.53	10+81.43	CL	180.70
-Y11-	14+00.37	14+50.61	RT	79.30
-Y12-	13+14.27	13+77.90	LT	196.10
	TEMPORARY	PAVEMENT		
-Y6-	12+26.00	13+00.00	LT	42.10
-Y6-	13+00.00	14+15.00	LT	129.40
-Y6-	14+15.00	14+89.00	LT	42.10
-L-	20+04.00	26+49.00	CL	1132.50
-L-	26+57.00	31+01.00	LT	171.00
-L-	31+61.00	32+79.00	CL	43.70
			TOTAL:	8463.60
			SAY:	8500

12/06/07
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$$$$USERNAME$$$$

COMPUTED BY: HLE	DATE: 10/20/2015
CHECKED BY: SKR	DATE: 10/11/2016

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PROJECT REFERENCE NO.	SHEET NO.
U-3633	3B-2

SUMMARY OF EARTHWORK

IN CUBIC YARDS

STATION	STATION	UNCL. EXCAV.	UNDERCUT EXCAV.	EMBANK. +%	BORROW	WASTE
-L- STA. 18+65.00 (LT.)	-L- STA. 47+00.00 (LT.)	1,355		2,593	1,238	
-Y- STA. 15+50.00	-Y- STA. 23+64.31	452		515	63	
-Y2- STA. 10+22.61	-Y2- STA. 11+25.00	13		83	70	
-Y2- STA. 18+00.00	-Y2- STA. 19+35.15	59		54		5
-Y5- STA. 16+00.00	-Y5- STA. 16+46.16	19		51	32	
-Y7- STA. 17+00.00	-Y7- STA. 17+48.86	18		32	14	
SUBTOTAL:		1,916		3,328	1,417	5
-L- STA. 18+65.00 (RT.)	-L- STA. 47+00.00 (RT.)	1,134		32,742	31,608	
-Y- STA. 24+36.65	-Y- STA. 29+00.00	384		360		24
-Y1- STA. 10+41.70	-Y1- STA. 11+00.00	58		2		56
-Y4- STA. 10+39.66	-Y4- STA. 11+00.00	72		17		55
-Y5- STA. 17+25.21	-Y5- STA. 20+00.00	28		2,420	2,392	
-Y6- STA. 10+48.07	-Y6- STA. 11+50.00	70		39		31
-Y6- STA. 13+00.00	-Y6- STA. 14+15.00	10		225	215	
-Y6- (TEMP) STA. 12+26.00	-Y6- (TEMP) STA. 14+89.00	41		307	266	
-DR1- STA. 10+51.50	-DR1- STA. 12+20.00	75		5,190	5,115	
SUBTOTAL:		1,872		41,302	39,596	165
-L- STA. 47+00.00 (LT.)	-L- STA. 75+00.00 (LT.)	7,761		8,116	355	
-Y9- STA. 11+66.80	-Y9- STA. 12+28.32	115				115
-Y11- STA. 13+75.00	-Y11- STA. 17+84.99	694		665		29
SUBTOTAL:		8,570		8,780	355	144
-L- STA. 47+00.00 (RT.)	-L- STA. 75+00.00 (RT.)	853		39,903	39,050	
-DR2- STA. 10+51.50	-DR2- STA. 12+20.00	46		4,062	4,016	
-Y8- STA. 10+39.51	-Y8- STA. 10+75.00	15		101	86	
-Y10- STA. 10+43.72	-Y10- STA. 11+00.00	18		87	69	
-Y11- STA. 18+72.00	-Y11- STA. 22+73.00	453		139		314
SUBTOTAL:		1,385		44,293	43,222	314
-L- STA. 75+00.00 (LT.)	-L- STA. 90+00.00 (LT.)	590		1,903	1,313	
-Y12- STA. 12+28.32	-Y12- STA. 15+25.00	94		311	217	
SUBTOTAL:		684		2,214	1,530	
-L- STA. 75+00.00 (RT.)	-L- STA. 90+00.00 (RT.)	2,603		743		1,860
-Y12- STA. 10+79.72	-Y12- STA. 11+42.73	23		8		15
SUBTOTAL:		2,626		751		1,875
-Y6- (TEMP) STA. 12+26.00	-Y6- (TEMP) STA. 14+89.00	159		31		128
REMOVAL	REMOVAL					
SUBTOTAL:		159		31		128
TOTAL:		17,212		100,699	86,119	2,632
EST. MATERIAL FOR SHOULDER CONSTRUCTION:				575	575	
LOSS DUE TO CLEARING & GRUBBING:		(-) 250			250	
WASTE IN LIEU OF BORROW:					(-) 2,632	(-) 2,632
PROJECT TOTALS:		16,962		101,274	84,312	
EST. 5% TO REPLACE TOP SOIL ON BORROW PITS:					4,216	
GRAND TOTAL:		16,962			88,528	
SAY:		17,100			89,000	

-L-, -Y-, -Y11-, -Y12- PAVEMENT STRUCTURE VOLUME = 4,900 CY
ESTIMATED DRAINAGE DITCH EXCAVATION = 1,130 CY
ESTIMATED UNDERCUT EXCAVATION = 1,500 CY
ESTIMATED SHALLOW UNDERCUT EXCAVATION = 1,500 CY
ESTIMATED SELECT GRANULAR MATERIAL = 1,500 CY

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

COMPUTED BY: HLE DATE: 8/13/2015

CHECKED BY: SKR DATE: 9/23/2016

RD-299043

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
U-3633	3D-1

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

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

STATION (SIZE / THICKNESS OR GAUGE)	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	C.S. PIPE 12" .064	15" .064	18" .064	24" .064	30" .079	36" .079	42" .109	48" .109
-L- 18+96	LT	0401		693.50																							
-Y- 22+25	RT	0402		698.20	695.20																						
		0402	1003		695.20	700.85																					
		0402	0402A		695.20	693.96																					
-Y- 22+73	RT	0402A		696.96	693.96																						
		0402A	0417		693.96	695.85																					
		0402A	403		693.96	691.60																					
-Y- 23+30	RT	0403		694.71	691.60																						
		0403	0416		691.60																						
		0403	0405																								
-L- 18+15	LT	0404	0415		687.39	684.41																24					
-L- 22+93	LT	0407		694.77	691.77																						
		0407	0409		691.77	691.17																					
		0407	0438		691.77	691.99																					
-L- 21+92	LT	0408		695.16	692.16																						
		0408	0438		692.16	691.99																					
-L- 22+93	RT	0409		694.17	691.17																						
		0409	0411		691.17	688.46																					
-L- 24+48	LT	0410		692.85	689.68																						
		0410	0411		689.68	688.46																					
-L- 24+48	RT	0411		691.46	688.46	688.21																					
		0411	0421		688.21	679.83																					
-L- 25+29.50	LT	0419		690.40	680.40																						
		0419	0420		680.4																						
-L- 26+92.50	RT	0421		683.08	671.95																						
		0421	0413		671.95	671.00																					
-L- 27+92	LT	0436		685.65	683.40																						
		0436	0427		683.40	681.20																					
-L- 28+02	LT	0426		684.95	681.05																						
-L- 28+06.50	LT	0427		684.22	681.20																						
-L- 27+91.50	LT	0414		682.47	679.05																						
-L- 27+76	RT	0413		679.70	667.46																						
		0413	0412		667.46	669.40																					
-L- 27+66	RT	0412		675.00	666.40																						
		0412	0425		666.40	665.40																					
-Y- 22+49	LT	0417		698.06	695.85																						
-Y- 23+25	LT	0418		696.29	694.04																						
		0418	0406		694.04																						
-Y- 25+00	LT	0430							28																		
-Y- 26+20	LT	0431							24																		
-Y- 26+47	CL	0432	0434		688.13	686.35																					
-Y- 27+50	RT	0433							60																		
-Y- 28+54	RT	0435							32																		
-Y- 27+60	LT	0437							20																		
-L- 22+33	LT	0438		694.99	691.99																						
-Y- 27+30	LT	0439							24																		
SHEET TOTALS									188													24					

STATION	STRUCTURE NO. FROM	STRUCTURE NO. TO	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"			36" SLUICE GATE	42" SLUICE GATE (SEE DETAIL 2C-1)	ENDWALLS STD. 838.01 838.11 OR STD. 838.80 (UNLESS NOTED OTHERWISE) CU. YARDS R.C.P.	C.S.P.
-L- 18+96	0401																							
-Y- 22+25	0402																							
	0402	1003										220												
	0402	0402A										48												
-Y- 22+73	0402A																							
	0402A	0417										64												
	0402A	403										56												
-Y- 23+30	0403																							
	0403	0416		8																				
	0403	0405		8																				
-L- 18+15	0404	0415																						
-L- 22+93	0407																							
	0407	0409		80																				
	0407	0438										44												
-L- 21+92	0408																							
	0408	0438										52												
-L- 22+93	0409																							
	0409	0411										152												
-L- 24+48	0410																							
	0410	0411		48																				
-L- 24+48	0411																							
	0411	0421											236											
-L- 25+29.50	0419																							
	0419	0420			32																			
-L- 26+92.50	0421																							
	0421	0413				196																		
-L- 27+92	0436																							
	0436	0427		12																				
-L- 28+02	0426																							
-L- 28+06.50	0427																							
-L- 27+91.50	0414																							
-L- 27+76	0413																							
	0413	0412					24																	
-L- 27+66	0412																							
	0412	0425						16																
-Y- 22+49	0417																							
-Y- 23+25	0418																							
	0418	0406		12																				
-Y- 25+00	0430																							
-Y- 26+20	0431																							
-Y- 26+47	0432	0434			60																			
-Y- 27+50	0433																							
-Y- 28+54	0435																							
-Y- 27+60	0437																							
-L- 22+33	0438																							
-Y- 27+30	0439																							
SHEET TOTALS				168	92	196	24	16				636	236											

STATION	STRUCTURE NO. FROM	STRUCTURE NO. TO	QUANTITIES FOR DRAINAGE STRUCTURES PER EACH (0' THRU 5.0')	*TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL.'B') LIN. FT. A 5.0' THRU 10.0'	B 10.0' AND ABOVE	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STANDARD 840.03 TYPE OF GRATE E	F	G	CONCRETE TRANSITIONAL SECTION DROP INLET	CATCH BASIN	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATE STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR 840.26	G.D.I. TYPE "B" STD. 840.18 OR 840.27	T.B.J.B. STD. 840.34	T.B.D.I. STD. 840.35	ENERGY DISSIPATOR BASIN	G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.29	G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.24	J.B. STD. 840.31 OR 840.32	CONVERT EXISTING CB TO JB (SEE DETAIL 2C-3)	MANHOLE FRAME AND COVER STD. 840.54	CONVERT EXISTING DI TO JB (SEE DETAIL 2C-3)	4" CONCRETE PAVED DITCH, S.Y.	CONVERT EXISTING JB TO DI (SEE DETAIL 2C-4)	ADJUST CB	FLOWABLE FILL PIPE PLUG (CY)	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
-L- 18+96	0401																					1											
-Y- 22+25	0402		1			1		1																									
	0402	1003																														17	
	0402	0402A																															
-Y- 22+73	0402A		1			1		1																									
	0402A	0417																															
	0402A	403																															REMOVE EXISTING 15" RCP
-Y- 23+30	0403		1			1		1																									REMOVE EXIST. CB
	0403	0416																													0.3990		REMOVE 6' OF EXISTING 15" RCP
	0403	0405																													0.3990		
-L- 18+15	0404	0415																															REMOVE EXISTING 15" RCP
-L- 22+93	0407		1			1			1																								
	0407	0409																															
	0407	0438																															
-L- 21+92	0408		1			1			1																								
	0408	0438																															
-L- 22+93	0409		1			1		1																									
	0409	0411																											3.5					PLUG 15" W/ FLOWABLE FILL & REMOVE 2 DI's
-L- 24+48	0410		1			1		1			1																						
	0410	0411																															
-L- 24+48	0411		1			1		1																									
	0411	0421																															REMOVE EXISTING 15" RCP
-L- 25+29.50	0419		1	5.0								1	1																				REMOVE DI & EXISTING 18" RCP
	0419	0420																													0.4465		REMOVE 28' OF EXISTING 18" RCP
-L- 26+92.50	0421		1	5.0	1.13																1		1										REMOVE EXISTING DI
	0421	0413																														69	REMOVE EXISTING 24' RCP
-L- 27+92	0436		1									1	1																				
	0436	0427																															
-L- 28+02	0426																						1	1									
-L- 28+06.50	0427		1																		1												USE SLAB LID
-L- 27+91.50	0414		1			1		1			1																						
-L- 27+76	0413		1	5	2.24	1		1																									
	0413	0412																															REMOVE EXISTING 18" RCP
-L- 27+66	0412		1	3.6																	1		1										
	0412	0425																1															
-Y- 22+49	0417		1									1	1																				
-Y- 23+25	0418		1									1	1																				REMOVE EXISTING DI
	0418	0406																													0.3990		
-Y- 25+00	0430																																
-Y- 26+20	0431																															20	
-Y- 26+47	0432	0434																															REMOVE EXISTING 15" HDPE / RCP
-Y- 27+50	0433																															45	
-Y- 28+54	0435																																REMOVE EXISTING 15" RCP
-Y- 27+60	0437																																
-L- 22+33	0438		1			1			1																								
-Y- 27+30	0439																																
SHEET TOTALS			18	18.6	3.37	11		8	3		2	4	4					1			3	1	3	1				3.5			1.6435	151	

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: HLE DATE: 8/13/2015

CHECKED BY: SKR DATE: 9/23/2016

PROJECT NO. U-3633 SHEET NO. 3D-2

RD-299043

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
-L- 30+80	LT	0501		671.02	667.85														
		0501	0502		667.85	665.03													
-L- 30+80	RT	0502		668.03	665.03														
		0502	0505		665.03	659.14													
-L- 32+14	LT	0503		665.57	662.40														
		0503	0504		662.40	660.20													
-L- 30+00	LT	0504		663.20	660.03														
		0504	0505		660.03	659.14													
-L- 30+00	RT	0505		662.14	659.14														
		0505	0507		659.14	657.20													
-L- 35+69	LT	0506		660.17	657.17														
		0506	0507		657.17	656.92													
-L- 35+69	RT	0507		660.24	656.92														
		0507	0509		656.92	655.15													
-L- 37+42	LT	0558		659.77	656.77														
		0558	0508		656.77	656.76													
-L- 37+34	LT	0508		659.78	656.76														
		0508	0541		656.76	656.67													
-L- 37+34	LT	0541		660.63	656.67														
		0541	0509		656.67	656.00													
-L- 37+34	RT	0509		659.85	655.15														
		0509	0559		655.15	655.13													
-L- 39+34	LT	0510		661.56	658.56														
		0510	0511		658.56	658.56													
-L- 39+34	RT	0511		661.56	653.10														
		0511	0542		653.10	649.60													
-L- 36+88	LT	0516		661.51	657.76														
		0516	0515		657.56	651.00													
-L- 36+25	LT	0515		663.20	649.38														
		0515	0512		658.95	668.80													
		0515	0560		649.38	646.20													
-L- 31+80	LT	0513	0524		653.00	652.83													
-L- 31+90	LT	0524		664.20	652.83														
		0524	0525		652.83	652.50							56				X	X	
-L- 32+50	LT	0525		663.40	652.50														
		0525	0515		652.50	649.92							372				X	X	
-L- 40+87	LT	0519		663.52	661.27														
		0519	0518		661.27	657.45			76								X	X	
-L- 40+09	LT	0518		661.10	656.70														
		0518	0517		657.20	658.95													
		0518	0523		656.70	652.50					192						X	X	
-L- 38+15	LT	0523		656.90	652.50												X		
		0523	0516		652.50	657.76					124						X	X	
-L- 42+83	RT	0542		659.54	649.60														
		0542	0602		649.60	646.13													
-L- 30+28	LT	0545		674.94	672.69														
		0545	0524		672.69	660.50			164								X	X	
-Y5- 17+89	RT	0560		652.10	646.20														
		0560	0522		646.20	640.10													
-Y5- 17+77	LT	0540		653.47	650.47														
		0540	0543		650.47	650.42													
-Y5- 17+77	RT	0543		653.42	647.42														
		0543	0526		647.42	640.00													
-L- 37+42	RT	0559		659.54	655.13														
		0559	0511		655.13	653.1													
SHEET TOTALS									240		316		428						

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"
-L- 30+80	0501																									
	0501	0502										48														
-L- 30+80	0502																									
	0502	0505																		216						
-L- 32+14	0503																									
	0503	0504										84														
-L- 30+00	0504																									
	0504	0505										48														
-L- 30+00	0505																									
	0505	0507																		264						
-L- 35+69	0506																									
	0506	0507										84														
-L- 35+69	0507																									
	0507	0509																			164					
-L- 37+42	0558																									
	0558	0508																		8						
-L- 37+34	0508																									
	0508	0541										32														
-L- 37+34	0541																									
	0541	0509										48														
-L- 37+34	0509																									
	0509	0559																				8				
-L- 39+34	0510																									
	0510	0511										80														
-L- 39+34	0511																									
	0511	0542																				348				
-L- 36+88	0516																									
	0516	0515												60												
-L- 36+25	0515																									
	0515	0512			76																					
	0515	0560																							172	
-L- 31+80	0513	0524														20										
-L- 31+90	0524																									
	0524	0525																								
-L- 32+50	0525																									
	0525	0515																								
-L- 40+87	0519																									
	0519	0518																								
-L- 40+09	0518																									
	0518	0517											8													
	0518	0523																								
-L- 38+15	0523																									
	0523	0516																								
-L- 42+83	0542																									
	0542	0602																				208				
-L- 30+28	0545																									
	0545	0524																								
-Y5- 17+89	0560																									
	0560	0522							48																	
-Y5- 17+77	0540																									
	0540	0543																		20						
-Y5- 17+77	0543																									
	0543	0526		52																						
-L- 37+42	0559																									
	0559	0511																				188				
SHEET TOTALS				52	76				48			424	8	60		20				508	164	752			172	

STATION	FROM	TO			36" SLUICE GATE	42" SLUICE GATE (SEE DETAIL 2C-1)	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 GRATE STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR 840.26	G.D.I. TYPE "B" STD. 840.18 OR 840.27	T.B.J.B. STD. 840.34	T.B.D.I. STD. 840.35	ENERGY DISSIPATOR BASIN	G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.29	G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.24	J.B. STD. 840.31 OR 840.32	CONVERT EXISTING CB TO JB (SEE DETAIL 2C-3)	MANHOLE FRAME AND COVER STD. 840.54	CONVERT EXISTING DI TO JB (SEE DETAIL 2C-3)	4" CONCRETE PAVED DITCH, S.Y.	CONVERT EXISTING JB TO DI (SEE DETAIL 2C-4)	ADJUST CB	FLOWABLE FILL PIPE PLUG (CY)	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
-L- 30+80	0501								1			1		1			1																					38	REMOVE DI
	0501	0502																																				303	REMOVE DI
-L- 30+80	0502								1			1		1																									
	0502	0505																																					
-L- 32+14	0503								1			1		1			1																						
	0503	0504																																					
-L- 30+00	0504								1			1		1			1																						
	0504	0505																																					
-L- 30+00	0505								1			1		1																								146	REMOVE DI
	0505	0507																																					
-L- 35+69	0506								1			1			1																								
	0506	0507																																					
-L- 35+69	0507								1			1		1																									
	0507	0509																																					
-L- 37+42	0558								1			1	1																										
	0558	0508																																					
-L- 37+34	0508								1			1	1																										
	0508	0541																																					
-L- 37+34	0541								1							1		1	1																				
	0541	0509																																					
-L- 37+34	0509								1			1	1																										
	0509	0559																																					
-L- 39+34	0510								1			1		1																									
	0510	0511																																					
-L- 39+34	0511								1	3.46		1			1																								
	0511	0542																																					
-L- 36+88	0516								1			1			1																								
	0516	0515																																				62	REMOVE CB
-L- 36+25	0515								1	5.0	3.82									1						1													2GI
	0515	0512																																				26	REMOVE CB
	0515	0560																																					
-L- 31+80	0513	0524					3.4																																
-L- 31+90	0524								1	5.00	1.37																1		1										
	0524	0525																																29.0					REMOVE HW & PLUG 30" RCP W/FLOWABLE FILL
-L- 32+50	0525								1	5.00	0.90										1					1													2GI
	0525	0515																																				57	REMOVE DI
-L- 40+87	0519								1									1	1																			23	REMOVE DI
	0519	0518																																				61	REMOVE JB
-L- 40+09	0518								1																		1		1										
	0518	0517																																					
	0518	0523																																7.9					PLUG 24" W/ FLOWABLE FILL & REMOVE DI
-L- 38+15	0523								1																		1		1										REMOVE JB
	0523	0516																																				59	REMOVE 2 PIPES
-L- 42+83	0542								1	4.9		1		1																									
	0542	0602																																					
-L- 30+28	0545								1									1	1																				
	0545	0524																																					
-Y5- 17+89	0560								1	0.9																	1		1										
	0560	0522																																					
-Y5- 17+77	0540								1			1		1																									
	0540	0543																																					
-Y5- 17+77	0543								1	1.0		1			1																								
	0543	0526																																					
-L- 37+42	0559								1			1	1																										
	0559	0511																																				30	REMOVE JB
SHEET TOTALS							3.4		26	25.3	6.09	17	4	9	4	1	3	3	3	1	1					2	4		4					37				805	

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

RD-299043

COMPUTED BY: HLE DATE: 8/13/2015

CHECKED BY: SKR DATE: 9/23/2016

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
U-3633	3D-3

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

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

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
								THICKNESS OR GAUGE												
-L- 44+00	LT	0601		655.21	652.21															
		0601	0618		652.21	651.90														
-L- 44+93	RT	0602		649.81	645.56															
		0602	0605		645.56	629.69														
-L- 47+50	LT	0604		633.83	630.58															
		0604	0605		630.58	630.69														
		0604	0639		630.83	633.70														
-L- 47+50	RT	0605		633.94	629.19															
		0605	0629		629.19	619.97														
-L- 51+00	RT	0606		615.67	602.12															
		0606	0644		602.12	601.60									52		X			
-L- 49+49	LT	0607		622.00	619.00															
		0607	0648		619.00	616.57														
-L- 52+50	LT	0608		612.17	609.17															
		0608	0659		609.17	608.43														
		0608	0653		609.17	618.30														
-L- 53+69.50	LT	0609		611.41	608.41															
		0609	0659		608.41	608.43														
-L- 52+37	RT	0610		611.85	604.25															
		0610	0645		604.25	592.30														
-L- 53+60	RT	0611		611.39	606.50															
		0611	0610		606.50	606.00														
-L- 56+14	RT	0612		614.68	610.43															
		0612	0640		610.43	609.72														
-L- 56+14	LT	0613		615.64	612.47															
		0613	0612		612.47	611.68														
-L- 56+59	LT	0614		616.69	613.52															
		0614	0613		613.52	612.64														
-L- 44+14	LT	0618		654.90	651.90															
		0618	0619		651.90	650.95														
-Y7- 17+15	RT	0619		654.20	650.95															
-Y7- 17+15	LT	0620		653.86	650.61															
		0620	0621		650.61	648.00														
-L- 44+95	LT	0621		650.50	648.00															
		0621	0602		648.00	646.56														
-L- 46+81	LT	0625		638.80	635.55															
		0625	0626		635.55	632.90														
		0625	0627		635.80	639.52														
-L- 47+33	LT	0626		635.40	632.90															
		0626	0604		632.90	630.58														
-L- 49+00	RT	0629		624.72	619.97															
		0629	0606		619.97	610.00														
-L- 55+72	RT	0640		613.97	609.72															
		0640	0641		609.72	595.90														
SHEET TOTALS														48			52			

STATION	C.S. PIPE SIZE	C.S. PIPE THICKNESS OR GAUGE 12"	15"	18"	24"	30"	36"	42"	48"	R.C. PIPE CLASS III SIZE	R.C. PIPE CLASS III 12"	15"	18"	24"	30"	36"	42"	48"	R.C. PIPE CLASS IV SIZE	R.C. PIPE CLASS IV 12"	15"	18"	24"	30"	36"	42"	48"
		.064	.064	.064	.064	.079	.079	.109	.109																		
-L- 44+00												84															
			16																								
-L- 47+50																											
-L- 51+00																											
-L- 49+49																				52							
																				108							
											12																
-L- 53+69.50																				8							
-L- 52+37																											
-L- 53+60																											
																				128							
-L- 56+14																											
-L- 56+14																											
											44																
-L- 56+59																											
																				44							
-L- 44+14																											
											24																
-Y7- 17+15																											
-Y7- 17+15																											
												36															
-L- 44+95																											
												100															
-L- 46+81																											
												48															
											28																
-L- 47+33																											
				20																							
-L- 49+00																											
																				196							
-L- 55+72																											
						48																					
SHEET TOTALS			16	20		48					128	268								212	128		294	344			

STATION	36" SLUICE GATE	42" SLUICE GATE (SEE DETAIL 2C-1)	ENDWALLS STD. 838.01 838.11 OR STD. 838.80 (UNLESS NOTED OTHERWISE) CU. YARDS R.C.P.	ENDWALLS CU. YARDS C.S.P.	QUANTITIES FOR DRAINAGE STRUCTURES "TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL. 'B') PER EACH (0' THRU 5.0')	LIN. FT. A 5.0' THRU 10.0'	LIN. FT. B 10.0' AND ABOVE	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STANDARD 840.03 TYPE OF GRATE E	F	G	CONCRETE TRANSITIONAL SECTION DROP INLET	CATCH BASIN	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATE STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR 840.26	G.D.I. TYPE "B" STD. 840.18 OR 840.27	T.B.J.B. STD. 840.34	T.B.D.I. STD. 840.35	ENERGY DISSIPATOR BASIN	G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.29	G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.24	J.B. STD. 840.31 OR 840.32	CONVERT EXISTING CB TO JB (SEE DETAIL 2C-3)	MANHOLE FRAME AND COVER STD. 840.54	CONVERT EXISTING DI TO JB (SEE DETAIL 2C-3)	4" CONCRETE PAVED DITCH, S.Y.	CONVERT EXISTING JB TO DI (SEE DETAIL 2C-4)	ADJUST CB	FLOWABLE FILL PIPE PLUG (CY)	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
-L- 44+00					1			1																												
								1																										63		
-L- 44+93					1			1																												
								1																												
-L- 47+50					1			1																												
								1																										68		REMOVE DI
																														11					(BDO) SEE STD. 850.10
-L- 47+50					1			1																												
								1																												
-L- 51+00					1	5.0	3.55	1		1																										
-L- 49+49					1			1	1																										
-L- 52+37					1	2.6		1		1																										
-L- 53+60					1			1	1																										
-L- 56+14					1			1																												
-L- 56+14					1			1																												
-L- 56+59					1			1																												
-L- 44+14					1																														
-Y7- 17+15					1			1																												
-Y7- 17+15					1			1																												
-L- 44+95					1																														
-L- 46+81					1																														
-L- 47+33					1																														
-L- 49+00					1			1																												
-L- 55+72					1			1																												
SHEET TOTALS					21	7.6	3.55	17	3	5	9		2	2	2		2						2					22						483		

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: HLE DATE: 8/13/2015

CHECKED BY: SKR DATE: 9/23/2016

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
U-3633	3D-4

RD-259043

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
								THICKNESS OR GAUGE											
-L- 54+76	RT	0642																	
		0642	0643																
-L- 53+26	RT	0646																	
		0646	0647																
-L- 50+00	LT	0648		619.57	616.57														
		0648	0608		616.57	609.17													
		0648	0649		616.57	634.00													
-L- 53+61	LT	0659		611.43	608.18														
		0659	0662		608.18	608.05													
-L- 53+60	RT	0662		612.26	608.05														
		0662	0611		608.05	606.50													
-L- 53.68	RT	0661		611.41	606.75														
		0661	0611		606.75	606.50													
-L- 57+86	LT	0701		618.87	615.70														
		0701	0702		615.70	614.62													
-L- 57+85	RT	0702		617.62	613.37														
		0702	0612		613.42	610.43													
-L- 61+97.50	RT	0704		625.74	622.03														
		0704	0737		622.03	620.35													
-L- 61+98	RT	0705		626.88	623.46														
		0705	0735		623.46	620.51													
-L- 62+72.41	RT	0706		628.00	622.25														
		0706	0704		622.25	622.03													
		0706	0723		622.25	623.00													
-L- 66+52.50	RT	0707		643.00	639.00														
		0707	0724		639.00	635.00													
		0707	0726		639.00	639.20													
-L- 69+50	RT	0708		657.54	654.54														
		0708	0727		654.54	644.41													
-L- 68+41	LT	0709		653.07	650.07														
		0709	0710		650.07	644.51													
-L- 67+67	LT	0710		648.17	644.51														
		0710	0731		644.51	642.46													
-L- 66+88	LT	0711		645.20	642.95														
		0711	0731		642.95	642.46			16						X	X			
-L- 65+62	LT	0712		640.65	636.85														
		0712	0714		636.85	631.00													
-L- 65+56	LT	0713		639.30	637.05														
		0713	0712		637.05	636.85			16						X	X			
-L- 64+01	LT	0715		633.55	631.30														
		0715	0714		631.30	631.00			16						X	X			
-L- 64+01	LT	0714		635.00	630.75														
		0714	0716		630.75	629.25													
-L- 63+57	LT	0717		632.00	629.75														
		0717	0716		629.75	629.50			16						X	X			
-L- 63+55	LT	0716		633.30	629.25														
		0716	0718		629.25	626.80													
-L- 62+56	LT	0719		630.25	628.00														
		0719	0718		628.00	626.80			12						X				
-L- 62+59	LT	0718		630.05	626.80														
		0718	0730		626.80	625.38													
SHEET TOTALS									76										

STATION	C.S. PIPE 12"	15"	18"	24"	30"	36"	42"	48"	DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE
	THICKNESS OR GAUGE	.064	.064	.064	.064	.079	.079	.109	.109				
-L- 54+76													
-L- 53+26													
-L- 50+00													
		44											
-L- 53+61													
-L- 53+60													
-L- 53.68													
-L- 57+86													
-L- 57+85													
-L- 61+97.50													
-L- 61+98													
-L- 62+72.41													
-L- 66+52.50													
-L- 69+50													
-L- 68+41													
-L- 67+67													
-L- 66+88													
-L- 65+62													
-L- 65+56													
-L- 64+01													
-L- 64+01													
-L- 63+57													
-L- 63+55													
-L- 62+56													
-L- 62+59													
SHEET TOTALS	44												

STATION	R.C. PIPE CLASS III 12"	15"	18"	24"	30"	36"	42"	48"	R.C. PIPE CLASS IV 12"	15"	18"	24"	30"	36"	42"	48"
-L- 54+76																
						36										
-L- 53+26																
							36									
-L- 50+00																
										248						
-L- 53+61																
			44													
-L- 53+60																
			44													
-L- 53.68																
										8						
-L- 57+86																
										48						
-L- 57+85																
														168		
-L- 61+97.50																
											28					
-L- 61+98																
											140					
-L- 62+72.41																
											72					
-L- 66+52.50																
										64						
-L- 69+50																
										188						
-L- 68+41																
-L- 67+67																
										72						
-L- 66+88																
-L- 65+62																
										160						
-L- 65+56																
-L- 64+01																
-L- 64+01																
											44					
-L- 63+57																
-L- 63+55																
											96					
-L- 62+56																
-L- 62+59																
											44					
SHEET TOTALS			44							788	424		168			

STATION	36" SLUICE GATE	42" SLUICE GATE (SEE DETAIL 2C-1)	ENDWALLS STD. 838.01 838.11 OR STD. 838.80 (UNLESS NOTED OTHERWISE) CU. YARDS R.C.P.	C.S.P.
-L- 54+76	1		3.40	
-L- 53+26		1	4.50	
-L- 50+00				
-L- 53+61				
-L- 53+60				
-L- 53.68				
-L- 57+86				
-L- 57+85				
-L- 61+97.50				
-L- 61+98				
-L- 62+72.41				
-L- 66+52.50				
-L- 69+50				
-L- 68+41				
-L- 67+67				
-L- 66+88				
-L- 65+62				
-L- 65+56				
-L- 64+01				
-L- 64+01				
-L- 63+57				
-L- 63+55				
-L- 62+56				
-L- 62+59				
SHEET TOTALS	1	1	7.9	

STATION	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
-L- 54+76							
-L- 53+26							
-L- 50+00	1			1			1
-L- 53+61	1			1	1		
-L- 53+60	1						
-L- 53.68	1			1	1		
-L- 57+86	1			1			1
-L- 57+85	1			1			1
-L- 61+97.50	1			1			1
-L- 61+98	1						
-L- 62+72.41	1	0.75		1			1
-L- 66+52.50	1			1			1
-L- 69+50	1			1			1
-L- 68+41	1			1	1		
-L- 67+67	1			1	1		
-L- 66+88	1						
-L- 65+62	1			1	1		
-L- 65+56	1						
-L- 64+01	1						
-L- 64+01	1			1	1		
-L- 63+57	1						
-L- 63+55	1			1	1		
-L- 62+56	1						
-L- 62+59	1			1	1		
SHEET TOTALS	22	0.75		15	2	6	7

STATION	CONCRETE TRANSITIONAL SECTION DROP INLET	CATCH BASIN	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATE STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR 840.26	G.D.I. TYPE "B" STD. 840.18 OR 840.27	T.B.D.I. STD. 840.34	T.B.J.B. STD. 840.35	ENERGY DISSIPATOR BASIN	G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.29	G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.24	J.B. STD. 840.31 OR 840.32	CONVERT EXISTING CB TO JB (SEE DETAIL 2C-3)	MANHOLE FRAME AND COVER STD. 840.54	CONVERT EXISTING DI TO JB (SEE DETAIL 2C-3)	4" CONCRETE PAVED DITCH, S.Y.	CONVERT EXISTING JB TO DI (SEE DETAIL 2C-4)	ADJUST CB	FLOWABLE FILL PIPE PLUG (CY)	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
-L- 54+76																								
-L- 53+26																								
-L- 50+00																								
																11				2 @ 15"				(BDO) SEE STD. 850.10
-L- 53+61																								
-L- 53+60	1			1	1																			
-L- 53.68																								
-L- 57+86		1																					25	REMOVE DI
-L- 57+85																								
-L- 61+97.50																								
-L- 61+98	1			1	1																			
-L- 62+72.41																							14	
																				3.7				PLUG 15" RCP W/FLOWABLE FILL
-L- 66+52.50																							104	
-L- 69+50																							24	
-L- 68+41																							38	
-L- 67+67																							23	
-L- 66+88																								
-L- 65+62																								
-L- 65+56																								
-L- 64+01																								
-L- 64+01																								
-L- 63+57																								
-L- 63+55																							18	REMOVE JB
-L- 62+56																								
-L- 62+59																								
SHEET TOTALS	2	1	7	7												11			3.7	2 @ 15"			399	

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: HLE DATE: 8/13/2015

CHECKED BY: SKR DATE: 9/23/2016

PROJECT NO.	SHEET NO.
U-3633	3D-5

RD-299043

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)

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

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	C.S. PIPE 12"	15"	18"	24"	30"	36"	42"	48"	R.C. PIPE CLASS III 12"	15"	18"	24"	30"	36"	42"	48"	R.C. PIPE CLASS IV 12"	15"	18"	24"	30"	36"	42"	48"			36" SLUICE GATE	42" SLUICE GATE (SEE DETAIL 2C-1)	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 GRATE STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR 840.26	G.D.I. TYPE "B" STD. 840.18 OR 840.27	T.B.J.B. STD. 840.34	T.B.D.I. STD. 840.35	ENERGY DISSIPATOR BASIN	G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.29	G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.24	J.B. STD. 840.31 OR 840.32	CONVERT EXISTING CB TO JB (SEE DETAIL 2C-3)	MANHOLE FRAME AND COVER STD. 840.54	CONVERT EXISTING DI TO JB (SEE DETAIL 2C-3)	4" CONCRETE PAVED DITCH, S.Y.	CONVERT EXISTING JB TO DI (SEE DETAIL 2C-4)	ADJUST CB	FLOWABLE FILL PIPE PLUG (CY)	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
THICKNESS OR GAUGE																				.064	.064	.064	.064	.079	.079	.109	.109																																																						
-Y8- 10+79	LT	0721		623.00	620.00																																													1			1			1																									
		0721	0720		620.00	621.70																							36																																																					
		0721	0737		620.00	620.60																							36																																																			5	REMOVE CB & 15" RCP
-L- 67+59	RT	0727		647.41	644.41																																													1			1			1																								7	REMOVE JB
		0727	0707		644.41	638.78																															104																																												68	REMOVE JB & 2 EXISTING PIPES
		0727	0728		644.41	645.00																							16																																																			25	
-L- 65+84	RT	0724		639.97	635.00																																													1			1			1																			3.2					PLUG 18" RCP w/ FLOWABLE FILL
		0724	0706		635.00	622.50																															304																																													REMOVE 3 EXISTING PIPES
		0724	0725		635.00	635.60																							20																																																				REMOVE DI & EXISTING PIPE
-L- 70+20	LT	0729		660.10	657.85																																													1			1	1																									49	REMOVE CB
		0729	0802		657.85	657.00			68								X																																																																	32	
-L- 66+88	LT	0731		645.46	642.46																																													1			1		1																									20	
		0731	0712		642.46	636.85																															124																																													
-L- 62+62	RT	0730		628.80	625.38																																													1							1		1	1																						
		0730	0705		625.38	623.46																																60																																											
-L- 60+58		0735		623.93	620.51																																													1							1		1	1																						
		0735	0736		620.51	619.77																								32																																																				
-L- 60+57	RT	0736		622.77	619.02																																													1			1			1																									
		0736	0702		619.02	613.92																																	264																																										
-L- 61+69	RT	0737		624.25	620.50																																													1																			1		1										
		0737	0736		620.50	619.77																							108																																																					
-Y8- 11+09	LT	0738	0721		618.41	620.00																							32																																																		0.399	48	
-L- 70+84	LT	0801		663.13																																																					1			1													1							
-L- 70+84	LT	0802		663.00	657.00																																													1	1		1		1																										
		0802	0803		657.00																									12																																																		0.4465	55	REMOVE CB AND 2 EXISTING PIPES
-L- 70+86	RT	0804		662.50																																														1													1							1										
-Y11- 19+11	RT	0805		670.79	668.16																																													1			1			1																									REMOVE EXISTING CB
		0805	0811		668.16																									20																																																			REMOVE EXISTING 18" RCP
-L- 73+90	LT	0806		673.68	670.26																																													1							1		1	1																						
		0806	0846		670.51																								40																																																					
-L- 74+00	RT	0807		672.39	670.06																																													1			1			1																									
		0807	0825		670.06	669.60																							60																																																			153	
-L- 76+54	LT	0808		675.02	671.85																																													1							1		1	1																						
		0808	0809		671.85	670.59																							44																																																					
-L- 76+54		0809		673.59	670.59																																													1			1		1																									85	
		0809	0810		670.59	668.59																							148																																																				19	REMOVE EXISTING CB
SHEET TOTALS									68																				540	64							532	60	264											16	1		10	1	3	6	5		4	5			1					1		2			1		3.2			0.8455	566	

COMPUTED BY: HLE DATE: 8/13/2015

CHECKED BY: SKR DATE: 9/23/2016

RD-299043

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
U-3633	3D-6

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

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

STATION / SIZE / THICKNESS OR GAUGE	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	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"			36" SLUICE GATE	42" SLUICE GATE (SEE DETAIL 2C-1)	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 GRATE STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR 840.26	G.D.I. TYPE "B" STD. 840.18 OR 840.27	T.B.J.B. STD. 840.34	T.B.D.I. STD. 840.35	ENERGY DISSIPATOR BASIN	G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.29	G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.24	J.B. STD. 840.31 OR 840.32	CONVERT EXISTING CB TO JB (SEE DETAIL 2C-3)	MANHOLE FRAME AND COVER STD. 840.54	CONVERT EXISTING DI TO JB (SEE DETAIL 2C-3)	4" CONCRETE PAVED DITCH, S.Y.	CONVERT EXISTING JB TO DI (SEE DETAIL 2C-4)	ADJUST CB	FLOWABLE FILL PIPE PLUG (CY)	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
-L- 78+05	RT	0810		671.59	666.40																																													1			1		1																									
		0810	0813		668.59	657.72																															292																																										43	
-Y11- 19+11	RT	0811																																																1																			1		1											REMOVE EXISTING JB
-L- 81+00	RT	0813		660.72	657.47																																													1			1		1																									
		0813	0820		657.47	653.21																																104																																									30	
-L- 81+00	LT	0814		660.76	657.59																																													1			1			1																								
		0814	0821		657.59	653.46																															104																																										26	REMOVE EXISTING HW's
-Y12- 14+51	RT	0815		661.10	658.10																																													1			1		1																									
		0815	0836		658.10	658.28																				44																																																								8	
-Y11- 17+30	RT	0816		672.04	669.04																																													1			1		1																									
		0816	0847		669.04	662.00																				72																																																								
-Y11- 17+00	LT	0817		674.14	670.52																																													1							1		1	1																				24	REMOVE EXISTING CB
-L- 82+08	RT	0820		656.46	652.71																																													1			1		1																									
		0820	901		652.71	635.74																																	304																																								73	
-L- 82+08	LT	0821		656.46	653.21																																													1			1			1																								
		0821	0820		653.21	652.71																					68																																																							
-Y12- 13+42	LT	0822		669.80	663.35																																													1	1.45		1		1																									
-Y11- 17+06	RT	0823		673.40	670.40																																													1													1							1											REMOVE EXISTING JB
		0823	0816		670.40	669.04																				32																																																							40	REMOVE EXISTING CB
-Y11- 17+68	LT	0824		672.85	670.60																																													1									1	1																					
		0824	0860		670.60	669.15																				24																																																							0.3990		REMOVE EXISTING DI
-Y11- 19+12	LT	0825		671.90	669.60																																													1			1			1																								
-L- 79+09.07	LT	0828		665.60	662.60																																													1			1	1																										REMOVE EXISTING CB
		0828	0829		662.60	662.10																															76																																										77	
-L- 79+88	LT	0829		665.10	662.10																																													1			1	1																									9	REMOVE EXISTING CB
		0829	0830		662.10	660.20																				40																																																							29	REMOVE EXISTING CB
-L- 80+30	LT	0830		663.20	660.20																																													1			1			1																							29	REMOVE EXISTING CB
		0830	0831		660.20	659.61																				28																																																							72	
-L- 80+54	LT	0831		662.61	659.61																																													1			1			1																								
		0831	0814		659.61	657.59																															44																																											
-L- 80+74.5	RT	0834		662.36	659.19																																													1							1		1	1																				28	
		0834	0813		659.19	657.72																				40																																																								
-Y12- 12+99	LT	0835		670.15	667.90																																													1									1	1																					
		0835	0822		667.90	663.35			52									X	X																																																														29	REMOVE EXISTING DI
-Y12- 14+67	LT	0836		660.12	658.28																																													1									1	1																					
-Y11- 22+05	LT	0839																																																1			1			1																							20	REMOVE EXISTING DI
SHEET TOTALS									52																			280	68								516	104	304											21	1.45		14	2	6	6	2		5	5			1					1		2								0.399	537	

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

RD-299043

COMPUTED BY:	HLE	DATE:	8/13/2015
CHECKED BY:	SKR	DATE:	9/23/2016

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
U-3633	3D-7

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

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

STATION / SIZE / THICKNESS OR GAUGE	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	C.S. PIPE 12" .064	15" .064	18" .064	24" .064	30" .079	36" .079	42" .109	48" .109
-Y11- 14+59	LT	0840		677.35	675.10																						
		0840	0841		675.10	673.81															12						
-Y11- 14+59	LT	0841		676.81	673.81																						
		0841	0842		673.81	673.31																					
-Y11- 16+10	LT	0842		677.08	673.31																						
		0842	0844		673.31	673.00																					
-Y11- 16+37	LT	0843		678.70	676.45																						
		0843	0844		676.45	673.00															20						
-Y11- 16+38	LT	0844		676.00	673.00																						
		0844	0845		673.00	671.35																					
-Y11- 17+00	LT	0845		674.35	671.35																						
		0845	0817		671.35	670.52																					
-L- 73+52	LT	0846		673.89																							
-L- 71+99	LT	0847		668.78	662.00																						
		0847	0802		662.00	657.00																					
-L- 71+99	LT	0848																									
		0848	0849																								
-L- 71+20	LT	0850																									
		0850	0851																								
-L- 85+12	RT	0901		642.75	635.74																						
		0901	0902		635.74	632.15																					
		0901	0903		635.74	635.80																					
-L- 85+38	RT	0902		641.60	632.15																						
-L- 85+38	RT	0904		629.87	626.87																						
		0904	0905		626.87	626.90																					
-Y- 19+95	RT	1003		703.85	700.85																						
-Y- 17+12	LT	1004		709.81	706.81																						
		1004	1012		706.81	706.60																					
-Y- 16+47	LT	1005		711.04	708.00																						
-Y- 16+47	LT	1006		710.43	708.18																						
		1006	1005		708.18	708.00																					
-Y2- 10+75	LT	1010																									
-Y2- 10+35	LT	1011		707.90	705.65																						
-Y- 17+07	LT	1012		709.89	706.60																						
-Y- 18+85	RT																										
-Y- 19+35	RT																										
SHEET TOTAL																					32						
SHEET 3D-8 TOTAL																											
PROJECT TOTAL									624		364		428	52							144	120		48		48	
SAY																											

STATION	FROM	TO	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"			36" SLUICE GATE	42" SLUICE GATE (SEE DETAIL 2C-1)	ENDWALLS STD. 838.01 838.11 OR STD. 838.80 (UNLESS NOTED OTHERWISE) CU. YARDS R.C.P.	C.S.P.
	0841	0842										152												
	0842	0844										28												
	0844	0845										60												
	0845	0817										36												
	0847	0802			116																			
	0848	0849			12																			
	0850	0851			12																			
	0901	0902												24										
	0901	0903			20																		1	
	0904	0905		36																				
	1004	1012		8																				
	1006	1005		8																				
SHEET TOTAL				52	160							276		24									1	
PROJECT TOTAL				1712	748	256	24	72	36			3468	1116	1344	462	344	172				1	1	12.3	
SAY																							13	

STATION	FROM	TO	QUANTITIES FOR DRAINAGE STRUCTURES PER EACH (0' THRU 5.0')	*TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL.'B') LIN. FT. A 5.0' THRU 10.0'	B 10.0' AND ABOVE	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STANDARD 840.03 TYPE OF GRATE E	F	G	CONCRETE TRANSITIONAL SECTION DROP INLET	CATCH BASIN	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATE STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR 840.26	G.D.I. TYPE "B" STD. 840.18 OR 840.27	T.B.J.B. STD. 840.34	T.B.D.I. STD. 840.35	ENERGY DISSIPATOR BASIN	G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.29	G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.24	J.B. STD. 840.31 OR 840.32	CONVERT EXISTING CB TO JB (SEE DETAIL 2C-3)	MANHOLE FRAME AND COVER STD. 840.54	CONVERT EXISTING DI TO JB (SEE DETAIL 2C-3)	4" CONCRETE PAVED DITCH, S.Y.	CONVERT EXISTING JB TO DI (SEE DETAIL 2C-4)	ADJUST CB	FLOWABLE FILL PIPE PLUG (CY)
-Y11- 14+59	0840		1									1	1															
-Y11- 14+59	0841		1			1			1																			
-Y11- 16+10	0842		1			1			1																			
-Y11- 16+37	0843		1									1	1															
-Y11- 16+38	0844		1			1			1																			
-Y11- 17+00	0845		1			1			1																			
-L- 73+52	0846		1													1							1					
-L- 71+99	0847		1	1.78		1		1																				
-L- 85+12	0901		1	2.01		1		1																				
-L- 85+38	0902		1	4.45		1		1																				
-L- 85+38	0904		1			1	1																					
-Y- 19+95	1003		1			1		1																				
-Y- 17+12	1004		1			1			1																			
-Y- 16+47	1005																							1				
-Y- 16+47	1006		1									1	1															
-Y2- 10+75	1010																										1	
-Y2- 10+35	1011		1									1	1															
-Y- 17+07	1012																					1						
SHEET TOTAL			15	8.2		10	1	4	5			4	4			1						1	1	1			1	
SHEET 3D-8 TOTAL														4						4	1		1					
PROJECT TOTAL			139	62.94	13.01	94	13	41	40	10	8	29	30	5	3	3		1		8	10	2	13	2	33	1	1	47.3
SAY				(79.85) SAY 80																								48

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
	0845	0817					REMOVE EXISTING CB
-L- 73+52	0846					23	REMOVE EXISTING DI
	0847	0802				22	REMOVE EXISTING CB
-L- 71+99	0848				0.4470		
	0848	0849			0.4470		REMOVE EXISTING DI
-L- 71+20	0850				0.4770		
	0850	0851			0.4770	9	REMOVE EXISTING DI
-L- 85+38	0902					9	
-Y- 19+95	1003					44	
-Y- 18+85						31	
-Y- 19+35						16	
SHEET TOTAL					1.848	154	
SHEET 3D-8 TOTAL						343	
PROJECT TOTAL			2 @ 15		4.736	3438	
SAY					5	3440	

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:	HLE	DATE:	8/13/2015
CHECKED BY:	SKR	DATE:	9/23/2016

PROJECT NO.	SHEET NO.
U-3633	3D-8

RD-299043

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

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

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

STATION	LOCATION (LT, RT, OR CL)'	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	CLASS III R.C. PIPE (UNLESS NOTED OTHERWISE) 54"	60"	66"	72"	78"	84"	C.S. PIPE 54" .109	54" .138	54" .168	54" SHOP ELONGATED .138	54" SHOP ELONGATED .168	60" .138	60" .168	66" .138	66" .168	72" .139	72" .168	WELDED STEEL PIPE (TRENCHLESS INSTALLATION) 60"	66"	72" 1" THICK, GRADE B	REINFORCED ENDWALLS WITH R.C. - C.Y.	WITH C.S. - C.Y.	MASONRY DRAINAGE STRUCTURES CUBIC YARDS	C.B. STD. 840.01 OR 840.02	FRAMES, GRATES & HOOD STANDARD 840.03 TYPE OF GRATE E	F	G	CONCRETE TRANSITIONAL SECTION DROP INLET	CATCH BASIN	T.B.J.B. (SEE DETAIL 2C-2)	G.D.I. TYPE "A" STD. 840.17 OR 840.26	G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.24	J.B. STD. 840.31 OR 840.32	MANHOLE FRAME AND COVER STD. 840.54	REINF. CONC. FLARED END SECTIONS NO. & SIZE	CORR. STEEL FLARED END SECTIONS NO. & Size	CORR. STEEL ELBOWS NO. & SIZE	CONC. COLLARS CL. "B" C.Y. STD. 840.72	PIPE REMOVAL LIN. FT.	REMARKS
-Y5- 18+39	RT	0522		645.98	632.63																									3.48										1	1						REMOVE EXISTING 36" RCP
-Y5- 18+35	RT	0527	0522		632.90	632.63		28																				5.0																			
		0522	0529		632.63	632.09		52																																						24	
-Y5- 18+40	LT																																													34	REMOVE DI
-L- 47+70	RT	0630		611.32	605.32																									5.44								1	1								2GI
-L- 45+95	RT	0631			614.31																							5.9																			
		0631	0630		614.31	605.32													176																											43	
-L- 47+70	RT	0630	0632		605.32	603.00													88																												
-L- 48+60	RT	0632		609.00	603.00																									5.44								1	1								2GI
-L- 48+60	RT	0632	0633		603.00	599.18													140																											145	
-L- 50+00	RT	0633		612.00	599.18																									5.44								1	1								2GI
-L- 50+00	RT	0633	0634		599.18	596.50													72																											51	
-L- 50+73	RT	0634		606.00	596.50																									5.44								1	1								2GI
-L 50+73	RT	0634	0635		596.50	595.65													24																											46	REMOVE EXISTING HW
-L- 54+40	RT	0665		599.53	592.45.																									10.4							1										USE SLAB LID
		0667	0665		593.00	592.45																					88																				
		0665	0668		592.45	592.00					72																																				
-Y6- 13+59	RT	0530			623.47	623.03																						5.0																			HEADWALL
-Y6- 13+63	CL	0530	0531		623.47	623.03		64																																							REMOVE EXISTING 42" RCP
PROJECT TOTAL								144			72								500								88	15.9		35.64							1	4	4	1	1					343	
SAY																												16		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.)	GRATED DROP INLET (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: J. B. Barfield DATE: 5/11/15
CHECKED BY: JHM DATE: 5/12/15

PROJECT NO.	SHEET NO.
U-3633	3G-1

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SUMMARY OF SUBSURFACE DRAINAGE

LINE	Station	Station	Location LT/RT/CL	Drain Type* UD/BD/SD	LF
CONTINGENCY				UD	1000
				TOTAL LF:	1000

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

SUMMARY OF GEOTEXTILE FOR PAVEMENT STABILIZATION

LINE	Station	Station	SY
-L-	37+00	41+25	1889 *
-L-	44+00	56+50	7639 *
* CONTINGENCY			
		TOTAL SY:	9528 *

SUMMARY OF AGGREGATE SUBGRADE/STABILIZATION

LINE	Station	Station	Aggregate Type ASU/AST	Aggregate Thickness INCHES	Shallow Undercut CY	Class IV Subgrade Stabilization TONS	Geotextile for Soil Stabilization SY	Stabilizer Aggregate TONS	Class IV Aggregate Stabilization TONS
CONTINGENCY			ASU		1000	2000	3000		
CONTINGENCY			AST	3				500	
CONTINGENCY			ASU	12	500	1000	1500		
			TOTAL CY/TONS/SY:		1500	3000	4500*	500	0

ASU = Aggregate Subgrade, AST = Aggregate Stabilization

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

PROJ. REFERENCE NO.	SHEET NO.
U-3633	3P-1

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PARCEL INDEX SHEET

PARCEL No.	SHEET No.	PROPERTY OWNER NAME
1	4	KRISHNA INC.
3	4 & 10	WANDA W. MCELVEEN AND RONALD S. WOOLWINE
4	4	EARL A. CUNNINGHAM
5	4	JOEL R. AND PATRICIA P. HUBBARD
6	4 & 10	DONALD AND CHERYL DOSTER
7	4	W & B CORPERATION
8	4	DAN M. BOYD III
9	4	BEEBE ENTERPRISES, LLC
10	4	AUTEN INVESTMENT PROPERTY MANAGEMENT PARTNERSHIP, JEAN B. AUTEN
11	4	VU VAN-THUONG AND LISA TRINH
12	4	ROBERT S. AND EDWINA G. WESTON
13	4	DAVID L. AND CLEMMIE D. MARROW
14	4	NOAH H. HUFFSTETLER III
15	4 & 5	EDWARD C. AND CONNIE MAULDIN
16	4	BOYD F. AUTEN
17	4	BRYCE C. AND COLLEEN B. BEACH, TIMOTHY C. AND LISA A. BEACH
18	4	JIMMY L. AND NANCY S. RAGAN
19	4	JOHN ANDERSON
20	4	KENNETH R. AND AMY M. HARRIS
21	4	MERIDITH H. MCBRYDE
22	4	CORA LEE K. GOSNELL HEIRS
23	5	MACON A. ALBERTSON AND WIFE, DEBBIE D. ALBERTSON
24	4	RICHARD E. AND ANN C. BROWNE
25	5	ROBERT I. CONNELL
26	5 & 6	HARVEY L. AND CAROL R. THOMAS
27	5	JIMMY M. AND JEAN CLYBURN
28	5	JEFFREY A. AND LEAH Y. ROBERSON
29	5	LESTER O. AND RUTH B. MUNDY
30	5	MARY VANESSA S. WEBB
31	5	COMAVA, LLC
32	5	JOHNSON GULZAR AND WIFE, KIMBERLY D. SIGMON
33	5	DALE K. AND CARRIE H. FENNELL
34	5 & 6	JOHN AND JENNIFER SUTTLE
35	6	R. CRANDELL JR. AND MARY M. YON
36	6	DAVID C. FLETCHER DAVID C. FLETCHER
37	6	CARLOS F. AND MYRTLE A. DAVID
38	6	ROBERT N. AND SUE G. NEFF
39	6	MATTHEW G. AND KATHERINE M. MALTA39
40	6 & 7	CHRISTOPHER B. AND PAMELA LOFTIN
41	6	WILLIAM A. WHITMAN
42	6	JAMES A. FARTHING III AND WIFE, JOYCE STAFFORD FARTHING
43	6 & 7	TRIANGLE REAL ESTATE OF GASTONIA, INC
44	6 & 7	LINDA J. ROBINSON
45	6 & 7	ROBERT O. AND ANN A. WYATT
46	7	J.P. AND LOUISE S. GUIN
47	7	WILLIAM H. STEWART JR
48	7	AMY M. DIMMER AND DAVID W. HABURJACK
49	7	THE DALES GROUP, LLC
50	7	THE DALES GROUP, LLC
51	7	THE DALES GROUP, LLC
52	7	HARRELL H. JR AND JOANNE S. RICK
53	7	FREDDIE W. WHITE TRUST
54	7	HUBERT R. BROOME SR AND HUBERT R. BROOME JR
55	7 & 8	MCDONALD'S CORPORATION
58	7	TRIANGLE REAL ESTATE OF GASTONIA, INC
59	7	TIMOTHY P. AND MARGARET S. JONES
60	7	ANDREW S. AND DAWN H. WILLIAMS

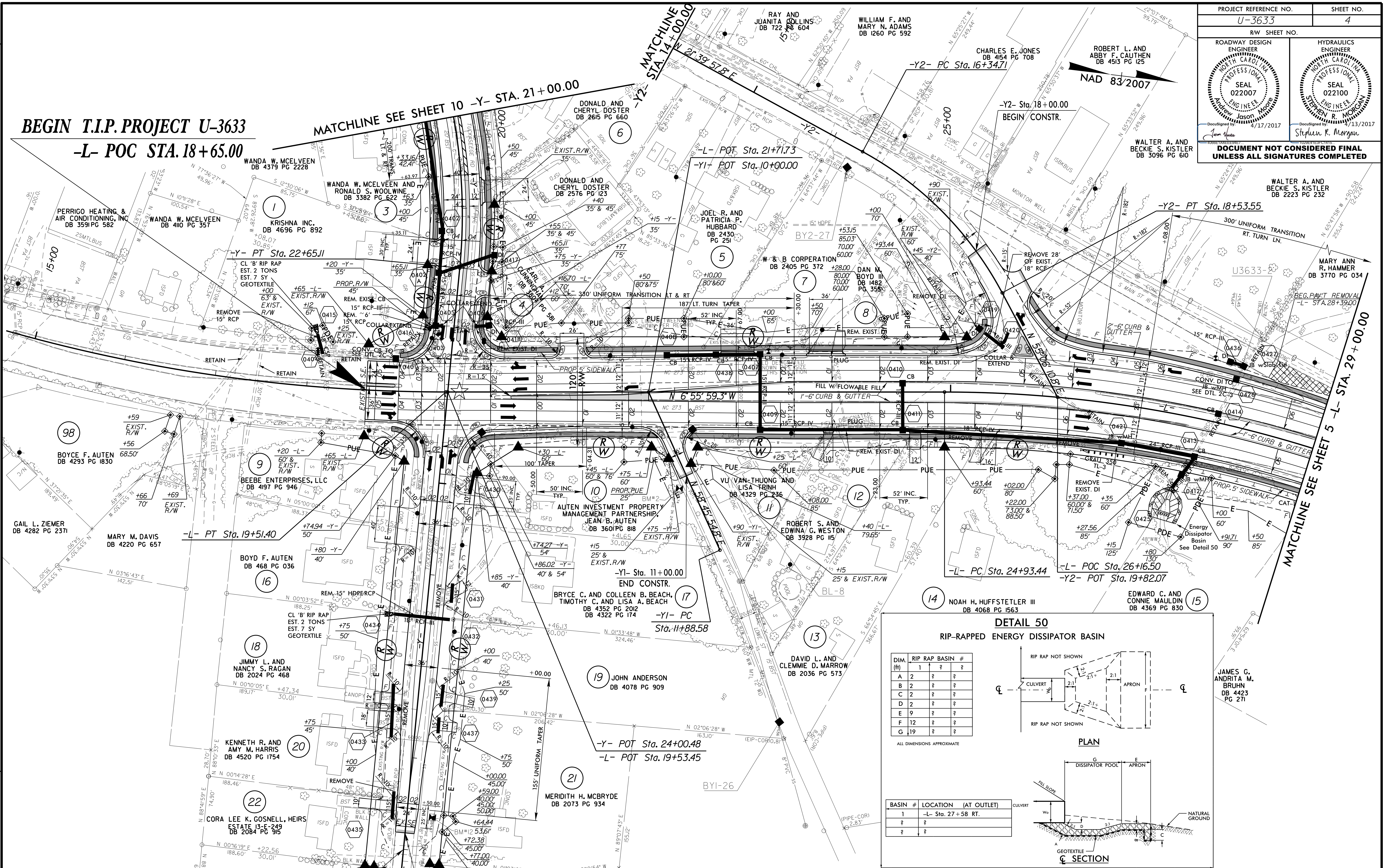
PARCEL No.	SHEET No.	PROPERTY OWNER NAME
61	7	ANDREW WILLIAMS, ET AL
62	7	1942, LLC
63	7	THE DALES GROUP, LLC
64	7	THE DALES GROUP, LLC
65	7	THE DALES GROUP, LLC
66	8	WEB-WOOD, INC WEB-WOOD, INC
67	8	RALPH J. AND VINETA M. BEATTY
68	8	MOUNT HOLLY CHURCH OF GOD
68A	8	RICHARD M. AND LUCY R. PENEGAR
68B	8	TRUSTEES OF MT. HOLLY CHURCH OF GOD
68C	8	GREGORY S. AND RITA H. FARMER
68D	8	KEVIN AND CORRINA DEVIN
69	8	DORTHY W. BEATTY
70	8	NATVARLAL B. AND SARALABEN N. PATEL
71	8	ALVIN RANKIN JR
72	8	DONALD R. AND EVELYN R. FLOYD
73	8	ANGELA FOX-PUTNAM
74	8	FRANKE A. BELL
75	8	LTR, LLC
76	8	ROBERT C. WHITT
77	7 & 8	COMMUNITY ONE BANK
78	7 & 8	THE DALES GROUP, LLC
79	8	MOUNT HOLLY CAPITAL, LLC
80	8	GREGORY S. AND CLARA P. FARMER
81	8	SPRINGS CROSSING, LLC
82	8	KONSTANTINOS I. AND MARIA PITSONIS
82A	8	KONSTANTINOS I. AND MARIA PITSONIS
83	8 & 9	AMERICAN AND EFIRD MILLS, INC.
85	10	KRISHA INC.
86	10	NANCY M. DUNCAN
87	10	NATALIE KINNEY
88	10	PHILIP D. AND DARLENE H. HARRIS
89	10	LAURA A. FERGUSON
90	10	CITY OF MOUNT HOLLY
91	10	CITY OF MOUNT HOLLY
92	10	SYLVIA HELLARD
94	10	EDD, LLC
95	10	JAMES A. AND WANDA W. MCELVEEN
96	8	GREGORY S. FARMER
97	8	MT. HOLLY BOARD OF ALCOHOLIC
98	4	BOYCE F. AUTEN

PROJECT REFERENCE NO.	SHEET NO.
U-3633	4
RW SHEET NO.	

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 022007 Andrew Jason Moore — 4/17/2017

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 022100 STEPHEN R. MORGAN — 4/13/2017

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



DIM. (ft)	RIP RAP BASIN # 1	?	?
A	2	?	?
B	2	?	?
C	2	?	?
D	2	?	?
E	9	?	?
F	12	?	?
G	19	?	?

BASIN #	LOCATION (AT OUTLET)
1	-L- Sta. 27+58 RT.
?	?
?	?

-L- STA. 27+58 RT.

-L-
PI Sta 16+35.20
Δ = 20° 56' 29.0" (LT)
D = 3° 16' 26.6"
L = 639.62'
T = 323.42'
R = 1,750.00'
SE = 04

-Y-
PI Sta 21+17.78
Δ = 28° 45' 24.5" (RT)
D = 9° 32' 57.5"
L = 301.14'
T = 153.81'
R = 600.00'
SE = SEE PLANS

-L-
PI Sta 28+35.58
Δ = 28° 38' 49.7" (RT)
D = 4° 16' 32.9"
L = 669.98'
T = 342.15'
R = 1,340.00'
SE = 06

-Y2-
PI Sta 17+47.34
Δ = 33° 26' 13.0" (RT)
D = 15° 16' 43.9"
L = 218.84'
T = 112.64'
R = 375.00'
SE = SEE PLANS

☆ EXIST. SIGNAL TO BE UPGRADED

▭ MONOLITHIC CONC. ISLAND

SEE SHEET 2B-1 FOR TRAFFIC DIAGRAM
SEE SHEET 11 FOR -L- PROFILE
SEE SHEET 14 FOR -Y- PROFILE
SEE SHEET 14 FOR -Y1- PROFILE
SEE SHEET 15 FOR -Y2- PROFILE

REVISIONS

8/17/99

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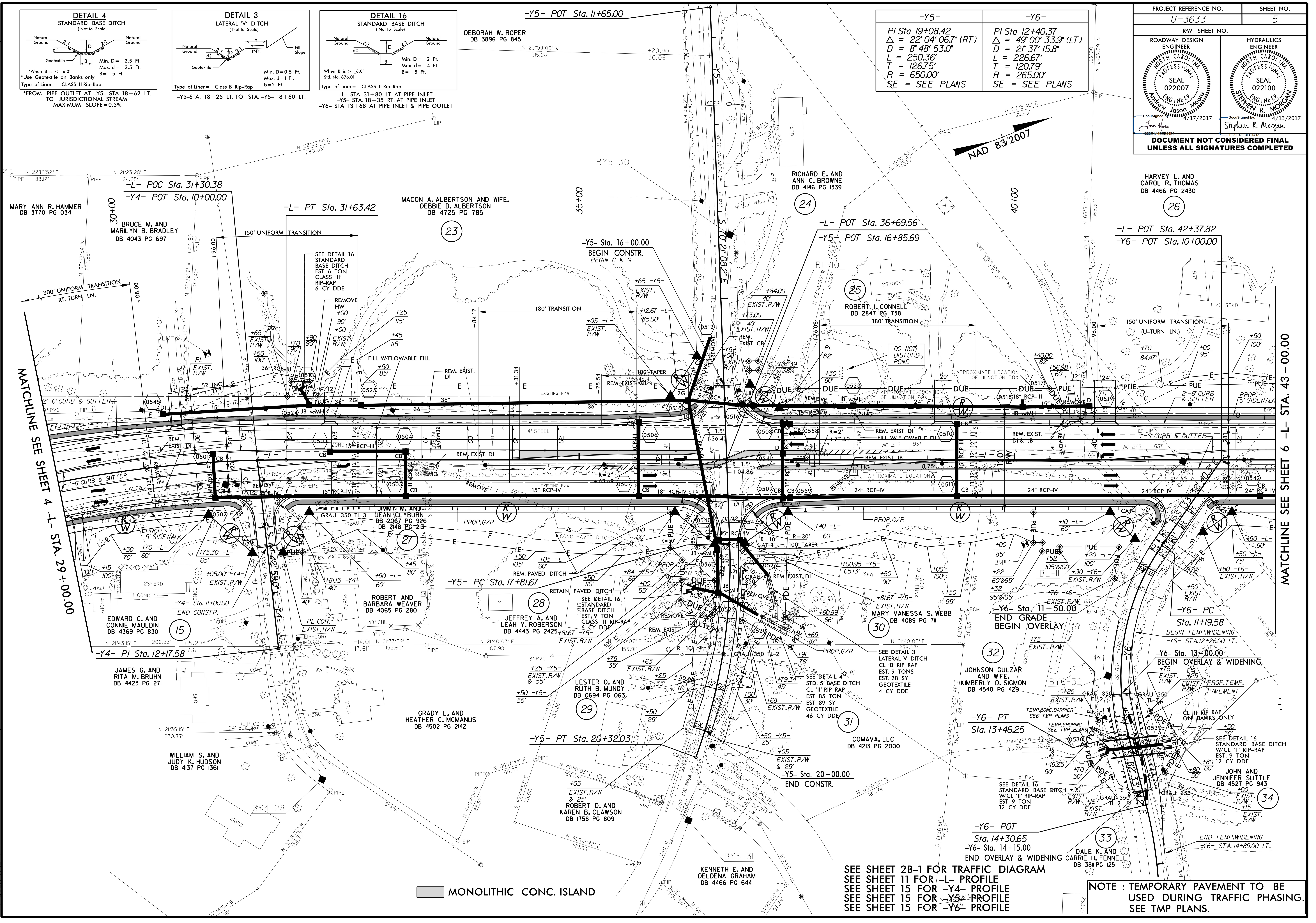
PROJECT REFERENCE NO.	SHEET NO.
U-3633	5
RW SHEET NO.	

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 022007 Andrew Jason Moon — DocuSigned by: 4/17/2017

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 022100 STEPHEN R. MORGAN — DocuSigned by: Stephen R. Morgan 4/13/2017

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

-Y5-	-Y6-
PI Sta 19+08.42	PI Sta 12+40.37
Δ = 22° 04' 06.7" (RT)	Δ = 49° 00' 33.9" (LT)
D = 8° 48' 53.0"	D = 21° 37' 15.8"
L = 250.36'	L = 226.67'
T = 126.75'	T = 120.79'
R = 650.00'	R = 265.00'
SE = SEE PLANS	SE = SEE PLANS



SEE SHEET 2B-1 FOR TRAFFIC DIAGRAM
SEE SHEET 11 FOR -L- PROFILE
SEE SHEET 15 FOR -Y4- PROFILE
SEE SHEET 15 FOR -Y5- PROFILE
SEE SHEET 15 FOR -Y6- PROFILE

NOTE : TEMPORARY PAVEMENT TO BE USED DURING TRAFFIC PHASING. SEE TMP PLANS.

8/17/99

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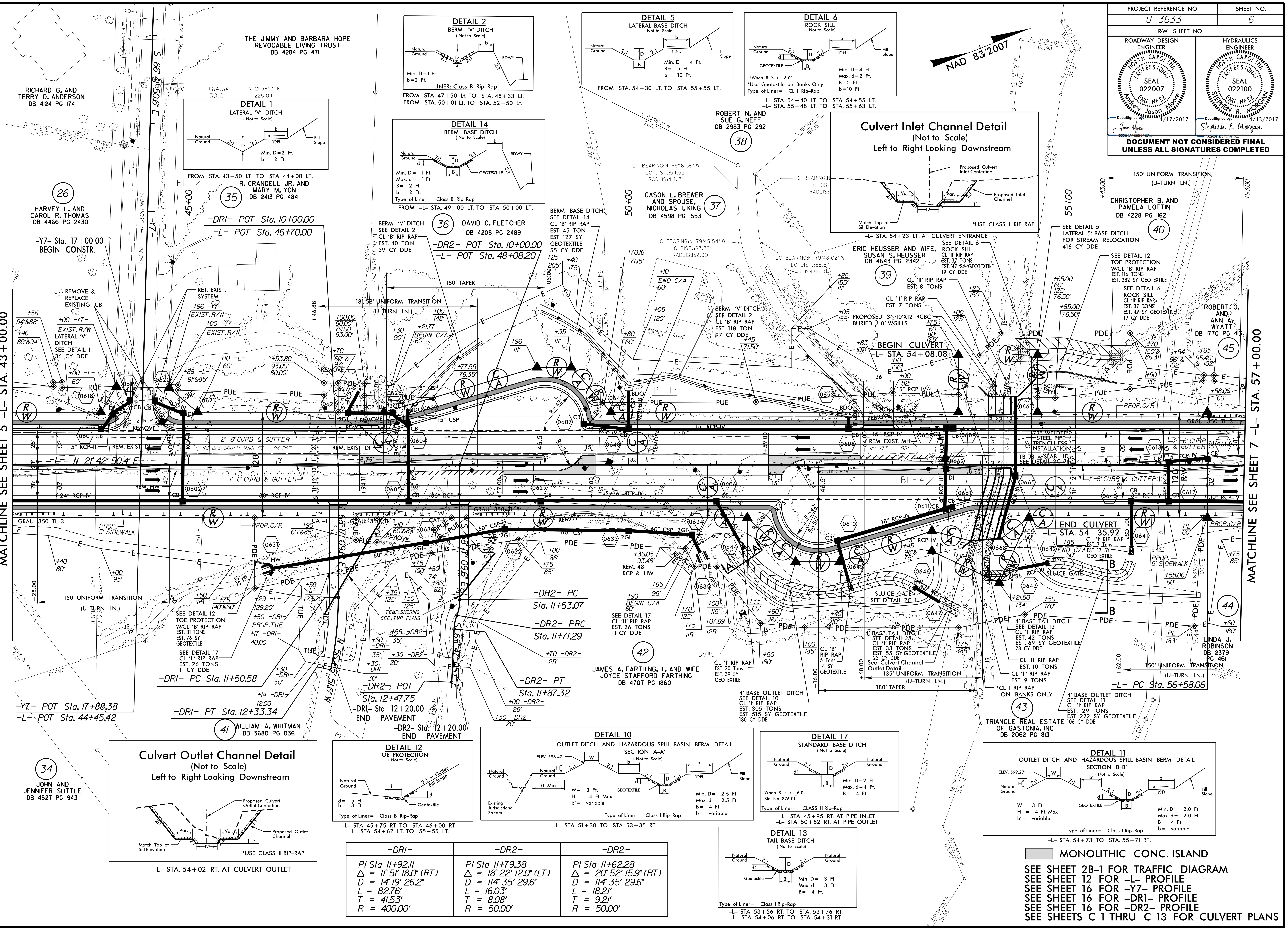
PROJECT REFERENCE NO.	SHEET NO.
U-3633	6
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 022007 ENGINEER Andrew Jason Moon 4/17/2017

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 022100 ENGINEER STEPHEN R. MORGAN 4/13/2017

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



NAD 83/2007
MATCHLINE SEE SHEET 5 -L- STA. 43+00.00
MATCHLINE SEE SHEET 7 -L- STA. 57+00.00
DETAIL 1 LATERAL 'V' DITCH (Not to Scale)
FROM STA. 43+50 LT. TO STA. 44+00 LT.
DETAIL 2 BERM 'V' DITCH (Not to Scale)
LINER: Class B Rip-Rap
FROM STA. 47+50 Lt. TO STA. 48+33 Lt.
FROM STA. 50+01 Lt. TO STA. 52+50 Lt.
DETAIL 14 BERM BASE DITCH (Not to Scale)
Type of Liner= Class B Rip-Rap
FROM -L- STA. 49+00 LT. TO STA. 50+00 LT.
DETAIL 5 LATERAL BASE DITCH (Not to Scale)
FROM STA. 54+30 LT. TO STA. 55+55 LT.
DETAIL 6 ROCK SILL (Not to Scale)
-L- STA. 54+40 LT. TO STA. 54+55 LT.
-L- STA. 55+48 LT. TO STA. 55+63 LT.
Culvert Inlet Channel Detail (Not to Scale) Left to Right Looking Downstream
*USE CLASS II RIP-RAP
-L- STA. 54+23 LT. AT CULVERT ENTRANCE
RICHARD G. AND TERRY D. ANDERSON DB 4124 PG 174
THE JIMMY AND BARBARA HOPE REVOCABLE LIVING TRUST DB 4284 PG 471
HARVEY L. AND CAROL R. THOMAS DB 4466 PG 2430
R. CRANDELL JR. AND MARY M. YON DB 2413 PG 484
DAVID C. FLETCHER DB 4208 PG 2489
ROBERT N. AND SUE G. NEFF DB 2983 PG 292
CASON L. BREWER AND SPOUSE, NICHOLAS I. KING DB 4598 PG 1553
ERIC HEUSSER AND WIFE, SUSAN S. HEUSSER DB 4643 PG 2342
CHRISTOPHER B. AND PAMELA LOFTIN DB 4228 PG 1162
ROBERT O. AND ANN A. WYATT DB 1770 PG 413
-Y7- Sta. 17+00.00 BEGIN CONSTR.
-DR1- POT Sta. 10+00.00 -L- POT Sta. 46+70.00
-DR2- POT Sta. 10+00.00 -L- POT Sta. 48+08.20
BEGIN CULVERT -L- STA. 54+08.08
END CULVERT -L- STA. 54+35.92
PROPOSED 3@10'X12 RCBC BURIED 1.0' W/SILLS
-L- N 21° 42' 50.4" E
-Y7- POT Sta. 17+88.38 -L- POT Sta. 44+45.42
-DR1- PC Sta. 11+50.58
-DR1- PT Sta. 12+33.34
-DR2- PC Sta. 11+53.07
-DR2- PRC Sta. 11+71.29
-DR2- PT Sta. 11+87.32
-DR2- POT Sta. 12+47.75
-DR1- Sta. 12+20.00 END PAVEMENT
-DR2- Sta. 12+20.00 END PAVEMENT
-L- PC Sta. 56+58.06
WILLIAM A. WHITMAN DB 3680 PG 036
JAMES A. FARTHING, III, AND WIFE JOYCE STAFFORD FARTHING DB 4707 PG 1860
TRIANGLE REAL ESTATE OF GASTONIA, INC DB 2062 PG 813
LINDA J. ROBINSON DB 2379 PG 461
JOHN AND JENNIFER SUTTLE DB 4527 PG 943
Culvert Outlet Channel Detail (Not to Scale) Left to Right Looking Downstream
*USE CLASS II RIP-RAP
-L- STA. 54+02 RT. AT CULVERT OUTLET
DETAIL 12 TOE PROTECTION (Not to Scale)
Type of Liner= Class B Rip-Rap
-L- STA. 45+75 RT. TO STA. 46+00 RT.
-L- STA. 54+62 LT. TO STA. 55+55 LT.
DETAIL 10 OUTLET DITCH AND HAZARDOUS SPILL BASIN BERM DETAIL SECTION A-A' (Not to Scale)
Type of Liner= Class I Rip-Rap
-L- STA. 51+30 TO STA. 53+35 RT.
DETAIL 17 STANDARD BASE DITCH (Not to Scale)
Type of Liner= CLASS II Rip-Rap
-L- STA. 45+95 RT. AT PIPE INLET
-L- STA. 50+82 RT. AT PIPE OUTLET
DETAIL 13 TAIL BASE DITCH (Not to Scale)
Type of Liner= Class I Rip-Rap
-L- STA. 53+56 RT. TO STA. 53+76 RT.
-L- STA. 54+06 RT. TO STA. 54+31 RT.
DETAIL 11 OUTLET DITCH AND HAZARDOUS SPILL BASIN BERM DETAIL SECTION B-B' (Not to Scale)
Type of Liner= Class I Rip-Rap
-L- STA. 54+73 TO STA. 55+71 RT.

-DR1-	-DR2-	-DR2-
PI Sta 11+92.11	PI Sta 11+79.38	PI Sta 11+62.28
Δ = 11° 51' 18.0" (RT)	Δ = 18° 22' 12.0" (LT)	Δ = 20° 52' 15.9" (RT)
D = 14° 19' 26.2"	D = 114° 35' 29.6"	D = 114° 35' 29.6"
L = 82.76'	L = 16.03'	L = 18.21'
T = 41.53'	T = 8.08'	T = 9.21'
R = 400.00'	R = 50.00'	R = 50.00'

MONOLITHIC CONC. ISLAND

SEE SHEET 2B-1 FOR TRAFFIC DIAGRAM
SEE SHEET 12 FOR -L- PROFILE
SEE SHEET 16 FOR -Y7- PROFILE
SEE SHEET 16 FOR -DR1- PROFILE
SEE SHEET 16 FOR -DR2- PROFILE
SEE SHEETS C-1 THRU C-13 FOR CULVERT PLANS

REVISIONS

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
U-3633	7
RW SHEET NO.	

ROADWAY DESIGN ENGINEER — SEAL 022007 — Andrew Jason Moore — 4/17/2017

HYDRAULICS ENGINEER — SEAL 022100 — Stephen R. Morgan — 4/13/2017

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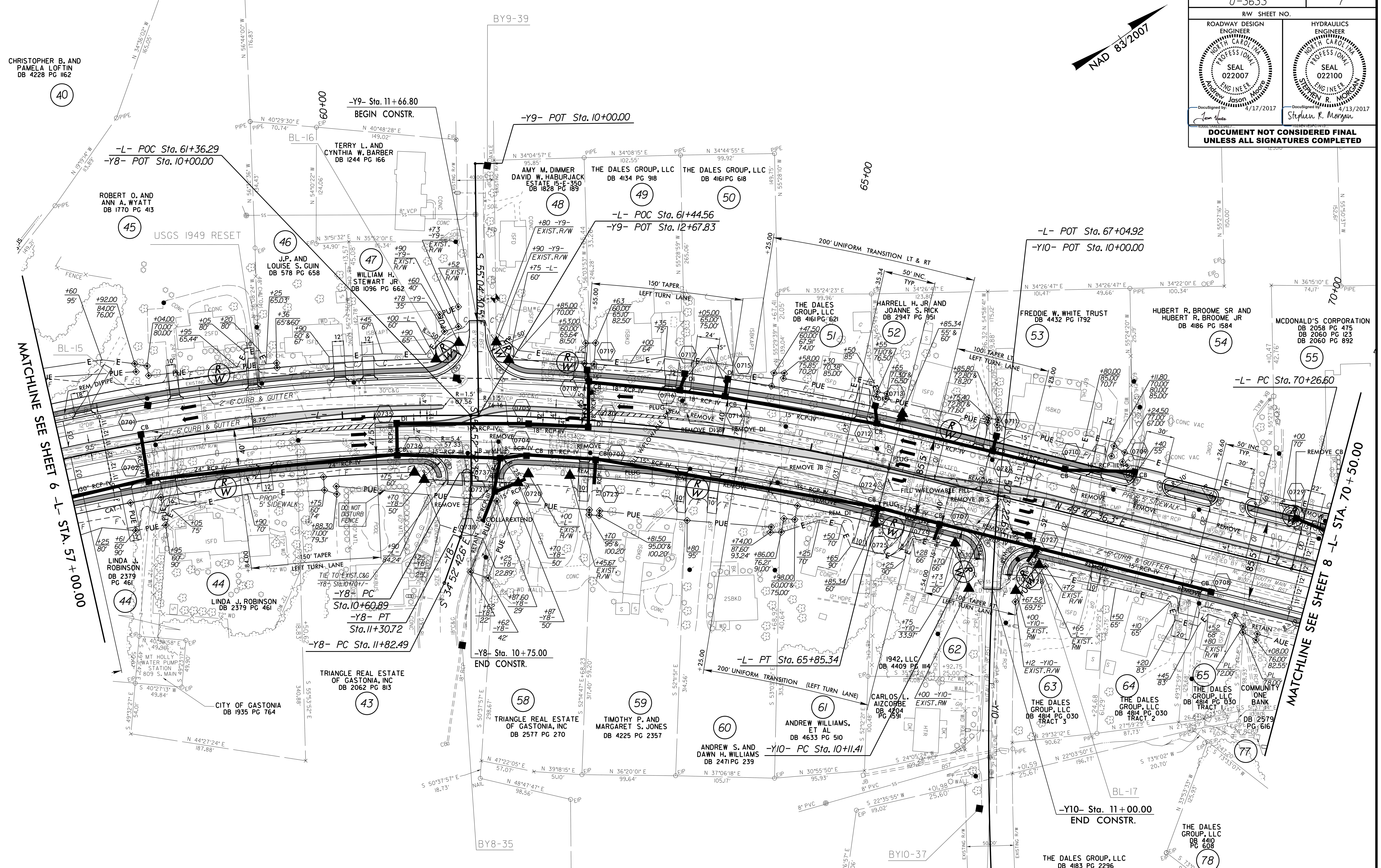
REVISIONS



NAD 83/2007
MATCHLINE SEE SHEET 6 -L- STA. 57+00.00
MATCHLINE SEE SHEET 8 -L- STA. 70+50.00
-Y9- Sta. 11+66.80
BEGIN CONSTR.
-Y9- POT Sta. 10+00.00
-L- POC Sta. 61+36.29
-Y8- POT Sta. 10+00.00
-L- POC Sta. 61+44.56
-Y9- POT Sta. 12+67.83
-L- POT Sta. 67+04.92
-Y10- POT Sta. 10+00.00
-L- PC Sta. 70+26.60
-L- PT Sta. 65+85.34
-Y10- PC Sta. 10+11.41
-Y10- Sta. 11+00.00
END CONSTR.
-Y10- PT Sta. 14+29.61
-Y8- PC Sta. 10+60.89
-Y8- PT Sta. 11+30.72
-Y8- PC Sta. 11+82.49
-Y8- Sta. 10+75.00
END CONSTR.
200' UNIFORM TRANSITION LT & RT
200' UNIFORM TRANSITION (LEFT TURN LANE)
150' TAPER LEFT TURN LANE
100' TAPER LT LEFT TURN LANE
CHRISTOPHER B. AND PAMELA LOFTIN DB 4228 PG 1162
ROBERT O. AND ANN A. WYATT DB 1770 PG 413
J.P. AND LOUISE S. GUIN DB 578 PG 658
WILLIAM H. STEWART JR DB 1096 PG 662
TERRY L. AND CYNTHIA W. BARBER DB 1244 PG 166
AMY M. DIMMER DAVID W. HABURJACK ESTATE 15-E-350 DB 1828 PG 189
THE DALES GROUP, LLC DB 4134 PG 918
THE DALES GROUP, LLC DB 4161 PG 618
THE DALES GROUP, LLC DB 4161 PG 621
HARRELL H. JR AND JOANNE S. RICK DB 2947 PG 951
FREDDIE W. WHITE TRUST DB 4432 PG 1792
HUBERT R. BROOME SR AND HUBERT R. BROOME JR DB 4186 PG 1584
MCDONALD'S CORPORATION DB 2058 PG 475 DB 2060 PG 123 DB 2060 PG 892
LINDA J. ROBINSON DB 2379 PG 461
TRIANGLE REAL ESTATE OF GASTONIA, INC DB 2062 PG 813
CITY OF GASTONIA DB 1935 PG 764
TRIANGLE REAL ESTATE OF GASTONIA, INC DB 2577 PG 270
TIMOTHY P. AND MARGARET S. JONES DB 4225 PG 2357
ANDREW S. AND DAWN H. WILLIAMS DB 2471 PG 239
ANDREW WILLIAMS, ET AL DB 4633 PG 510
CARLOS L. AIZCORBE DB 4204 PG 1591
1942, LLC DB 4409 PG 1114
THE DALES GROUP, LLC DB 4814 PG 030 TRACT 3
THE DALES GROUP, LLC DB 4814 PG 030 TRACT 2
THE DALES GROUP, LLC DB 4814 PG 030 TRACT 1
COMMUNITY ONE BANK DB 2579 PG 616
THE DALES GROUP, LLC DB 4410 PG 608
THE DALES GROUP, LLC DB 4183 PG 2296
JOHN M. MANESS DB 2718 PG 740
MT HOLLY WATER PUMP STATION 809 S. MAIN
USGS 1949 RESET
BY9-39
BY8-35
BY10-37
BL-15
BL-16
BL-17
2' 6" CURB & GUTTER
PROP. 5' SIDEWALK
MONOLITHIC CONC. ISLAND

-L-	-Y8-	-Y10-
PI Sta 61+31.13	PI Sta 10+96.16	PI Sta 12+20.75
Δ = 27° 57' 46.0" (RT)	Δ = 20° 00' 09.8" (RT)	Δ = 6° 44' 58.8" (LT)
D = 3° 00' 56.0"	D = 28° 38' 52.4"	D = 1° 36' 50.3"
L = 927.28'	L = 69.82'	L = 418.20'
T = 473.07'	T = 35.27'	T = 209.34'
R = 1,900.00'	R = 200.00'	R = 3,550.00'
SE = 04	SE = SEE PLANS	SE = SEE PLANS

SEE SHEET 2B-1 FOR TRAFFIC DIAGRAM
SEE SHEET 12 FOR -L- PROFILE
SEE SHEET 16 FOR -Y8- PROFILE
SEE SHEET 16 FOR -Y9- PROFILE
SEE SHEET 16 FOR -Y10- PROFILE

8/17/99

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PROJECT REFERENCE NO.	SHEET NO.
U-3633	8
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER — SEAL 022007 — Andrew Jason Moore — 4/17/2017

HYDRAULICS ENGINEER — SEAL 022100 — Stephen R. Morgan — 4/13/2017

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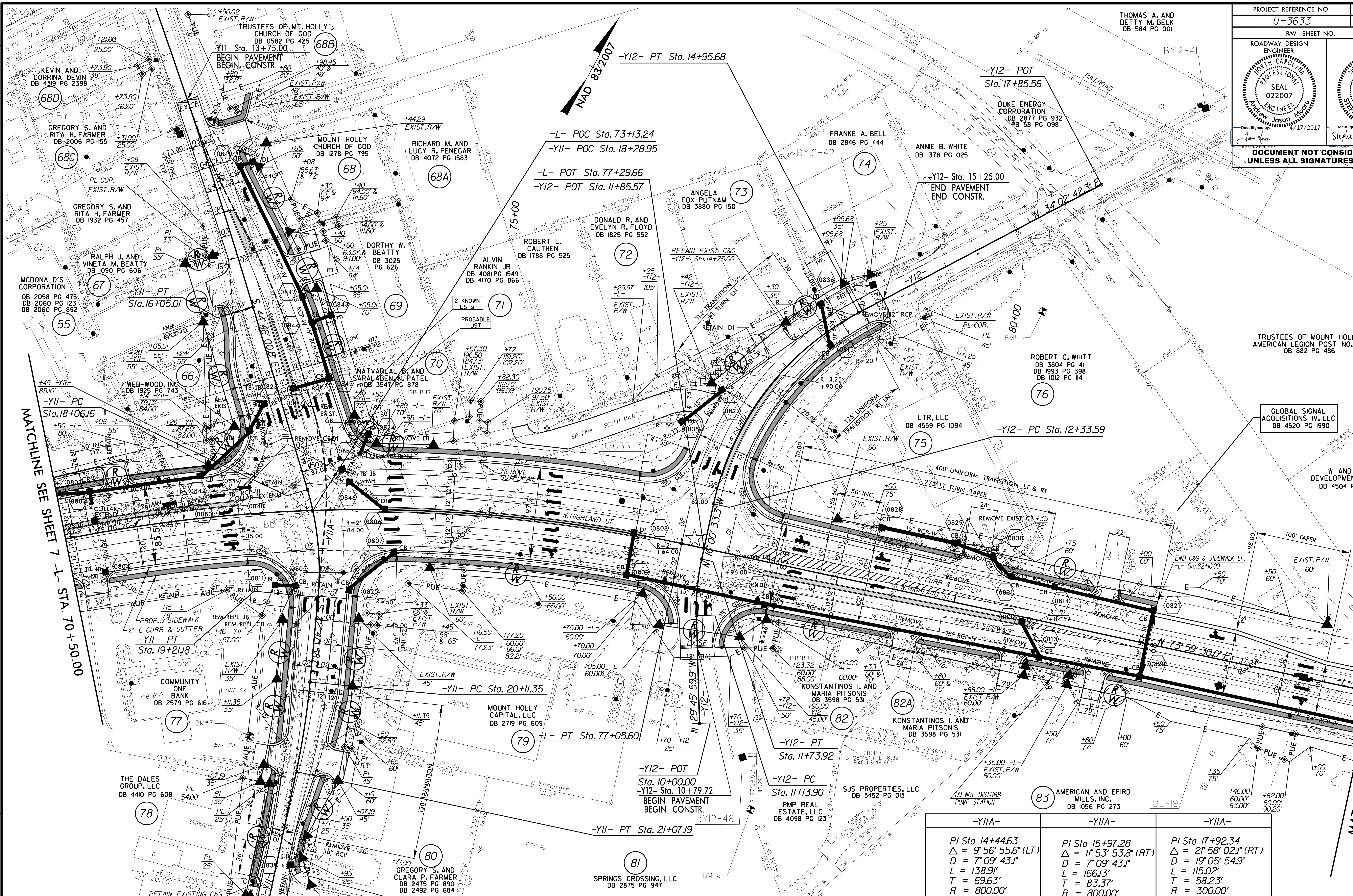


NAD 83/2007
MATCHLINE SEE SHEET 7 -L- STA. 70+50.00
MATCHLINE SEE SHEET 9 -L- STA. 84+50.00
-L- POC Sta. 73+13.24
-Y11- POC Sta. 18+28.95
-L- POT Sta. 77+29.66
-Y12- POT Sta. 11+85.57
-Y12- PT Sta. 14+95.68
-Y12- POT Sta. 17+85.56
-Y12- Sta. 15+25.00
END PAVEMENT
END CONSTR.
-Y12- PC Sta. 12+33.59
-Y11- Sta. 13+75.00
BEGIN PAVEMENT
BEGIN CONSTR.
-Y11- PT Sta.16+05.01
-Y11- PC Sta.18+06.16
-Y11- PT Sta. 19+21.18
-Y11- PC Sta. 20+11.35
-L- PT Sta. 77+05.60
-Y12- POT Sta. 10+00.00
-Y12- Sta. 10+79.72
BEGIN PAVEMENT
BEGIN CONSTR.
-Y12- PC Sta. 11+13.90
-Y12- PT Sta. 11+73.92
-Y11- PT Sta. 21+07.19
-Y11- Sta. 22+73.00
END PAVEMENT
END CONSTR.
N 73°59' 30.0" E
N 34°02' 42.3" E
N 18°00' 33.3" W
N 29°45' 59.9" W
S 44°46' 00.8" E
400' UNIFORM TRANSITION LT & RT
275' LT. TURN TAPER
125' UNIFORM TRANSITION RT LN.
114' TRANSITION RT TURN LN.
100' TAPER
150' TRANSITION
N. HIGHLAND ST.
SOUTH MAIN ST
OAK GROVE DR
RAILROAD
THOMAS A. AND BETTY M. BELK DB 584 PG 001
TRUSTEES OF MT. HOLLY CHURCH OF GOD DB 0582 PG 425
KEVIN AND CORRINA DEVIN DB 4319 PG 2398
GREGORY S. AND RITA H. FARMER DB 2006 PG 155
MOUNT HOLLY CHURCH OF GOD DB 1278 PG 795
RICHARD M. AND LUCY R. PENEGAR DB 4072 PG 1583
GREGORY S. AND RITA H. FARMER DB 1932 PG 457
RALPH J. AND VINETA M. BEATTY DB 1090 PG 606
DORTHY W. BEATTY DB 3025 PG 626
MCDONALD'S CORPORATION DB 2058 PG 475 DB 2060 PG 123 DB 2060 PG 892
ALVIN RANKIN JR DB 4081 PG 1549 DB 4170 PG 866
ROBERT L. CAUTHEN DB 1788 PG 525
DONALD R. AND EVELYN R. FLOYD DB 1825 PG 552
ANGELA FOX-PUTNAM DB 3880 PG 150
FRANKE A. BELL DB 2846 PG 444
ANNIE B. WHITE DB 1378 PG 025
DUKE ENERGY CORPORATION DB 2877 PG 932 PB 58 PG 098
WEB-WOOD, INC. DB 1925 PG 743
NATVARLAL B. AND SARALABEN N. PATEL DB 3547 PG 878
TRUSTEES OF MOUNT HOLLY AMERICAN LEGION POST NO. 152 DB 882 PG 486
ROBERT C. WHITT DB 3804 PG 41 DB 1993 PG 398 DB 1012 PG 114
GLOBAL SIGNAL ACQUISITIONS IV, LLC DB 4520 PG 1990
LTR, LLC DB 4559 PG 1094
W AND B DEVELOPMENT, LLC DB 4504 PG 551
COMMUNITY ONE BANK DB 2579 PG 616
MOUNT HOLLY CAPITAL, LLC DB 2719 PG 609
KONSTANTINOS I. AND MARIA PITSONIS DB 3598 PG 531
THE DALES GROUP, LLC DB 4410 PG 608
SJS PROPERTIES, LLC DB 3452 PG 013
PMP REAL ESTATE, LLC DB 4098 PG 123
GREGORY S. AND CLARA P. FARMER DB 2475 PG 890 DB 2492 PG 684
SPRINGS CROSSING, LLC DB 2875 PG 947
AMERICAN AND EFIRD MILLS, INC. DB 1056 PG 273
MT HOLLY BOARD OF ALCOHOLIC DB 4374 PG 2319
GREGORY S. FARMER DB 4087 PG 090
DO NOT DISTURB PUMP STATION
RETAIN EXISTING C&G

-Y11A-	-Y11A-	-Y11A-
PI Sta 14+44.63	PI Sta 15+97.28	PI Sta 17+92.34
Δ = 9° 56' 55.6" (LT)	Δ = 11° 53' 53.8" (RT)	Δ = 21° 58' 02.1" (RT)
D = 7° 09' 43.1"	D = 7° 09' 43.1"	D = 19° 05' 54.9"
L = 138.91'	L = 166.13'	L = 115.02'
T = 69.63'	T = 83.37'	T = 58.23'
R = 800.00'	R = 800.00'	R = 300.00'

-L-	-Y11-	-Y11-	-Y11-	-Y12-	-Y12-
PI Sta 73+71.29	PI Sta 13+48.15	PI Sta 18+64.38	PI Sta 20+59.32	PI Sta 11+44.05	PI Sta 13+73.66
Δ = 24° 18' 53.7" (RT)	Δ = 4° 21' 22.3" (RT)	Δ = 21° 58' 02.1" (RT)	Δ = 6° 41' 48.8" (RT)	Δ = 13° 45' 26.5" (RT)	Δ = 50° 03' 15.6" (RT)
D = 3° 34' 51.6"	D = 0° 50' 51.3"	D = 19° 05' 54.9"	D = 6° 59' 14.2"	D = 22° 55' 05.9"	D = 19° 05' 54.9"
L = 679.00'	L = 513.96'	L = 115.02'	L = 95.84'	L = 60.03'	L = 262.08'
T = 344.69'	T = 257.11'	T = 58.23'	T = 47.98'	T = 30.16'	T = 140.07'
R = 1,600.00'	R = 6,760.00'	R = 300.00'	R = 820.00'	R = 250.00'	R = 300.00'
SE = 03	SE = SEE PLANS	SE = SEE PLANS	SE = SEE PLANS	SE = SEE PLANS	SE = SEE PLANS

☆ EXIST. SIGNAL TO BE UPGRADED

MONOLITHIC CONC. ISLAND

SEE SHEET 2B-1 FOR TRAFFIC DIAGRAM
SEE SHEET 13 FOR -L- PROFILE
SEE SHEET 17 FOR -Y11- PROFILE
SEE SHEET 17 FOR -Y12- PROFILE

8/17/99


PROJECT REFERENCE NO. U-3633
SHEET NO. 9
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 022007 ENGINEER Andrew Jason Moore
4/17/2017
NORTH CAROLINA PROFESSIONAL SEAL 022100 ENGINEER STEPHEN R. MORGAN
4/13/2017
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
NAD 83/2007
-L- PT Sta. 95+08.32
95+00
-L- PC Sta. 89+61.77
90+00
85+00
W AND B DEVELOPMENT, LLC DB 4504 PG 551
JAMES C. SUMMERLIN AND ANNA E. BLACK DB 3791 PG 909
ANGELA D. BURGESS DB 3681 PG 714
BL-20
S 30° PT 56.5' W
SEABOARD COASTLINE RAILROAD
MATCHLINE SEE SHEET 8 -L- STA. 84+50.00
-L- N 73° 59' 30.0" E
REMOVE PORTION
RETAIN
GRADE TO DRAIN
END CURB & GUTTER AND SIDEWALK
CL. 'B' RIP RAP EST. 2 TONS 7 SY GEOTEXTILE
EXIST. R/W
BM#9
BM#10
END T.I.P. PROJECT U-3633
-L- POC STA. 91+00.00
AMERICAN AND EFIRD MILLS, INC. DB 2619 PG 875 PB 55 PG 2
AMERICAN AND EFIRD MILLS, INC. DB 946 PG 674
AMERICAN AND EFIRD MILLS, INC. DB 1056 PG 273
83
U3633-4
-L-
PI Sta 92+48.97
Δ = 43° 29' 33.6" (LT)
D = 7° 57' 27.9"
L = 546.54'
T = 287.20'
R = 720.00'
SE = 04
EXIST. SIGNAL TO BE UPGRADED
SEE SHEET 13 FOR -L- PROFILE
REVISIONS
8/17/99

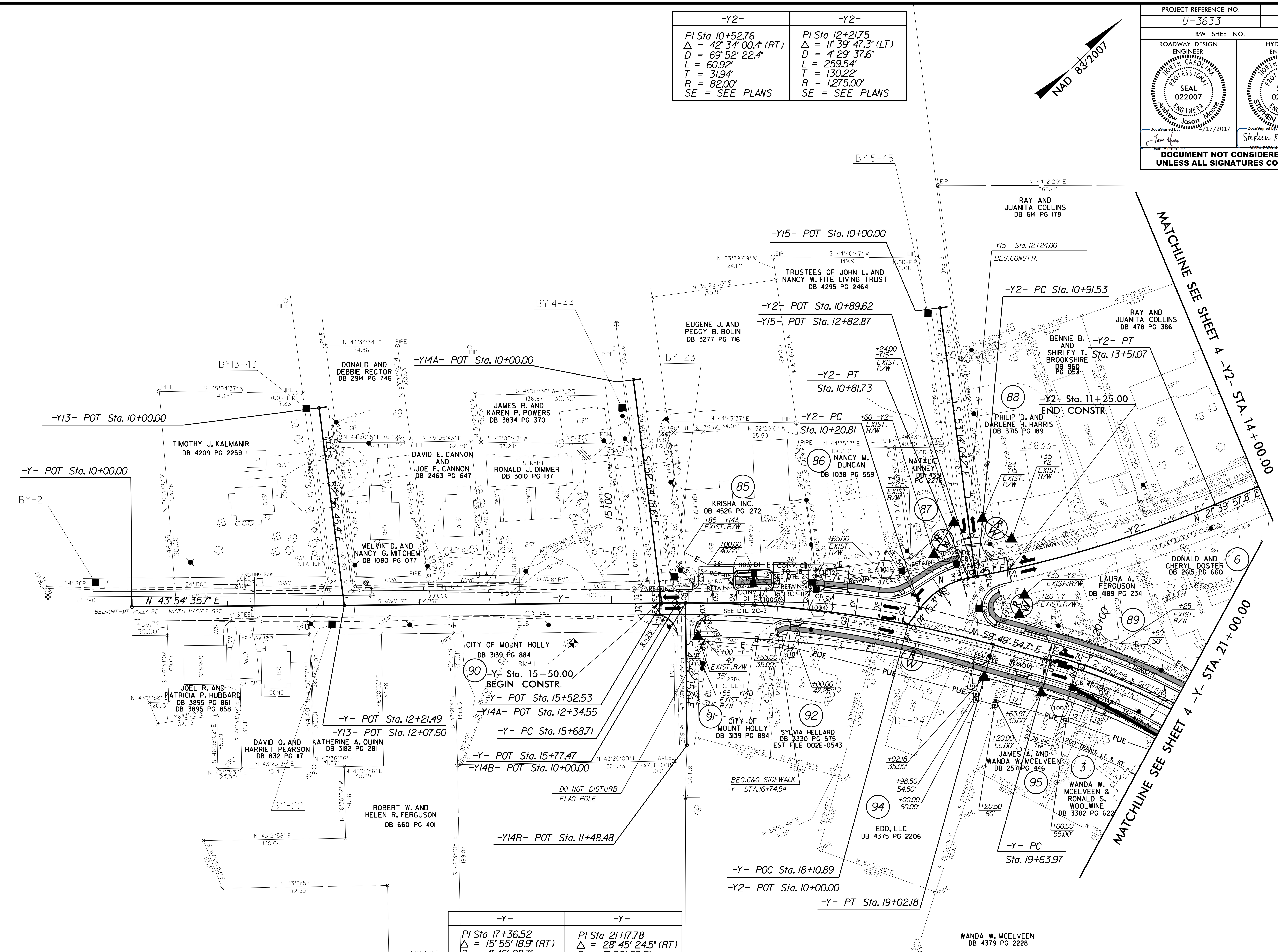
PROJECT REFERENCE NO.	SHEET NO.
U-3633	10
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 022007, Andrew Jason Moore, 4/17/2017

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 022100, STEPHEN R. MORGAN, 4/13/2017

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

-Y2-	-Y2-
PI Sta 10+52.76	PI Sta 12+21.75
△ = 42° 34' 00.4" (RT)	△ = 11° 39' 47.3" (LT)
D = 69° 52' 22.4"	D = 4° 29' 37.6"
L = 60.92'	L = 259.54'
T = 31.94'	T = 130.22'
R = 82.00'	R = 1,275.00'
SE = SEE PLANS	SE = SEE PLANS



-Y-	-Y-
PI Sta 17+36.52	PI Sta 21+17.78
△ = 15° 55' 18.9" (RT)	△ = 28° 45' 24.5" (RT)
D = 4° 46' 28.7"	D = 9° 32' 57.5"
L = 333.47'	L = 301.14'
T = 167.82'	T = 153.81'
R = 1,200.00'	R = 600.00'
SE = SEE PLANS	SE = SEE PLANS

SEE SHEET 10 FOR -Y- PROFILE
SEE SHEET 15 FOR -Y2- PROFILE

REVISIONS

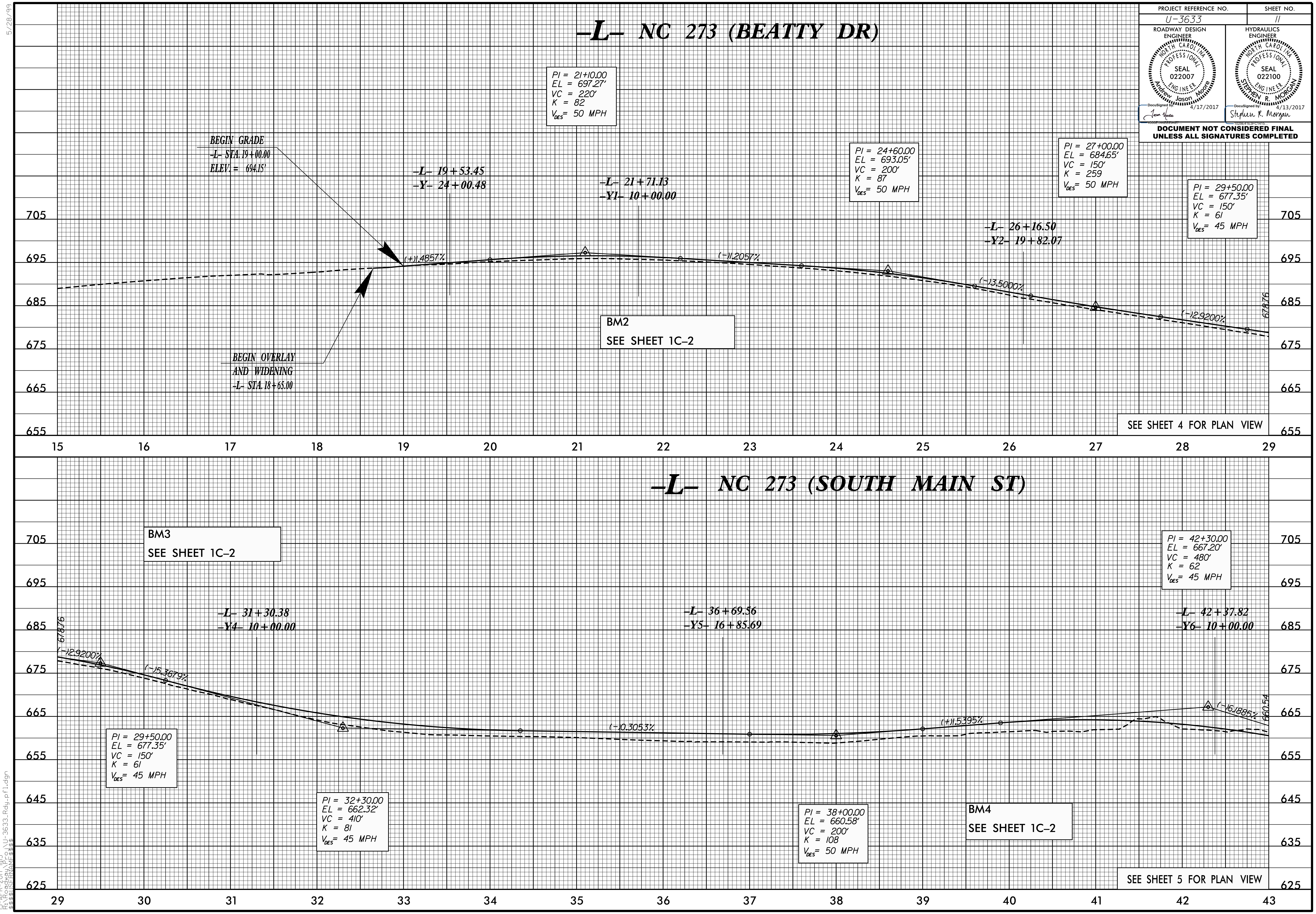
8/17/99

PROJECT REFERENCE NO.	SHEET NO.
U-3633	11

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 022007 ENGINEER Andrew Jason Moore
DocuSigned by: Jason Moore 4066E1A4EEE94E7... 4/17/2017

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 022100 ENGINEER STEPHEN R. MORGAN
DocuSigned by: Stephen R. Morgan 1029E41E3FC1415... 4/13/2017

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



5/28/99

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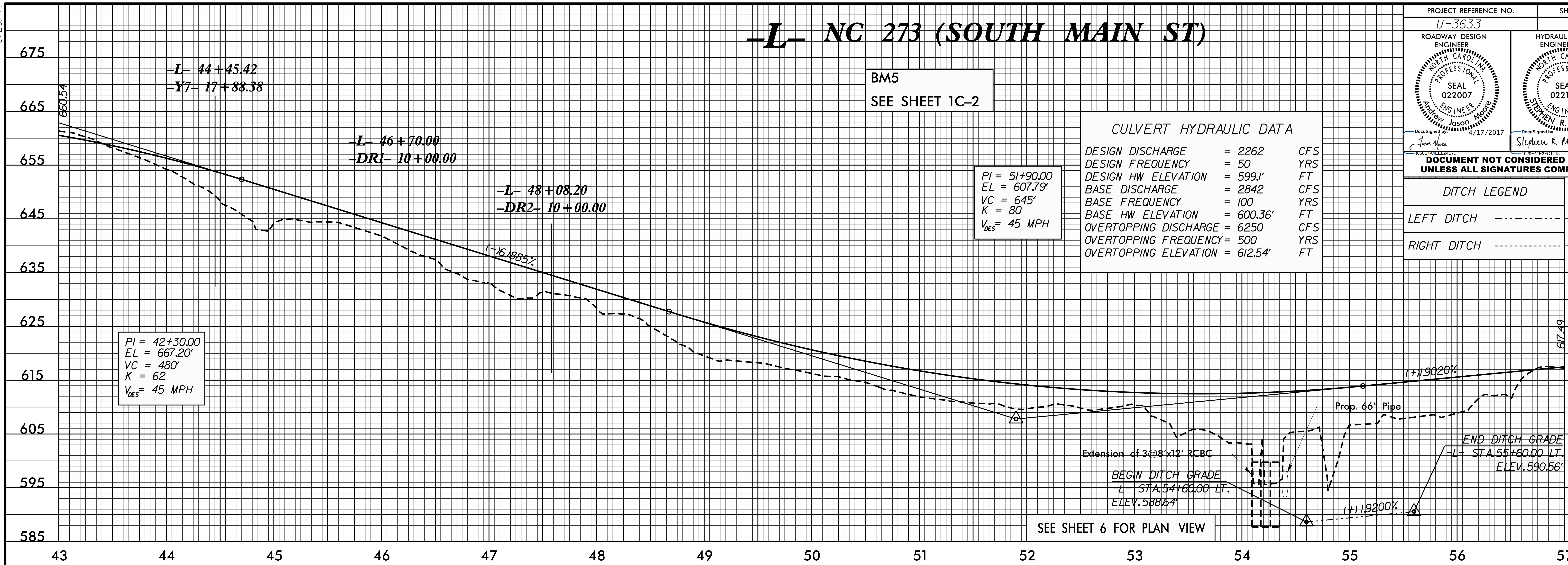
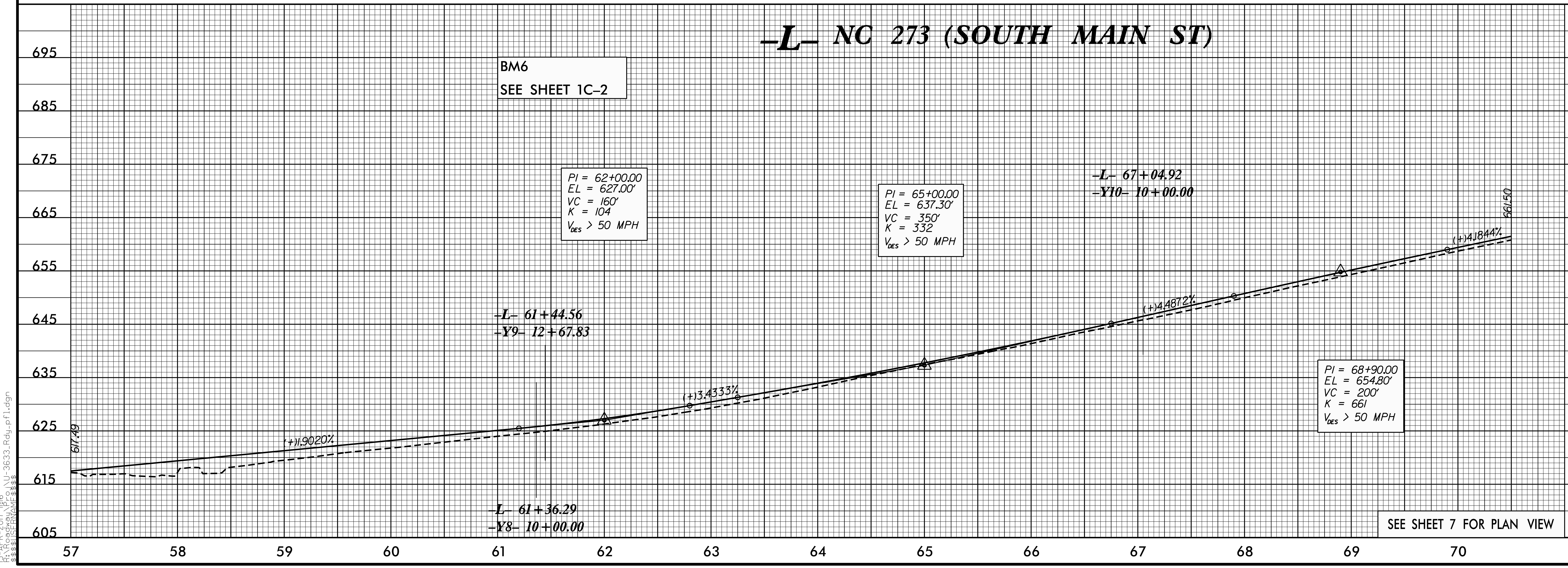
PROJECT REFERENCE NO.	SHEET NO.
U-3633	12

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 022007 Andrew Jason Moore — DocuSigned by: 4/17/2017

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 022100 STEPHEN R. MORGAN — DocuSigned by: Stephen R. Morgan 4/13/2017

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED





5/28/99

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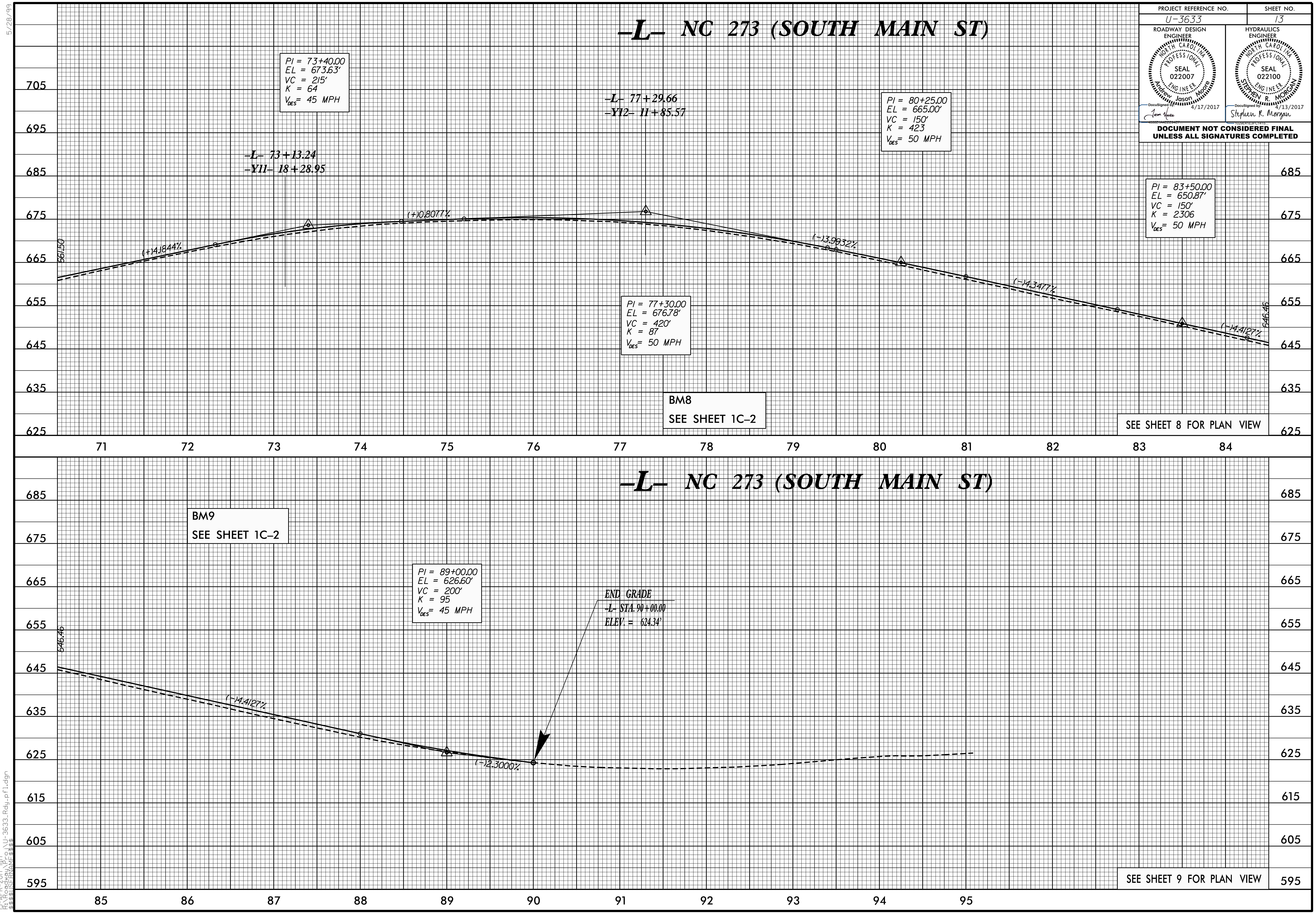
PROJECT REFERENCE NO.	SHEET NO.
U-3633	13

ROADWAY DESIGN ENGINEER — SEAL 022007, Andrew Jason Moore — DocuSigned by: Jason Moore 4/17/2017 — 4066E1A4EEE94E7...

HYDRAULICS ENGINEER — SEAL 022100, STEPHEN R. MORGAN — DocuSigned by: Stephen R. Morgan 4/13/2017 — 1029E41E3FC1415...

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



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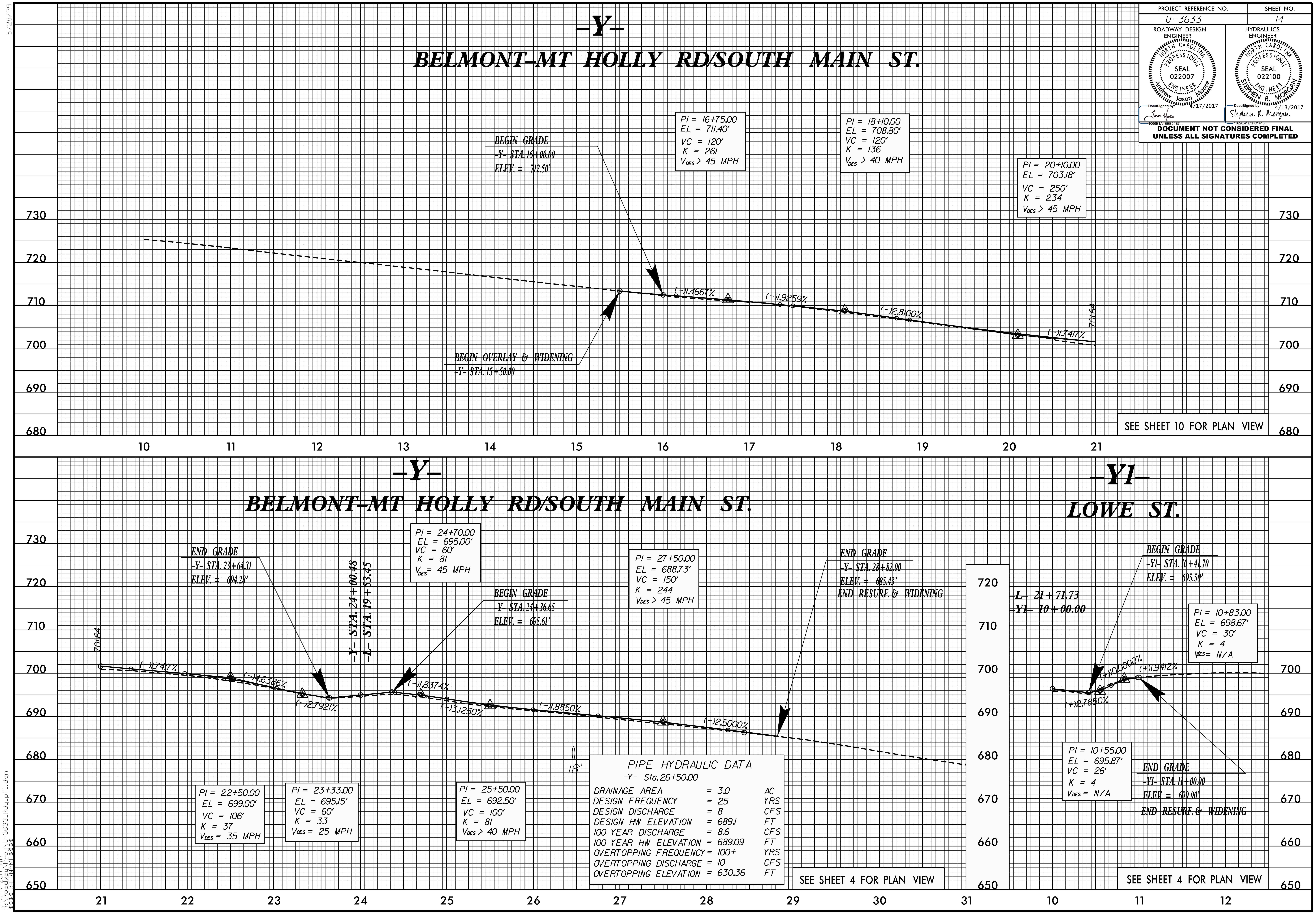
PROJECT REFERENCE NO.	SHEET NO.
U-3633	14

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 022007, Andrew Jason Moore — DocuSigned by: Jason Moore 4066E1A4EEE94E7... 4/17/2017

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 022100, STEPHEN R. MORGAN — DocuSigned by: Stephen R. Morgan 1029E41E3FC1415... 4/13/2017

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



PIPE HYDRAULIC DATA
-Y- Sta. 26+50.00

DRAINAGE AREA	= 3.0	AC
DESIGN FREQUENCY	= 25	YRS
DESIGN DISCHARGE	= 8	CFS
DESIGN HW ELEVATION	= 689.1	FT
100 YEAR DISCHARGE	= 8.6	CFS
100 YEAR HW ELEVATION	= 689.09	FT
OVERTOPPING FREQUENCY	= 100+	YRS
OVERTOPPING DISCHARGE	= 10	CFS
OVERTOPPING ELEVATION	= 630.36	FT

5/28/99

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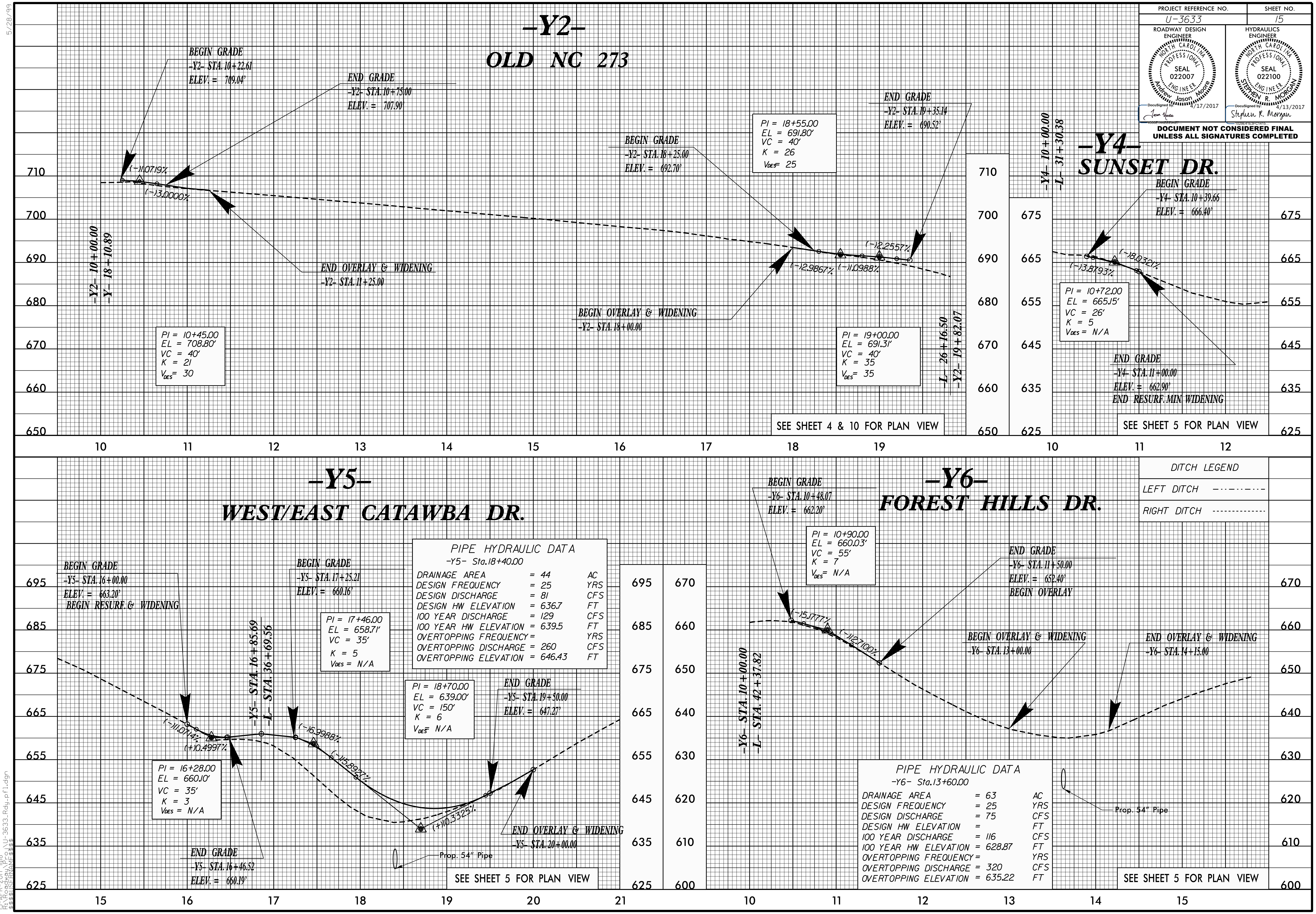
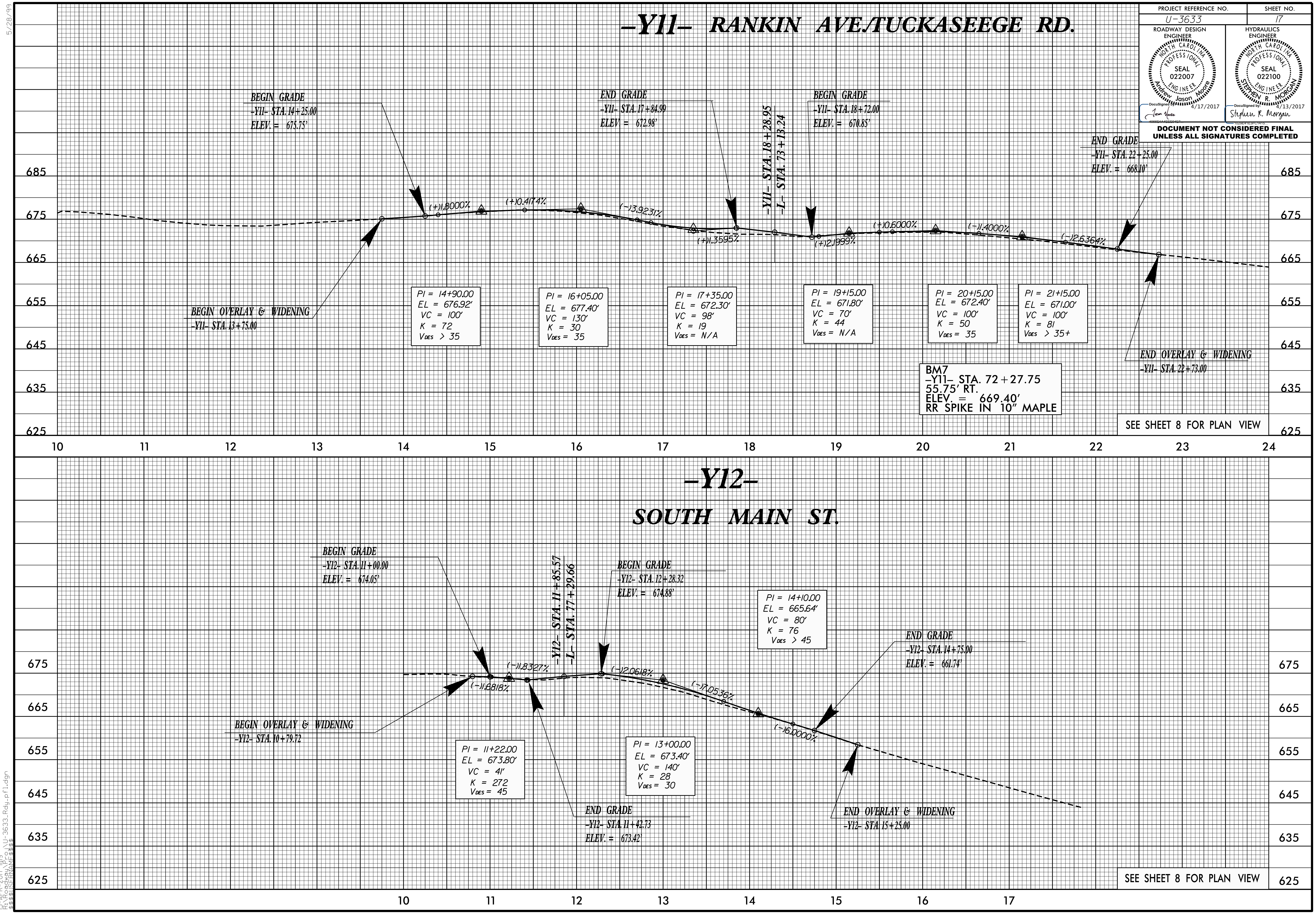


PROJECT REFERENCE NO. U-3633
SHEET NO. 15
ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 022007 ENGINEER Andrew Jason Moore
5/17/2017
HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 022100 ENGINEER STEPHEN R. MORGAN
4/13/2017
Stephen R. Morgan
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
-Y2-
OLD NC 273
BEGIN GRADE
-Y2- STA. 10+22.61
ELEV. = 709.04'
END GRADE
-Y2- STA. 10+75.00
ELEV. = 707.90
(-)1.0719%
(-)3.0000%
END OVERLAY & WIDENING
-Y2- STA. 11+25.00
-Y2- 10+00.00
-Y- 18+10.89
PI = 10+45.00
EL = 708.80'
VC = 40'
K = 21
VDES = 30
BEGIN GRADE
-Y2- STA. 18+25.00
ELEV. = 692.70'
PI = 18+55.00
EL = 691.80'
VC = 40'
K = 26
VDES = 25
END GRADE
-Y2- STA. 19+35.14
ELEV. = 690.52'
(-)2.2557%
(-)2.9867%
(-)1.0988%
BEGIN OVERLAY & WIDENING
-Y2- STA. 18+00.00
PI = 19+00.00
EL = 691.31'
VC = 40'
K = 35
VDES = 35
-L- 26+16.50
-Y2- 19+82.07
SEE SHEET 4 & 10 FOR PLAN VIEW
-Y4- 10+00.00
-L- 31+30.38
-Y4-
SUNSET DR.
BEGIN GRADE
-Y4- STA. 10+39.66
ELEV. = 666.40'
(-)8.0321%
(-)3.8793%
PI = 10+72.00
EL = 665.15'
VC = 26'
K = 5
VDES = N/A
END GRADE
-Y4- STA. 11+00.00
ELEV. = 662.90'
END RESURF. MIN WIDENING
SEE SHEET 5 FOR PLAN VIEW
-Y5-
WEST/EAST CATAWBA DR.
BEGIN GRADE
-Y5- STA. 16+00.00
ELEV. = 663.20'
BEGIN RESURF. & WIDENING
-Y5- STA. 16+85.69
-L- STA. 36+69.56
BEGIN GRADE
-Y5- STA. 17+25.21
ELEV. = 660.16'
PI = 17+46.00
EL = 658.71'
VC = 35'
K = 5
VDES = N/A
PIPE HYDRAULIC DATA
-Y5- Sta. 18+40.00
DRAINAGE AREA = 44 AC
DESIGN FREQUENCY = 25 YRS
DESIGN DISCHARGE = 81 CFS
DESIGN HW ELEVATION = 636.7 FT
100 YEAR DISCHARGE = 129 CFS
100 YEAR HW ELEVATION = 639.5 FT
OVERTOPPING FREQUENCY = YRS
OVERTOPPING DISCHARGE = 260 CFS
OVERTOPPING ELEVATION = 646.43 FT
(-)11.0714%
(+)0.4997%
(-)6.9988%
(-)15.8927%
(+)10.3325%
PI = 18+70.00
EL = 639.00'
VC = 150'
K = 6
VDES = N/A
END GRADE
-Y5- STA. 19+50.00
ELEV. = 647.27'
PI = 16+28.00
EL = 660.10'
VC = 35'
K = 3
VDES = N/A
END GRADE
-Y5- STA. 16+46.52
ELEV. = 660.19'
END OVERLAY & WIDENING
-Y5- STA. 20+00.00
Prop. 54" Pipe
SEE SHEET 5 FOR PLAN VIEW
-Y6-
FOREST HILLS DR.
BEGIN GRADE
-Y6- STA. 10+48.07
ELEV. = 662.20'
PI = 10+90.00
EL = 660.03'
VC = 55'
K = 7
VDES = N/A
(-)5.1777%
(-)12.7100%
END GRADE
-Y6- STA. 11+50.00
ELEV. = 652.40'
BEGIN OVERLAY
BEGIN OVERLAY & WIDENING
-Y6- STA. 13+00.00
END OVERLAY & WIDENING
-Y6- STA. 14+15.00
-Y6- STA. 10+00.00
-L- STA. 42+37.82
DITCH LEGEND
LEFT DITCH
RIGHT DITCH
PIPE HYDRAULIC DATA
-Y6- Sta. 13+60.00
DRAINAGE AREA = 63 AC
DESIGN FREQUENCY = 25 YRS
DESIGN DISCHARGE = 75 CFS
DESIGN HW ELEVATION = FT
100 YEAR DISCHARGE = 116 CFS
100 YEAR HW ELEVATION = 628.87 FT
OVERTOPPING FREQUENCY = YRS
OVERTOPPING DISCHARGE = 320 CFS
OVERTOPPING ELEVATION = 635.22 FT
Prop. 54" Pipe
SEE SHEET 5 FOR PLAN VIEW


PROJECT REFERENCE NO.
U-3633
SHEET NO.
16
ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 022007 ENGINEER Andrew Jason Moore
4/17/2017
HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 022100 ENGINEER STEPHEN R. MORGAN
4/13/2017
Stephen R. Morgan
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
5/28/99
-Y7-
STONERIDGE DR.
BEGIN GRADE
-Y7- STA. 17+11.00
ELEV. = 654.10'
PI = 17+35.00
EL = 652.80'
VC = 30'
K = 5
VDES = N/A
(+)1.2007%
(-)5.4167%
-L- 61+36.29
-Y8- 10+00.00
BEGIN OVERLAY & WIDENING
-Y7- STA. 17+00.00
END GRADE
-Y7- STA. 17+48.86
ELEV. = 652.97'
SEE SHEET 6 FOR PLAN VIEW
-DR1-
BEGIN GRADE
-DR1- STA. 10+51.50
ELEV. = 639.67'
END GRADE
-DR1- STA. 12+00.00
ELEV. = 628.66'
PI = 10+80.00
EL = 638.53'
VC = 20'
K = 2
VDES = N/A
END OVERLAY & WIDENING
-DR1- STA. 12+20.00
-L- 46+70.00
-DR1- 10+00.00
(-)4.0000%
(-)12.0000%
(+)10.6500%
PI = 11+80.00
EL = 626.53'
VC = 40'
K = 2
VDES = N/A
SEE SHEET 6 FOR PLAN VIEW
-DR2-
BEGIN GRADE
-DR2- STA. 10+51.50
ELEV. = 631.12'
PI = 11+55.00
EL = 626.98'
VC = 70'
K = 4
VDES = N/A
END GRADE
-DR1- STA. 12+10.00
ELEV. = 634.10'
(-)4.0000%
(+)12.7333%
END OVERLAY & WIDENING
-DR2- STA. 12+20.00
-L- 48+08.20
-DR2- 10+00.00
SEE SHEET 6 FOR PLAN VIEW
-Y8-
PI = 10+57.00
EL = 623.53'
VC = 30'
K = 10
VDES = NA
-L- 61+36.29
-Y8- 10+00.00
BEGIN GRADE
-Y8- STA. 10+39.51
ELEV. = 624.56'
END GRADE
-Y8- STA. 10+75.00
ELEV. = 623.00'
(-)5.8891%
(-)2.9444%
SEE SHEET 7 FOR PLAN VIEW
-Y9- CAREY AVE.
-L- 61+44.56
-Y9- 12+67.83
BEGIN OVERLAY & WIDENING
-Y9- STA. 11+66.80
ELEV. = 629.87'
END OVERLAY & WIDENING
-Y9- STA. 12+28.32
ELEV. = 627.14'
SEE SHEET 7 FOR PLAN VIEW
-Y10-
NUTALL DR.
BEGIN GRADE
-Y10- STA. 10+43.72
ELEV. = 645.98'
-L- 67+04.92
-Y10- 10+00.00
END GRADE
-Y10- STA. 11+00.00
ELEV. = 644.73'
(-)4.4161%
(+)0.5240%
PI = 10+75.00
EL = 644.60'
VC = 30'
K = 10
VDES = N/A
SEE SHEET 7 FOR PLAN VIEW



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