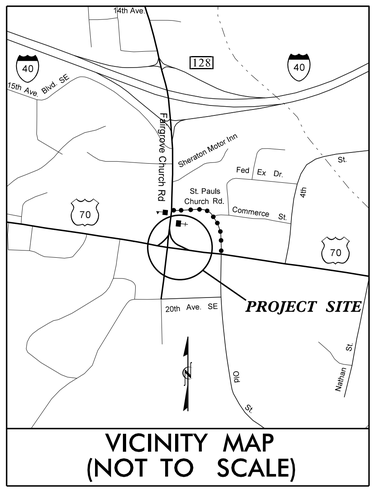
09/08/99

TIP PROJECT: SS–4912BO

CONTRACT: DL00159

See Sheet 1-A For Index of Sheets



VICINITY MAP
(NOT TO SCALE)

DETOUR ROUTE

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CATAWBA COUNTY

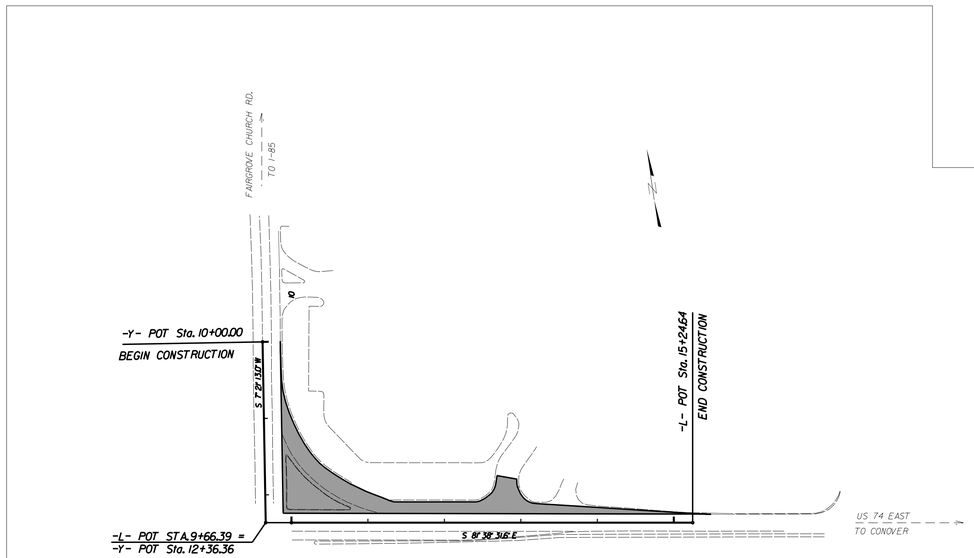
LOCATION: US 70 AT FAIRGROVE CHURCH RD.

TYPE OF WORK: PAVING, GRADING, DRAINAGE AND SIGNALS

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	SS–4912BO	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
44549.1.1	HSIP–0070 (193)	PE
44549.3.1	N\A	CONST.

4



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

GRAPHIC SCALES

30 15 0 30 60

PLANS

DESIGN DATA

ADT 2013 = 15,000

V = 50 MPH

PRINCIPAL ARTERIAL
REGIONAL

PROJECT LENGTH

LENGTH TIP PROJ. SS–4912 BO = 0.15 MI

TOTAL LENGTH TIP PROJECT SS–4912 BO = 0.15 MI

Prepared in the Office of:

DIVISION OF HIGHWAYS

1000 Birch Ridge Dr., Raleigh NC, 27610

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: N/A

LETTING DATE: October 24, 2017

J.B. McSwain
PROJECT TEAM LEAD

B.K. SOWELL, PE
PROJECT DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 043888 ENGINEER BRIAN K.D. SOWELL

ROADWAY DESIGN ENGINEER

10/3/2017

DocuSigned by: Bryan Sowell 76EABDC0D6E4AD1...

SIGNATURE: *P.E.*

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

PROJECT REFERENCE NO.	SHEET NO.
SS-4912B0	1A

ROADWAY DESIGN ENGINEER

SEAL 043888
BRYAN K.D. SOWELL
10/3/2017

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

INDEX OF SHEETS

GENERAL NOTES:

2012 SPECIFICATIONS
EFFECTIVE: 01-17-2012
REVISED: 01-24-2017

GRADING AND SURFACING:

THE GRADE LINES SHOWN DENOTE THE FINISHED ELEVATION OF THE PROPOSED SURFACING AT GRADE POINTS SHOWN ON THE TYPICAL SECTIONS. GRADE LINES MAY BE ADJUSTED AT THEIR BEGINNING AND ENDING AND AT STRUCTURES AS DIRECTED 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 II.

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

TEMPORARY SHORING:

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

SUBSURFACE PLANS:

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

UTILITIES:

UTILITY OWNERS ON THIS PROJECT ARE AT&T, CHARTER, BROADPLEX,

CITY OF CONOVER, CITY OF NEWTON, DUKE ENERGY, CITY OF HICKORY,

PIEDMONT NATURAL GAS, NCDOT

2012 ROADWAY ENGLISH STANDARD DRAWINGS

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

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	
200.02	Method of Clearing - Method II
225.02	Guide for Grading Subgrade - Secondary and Local
225.04	Method of Obtaining Superelevation - Two Lane Pavement
DIVISION 3 - PIPE CULVERTS	
300.01	Method of Pipe Installation
DIVISION 5 - SUBGRADE, BASES AND SHOULDERS	
560.01	Method of Shoulder Construction - High Side of Superelevated Curve - Method I
DIVISION 8 - INCIDENTALS	
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
840.45	Precast Drainage Structure
840.72	Pipe Collar
846.01	Concrete Curb, Gutter and Curb & Gutter

8/17/99

02-OCT-2017 08:14
R:\Roadway\Proj\SS-4912 BO_Rdy_psh_1A.dgn
$$$$USERNAME$$$$

12/2/2016

PROJECT REFERENCE NO.	SHEET NO.
SS-4912B0	1B

STATE OF NORTH CAROLINA, DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

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

BOUNDARIES AND PROPERTY:

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

BUILDINGS AND OTHER CULTURE:

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

HYDROLOGY:

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

RAILROADS:

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

RIGHT OF WAY & PROJECT CONTROL:

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

ROADS AND RELATED FEATURES:

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

VEGETATION:

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

EXISTING STRUCTURES:

MAJOR:

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

MINOR:

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

UTILITIES:

POWER:

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

TELEPHONE:

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

WATER:

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

TV:

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

GAS:

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

SANITARY SEWER:

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

MISCELLANEOUS:

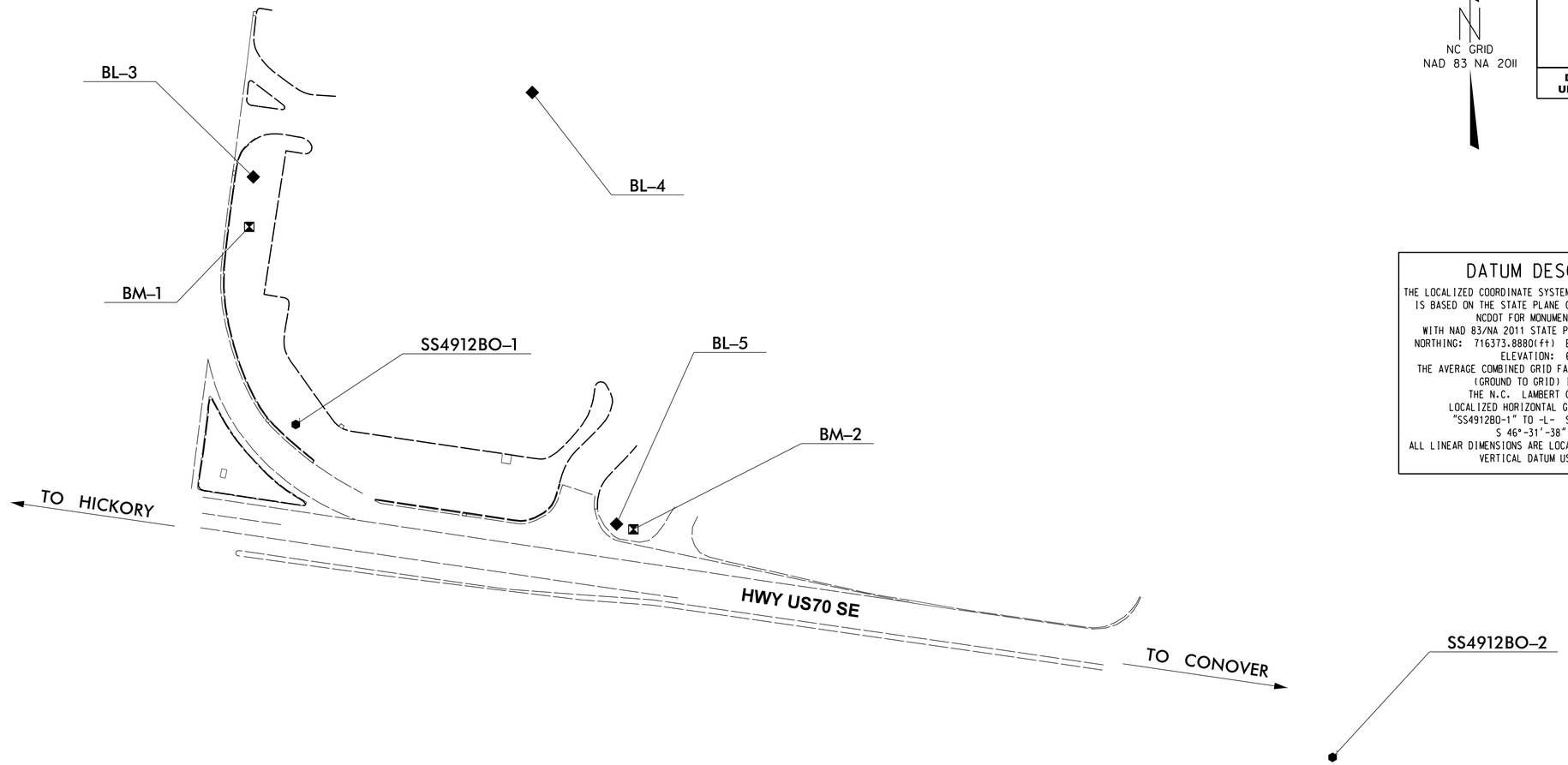
- Utility Pole
- Utility Pole with Base
- Utility Located Object
- Utility Traffic Signal Box — S
- Utility Unknown U/G Line LOS B (S.U.E.*) — ?UTL
- U/G Tank; Water, Gas, Oil
- Underground Storage Tank, Approx. Loc. — UST
- A/G Tank; Water, Gas, Oil
- Geoenvironmental Boring
- U/G Test Hole LOS A (S.U.E.*)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

5/14/99

PROJECT REFERENCE NO.	SHEET NO.
SS-4912B0	1C-1
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SURVEY CONTROL SHEET



DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "SS4912B0-1"
WITH NAD 83/NA 2011 STATE PLANE GRID COORDINATES OF
NORTHING: 716373.8880(ft) EASTING: 1328543.6900(ft)
ELEVATION: 696.90(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: .999861305
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "SS4912B0-1" TO -L- STATION 10+00.00 IS
S 46°-31'-38" W 98.43'
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

Point	Northing	Easting	Elevation	Station	Offset
SS4912BO-1	716373.8880	1328543.6900	969.9000	10+60.83	77.38'
SS4912BO-2	716119.8866	1329334.8509	975.3700	OUTSIDE PROJECT LIMITS	
BL-3	716562.7813	1328511.2299	977.7750	10+01.25	259.55'
BL-4	716627.2353	1328724.1380	982.9000	12+02.53	354.27'
BL-5	716297.8924	1328788.4170	971.4650	13+14.00	37.77'

****
BM#1
N: 716525 E: 1328508 ELEV. = 979.51'
-L- STATION 10+03.75 221.42' LT.
BENCH TIE IN POWER POLE
****

****
BM#2
N: 716294 E: 1328801 ELEV. = 973.69'
-L- STATION 13+27.34 35.70' LT.
BENCH TIE IN POWER POLE
****

25-SEP-2017 15:41
K:\Projects\SS4912B0_LS_1C.dgn
$$$$USERNAME$$$$

8/17/99

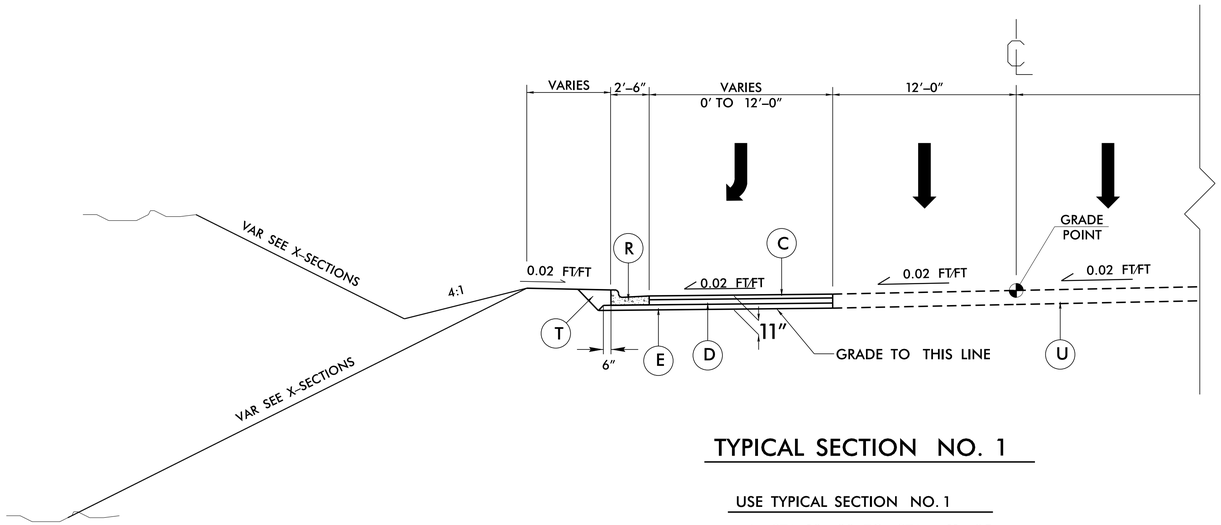
PROJECT REFERENCE NO.	SHEET NO.
SS-4912B0	2A-1
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DocuSigned by: Bryan Sowell 79EAB3C0D6E4...

NORTH CAROLINA PROFESSIONAL SEAL 043888 ENGINEER BRYAN K.D. SOWELL

10/3/2017

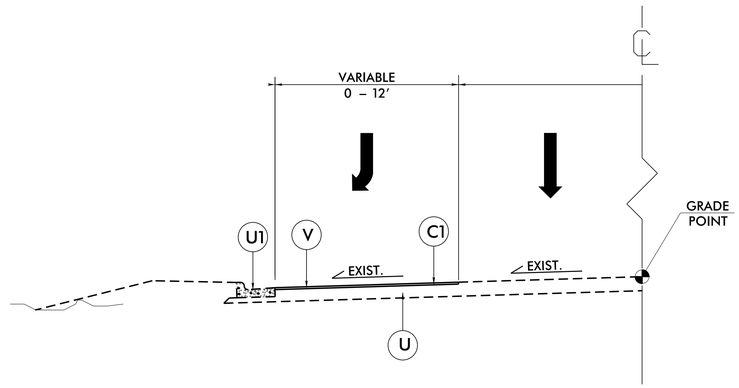
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



TYPICAL SECTION NO. 1

USE TYPICAL SECTION NO. 1

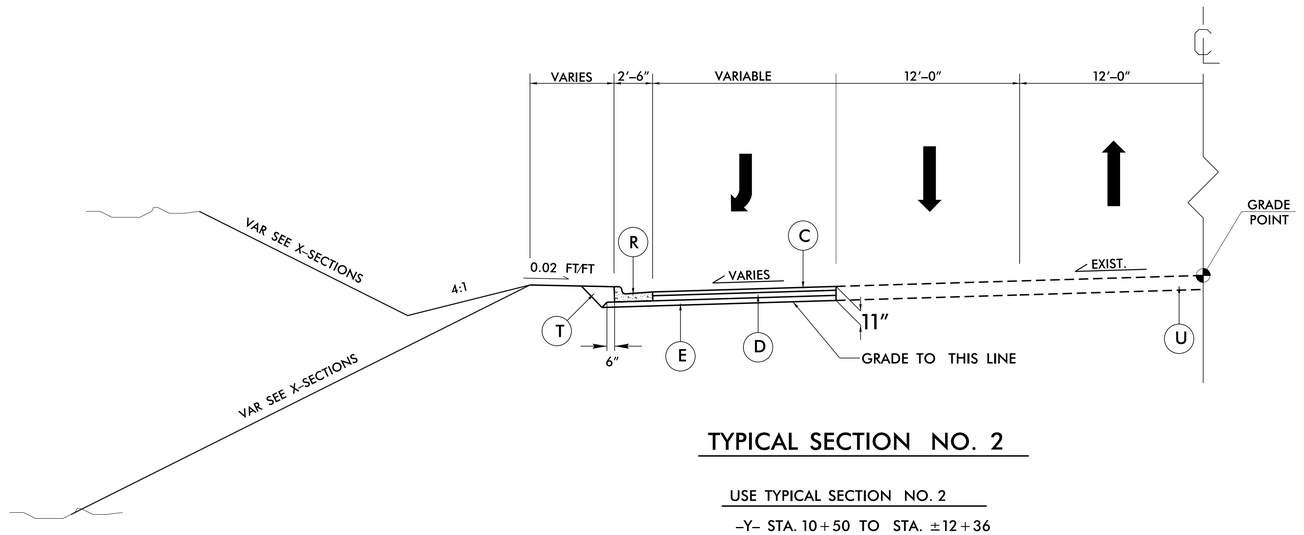
–L– STA. 10+00 TO STA. ±11+35



TYPICAL SECTION NO. 3

USE TYPICAL SECTION NO. 3

–L– STA. 11+35 TO STA. ±15+24.64



TYPICAL SECTION NO. 2

USE TYPICAL SECTION NO. 2

–Y– STA. 10+50 TO STA. ±12+36

PAVEMENT SCHEDULE *FINAL PAVEMENT DESIGN*	
C	PROP. APPROX. 3.0" ASPHALT CONCRETE SURFACE COURSE. TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YARD IN EACH OF TWO LAYERS
C1	PROP. APPROX. 1.5" ASPHALT CONCRETE SURFACE COURSE. TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YARD.
D	PROP. APPROX. 4.0" ASPHALT CONCRETE INTERMEDIATE COURSE. TYPE I19.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YARD.
E	PROP. APPROX. 4.0" CONCRETE BASE COURSE. TYPE B25.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YARD.
R	2'-6" CONCRETE CURB AND GUTTER.
T	EARTH MATERIAL.
U	EXISTING PAVEMENT.
U1	EXISTING CONCRETE CURB & GUTTER.
V	MILLING BITUMINOUS PAVEMENT. 1.5" DEPTH.

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

03-OCT-2017 07:13
C:\Projects\SS-491280_Rdy_typ_2a-1.dgn
$$$$USERNAME$$$$
$$$$DATE$$$$

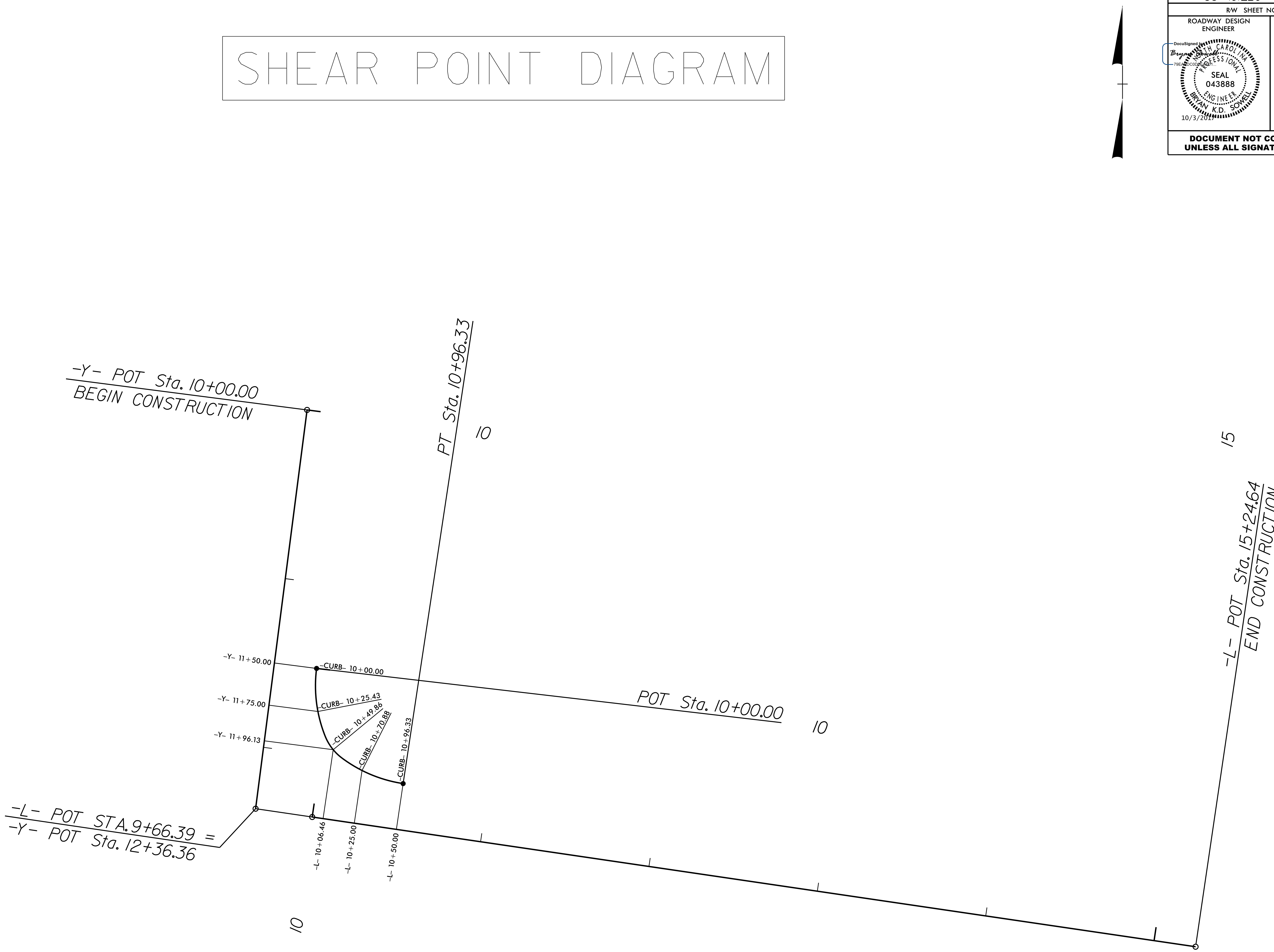
PROJECT REFERENCE NO.	SHEET NO.
SS-4912B0	2B-1

R/W SHEET NO.

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
DocuSigned by: Bryan Sowell 79EABDC0D6EA4D1... NORTH CAROLINA PROFESSIONAL SEAL 043888 ENGINEER BRYAN K.D. SOWELL 10/3/2017	

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SHEAR POINT DIAGRAM



5/14/99

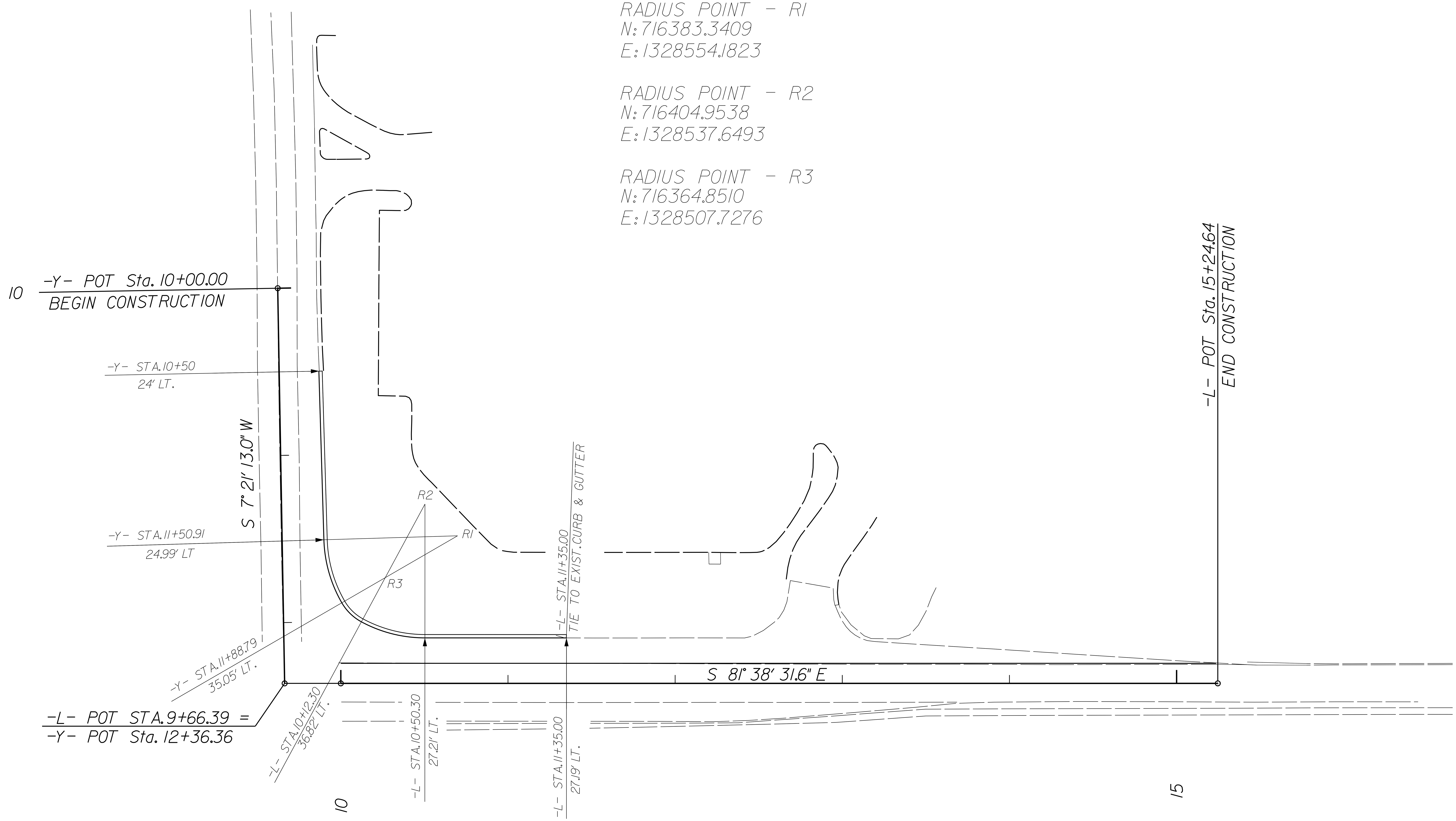
03-OCT-2017 07:15
R:\Roadway\Proj\SS-4912B0_Rdy-psh_2B-1_CRD.dgn
$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
SS-4912B0	2B-2
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 043888 ENGINEER BRYAN K.D. SOWELL
10/3/2017

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

3 CENTERED CURVE LAYOUT INFO
80-30-80



8/17/99
02-OCT-2017 13:59
R:\Roadway\Proj\SS-4912B0_Rdy_psh_2B-2_CRD.dgn

COMPUTED BY:JSC DATE:9-28-17
CHECKED BY:BKS DATE:9-28-17

PROJECT NO.	SHEET NO.
SS-4912BO	3B-1

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SUMMARY OF EARTHWORK

Station	Station	Uncl. Excav.	Embank. +%	Borrow	Waste
-CURB- 10+50	-CURB- 11+00	103	31	31	103
-L- 10+00	-L- 11+50	128	35	35	128
-Y- 10+35	-Y- 11+96	68	35	35	68
SUBTOTALS:		299		101	299
SUBTOTALS:					
PROJECT TOTALS:		299		101	299
PROJECT TOTALS:		299		101	299
GRAND TOTALS:		299		101	299
SAY:		**350**		**150**	350

Note: Approximate quantities only. Borrow Excavation, Fine Grading, Clearing and Grubbing, and Removal of Existing Pavement will be paid for at the contract lump sum price for grading.

Note: All Unclassified Excavation deemed to be asphalt and concrete and will be paid for under the Lump Sum Grading. Unclassified Excavation is not suitable material for Borrow.

PAVEMENT REMOVAL SUMMARY

IN SQUARE YARDS

SURVEY LINE	Station	Station	LOCATION LT/RT/CL	ASPHALT REMOVAL	ASPHALT BREAKUP	CONCRETE REMOVAL	CONCRETE BREAKUP
L	9+90	11+35	LT	9022			
		TOTAL:		9022			
		SAY:		9050			

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

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

STATION	LOCATION (LT,RT,OR CL)'	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	DRAINAGE PIPE (RCP,CSP,CAAP,HDPE,orPVC) 12"	15"	18"	24"	30"	36"	42"	48"	DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE
SIZE / THICKNESS OR GAUGE																			
-L-10+07	LT	401																	
-L-10+39	LT	402																	
-Y-12+10	LT	403																	
SHEET TOTALS																			

STATION	C.S. PIPE 12"	15"	18"	24"	30"	36"	42"	48"	R.C. PIPE CLASS III 12"	15"	18"	24"	30"	36"	42"	48"
THICKNESS OR GAUGE	.064	.064	.064	.064	.079	.079	.109	.109								
-L-10+07																
-L-10+39																
-Y-12+10																
SHEET TOTALS																

STATION	R.C. PIPE CLASS IV 12"	15"	18"	24"	30"	36"	42"	48"	**"R.C. PIPE (CLASS V)	***"RC PIPE CULVERTS, CONTRACTOR DESIGN	***"RC PIPE CULVERTS, CONTRACTOR DESIGN	15" SIDE DRAIN PIPE	18" SIDE DRAIN PIPE	ENDWALLS STD. 838.01 838.11 OR STD. 838.80 (UNLESS NOTED OTHERWISE) CU. YARDS R.C.P.	C.S.P.
-L-10+07					8										
-L-10+39															
-Y-12+10					8										
SHEET TOTALS					16										

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	CONCRETE TRANSITIONAL SECTION DROP INLET	CATCH BASIN
-L-10+07	1			1	1				
-L-10+39									
-Y-12+10	1								
SHEET TOTALS	2			1	1				

STATION	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME WITH TWO GRATES STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR 840.26	G.D.I. TYPE "B" STD. 840.18 OR 840.27	G.D.I. TYPE "D" STD. 840.19 OR 840.28	G.D.I. FRAME WITH GRATE STD. 840.20	G.D.I. FRAME WITH TWO GRATES STD. 840.22	G.D.I. (N.S.) FRAME WITH GRATE STD. 840.24	G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.24	J.B. STD. 840.31 OR 840.32	T.B. J.B. STD. 840.34 OR 840.36			
-L-10+07														
-L-10+39	1													
-Y-12+10											1			
SHEET TOTALS	1										1			

STATION	DRAINAGE 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-10+07					8 LF OF 30"RCP IF NEEDED
-L-10+39					CONVERT CB TO DI
-Y-12+10					REPLACE EXIST BOX WITH TRAFFIC BEARING
SHEET TOTALS					

ABBREVIATIONS

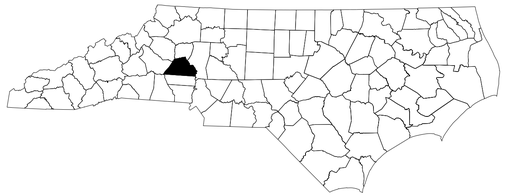
C.B.	CATCH BASIN
N.D.I.	NARROW DROP INLET
D.I.	DROP INLET
G.D.I.	GRATED DROP INLET
G.D.I.(N.S.)	(NARROW SLOT)
J.B.	JUNCTION BOX
M.H.	MANHOLE
T.B.D.I.	TRAFFIC BEARING DROP INLET
T.B.J.B.	TRAFFIC BEARING JUNCTION BOX

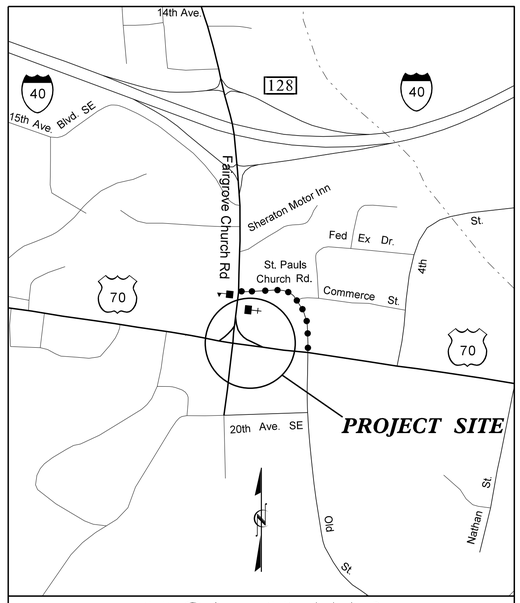

PROJECT REFERENCE NO. SS-4912B0
SHEET NO. 4
RW SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 043888 ENGINEER BRYAN K.D. SOWELL
10/3/2017
DocuSigned by: Bryan Sowell
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
NC GRID NAD 83 NA 2011
S 81°32'19" E 247.94'
S 84°16'43" E 92.66'
S 07°44'14" W 30.46'
S 86°14'45" E 17.73'
S 08°38'57" W 276.92'
N 06°12'28" E 107.99'
N 32°42'24" W 121.60'
N 81°33'47" W 100.04'
N 81°35'02" W 169.03'
S 7° 21' 13.0" W
S 81° 38' 31.6" E
-Y- POT Sta. 10+00.00
BEGIN CONSTRUCTION
-L- POT Sta. 15+24.64
END CONSTRUCTION
-L- POT STA. 9+66.39 =
-Y- POT Sta. 12+36.36
TIE TO EXISTING CURB -Y- STA. ± 10+50
CONVERT CB TO DI & GRADE TO DRAIN
TIE TO EXISTING CURB -L- STA. ± 11+35
1.5" MILLING
PAVEMENT REMOVAL
EXIST JUNCTION BOX
EXACT LOCATION UNKNOWN
EXIST. JUNCTION BOX
APPROXIMATE LOCATION
REPLACE WITH TBJB
END UNKNOWN
0401
0402
0403
CB
10
15
PLANTER
GRASS
CONC. PAD
SIGN
15" RCP
18" RCP
24" RCP
DI
SS
6" MAPLE
8/17/99

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

TRANSPORTATION MANAGEMENT PLAN

CATAWBA COUNTY





VICINITY MAP
(NOT TO SCALE)

DETOUR ROUTE

INDEX OF SHEETS

SHEET NO.
TMP-1

SS-4219BO

TIP PROJECT:

WORK ZONE SAFETY & MOBILITY
"from the MOUNTAINS to the COAST"

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
WORK ZONE TRAFFIC CONTROL

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

APPROVED: DocuSigned by: Bryan Sowell 79EABDC0D6EA4D1...

DATE: 10/3/2017

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 043888 ENGINEER BRYAN K.D. SOWELL

29-SEP-2017 07:02
R:\Traffic\TrafficControl\TCP\SS-4912_TC_TMP_tsh_1.dgn
$$$$USERNAME$$$$

PROJ. REFERENCE NO.	SHEET NO.
SS-4912B0	TMP-1A

ROADWAY STANDARD DRAWINGS

THE FOLLOWING ROADWAY STANDARDS AS SHOWN IN "ROADWAY STANDARD DRAWINGS" - PROJECT SERVICES UNIT - 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
1101.01	WORK ZONE ADVANCE WARNING SIGNS
1101.02	TEMPORARY LANE CLOSURES
1101.03	TEMPORARY ROAD CLOSURES
1101.04	TEMPORARY SHOULDER CLOSURES
1101.05	WORK ZONE VEHICLE ACCESSES
1101.06	WARNING SIGNS FOR BLASTING ZONES
1101.11	TRAFFIC CONTROL DESIGN TABLES
1110.01	STATIONARY WORK ZONE SIGNS
1110.02	PORTABLE WORK ZONE SIGNS
1115.01	FLASHING ARROW BOARDS
1130.01	DRUM
1135.01	CONES
1145.01	BARRICADES
1150.01	FLAGGING DEVICES
1160.01	TEMPORARY CRASH CUSHION
1165.01	WORK VEHICLE LIGHTING SYSTEMS AND TMA DELINEATION
1170.01	POSITIVE PROTECTION
1180.01	SKINNY-DRUM
1205.01	PAVEMENT MARKINGS - LINE TYPES AND OFFSETS
1205.02	PAVEMENT MARKINGS - TWO-LANE AND MULTI-LANE ROADWAYS
1205.03	PAVEMENT MARKINGS - EXITS AND ENTRANCE RAMPS
1205.04	PAVEMENT MARKINGS - INTERSECTIONS
1205.05	PAVEMENT MARKINGS - TURN LANES
1205.06	PAVEMENT MARKINGS - LANE DROPS
1205.07	PAVEMENT MARKINGS - PEDESTRIAN CROSSWALKS
1205.08	PAVEMENT MARKINGS - SYMBOLS AND WORD MESSAGES
1205.09	PAVEMENT MARKINGS - PAINTED ISLANDS
1205.10	PAVEMENT MARKINGS - SCHOOL AREAS
1205.11	PAVEMENT MARKINGS - RAILROAD CROSSINGS
1205.12	PAVEMENT MARKINGS - BRIDGES
1205.13	PAVEMENT MARKINGS - LANE REDUCTIONS
1250.01	RAISED PAVEMENT MARKERS - INSTALLATION SPACING
1251.01	RAISED PAVEMENT MARKERS - PERMANENT AND TEMPORARY
1261.01	GUARDRAIL AND BARRIER DELINEATORS - INSTALLATION SPACING
1261.02	GUARDRAIL AND BARRIER DELINEATORS - TYPES AND MOUNTING
1262.01	GUARDRAIL END DELINEATION
1264.01	OBJECT MARKERS - TYPES
1264.02	OBJECT MARKERS - INSTALLATION

LEGEND

GENERAL

- DIRECTION OF TRAFFIC FLOW
- DIRECTION OF PEDESTRIAN TRAFFIC FLOW
- EXIST. PVMT.
- NORTH ARROW
- PROPOSED PVMT.
- TEMP. SHORING (LOCATION PURPOSES ONLY)
- WORK AREA
- REMOVAL
- USER DEFINED (IF NEEDED)
- USER DEFINED (IF NEEDED)

SIGNALS

EXISTING PROPOSED TEMPORARY

PAVEMENT MARKINGS

- EXISTING LINES
- TEMPORARY LINES

TRAFFIC CONTROL DEVICES

- BARRICADE (TYPE III)
- CONE
- DRUM SKINNY DRUM TUBULAR MARKER
- TEMPORARY CRASH CUSHION
- FLASHING ARROW BOARD
- FLAGGER
- LAW ENFORCEMENT
- TRUCK MOUNTED ATTENUATOR (TMA)
- CHANGEABLE MESSAGE SIGN

TEMPORARY SIGNING

- PORTABLE SIGN
- STATIONARY SIGN
- STATIONARY OR PORTABLE SIGN

PAVEMENT MARKERS

- CRYSTAL/CRYSTAL
- CRYSTAL/RED
- YELLOW/YELLOW

PAVEMENT MARKING SYMBOLS

PAVEMENT MARKING SYMBOLS

APPROVED: Bryan Sowell (DocuSigned by: 79EABDCDD0EA4D1...)

DATE: 10/3/2017

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 043888 ENGINEER BRYAN K.D. SOWELL

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

DIVISION OF HIGHWAYS · STATE OF NORTH CAROLINA · DEPARTMENT OF TRANSPORTATION · WORK ZONE TRAFFIC CONTROL

ROADWAY STANDARD DRAWINGS & LEGEND

29-SEP-2017 07:05
R:\Traffic\TrafficControl\TCP\SS-4912_TC_TMP_1-A.dgn
$$$$USERNAME$$$$

PROJ. REFERENCE NO.	SHEET NO.
SS-4912B0	TMP-1B

GENERAL NOTES

CHANGES MAY BE REQUIRED WHEN PHYSICAL DIMENSIONS IN THE DETAIL DRAWINGS, STANDARD DETAILS, AND ROADWAY DETAILS ARE NOT ATTAINABLE TO MEET FIELD CONDITIONS OR RESULT IN DUPLICATE OR UNDESIRED OVERLAPPING OF DEVICES. MODIFICATION MAY INCLUDE: MOVING, SUPPLEMENTING, COVERING, OR REMOVAL OF DEVICES AS DIRECTED BY THE ENGINEER.

THE FOLLOWING GENERAL NOTES APPLY AT ALL TIMES FOR THE DURATION OF THE CONSTRUCTION PROJECT EXCEPT WHEN OTHERWISE NOTED IN THE PLAN OR DIRECTED BY THE ENGINEER.

TIME RESTRICTIONS

A) DO NOT CLOSE OR NARROW TRAVEL LANES AS FOLLOWS:

ROAD NAME	DAY AND TIME RESTRICTIONS
	MONDAY-FRIDAY
US 70 & FAIRGROVE CHURCH RD.	7:00 A.M. UNTIL 9:00 A.M. & 4:00 P.M. UNTIL 7:00P.M.

B) DO NOT CLOSE OR NARROW TRAVEL LANES DURING HOLIDAYS AND SPECIAL EVENTS AS FOLLOWS:

ROAD NAME	HOLIDAY
US 70 & FAIRGROVE CHURCH RD.	

1. FOR ANY UNEXPECTED OCCURRENCE THAT CREATES UNUSUALLY HIGH TRAFFIC VOLUMES, AS DIRECTED BY THE ENGINEER.
2. FOR NEW YEAR'S, BETWEEN THE HOURS OF 7:00 A.M. DECEMBER 31st TO 7:00 P.M. JANUARY 2ND. IF NEW YEAR'S DAY IS ON A FRIDAY, SATURDAY, SUNDAY, OR MONDAY THEN UNTIL 7:00 P.M. THE FOLLOWING TUESDAY.
3. FOR EASTER, BETWEEN THE HOURS OF 7:00 A.M. THURSDAY AND 7:00 P.M. MONDAY.
4. FOR MEMORIAL DAY, BETWEEN THE HOURS OF 7:00 A.M. FRIDAY TO 7:00 P.M. TUESDAY.
5. FOR INDEPENDENCE DAY, BETWEEN THE HOURS OF 7:00 A.M. THE DAY BEFORE INDEPENDENCE DAY AND 7:00 P.M. THE DAY AFTER INDEPENDENCE DAY.

   IF INDEPENDENCE DAY IS ON A FRIDAY, SATURDAY, SUNDAY OR MONDAY THEN BETWEEN THE HOURS OF 7:00 A.M. THE THURSDAY BEFORE INDEPENDENCE DAY AND 7:00 P.M. THE TUESDAY AFTER INDEPENDENCE DAY.
6. FOR LABOR DAY, BETWEEN THE HOURS OF 7:00 A.M. FRIDAY AND 7:00 P.M. TUESDAY.
7. FOR THANKSGIVING DAY, BETWEEN THE HOURS OF 7:00 A.M. TUESDAY TO 7:00 P.M. MONDAY.
8. FOR CHRISTMAS, BETWEEN THE HOURS OF 7:00 A.M. THE FRIDAY BEFORE THE WEEK OF CHRISTMAS DAY AND 7:00 P.M. THE FOLLOWING TUESDAY AFTER THE WEEK OF CHRISTMAS.

LANE AND SHOULDER CLOSURE REQUIREMENTS

C) REMOVE LANE CLOSURE DEVICES FROM THE LANE WHEN WORK IS NOT BEING PERFORMED BEHIND THE LANE CLOSURE OR WHEN A LANE CLOSURE IS NO LONGER NEEDED OR AS DIRECTED BY THE ENGINEER.

D) WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING WITHIN 15 FT OF AN OPEN TRAVEL LANE, CLOSE THE NEAREST OPEN SHOULDER USING ROADWAY STANDARD DRAWING NO. 1101.04 UNLESS THE WORK AREA IS PROTECTED BY BARRIER OR GUARDRAIL OR A LANE CLOSURE IS INSTALLED.

E) WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING ON THE SHOULDER ADJACENT TO AN UNDIVIDED FACILITY AND WITHIN 5 FT OF AN OPEN TRAVEL LANE, CLOSE THE NEAREST OPEN TRAVEL LANE USING ROADWAY STANDARD DRAWING NO. 1101.02 UNLESS THE WORK AREA IS PROTECTED BY BARRIER OR GUARDRAIL.

WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING ON THE SHOULDER ADJACENT TO A DIVIDED FACILITY AND WITHIN 10 FT OF AN OPEN TRAVEL LANE, CLOSE THE NEAREST OPEN TRAVEL LANE USING ROADWAY STANDARD DRAWING NO. 1101.02 UNLESS THE WORK AREA IS PROTECTED BY BARRIER OR GUARDRAIL.

PAVEMENT EDGE DROP OFF REQUIREMENTS

F) BACKFILL AT A 6:1 SLOPE UP TO THE EDGE AND ELEVATION OF EXISTING PAVEMENT IN AREAS ADJACENT TO AN OPENED TRAVEL LANE THAT HAS AN EDGE OF PAVEMENT DROP-OFF AS FOLLOWS:

BACKFILL DROP-OFFS THAT EXCEED 2 INCHES ON ROADWAYS WITH POSTED SPEED LIMITS OF 45 MPH OR GREATER.

BACKFILL DROP-OFFS THAT EXCEED 3 INCHES ON ROADWAYS WITH POSTED SPEED LIMITS LESS THAN 45 MPH.

BACKFILL WITH SUITABLE COMPACTED MATERIAL, AS APPROVED BY THE ENGINEER, AT NO EXPENSE TO THE DEPARTMENT.

TRAFFIC PATTERN ALTERATIONS

G) NOTIFY THE ENGINEER TWENTY ONE (21) CALENDAR DAYS PRIOR TO ANY TRAFFIC PATTERN ALTERATION.

SIGNING

H) INSTALL ADVANCE WORK ZONE WARNING SIGNS WHEN WORK IS WITHIN 40 FT FROM THE EDGE OF TRAVEL LANE AND NO MORE THAN THREE (3) DAYS PRIOR TO THE BEGINNING OF CONSTRUCTION.

I) PROVIDE SIGNING AND DEVICES REQUIRED TO CLOSE THE ROAD ACCORDING TO THE ROADWAY STANDARD DRAWINGS AND TRAFFIC CONTROL PLANS. AND TRAFFIC CONTROL PLANS.

PROVIDE SIGNING REQUIRED FOR THE OFF-SITE DETOUR ROUTE AS SHOWN IN THE TRAFFIC CONTROL PLANS, EXECPT THE FAIRGROVE CHURCH RD. DETOUR SIGN

PAVEMENT MARKINGS AND MARKERS

J) TIE PROPOSED PAVEMENT MARKING LINES TO EXISTING PAVEMENT MARKING LINES.

K) REMOVE/REPLACE ANY CONFLICTING/DAMAGED PAVEMENT MARKINGS AND MARKERS BY THE END OF EACH DAY'S OPERATION.

LOCAL NOTES

MAINTAIN DRIVEWAY ACCESS TO ALL PARCELS DURING CONSTRUCTION.

TRAFFIC SHALL BE MAINTAINED DURING OPEN CUTTING OPERATIONS FOR UTILITY CONSTRUCTION. ONLY ONE LANE MAY BE CLOSED AT ANY GIVEN TIME.

MANAGEMENT STRATEGIES

FAIR GROVE CHURCH RD. (-Y-) WILL BE CONSTRUCTED USING TEMPORARY LANE CLOSURES AS NEEDED.

US 70 (-L-) RT TURN LANE WILL BE CONSTRUCTED USING A DETOUR.

APPROVED: Bryan Sowell (79EABDC0D6EA4D1...)

DATE: 10/3/2017

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 043888 ENGINEER BRYAN K.D. SOWELL

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

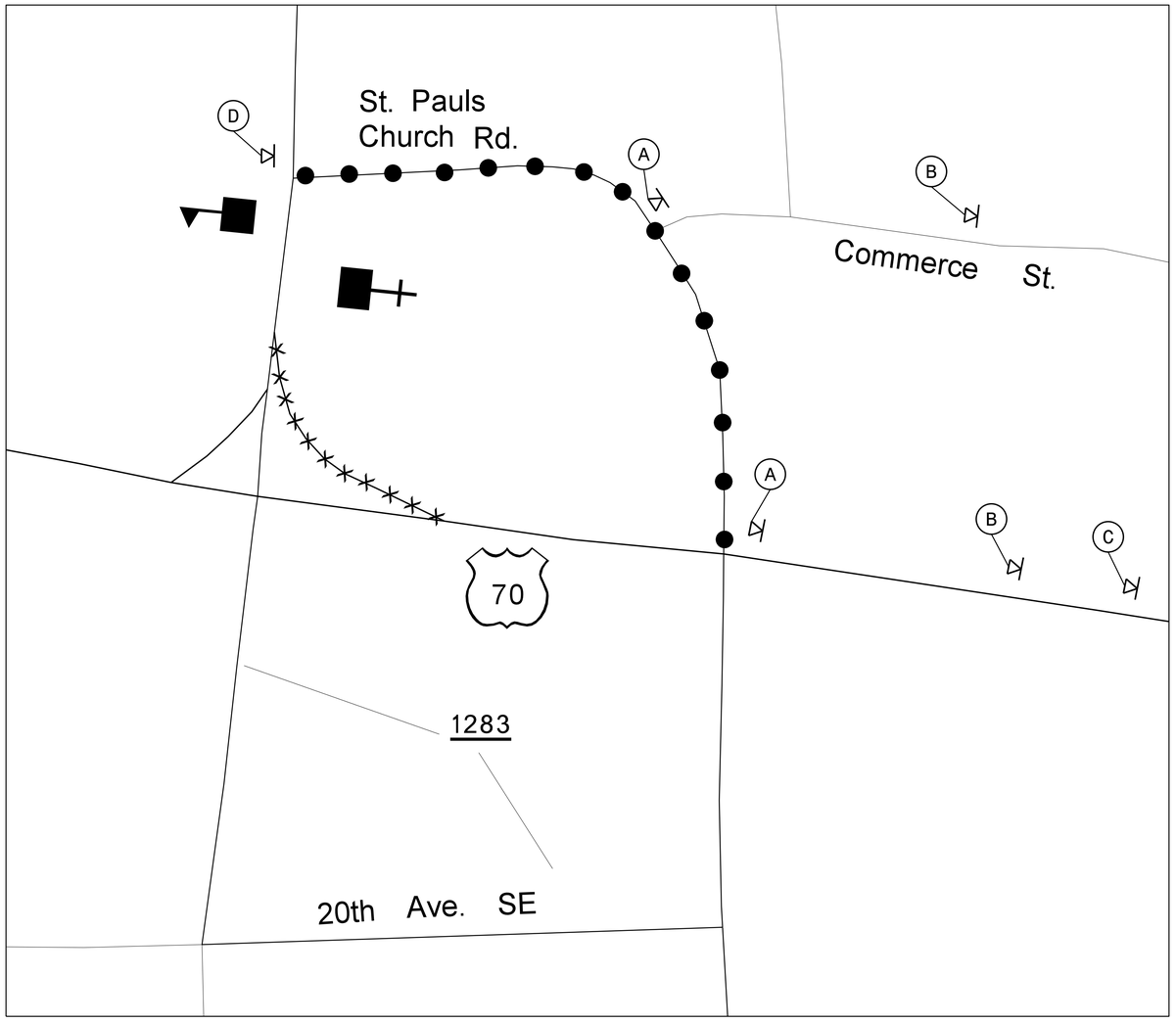
DIVISION OF HIGHWAYS · STATE OF NORTH CAROLINA · DEPARTMENT OF TRANSPORTATION · WORK ZONE TRAFFIC CONTROL

TRANSPORTATION OPERATIONS PLAN

29-SEP-2017 07:09
R:\TrafficV\TrafficControlTCP\SS-4912_TC_TMP_1-B.dgn
$$$$USERNAME$$$$

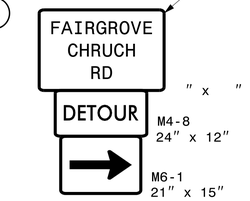
PROJ. REFERENCE NO.	SHEET NO.
SS-4912B0	TMP-2

DETOUR FOR RIGHT TURN LANE OFF OF US 70 ONTO FAIRGROVE CHURCH RD



NOTE: REFER TO STANDARD ROADWAY DRAWING NO. 1101.03 SHEET 1 OF 9, FOR ADDITIONAL SIGN SPACING REQUIREMENTS.

A



FAIRGROVE CHURCH RD. SIGN TO BE PROVIDED BY NCDOT

B

C

D

LEGEND

DETOUR ROUTE — DETOUR ROUTE

STATIONARY SIGN

APPROVED: Bryan Sowell (Docusigned by: 79EABDC0D6E44D1...)

DATE: 10/3/2017

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 043888 ENGINEER BRYAN K.D. SOWELL

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

DIVISION OF HIGHWAYS · STATE OF NORTH CAROLINA · DEPARTMENT OF TRANSPORTATION · WORK ZONE TRAFFIC CONTROL

RIGHT TURN LANE DETOUR FROM US 70 TO FAIRGROVE CHURCH RD

29-SEP-2017 07:11
R:\Traffic\TrafficControl\TCP\SS-4912 B0_TC_TMP_2.dgn
$$$$USERNAME$$$$

PROJ. REFERENCE NO.	SHEET NO.
SS-4912B0	PMP-1

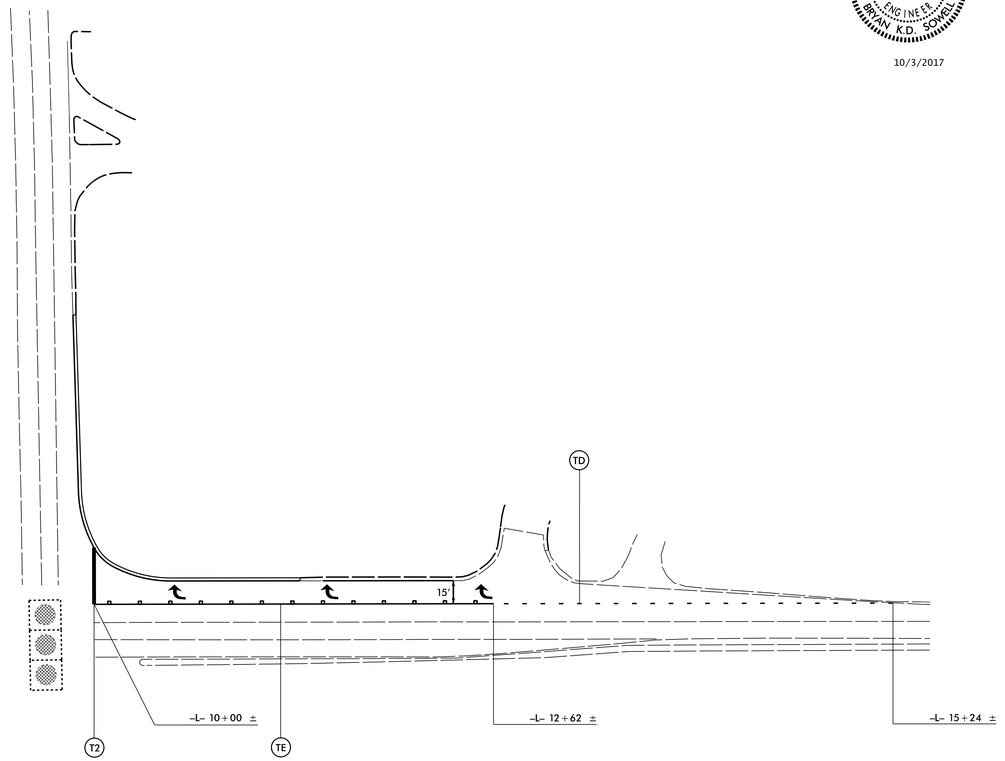
DocuSigned by:
Bryan Sowell
79EABDC0DEA4...

NORTH CAROLINA PROFESSIONAL SEAL 043888 ENGINEER BRYAN, K.D. SOWELL

10/3/2017

PAVEMENT MARKING SCHEDULE
TIP PROJECT # SS–4912BO

SYMB	DESCRIPTION
	FINAL PAVEMENT MARKINGS
T2	WHITE STOPBAR
	THERMOPLASTIC(24", 120 MILS)
	POLYUREA (4") Highly Reflective Elements
VD	3 FT. – 9 FT./SP WHITE MINISKIP
VE	WHITE SOLID LANE LINE
	THERMOPLASTICPAVEMENT MARKING SYMBOLS (90 MILS)
UB	RIGHT TURN ARROW
	MARKERS
	SNOWPLOWABLE RAISED PAVEMENT MARKERS
MF	CRYSTAL & RED



DIVISION OF HIGHWAYS · STATE OF NORTH CAROLINA · DEPARTMENT OF TRANSPORTATION · WORK ZONE TRAFFIC CONTROL

PAVEMENT MARKING PLAN

02-OCT-2017 14:17
R:\Roadway\Proj\SS-4912_TC_TMP_PMP.dgn
$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
SS-4912B0	EC-1/CONST.4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

Roadway Standard Drawings

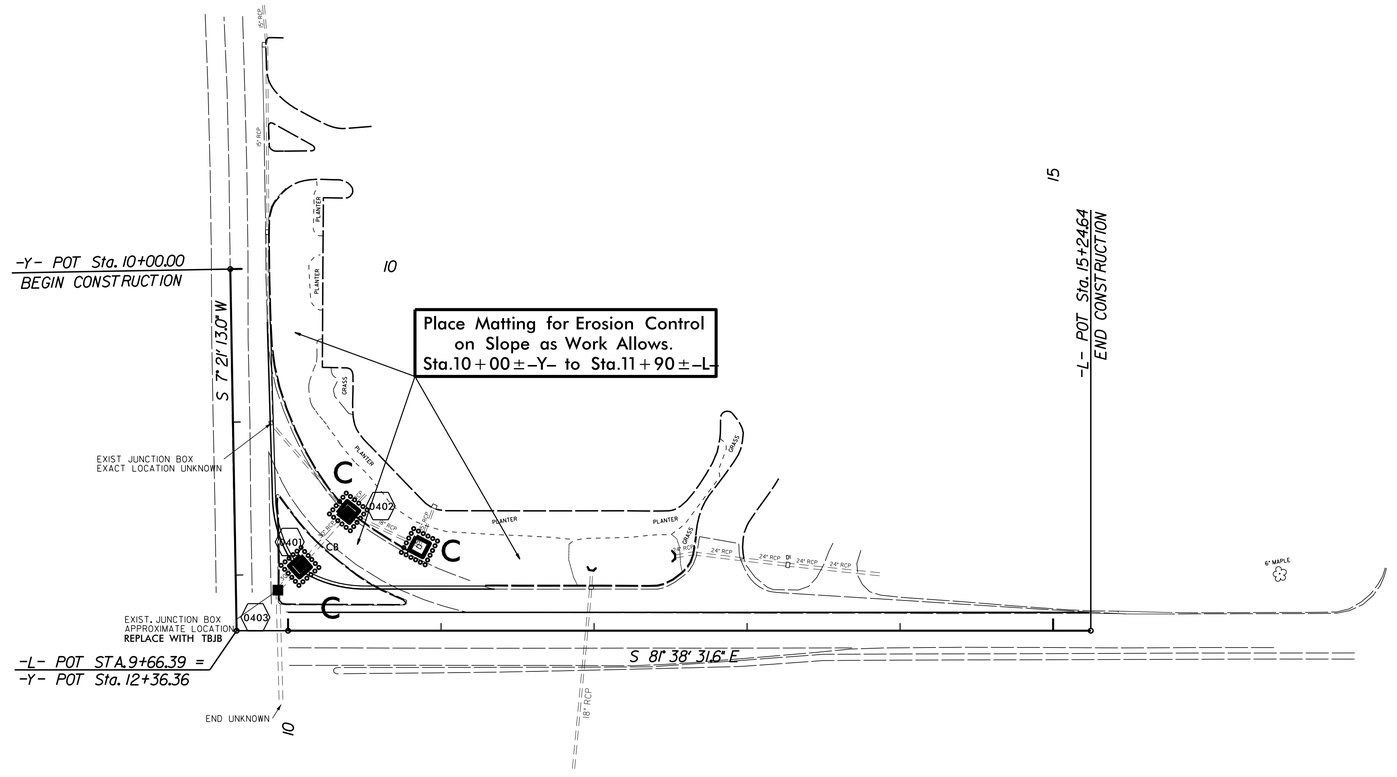
The following roadway english standards as appear in "Roadway Standard Drawings"– Roadway Design Unit – N. C. Department of Transportation – Raleigh, N. C., dated January 2012 and the latest revison thereto are applicable to this project and by reference hereby are considered a part of these plans.

1606.01 Special Sediment Control Fence
1631.01 Matting Installation
1632.03 Rock Inlet Sediment Trap Type C

PLAN FOR PROPOSED HIGHWAY EROSION CONTROL

EROSION AND SEDIMENT CONTROL MEASURES

Std. #	Description	Symbol
1632.03	Type C	C



MATTING FOR EROSION CONTROL

CONST SHEET NO.	LINE	FROM STATION	TO STATION	SIDE	ESTIMATE (SY)
EC-1	-L-	10+18	11+90	LT	660
	-L-	10+00	10+82	LT	635
			SUBTOTAL		1295
MISCELLANEOUS MATTING TO BE INSTALLED AS DIRECTED BY THE ENGINEER					1295
				TOTAL	1295
				SAY	1300

50 25 0 50 100
EROSION CONTROL PLAN SCALE

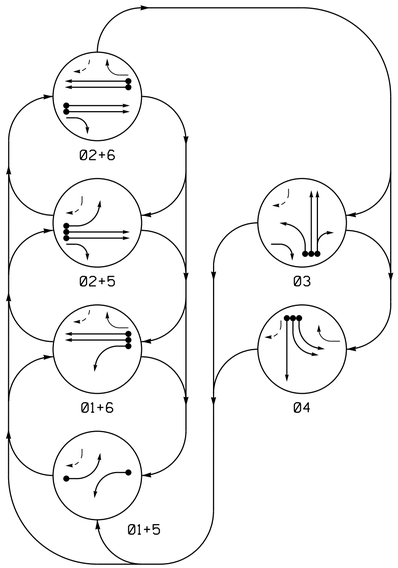
THESE EROSION AND SEDIMENT CONTROL PLANS COMPLY WITH THE REGULATIONS SET FORTH BY THE NCG-010000 GENERAL CONSTRUCTION PERMIT EFFECTIVE AUGUST 3, 2011 ISSUED BY THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES DIVISION OF WATER QUALITY.

Designed by:

J.S.CARPENTER — *3877*
NAME — *LEVEL III CERTIFICATION NO.*

PROJECT REFERENCE NO.	SHEET NO.
SS-4912 B0	Sig. 1

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

- DETECTED MOVEMENT
- UNDETECTED MOVEMENT (OVERLAP)
- UNSIGNALIZED MOVEMENT
- PEDESTRIAN MOVEMENT

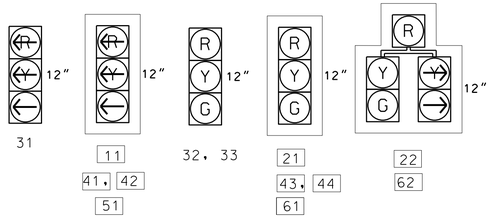
TABLE OF OPERATION

SIGNAL FACE	PHASE 0 1 + 5	0 1 + 6	0 2 + 5	0 2 + 6	0 3	0 4	FLASH
11	←	←	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~
21	R	R	G	G	R	R	Y
22	R	R	G	G	R/←	R	Y
31	~~R~~	~~R~~	~~R~~	~~R~~	←	~~R~~	~~R~~
32, 33	R	R	R	R	G	R	R
41, 42	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	←	~~R~~
43, 44	R	R	R	R	R	G	R
51	←	~~R~~	←	~~R~~	~~R~~	~~R~~	~~R~~
61	R	G	R	G	R	R	Y
62	R	G	R	G	R/→	R	Y

SIGNAL FACE I.D.

All Heads L.E.D.

Backplates with Reflective Borders



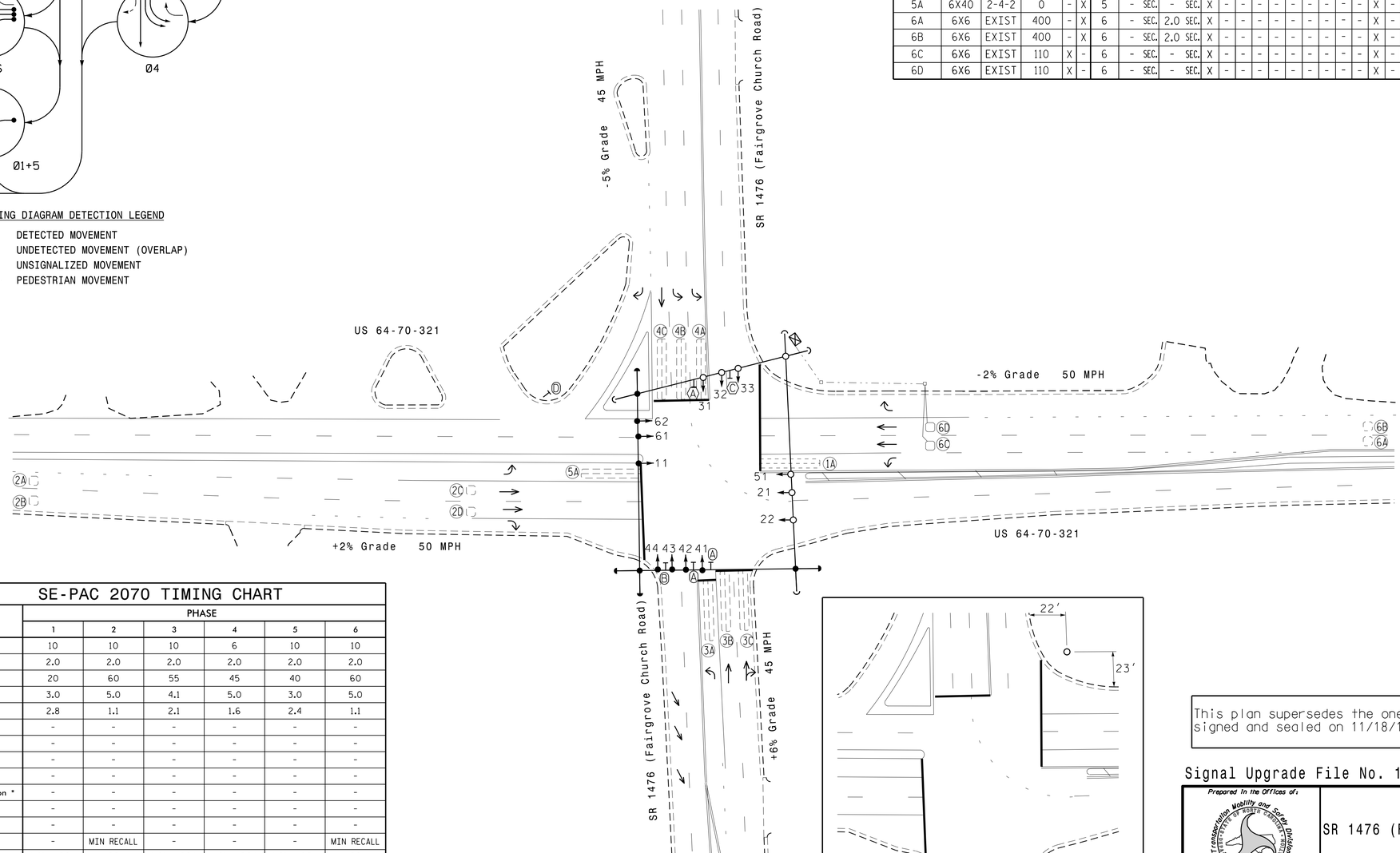
SE-PAC 2070 LOOP & DETECTOR UNIT INSTALLATION CHART

INDUCTIVE LOOPS						DETECTOR PROGRAMMING																			
								TIMING		OPERATION MODE												STATUS	
						ASSIGNED PHASE			0	1	2	3	4	5	6	7	SWITCH		SYSTEM LOOPS		
LOOP NO.	SIZE (ft)	TURNS	DIST. FROM STOPBAR (ft)	NEW	EXISTING		DELAY	EXTEND (STRETCH)	VEHICLE	PEDESTRIAN	1 CALL	STOP A	STOP B	PROTPER LEFT	PROTPER THROUGH	AND			NEW	EXISTING	
1A	6X40	2-4-2	0	-	X	1	3 SEC.	- SEC.	X	-	-	-	-	-	-	-	-		-	X	-
2A	6X6	EXIST	400	-	X	2	- SEC.	2.0 SEC.	X	-	-	-	-	-	-	-	-		-	X	-
2B	6X6	EXIST	400	-	X	2	- SEC.	2.0 SEC.	X	-	-	-	-	-	-	-	-		-	X	-
2C	6X6	EXIST	110	-	X	2	- SEC.	- SEC.	X	-	-	-	-	-	-	-	-		-	X	-
2D	6X6	EXIST	110	-	X	2	- SEC.	- SEC.	X	-	-	-	-	-	-	-	-		-	X	-
3A	6X60	2-4-2	0	-	X	3	3 SEC.	- SEC.	X	-	-	-	-	-	-	-	-		-	X	-
3B	6X60	2-4-2	0	-	X	3	- SEC.	- SEC.	X	-	-	-	-	-	-	-	-		-	X	-
3C	6X60	2-4-2	0	-	X	3	10 SEC.	- SEC.	X	-	-	-	-	-	-	-	-		-	X	-
4A	6X60	2-4-2	0	-	X	4	3 SEC.	- SEC.	X	-	-	-	-	-	-	-	-		-	X	-
4B	6X60	2-4-2	0	-	X	4	- SEC.	- SEC.	X	-	-	-	-	-	-	-	-		-	X	-
4C	6X60	2-4-2	0	-	X	4	- SEC.	- SEC.	X	-	-	-	-	-	-	-	-		-	X	-
5A	6X40	2-4-2	0	-	X	5	- SEC.	- SEC.	X	-	-	-	-	-	-	-	-		-	X	-
6A	6X6	EXIST	400	-	X	6	- SEC.	2.0 SEC.	X	-	-	-	-	-	-	-	-		-	X	-
6B	6X6	EXIST	400	-	X	6	- SEC.	2.0 SEC.	X	-	-	-	-	-	-	-	-		-	X	-
6C	6X6	EXIST	110	X	-	6	- SEC.	- SEC.	X	-	-	-	-	-	-	-	-		-	X	-
6D	6X6	EXIST	110	X	-	6	- SEC.	- SEC.	X	-	-	-	-	-	-	-	-		-	X	-

6 Phase
Fully Actuated
Hickory City System

NOTES

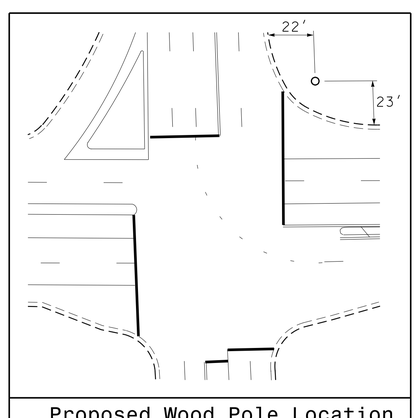
1. Refer to "Roadway Standard Drawings NCDOT" dated January 2012 and "Standard Specifications for Roads and Structures" dated January 2012.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Phase 1 and/or phase 5 may be lagged.
4. The order of phase 3 and phase 4 may be reversed.
5. Set all detector units to presence mode.
6. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
7. Hickory System No. : 1501.



SE-PAC 2070 TIMING CHART

FEATURE	PHASE 1	2	3	4	5	6
Min Green *	10	10	10	6	10	10
Passage Gap *	2.0	2.0	2.0	2.0	2.0	2.0
Maximum Green *	20	60	55	45	40	60
Yellow Change	3.0	5.0	4.1	5.0	3.0	5.0
Red Clear	2.8	1.1	2.1	1.6	2.4	1.1
Walk *	-	-	-	-	-	-
Pedestrian Clear	-	-	-	-	-	-
Added Initial *	-	-	-	-	-	-
Maximum Initial *	-	-	-	-	-	-
Time Before Reduction *	-	-	-	-	-	-
Time To Reduce *	-	-	-	-	-	-
Minimum Gap	-	-	-	-	-	-
Recall Mode	-	MIN RECALL	-	-	-	MIN RECALL
Vehicle Call Memory	NON-LOCK	LOCK	NON-LOCK	NON-LOCK	NON-LOCK	LOCK
Dual Entry	-	-	-	-	-	-
Simultaneous Gap	ON	ON	ON	ON	ON	ON

* These values may be field adjusted. Do not adjust Min Green and Extension times for phases 2 and 6 lower than what is shown. Min Green for all other phases should not be lower than 4 seconds.



Proposed Wood Pole Location

LEGEND

PROPOSED		EXISTING
○→	Traffic Signal Head	●→
◐→	Modified Signal Head	N/A
⊣	Sign	⊣
□↓	Pedestrian Signal Head With Push Button & Sign	■↓
○→	Signal Pole with Guy	●→
○↓	Signal Pole with Sidewalk Guy	●↓
▭	Inductive Loop Detector	▭
⊠	Controller & Cabinet	⛶
□	Junction Box	■
·-·-·	2-in Underground Conduit	·-·-·
N/A →	Right of Way	- - - - -
→	Directional Arrow	→
Ⓐ	Left Arrow "ONLY" Sign (R3-5L)	Ⓐ
Ⓑ	Through Arrow "ONLY" Sign (R3-5A)	Ⓑ
Ⓒ	Combined Through and Right Arrow Sign (R3-6R)	Ⓒ
Ⓓ	"YIELD" Sign (R1-2)	Ⓓ

This plan supersedes the one signed and sealed on 11/18/15

Signal Upgrade File No. 12-14-216

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Prepared In the Offices of:
Transportation Mobility and Safety Division
Signal Design Section
750 N.Greenfield Pkwy.Garner,NC 27529

US 64-70-321
at
SR 1476 (Fairgrove Church Road)

Division 12 Catawba County Hickory

PLAN DATE: July 2017 REVIEWED BY: R. N. Zinser

PREPARED BY: C. Pierce REVIEWED BY:

SCALE 0 40 1"=40'

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 24393 ENGINEER TIMOTHY J. WILLIAMS

DocuSigned by: T. J. Williams 8/2/2017
97AD792DE8E934CA... DATE

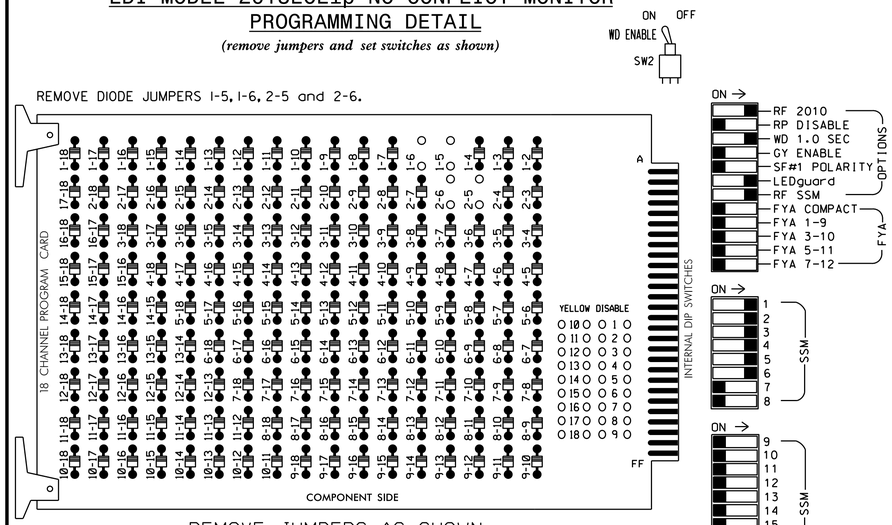
SIG. INVENTORY NO. 12-0647

17-AUG-2017 16:48
S:*TISS*ITS Signals*Signal Design Section*Eastern Region*Div-12*12-0647*120647_sig_dsn_20170802.dgn
cdpierce

PROJECT REFERENCE NO.	SHEET NO.
SS-4912 BO	Sig. 2

EDI MODEL 2018ECLip-NC CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



REMOVE JUMPERS AS SHOWN

NOTES:

1. Card is provided with all diode jumpers in place. Removal of any jumper allows its channels to run concurrently.
2. Ensure jumpers SEL2-SEL5 and SEL9 are present on the monitor board.
3. Ensure that Red Enable is active at all times during normal operation.
4. Integrate monitor with Ethernet network in cabinet.

■ = DENOTES POSITION OF SWITCH

NOTES

1. To prevent "flash-conflict" problems, insert red flash program blocks for all unused vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the Signal Plans.
2. Program controller to start up in phases 2 and 6 Green.
3. Enable Simultaneous Gap-Out, on controller unit, for all phases.
4. The cabinet and controller are part of the Hickory Signal System.

EQUIPMENT INFORMATION

CONTROLLER.....2070
CABINET.....332 W/ AUX
SOFTWARE.....SE-PAC 2070
CABINET MOUNT.....BASE
OUTPUT FILE POSITIONS...16
LOAD SWITCHES USED.....S1,S2,S4,S5,S7,S8
PHASES USED.....1,2,3,4,5,6
OVERLAPS.....NONE

SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S3	S4			S5			S6	S7	S8	S9	S10	S11	S12	AUX S1	AUX S2	AUX S3	AUX S4	AUX S5	AUX S6
CMU CHANNEL NO.	1	2	13	3			4			14	5	6	15	7	8	16	9	10	17	11	12	18
PHASE	1	2	2 PED	3			4			4 PED	5	6	6 PED	7	8	8 PED	OLA	OLB	SPARE	OLC	OLD	SPARE
SIGNAL HEAD NO.	11	21,22	NU	31	32,33	22	41,42	43,44	62	NU	51	61,62	NU	NU	NU	NU	NU	NU	NU	NU	NU	NU
RED		128			116			101				134										
YELLOW		129			117			102				135										
GREEN		130			118			103				136										
RED ARROW	125			116			101				131											
YELLOW ARROW	126			117		117	102		102		132											
GREEN ARROW	127			118		118	103		103		133											

NU = Not Used

INPUT FILE POSITION LAYOUT

(front view)

		1	2	3	4	5	6	7	8	9	10	11	12	13	14
FILE "I"	U	ø1 1A	ø2 2A	ø2 2C	SLOT EMPTY	ø3 3A	ø4 3B	ø4 4A	ø4 4C	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	FS DC ISOLATOR
	L	NOT USED	ø2 2B	ø2 2D		NOT USED	ø4 3C	ø4 4B	NOT USED						ST DC ISOLATOR
FILE "J"	U	ø5 5A	ø6 6A	ø6 6C	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY
	L	NOT USED	ø6 6B	ø6 6D											

EX.: 1A, 2A, ETC. = LOOP NO.'S

FS = FLASH SENSE
ST = STOP TIME

INPUT FILE CONNECTION & PROGRAMMING CHART

LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	DETECTOR NO.	NEMA PHASE	DELAY TIME	EXTEND (STRETCH) TIME
1A	TB2-1,2	I1U	56	1	1	3	
2A	TB2-5,6	I2U	39	3	2		2.0
2B	TB2-7,8	I2L	43	4	2		2.0
2C	TB2-9,10	I3U	63	5	2		
2D	TB2-11,12	I3L	76	6	2		
3A	TB4-5,6	I5U	58	9	3	3	
3B	TB4-9,10	I6U	41	11	3		
3C	TB4-11,12	I6L	45	12	3	10	
4A	TB6-1,2	I7U	65	13	4	3	
4B	TB6-3,4	I7L	78	14	4		
4C	TB6-5,6	I8U	49	15	4		
5A	TB3-1,2	J1U	55	19	5		
6A	TB3-5,6	J2U	40	21	6		2.0
6B	TB3-7,8	J2L	44	22	6		2.0
6C	TB3-9,10	J3U	64	23	6		
6D	TB3-11,12	J3L	77	24	6		

INPUT FILE POSITION LEGEND: J2L
FILE J
SLOT 2
LOWER

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 12-0647
DESIGNED: July 2017
SEALED: 8/2/2017
REVISED:

THIS ELECTRICAL DETAIL SUPERSEDES THE DETAIL SEALED ON 11/19/15

Electrical Detail

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

ELECTRICAL AND PROGRAMMING DETAILS FOR:

Prepared in the Offices of:
Transportation Mobility and Safety Division
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
Signals Management Section
750 N.Greenfield Pkwy.Garner,NC 27529

US 64-70-321
at
SR 1476 (Fairgrove Church Road)

Division 12 | Catawba County | Hickory

PLAN DATE: July 2017 | REVIEWED BY: T. Joyce
PREPARED BY: C. Strickland | REVIEWED BY:

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 031001 ENGINEER D. TODD JOYCE

DocuSigned by: D. Todd Joyce 8/3/2017 DATE

STG. INVENTORY NO. 12-0647

02-AUG-2017 16:13
S:\TIGSIG\ITS Signals\Workgroups\Sig Mgmt\Strickland\20647_sm_ele_xxx.dgn
cstrickland

PROJ. REFERENCE NO.	SHEET NO.
SS-4912B0	X-1

6/23/16
28-SEP-2017 07:58
R:\Roadway\Proj\SS-4912B0_Rdy_xpl_X-1.dgn
$$$$USERNAME$$$$

PROJ. REFERENCE NO.	SHEET NO.
SS-4912BO	X-2

6/23/16

28-SEP-2017 07:59
R:\Roadway\Proj\SS-4912BO_Rdy_xpl_X-1.dgn
$$$$USERNAME$$$$

6/23/16

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	SS-4912B0	X-3

70 60 50 40 30 20 10 0 10 20 30 40 50 60 70

990 980 970 980 970 980 970 980 970

971.26 0.02 971.66 0.037

11+00.00

972.54 0.02 0.043

10+75.00

974.06 0.02 973.62 0.03

10+50.00

EXIST EOT

TIE TO EXISTING CURB

974.26 0.03

10+35.00

—Y—

PROJ. REFERENCE NO.	SHEET NO.
SS-4912BO	X-4

6/23/16

28-SEP-2017 15:16
R:\Roadway\Proj\SS-4912BO_RDY_XPL_X-3 - X-5.DGN
$$$$USERNAME$$$$

6/23/16

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	SS-4912B0	X-5

70 60 50 40 30 20 10 0 10 20 30 40 50 60 70

1000 990 980 970 960

SP CURB STATION 10+49.86

967.56

0.04

0.01

11+96.13

6/23/16

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	SS-4912B0	X-6

980 970 960

70 60 50 40 30 20 10 0 10 20 30 40 50 60 70

0.02 FT/FT

10+96.33

0.02 FT/FT

10+70.88

0.02 FT/FT

EXIST. 30" CONC. 3.3% GRADE

10+49.86

0.02 FT/FT

10+25.43

0.02 FT/FT

10+00.00

—CURB—