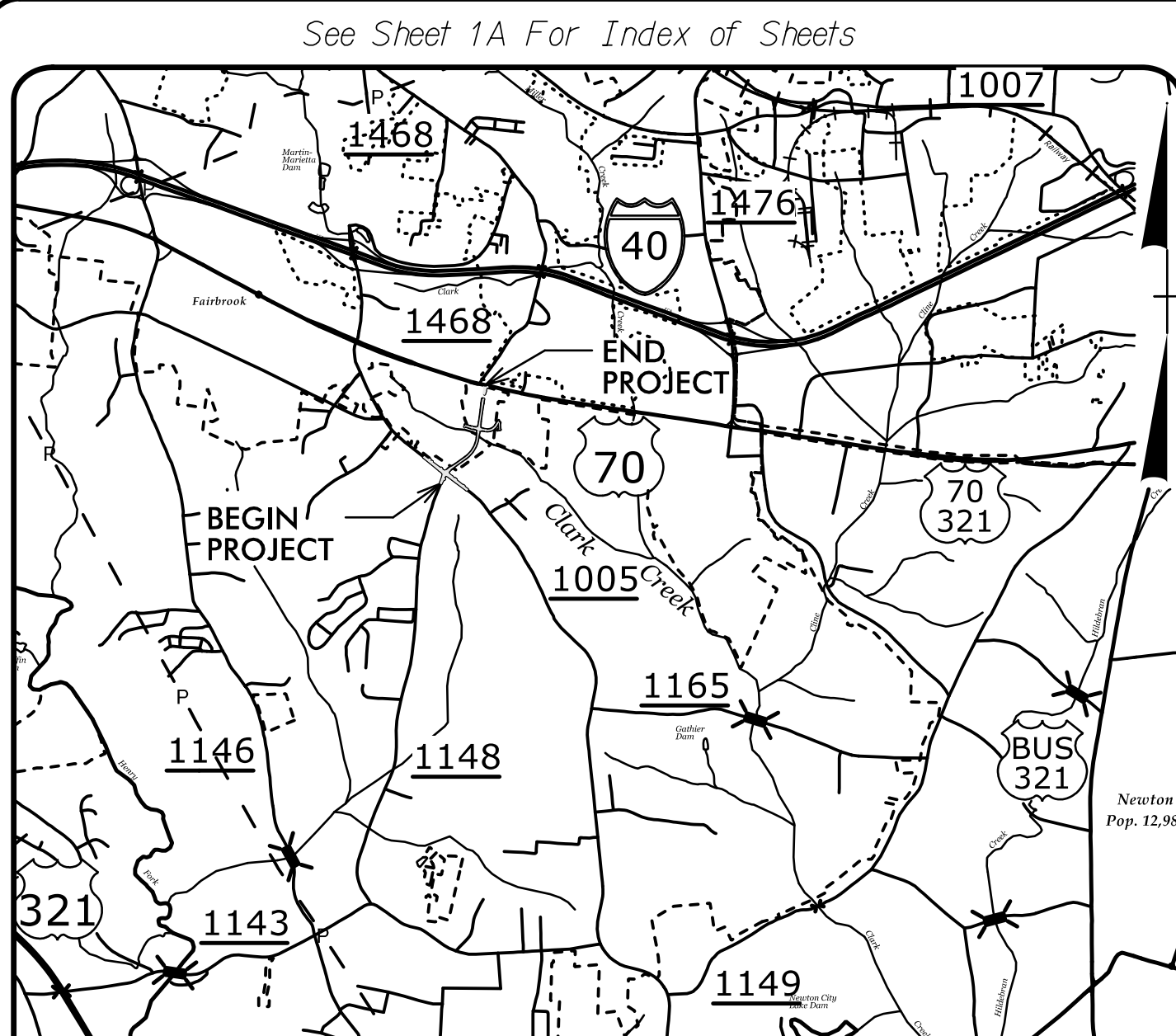


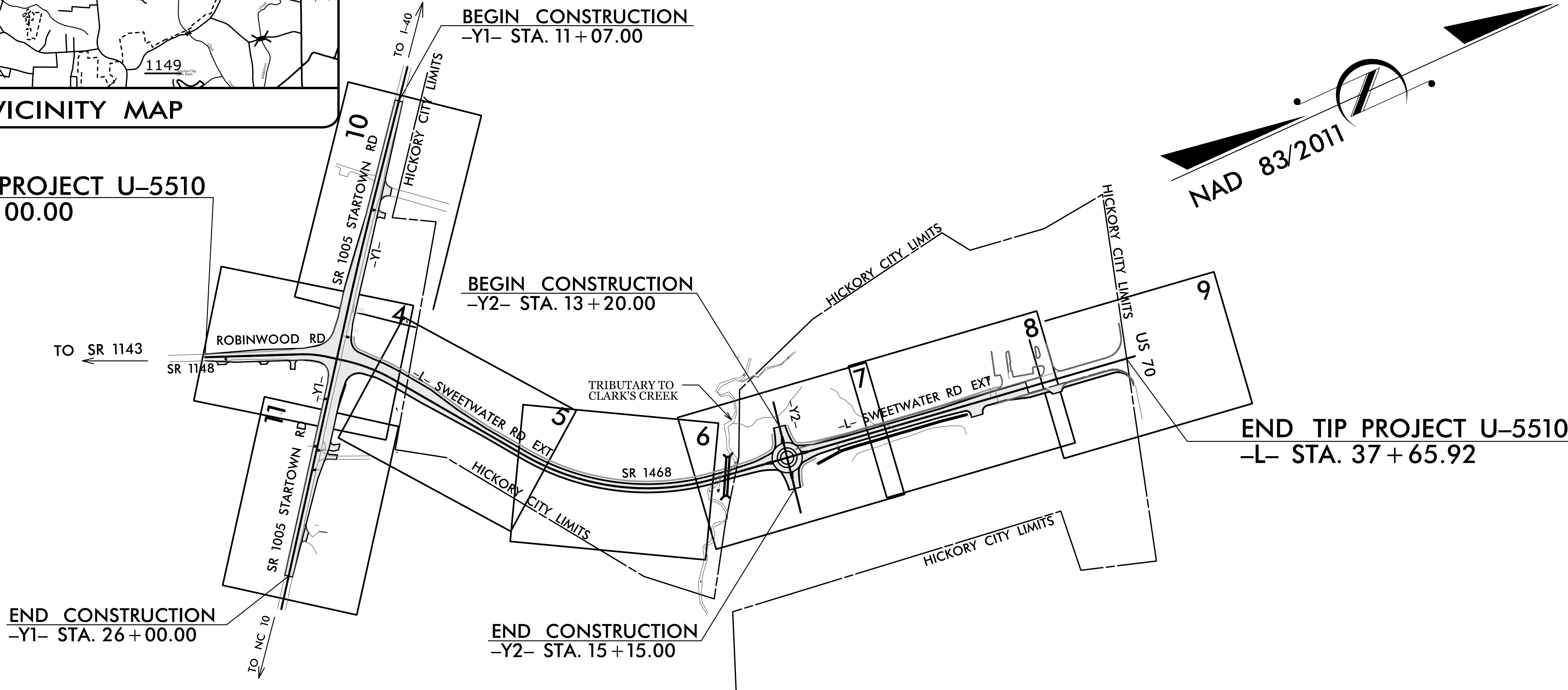
CONTRACT: U-5510

CONTRACT: DL00160



VICINITY MAP

BEGIN TIP PROJECT U-5510
-L- STA. 8+00.00



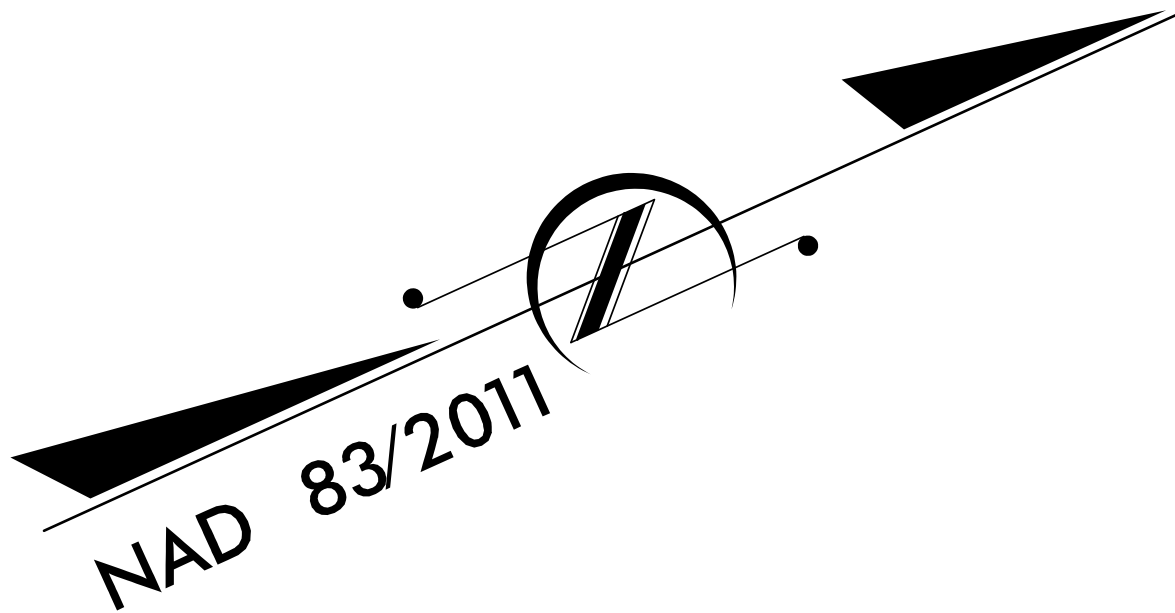
BEGIN CONSTRUCTION
-Y1- STA. 11+07.00

BEGIN CONSTRUCTION
-Y2- STA. 13+20.00

END CONSTRUCTION
-Y1- STA. 26+00.00

END CONSTRUCTION
-Y2- STA. 15+15.00

END TIP PROJECT U-5510
-L- STA. 37+65.92



STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CATAWBA COUNTY

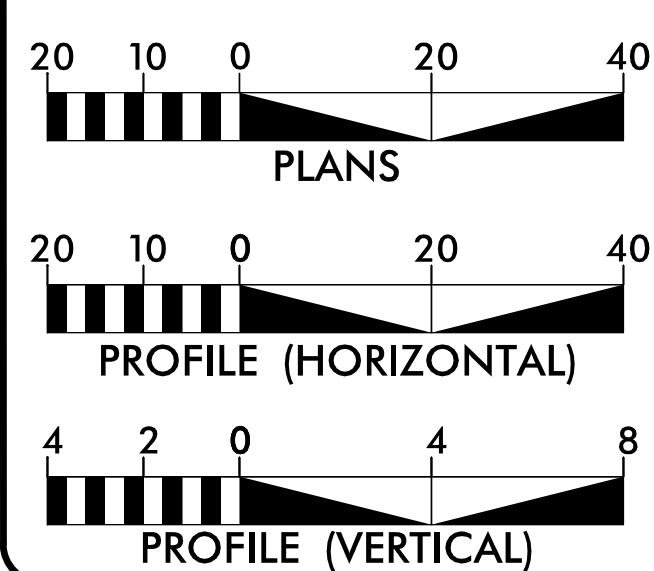
**LOCATION: SR 1468 (SWEETWATER RD) EXTENSION FROM
US 70 TO SR 1005 (STARTOWN RD)**

TYPE OF WORK: GRADING, PAVING, DRAINAGE, SIGNING, STRUCTURE AND SIGNALS

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U-5510	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
45532.1.1	TCSP-1468(2)	PE	
45532.2.1	TCSP-1468(2)	RW, UTIL.	
45532.3.1	TCSP-1468(2)	CONST.	

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

GRAPHIC SCALES



DESIGN DATA

ADT 2015 = 400
ADT 2040 = 9500
K = 9 %
D = 55 %
T = 3 % *
V = 40 MPH
* TTST = 1% DUAL 2%
FUNC CLASS =
URBAN COLLECTOR
REGIONAL TIER

PROJECT LENGTH

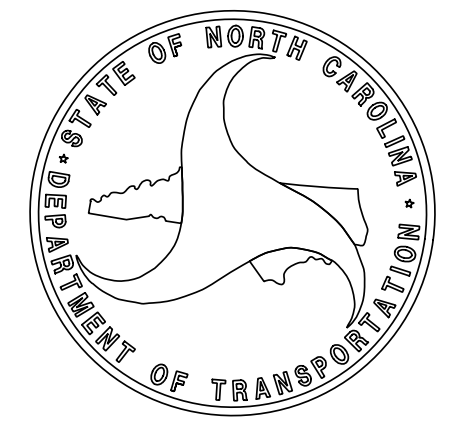
LENGTH ROADWAY TIP PROJECT U-5510 = 0.562 MILES
TOTAL LENGTH TIP PROJECT U-5510 = 0.562 MILES

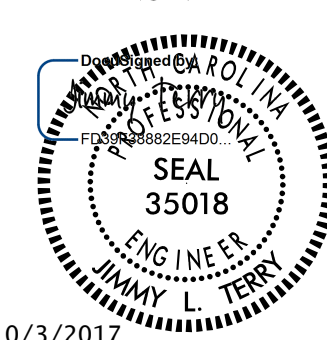
NCDOT CONTACT: JACKIE McSWAIN

<p>PLANS PREPARED BY: TGS ENGINEERS 804-C N. LAFAYETTE ST SHELBY, NC 28150 PH (704) 476-0003 CORP. LICENSE NO. C-0275</p>	<p>PLANS PREPARED FOR: NORTH CAROLINA DEPARTMENT OF TRANSPORTATION DIVISION 12 1710 East Marlon St. Shelby, NC 28151</p>
<p>RIGHT OF WAY DATE: MARCH 16, 2017</p>	<p>LEONARD G. FLETCHER, PE PROJECT ENGINEER</p>
<p>LETTING DATE: JUNE 26, 2018</p>	<p>JIMMY L. TERRY, PE PROJECT DESIGN ENGINEER</p>

HYDRAULICS ENGINEER

<p>10/3/2017 DocuSigned by: Thomas Fletcher 036194 P.E. SIGNATURE:</p>	
<p>ROADWAY DESIGN ENGINEER 10/3/2017 DocuSigned by: Jimmy Terry 35018 P.E. SIGNATURE:</p>	



PROJECT REFERENCE NO. <i>U-5510</i>	SHEET NO. <i>1A</i>
ROADWAY DESIGN ENGINEER	
	

**DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED**

INDEX OF SHEETS

SHEET NO.	SHEET
1	TITLE SHEET
1A	INDEX OF SHEETS, GENERAL NOTES, AND LIST OF STANDARD DRAWINGS
1B	CONVENTIONAL SYMBOLS
1C-1	SURVEY CONTROL SHEET
1D-1	ALIGNMENT CONTROL SHEET
1E-1	RIGHT OF WAY CONTROL SHEET
2A-1 THRU 2A-2	PAVEMENT SCHEDULE AND TYPICAL SECTIONS
2B-1	ROUNDBOUT DETAIL
2C-1 THRU 2C-2	GUARDRAIL DETAILS - GUARDRAIL INSTALLATION
2C-3	CURB RAMP DETAIL
2C-4	DETAIL - FENCE ON TOP OF WALL
3B-1	SUMMARY OF GUARDRAIL AND EARTHWORK SUMMARY
3D-1 THRU 3D-2	SUMMARY OF DRAINAGE QUANTITIES
3G-1	GEOTECHNICAL SUMMARIES
3P-1	PARCEL INDEX SHEET
4 THRU 11	PLAN SHEETS
12 THRU 19	PROFILE SHEETS
TMP-1 THRU TMP-8	TRAFFIC MANAGEMENT PLANS
PMP-1 THRU PMP-5	PAVEMENT MARKING PLAN
EC-1 THRU EC-20	EROSION CONTROL PLANS
SIGN-1 THRU SIGN-4	SIGNING PLANS
SIG-1.0 THRU SIG-5.5	SIGNAL PLANS
SCP 1 AND SCP 3	SIGNAL COMMUNICATION PLAN
UC-1 THRU UC-15	UTILITY CONSTRUCTION PLANS
UO-1 THRU UO-6	UTILITIES BY OTHERS
W-1 THRU W-2	RETAINING WALL NO. 1 - SOIL NAIL RETAINING WALL
X-1A	CROSS-SECTION INDEX
X-1B	CROSS-SECTION SUMMARY
X-1 THRU X-28	CROSS-SECTIONS
C-1 THRU C-6	CULVERT PLANS

GENERAL NOTES

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

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

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

SUPERELEVATION:
ALL CURVES ON THIS PROJECT SHALL BE SUPERELEVATED IN ACCORDANCE WITH STD. NO. 225.04 USING THE RATE OF SUPERELEVATION AND RUNOFF SHOWN ON THE PLANS. SUPERELEVATION IS TO BE REVOLVED ABOUT THE GRADE POINTS SHOWN ON THE TYPICAL SECTIONS.

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

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

BERM DITCHES:
BERM DITCHES SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. NO. 240.01 AT LOCATIONS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER.

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

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

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

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

UTILITIES:
UTILITY OWNERS ON THIS PROJECT ARE CENTURY LINK, CHARTER, CVCC TELECOMMUNICATIONS, CITY OF HICKORY, DUKE ENERGY, AND PIEDMONT NATURAL GAS

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.

STANDARD DRAWINGS

EFF. 01-17-2012
REV. 05-24-2017

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
240.01	Guide for Berm Ditch Construction
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	
815.02	Subsurface Drain
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
840.18	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
840.27	Brick Grated Drop Inlet Type 'B' - 12" thru 36" Pipe
840.29	Frames and Narrow Slot Flat Grates
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
840.66	Drainage Structure Steps
840.71	Concrete and Brick Pipe Plug
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
866.01	Chain Link Fence - 4', 5' and 6' High Fence
876.01	Rip Rap in Channels
876.02	Guide for Rip Rap at Pipe Outlets
876.04	Drainage Ditches with Class 'B' Rip Rap

STATE OF NORTH CAROLINA, DIVISION OF HIGHWAYS CONVENTIONAL PLAN SHEET SYMBOLS

BOUNDARIES AND PROPERTY:

State Line	_____
County Line	_____
Township Line	_____
City Line	_____
Reservation Line	_____
Property Line	_____
Existing Iron Pin	○ EIP
Computed Property Corner	_____ X
Property Monument	□ ECM
Parcel/Sequence Number	①23
Existing Fence Line	-X-X-X-
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	_____
RR Signal Milepost	○ MILEPOST 35
Switch	□ SWITCH
RR Abandoned	_____
RR Dismantled	_____

RIGHT OF WAY & PROJECT CONTROL:

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

ROADS AND RELATED FEATURES:

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

VEGETATION:

Single Tree	☼
Single Shrub	☼

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

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	⊙
Storm Sewer	— S —

UTILITIES:

POWER:	
Existing Power Pole	●
Proposed Power Pole	○
Existing Joint Use Pole	●
Proposed Joint Use Pole	○
Power Manhole	⊙
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	⊙
Telephone Pedestal	□
Telephone Cell Tower	⊗
U/G Telephone Cable Hand Hole	_____ (FH)
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	⊙
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	□
TV Tower	⊗
U/G TV Cable Hand Hole	_____ (FH)
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 ---

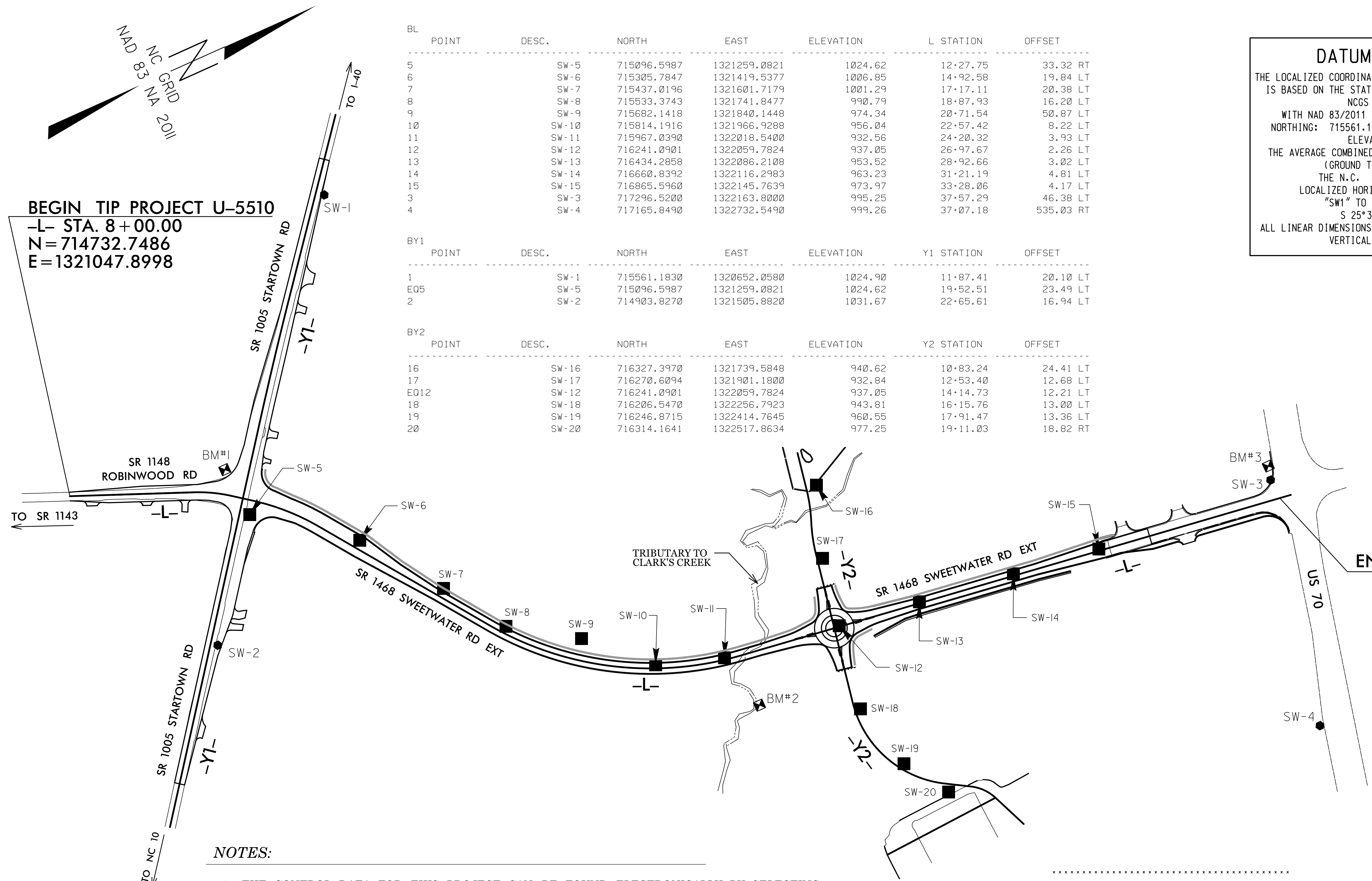
SANITARY SEWER:

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	⊕
Utility Unknown U/G Line LOS B (S.U.E.*)	--- 2UTL ---
U/G Tank; Water, Gas, Oil	□
Underground Storage Tank, Approx. Loc.	⊕
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.

SURVEY CONTROL SHEET U-5510



BEGIN TIP PROJECT U-5510
 -L- STA. 8+00.00
 N = 714732.7486
 E = 1321047.8998

END TIP PROJECT U-5510

BL POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
5	SW-5	715096.5987	1321259.0821	1024.62	12+27.75	33.32 RT
6	SW-6	715305.7847	1321419.5377	1006.85	14+92.58	19.84 LT
7	SW-7	715437.0196	1321601.7179	1001.29	17+17.11	20.38 LT
8	SW-8	715533.3743	1321741.8477	990.79	18+87.93	16.20 LT
9	SW-9	715682.1418	1321840.1448	974.34	20+71.54	50.87 LT
10	SW-10	715814.1916	1321966.9288	956.04	22+57.42	8.22 LT
11	SW-11	715967.0390	1322018.5400	932.56	24+20.32	3.93 LT
12	SW-12	716241.0901	1322059.7824	937.05	26+97.67	2.26 LT
13	SW-13	716434.2858	1322086.2108	953.52	28+92.66	3.02 LT
14	SW-14	716660.8392	1322116.2983	963.23	31+21.19	4.81 LT
15	SW-15	716865.5960	1322145.7639	973.97	33+28.06	4.17 LT
3	SW-3	717296.5200	1322163.8000	995.25	37+57.29	46.38 LT
4	SW-4	717165.8490	1322732.5490	999.26	37+07.18	535.03 RT

BY1 POINT	DESC.	NORTH	EAST	ELEVATION	Y1 STATION	OFFSET
1	SW-1	715561.1830	1320652.0580	1024.90	11+87.41	20.10 LT
E05	SW-5	715096.5987	1321259.0821	1024.62	19+52.51	23.49 LT
2	SW-2	714903.8270	1321505.8820	1031.67	22+65.61	16.94 LT

BY2 POINT	DESC.	NORTH	EAST	ELEVATION	Y2 STATION	OFFSET
16	SW-16	716327.3970	1321739.5848	940.62	10+83.24	24.41 LT
17	SW-17	716270.6094	1321901.1800	932.84	12+53.40	12.68 LT
E012	SW-12	716241.0901	1322059.7824	937.05	14+14.73	12.21 LT
18	SW-18	716206.5470	1322256.7923	943.81	16+15.76	13.00 LT
19	SW-19	716246.8715	1322414.7645	960.55	17+91.47	13.36 LT
20	SW-20	716314.1641	1322517.8634	977.25	19+11.03	18.82 RT

DATUM DESCRIPTION
 THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCGS FOR MONUMENT "SW1"
 WITH NAD 83/2011 STATE PLANE GRID COORDINATES OF
 NORTHING: 715561.183(±) EASTING: 1320652.058(±)
 ELEVATION: 1024.90(±)
 THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99988432
 THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "SW1" TO -L- STATION 8+00.00 IS
 S 25°32'21.7" E 918.147'
 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/](https://connect.ncdot.gov/resources/location/)
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:

- INDICATES GEODETIC CONTROL MONUMENTS FOR HORIZONTAL CONTROL
- INDICATES BASELINE MONUMENTS FOR HORIZONTAL PROJECT CONTROL
- ⊠ INDICATES BENCHMARKS FOR VERTICAL CONTROL

.....
 BM1 ELEVATION = 1025.60
 N 715087 E 1321140
 L STATION 11+52 57 LEFT
 CHISELED SQUARE IN CONC PAD TRAFFIC CONTROL BOX

 BM2 ELEVATION = 925.49
 N 715996 E 1322152
 L STATION 24+68 123 RIGHT
 RR SPIKE IN BASE 42" POPLAR

 BM3 ELEVATION = 995.89
 N 717305 E 1322132
 L STATION 37+61 79 LEFT
 CHISELED SQUARE IN CORNER CONC SW

NOTE: DRAWING NOT TO SCALE

ALIGNMENT CONTROL SHEET U-5510

L

TYPE	STATION	NORTH	EAST
POT	8+00.00	714732.7486	1321047.8998
PC	10+88.98	714999.7167	1321158.5231
PT	11+76.25	715075.3656	1321201.5868
PC	12+26.81	715115.8498	1321231.8667
PT	13+92.45	715231.3267	1321349.7137
PC	18+51.60	715498.8050	1321722.9046
PT	24+58.40	716003.8487	1322028.6658
POT	37+92.76	717325.1792	1322214.6755

Y1

TYPE	STATION	NORTH	EAST
POT	10+00.00	715662.0145	1320492.8065
PC	14+49.01	715382.7290	1320844.3825
PT	17+40.23	715204.9324	1321075.0170
POT	27+03.33	714628.0836	1321846.2634

Y2

TYPE	STATION	NORTH	EAST
POT	10+00.00	716318.3232	1321653.3184
PC	10+88.01	716302.5272	1321739.8988
PRC	11+63.96	716281.5453	1321812.7588
PT	12+39.67	716260.6056	1321885.3880
PC	15+96.39	716196.3651	1322236.2728
PT	19+00.29	716314.5476	1322496.2018
PC	19+61.26	716366.9557	1322527.3506
PT	20+25.02	716408.0910	1322574.6595
POT	21+14.82	716442.7998	1322657.4740

DR1

TYPE	STATION	NORTH	EAST
POT	10+00.00	716408.1322	1322574.7579
POT	12+84.54	716124.1188	1322592.0675

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCGS FOR MONUMENT "SW1" WITH NAD 83/2011 STATE PLANE GRID COORDINATES OF NORTHING: 715561.183(ft) EASTING: 1320652.058(ft) ELEVATION: 1024.90(ft)

THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99988432

THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "SW1" TO -L- STATION 8+00.00 IS
S 25°32'21.7" E 918.147'

ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

SEE SHEET 1C-1 FOR NOTES

RIGHT OF WAY CONTROL SHEET U-5510

PROJECT REFERENCE NO.	SHEET NO.
U-5510	1E-1
Location and Surveys	

ROW MARKER IRON PIN AND CAP

ALIGN	STATION	OFFSET	NORTH	EAST
L	8+00.00	-14.74	714738.38769	1321034.28419
L	8+00.00	-30.00	714744.23275	1321020.18495
L	8+00.00	15.26	714726.90581	1321062.00021
L	8+00.00	30.00	714721.26439	1321075.61467
L	10+88.98	30.00	714988.23244	1321186.23792
L	10+88.98	-30.00	715011.20092	1321130.80825
L	11+01.60	-30.00	715023.75885	1321136.27910
L	11+40.00	30.00	715029.87452	1321207.16679
L	12+73.07	-71.59	715199.29010	1321207.67767
L	13+64.29	-83.56	715279.62012	1321275.11002
L	13+70.87	-51.22	715258.81231	1321300.95179
L	13+92.45	-50.00	715271.96629	1321320.58596
L	14+16.67	30.00	715221.05199	1321386.87552
L	14+40.06	69.47	715202.59942	1321428.87845
L	15+02.00	-50.00	715335.78470	1321409.62666
L	17+09.00	-30.00	715440.11767	1321589.52560
L	18+51.60	30.00	715474.42126	1321740.38128
L	18+51.60	-30.00	715523.18875	1321705.42800
L	24+50.00	30.00	715991.02045	1322057.10629
L	24+58.40	-30.00	716008.03067	1321998.95872
L	24+58.68	30.68	715999.84995	1322059.08925
L	25+68.67	30.61	716108.77178	1322074.34553
L	25+70.00	-30.00	716118.53860	1322014.51542
L	27+62.00	70.00	716294.72394	1322140.30384
L	28+00.00	-29.29	716346.19342	1322047.28422
L	29+16.00	35.00	716452.09931	1322127.11318
L	31+16.00	35.00	716650.14654	1322154.99318
L	31+16.00	40.00	716649.44954	1322159.94436
L	33+50.00	40.00	716881.16480	1322192.56397
L	33+50.00	50.00	716879.77080	1322202.46633
L	37+28.77	50.00	717254.83895	1322255.26637

PERMANENT EASEMENT MARKER IRON PIN AND CAP

ALIGN	STATION	OFFSET	NORTH	EAST
L	11+40.00	-60.44	715076.26665	1321129.52718
L	15+03.00	-70.00	715352.62309	1321398.78835
L	17+10.00	-50.00	715456.95606	1321578.68730
L	18+50.00	85.00	715428.78684	1321771.12299
L	18+51.60	-50.00	715539.44458	1321693.77691
L	19+50.00	85.00	715499.18922	1321857.03057
L	20+45.00	73.00	715583.85685	1321920.16916
L	22+27.00	57.00	715758.55036	1322013.21297
L	22+59.00	-50.00	715832.11891	1321929.16012
L	22+59.00	-30.00	715824.22520	1321947.53645
L	22+59.00	-60.00	715836.06577	1321919.97196
L	22+80.00	-60.00	715853.92173	1321927.34778
L	22+80.00	-50.00	715850.23365	1321936.64284
L	23+50.00	50.00	715883.93948	1322053.85461
L	23+85.00	-50.00	715943.55385	1321966.30199
L	24+08.00	-78.00	715970.24733	1321943.63465
L	24+50.00	113.00	715978.53021	1322139.16111
L	24+60.00	180.00	715980.33862	1322207.13101
L	24+71.00	117.00	716000.01342	1322146.27954
L	24+80.00	180.00	716000.14335	1322209.91901
L	25+03.00	30.65	716043.73775	1322065.23645
L	25+06.00	-95.00	716064.22449	1321941.22847
L	26+20.00	-90.47	716176.48032	1321961.60308
L	27+84.88	-50.00	716334.10478	1322024.66445
L	28+05.00	60.23	716338.66642	1322136.62074
L	29+11.00	60.00	716443.66313	1322151.17208
L	31+16.00	45.00	716648.75254	1322164.89555
L	33+12.00	50.00	716842.14183	1322197.16913
L	33+75.00	-50.00	716918.46671	1322106.92772
L	33+75.00	-29.69	716915.63488	1322127.04378

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "SW1" WITH NAD 83/NA 2011 STATE PLANE GRID COORDINATES OF NORTHING: 715561.183(ft) EASTING: 1320652.058(ft) ELEVATION: 1024.896(ft) THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99988432 THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "SW1" TO -L- STATION 8+00.00 IS S 25°32'21.7" E 918.15 (ft) ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES VERTICAL DATUM USED IS NAVD 88

I, Matthew T. Cornwell, a Professional Land Surveyor in the state of North Carolina, hereby certify to the best of my knowledge and belief that the following work item(s) (R/W Staking) performed under my responsible charge meet NCDOT Survey Standards as directed in the NCDOT Location & Surveys guidelines and procedures. Those standards can be found at: <https://connect.ncdot.gov/resources/Location/Pages/>.

I further certify that the right of way and permanent easement points shown herein and outlined in the tables shown hereon (localized coordinates, station/offset) have been checked and are accurate representations of the right of way and permanent easement points depicted on the corresponding highway plans. I also certify that the right of way and permanent easement points shown herein have been field monumented under my supervision from existing survey control provided by others; that the depicted property data shown herein were surveyed by others; and these monuments denote the right of way and easement boundaries at the time of staking which may be subject to change due to right of way revisions (See deeds for final determination).

Witness my original signature, registration number and seal this day 7/26/2017

ROW MARKER IRON PIN AND CAP

ALIGN	STATION	OFFSET	NORTH	EAST
Y1	11+07.00	-30.04	715618.97735	1320595.27070
Y1	11+07.00	-50.00	715634.61008	1320607.68905
Y1	14+49.01	-50.00	715421.87949	1320875.48293
Y1	17+40.23	-50.00	715244.97190	1321104.96423
Y1	18+15.00	-50.00	715200.18694	1321164.84168
Y1	19+69.90	28.85	715044.27122	1321241.65385
Y1	20+44.60	-50.00	715062.66905	1321348.70301
Y1	26+00.00	-29.95	714713.95663	1321781.45112
Y1	26+00.00	-50.00	714730.01470	1321793.46165

PERMANENT EASEMENT MARKER IRON PIN AND CAP

ALIGN	STATION	OFFSET	NORTH	EAST
Y1	12+40.00	-65.00	715563.62803	1320721.15953
Y1	14+49.01	-65.00	715433.62464	1320884.81307
Y1	14+70.00	29.52	715346.53600	1320842.52292
Y1	16+50.00	55.00	715215.55427	1320969.67082
Y1	17+40.23	-65.00	715256.98374	1321113.94841
Y1	18+15.00	43.21	715125.54451	1321109.01336
Y1	18+35.96	-65.00	715199.64751	1321190.60692
Y1	20+42.28	-68.83	715079.13591	1321358.12271
Y1	22+45.00	-68.00	714957.05458	1321519.96230
Y1	24+50.00	-50.00	714819.85653	1321673.34318

ROW MARKER IRON PIN AND CAP

ALIGN	STATION	OFFSET	NORTH	EAST
Y2	12+85.00	-35.00	716286.86986	1321936.28041
Y2	12+85.00	35.00	716218.01432	1321923.67424
Y2	15+28.00	35.00	716174.25293	1322162.70132
Y2	15+28.00	-35.00	716243.10847	1322175.30748

NOTES:

1. THE CONTROL DATA FOR THIS PROJECT CAN BE FOUND ELECTRONICALLY BY SELECTING PROJECT CONTROL DATA AT: [HTTPS://CONNECT.NCDOT.GOV/RESOURCES/LOCATION/](https://connect.ncdot.gov/resources/location/)

2. IF FURTHER INFORMATION REGARDING PROJECT CONTROL IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

3. PROJECT CONTROL WAS ESTABLISHED USING GNSS, THE GLOBAL NAVIGATION SATELLITE SYSTEM.

Matthew T. Cornwell
Digitally signed by Matthew T. Cornwell
 DN: cn=Matthew T. Cornwell, o=TC2
 Engineers, ou=Location & Surveys,
 email=matcornwell@tc2engineers.com, c=US
 Date: 2017.07.26 17:21:30 -0400

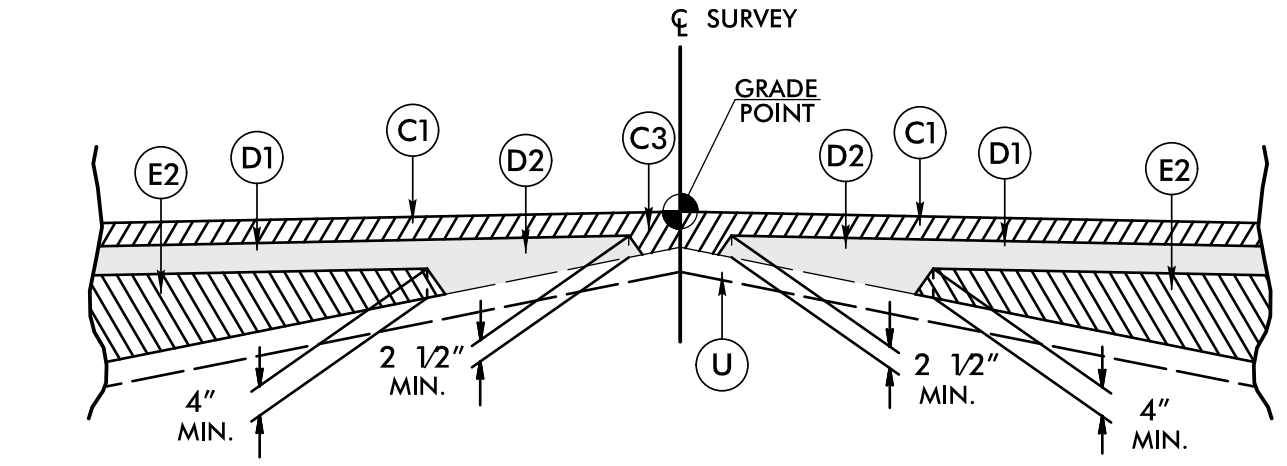


7/25/17

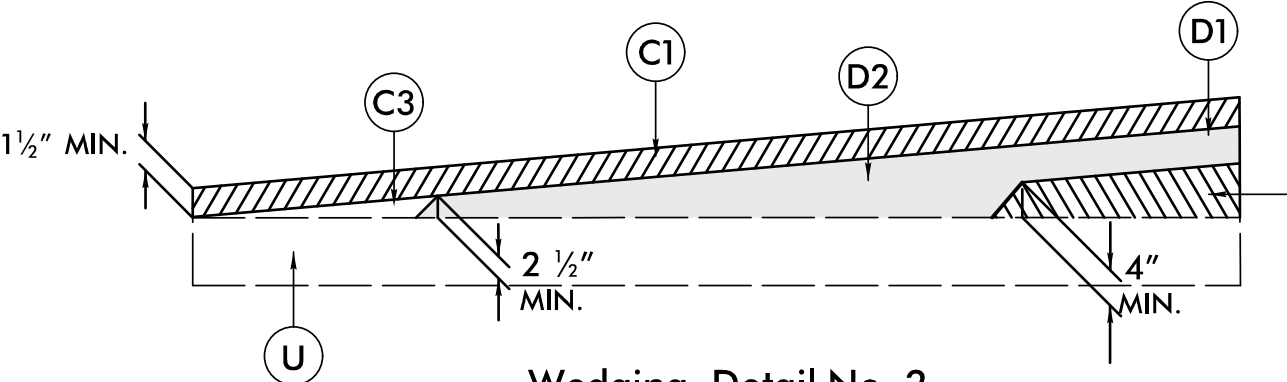
6/2/2017

PAVEMENT SCHEDULE	
C1	PROP. APPROX. 1 1/2" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
C2	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.
C3	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1" DEPTH, TO BE PLACED IN LAYERS NOT TO EXCEED 2" IN DEPTH.
D1	PROP. APPROX. 4" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
D2	PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 2 1/2" IN DEPTH OR GREATER THAN 4" IN DEPTH.
E1	PROP. APPROX. 5" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 570 LBS. PER SQ. YD.
E2	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 4" IN DEPTH OR GREATER THAN 5 1/2" IN DEPTH.
J1	PROP. 10" DEPTH AGGREGATE BASE COURSE
R1	2'-6" CONCRETE CURB AND GUTTER.
R2	1'-6" CONCRETE CURB AND GUTTER.
R3	7" MONOLITHIC CONCRETE TRUCK APRON
S	4" CONCRETE SIDEWALK
T	EARTH MATERIAL.
U	EXISTING PAVEMENT.
V	MILLING EXISTING PAVEMENT.SEE DETAIL THIS SHEET
W	WEDGING EXISTING PAVEMENT.SEE DETAILS THIS SHEET

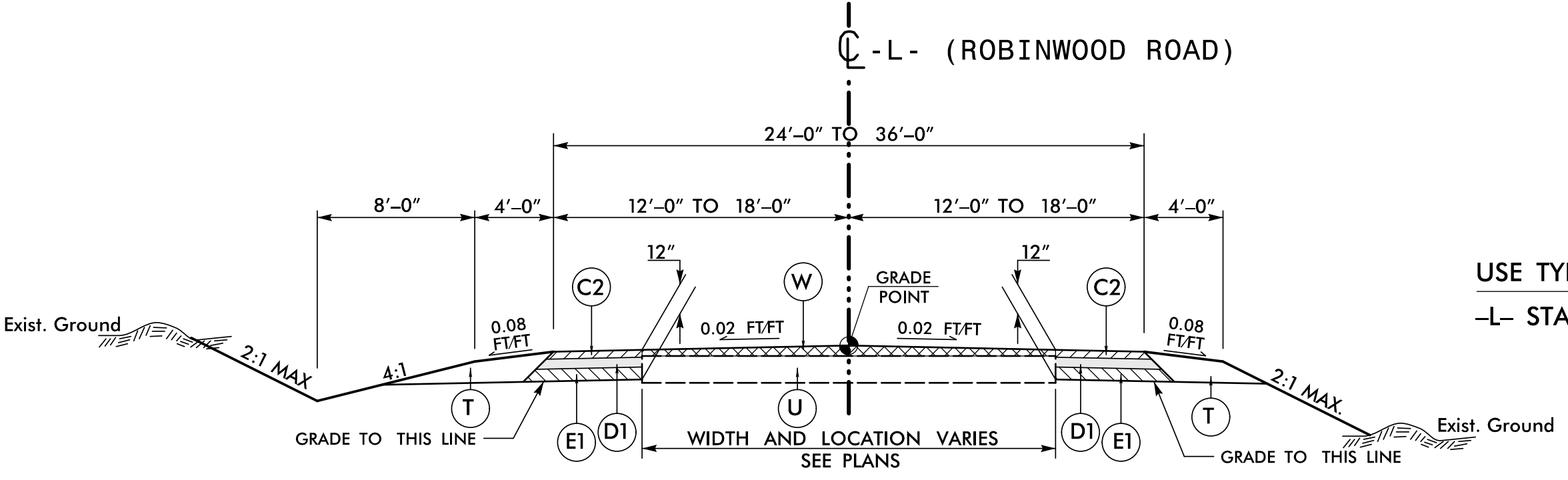
NOTE: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.



Wedging Detail No. 1

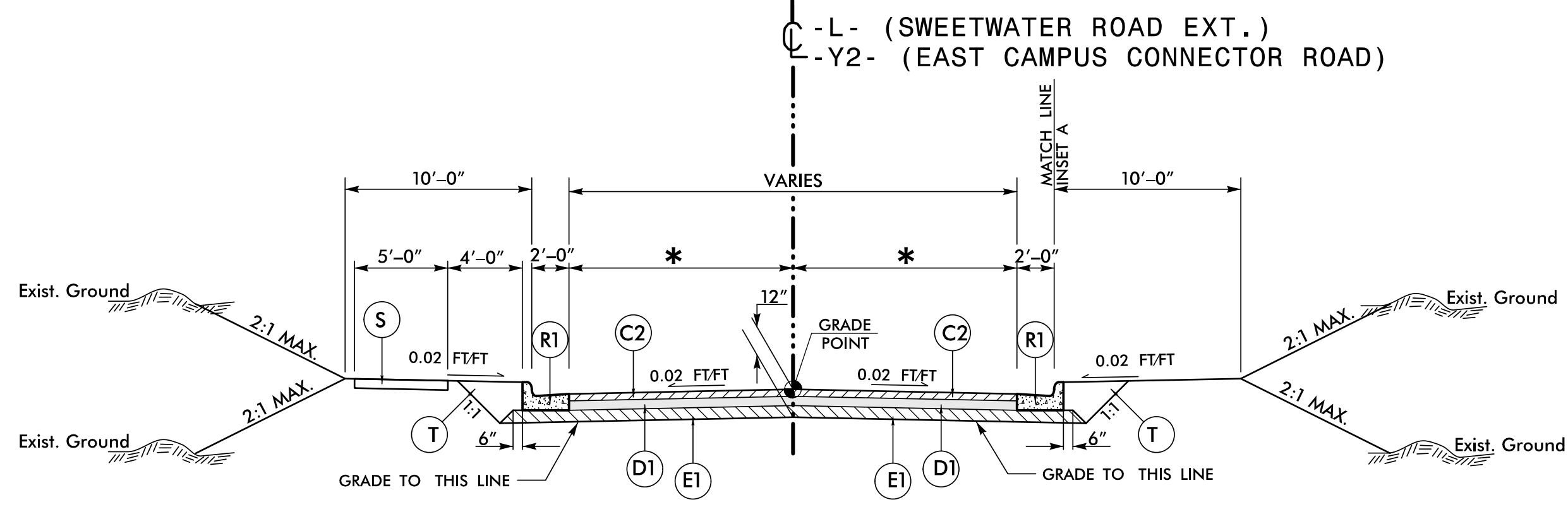


Wedging Detail No. 2



TYPICAL SECTION NO. 1

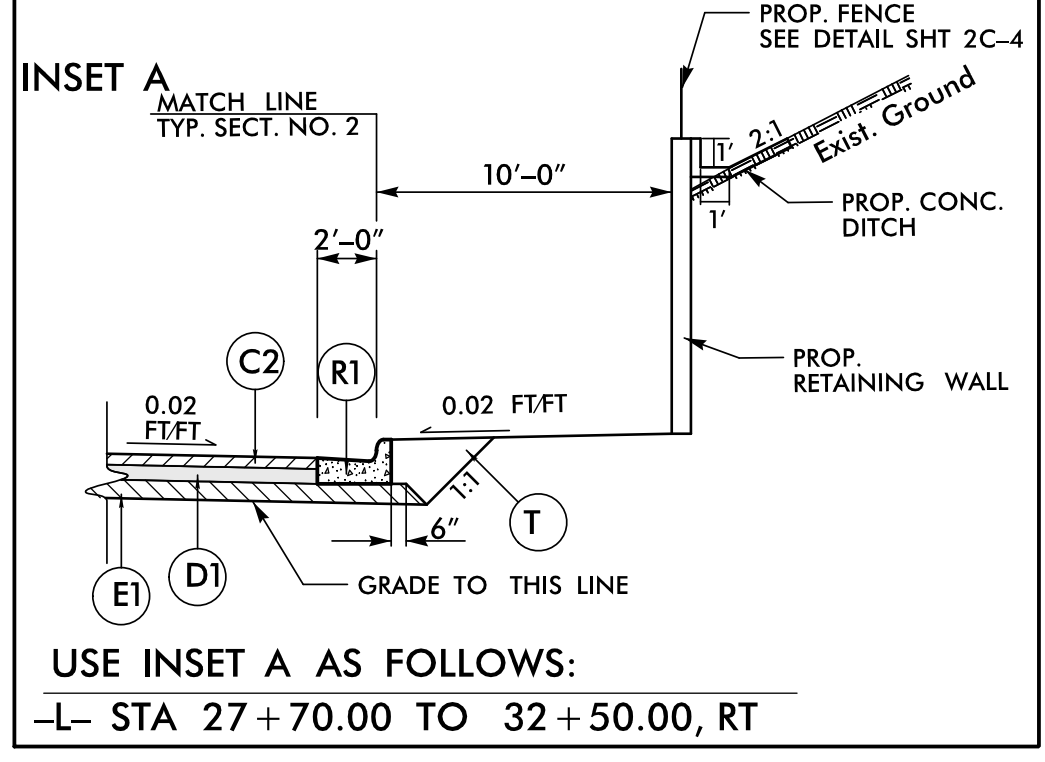
USE TYPICAL SECTION NO. 1 AS FOLLOWS:
-L- STA 8+00.00 TO 11+92.20



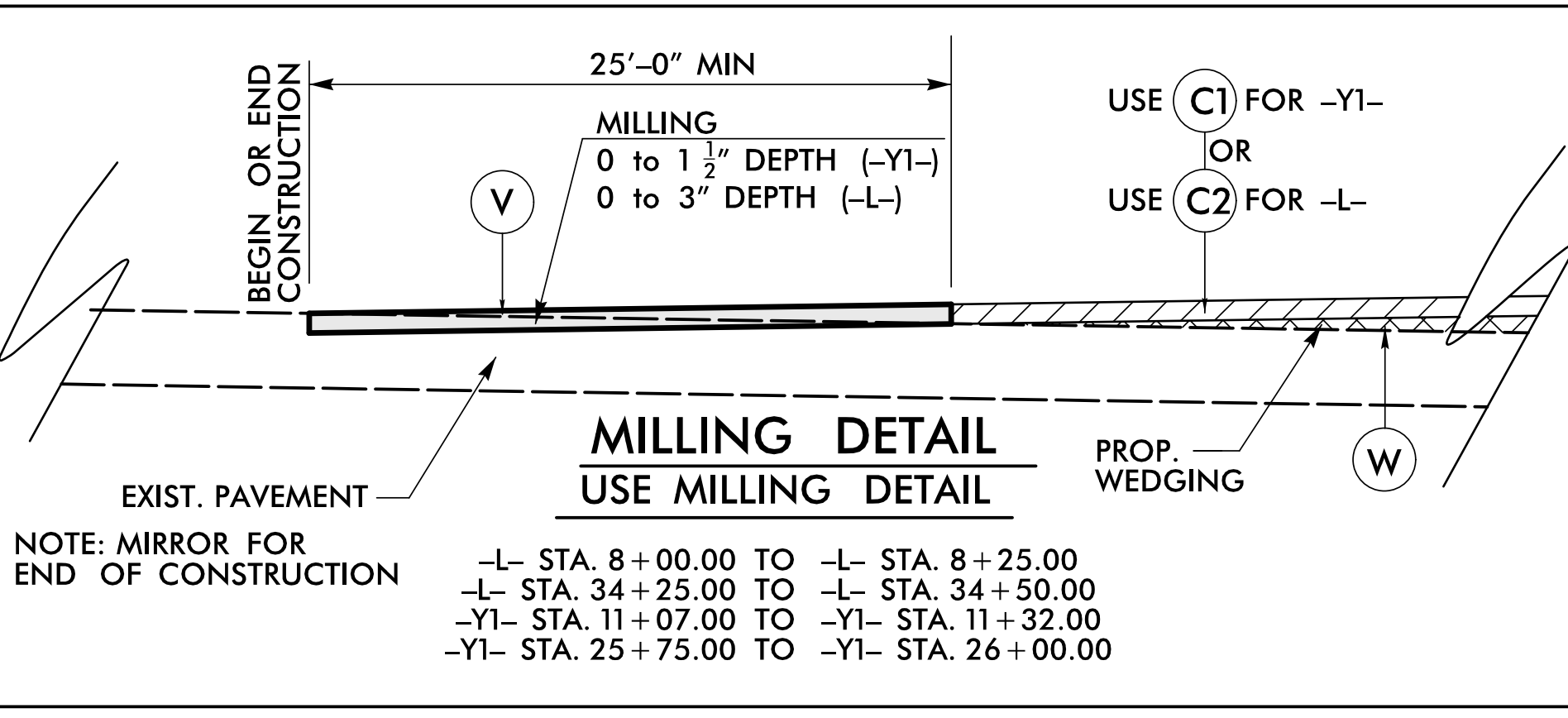
TYPICAL SECTION NO. 2

USE TYPICAL SECTION NO. 2 AS FOLLOWS:

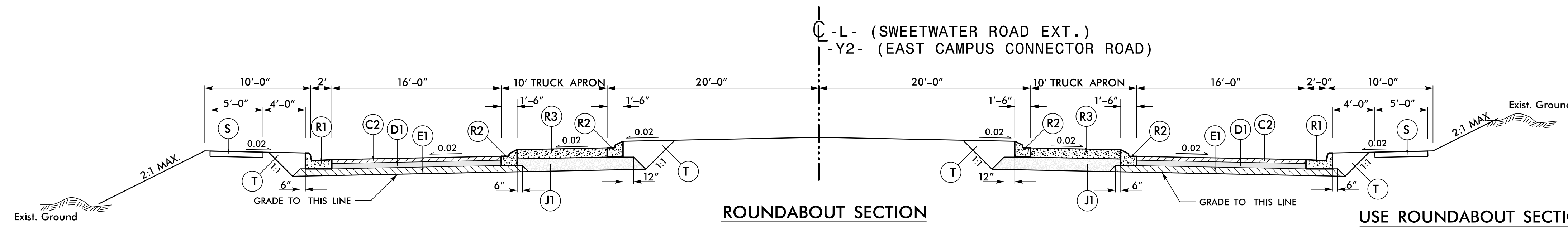
*	STA. TO STA.
12'-0"	-L- STA. 17+09.00 TO 25+10.35 -L- STA. 28+80.37 TO 31+75.00
18'-0"	-L- STA. 12+28.20 TO 15+02.00 RT -L- STA. 33+35.00 TO 33+75.00 -L- STA. 33+35.00 TO 34+50.00 LT
30'-0"	-L- STA. 12+28.20 TO 15+02.00 LT
12'-0" TO 15'-0"	-L- STA. 28+00.37 TO 28+80.37
12'-0" TO 15'-8"	-L- STA. 25+10.35 TO 25+90.35 LT
12'-0" TO 15'-1"	-L- STA. 25+10.35 TO 25+90.35 RT
12'-0" TO 18'-0"	-L- STA. 16+02.00 TO 17+09.00 LT -L- STA. 15+02.00 TO 17+09.00 RT -L- STA. 31+75.00 TO 33+35.00
18'-0" TO 30'-0"	-L- STA. 15+02.00 TO 16+02.00 LT -L- STA. 33+75.00 TO 34+50.00 RT
VARIES (SEE PLANS)	-L- STA. 25+90.35 TO 26+39.35 -L- STA. 27+31.35 TO 28+00.37 -Y2- STA. 13+20.00 TO 13+71.49 -Y2- STA. 14+65.49 TO 15+15.00



USE INSET A AS FOLLOWS:
-L- STA 27+70.00 TO 32+50.00, RT



NOTE: MIRROR FOR END OF CONSTRUCTION
-L- STA. 8+00.00 TO -L- STA. 8+25.00
-L- STA. 34+25.00 TO -L- STA. 34+50.00
-Y1- STA. 11+07.00 TO -Y1- STA. 11+32.00
-Y1- STA. 25+75.00 TO -Y1- STA. 26+00.00



ROUNDBOAT SECTION

USE ROUNDBOAT SECTION AS FOLLOWS:
-L- STA 26+39.35 TO 27+31.35
-Y2- STA. 13+71.49 TO 14+63.49

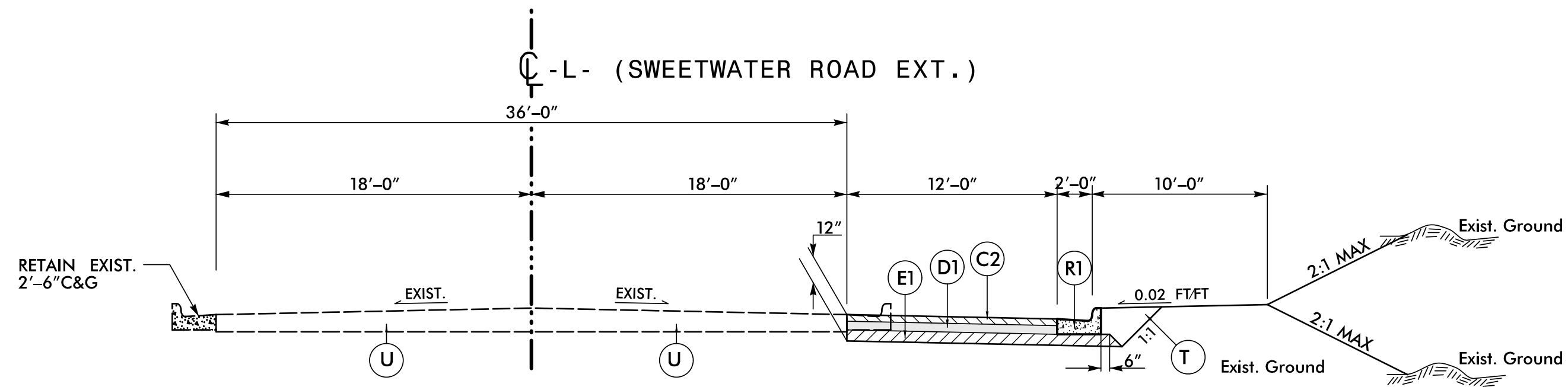
PROJECT REFERENCE NO. U-5510	SHEET NO. 2A-1
ROADWAY DESIGN ENGINEER 	PAVEMENT DESIGN ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	
 TGS ENGINEERS 804-C N. LAFAYETTE ST SHELBY, NC 28150 PH (704) 476-0003 CORP. LICENSE NO.: C-0275	

9/29/2017 U-5510\Roadway\Proc\SPR-Rdy_tjg.dgn
 User: tjg

6/2/2017

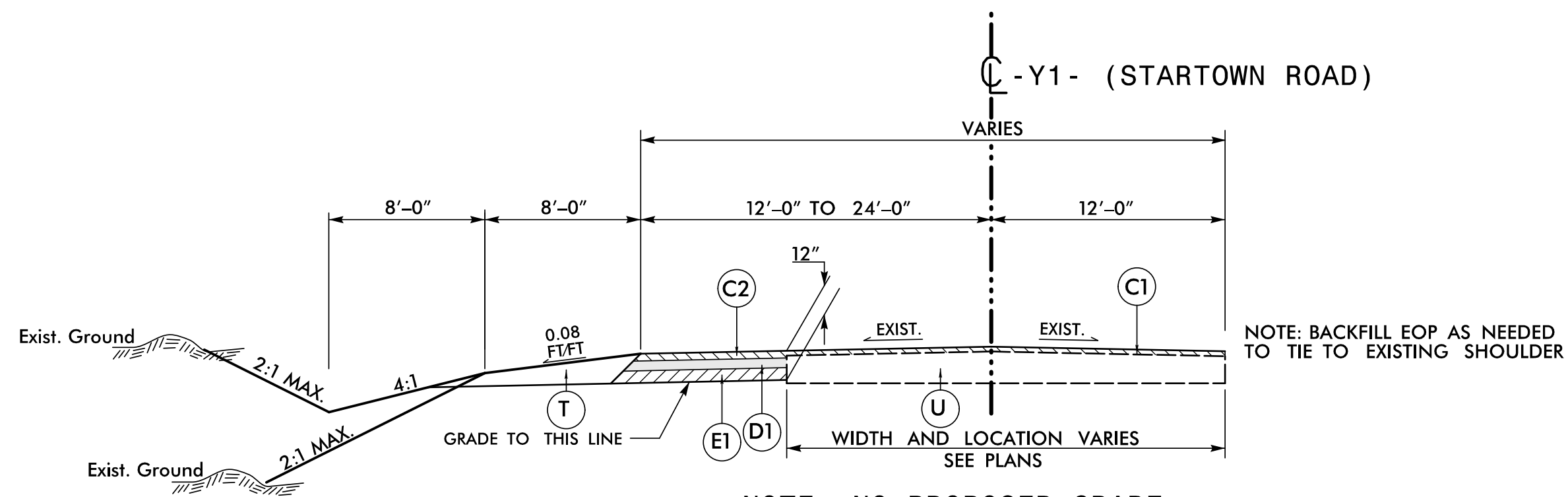
PAVEMENT SCHEDULE	
C1	PROP. APPROX. 1½" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B
C2	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B
D1	PROP. APPROX. 4" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B
E1	PROP. APPROX. 5" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B
R1	2'-6" CONCRETE CURB AND GUTTER.
T	EARTH MATERIAL.
U	EXISTING PAVEMENT.

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



TYPICAL SECTION NO. 3

USE TYPICAL SECTION NO. 3 AS FOLLOWS:
 -L- STA 34+50.00 TO 37+65.92





NOTE: NO PROPOSED GRADE

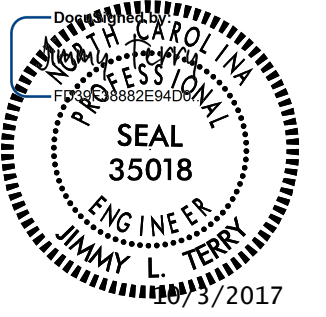

TYPICAL SECTION NO. 4

USE TYPICAL SECTION NO. 4 AS FOLLOWS:
 -Y1- STA 11+07.00 TO 26+00.00

PROJECT REFERENCE NO. U-5510	SHEET NO. 2A-2
ROADWAY DESIGN ENGINEER 	PAVEMENT DESIGN ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	
 TGS ENGINEERS 804-C N. LAFAYETTE ST SHELBY, NC 28150 PH (704) 476-0003 CORP. LICENSE NO.: C-0275	

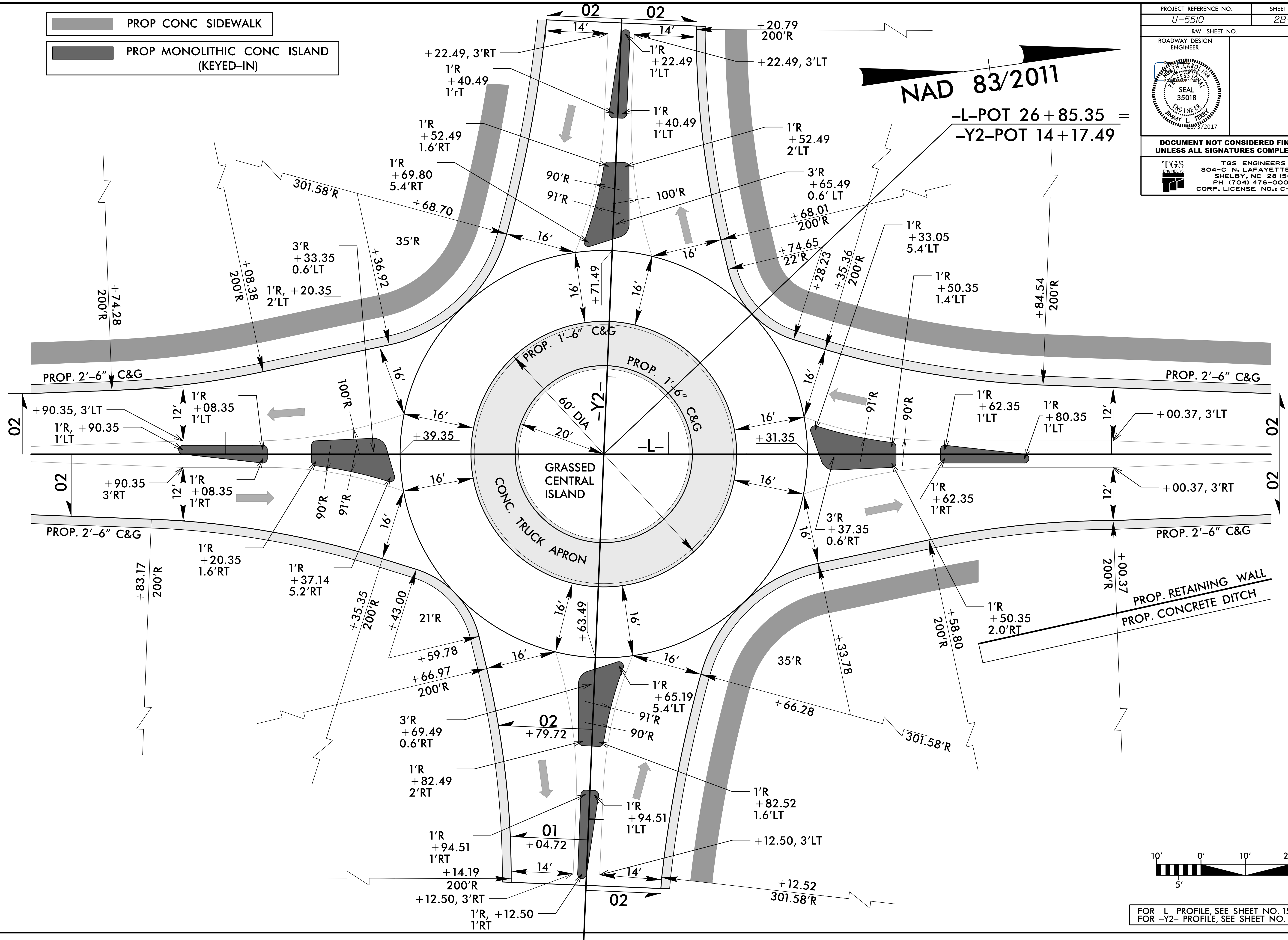
8/17/17

 PROP CONC SIDEWALK
 PROP MONOLITHIC CONC ISLAND (KEYED-IN)

PROJECT REFERENCE NO. U-5510	SHEET NO. 2B-1
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	
 SEAL 35018 ENGINEER N.C. STATE BOARD OF PROFESSIONAL ENGINEERS 08/17/2017	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	
 TGS ENGINEERS 804-C N. LAFAYETTE ST SHELBY, NC 28150 PH (704) 476-0003 CORP. LICENSE NO. C-0275	

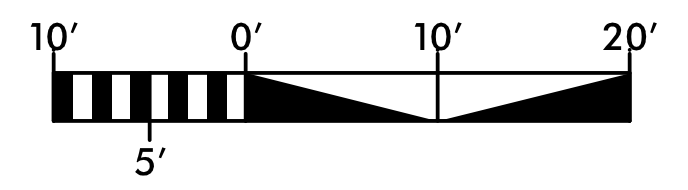
NAD 83/2011

$$-L-POT\ 26 + 85.35 = -Y2-POT\ 14 + 17.49$$



REVISIONS

8/28/2017 U-5510\Roadway\Proj\SRE_Rdy_Roundabout_Detail_Sht.dgn
 User: jml
 11:52 AM



FOR -L- PROFILE, SEE SHEET NO. 15
 FOR -Y2- PROFILE, SEE SHEET NO. 19

04-MAY-2017 15:20
 S:\Contracts\Construction\Special Details\Standard Drawings\Details in Lieu of Standards\Division 8\862d01 862d03 862d02\862d02.dgn
 Jhowerton - N1 CSP-215798

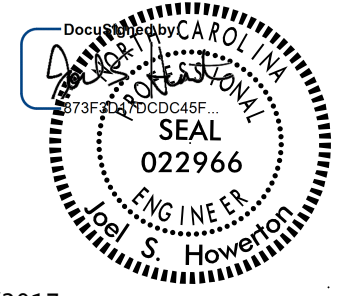
STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.	ROADWAY DETAIL DRAWING FOR GUARDRAIL INSTALLATION	SHEET 6 OF 8 862D02
SYSTEM PARTS		
ROADWAY DETAIL DRAWING FOR GUARDRAIL INSTALLATION		
SHEET 6 OF 8 862D02		

STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.	ROADWAY DETAIL DRAWING FOR GUARDRAIL INSTALLATION	SHEET 6 OF 8 862D02
ROADWAY DETAIL DRAWING FOR "W6" STEEL POST		
SHEET 5 OF 8 862D02		

STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.	ROADWAY DETAIL DRAWING FOR GUARDRAIL INSTALLATION	SHEET 5 OF 8 862D02
TYPICAL GUARDRAIL AND GUARDRAIL POST ALTERNATIVES		
ROADWAY DETAIL DRAWING FOR GUARDRAIL INSTALLATION		
SHEET 5 OF 8 862D02		

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

CONTRACT STANDARDS AND DEVELOPMENT UNIT	
Office 919-707-6950	FAX 919-250-4119
SEE TITLE BLOCK	
ORIGINAL BY: J HOWERTON	DATE: 06-22-12
MODIFIED BY:	DATE:
CHECKED BY:	DATE:
FILE SPEC.:	



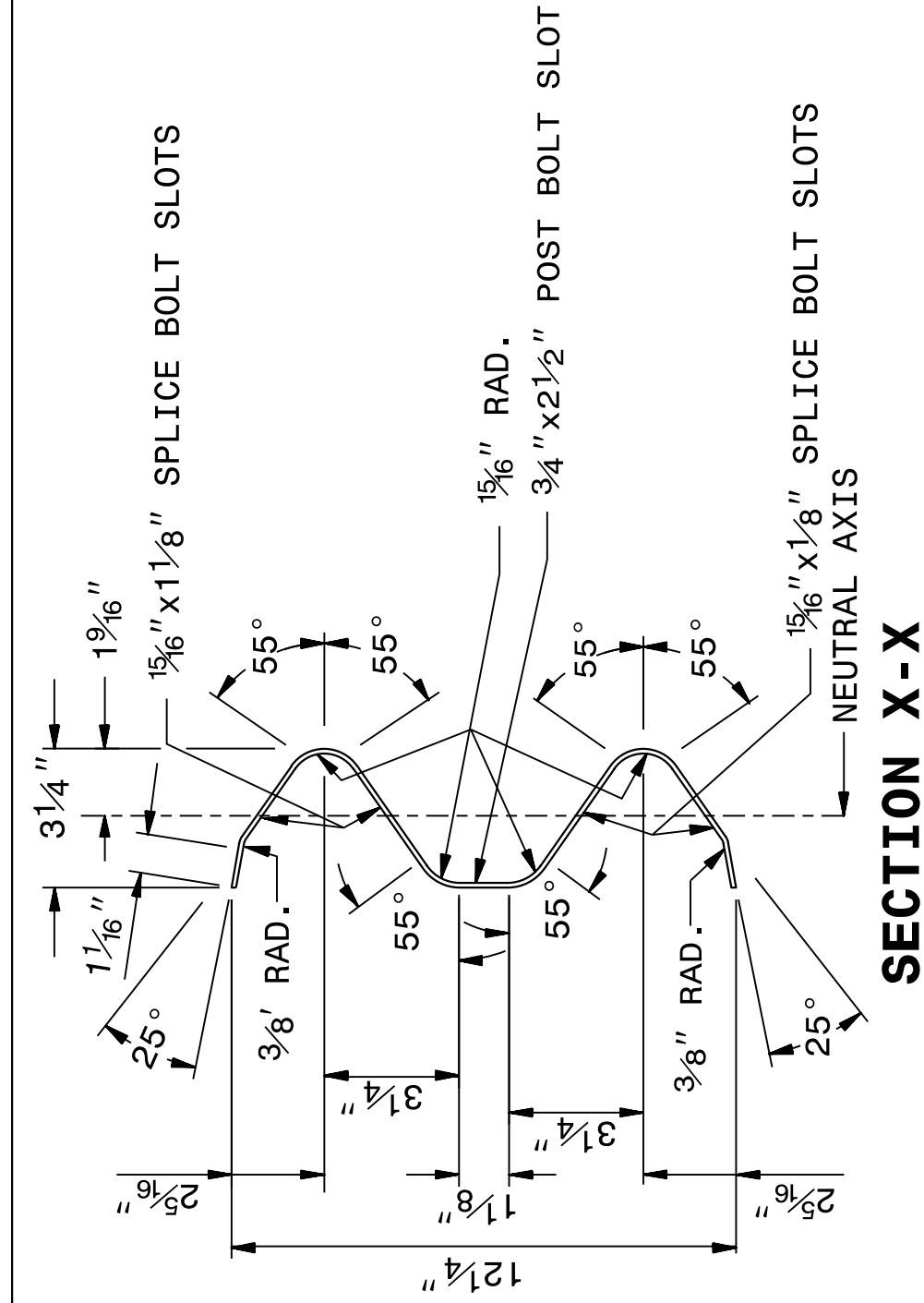
10/5/2017

04-MAY-2017 15:21
S:\Contracts\Construction\Special Details\Standard Drawings\Details in Lieu of Standards\Division 8\862d01 862d03 862d03\862d02.dgn
Jhowerton - N\CSPE\201705

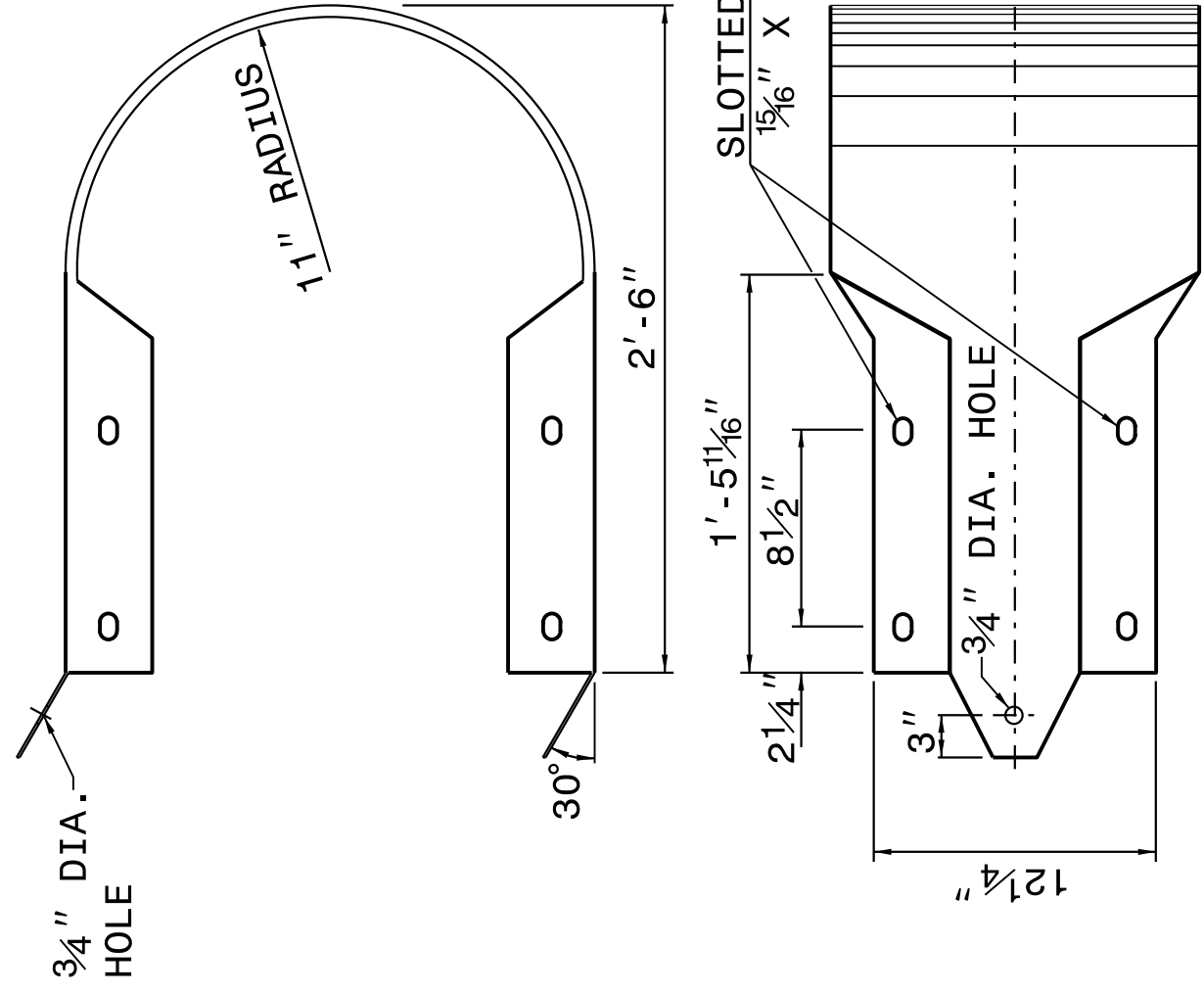
STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

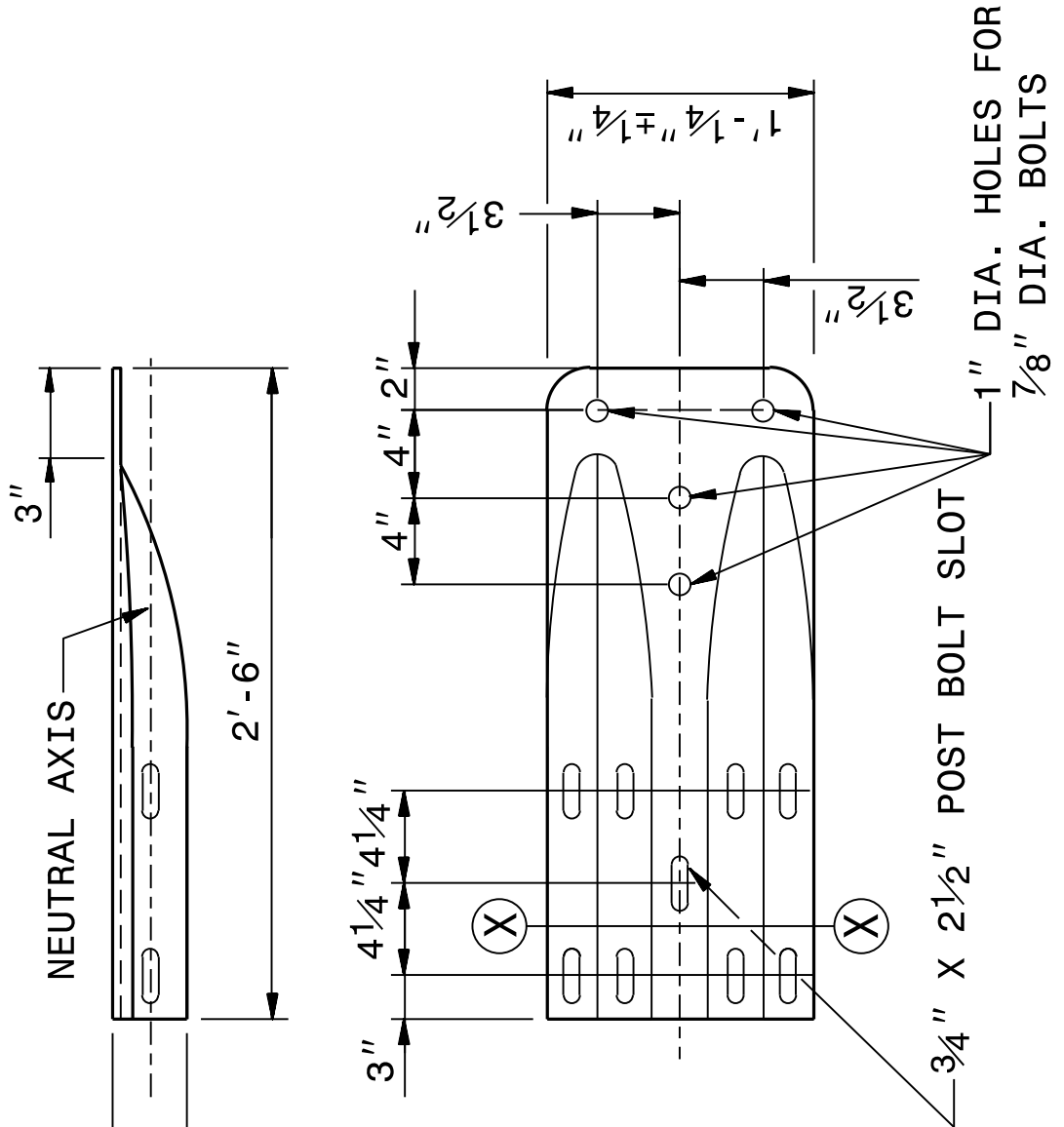
SHEET 8 OF 8
862D02



SECTION X-X



BUFFERED END SECTION



TYPICAL END SHOE

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

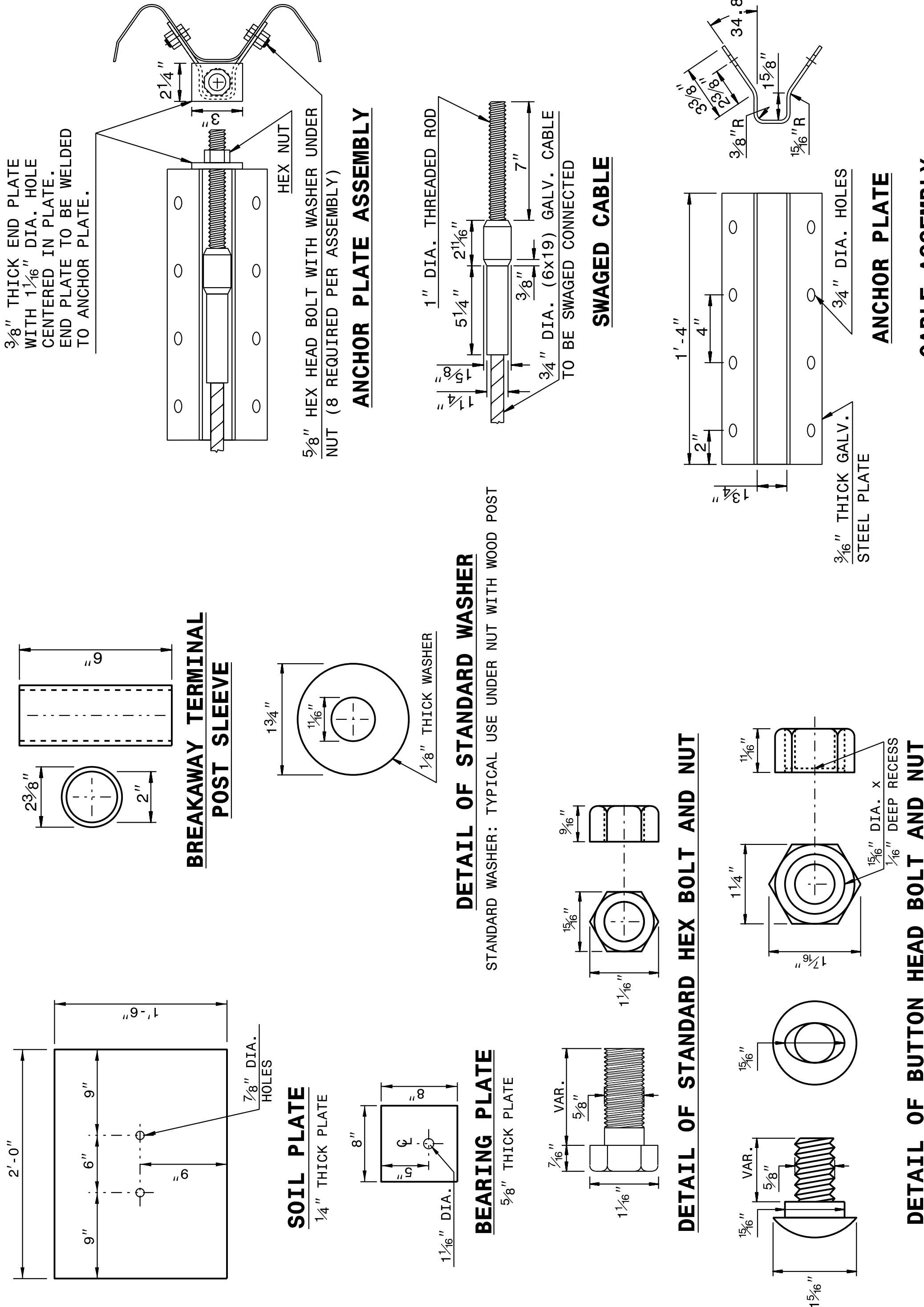
ROADWAY DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

SHEET 8 OF 8
862D02

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

ROADWAY DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

SHEET 7 OF 8
862D02

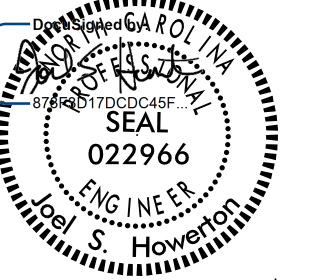


STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

SHEET 7 OF 8
862D02

10/5/2017

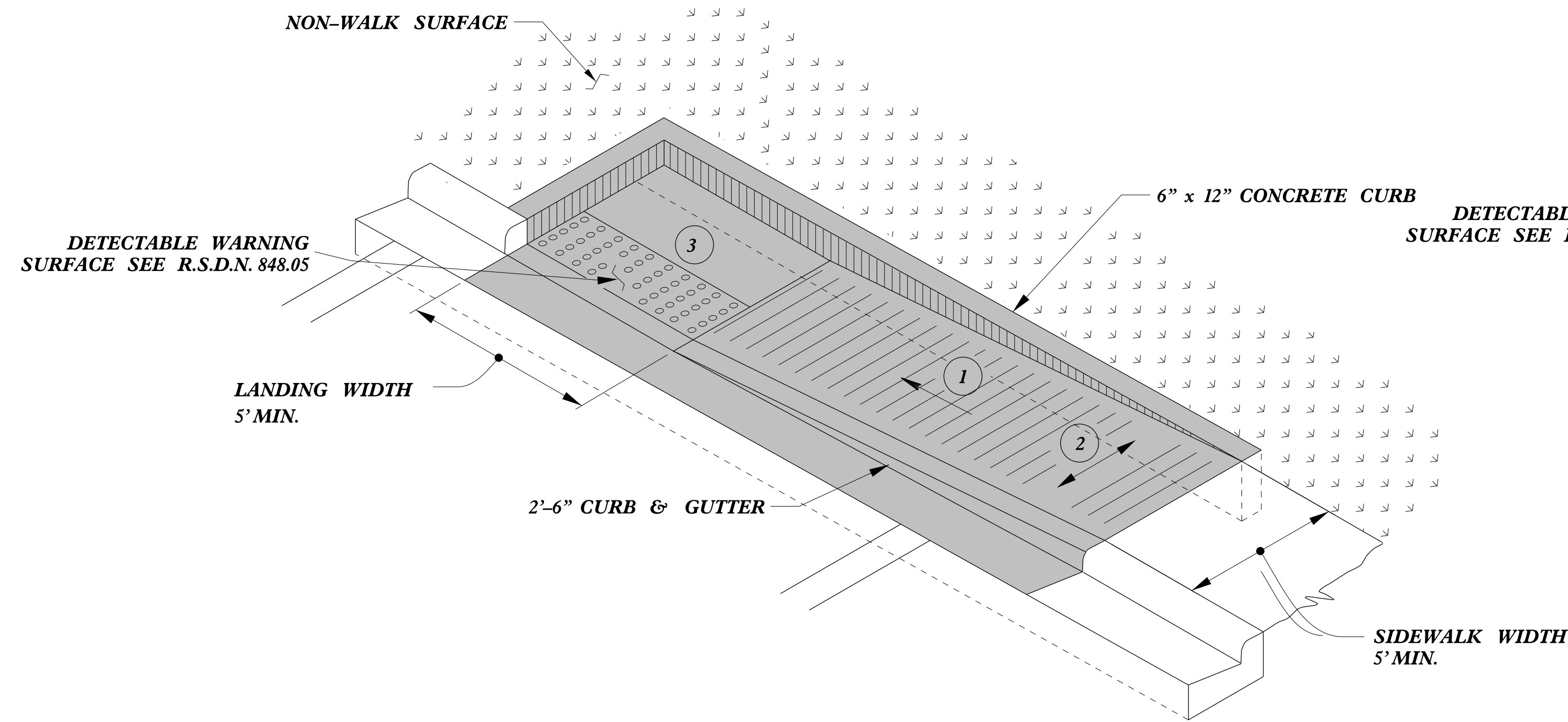


DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

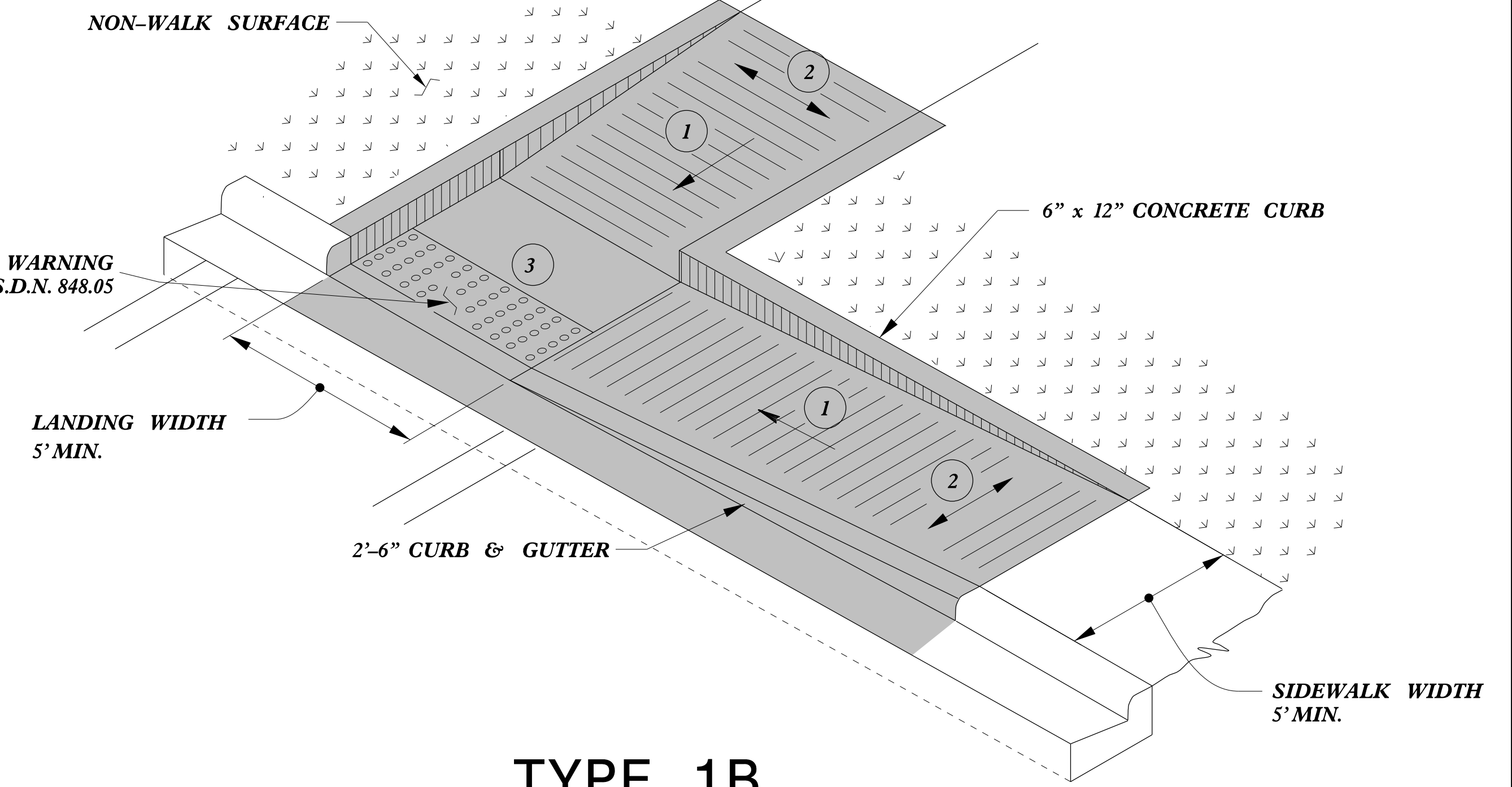
CONTRACT STANDARDS AND DEVELOPMENT UNIT
Office 919-707-6950 FAX 919-250-4119

SEE TITLE BLOCK

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



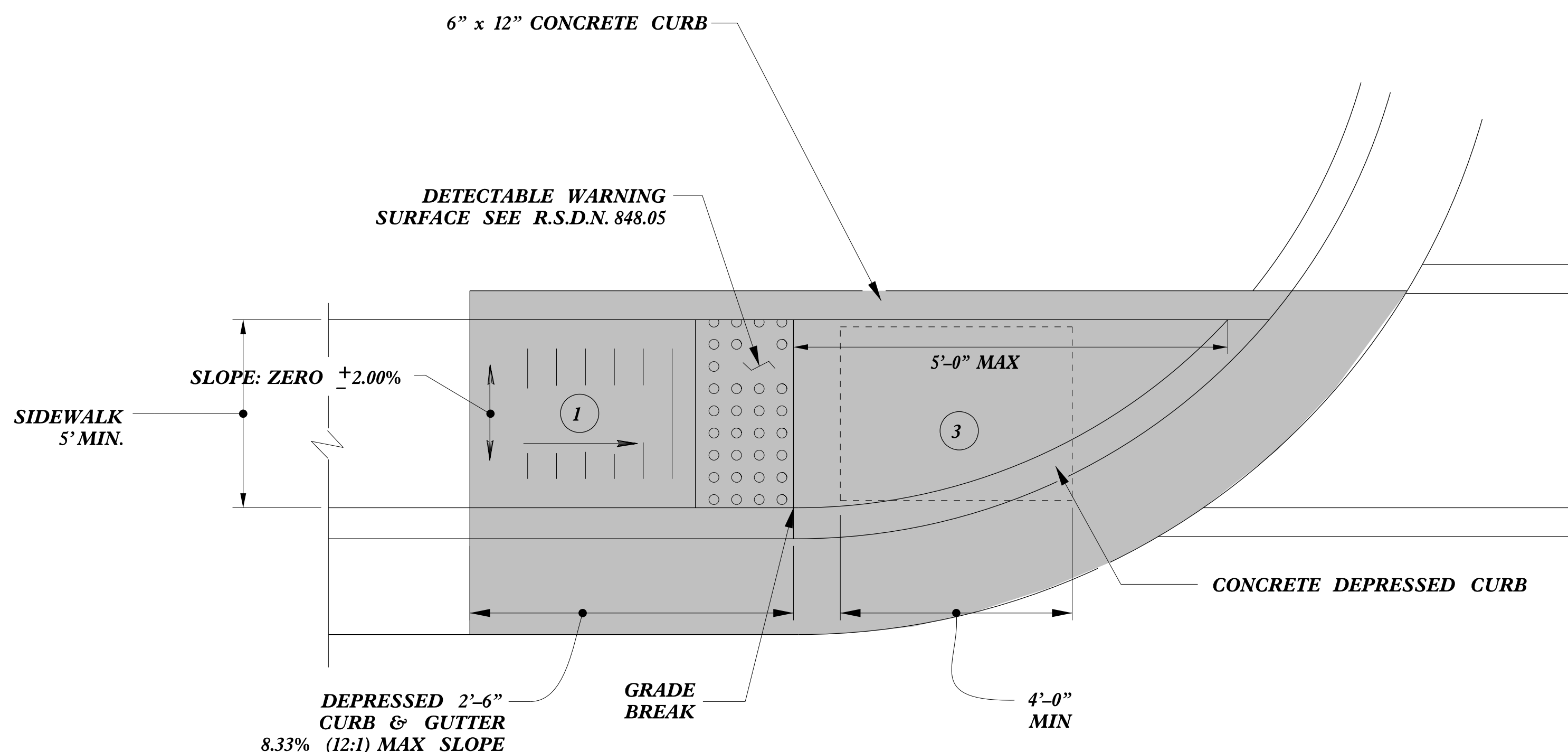
TYPE 1A



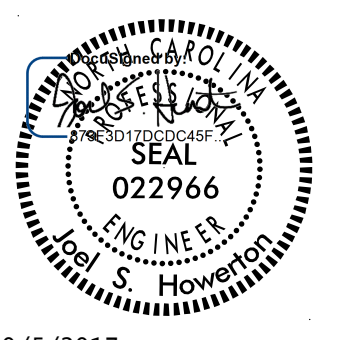
TYPE 1B

PAY LIMITS FOR 1 CURB RAMP

- 1 8.33% (12:1) MAX RAMP SLOPE
- 2 CROSS SLOPE: 2.00%
- 3 CURB RAMPS REQUIRE A (4'-0") MINIMUM LANDING WITH A MAXIMUM CROSS SLOPE AND LONGITUDINAL SLOPE OF 2.00% WHERE PEDESTRIANS PERFORM TURNING MANEUVERS. SLOPE TO DRAIN TO CURB.



TYPE 1



10/5/2017

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

CONTRACT STANDARDS AND DEVELOPMENT UNIT	
Office 919-707-6950	FAX 919-250-4119
CURB RAMPS	
Directional Ramps	
ORIGINAL BY: J.S. HOWERTON	DATE: 7/7/11
MODIFIED BY:	DATE:
CHECKED BY:	DATE:
FILE SPEC: .stds/2012CurbRamp/CurbRampDetails.dgn	

REFER TO ROADWAY STANDARD DRAWING NUMBER 848.05 SHEET 3 OF 3 FOR ALL RAMP NOTES

5/14/99
C:\TEMP\WORK\2012\2012CurbRamp\CurbRampDetails.dgn

COMPUTED BY: SGM DATE: 9/12/2017
 CHECKED BY: JLT DATE: 9/19/2017

PROJECT NO.	SHEET NO.
U-5510	3B-1

STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS

SUMMARY OF EARTHWORK (cu yd)

Station	Station	Uncl. Excav.	Embank. +%	Borrow	Waste
-L- 8+00.00	-L- 11+92.20	144	22		122
-Y1- 11+07.00	-Y1- 26+00.00	466	848	382	
SUBTOTAL 1:		610	870	382	122
-L- 12+28.00	-L- 37+65.92	33,620	15,624		17,996
-Y2- 13+20.00	-Y2- 15+15.00	120	1,150	1,030	
SUBTOTAL 2:		33,740	16,774	1,030	17,996
PROJECT TOTALS:		34,350	17,644	1,412	18,118
LOSS DUE TO CLEARING & GRUBBING		-550			-550
WASTE IN LIEU OF BORROW				-1412	-1412
GRAND TOTALS:		33,800	17,644	0	16,156
SAY:		34,900			

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

Note: 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.

SHOULDER BORROW = 450 CUBIC YARDS
 EST. DDE = 370 CUBIC YARDS
 PER GEOTECH RECOMMENDATION, EST. 3,395 CUBIC YARDS OF UNDERCUT TO BE USED IN THE DISCRETION OF THE RESIDENT ENGINEER.
 UNCLASSIFIED EXCAVATION - ACCEPTABLE, BUT NOT IN THE TOP 3 FT OF EMBANKMENT (-L- 27+75 TO 31+75) = 4,000 CUBIC YARDS

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

GUARDRAIL SUMMARY

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

SURVEY LINE	BEG. STA.	END STA.	LOCATION	LENGTH			WARRANT POINT		"N" DIST. FROM E.O.L.	TOTAL SHOUL WIDTH	FLARE LENGTH		W		ANCHORS										IMPACT ATTENUATOR TYPE 350		TERMINAL END SECTION	REMOVE EXISTING GUARDRAIL	REMOVE & STOCKPILE EXISTING GUARDRAIL	REMARKS
				STRAIGHT	SHOP CURVED	DOUBLE FACED	APPROACH END	TRAILING END			H END	TRAILING END	H END	TRAILING END	XI MOD	XI	GRAU 350	M-350	XIII	CAT-1	VI MOD	BIC	G	NG						
-Y2-	13+18.00		CL	50																						2				
-Y2-	15+17.00		CL	50																						2				
GRAND TOTALS:				100																						4				

COMPUTED BY: DMB DATE: 8-18-16
 CHECKED BY: MJW DATE: 8-18-16

(4-21-15)

PROJECT NO. U-5510 SHEET NO. 3G-1

**STATE OF NORTH CAROLINA
 DIVISION OF HIGHWAYS**

SUMMARY OF SUBSURFACE DRAINAGE

LINE	Station	Station	Location LT/RT/CL	Drain Type* UD/BD/SD	LF
CONTINGENCY				SD	250
TOTAL LF:					250

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

**SUMMARY OF
 BRIDGE WAITING PERIODS**

Bridge Description	End Bent/ Bent No.	MONTHS

**SUMMARY OF
 SETTLEMENT GAUGES**

Gauge No.	LINE	Approx. Station	Approx. Offset
TOTAL GAUGES (EACH):			

SUMMARY OF ROCK PLATING

LINE	Beginning Slope	Approx. Station	Ending Slope	Approx. Station	Location LT/RT	Rock Plating Detail No. 1/2/3/4	Riprap Class* 1/2/B	SY
TOTAL SY:								0

*Use Class 1, 2 or B riprap if riprap class is not shown for rock plating location.

**SUMMARY OF
 EMBANKMENT WAITING PERIODS**

LINE	Station	Station	MONTHS

**SUMMARY OF SURCHARGES
 AND SURCHARGE WAITING PERIODS**

LINE	Station	Station	Surcharge Height FT	MONTHS

SUMMARY OF REINFORCED SOIL SLOPES (RSS)

LINE	Beginning Slope	Approx. Station	Ending Slope	Approx. Station	Location LT/RT	SY
TOTAL SY:						0

**SUMMARY OF GEOTEXTILE
 FOR PAVEMENT STABILIZATION**

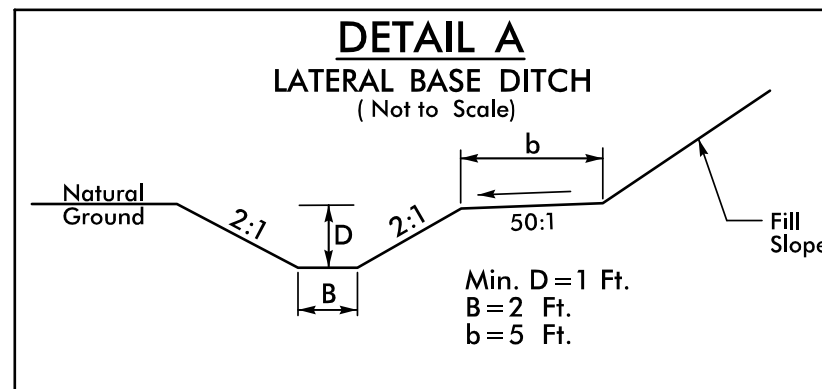
LINE	Station	Station	SY
CONTINGENCY			
TOTAL SY:			0

SUMMARY OF AGGREGATE SUBGRADE/STABILIZATION

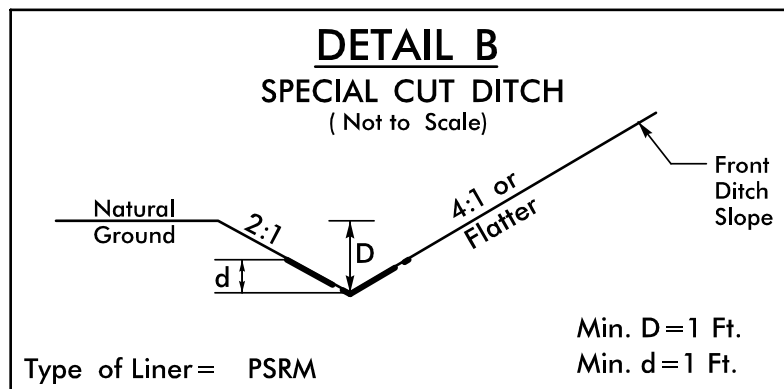
LINE	Station	Station	Aggregate Type ASU/AST	Aggregate Thickness INCHES	Shallow Undercut CY	Class IV Subgrade Stabilization TONS	Geotextile for Soil Stabilization SY	Stabilizer Aggregate TONS	Class IV Aggregate Stabilization TONS
CONTINGENCY			ASU	18	150	300	300		
TOTAL CY/TONS/SY:					150	300	300*	0	0

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

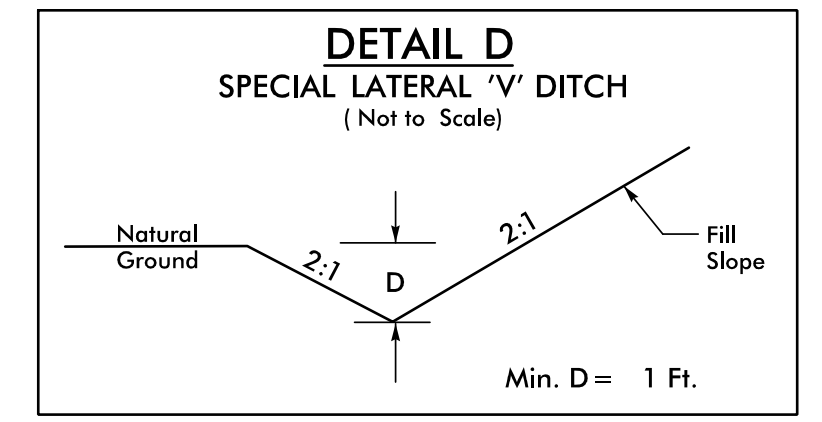
PROJECT REFERENCE NO. U-5510	SHEET NO. 4
ROADWAY DESIGN ENGINEER 	HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	
 TGS ENGINEERS 804-C N. LAFAYETTE ST SHELBY, NC 28150 PH (704) 476-0003 CORP. LICENSE NO. C-0275	



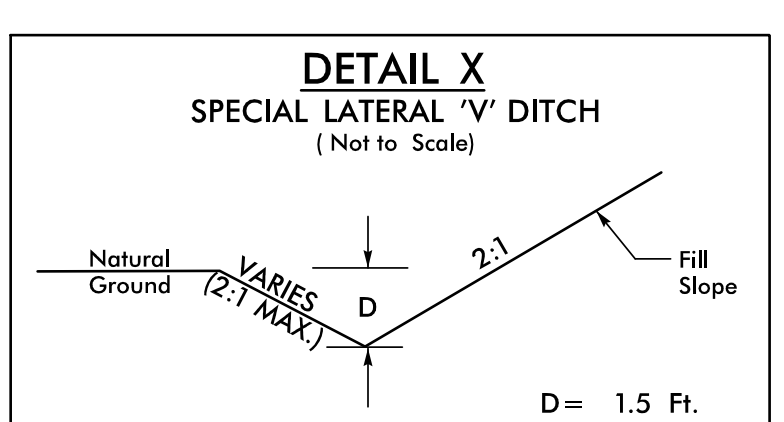
FROM -Y1- STA. 19+84 TO 20+50 LT
(SEE -Y1- X-SECTIONS, SHEET X-23)
DDE: EST. 15 CY



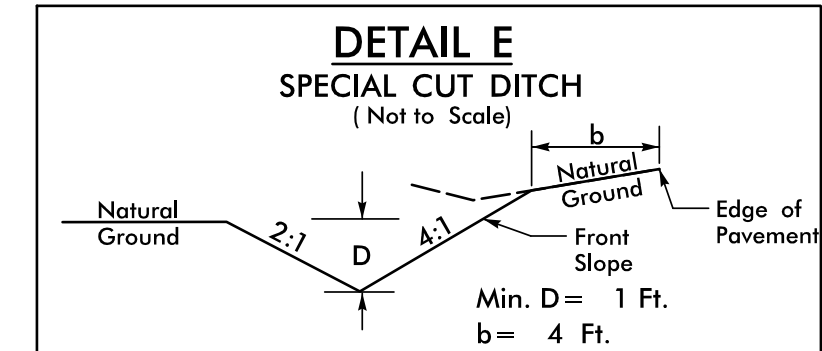
FROM -Y1- STA. 20+50 TO 21+00 LT
(SEE DITCH GRADE, SHEET 18)
PSRM: EST. 35 SY



-Y1- STA. 14+20 TO 18+00 LT
(SEE DITCH GRADES, SHEETS 17 & 18)



-L- STA. 8+70 TO 10+45 RT
(SEE -L- X-SECTIONS, SHEETS X-1 & X-2)



-Y1- STA. 15+50 TO 17+50 RT
(SEE DITCH GRADES, SHEETS 17 & 18)
DDE: EST. 70 CY

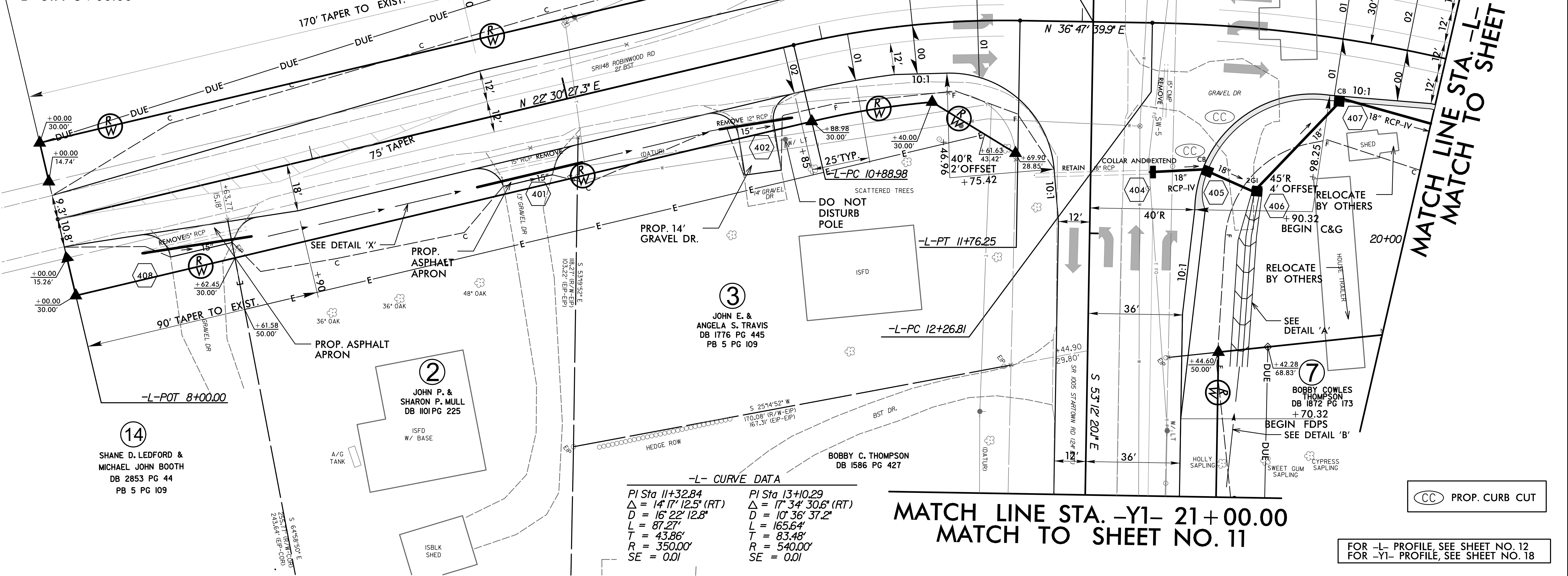
ANNUAL AVERAGE DAILY TRAFFIC
(Vehicles per Day in 100s)

$\frac{1-}{95}$	$\frac{1-}{33}$	$\frac{1-}{35}$	$\frac{1-}{25}$	$\frac{112}{175}$
$\frac{142}{194}$	$\frac{32}{25}$	$\frac{2}{4}$	$\frac{34}{56}$	$\frac{2015}{2040}$

1- = less than 50 VPD

MATCH LINE STA. -Y1- 17+40.00
MATCH TO SHEET NO. 10

BEGIN TIP PROJECT U-5510
-L- STA 8+00.00



-L- CURVE DATA

PI Sta 11+32.84	PI Sta 13+10.29
$\Delta = 14^\circ 17' 12.5''$ (RT)	$\Delta = 17^\circ 34' 30.6''$ (RT)
$D = 16' 22' 12.8''$	$D = 10' 36' 37.2''$
$L = 87.27'$	$L = 165.64'$
$T = 43.86'$	$T = 83.48'$
$R = 350.00'$	$R = 540.00'$
$SE = 0.01$	$SE = 0.01$

MATCH LINE STA. -Y1- 21+00.00
MATCH TO SHEET NO. 11

FOR -L- PROFILE, SEE SHEET NO. 12
FOR -Y1- PROFILE, SEE SHEET NO. 18

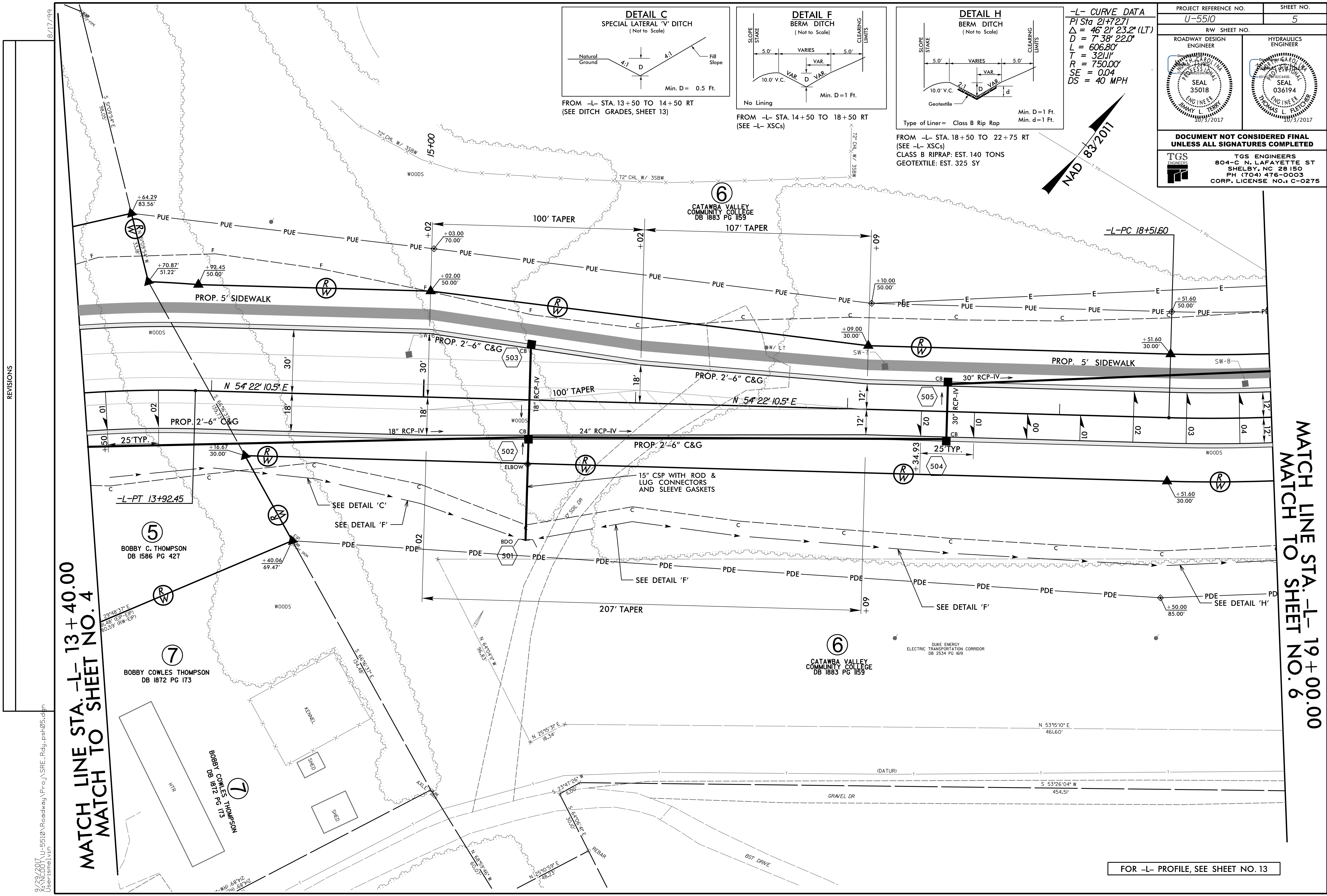
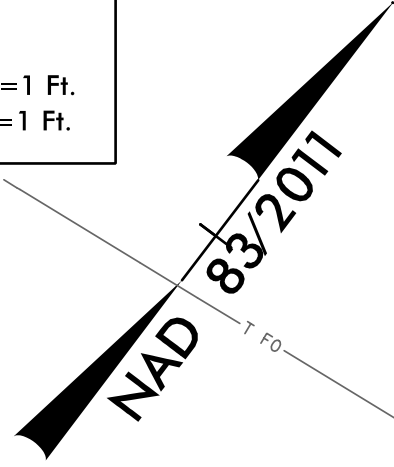
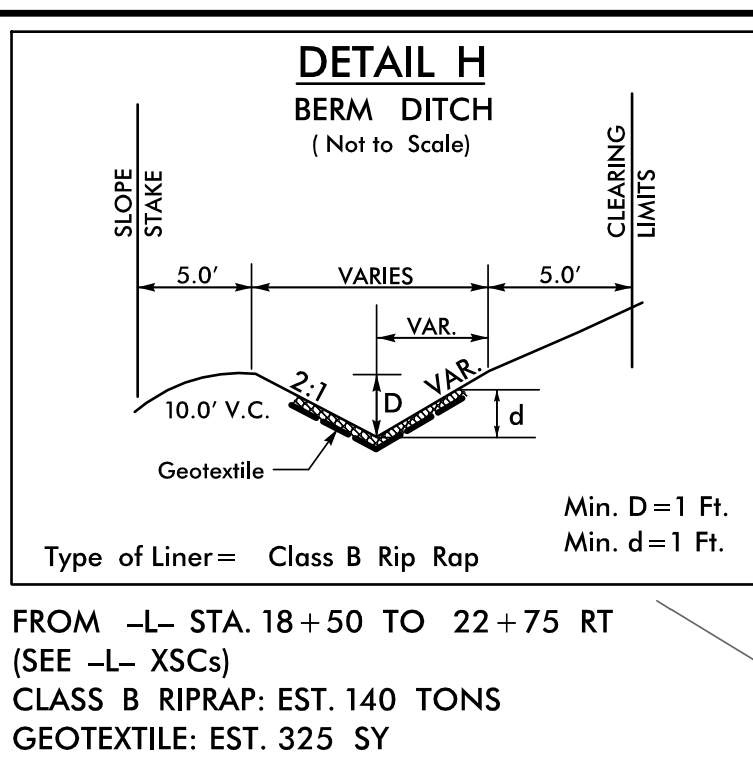
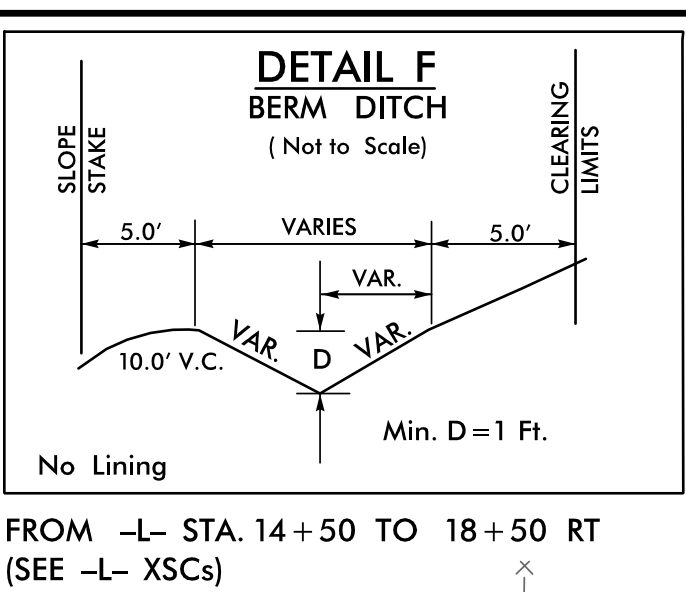
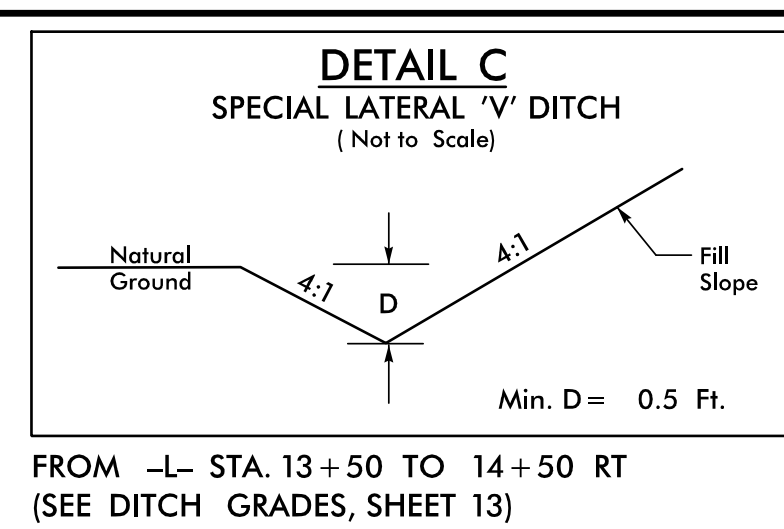
CC PROP. CURB CUT

MATCH LINE STA. -L- 13+40.00
MATCH TO SHEET NO. 5

9/28/2017 U-5510\Roadway\Proj\SRE_Rdy_psh04.dgn
 X:\Roadway\U-5510\Roadway\Proj\SRE_Rdy_psh04.dgn
 License: TGS

PROJECT REFERENCE NO. U-5510	SHEET NO. 5
RW SHEET NO.	
ROADWAY DESIGN ENGINEER 	HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	
TGS ENGINEERS 804-C N. LAFAYETTE ST SHELBY, NC 28150 PH (704) 476-0003 CORP. LICENSE NO. C-0275	

-L- CURVE DATA
 PI Sta 21+72.71
 $\Delta = 46^{\circ} 21' 23.2" (LT)$
 $D = 7^{\circ} 38' 22.0"$
 $L = 606.80'$
 $T = 321.1'$
 $R = 750.00'$
 $SE = 0.04$
 $DS = 40 \text{ MPH}$



MATCH LINE STA. -L- 13+40.00
MATCH TO SHEET NO. 4

MATCH LINE STA. -L- 19+00.00
MATCH TO SHEET NO. 6

FOR -L- PROFILE, SEE SHEET NO. 13

REVISIONS

9/29/2017 U:\5510\Roadway\Proj\SRU_Rd\psh05.cdr
 Users\smel\vrn

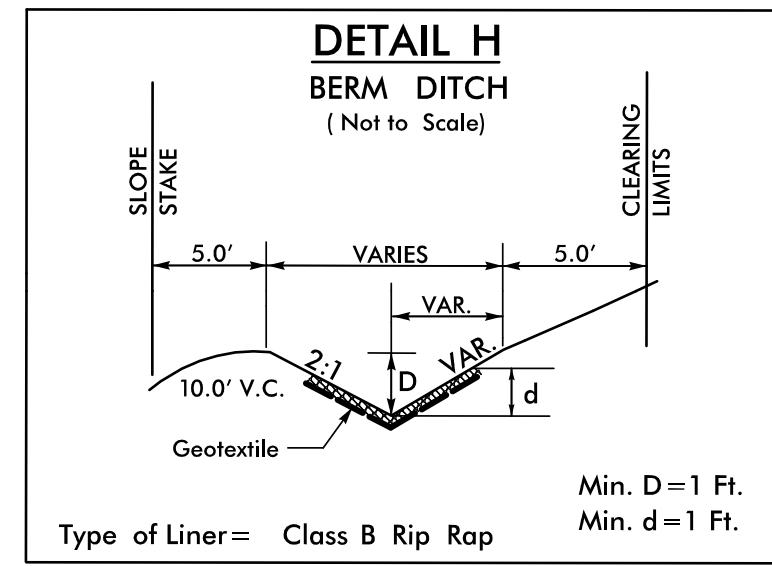
8/17/99

REVISIONS

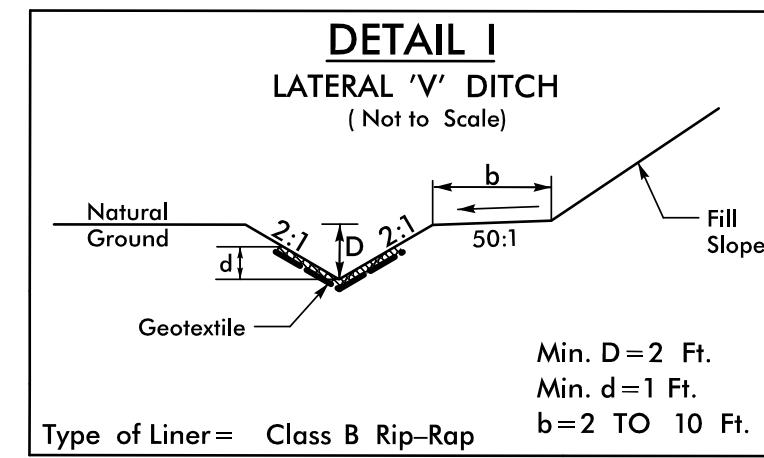
X:\2017\U-5510\Roadway\Proj\SRE_Rdy_psh\06.dwg
User: tsmal

MATCH LINE STA. -L- 19+00.00
MATCH TO SHEET NO. 5

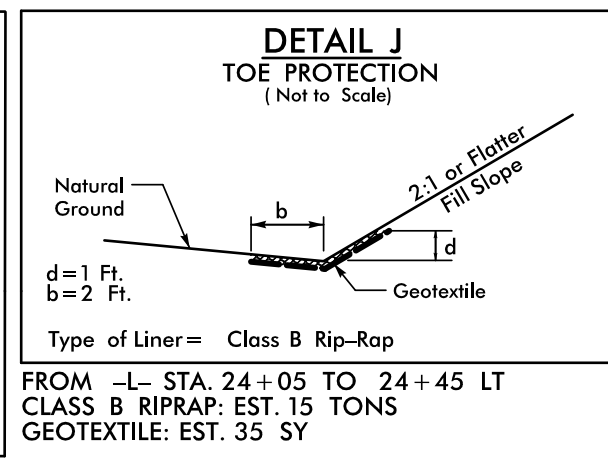
MATCH LINE
STA. -L- 24+20.00
MATCH TO SHEET NO. 7



FROM -L- STA. 18+50 TO 22+75 RT
(SEE -L- XSCs)
CLASS B RIPRAP: EST. 140 TONS
GEOTEXTILE: EST. 325 SY



FROM -L- STA. 22+75 RT TO 24+45 RT
(SEE -L- XSCs)
CLASS B RIPRAP: EST. 50 TONS
GEOTEXTILE: EST. 120 SY
DDE: EST. 100 CY



FROM -L- STA. 24+05 TO 24+45 LT
CLASS B RIPRAP: EST. 15 TONS
GEOTEXTILE: EST. 35 SY

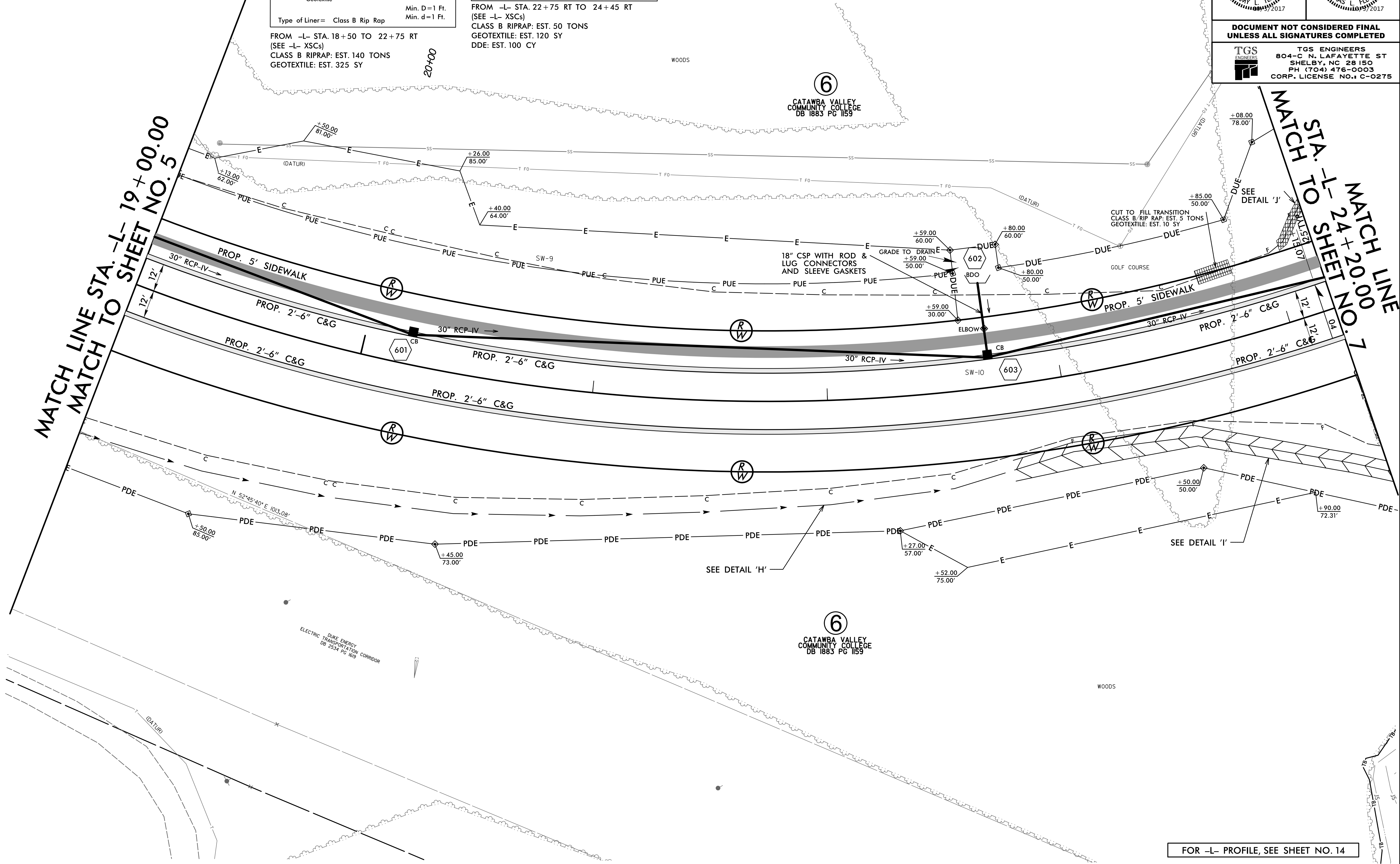
-L- CURVE DATA
PI Sta 21+72.71
 $\Delta = 46^\circ 21' 23.2''$ (LT)
D = 7' 38" 22.0"
L = 606.80'
T = 321.11'
R = 1750.00'
SE = 0.04
DS = 40 MPH



PROJECT REFERENCE NO. U-5510	SHEET NO. 6
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

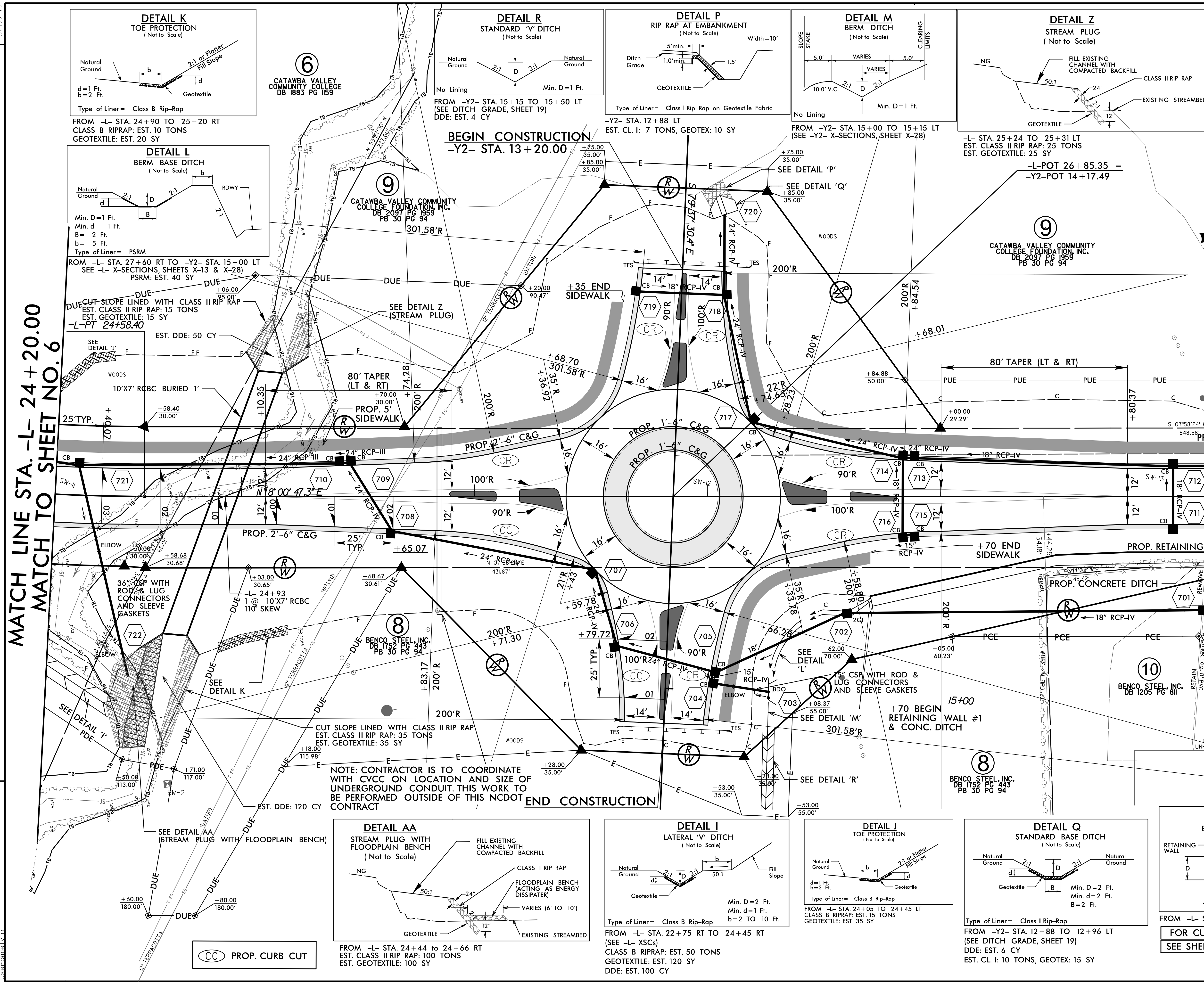
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

TGS ENGINEERS
804-C N. LAFAYETTE ST
SHELBY, NC 28150
PH (704) 476-0003
CORP. LICENSE NO.: C-0275



FOR -L- PROFILE, SEE SHEET NO. 14

PROJECT REFERENCE NO. U-5510		SHEET NO. 7	
ROADWAY DESIGN ENGINEER 		HYDRAULICS ENGINEER 	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED			
		TGS ENGINEERS 804-C N. LAFAYETTE ST SHELBY, NC 28150 PH (704) 476-0003 CORP. LICENSE NO.: C-0275	



MATCH LINE STA. -L- 24+20.00
MATCH TO SHEET NO. 6

MATCH LINE STA. -L- 29+80.00
MATCH TO SHEET NO. 8

6
CATAWBA VALLEY COMMUNITY COLLEGE
DB 1863 PG 1159

9
CATAWBA VALLEY COMMUNITY COLLEGE FOUNDATION, INC.
DB 2097 PG 1959
PB 30 PG 94

9
CATAWBA VALLEY COMMUNITY COLLEGE FOUNDATION, INC.
DB 2097 PG 1959
PB 30 PG 94

8
BENCO STEEL, INC.
DB 1717 PG 444
PB 30 PG 94

8
BENCO STEEL, INC.
DB 1717 PG 444
PB 30 PG 94

10
BENCO STEEL, INC.
DB 1205 PG 811

NOTE: CONTRACTOR IS TO COORDINATE WITH CVCC ON LOCATION AND SIZE OF UNDERGROUND CONDUIT. THIS WORK TO BE PERFORMED OUTSIDE OF THIS NCDOT CONTRACT

8/17/99
REVISIONS
8/28/2017 U-5510\Roadway\Proj\SRE_Rd\psf07.dwg
J. [unreadable]

CC PROP. CURB CUT

FOR CULVERT PLANS, SEE SHEET C-1 THRU C-6
SEE SHEET NO. 2B-1 FOR ROUNDABOUT LAYOUT

FOR -L- PROFILE, SEE SHEET NO. 15
FOR -Y2- PROFILE, SEE SHEET NO. 19

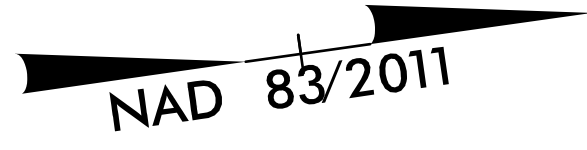
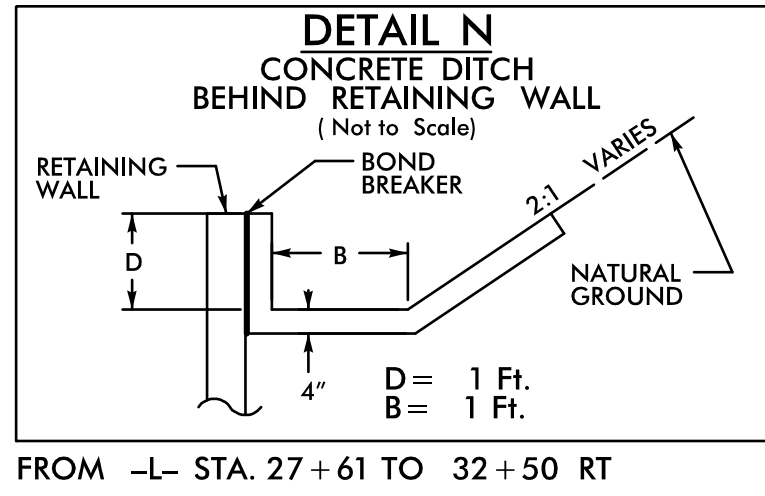
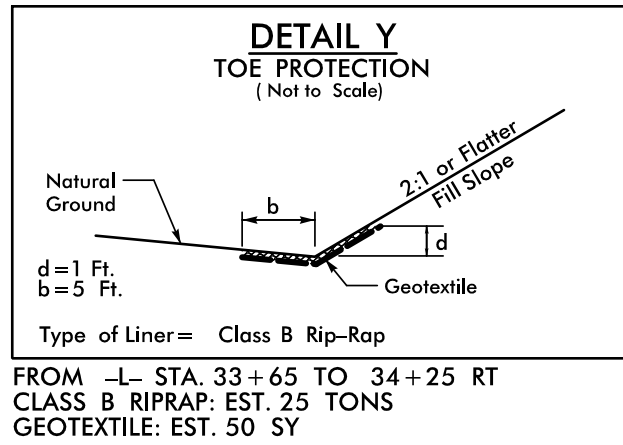
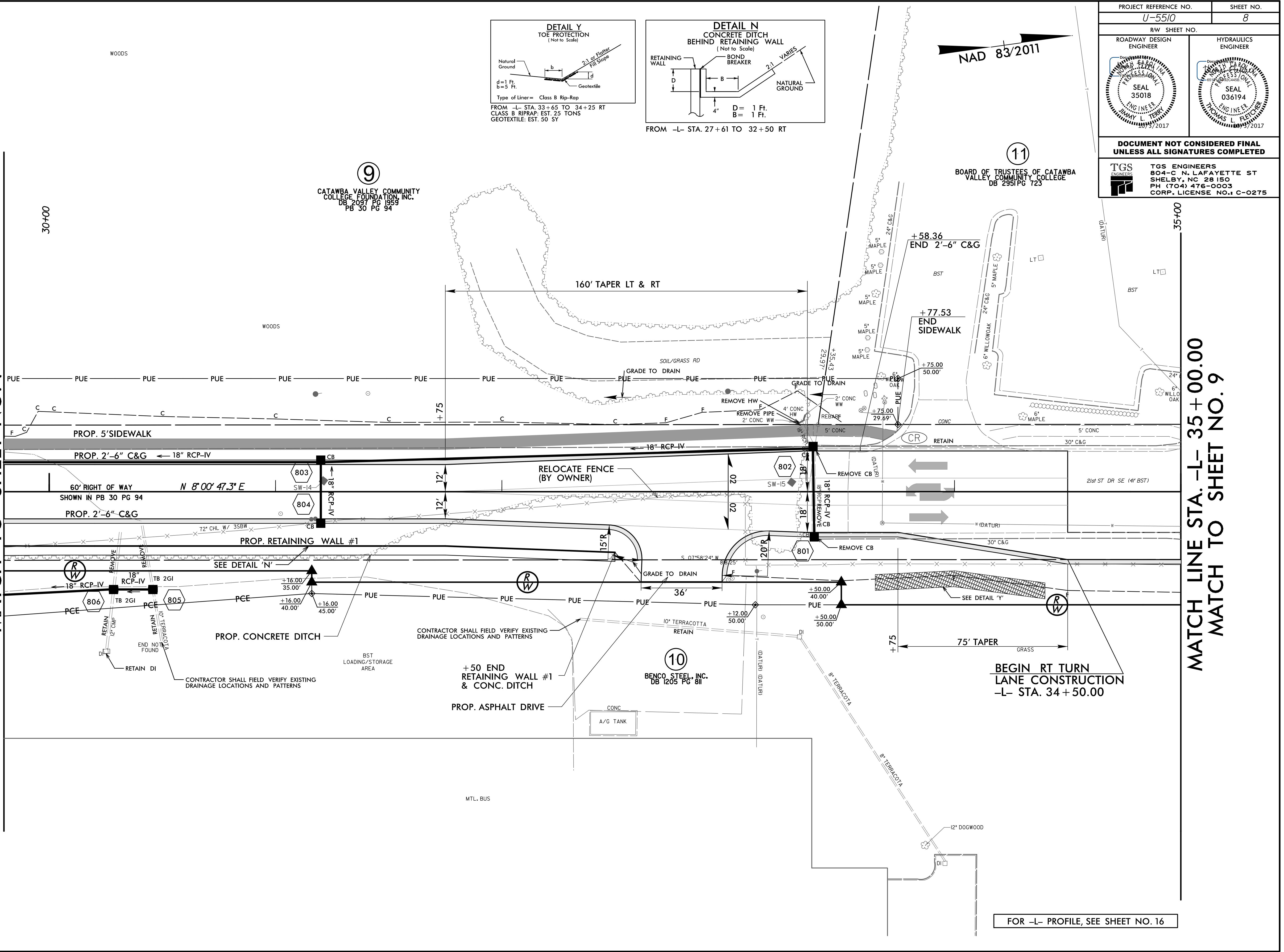
8/17/99

REVISIONS

X:\2017\U-5510\Roadway\Proj\SRE_Rdy_psh\08.dwg
U-5510

MATCH LINE STA. -L- 29 + 80.00
MATCH TO SHEET NO. 7

MATCH LINE STA. -L- 35 + 00.00
MATCH TO SHEET NO. 9



PROJECT REFERENCE NO. U-5510		SHEET NO. 8	
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED			
		TGS ENGINEERS 804-C N. LAFAYETTE ST SHELBY, NC 28150 PH (704) 476-0003 CORP. LICENSE NO.: C-0275	

9

CATAWBA VALLEY COMMUNITY COLLEGE FOUNDATION, INC.
DB 2097 PG 1959
PB 30 PG 94

11

BOARD OF TRUSTEES OF CATAWBA VALLEY COMMUNITY COLLEGE
DB 2951 PG 723

10

BENCO STEEL, INC.
DB 1205 PG 811

BEGIN RT TURN
LANE CONSTRUCTION
-L- STA. 34 + 50.00

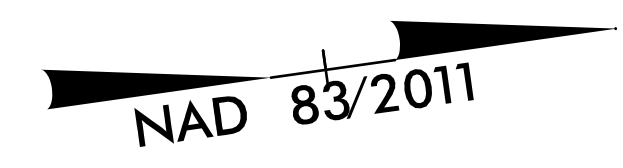
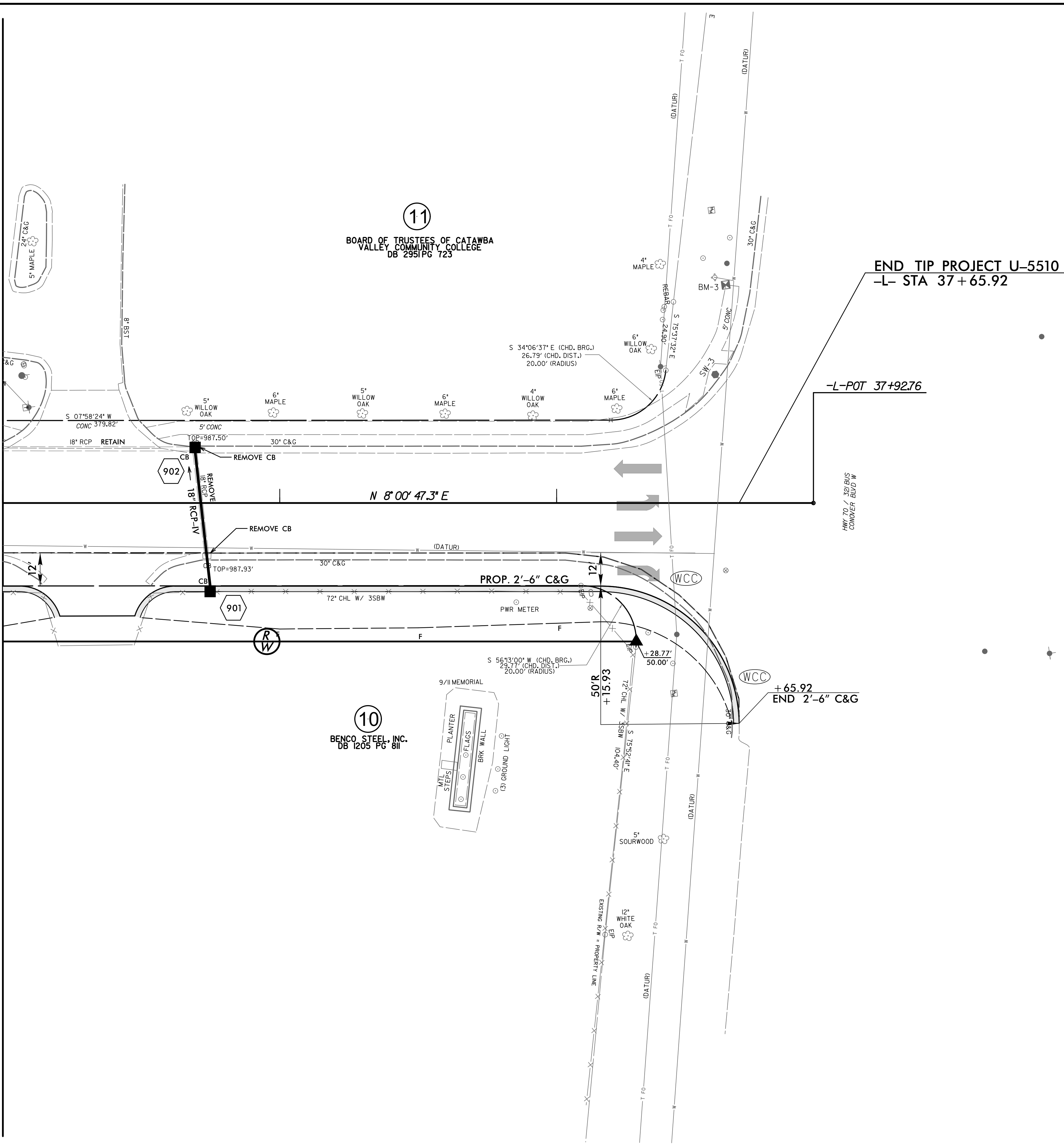
FOR -L- PROFILE, SEE SHEET NO. 16

8/17/99

REVISIONS

9/23/00 11:55:00 U:\5510\Roadway\Proc\SPR\RDY_PSH\09.dwg
User:smel.vpr

MATCH LINE STA. -L- 35 + 00.00
MATCH TO SHEET NO. 8



PROJECT REFERENCE NO. <i>U-5510</i>	SHEET NO. <i>9</i>
RW SHEET NO.	
ROADWAY DESIGN ENGINEER 	HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	
 TGS ENGINEERS 804-C N. LAFAYETTE ST SHELBY, NC 28150 PH (704) 476-0003 CORP. LICENSE NO.: C-0275	

END TIP PROJECT U-5510
-L- STA 37 + 65.92

-L-POT 37+92.76

+65.92
END 2'-6" C&G

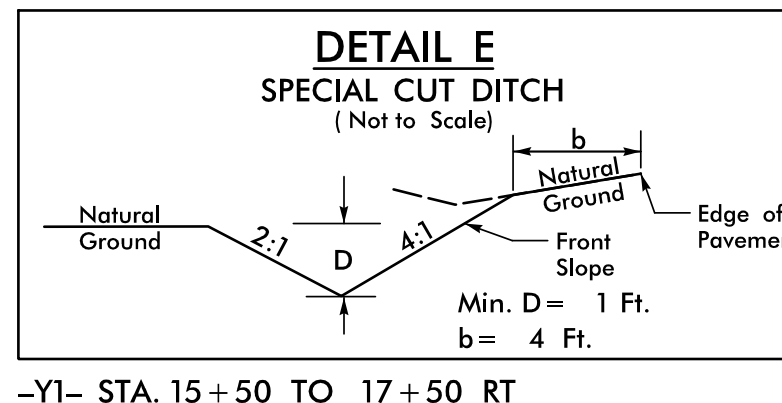
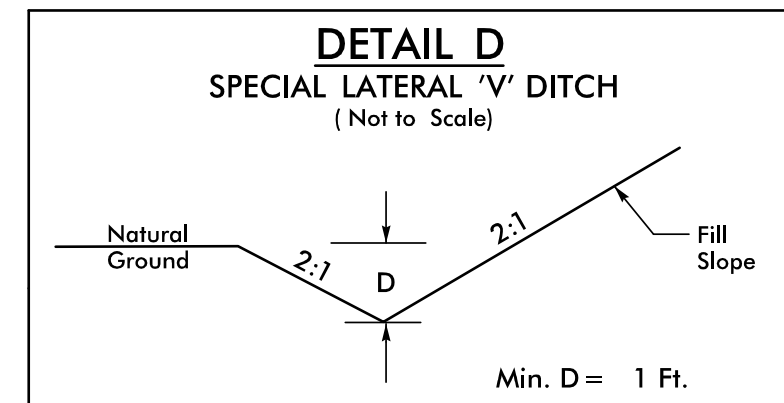
		US 70	
		174	187
4 78	2 13	19 30	21ST STREET
-L- SWEETWATER EXT			
		1 47	55 85
		US 70	
		189	228
2015 2040			

FOR -L- PROFILE, SEE SHEET NO. 17

8/17/99

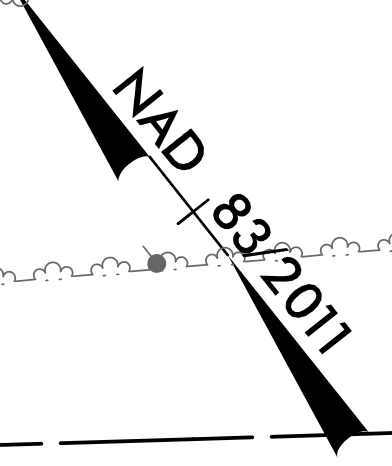
PROJECT REFERENCE NO. U-5510		SHEET NO. 10	
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED			
TGS ENGINEERS 804-C N. LAFAYETTE ST SHELBY, NC 28150 PH (704) 476-0003 CORP. LICENSE NO.: C-0275			

-YI- CURVE DATA
 PI Sta 15+94.63
 $\Delta = 1^{\circ}40'06.9" (LT)$
 $D = 0^{\circ}34'22.6"$
 $L = 291.22'$
 $T = 145.62'$
 $R = 10,000.00'$
 SE = EXIST.



-YI- STA. 14+20 TO 18+00 LT
(SEE DITCH GRADES, SHEETS 17 & 18)

-YI- STA. 15+50 TO 17+50 RT
(SEE DITCH GRADES, SHEETS 17 & 18)
DDE: EST. 70 CY

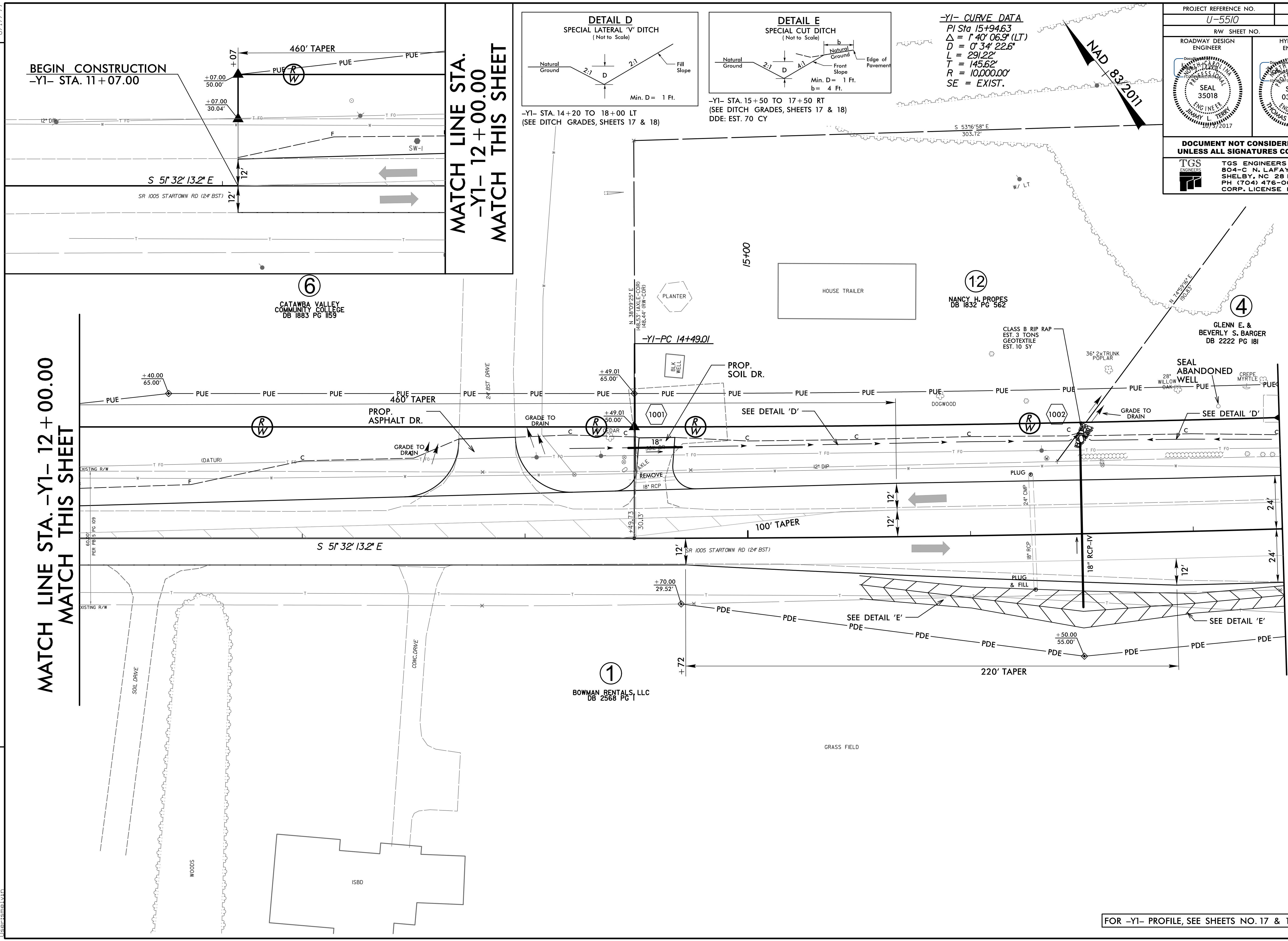


BEGIN CONSTRUCTION
-YI- STA. 11+07.00

MATCH LINE STA.
-YI- 12+00.00
MATCH THIS SHEET

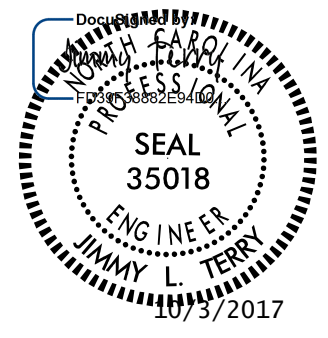
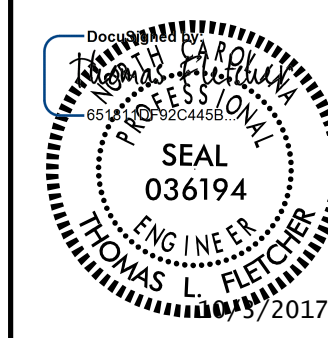

MATCH LINE STA. -YI- 12+00.00
MATCH THIS SHEET

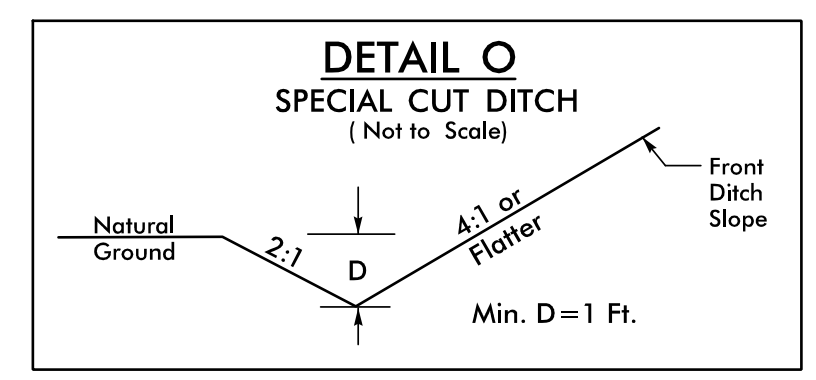
MATCH LINE STA. -YI- 17+40.00
MATCH TO SHEET NO. 4



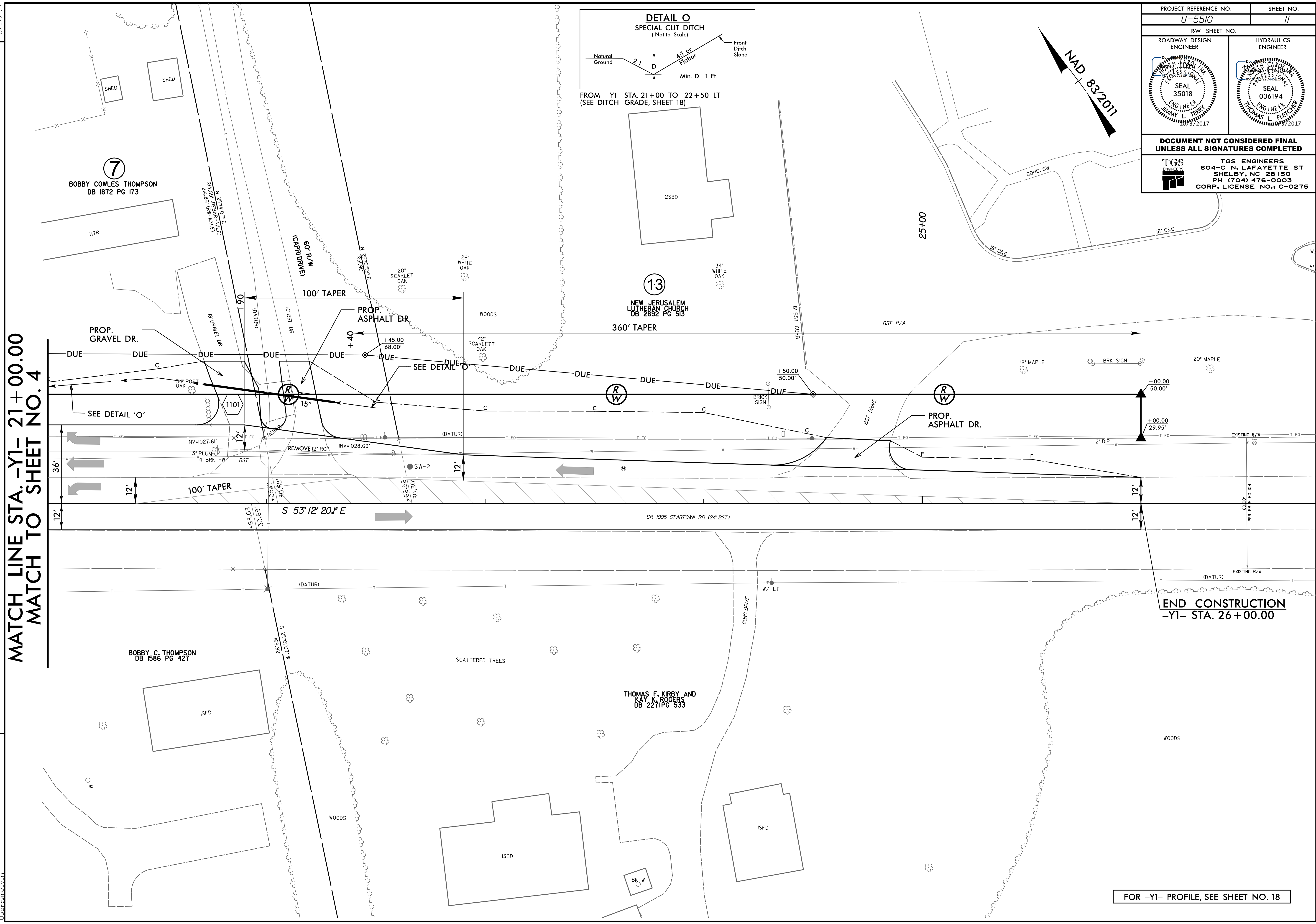
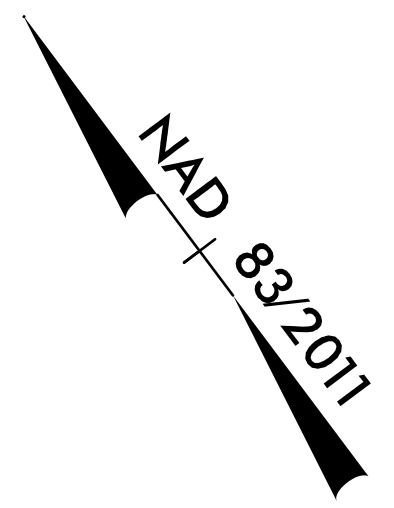
REVISIONS

8/28/2017
 X:\Road\U-5510\Roadway\Proc\SR1005\SR1005_Rdy_psh10.dwg
 User: jstame

PROJECT REFERENCE NO. U-5510		SHEET NO. 11	
RW SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
			
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED			
		TGS ENGINEERS 804-C N. LAFAYETTE ST SHELBY, NC 28150 PH (704) 476-0003 CORP. LICENSE NO.: C-0275	



FROM -Y1- STA. 21+00 TO 22+50 LT
(SEE DITCH GRADE, SHEET 18)



MATCH LINE STA. -Y1- 21+00.00
MATCH TO SHEET NO. 4

END CONSTRUCTION
-Y1- STA. 26+00.00

FOR -Y1- PROFILE, SEE SHEET NO. 18

REVISIONS

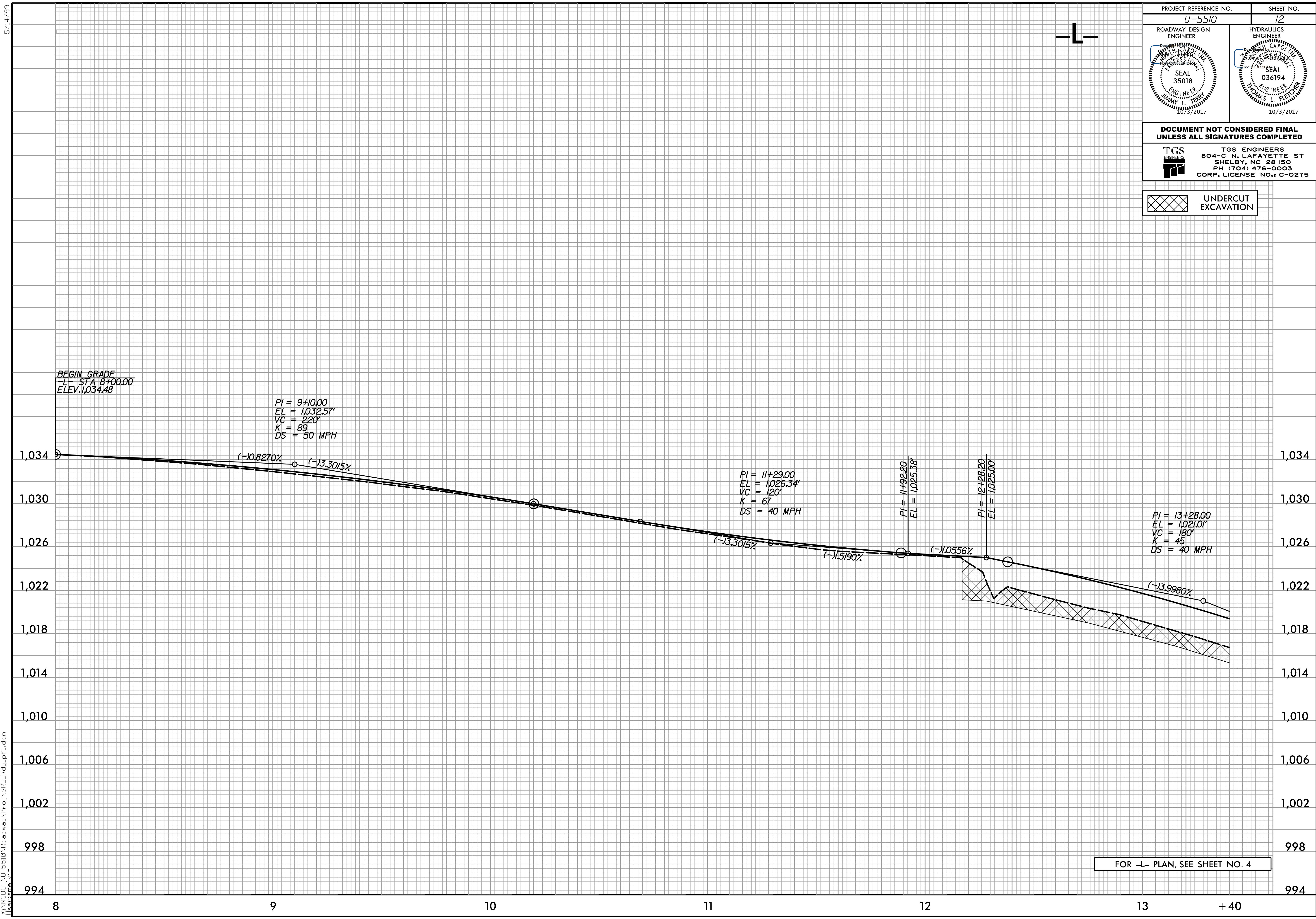
8/28/2017 U-5510\Roadway\Proj\SRE_Rdy_psh11.dwg
 TERRY, L. TERRY

8/17/99

5/14/99

PROJECT REFERENCE NO. <i>U-5510</i>	SHEET NO. <i>12</i>
ROADWAY DESIGN ENGINEER 	HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	
 TGS ENGINEERS 804-C N. LAFAYETTE ST SHELBY, NC 28150 PH (704) 476-0003 CORP. LICENSE NO.: C-0275	

UNDERCUT EXCAVATION

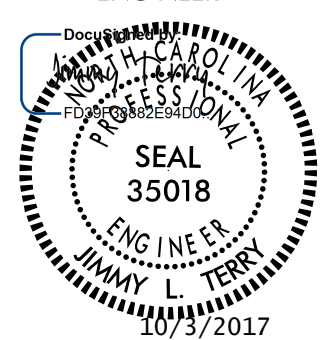
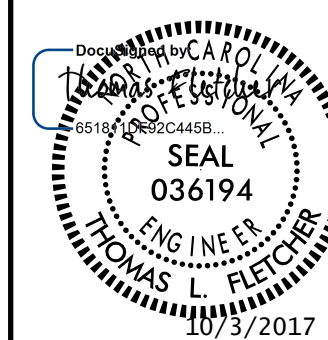


FOR -L- PLAN, SEE SHEET NO. 4

9/29/2017 9:29:07 AM U-5510\Roadway\Proj\SPE_Rdu.pfl.dgn
 User: smel

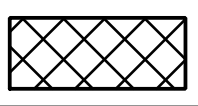
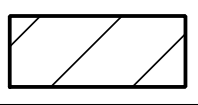
5/14/99

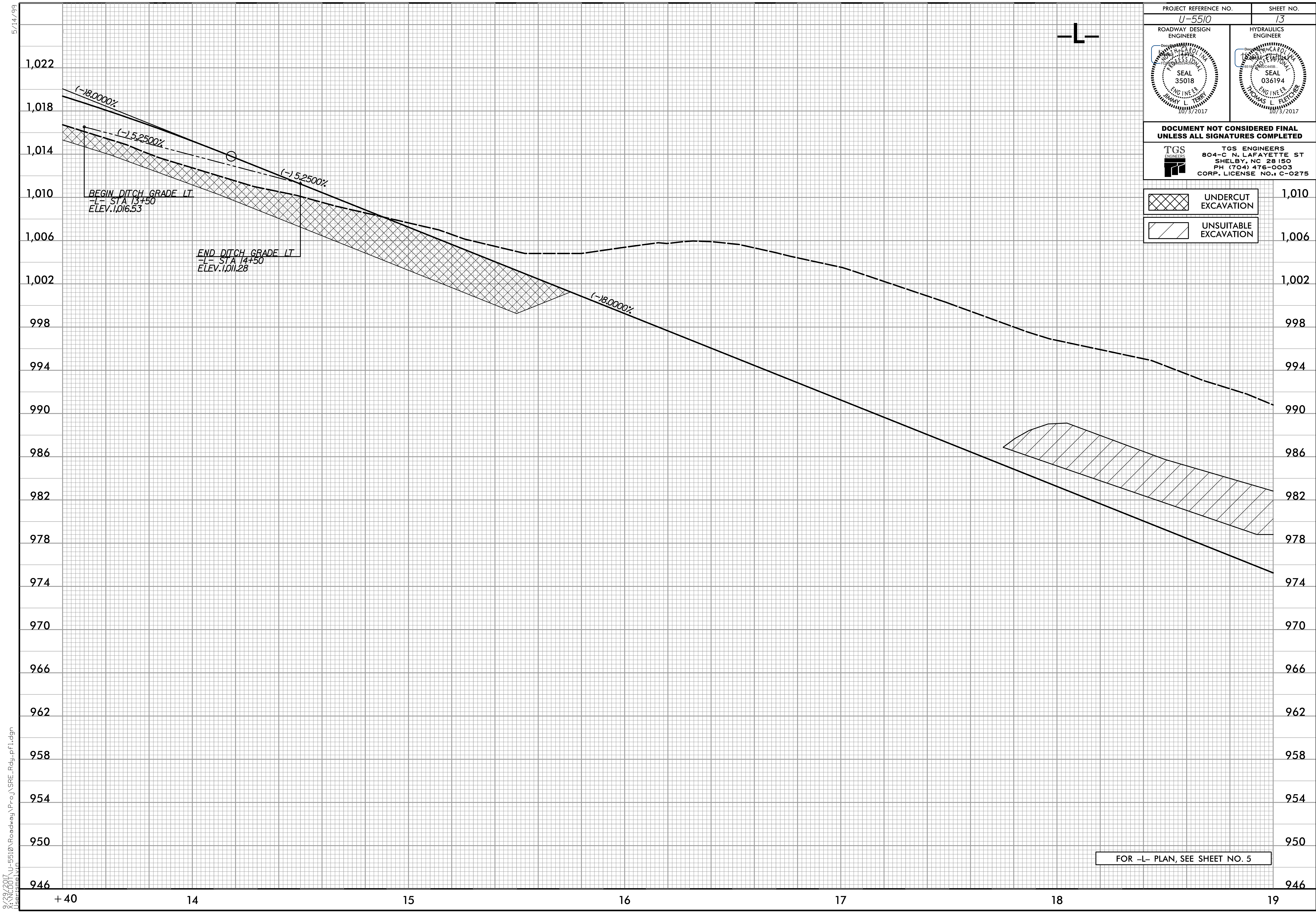
-L-

PROJECT REFERENCE NO. <i>U-5510</i>	SHEET NO. <i>13</i>
ROADWAY DESIGN ENGINEER 	HYDRAULICS ENGINEER 

**DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED**

TGS ENGINEERS
804-C N. LAFAYETTE ST
SHELBY, NC 28150
PH (704) 476-0003
CORP. LICENSE NO.: C-0275

	UNDERCUT EXCAVATION	1,010
	UNSUITABLE EXCAVATION	1,006



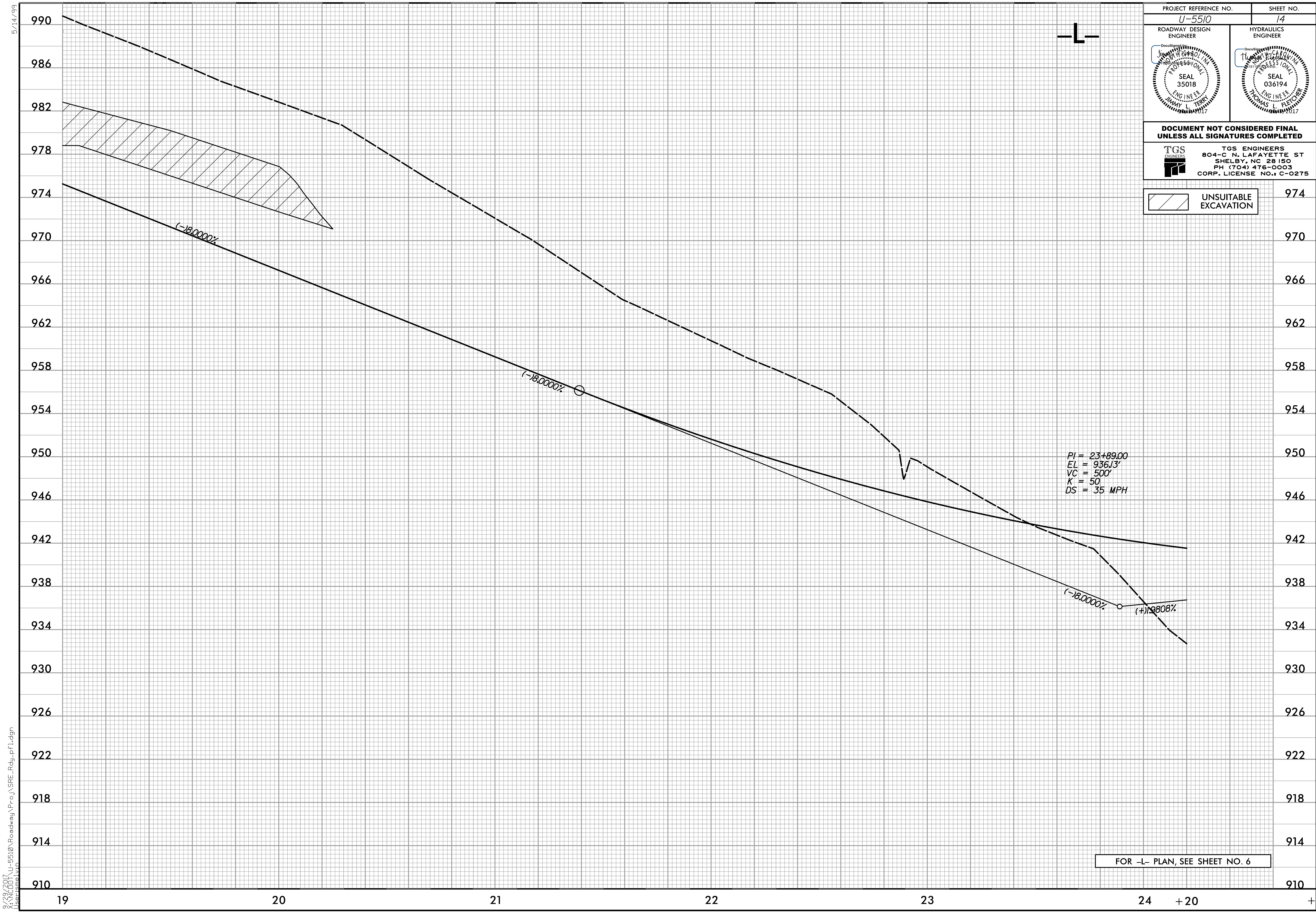
FOR -L- PLAN, SEE SHEET NO. 5

9/28/2017 10:55:10 Roadway\Proj\SPE_Rdy.pfl.dgn

5/14/99

PROJECT REFERENCE NO. <i>U-5510</i>	SHEET NO. <i>14</i>
ROADWAY DESIGN ENGINEER 	HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	
TGS ENGINEERS 804-C N. LAFAYETTE ST SHELBY, NC 28150 PH (704) 476-0003 CORP. LICENSE NO.: C-0275	

-L-



	UNSUITABLE EXCAVATION
--	-----------------------

PI = 23+89.00
 EL = 936.13'
 VC = 500'
 K = 50
 DS = 35 MPH

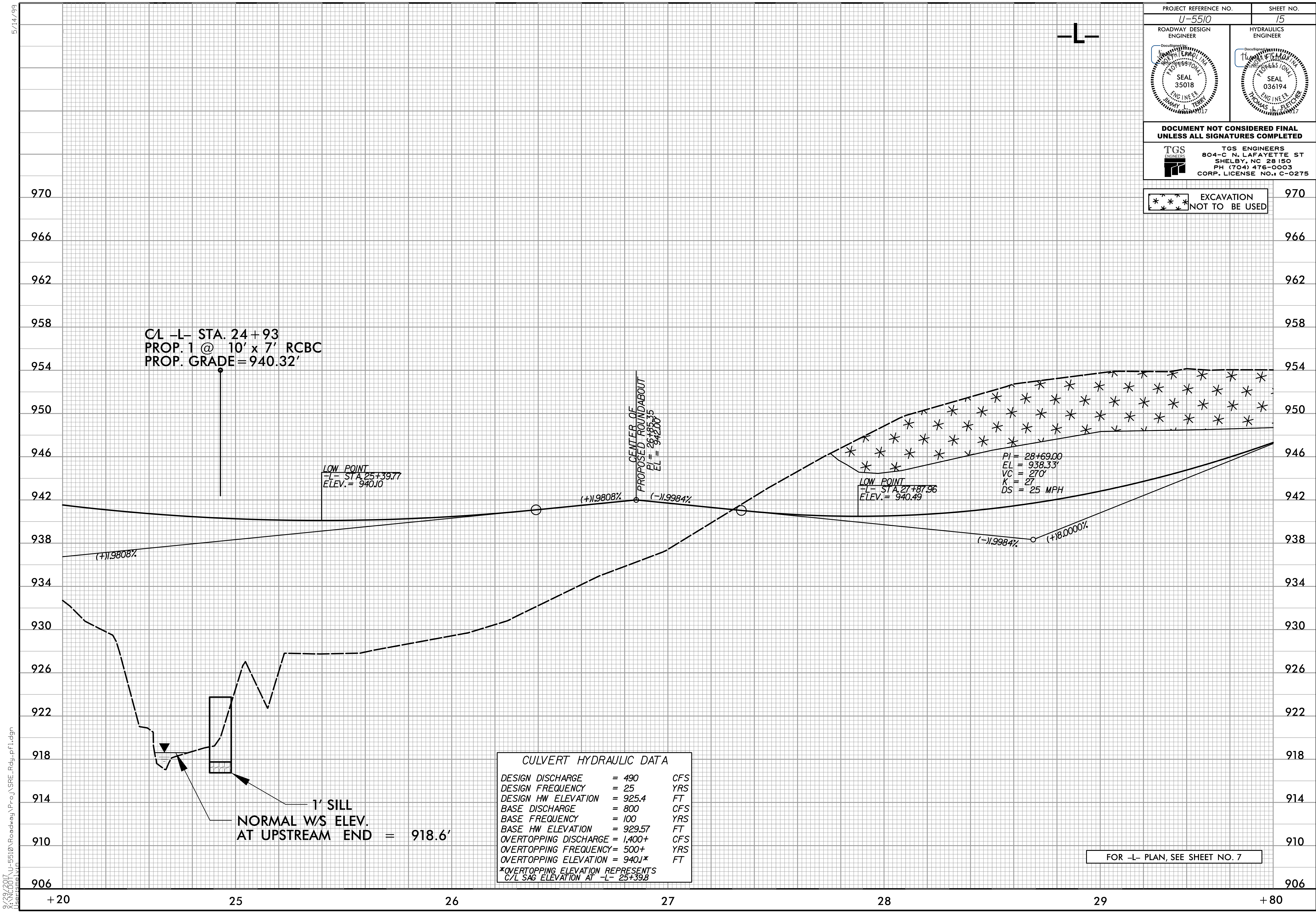
FOR -L- PLAN, SEE SHEET NO. 6

9/29/2017 9:29:00 AM U:\5510\Roadway\Proj\SPE_Rdu.pfl.dgn
 User: smel...

5/14/99

PROJECT REFERENCE NO. U-5510	SHEET NO. 15
ROADWAY DESIGN ENGINEER 	HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	
 TGS ENGINEERS 804-C N. LAFAYETTE ST SHELBY, NC 28150 PH (704) 476-0003 CORP. LICENSE NO.: C-0275	

EXCAVATION NOT TO BE USED



DESIGN DISCHARGE	= 490	CFS
DESIGN FREQUENCY	= 25	YRS
DESIGN HW ELEVATION	= 925.4	FT
BASE DISCHARGE	= 800	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 929.57	FT
OVERTOPPING DISCHARGE	= 1,400+	CFS
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING ELEVATION	= 940.1*	FT
*OVERTOPPING ELEVATION REPRESENTS C/L SAG ELEVATION AT -L- 25+39.8		

1' SILL
NORMAL W/S ELEV.
AT UPSTREAM END = 918.6'

FOR -L- PLAN, SEE SHEET NO. 7

9/28/2007 10:55:10 Roadway\Proj\SPR_Rdy.pfl.dgn
 User: sam

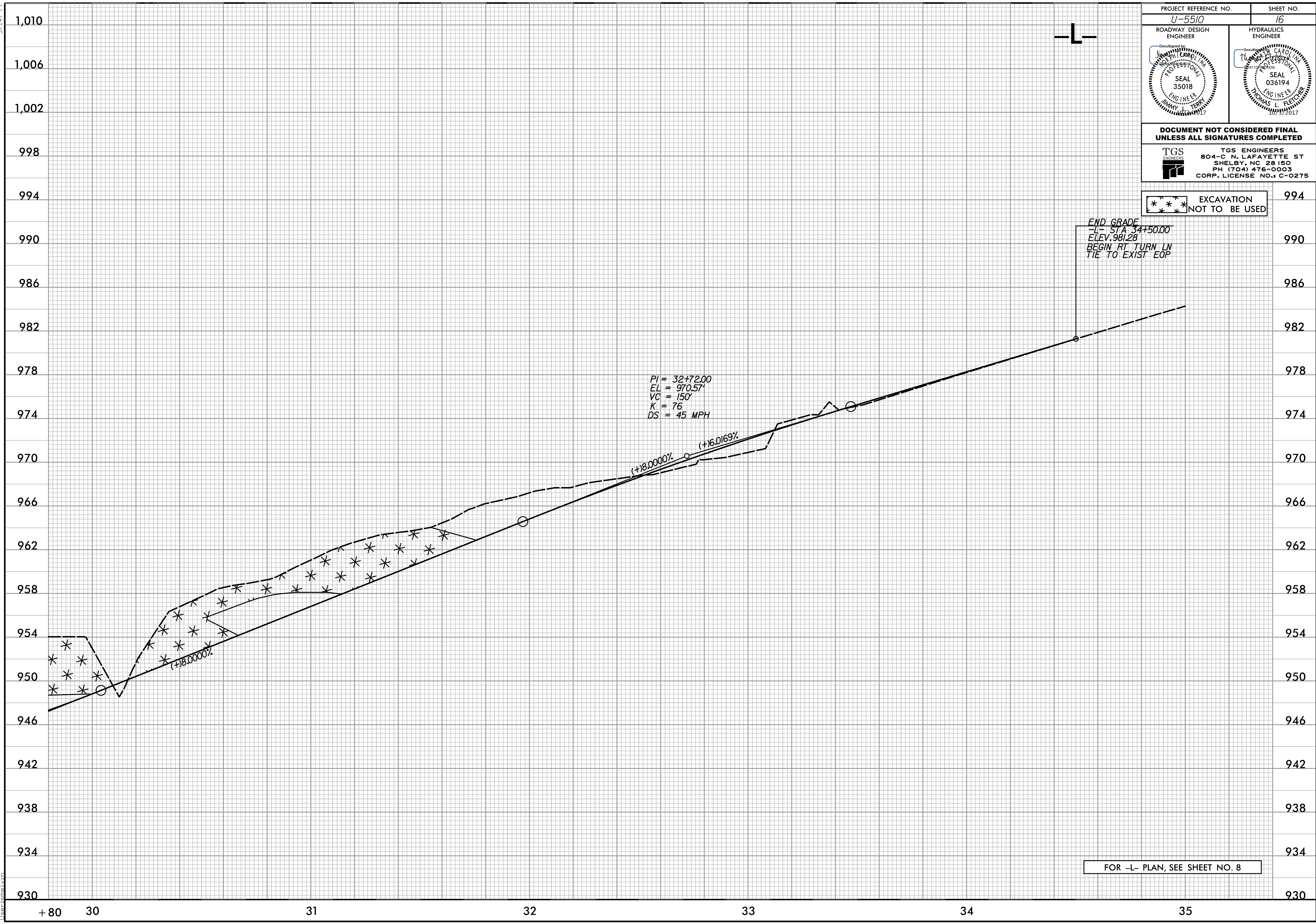
5/14/99

PROJECT REFERENCE NO. U-5510	SHEET NO. 16
ROADWAY DESIGN ENGINEER 	HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	
 TGS ENGINEERS 804-C N. LAFAYETTE ST SHELBY, NC 28150 PH (704) 476-0003 CORP. LICENSE NO.: C-0275	

EXCAVATION
NOT TO BE USED

END GRADE
-L- STA 34+50.00
ELEV. 981.28
BEGIN RT TURN LN
TIE TO EXIST EOP

PI = 32+72.00
EL = 970.57'
VC = 150'
K = 76
DS = 45 MPH

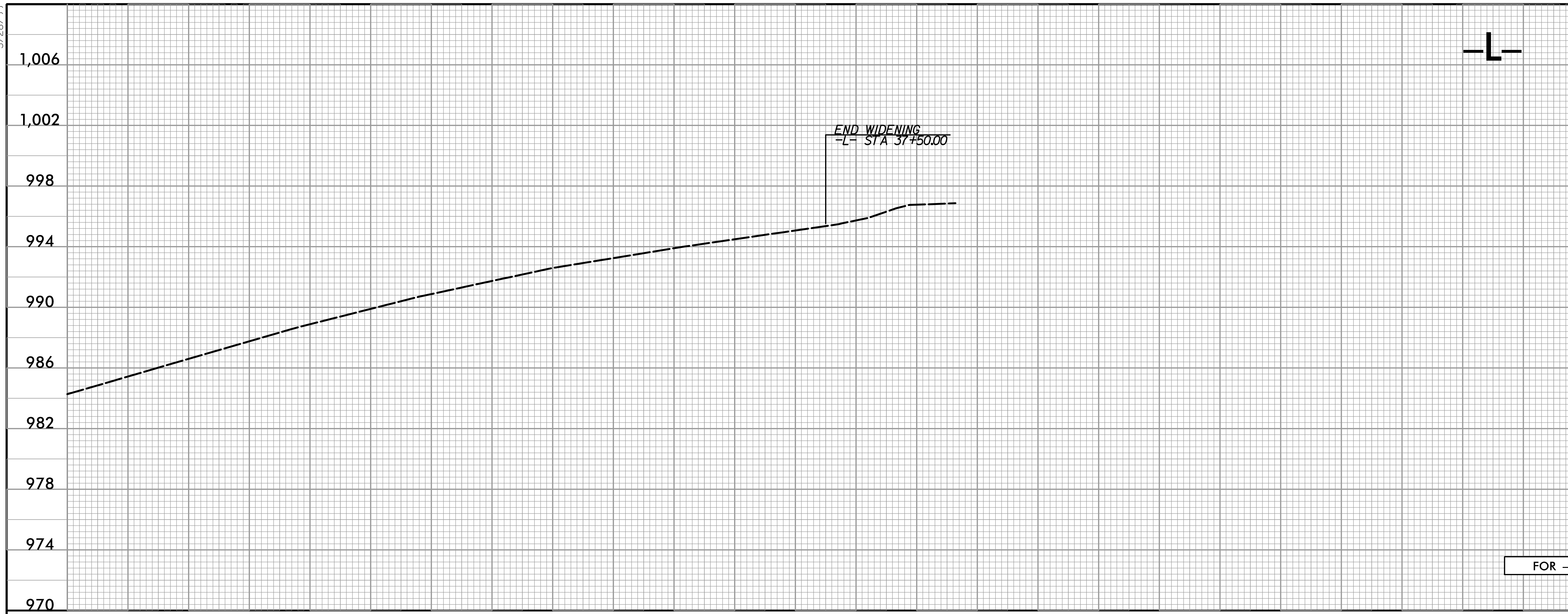


FOR -L- PLAN, SEE SHEET NO. 8

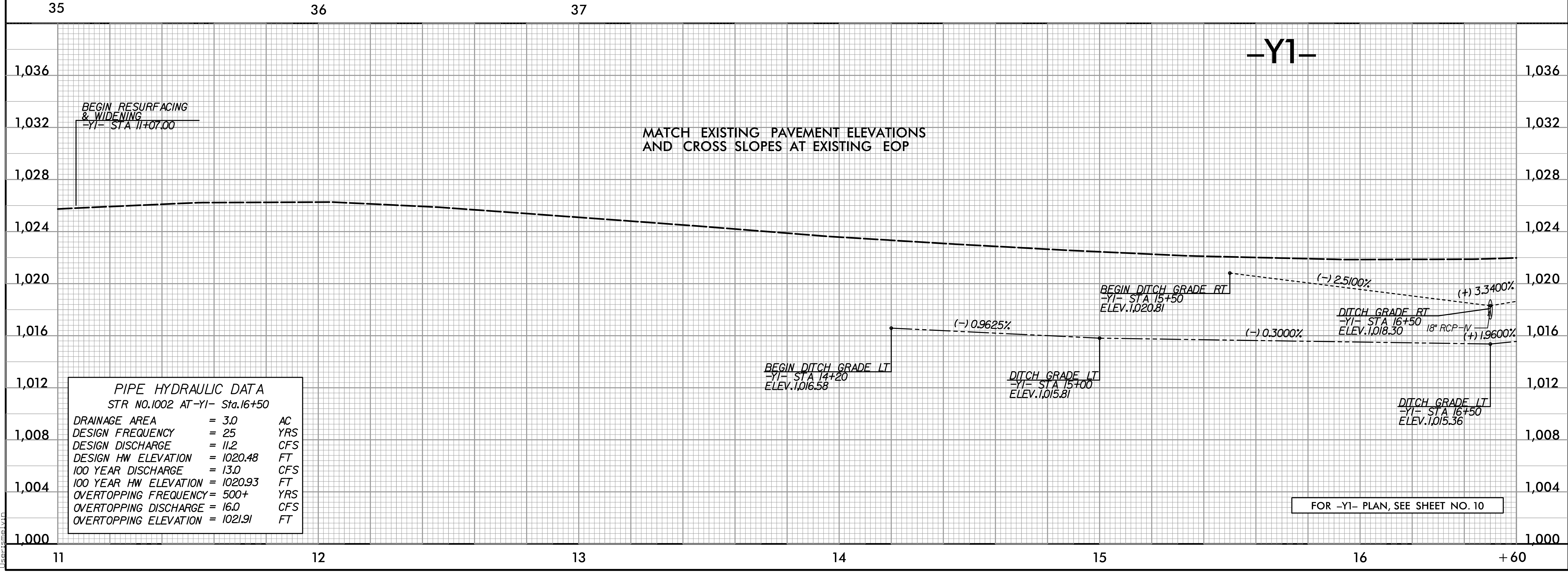
9/29/2017 10:55:10 Roadway\Proj\SPE_Rdy_pf1.dgn
 User: smel

5/28/99

PROJECT REFERENCE NO. <i>U-5510</i>	SHEET NO. <i>17</i>
ROADWAY DESIGN ENGINEER 	HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	
 TGS ENGINEERS 804-C N. LAFAYETTE ST SHELBY, NC 28150 PH (704) 476-0000 CORP. LICENSE NO. C-2274	



FOR -L- PLAN, SEE SHEET NO. 9

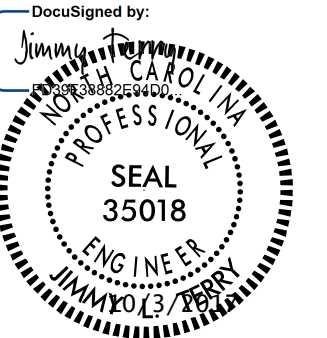
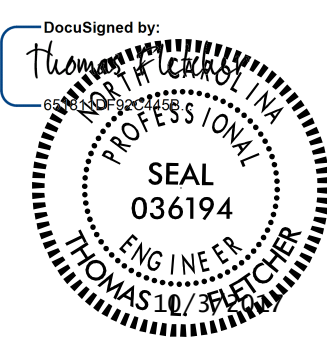



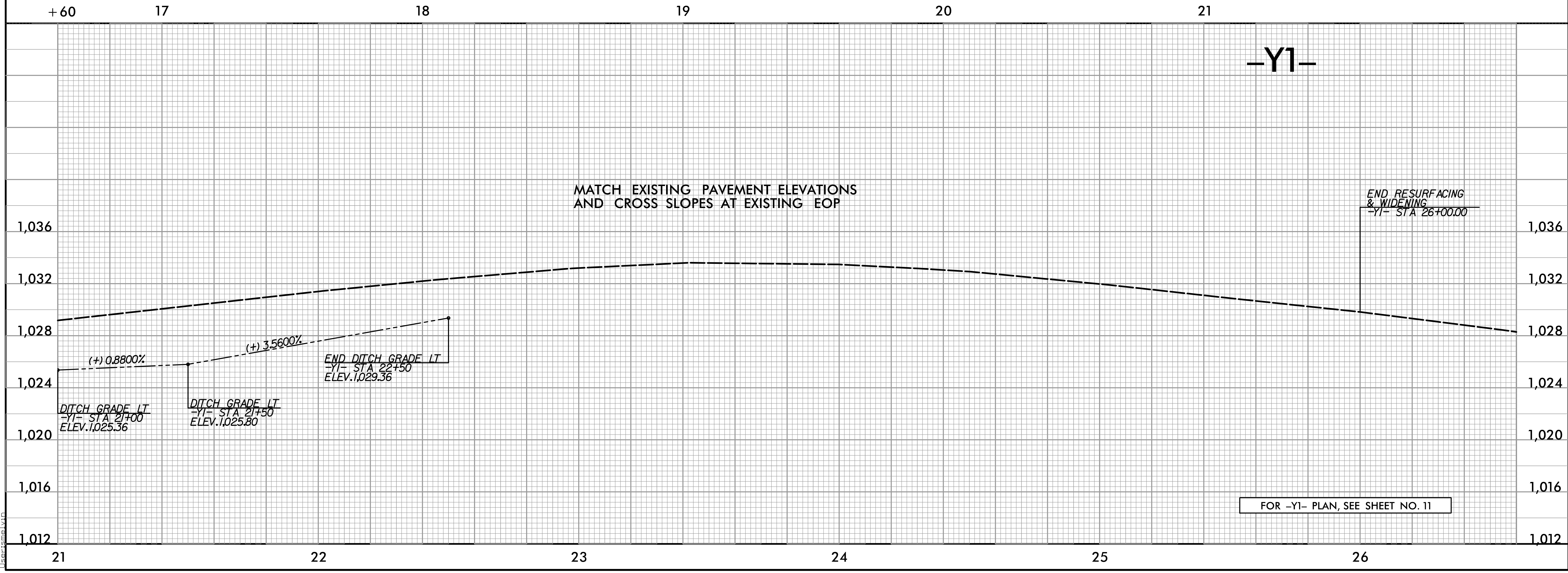
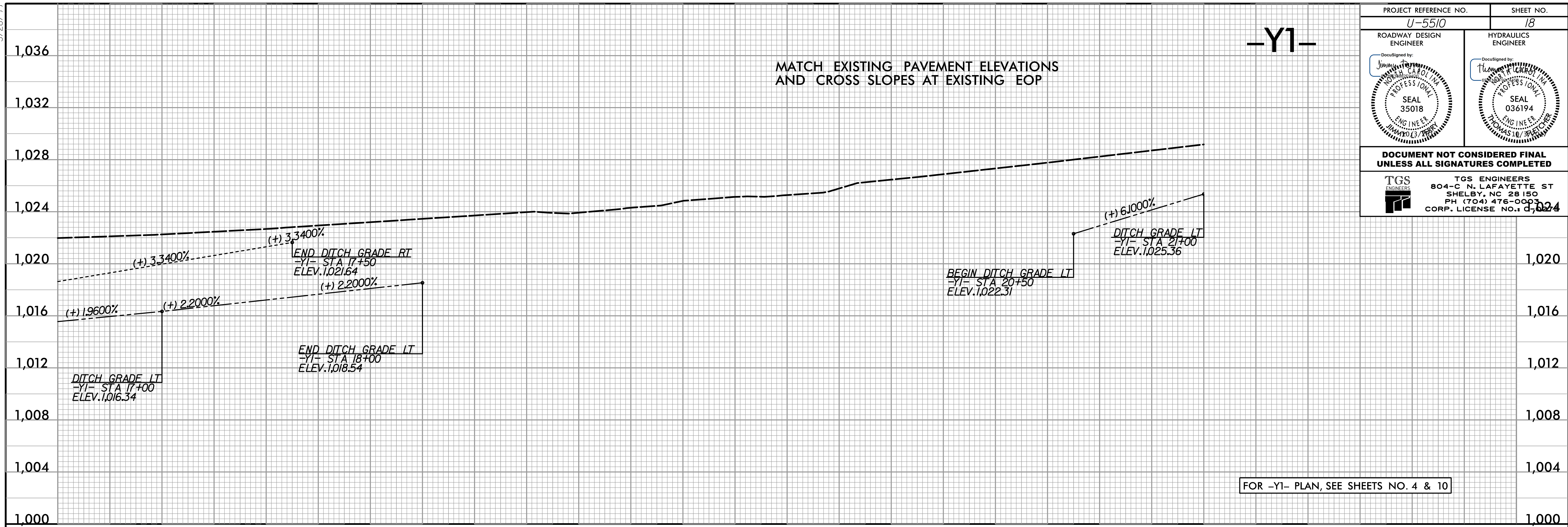
FOR -Y1- PLAN, SEE SHEET NO. 10

PIPE HYDRAULIC DATA		
STR NO.1002 AT-Y1- Sta.16+50		
DRAINAGE AREA	= 3.0	AC
DESIGN FREQUENCY	= 25	YRS
DESIGN DISCHARGE	= 11.2	CFS
DESIGN HW ELEVATION	= 1020.48	FT
100 YEAR DISCHARGE	= 13.0	CFS
100 YEAR HW ELEVATION	= 1020.93	FT
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING DISCHARGE	= 16.0	CFS
OVERTOPPING ELEVATION	= 1021.91	FT

9/28/2017 9:28:00 AM U:\5510\Roadway\Proc\SPR-Rdy.pfl.dgn
 User: jsmal

5/28/99

PROJECT REFERENCE NO. <i>U-5510</i>		SHEET NO. <i>18</i>	
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
Designed by: 		Designed by: 	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED			
		TGS ENGINEERS 804-C N. LAFAYETTE ST SHELBY, NC 28150 PH (704) 476-0003 CORP. LICENSE NO. <i>01024</i>	

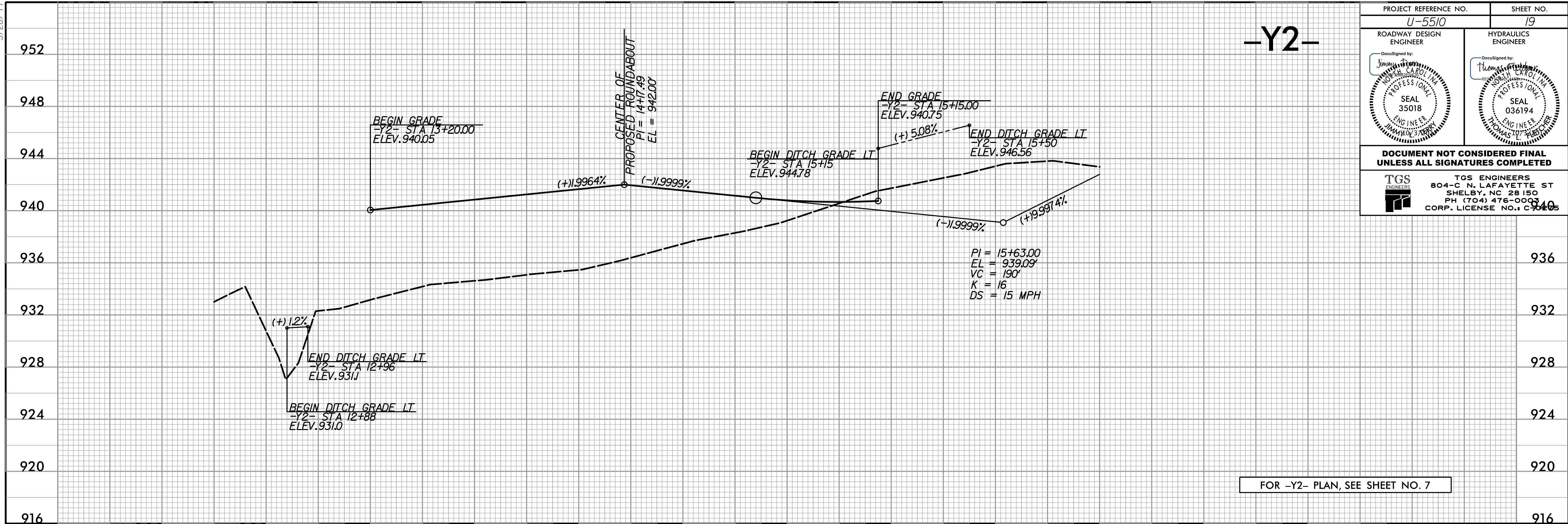


9/28/2017 U-5510\Roadway\Proc\SPE_Rdu.pfl.dgn

5/28/99

-Y2-

PROJECT REFERENCE NO. U-5510		SHEET NO. 19	
ROADWAY DESIGN ENGINEER DocuSigned by: <i>James H. Carroll, Inc.</i> PROFESSIONAL SEAL 35018 ENGINEER JIMMYLOX378999		HYDRAULICS ENGINEER DocuSigned by: <i>Thomas H. Carroll, Inc.</i> PROFESSIONAL SEAL 036194 ENGINEER THOMAS H. CARROLL	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED			
TGS ENGINEERS 804-C N. LAFAYETTE ST SHELBY, NC 28150 PH (704) 476-0033 CORP. LICENSE NO. C-92475		940	



FOR -Y2- PLAN, SEE SHEET NO. 7

X:\2007\U-5510\Roadway\Proj\SPE_Rdy.pfl.dgn
User: jsmel

936
932
928
924
920
916

12 13 14 15 16