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09\_08/2019

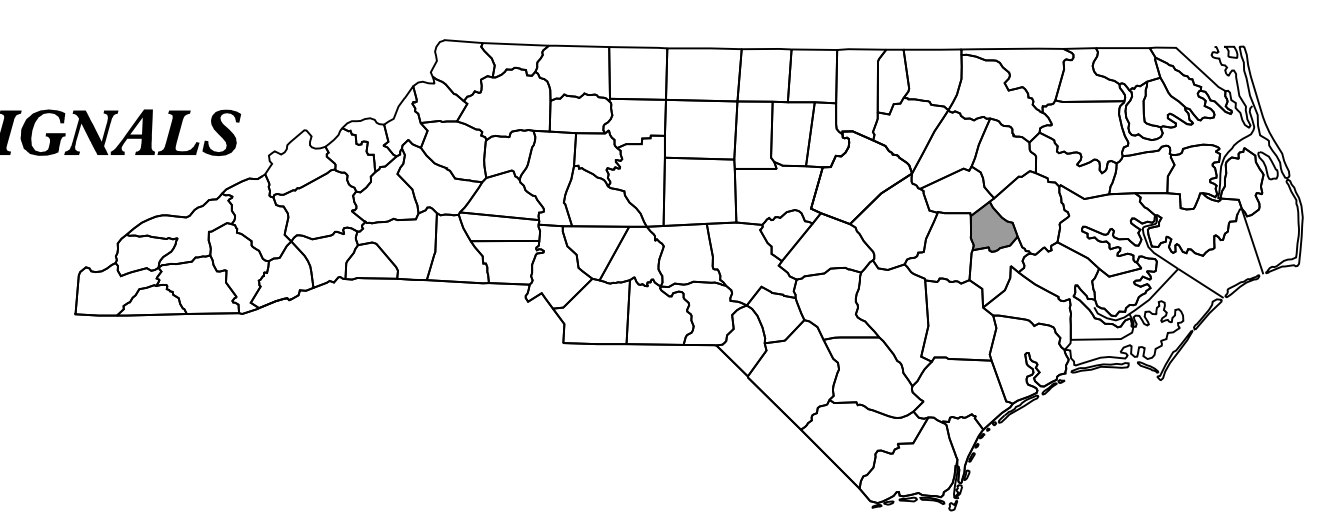
See Sheet 1A For Index of Sheets  
See Sheet 1B For Conventional Symbols

STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

**GREENE COUNTY**

**LOCATION: US 13 FROM NC 58 (KINGOLD BOULEVARD) TO NC 91**  
**TYPE OF WORK: GRADING, PAVING, DRAINAGE, RETAINING WALL, AND SIGNALS**

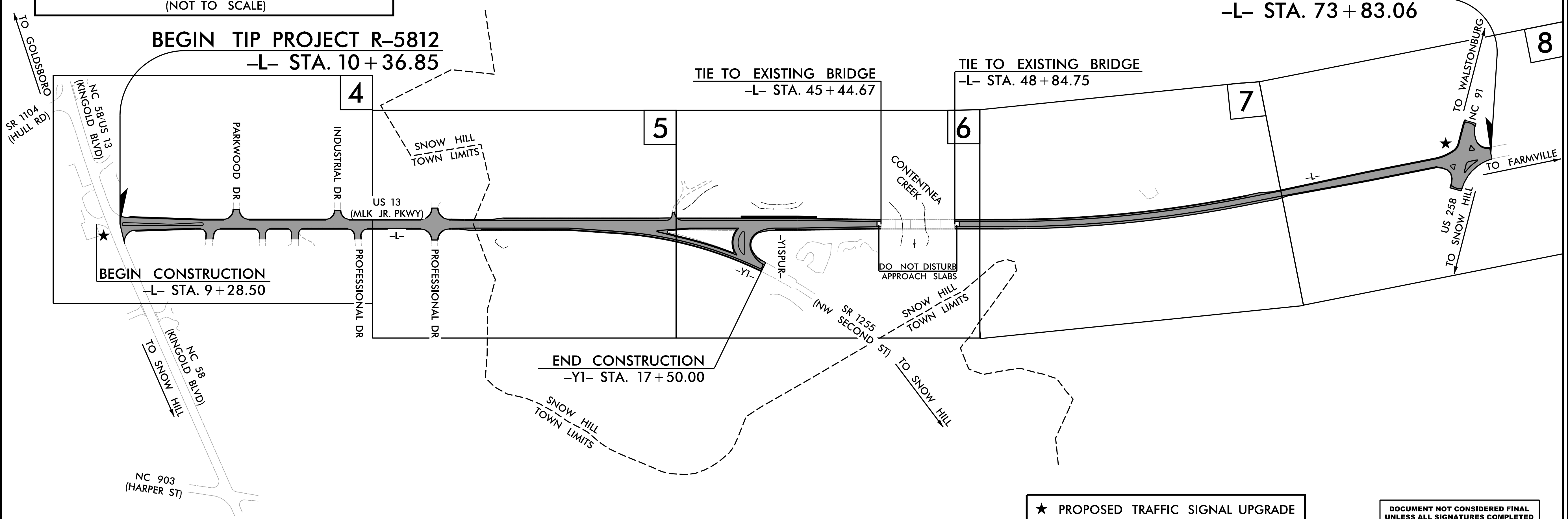
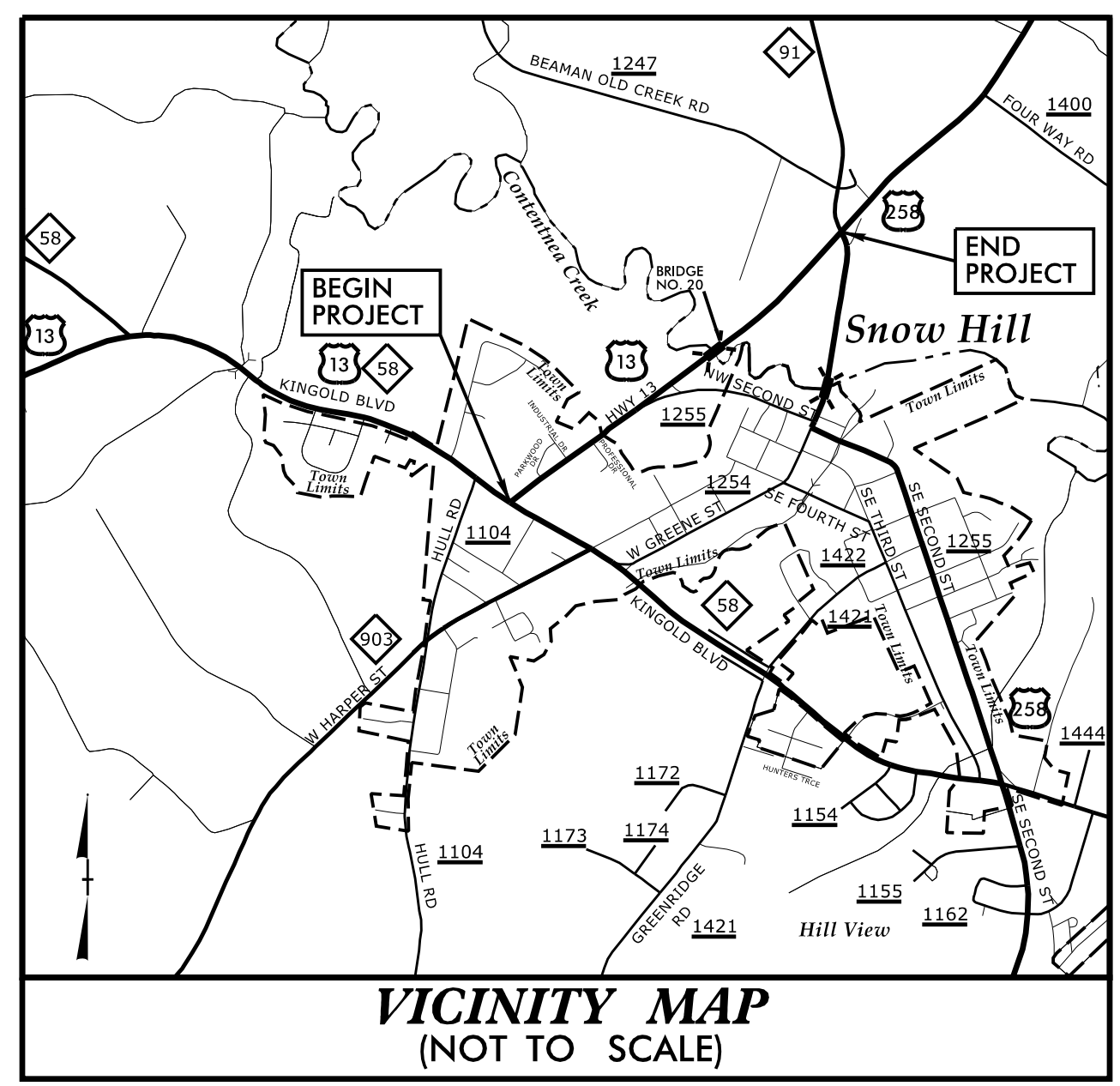
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-5812	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
46981.1.1	N/A	P.E.	
46981.2.1	N/A	R/W & UTILITIES	
46981.3.1	N/A	CONSTRUCTION	



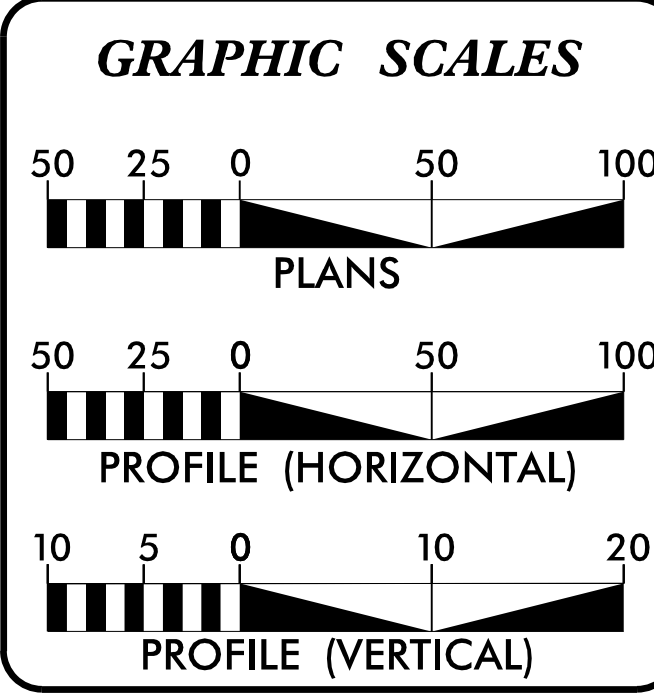
**END TIP PROJECT R-5812**  
**-L- STA. 73 + 83.06**

**TIP PROJECT: R-5812**

**CONTRACT: C204358**



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**DESIGN DATA**

ADT 2019 =	12,750
ADT 2040 =	17,300
K =	8 %
D =	55 %
T =	12 % *
V =	60 MPH
(* TTST 7% + DUAL 5%)	
FUNC CLASS =	MINOR ARTERIAL STATEWIDE TIER

**PROJECT LENGTH**

LENGTH ROADWAY TIP PROJECT R-5812 =	1.138 MILES
TOTAL LENGTH TIP PROJECT R-5812 =	1.138 MILES

Prepared by the Office of:  
**HDR**  
HDR Engineering, Inc. of the Carolinas  
555 Fayetteville St, Suite 900 Raleigh, N.C. 27601  
N.C.B.E.L.S. License Number: F-0116

2018 STANDARD SPECIFICATIONS

**RIGHT OF WAY DATE:**  
NOVEMBER 16, 2018

**LETTING DATE:**  
SEPTEMBER 17, 2019

**DOMINIC WAINWRIGHT, PE**  
PROJECT ENGINEER

**T. NATHAN BEDENBAUGH, PE**  
PROJECT DESIGN ENGINEER

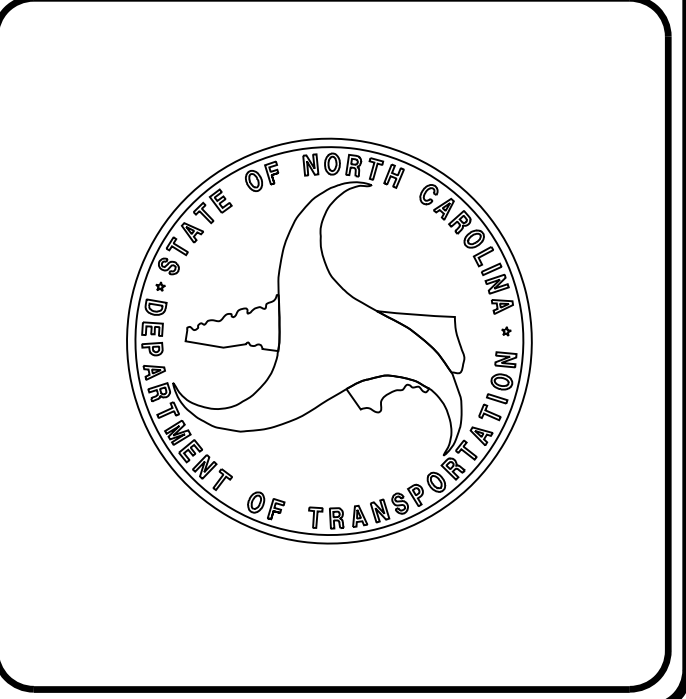
**CASEY WHITLEY, PE**  
NCDOT CONTACT

**HYDRAULICS ENGINEER**  
7/17/2019

*Josh Massack*  
SIGNATURE

**ROADWAY DESIGN ENGINEER**  
7/17/2019

*T. Nathan Bedenbaugh*  
SIGNATURE

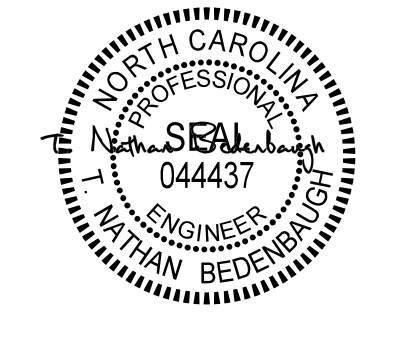



★ PROPOSED TRAFFIC SIGNAL UPGRADE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



8/17/19

PROJECT REFERENCE NO.	SHEET NO.
R-5812	1A
ROADWAY DESIGN ENGINEER	
	
7/2/2019	
<b>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</b>	
 HDR Engineering, Inc. of the Carolinas 555 Fayetteville St. Suite 900 Raleigh, N.C. 27601 N.C.B.E.L.S. License Number: F-0116	

**INDEX OF SHEETS**

SHEET NUMBER	SHEET
1	TITLE SHEET
1A	INDEX OF SHEETS, GENERAL NOTES, AND LIST OF STANDARD DRAWINGS
1B	CONVENTIONAL SYMBOLS
2A-1 THRU 2A-3	PAVEMENT SCHEDULE, TYPICAL SECTIONS, AND WEDGING DETAILS
2B-1	INTERSECTION DETAIL
2B-2 THRU 2B-3	CROSS-SECTION LAYOUT DETAIL
2C-1	GUARDRAIL INSTALLATION
2C-2	GUARDRAIL ANCHOR UNIT TYPE III
2C-3	COAL COMBUSTION PRODUCT PLACEMENT
2G-1 THRU 2G-2	REINFORCED SOIL SLOPES
3B-1	ROADWAY SUMMARIES
3B-2	GUARDRAIL SUMMARY
3D-1 THRU 3D-4	SUMMARY OF DRAINAGE QUANTITIES
3G-1	GEOTECHNICAL SUMMARY
3P-1	PARCEL INDEX
4 THRU 8	PLAN SHEETS
9 THRU 12	PROFILE SHEETS
RW01 THRU RW08	SURVEY CONTROL, EXISTING CENTERLINES, RIGHT OF WAY, EASEMENTS AND PROPERTY TIES
TMP-1 THRU TMP-16	TRANSPORTATION MANAGEMENT PLANS
PMP-1 THRU PMP-6	PAVEMENT MARKING PLANS
EC-1 THRU EC-13	EROSION CONTROL PLAN
RF-1	REFORESTATION PLANS
SIGN-1 THRU SIGN-9A	SIGNING PLANS
SIG-1.0 THRU SIG.M7	SIGNAL PLANS
UC-1 THRU UC-7	UTILITY CONSTRUCTION PLANS
UO-1 THRU UO-6	UTILITIES BY OTHERS PLANS
X-1	CROSS-SECTION SHEET INDEX
X-1A	CROSS-SECTION SUMMARY SHEET
X-2 THRU X-34	CROSS-SECTIONS
S-1 THRU S-8	RETAINING WALL PLANS

**2018 ROADWAY ENGLISH STANDARD DRAWINGS**

STD. NO.	TITLE
EFF. 01-16-2018	
2018 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, 2018 are applicable to this project and by reference hereby are considered a part of these plans:	
DIVISION 2 - EARTHWORK	
200.03	Method of Clearing - Method III
225.02	Guide for Grading Subgrade - Secondary and Local
225.03	Deceleration and Acceleration Lanes
225.04	Method of Obtaining Super-elevation - Two Lane Pavement
225.06	Method of Grading Sight Distance at Intersections
DIVISION 3 - PIPE CULVERTS	
300.01	Method of Pipe Installation
310.10	Driveway Pipe Construction
DIVISION 5 - SUBGRADE, BASES AND SHOULDERS	
560.01	Method of Shoulder Construction - High Side of Super-elevated Curve - Method I
560.02	Method of Shoulder Construction - High Side of Super-elevated Curve - Method II
DIVISION 6 - ASPHALT BASES AND PAVEMENTS	
654.01	Pavement Repairs
DIVISION 8 - INCIDENTALS	
815.02	Subsurface Drain
816.01	Concrete Pads - for Shoulder Drain Installation
816.02	Aggregate Shoulder Drain
816.04	Markers for Drainage Structure and Concrete Pad
838.21	Reinforced Concrete Endwall - for Single 54" Pipe 90 Skew
838.51	Reinforced Brick Endwall - for Single 54" Pipe 90 Skew
838.75	Notes for Reinforced Brick Endwall - Std. Dwg 838.51 thru 838.70
838.80	Precast Endwalls - 12" thru 72" Pipe 90 Skew
840.00	Concrete Base Pad for Drainage Structures
840.01	Brick Catch Basin - 12" thru 54" Pipe
840.02	Concrete Catch Basin - 12" thru 54" Pipe
840.03	Frame, Grates and Hood - for Use on Standard Catch Basin
840.17	Concrete Grated Drop Inlet Type 'A' - 12" thru 72" Pipe
840.18	Concrete Grated Drop Inlet Type 'B' - 12" thru 36" Pipe
840.20	Frames and Wide Slot Flat Grates
840.22	Frames and Wide Slot Sag Grates
840.25	Anchorage for Frames - Brick or Concrete or Precast
840.26	Brick Grated Drop Inlet Type 'A' - 12" thru 72" Pipe
840.27	Brick Grated Drop Inlet Type 'B' - 12" thru 36" Pipe
840.31	Concrete Junction Box - 12" thru 66" Pipe
840.32	Brick Junction Box - 12" thru 66" Pipe
840.34	Traffic Bearing Junction Box - for Use with Pipes 42" and Under
840.35	Traffic Bearing Grated Drop Inlet - for Cast Iron Double Frame and Grates
840.45	Precast Drainage Structure
840.46	Traffic Bearing Precast Drainage Structure
840.54	Manhole Frame and Cover
840.66	Drainage Structure Steps
840.72	Pipe Collar
846.01	Concrete Curb, Gutter and Curb & Gutter
846.04	Drop Inlet Installation in Shoulder Berm Gutter
848.01	Concrete Sidewalk
848.02	Driveway Turnout - Radius Type
848.04	Street Turnout
848.05	Curb Ramp - Proposed Curb & Gutter
848.06	Curb Ramp - Existing Curb & Gutter
852.01	Concrete Islands
852.06	Method for Placement of Drop Inlets in Concrete Islands
862.01	Guardrail Placement
862.02	Guardrail Installation
862.03	Structure Anchor Units (Special Detail for Type III Anchor Units Sheets 1 of 7 and 2 of 7)
876.01	Rip Rap in Channels
876.02	Guide for Rip Rap at Pipe Outlets

**GENERAL NOTES**

GENERAL NOTES: 2018 SPECIFICATIONS EFFECTIVE: 01-16-2018

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 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 AND STD. NO. 560.02

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

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

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

STREET TURNOUT: STREET RETURNS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. NO. 848.04 USING THE RADIUS 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 TOWN OF SNOW HILL, SPECTRUM, CONTERRA ULTRA BROADBAND, CENTURY LINK, INFINITY LINK, AND DUKE ENERGY. ANY RELOCATION OF EXISTING UTILITIES WILL BE ACCOMPLISHED BY OTHERS, EXCEPT AS SHOWN ON THE PLANS.

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

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

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REVISIONS

# 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	-----
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	▬
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	-----
New Right of Way Line with Pin and Cap	-----
New Right of Way Line with Concrete or Granite R/W Marker	-----
New Control of Access Line with Concrete C/A Marker	-----
Existing Control of Access	-----
New Control of Access	-----
Existing Easement Line	-----
New Temporary Construction Easement	-----
New Temporary Drainage Easement	-----
New Permanent Drainage Easement	-----
New Permanent Drainage / Utility Easement	-----
New Permanent Utility Easement	-----
New Temporary Utility Easement	-----
New Aerial Utility Easement	-----

### 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 ---
Proposed Guardrail	--- T ---
Existing Cable Guiderail	--- T ---
Proposed Cable Guiderail	--- T ---
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	○
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	○
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 ---

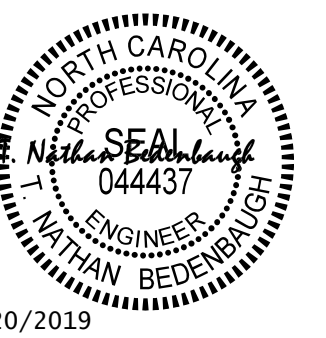


### MISCELLANEOUS:

Utility Pole	●
Utility Pole with Base	⊠
Utility Located Object	○
Utility Traffic Signal Box	⊠
Utility Unknown U/G Line LOS B (S.U.E.*)	--- 7U/L ---
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.

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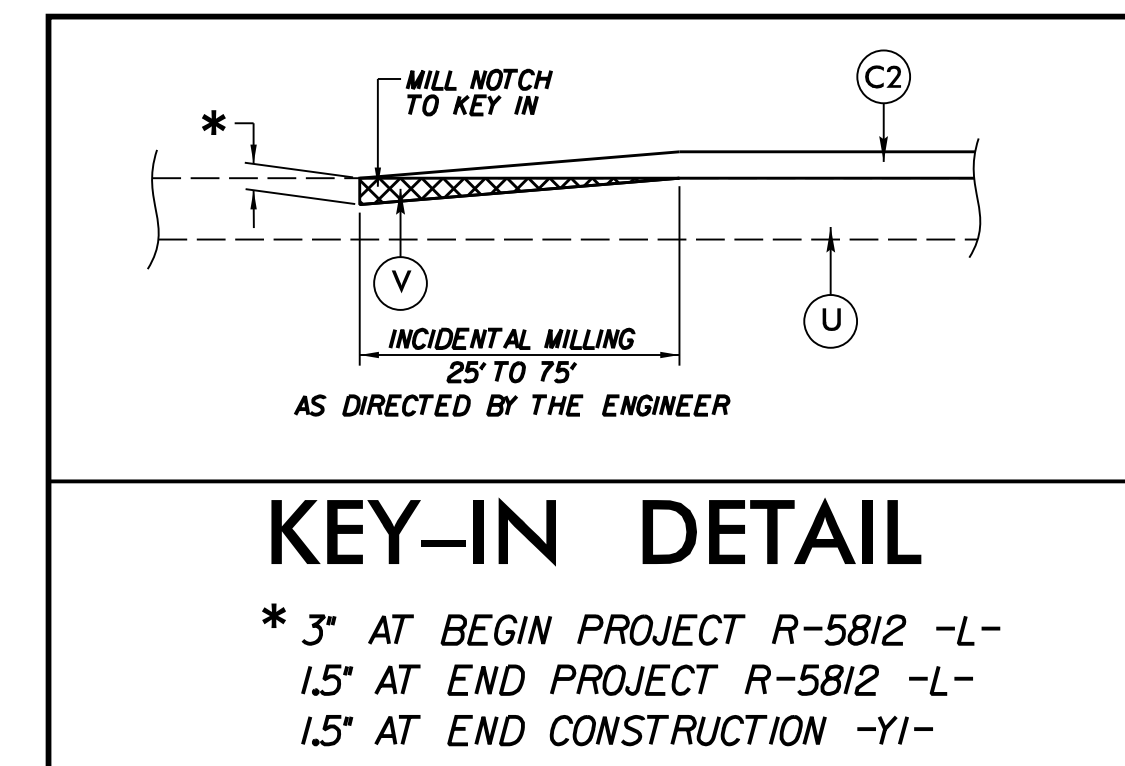
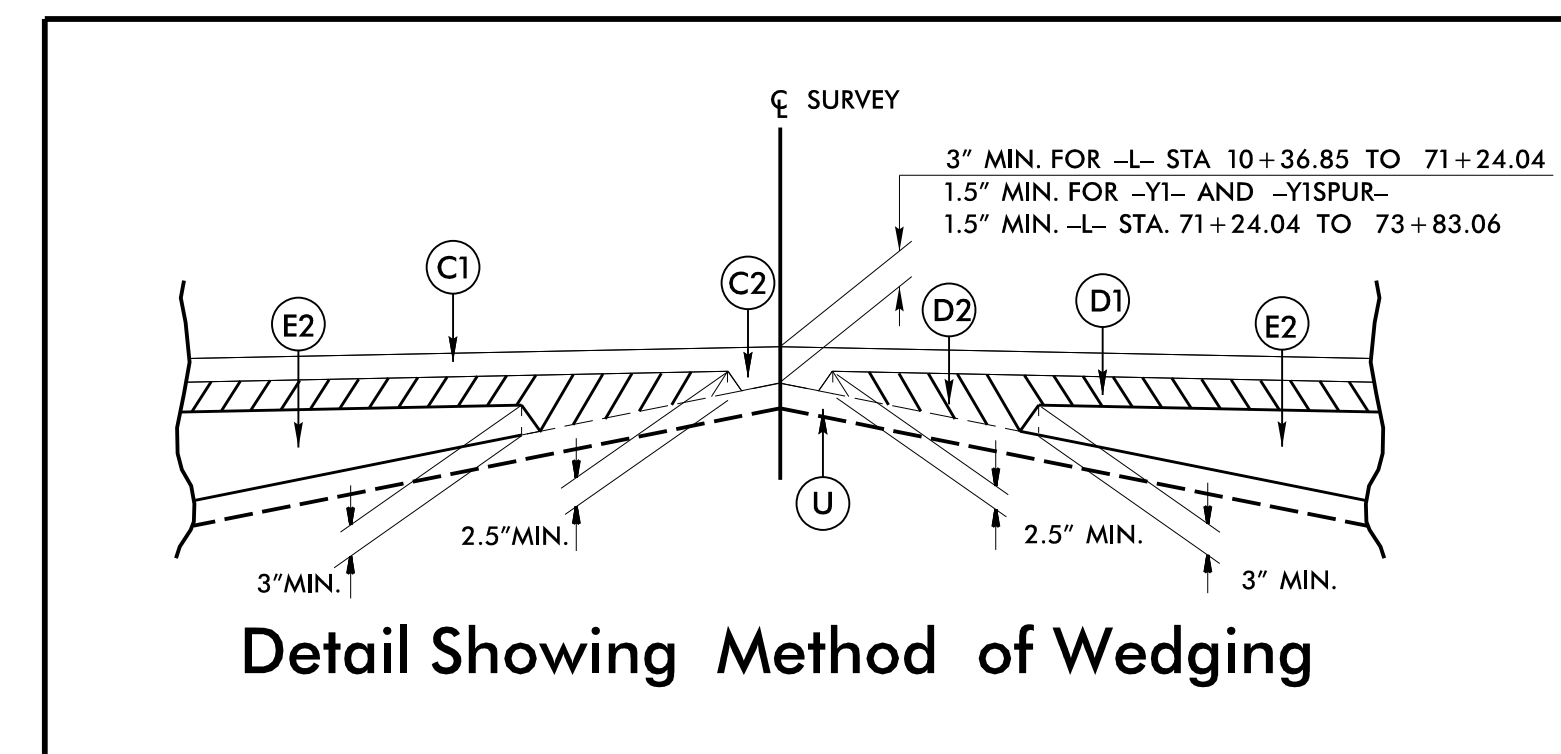
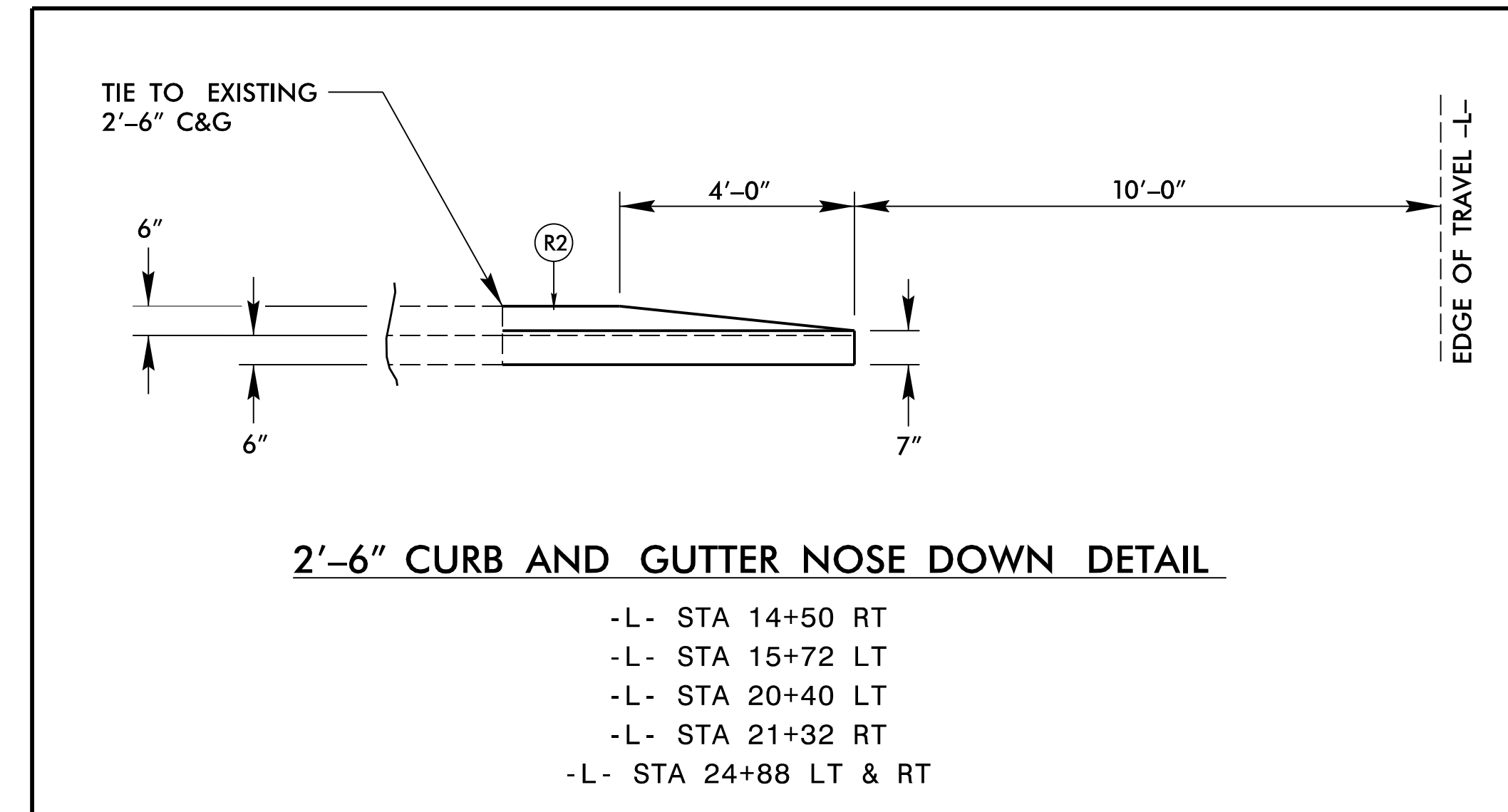


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PROJECT REFERENCE NO. <b>R-5812</b>	SHEET NO. <b>2A-1</b>
ROADWAY DESIGN ENGINEER 	PAVEMENT DESIGN ENGINEER 
<b>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</b>	
 HDR Engineering, Inc. of the Carolinas 555 Fayetteville St., Suite 900 Raleigh, N.C. 27601 N.C.B.E.L.S. License Number: F-0116	

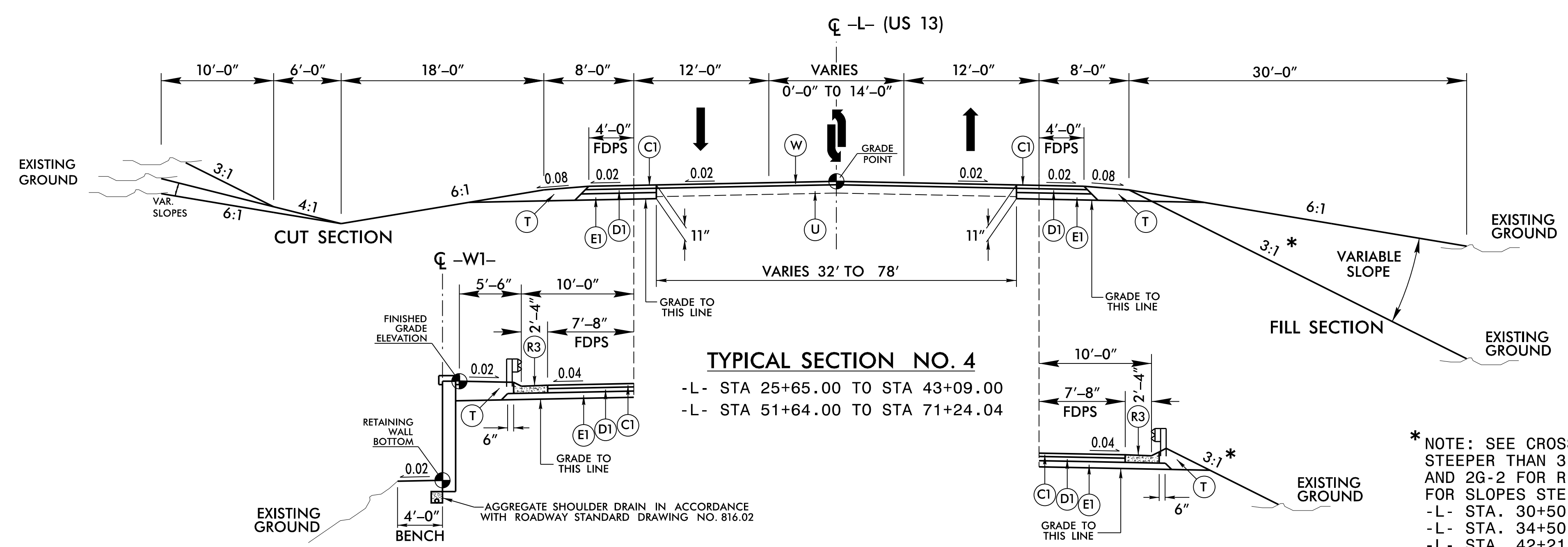
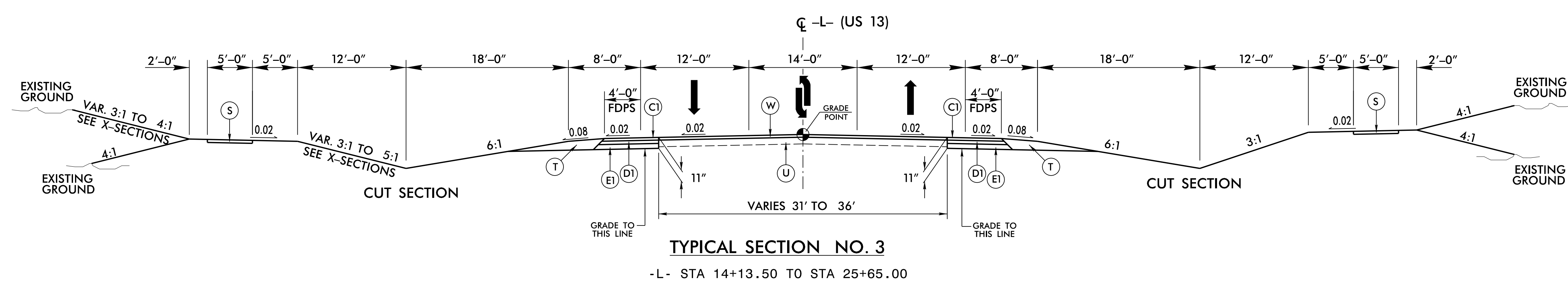
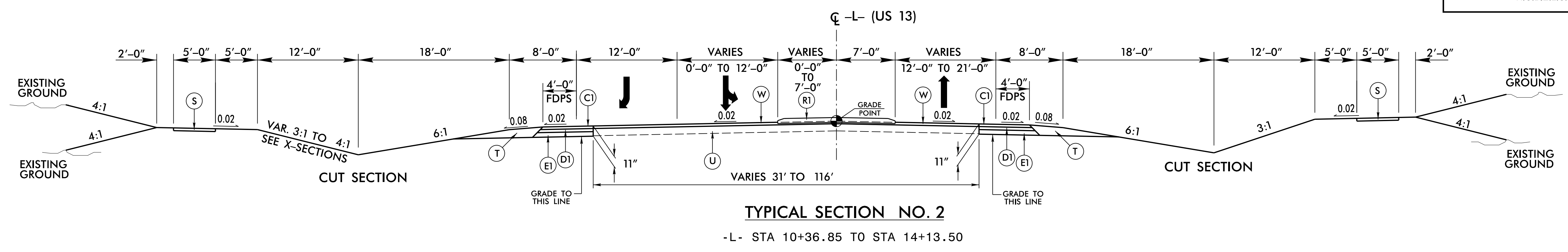
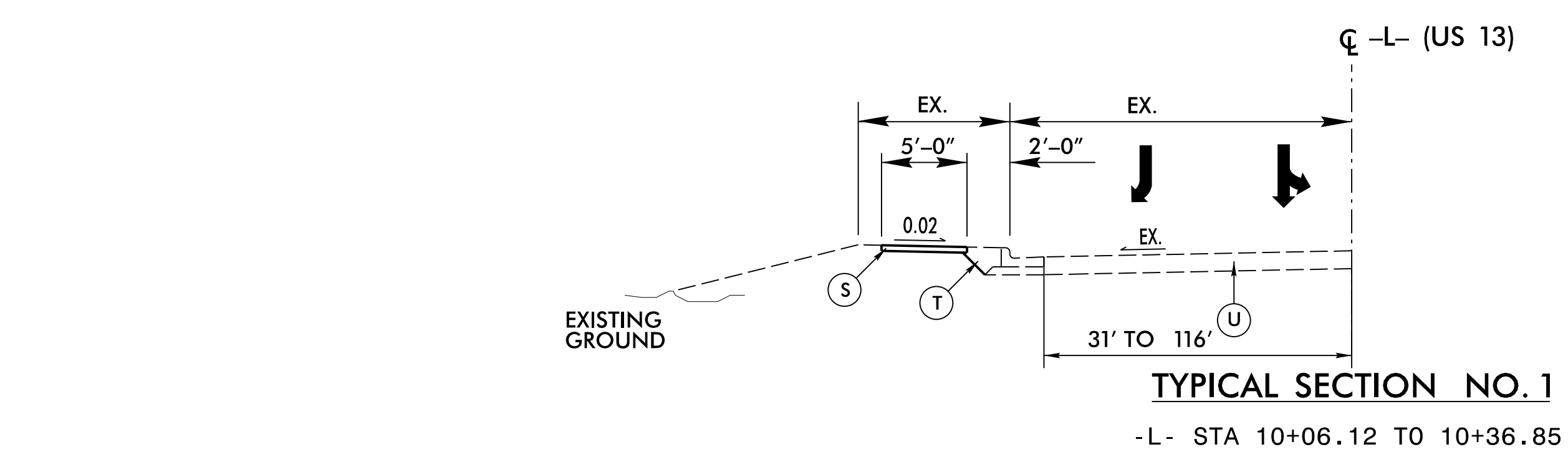
FINAL PAVEMENT SCHEDULE	
C1	PROP. APPROX. 3.0" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD IN EACH TO TWO LAYERS.
C2	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT TO EXCEED 2" IN DEPTH.
D1	PROP. APPROX. 4" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
D2	PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 2.5" IN DEPTH OR GREATER THAN 4" IN DEPTH.
E1	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
E2	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 3" IN DEPTH OR GREATER THAN 5.5" IN DEPTH.
R1	5" MONOLITHIC CONCRETE ISLAND (KEYED IN)
R2	2'-6" CONCRETE CURB AND GUTTER
R3	SHOULDER BERM GUTTER
S	4" CONCRETE SIDEWALK
T	EARTH MATERIAL
U	EXISTING PAVEMENT
V	MILLING EXISTING PAVEMENT
W	VAR. DEPTH ASPHALT PAVEMENT (SEE WEDGING DETAIL THIS SHEET)

ALL PAVEMENT SLOPES ARE 1:1 UNLESS OTHERWISE NOTED.



6/2/2019

PROJECT REFERENCE NO. <b>R-5812</b>	SHEET NO. <b>2A-2</b>
ROADWAY DESIGN ENGINEER 	PAVEMENT DESIGN ENGINEER 
<b>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</b>	
 HDR Engineering, Inc. of the Carolinas 555 Fayetteville St., Suite 900 Raleigh, N.C. 27601 N.C.B.E.L.S. License Number: F-0116	



NOTE: FDPS = FULL DEPTH PAVED SHOULDER

FINAL PAVEMENT SCHEDULE	
CODE	DESCRIPTION
C1	3" S9.5C
C2	VARIABLE DEPTH S9.5C
D1	4" I19.0C
D2	VARIABLE DEPTH I19.0C
E1	4" B25.0C
E2	VARIABLE DEPTH B25.0C
R1	CONC MONOLITHIC ISLAND
R2	CONC 2'-6" C&G
R3	CONC SBG
S	4" CONC. SIDEWALK
T	EARTH MATERIAL
U	EXISTING PAVEMENT
V	MILLING
W	WEDGING

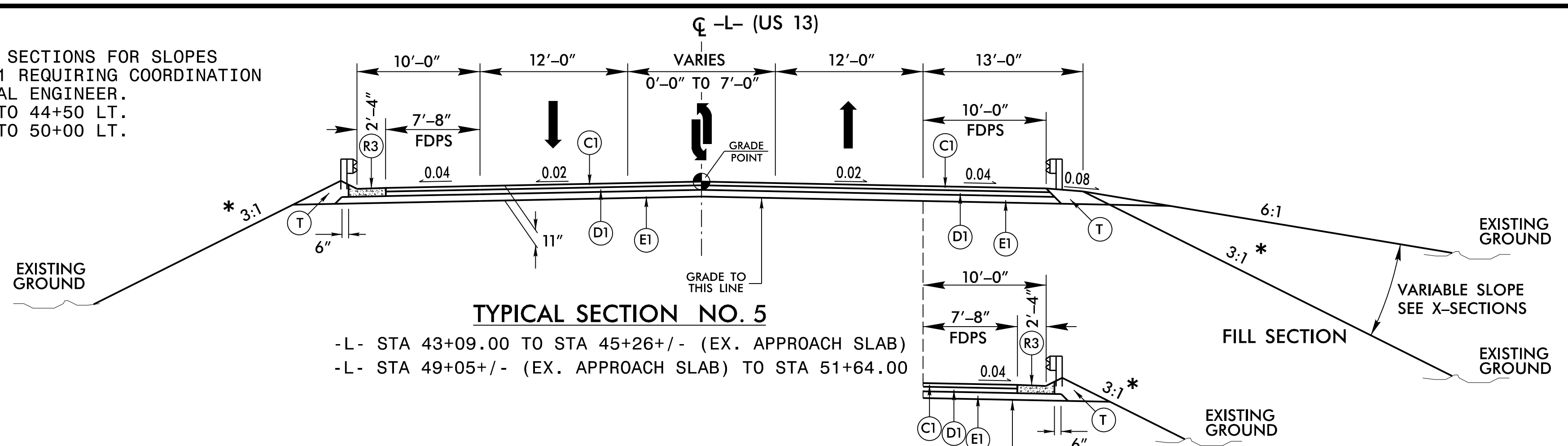
\* NOTE: SEE CROSS SECTIONS FOR SLOPES STEEPER THAN 3:1. SEE SHEET NOS. 2G-1 AND 2G-2 FOR REINFORCED SOIL SLOPES FOR SLOPES STEEPER THAN 3:1.  
-L- STA. 30+50 TO 35+00 RT.  
-L- STA. 34+50 TO 35+50 LT.  
-L- STA. 42+21 TO 43+09 LT.

PLOT DRIVER: NCDOT\_color\_eng\_50.plt  
USER: DWAINWRI  
DATE: 6/18/2019  
TIME: 7:59:42 PM  
PENTABLE: NCDOT\_pshpfi.tbl  
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6/2/2019

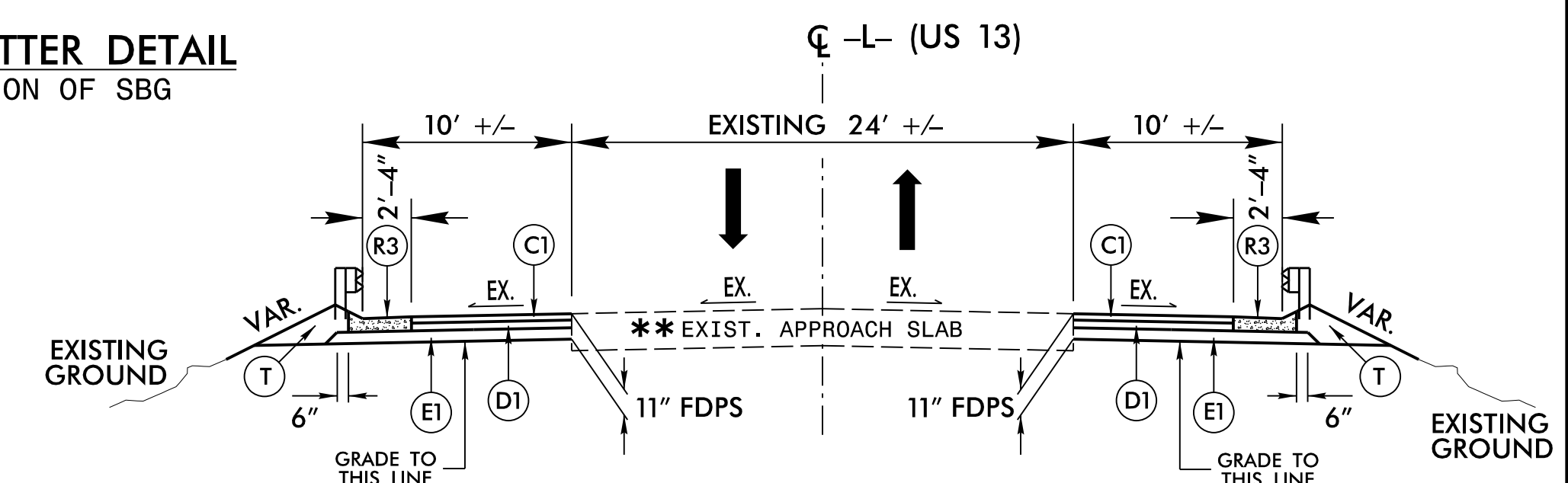
\* NOTE: SEE CROSS SECTIONS FOR SLOPES STEEPER THAN 3:1 REQUIRING COORDINATION WITH GEOTECHNICAL ENGINEER.  
 -L- STA. 43+09 TO 44+50 LT.  
 -L- STA. 48+85 TO 50+00 LT.



**TYPICAL SECTION NO. 5**

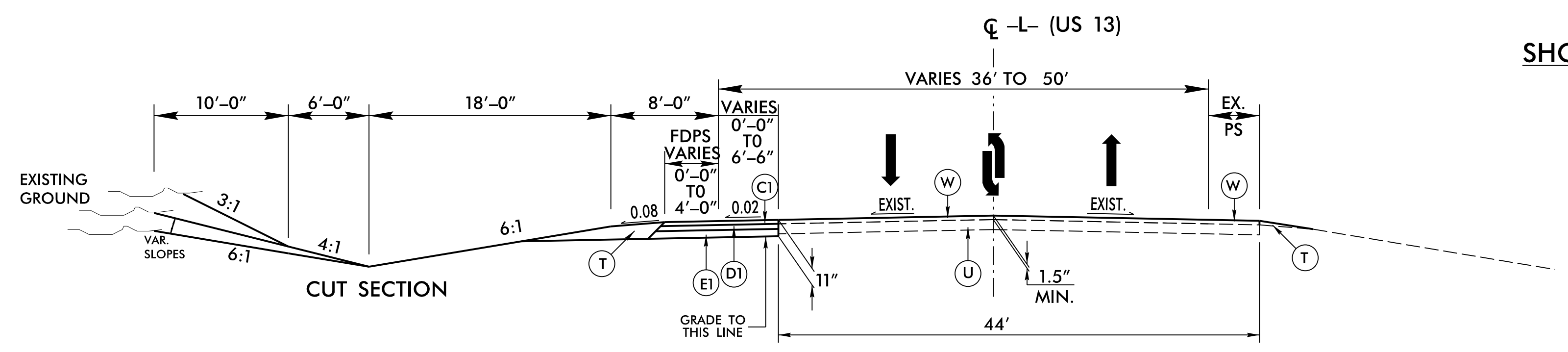
-L- STA 43+09.00 TO STA 45+26+/- (EX. APPROACH SLAB)  
 -L- STA 49+05+/- (EX. APPROACH SLAB) TO STA 51+64.00

**SHOULDER BERM GUTTER DETAIL**  
 SEE PLANS FOR LOCATION OF SBG



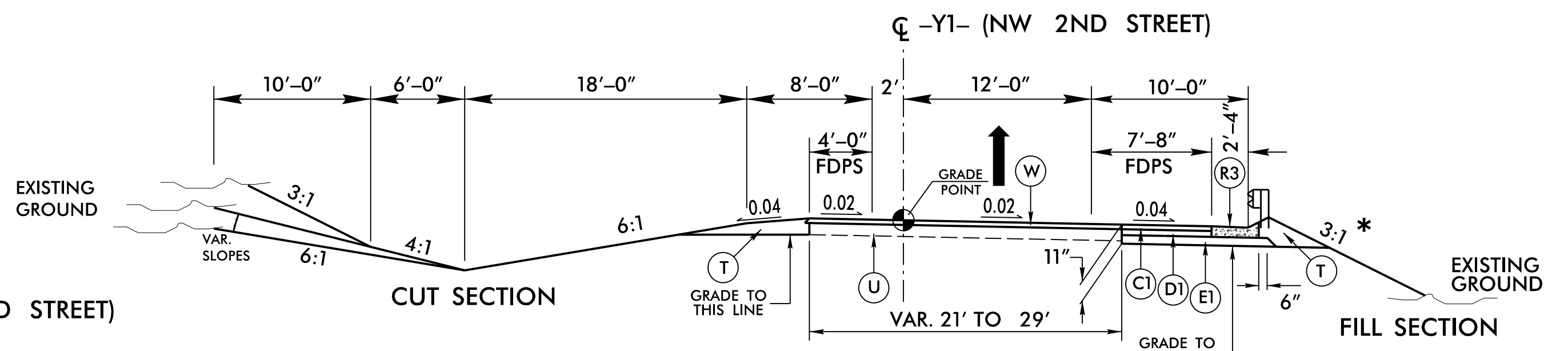
**TYPICAL SECTION NO. 6**

-L- STA 45+26+/- (EX. APPROACH SLAB) TO 45+44.67 (EX. BRIDGE)  
 -L- STA 48+84.75 (EX. BRIDGE) TO STA 49+05+/- (EX. APPROACH SLAB)  
 \*\*NOTE: DO NOT DISTURB EXISTING APPROACH SLABS



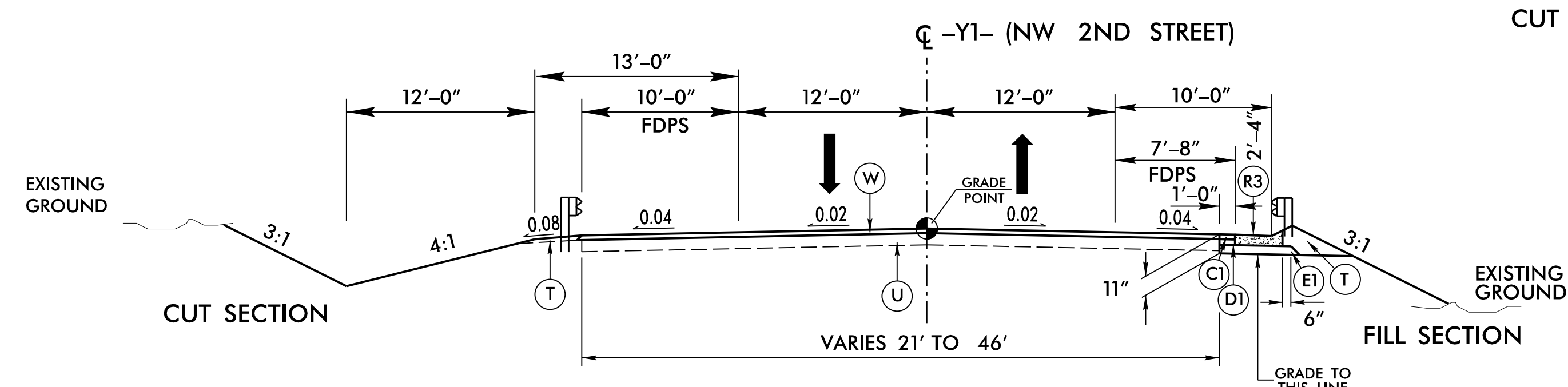
**TYPICAL SECTION NO. 7**

-L- STA 71+24.04 TO STA 73+83.06



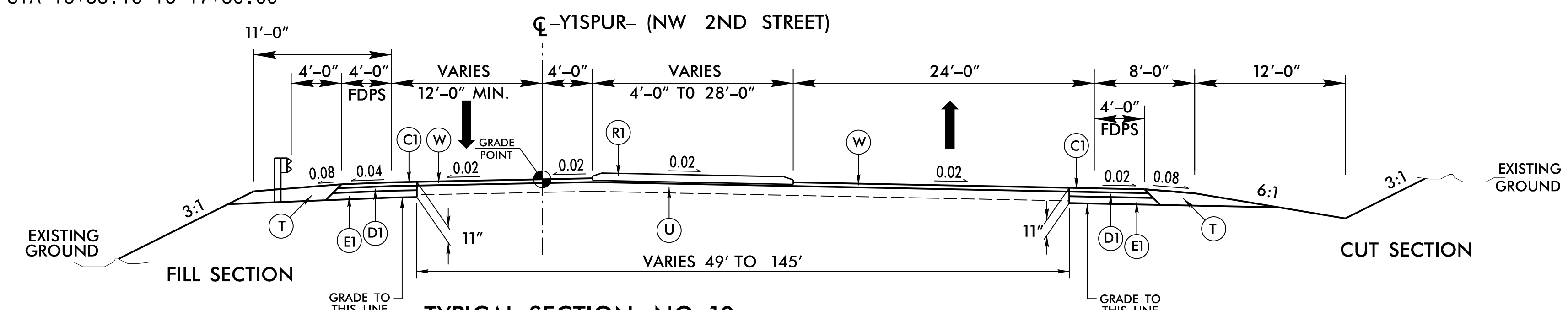
**TYPICAL SECTION NO. 8**

-Y1- STA 12+81.07 TO 16+53.16  
 \*NOTE: SEE CROSS SECTIONS FOR SLOPES STEEPER THAN 3:1. SEE SHEET NOS. 2G-1 AND 2G-2 FOR REINFORCED SOIL SLOPES FOR SLOPES STEEPER THAN 3:1.  
 -Y1- STA. 13+68 TO 16+50 RT.



**TYPICAL SECTION NO. 9**

-Y1- STA 16+53.16 TO 17+50.00



**TYPICAL SECTION NO. 10**

-Y1SPUR- STA 10+22.00 TO 11+48.51

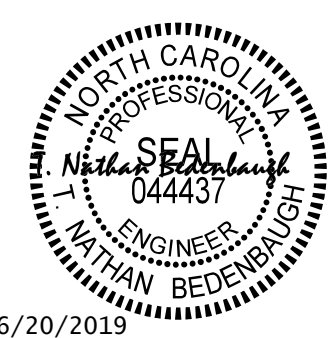


PROJECT REFERENCE NO. <b>R-5812</b>	SHEET NO. <b>2A-3</b>
ROADWAY DESIGN ENGINEER 	PAVEMENT DESIGN ENGINEER 
<b>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</b>	
HDR Engineering, Inc. of the Carolinas 555 Fayetteville St., Suite 900 Raleigh, N.C. 27601 N.C.B.E.L.S. License Number: F-0116	

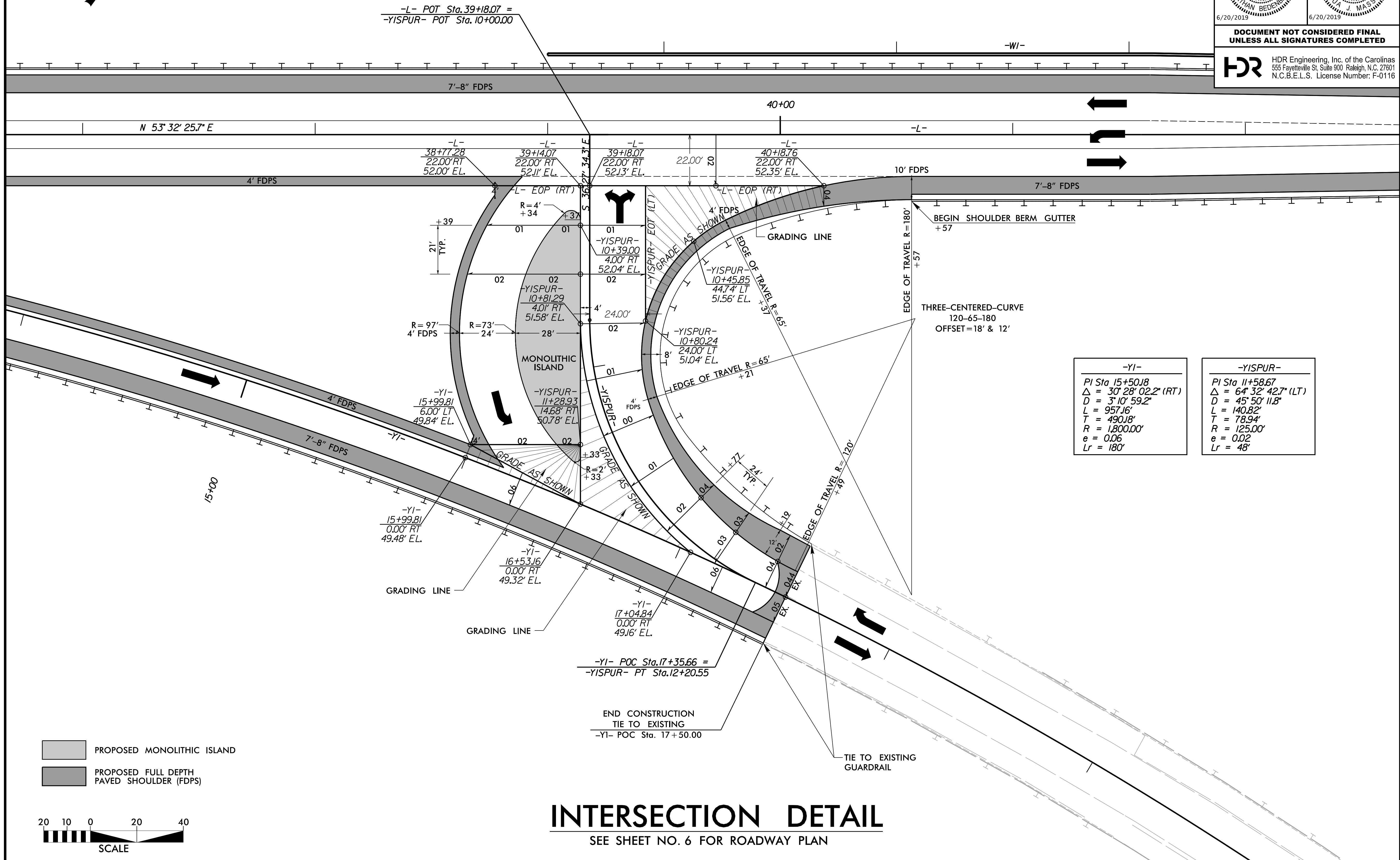
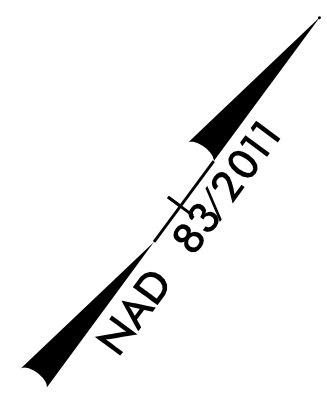
NOTE: FDPS = FULL DEPTH PAVED SHOULDER

FINAL PAVEMENT SCHEDULE	
CODE	DESCRIPTION
C1	3" S9.5C
C2	VARIABLE DEPTH S9.5C
D1	4" I19.0C
D2	VARIABLE DEPTH I19.0C
E1	4" B25.0C
E2	VARIABLE DEPTH B25.0C
R1	CONC MONOLITHIC ISLAND
R2	CONC 2'-6" C&G
R3	CONC SBG
S	4" CONC. SIDEWALK
T	EARTH MATERIAL
U	EXISTING PAVEMENT
V	MILLING
W	WEDGING



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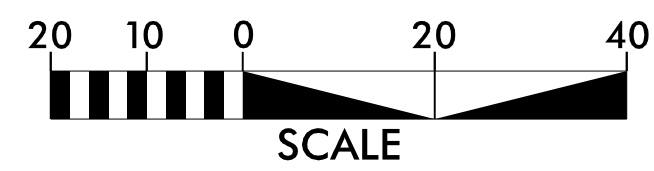


PROJECT REFERENCE NO. <b>R-5812</b>	SHEET NO. <b>2B-1</b>
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
	
6/20/2019	6/20/2019
<b>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</b>	
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-YI-	-YISPUR-
PI Sta 15+50.18	PI Sta 11+58.67
$\Delta = 30^\circ 28' 02.2''$ (RT)	$\Delta = 64^\circ 32' 42.7''$ (LT)
D = 3' 10' 59.2"	D = 45' 50' 11.8"
L = 957.16'	L = 140.82'
T = 490.18'	T = 78.94'
R = 1,800.00'	R = 125.00'
e = 0.06	e = 0.02
Lr = 180'	Lr = 48'

-  PROPOSED MONOLITHIC ISLAND
-  PROPOSED FULL DEPTH PAVED SHOULDER (FDPS)


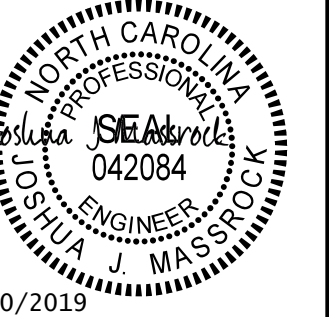



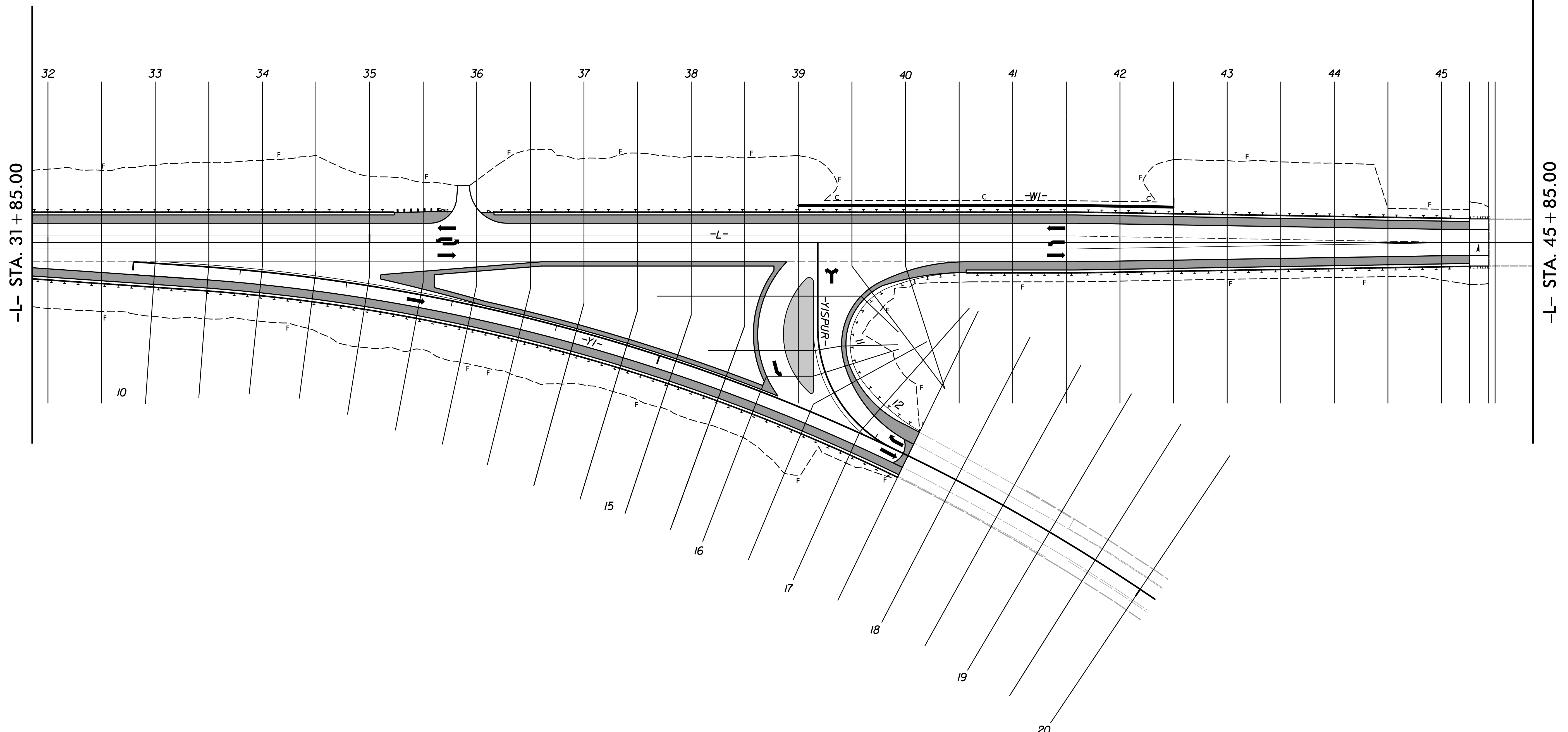
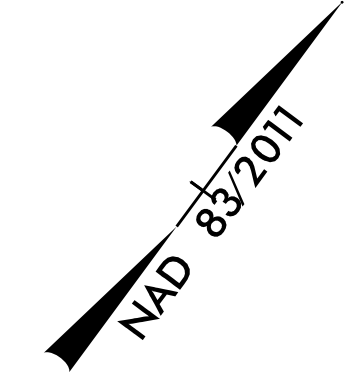
# INTERSECTION DETAIL

SEE SHEET NO. 6 FOR ROADWAY PLAN

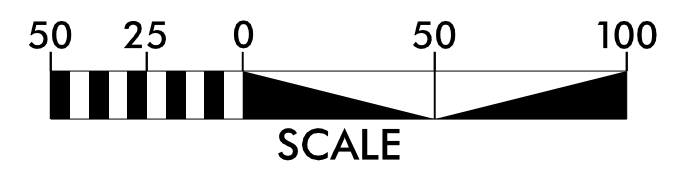
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 DATE: 6/5/2019  
 REVISIONS



PROJECT REFERENCE NO. <b>R-5812</b>	SHEET NO. <b>2B-2</b>
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
	
6/20/2019	6/20/2019
<b>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</b>	
 <b>HDR</b> HDR Engineering, Inc. of the Carolinas 555 Fayetteville St. Suite 900 Raleigh, N.C. 27601 N.C.B.E.L.S. License Number: F-0116	






REVISIONS

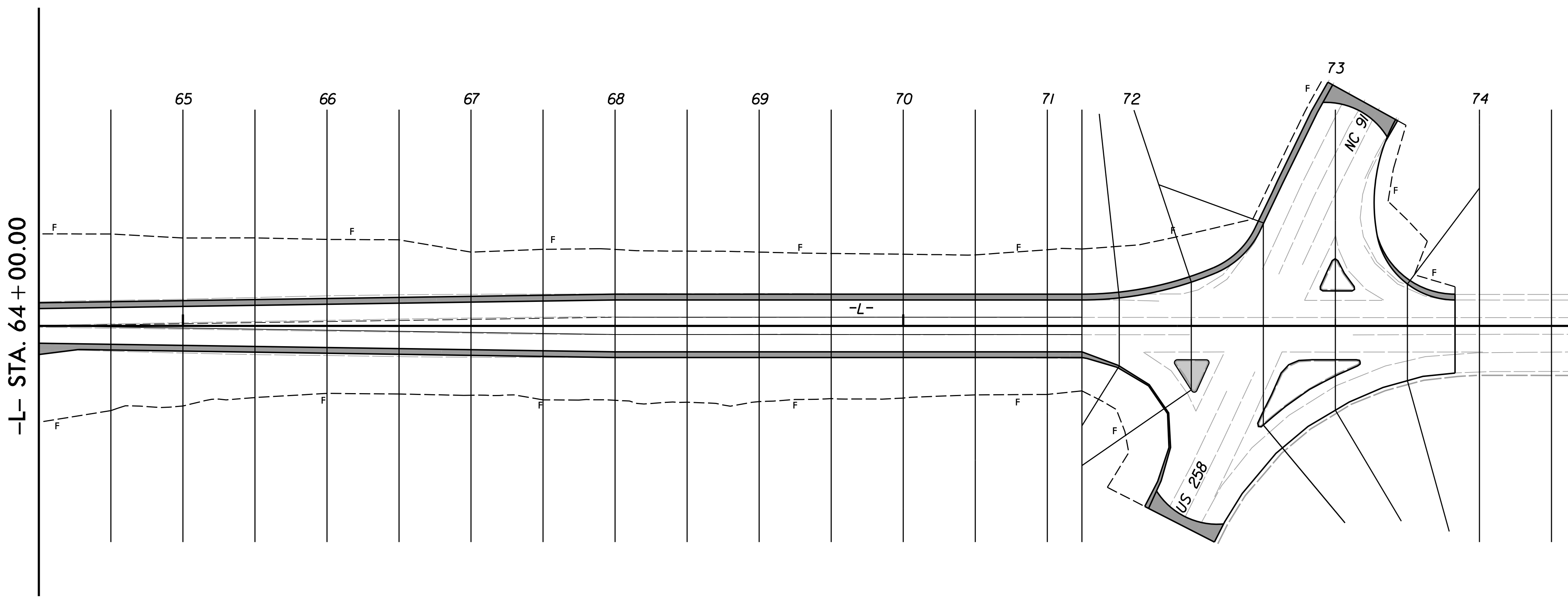
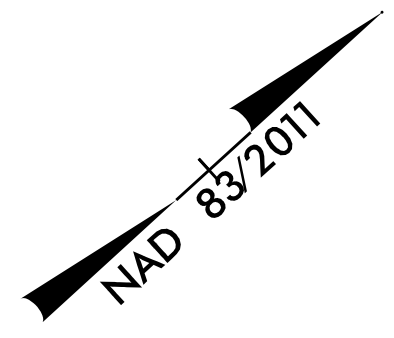


# CROSS-SECTION LAYOUT DETAIL

SEE SHEET X-10 THRU SHEET X-19 FOR -L- CROSS-SECTIONS  
SEE SHEET X-32 THRU SHEET X-33 FOR -Y- CROSS-SECTIONS  
SEE SHEET X-34 FOR -YISPUR- CROSS-SECTIONS

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PROJECT REFERENCE NO. <b>R-5812</b>	SHEET NO. <b>2B-3</b>
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
	
6/20/2019	6/20/2019
<b>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</b>	
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-L- STA. 64 + 00.00

-L-

US 258

73

NC 91

74

65

66

67

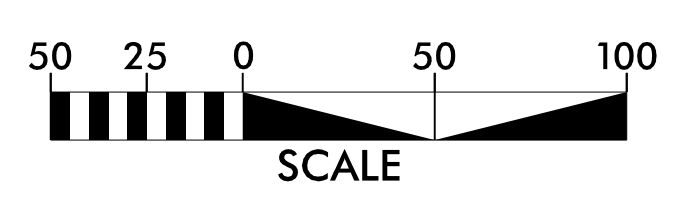
68

69

70

71

72



# CROSS-SECTION LAYOUT DETAIL

SEE SHEET X-28 THRU SHEET X-31 FOR -L- CROSS-SECTIONS

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 DATE: 6/5/2019  
 TIME: 6:33:31 PM

REVISIONS



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

ROADWAY DETAIL DRAWING FOR  
**GUARDRAIL INSTALLATION**

SHEET 6 OF 8  
**862D02**

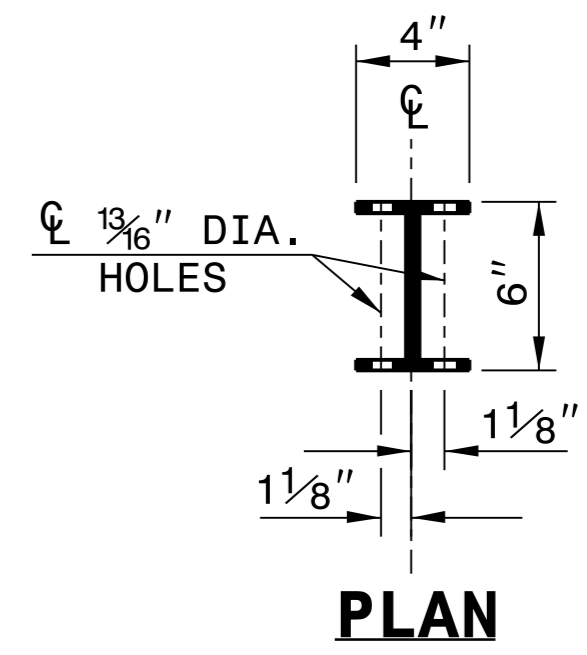
STATE OF NORTH CAROLINA  
DEPT. OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR  
**GUARDRAIL INSTALLATION**

SHEET 6 OF 8  
**862D02**



**STANDARD W-BEAM GUARDRAIL**



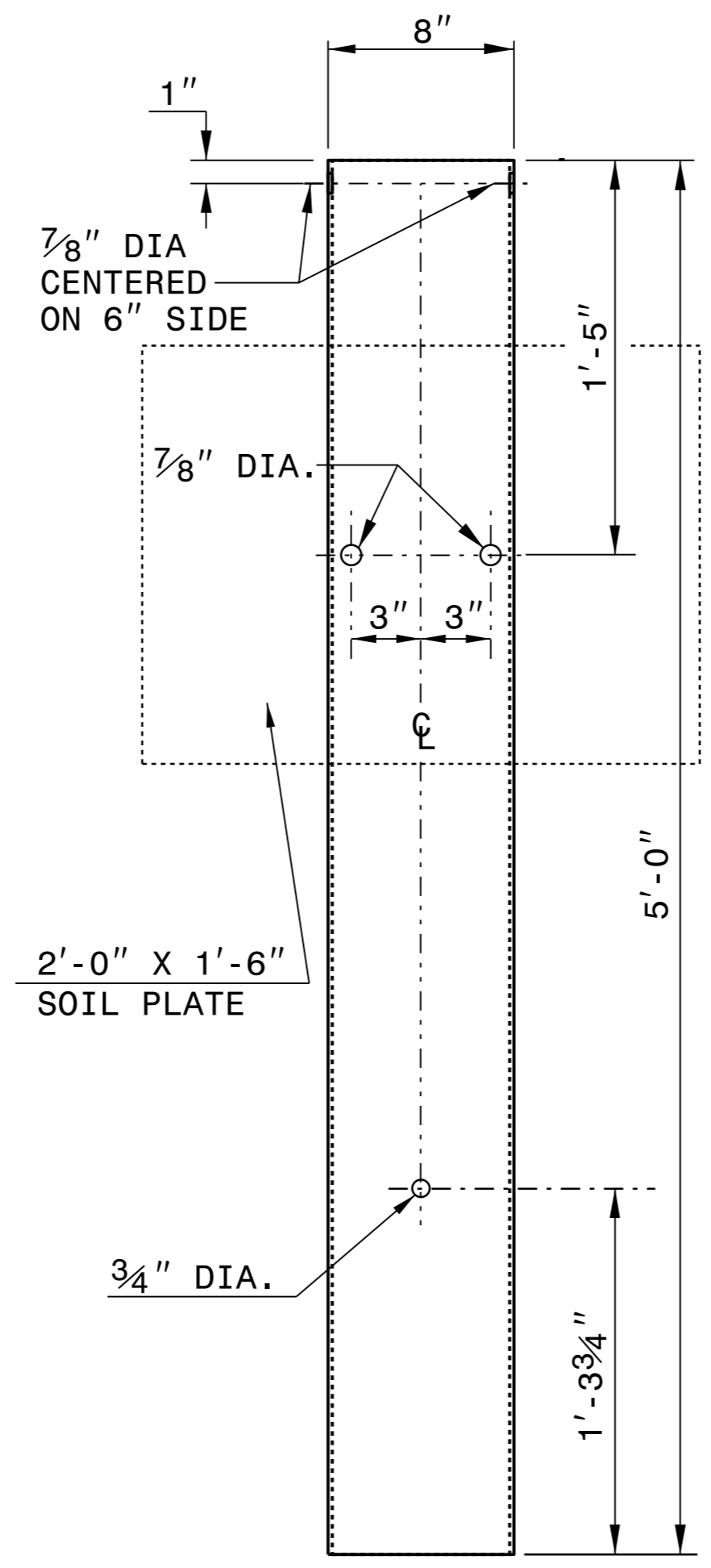
**PLAN**



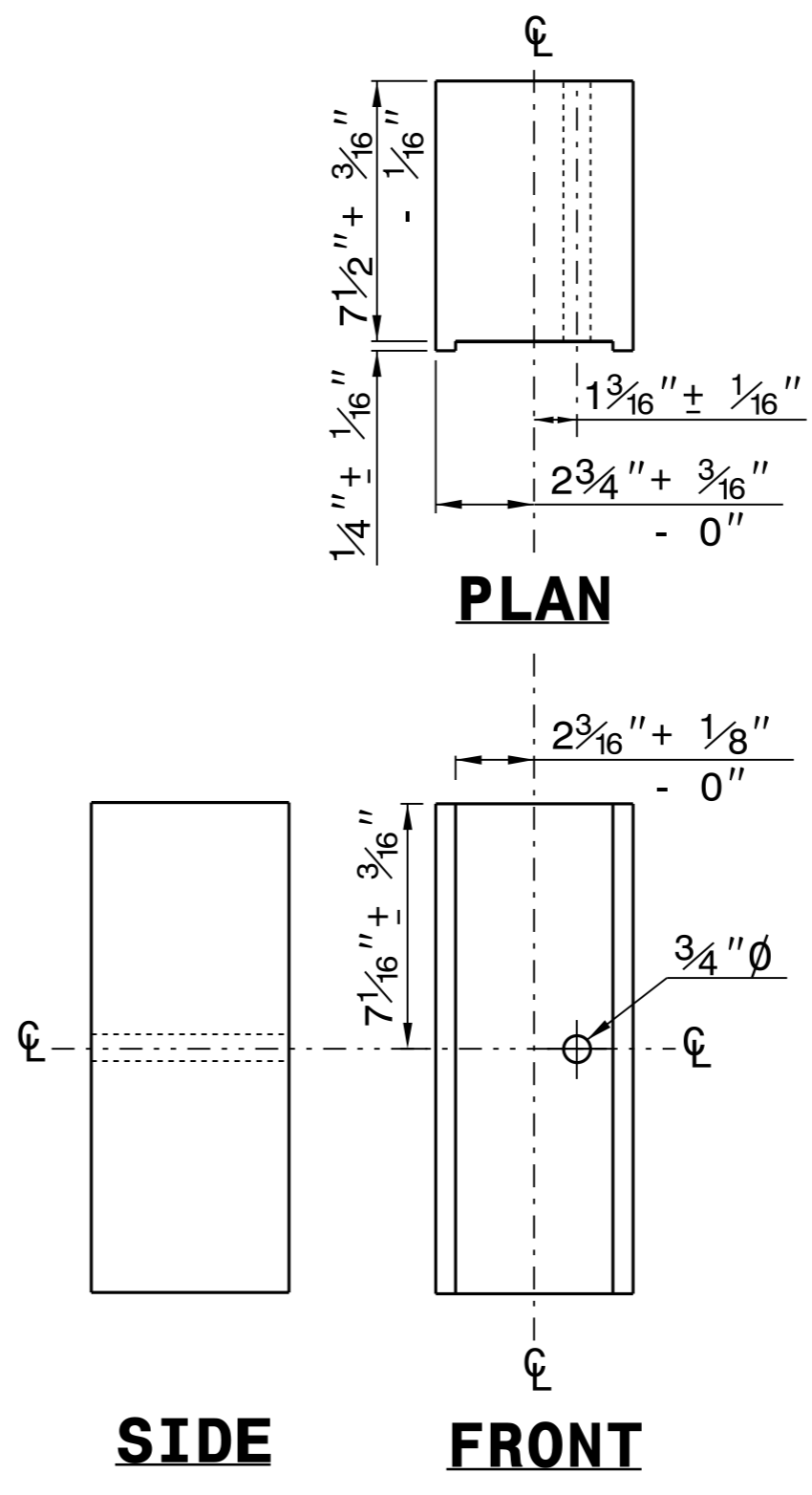
**WOOD OFFSET BLOCK  
(FOR WOOD POSTS)**

**STANDARD  
LINE POST**

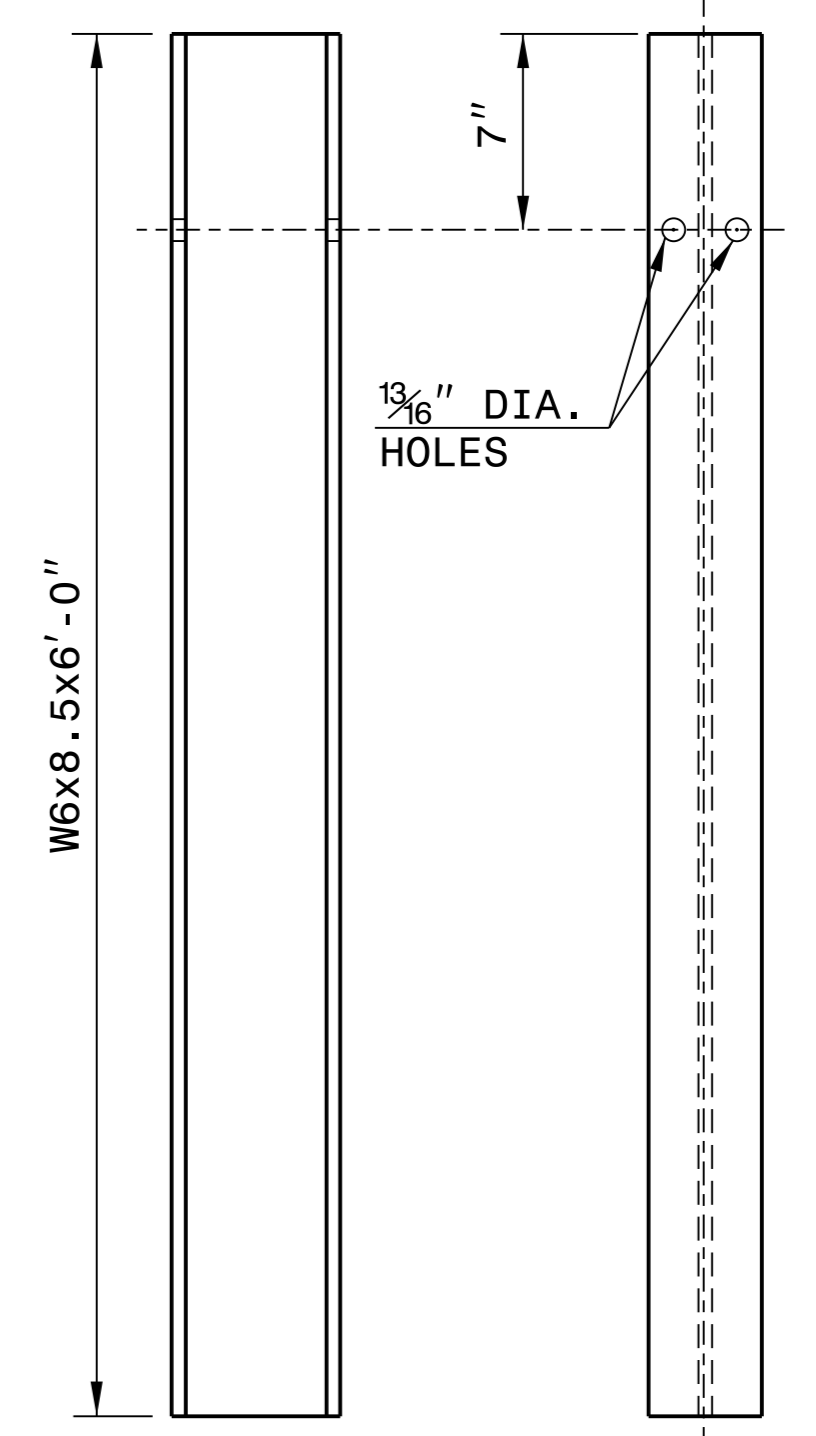
**SHORT WOOD  
BREAKAWAY POST**



**STEEL TUBE  
TS 6"x8"x0.1875"**

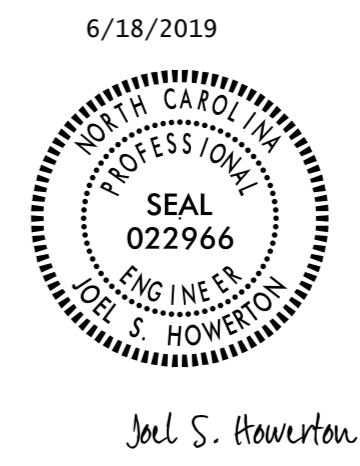


**ROUTED  
OFFSET BLOCK**



**"W6" STEEL POST**

**SYSTEM PARTS**



Joel S. Howerton

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

**SEE TITLE BLOCK**

ORIGINAL BY: J. HOWERTON	DATE: 3-7-2018
MODIFIED BY:	DATE:
CHECKED BY:	DATE:
FILE SPEC.:	

I4-DEC-2017 10:36  
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 Jhowerton AT: USD-292595

STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.	<div style="text-align: center;"> <p>ROADWAY DETAIL DRAWING FOR  <b>STRUCTURE ANCHOR UNITS</b>          GUARDRAIL ANCHOR UNIT, TYPE III          FOR ATTACHMENT TO RAIL ON BRIDGE</p> </div>	SHEET 1 OF 7 <b>862D03</b>
--	--	-------------------------------

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

ROADWAY DETAIL DRAWING FOR  
**STRUCTURE ANCHOR UNITS**  
 GUARDRAIL ANCHOR UNIT, TYPE III  
 FOR ATTACHMENT TO RAIL ON BRIDGE

SHEET 1 OF 7  
**862D03**

STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.	<div style="text-align: center;"> <p>ROADWAY DETAIL DRAWING FOR  <b>STRUCTURE ANCHOR UNITS</b>          GUARDRAIL ANCHOR UNIT, TYPE III FOR ATTACHMENT TO          RAIL ON BRIDGE - SUB REGIONAL TIER</p> </div>	SHEET 2 OF 7 <b>862D03</b>
--	--	-------------------------------

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

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

SHEET 2 OF 7  
**862D03**

**NOTE:**  
 \*\*POST NOT REQUIRED FOR SKEW ANGLES GREATER THAN 150° OR LESS THAN 30° UNLESS OTHERWISE DIRECTED BY THE ENGINEER.  
 \*THE DISTANCE FROM END OF BRIDGE RAIL TO CENTER LINE OF THE FIRST POST SHOULD BE 11 1/2" IF CONCRETE BACKWALL IS NOT PRESENT.  
 -SHOULDER BERM GUTTER MUST BE INSTALLED TO THE LIMITS 8" x 4" LIP CURB IS SHOWN IF ANCHOR UNIT IS NOT ADJACENT TO AN APPROACH SLAB.  
 -MEASURE GUARDRAIL HEIGHT FROM THE TOP OF ADJACENT SURFACE (SHOULDER, BERM, OR GUTTER).  
 -LAP JOINTS IN THE DIRECTION OF TRAFFIC FLOW.  
 -SEE SHEET 3 FOR POST SECTIONS 1 THRU 9.

**NOTE:**  
 \*\*POST NOT REQUIRED FOR SKEW ANGLES GREATER THAN 150° OR LESS THAN 30° UNLESS OTHERWISE DIRECTED BY THE ENGINEER.  
 \*THE DISTANCE FROM END OF BRIDGE RAIL TO CENTER LINE OF THE FIRST POST SHOULD BE 11 1/2" IF CONCRETE BACKWALL IS NOT PRESENT.  
 -SHOULDER BERM GUTTER MUST BE INSTALLED TO THE LIMITS 8" x 4" LIP CURB IS SHOWN IF ANCHOR UNIT IS NOT ADJACENT TO AN APPROACH SLAB.  
 -MEASURE GUARDRAIL HEIGHT FROM THE TOP OF ADJACENT SURFACE (SHOULDER, BERM, OR GUTTER).  
 -LAP JOINTS IN THE DIRECTION OF TRAFFIC FLOW.  
 -SEE SHEET 3 FOR POST SECTIONS 1 THRU 9.

6/18/2019



Joel S. Howerton

DOCUMENT NOT CONSIDERED FINAL  
 UNLESS ALL SIGNATURES COMPLETED

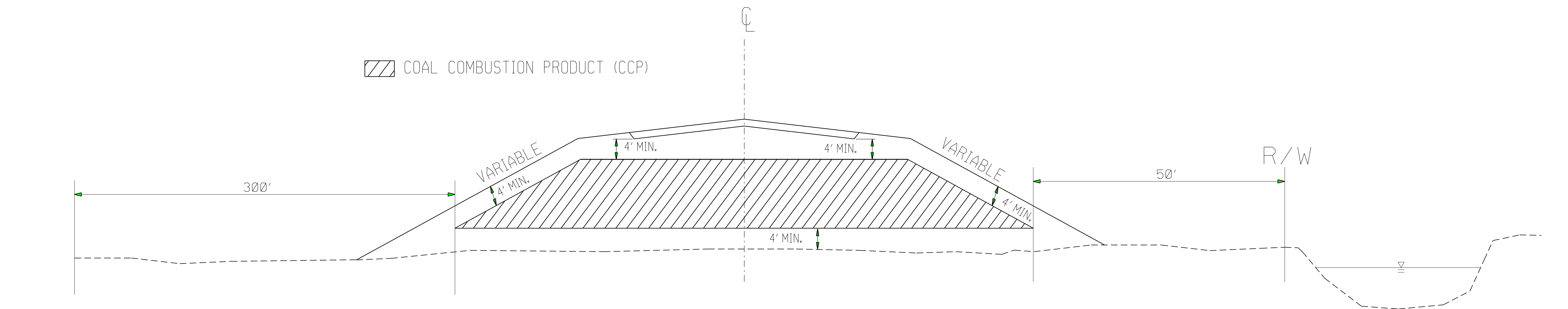
**CONTRACT STANDARDS  
 AND DEVELOPMENT UNIT**  
 Office 919-707-6950 FAX 919-250-4119

SEE TITLE BLOCK

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



# COAL COMBUSTION PRODUCT PLACEMENT



PRIVATE DWELLING OR WELL

PERENNIAL STREAM, OTHER SURFACE WATER BODY OR \*WETLAND

\*(OBTAIN PERMISSION FROM ARMY CORPS OF ENGINEERS)

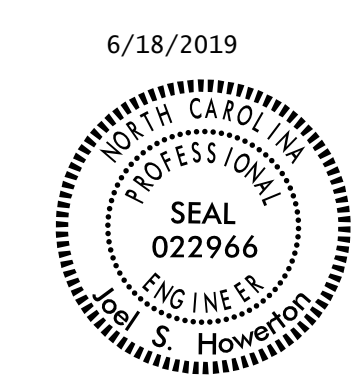
PLACE CCP IN HATCHED AREA IN ACCORDANCE WITH THE PROJECT SPECIAL PROVISIONS

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

PLACE AT LOCATIONS AS APPROVED BY THE ENGINEER

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

07-SEP-2017 08:21 S:\Contracts\Projects\Special Details\Howerton\Coal Combustion Product Detail.dgn Jhowerton AT USD-232595


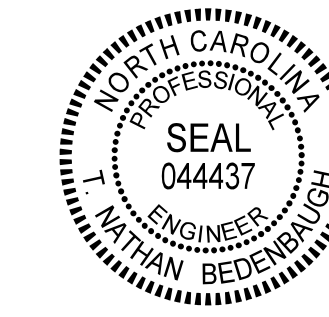


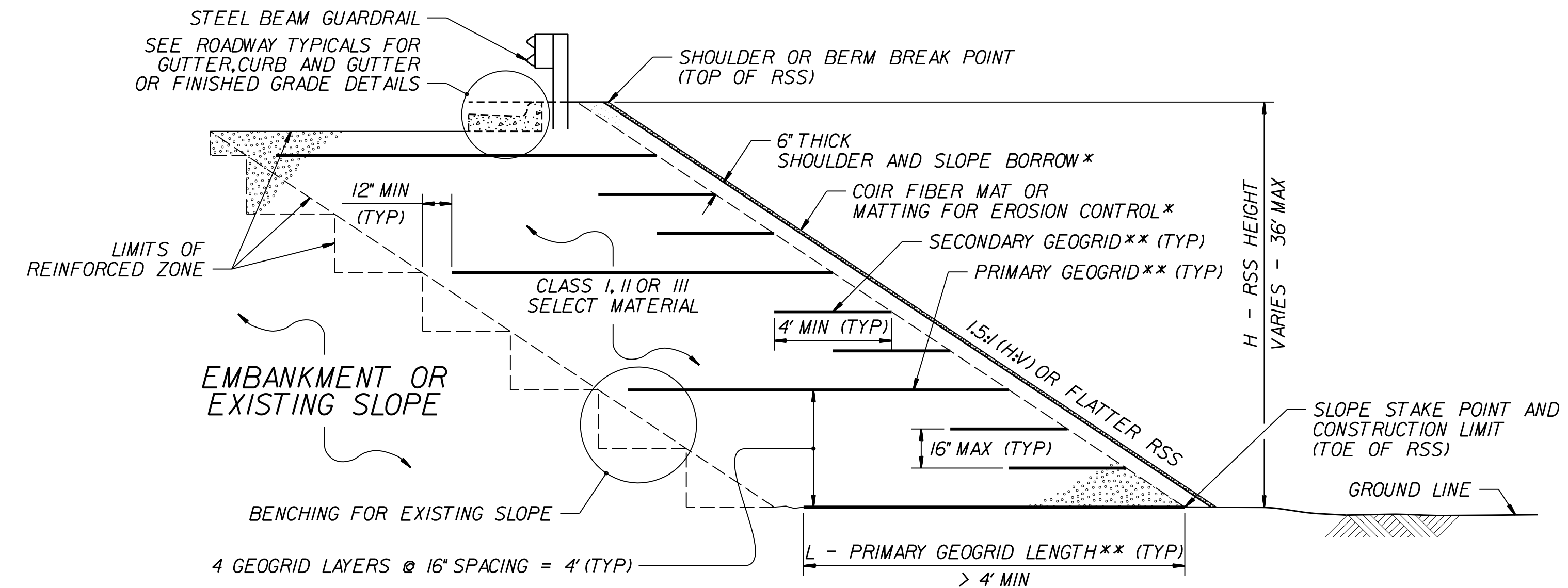
6/18/2019

Joel S. Howerton

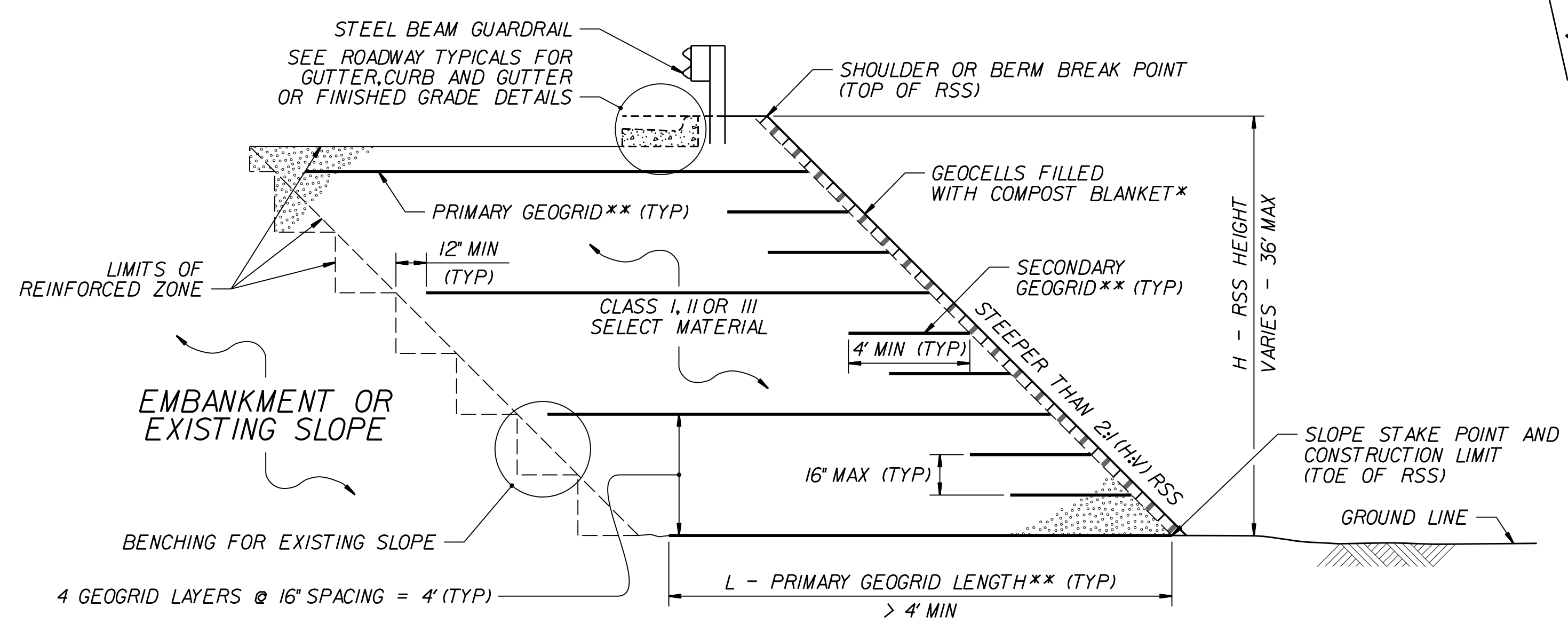
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

<b>CONTRACT STANDARDS AND DEVELOPMENT UNIT</b>	
Office 919-707-6950 FAX 919-250-4119	
<b>COAL COMBUSTION PRODUCT PLACEMENT DETAIL</b>	
ORIGINAL BY: J.S.H.	DATE: 3/16/15
MODIFIED BY:	DATE:
CHECKED BY:	DATE:
FILE SPEC.: joel/coal combustion material detail.dgn	

<b>PROJECT REFERENCE NO.</b> R-5812		<b>SHEET NO.</b> 2G-1	
GEOTECHNICAL ENGINEER  ELIZABETH C. HOWLEY SIGNATURE DATE 6/20/2019		ROADWAY DESIGN ENGINEER  T. NATHAN BEDENBAUGH SIGNATURE DATE 6/20/2019	
<b>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</b>			

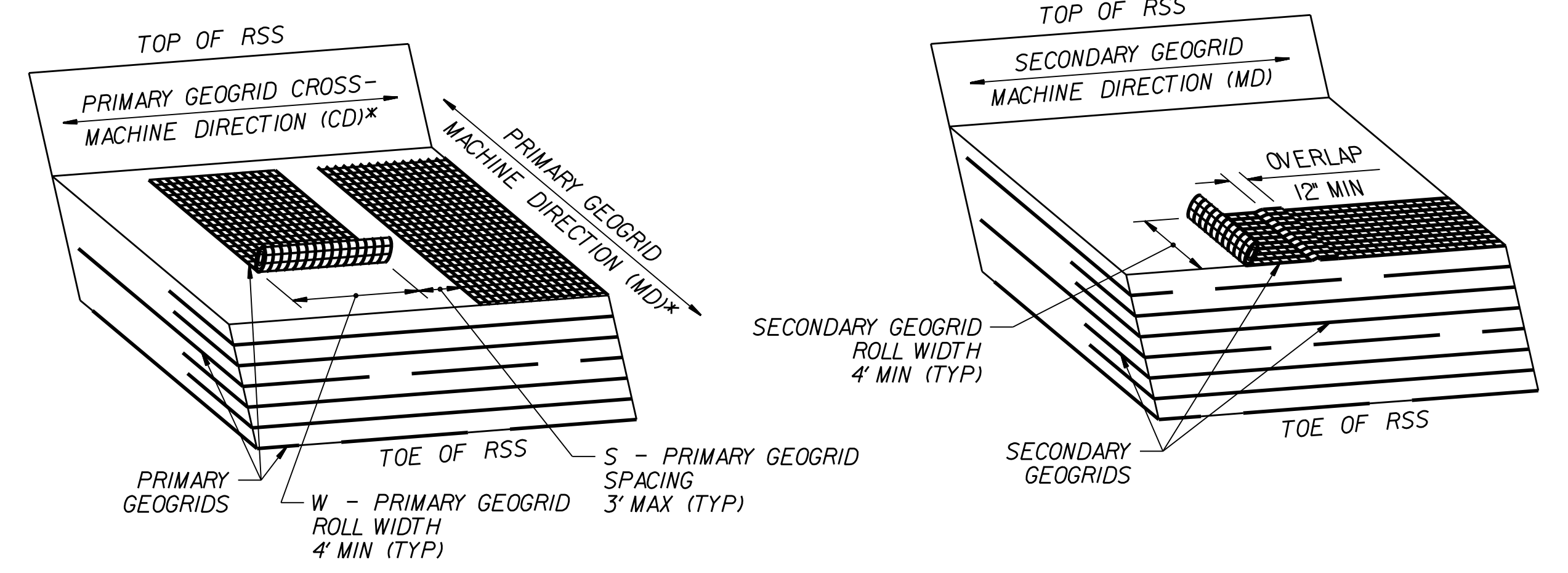


**MATTING WITH SHOULDER AND SLOPE BORROW**  
\*SEE NOTES 3 AND 11 ON SHEET 2.

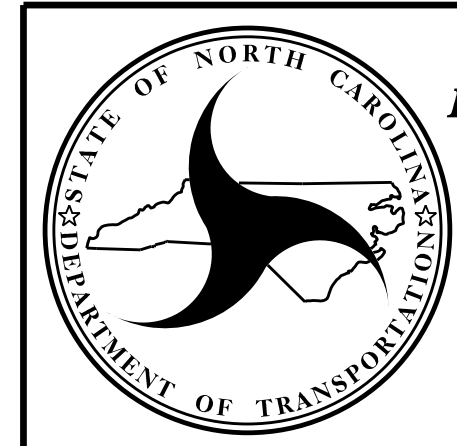


**GEOCELLS WITH COMPOST BLANKET**  
\*SEE NOTES 3 AND 11 ON SHEET 2.

**STANDARD REINFORCED SOIL SLOPE (RSS)**  
\*\*SEE TABLES ON SHEET 2 AND  
GEOGRID PLACEMENT DETAILS.




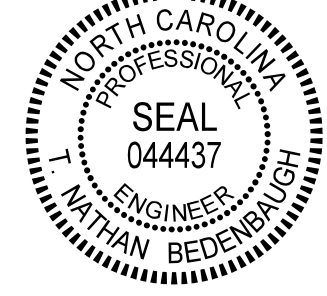
**GEOGRID PLACEMENT DETAILS**  
(% COVERAGE =  $\frac{W}{W+S} \times 100 \geq 75\%$ )  
\*SEE NOTES 8 AND 9 ON SHEET 2.



NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
  
**GEOTECHNICAL  
ENGINEERING UNIT**

STANDARD DETAIL NO. 1802.01  
  
STANDARD  
REINFORCED SOIL SLOPE (RSS)  
WITH HIGH GROUNDWATER  
SHEET 1 OF 2  
  
DATE: 4-19-16



<b>PROJECT REFERENCE NO.</b> R-5812		<b>SHEET NO.</b> 2G-2
GEOTECHNICAL ENGINEER  ELIZABETH C. HOWELL SIGNATURE DATE 6/20/2019	ROADWAY DESIGN ENGINEER  T. NATHAN BEDENBAUGH SIGNATURE DATE 6/20/2019	
<b>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</b>		

GEOGRID TYPE, DIRECTION	H (FT)	0 - < 12		12 - 24		> 24 - 36	
	SELECT MATERIAL CLASS	I	II OR III	I	II OR III	I	II OR III
PRIMARY GEOGRID, MD (SUBSTITUTE SECONDARY GEOGRID FOR PRIMARY GEOGRID FOR 2:1 (H:V) OR FLATTER RSS)	1:1 TO < 1.5:1 (H:V) RSS	900	500	1200	900	1800	1200
	1.5:1 TO 1.75:1 (H:V) RSS	500	500	900	500	1400	1000
	> 1.75:1 TO < 2:1 (H:V) RSS	500	500	600	500	1000	800
SECONDARY GEOGRID, CD	1:1 (H:V) OR FLATTER RSS	185					

**LTDS – MINIMUM REQUIRED LONG-TERM DESIGN STRENGTH (LB/FT)**  
 (LTDS IS BASED ON 100% COVERAGE FOR PRIMARY GEOGRID.  
 SEE NOTE 9 FOR LESS THAN 100% COVERAGE.)

**NOTES:**

- SEE EROSION CONTROL AND ROADWAY PLANS AND SUMMARY SHEETS FOR REINFORCED SOIL SLOPE (RSS) AND SLOPE EROSION CONTROL LOCATIONS.
- FOR STANDARD REINFORCED SOIL SLOPES, SEE REINFORCED SOIL SLOPES PROVISION. FOR STEEL BEAM GUARDRAIL, SEE SECTION 862 OF THE STANDARD SPECIFICATIONS.
- FOR SHOULDER AND SLOPE BORROW, SEE ARTICLE 1019-2 OF THE STANDARD SPECIFICATIONS. FOR GEOCELLS, SEE CELLULAR CONFINEMENT SYSTEMS PROVISION. FOR COIR FIBER MAT, MATTING FOR EROSION CONTROL AND COMPOST BLANKET, SEE EROSION CONTROL PROVISIONS, SECTION 1631 OF THE STANDARD SPECIFICATIONS AND ROADWAY STANDARD DRAWING NO. 1631.01.
- STANDARD RSS ARE BASED ON THE FOLLOWING IN-SITU ASSUMED SOIL PARAMETERS:  
 UNIT WEIGHT,  $\gamma = 120$  PCF  
 FRICTION ANGLE,  $\phi = 30$  DEGREES  
 COHESION,  $c = 0$  PSF
- DO NOT USE STANDARD RSS IF ASSUMED SOIL PARAMETERS ARE NOT APPLICABLE OR GROUNDWATER IS ABOVE TOE OF RSS.
- DO NOT USE STANDARD RSS WHEN VERY LOOSE OR SOFT SOIL OR MUCK IS BELOW RSS.
- GEOGRIDS ARE TYPICALLY APPROVED FOR ULTIMATE TENSILE STRENGTHS IN THE MACHINE DIRECTION (MD) AND CROSS-MACHINE DIRECTION (CD) OR LONG-TERM DESIGN STRENGTHS FOR A 75-YEAR DESIGN LIFE IN THE MD BASED ON MATERIAL TYPE. THE LIST OF APPROVED GEOGRIDS WITH DESIGN STRENGTHS IS AVAILABLE FROM:  
[connect.ncdot.gov/resources/Materials/Pages/Materials-Manual-by-Material.aspx](http://connect.ncdot.gov/resources/Materials/Pages/Materials-Manual-by-Material.aspx)  
 DEFINE MATERIAL TYPE FROM THE WEBSITE ABOVE FOR SELECT MATERIAL AS FOLLOWS:

MATERIAL TYPE	SELECT MATERIAL
BORROW	CLASS I SELECT MATERIAL
FINE AGGREGATE	CLASS II OR III SELECT MATERIAL


- IF THE WEBSITE DOES NOT LIST A LONG-TERM DESIGN STRENGTH FOR AN APPROVED GEOGRID IN THE MD, DO NOT USE THE GEOGRID FOR PRIMARY GEOGRID. IF THE WEBSITE DOES NOT LIST A LONG-TERM DESIGN STRENGTH FOR AN APPROVED GEOGRID IN THE CD, USE A LONG-TERM DESIGN STRENGTH EQUAL TO THE ULTIMATE TENSILE STRENGTH DIVIDED BY 7 FOR THE SECONDARY GEOGRID.
- DO NOT OVERLAP PRIMARY GEOGRIDS IN THE MD SO OVERLAPS ARE PARALLEL TO THE TOE OF RSS. POLYOLEFIN (e.g., HDPE OR PP) GEOGRIDS MAY BE SPLICED ONCE PER PRIMARY GEOGRID LENGTH IN ACCORDANCE WITH THE GEOGRID MANUFACTURER'S INSTRUCTIONS. USE POLYOLEFIN GEOGRID PIECES AT LEAST 4' LONG. DO NOT SPLICE POLYESTER TYPE (PET) GEOGRIDS.
  - FOR PRIMARY GEOGRIDS WITH 100% COVERAGE, PLACE PRIMARY GEOGRIDS SO GEOGRIDS ARE ADJACENT TO EACH OTHER IN THE CD. FOR PRIMARY GEOGRIDS WITH 75% TO LESS THAN 100% COVERAGE,  
 MINIMUM REQUIRED LONG-TERM DESIGN STRENGTH = LTDS BASED ON 100% COVERAGE x (W + S) / W  
 SEE TABLE FOR LTDS BASED ON 100% COVERAGE AND GEOGRID PLACEMENT DETAILS FOR PRIMARY GEOGRID ROLL WIDTH (W) AND SPACING (S). FOR PRIMARY GEOGRIDS WITH LESS THAN 100% COVERAGE, STAGGER PRIMARY GEOGRIDS SO GEOGRIDS ARE CENTERED OVER GAPS IN THE PRIMARY GEOGRID LAYER BELOW. DO NOT USE LESS THAN 75% COVERAGE FOR PRIMARY GEOGRIDS.
  - DO NOT PLACE ANY GEOGRIDS UNTIL EXCAVATION DIMENSIONS AND IN-SITU MATERIAL ARE APPROVED.
  - FOR SLOPE EROSION CONTROL, USE GEOCELLS OR MATTING ON SLOPE FACES OF RSS AS FOLLOWS:

RSS ANGLE	SLOPE EROSION CONTROL
1:1 TO < 1.5:1 (H:V)	GEOCELLS WITH COMPOST BLANKET
1.5:1 TO < 2:1 (H:V)	GEOCELLS WITH COMPOST BLANKET OR COIR FIBER MAT WITH SHOULDER AND SLOPE BORROW*
2:1 (H:V) OR FLATTER	MATTING FOR EROSION CONTROL WITH SHOULDER AND SLOPE BORROW

\*SEE REINFORCED SOIL SLOPES AND SLOPE EROSION CONTROL SUMMARY TABLE IN THE ROADWAY SUMMARY SHEETS FOR SLOPE EROSION CONTROL ON SLOPE FACES OF RSS 1.5:1 (H:V) TO STEEPER THAN 2:1.

H (FT)	0 - < 12		12 - 24		> 24 - 36	
SELECT MATERIAL CLASS	I	II OR III	I	II OR III	I	II OR III
1:1 TO < 1.5:1 (H:V) RSS	1.25	1.20	1.15	1.10	1.10	1.00
1.5:1 TO 1.75:1 (H:V) RSS	1.10	1.00	0.95	0.90	0.90	0.85
> 1.75:1 TO < 2:1 (H:V) RSS	1.00	0.85	0.80	0.75	0.75	0.70

**L / H RATIO (L > 4' MIN)**  
 (IF L ≤ 4', USE SECONDARY GEOGRID INSTEAD OF PRIMARY GEOGRID.)

 NORTH CAROLINA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS  <b>GEOTECHNICAL ENGINEERING UNIT</b>	STANDARD DETAIL NO. 1802.01
	STANDARD REINFORCED SOIL SLOPE (RSS) WITH HIGH GROUNDWATER SHEET 2 OF 2  DATE: 4-19-16

**SUMMARY OF EARTHWORK**

IN CUBIC YARDS

LOCATION	UNCLASSIFIED EXCAVATION	EMBANK. +%	BORROW	WASTE
-L- STA. 10+36.85 TO STA. 45+26 (BEGIN APPROACH SLAB)	6,697	18,119	11,422	20
-L- STA. 49+05 (END APPROACH SLAB) TO STA. 73+83.06	869	18,428	17,559	0
SUBTOTAL	7,566	36,546	29,000	20
-YI- STA. 15+65.00 TO STA. 17+50.00	67	206	139	0
SUBTOTAL	67	206	139	0
-YISPUR- STA. 10+18.00 TO STA. 11+00.00	108	0	0	108
SUBTOTAL	108	0	0	108
TOTAL	7,741	36,752	29,139	128
MATERIAL FOR SHOULDER CONSTRUCTION		2,263	2,263	
LOSS DUE TO CLEARING AND GRUBBING				
WASTE IN LIEU OF BORROW			-108	-108
PROJECT TOTAL	7,741	39,014	31,293	20
EST. 5% TO REPLACE TOP SOIL ON BORROW PIT			1,565	
GRAND TOTAL	7,741	39,014	32,857	20
SAY	8,000		33,000	

ESTIMATED DDE = 440 CUBIC YARDS  
 TOTAL SHALLOW UNDERCUT = 200 CUBIC YARDS  
 CLASS IV SUBGRADE STABILIZATION = 400 TONS  
 ESTIMATED UNDERCUT = 1,500 CUBIC YARDS

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

Note: (-L- Sta. 18+75 TO 20+75) 100 cubic yards of Unclassified Excavation - Acceptable, but not to be used in top 3 feet of embankment or backfill.

**RIGHT OF WAY AREA DATA**

PARCEL NO.	PROPERTY OWNERS NAMES	TOTAL ACREAGE	AREA TAKEN	AREA REMAINING RT.	AREA REMAINING LT.	CONST. EASE.	PERM. DRAIN. EASE.	TEMP. DRAIN. EASE.	PERM. UTILITY EASE.	PERM. DRAINAGE / UTILITY EASE.
1	DAVID C. MADURES	127.38 AC	-	-	127.38 AC	2588 SF	1039 SF	-	-	-
2	JOSIAH EXUM, II	32.69 AC	-	32.69 AC	-	-	525 SF	-	-	-
3	MARY H. HARRELL	9.53 AC	-	9.53 AC	-	1995 SF	-	-	-	-
4	CHRIS PARKER BEAMAN	52.70 AC	-	-	52.70 AC	0.33 AC	0.11 AC	-	-	-
5	BOBBY GLENN HAM	45.57 AC	-	-	45.57 AC	2607 SF	-	-	-	-
6	HARRISON & SHELTON, LLC	2.33 AC	-	2.33 AC	-	239 SF	-	-	-	-
7	TRADE LAND COMPANY, LLC	1.63 AC	-	1.63 AC	-	575 SF	-	-	-	-
8	YAMCO, LLC	17.98 AC	3137 SF	17.91 AC	-	-	-	-	-	-

**SUMMARY OF PAVEMENT REMOVAL**

IN SQUARE YARDS

LOCATION	LT / RT	ASPHALT REMOVAL	ASHPALT BREAK UP	CONCRETE REMOVAL	CONCRETE BREAK UP
-L- STA. 14+06 TO 14+96	RT	85			
-L- STA. 15+27 TO 16+17	LT	89			
-L- STA. 16+57 TO 17+23	RT	40			
-L- STA. 18+04 TO 18+75	RT	42			
-L- STA. 19+93 TO 20+88	LT	123			
-L- STA. 21+09 TO 21+54	RT	76			
-L- STA. 24+41 TO 25+31	RT	125			
-L- STA. 24+41 TO 25+34	LT	139			
-L- STA. 26+76 TO 31+64	RT	144			
-L- STA. 26+83 TO 31+50	LT	181			
-L- STA. 35+30 TO 38+77	RT	296			
-L- STA. 40+56 TO 41+59	RT	19			
-L- STA. 43+09 TO 45+26	MED	847			
-L- STA. 49+05 TO 51+64	MED	923			
-L- STA. 63+77 TO 67+86	RT	50			
-L- STA. 63+76 TO 69+65	LT	60			
-L- STA. 45+26 TO 45+45	LTRT	23			
-L- STA. 48+85 TO 49+05	LTRT	30			
-YI- STA. 13+71 TO 17+50	RT	91			
-YI- STA. 12+52 TO 16+00	LT	189			
-YISPUR- STA. 10+33 TO 11+15	RT	18			
-YISPUR- STA. 10+38 TO 11+26	LT	21			
TOTAL		3,611			
SAY		3,620			

REVISIONS



COMPUTED BY: TNB DATE: 8/29/18  
 CHECKED BY: DMW DATE: 6/19/19

PROJECT REFERENCE NO. R-5812 SHEET NO. 3B-2

DIVISION OF HIGHWAYS

STATE OF NORTH CAROLINA

**GUARDRAIL/GUIDERAIL SUMMARY**

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

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

SURVEY LINE	BEG. STA.	END STA.	LOCATION	LENGTH			WARRANT POINT		"N" DIST. FROM E.O.L.	TOTAL SHOULDER WIDTH	FLARE LENGTH		W		ANCHORS								IMPACT ATTENUATOR TYPE 350		DOUBLE FACED CABLE GUIDERAIL	GUIDERAIL ANCHOR UNITS	REMOVE EXISTING GUARDRAIL	REMARKS							
				STRAIGHT	SHOP CURVED	DOUBLE FACED	APPROACH END	TRAILING END			APPROACH END	TRAILING END	APPROACH END	TRAILING END	XI	AT-1	GREU TL-3	M-350	TYPE III	CAT-1	B-77	IAU TL-3	Term End Section	G					NG						
-L-	26+50	39+93	RT	1375			27+50		10	13	50		1																				TIE END GUARDRAIL TO EXIST. GUARDRAIL		
-L-	40+13	45+45	RT	637.5	112.5				10	13																						TIE BEGIN GUARDRAIL TO EXIST. GUARDRAIL			
-L-	48+85	63+75	RT	1500			48+85	62+50	10	13		50		1																					
-L-	28+00	35+73	LT	775				28+00	10	13	50			1																					
-L-	36+10	45+45	LT	937.5			45+45	36+10	10	13																									
-L-	48+85	63+00	LT	1412.5			61+75	48+85	10	13	50			1																					
-L-	26+50	39+93	RT																														1,375		
-L-	40+12	45+44	RT																														737.5		
-L-	48+86	62+94	RT																														1,412.5		
-L-	26+82	45+43	LT																														1,837.5		
-L-	48+86	63+05	LT																														1,412.5		
TOTAL				6637.5	112.5																														
LESS ANCHOR DEDUCTIONS																																			
	AT-1	0	@ 6.25' =		0																														
	GREU TL-3	4	@ 50' =	200																															
	TYPE III	4	@ 18.75' =	75																															
	CAT-1	2	@ 6.25' =	12.5																															
	B-77	0	@ 22.875' =	0																															
	IAU-TL3	0	@ 21.0' =	0																															
TOTAL				6350	112.5																														6,775

FOUR (4) TEMPORARY GREU TL-3 ARE INCLUDED IN THE CONTRACT AS A CONTINGENCY ITEM FOR THE TRAFFIC MANAGEMENT PLAN.  
 SAY 10 ADDITIONAL GUARDRAIL POSTS.





COMPUTED BY: Michael McNamara DATE: 6/17/2019  
CHECKED BY: Josh Massrock DATE: 6/17/2019

PROJECT NO. R-5812 SHEET NO. 3D-2

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION  
DIVISION OF HIGHWAYS

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

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

Table with columns for Line & Station, Offset, Structure Number, Invert Elevation, Minimum Required Slope, Pipe Type (Side Drain Pipe, C.S. Pipe, R.C. Pipe Class III/IV), Endwalls, Reinforced Endwalls, Drainage Structure, Quantities for Drainage Structures, Frame, Grates, and Hood, Concrete Transitional Section, and Abbreviations. Includes a SHEET TOTALS row at the bottom.







COMPUTED BY: J. Crenshaw DATE: 2/18/2019  
 CHECKED BY: E. Howey DATE: February, 2019

(5-15-18)

PROJECT NO. R-5812 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	200
				<b>TOTAL LF:</b>	200

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

SUMMARY OF AGGREGATE SUBGRADE/STABILIZATION

LINE	Station	Station	Aggregate Type* ASU(1/2)/ AST	Aggregate Thickness INCHES [8" for ASU(2)]	Shallow Undercut CY	Class IV Subgrade Stabilization TONS	Geotextile for Soil Stabilization SY	Stabilizer Aggregate TONS	Class IV Aggregate Stabilization TONS
CONTINGENCY			ASU	12	200	400	600		
					<b>TOTAL CY/TONS/SY:</b>	200	400**	600**	0

\*ASU(1/2) = Aggregate Subgrade (Type 1 or 2)  
 \*AST = Aggregate Stabilization  
 \*\*Total tons of "Class IV Subgrade Stabilization" and total square yards of "Geotextile for Soil Stabilization" are only the estimated quantities for ASU(1/2)/AST and may only represent a portion of the subgrade stabilization and geotextile quantities shown in the Item Sheets of the Proposal.

SUMMARY OF REINFORCED SOIL SLOPES AND SLOPE EROSION CONTROL

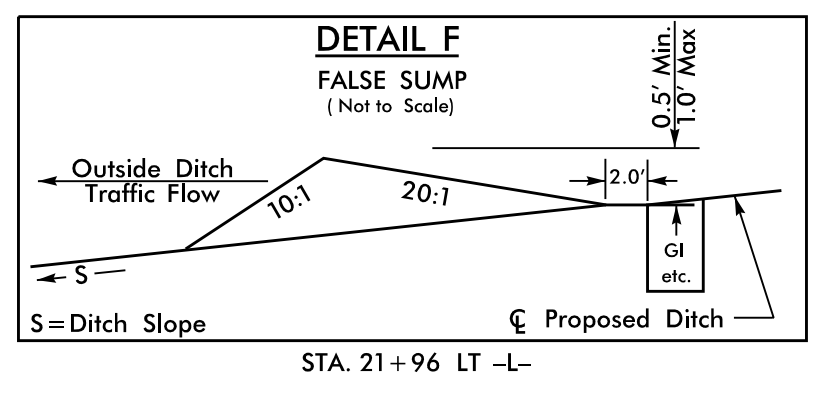
LINE	Beginning Slope/ RSS (H:V)	Approx. Station	Ending Slope/ RSS (H:V)	Approx. Station	Location LT/RT	Reinforced Soil Slope (RSS) SY	Geocells SY	Coir Fiber Mat SY	Matting for Erosion Control SY
L	2:1	30+50	3:1	35+00	RT	1500			1500
L	3:1	34+50	2:1	35+50	LT	450			450
L	2:1	42+21	2.6:1	44+50	LT	1000			1000
L	2:1	48+85	2:1	50+00	LT	150			150
Y1	3:1	13+68	3:1	16+50	RT	950			950
						<b>TOTAL SY:</b>	4050	0	4050**

\*Total square yards of "Coir Fiber Mat" is only the estimated quantity for slopes steeper than 2:1 (H:V) and may only represent a portion of the coir fiber mat quantity shown in the Item Sheets of the Proposal.  
 \*\*Total square yards of "Matting for Erosion Control" is only the estimated quantity for RSS and may only represent a portion of the matting quantity shown in the Item Sheets of the Proposal.



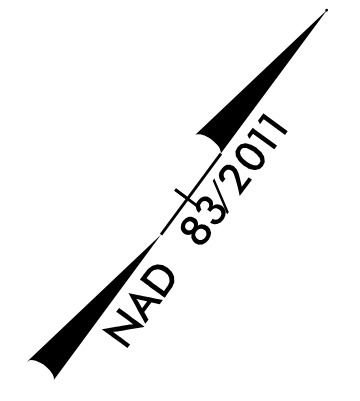


PROJECT REFERENCE NO. <b>R-5812</b>		SHEET NO. <b>4</b>	
RW SHEET NO.		HYDRAULICS ENGINEER	
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
6/20/2019		6/20/2019	
<b>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</b>			
HDR Engineering, Inc. of the Carolinas 555 Fayetteville St. Suite 900 Raleigh, N.C. 27601 N.C.B.E.L.S. License Number: F-01116			

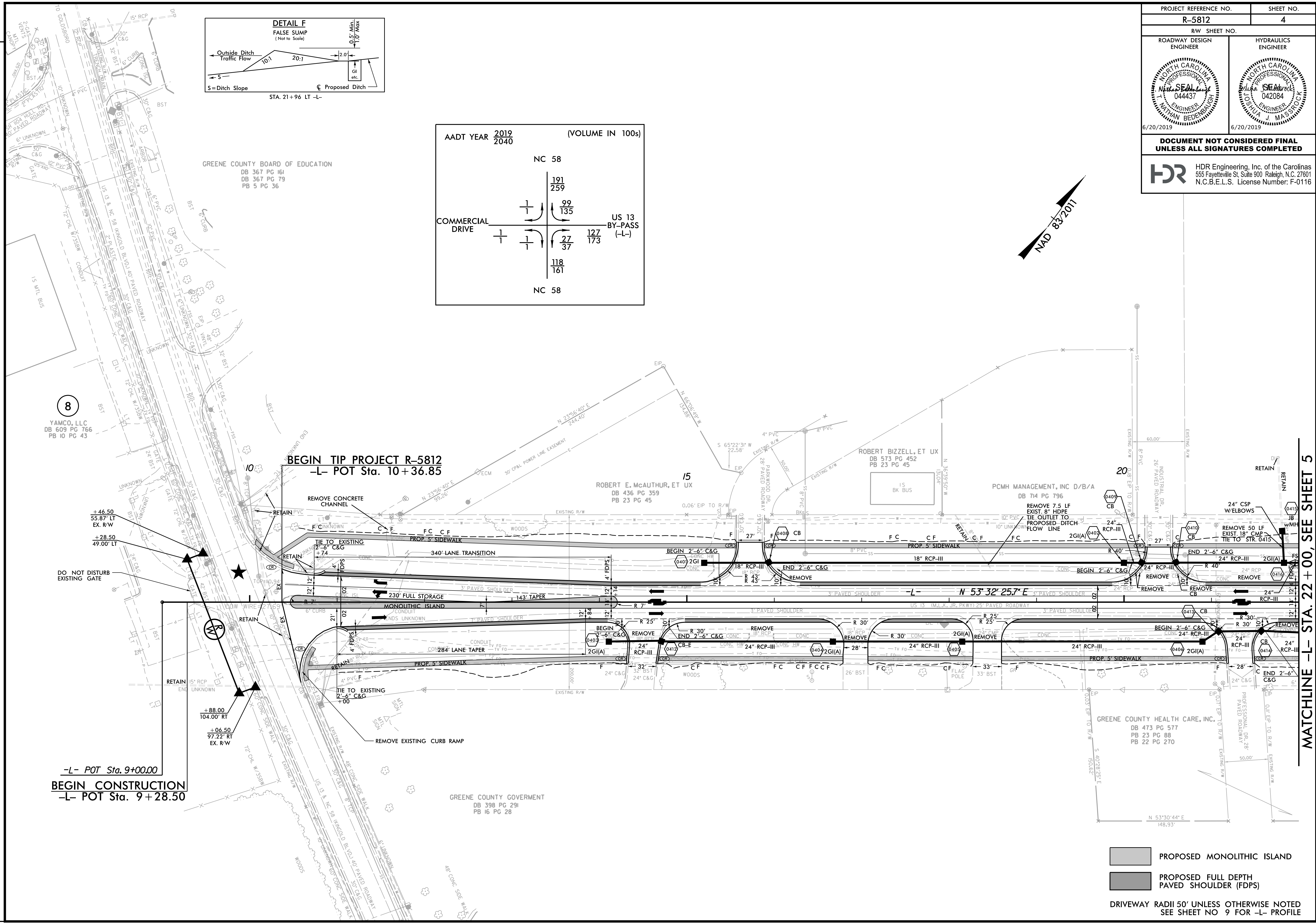


AADT YEAR		2019		2040		(VOLUME IN 100s)	
		NC 58		191		259	
		99		135			
COMMERCIAL DRIVE		27		37		127	
		118		161		173	
		NC 58				US 13 BY-PASS (-L-)	

GREENE COUNTY BOARD OF EDUCATION  
 DB 367 PG 161  
 DB 367 PG 79  
 PB 5 PG 36



PLOT DRIVER: NCDOT\_color\_eng\_50.plt  
 USER: DWA INWRI  
 FILE: NCDOT\2015.NCDOT\_East\_Reg\_Div\_Planning\_Design\_LSA\NCDOT-R-5812\_US\_13\_Widening\6.0.CAD.BTM\6.2.Work\In\_Progress\R-5812\_Roadway\Proj\RS812.RDY\_PSH04.dgn  
 PENTABLE: NCDOT\_pshp.plt  
 TIME: 9:34:22 PM  
 DATE: 6/19/2019  
 REVISIONS



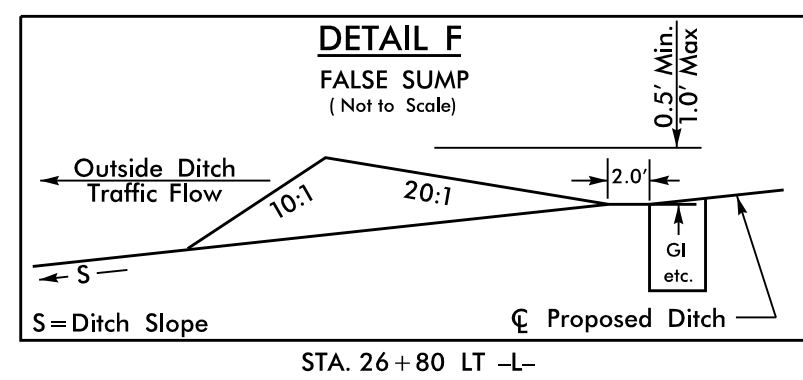
**-L- POT Sta. 9+00.00**  
**BEGIN CONSTRUCTION**  
**-L- POT Sta. 9+28.50**

- PROPOSED MONOLITHIC ISLAND
- PROPOSED FULL DEPTH PAVED SHOULDER (FDPS)

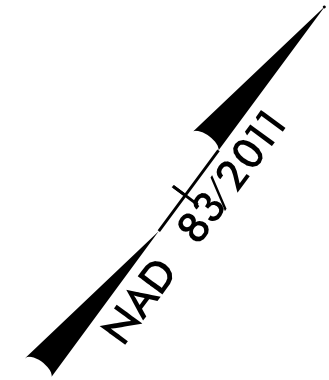
DRIVEWAY RADII 50' UNLESS OTHERWISE NOTED  
 SEE SHEET NO 9 FOR -L- PROFILE

**MATCHLINE -L- STA. 22 + 00, SEE SHEET 5**





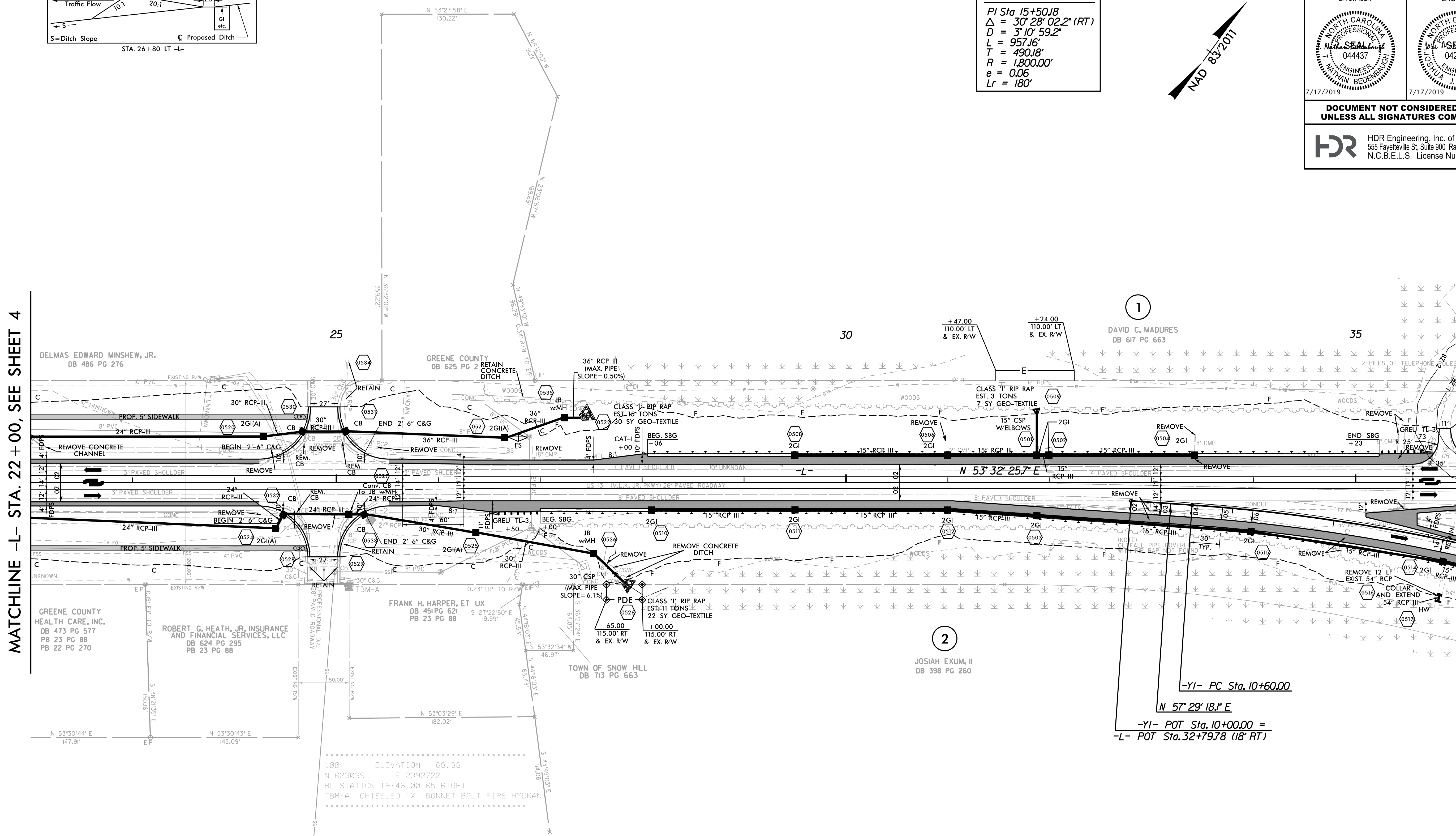
-YI-  
 PI Sta 15+50.18  
 $\Delta = 30' 28' 02.2''$  (RT)  
 $D = 3' 10' 59.2''$   
 $L = 957.16'$   
 $T = 490.18'$   
 $R = 1,800.00'$   
 $e = 0.06$   
 $Lr = 180'$



PROJECT REFERENCE NO. <b>R-5812</b>	SHEET NO. <b>5</b>
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
7/17/2019	7/17/2019
<b>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</b>	
HDR Engineering, Inc. of the Carolinas 555 Fayetteville St. Suite 900 Raleigh, N.C. 27601 N.C.B.E.L.S. License Number: F-0116	

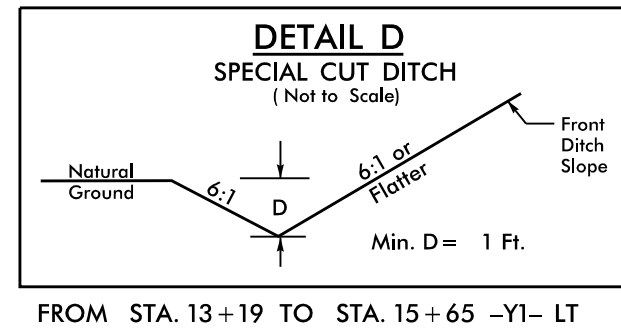
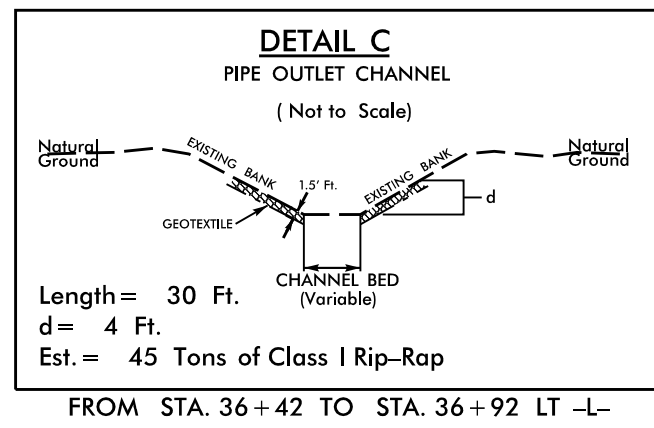
MATCHLINE -L- STA. 22 + 00, SEE SHEET 4

MATCHLINE -L- STA. 36 + 00, SEE SHEET 6





PROJECT REFERENCE NO. <b>R-5812</b>		SHEET NO. <b>6</b>	
RW SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
7/17/2019		7/17/2019	
<b>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</b>			
HDR Engineering, Inc. of the Carolinas 555 Fayetteville St. Suite 900 Raleigh, N.C. 27601 N.C.B.E.L.S. License Number: F-0116			

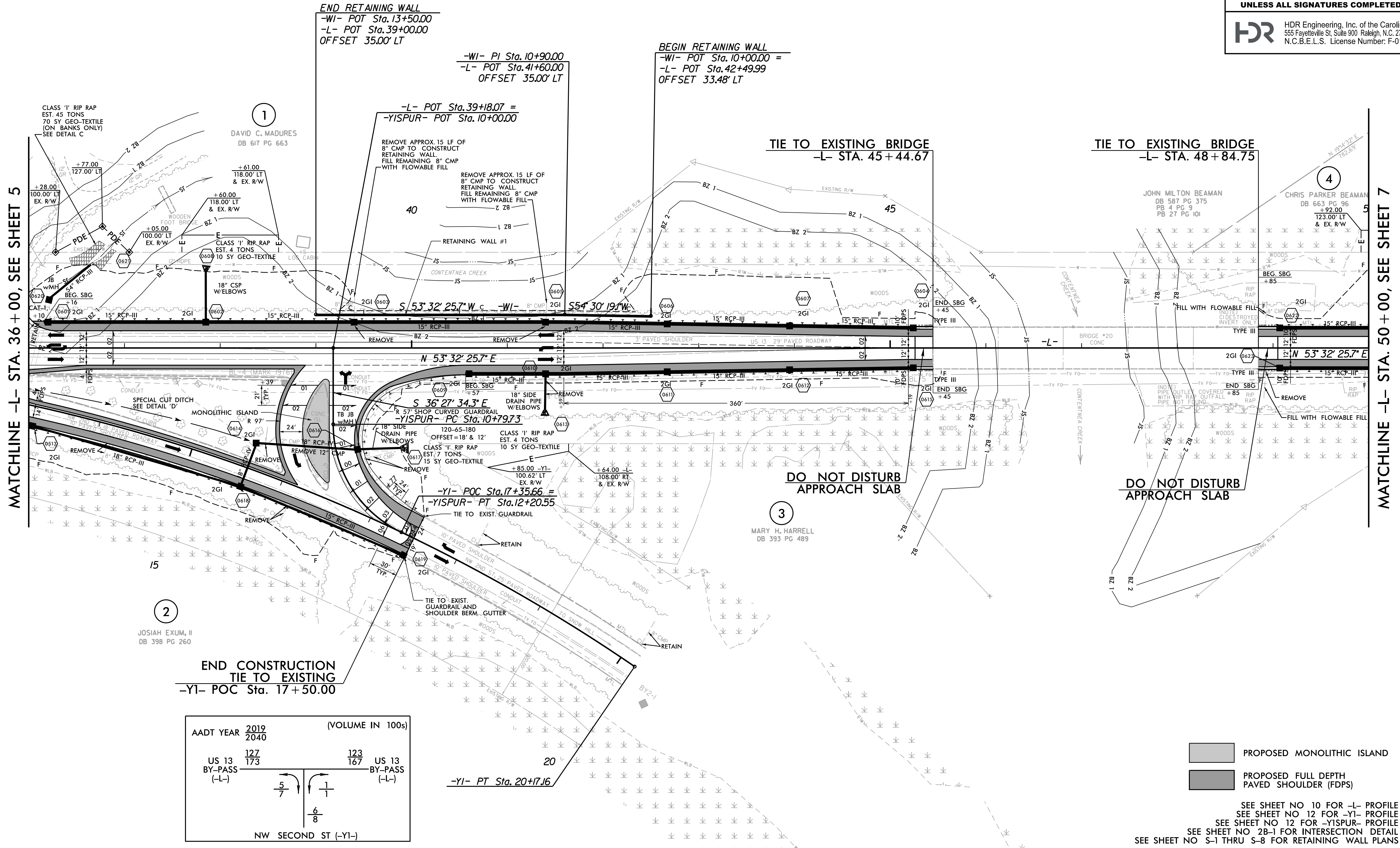
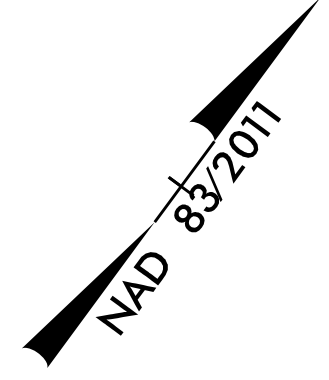


**-YI-**

PI Sta 15+50.18  
 $\Delta = 30' 28" 02.2' (RT)$   
 $D = 3' 10' 59.2"$   
 $L = 957.16'$   
 $T = 490.18'$   
 $R = 1800.00'$   
 $e = 0.06$   
 $Lr = 180'$

**-YISPUR-**

PI Sta 11+58.67  
 $\Delta = 64' 32" 42.7' (LT)$   
 $D = 45' 50' 11.8"$   
 $L = 140.82'$   
 $T = 78.94'$   
 $R = 125.00'$   
 $e = 0.02$   
 $Lr = 48'$



**END CONSTRUCTION**  
TIE TO EXISTING  
-YI- POC Sta. 17+50.00

AADT YEAR		(VOLUME IN 100s)	
2019	2040	127	123
US 13 BY-PASS (-L-)	173	5	7
US 13 BY-PASS (-L-)	167	1	8

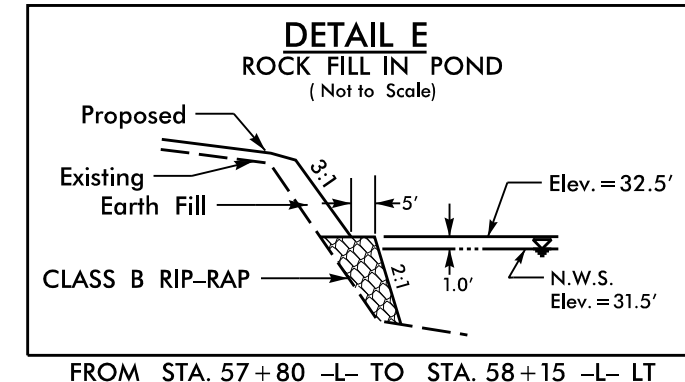
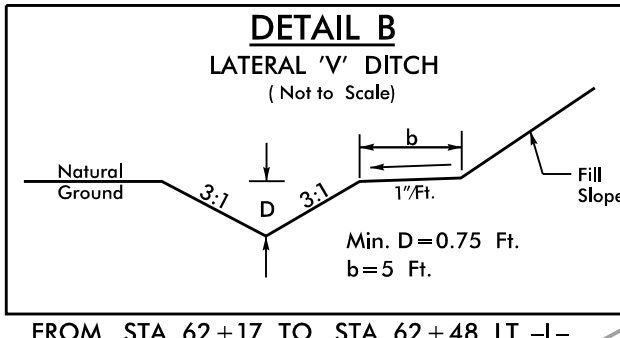
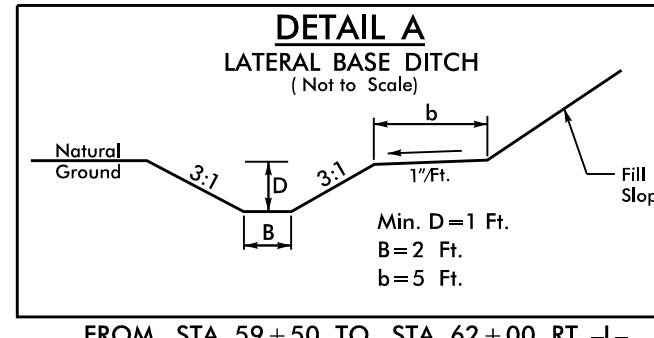
NW SECOND ST (-YI-)

PROPOSED MONOLITHIC ISLAND  
 PROPOSED FULL DEPTH PAVED SHOULDER (FDPS)

SEE SHEET NO 10 FOR -L- PROFILE  
 SEE SHEET NO 12 FOR -YI- PROFILE  
 SEE SHEET NO 12 FOR -YISPUR- PROFILE  
 SEE SHEET NO 2B-1 FOR INTERSECTION DETAIL  
 SEE SHEET NO S-1 THRU S-8 FOR RETAINING WALL PLANS

PLOT DRIVER: NCDOT\_color\_eng\_50.plt  
 USER: DWA INWRI  
 FILE: NCDOT\2015\NCDOT\_East\_Reg\_Div\_Planning\_Design\LSA\NCDOT-R-5812\_US\_13\_Widening\6.0\_CAD\_BITMAP\6.2\_Work\In\_Progress\NCDOT-R-5812\_RDY\_PSH06.dgn  
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 TIME: 12:40:41 PM  
 DATE: 7/17/2019  
 REVISIONS



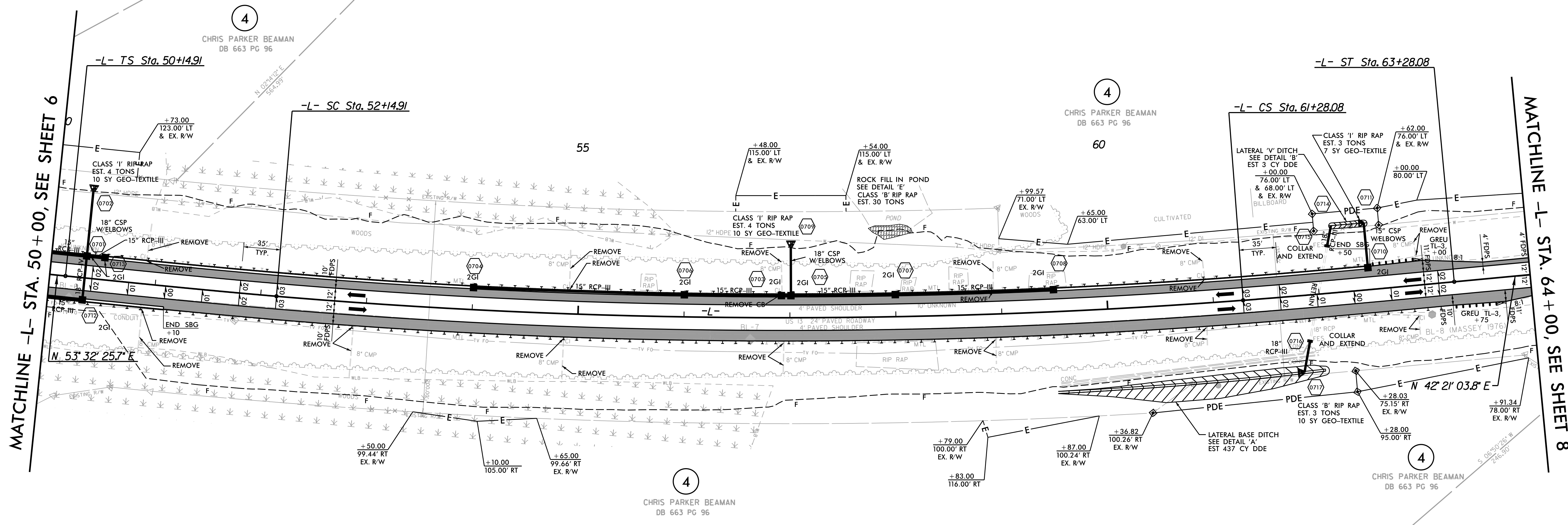


-L-

Pls Sta 51+48.25 θs = 1° 00' 18.7" Ls = 200.00' LT = 133.34' ST = 66.67'	Pl Sta 56+72.47 Δ = 9° 10' 44.5" (LT) D = 1° 00' 18.7" L = 913.17' T = 457.56' R = 5,700.00' e = 0.03 Lr = 105'	Pls Sta 61+94.74 θs = 1° 00' 18.7" Ls = 200.00' LT = 133.34' ST = 66.67'
--	--	--



PROJECT REFERENCE NO. <b>R-5812</b>	SHEET NO. <b>7</b>
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
6/20/2019	6/20/2019
<b>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</b>	
HDR Engineering, Inc. of the Carolinas 555 Fayetteville St. Suite 900 Raleigh, N.C. 27601 N.C.B.E.L.S. License Number: F-0116	



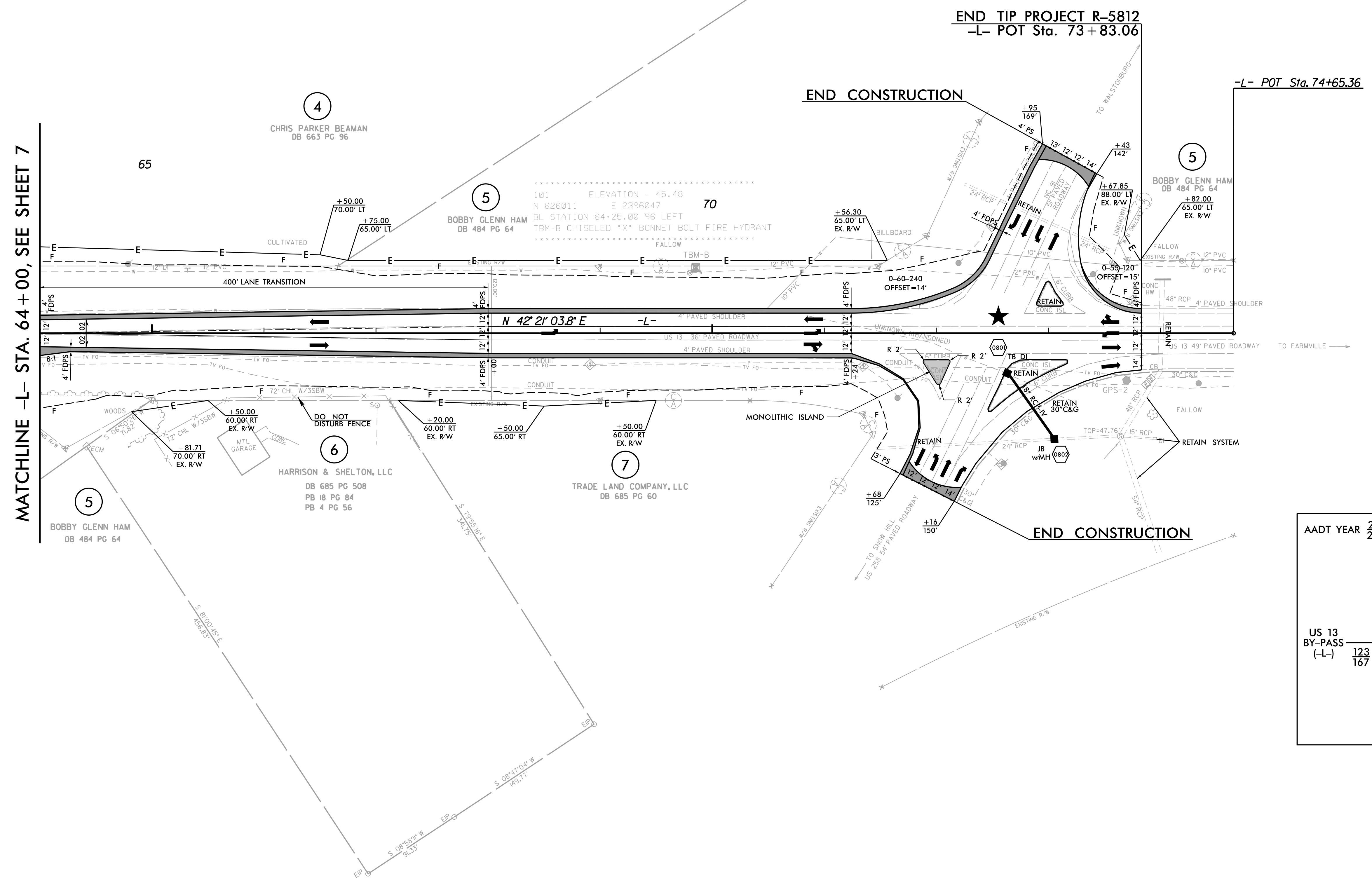
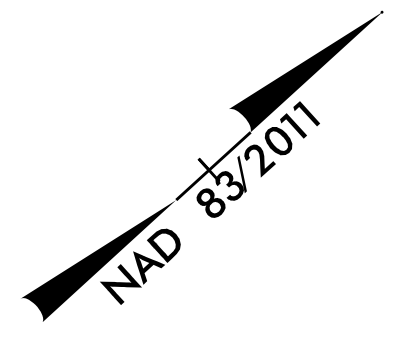
PLOT DRIVER: NCDOT\_color\_eng\_50.plt  
 USER: DWA INWRI  
 FILE: NCDOT\2015\NCDOT\_East\_Reg\_Div\_Planing\_Design\_LSA\NCDOT-R-5812\_US\_13\_Widening\6.0\_CAD\_BITMAP\6.2\_Work\In\_Progress\R-5812\_Roadway\Proj\RSB12.RDY\_PSH07.dgn  
 REVISIONS  
 PENTABLE: NCDOT\_pshp.plt.tdi  
 TIME: 6:34:28 PM  
 DATE: 6/5/2019  
 NCDOT\2015\NCDOT\_East\_Reg\_Div\_Planing\_Design\_LSA\NCDOT-R-5812\_US\_13\_Widening\6.0\_CAD\_BITMAP\6.2\_Work\In\_Progress\R-5812\_Roadway\Proj\RSB12.RDY\_PSH07.dgn

PROPOSED FULL DEPTH PAVED SHOULDER (FDPS)

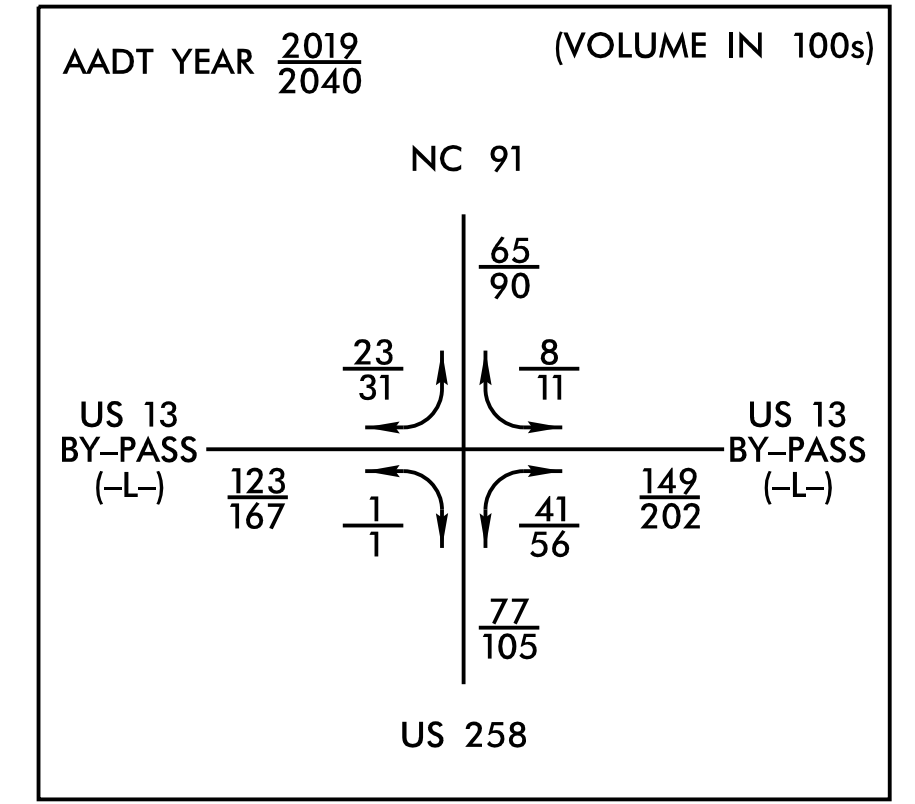
SEE SHEET NO 10 FOR -L- PROFILE



PROJECT REFERENCE NO. <b>R-5812</b>	SHEET NO. <b>8</b>
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
6/20/2019	6/20/2019
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MATCHLINE -L- STA. 64+00, SEE SHEET 7



- PROPOSED MONOLITHIC ISLAND
- PROPOSED FULL DEPTH PAVED SHOULDER (FDPS)

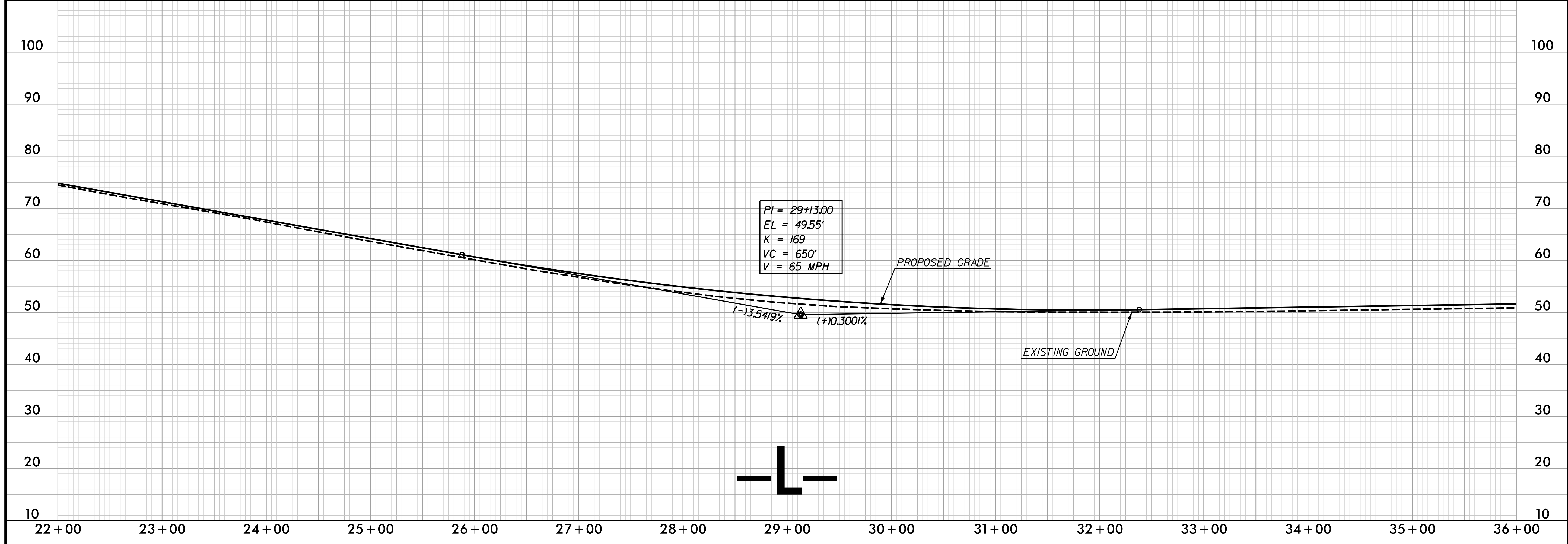
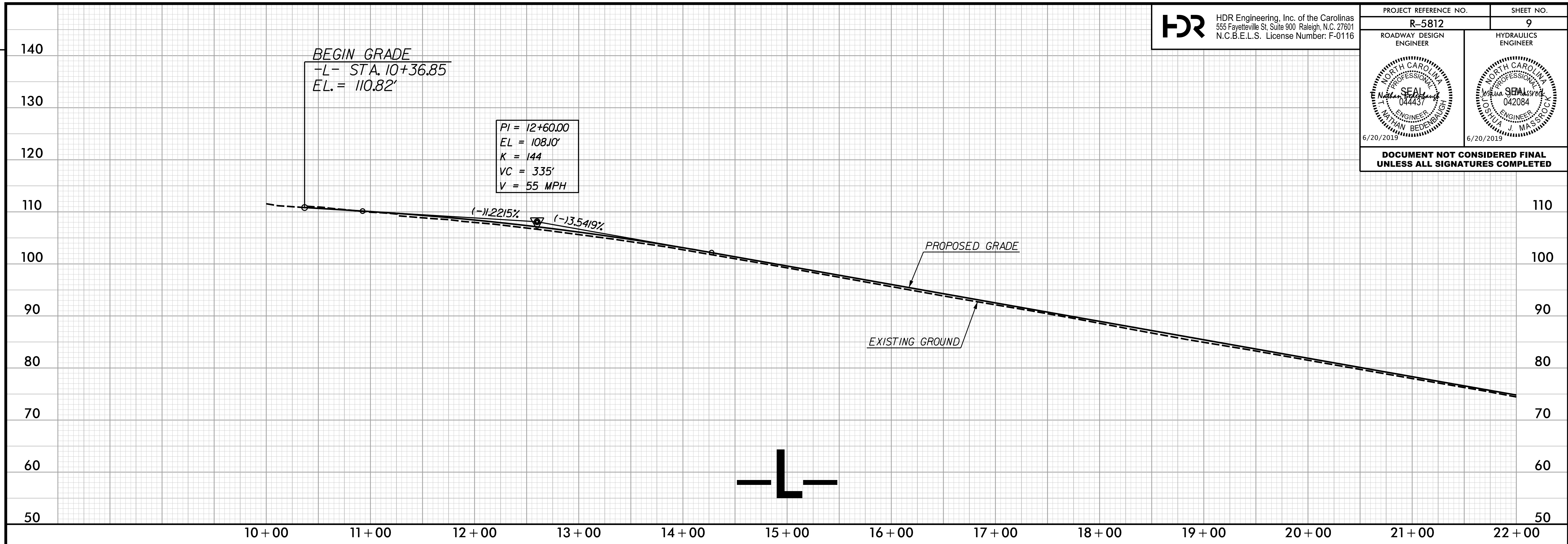
SEE SHEET NO 11 FOR -L- PROFILE  
 CONTRACTOR TO PRECLUDE PONDING OF WATER AROUND CONCRETE ISLANDS

PLOT DRIVER: NCDOT\_color\_eng\_50.plt  
 USER: DWA INWRI  
 FILE: NCDOT\2015.NCDOT\_East\_Reg.Div\_Planning\_Design\_LSA\NCDOT-R-5812\_US\_13\_Widening\6.0.CAD.BTM\6.2.Work\In\_Progress\R-5812\_Roadway\Proc\RS812.RDY\_PSH08.dgn  
 PENTABLE: NCDOT\_pshp.plt  
 TIME: 6:34:38 PM  
 DATE: 6/5/2019  
 REVISIONS



PROJECT REFERENCE NO. <b>R-5812</b>	SHEET NO. <b>9</b>
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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

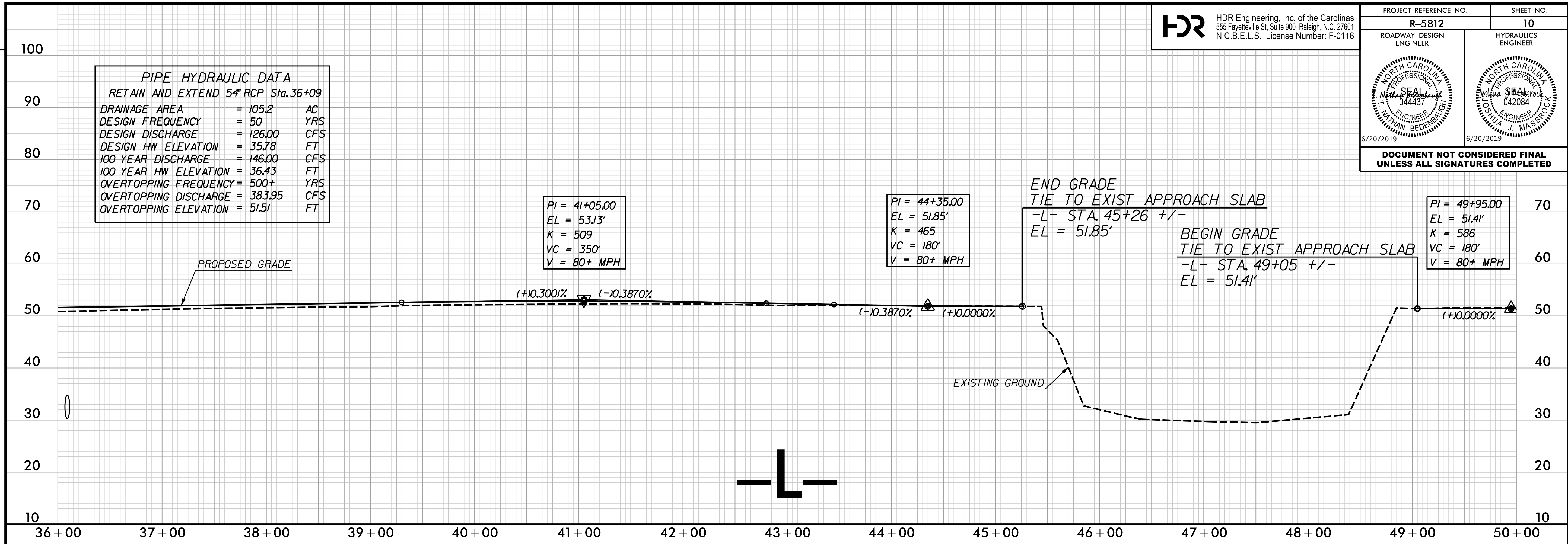


PLOT DRIVER: NCDOT\_color\_eng\_50.plt  
 USER: DWA INWRI  
 FILE: NCDOT\2015.NCDOT\_East\_Reg.Div\_Planning\_Design\_LSA\NCDOT-R-5812\_US\_13\_Widening\6.0.CAD.BIM\6.2.Work\In\_Progress\R-5812\_Roadway\Proc\RSB12.RDY\_PFL09.dgn  
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 DATE: 6/5/2019

REVISIONS

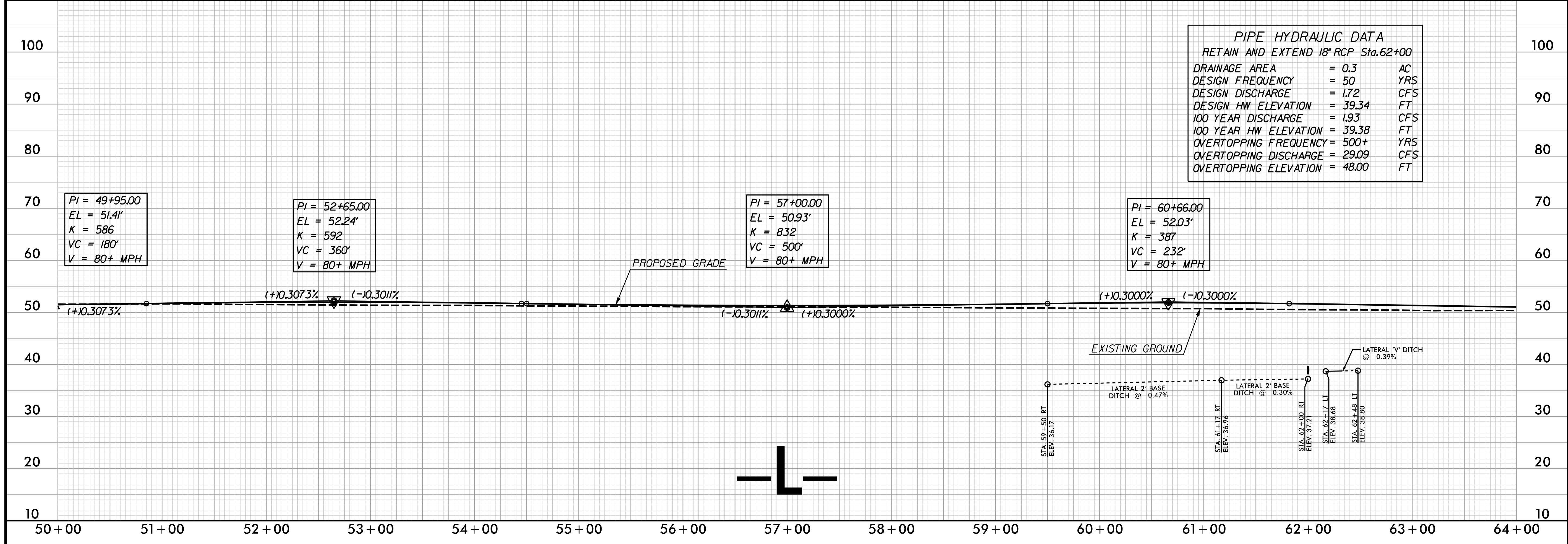
**PIPE HYDRAULIC DATA**  
RETAIN AND EXTEND 54" RCP Sta. 36+09

DRAINAGE AREA	= 105.2	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 126.00	CFS
DESIGN HW ELEVATION	= 35.78	FT
100 YEAR DISCHARGE	= 146.00	CFS
100 YEAR HW ELEVATION	= 36.43	FT
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING DISCHARGE	= 383.95	CFS
OVERTOPPING ELEVATION	= 51.51	FT



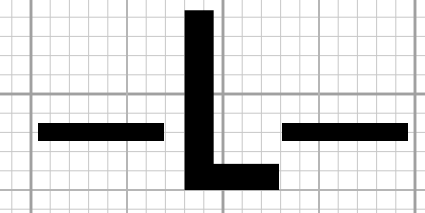
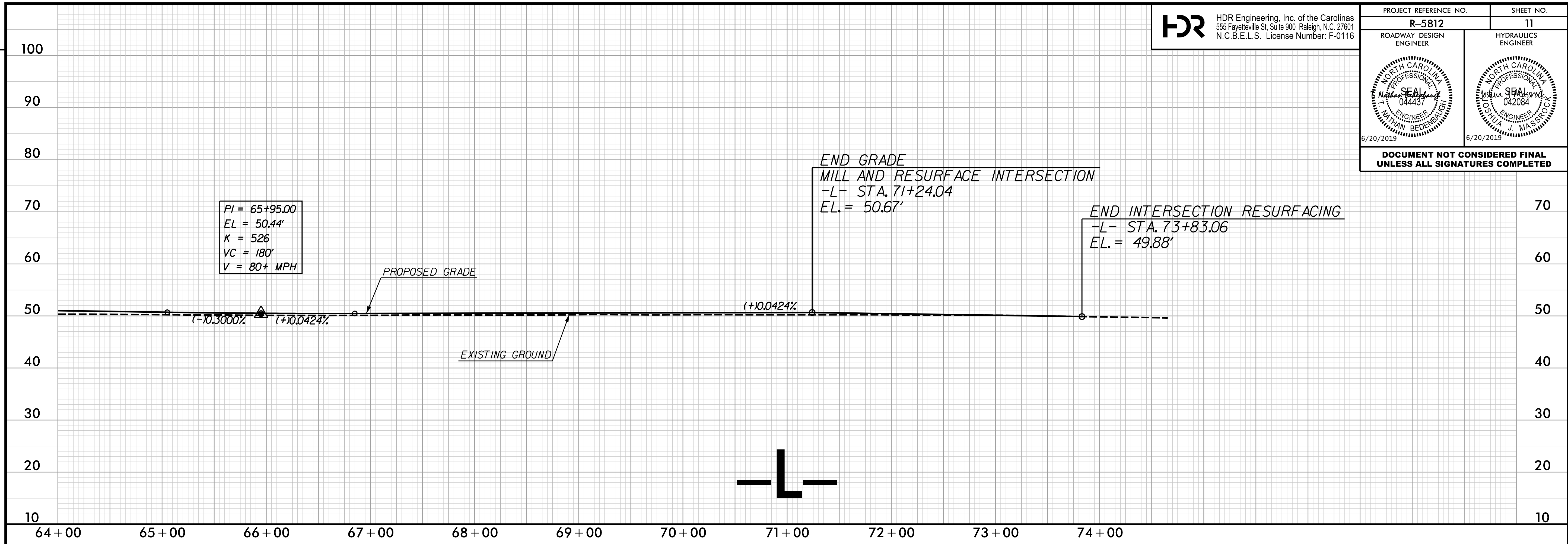
**PIPE HYDRAULIC DATA**  
RETAIN AND EXTEND 18" RCP Sta. 62+00

DRAINAGE AREA	= 0.3	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 1.72	CFS
DESIGN HW ELEVATION	= 39.34	FT
100 YEAR DISCHARGE	= 1.93	CFS
100 YEAR HW ELEVATION	= 39.38	FT
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING DISCHARGE	= 29.09	CFS
OVERTOPPING ELEVATION	= 48.00	FT



PLOT DRIVER: NCDOT\_color\_eng\_50.plt  
 USER: DWA INWRI  
 FILE: NCDOT\2015.NCDOT\_East\_Reg.Div\_Planning\_Design\_LSA\NCDOT-R-5812-US-13-Widening\6.0.CAD.BIM\6.2.Work\In\_Progress\R-5812\_Roadway\Proc\5812\_RDY\_PFL10.dgn  
 DATE: 6/5/2019  
 TIME: 6:34:54 PM  
 REVISIONS

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

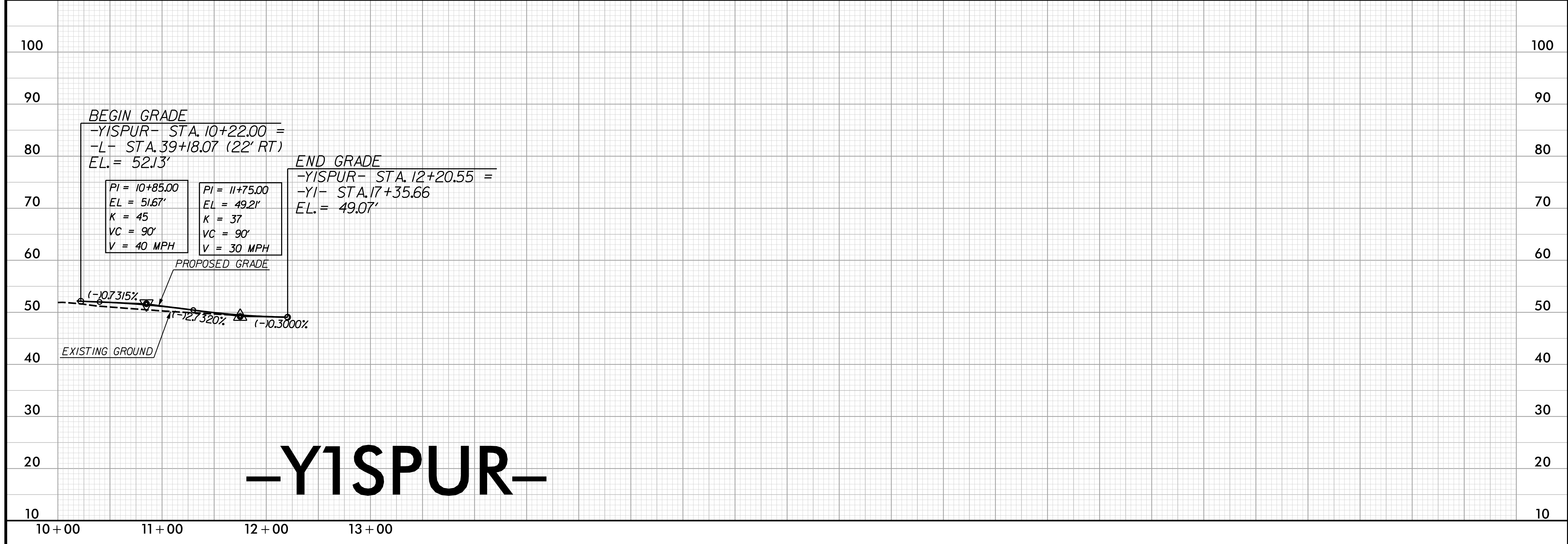
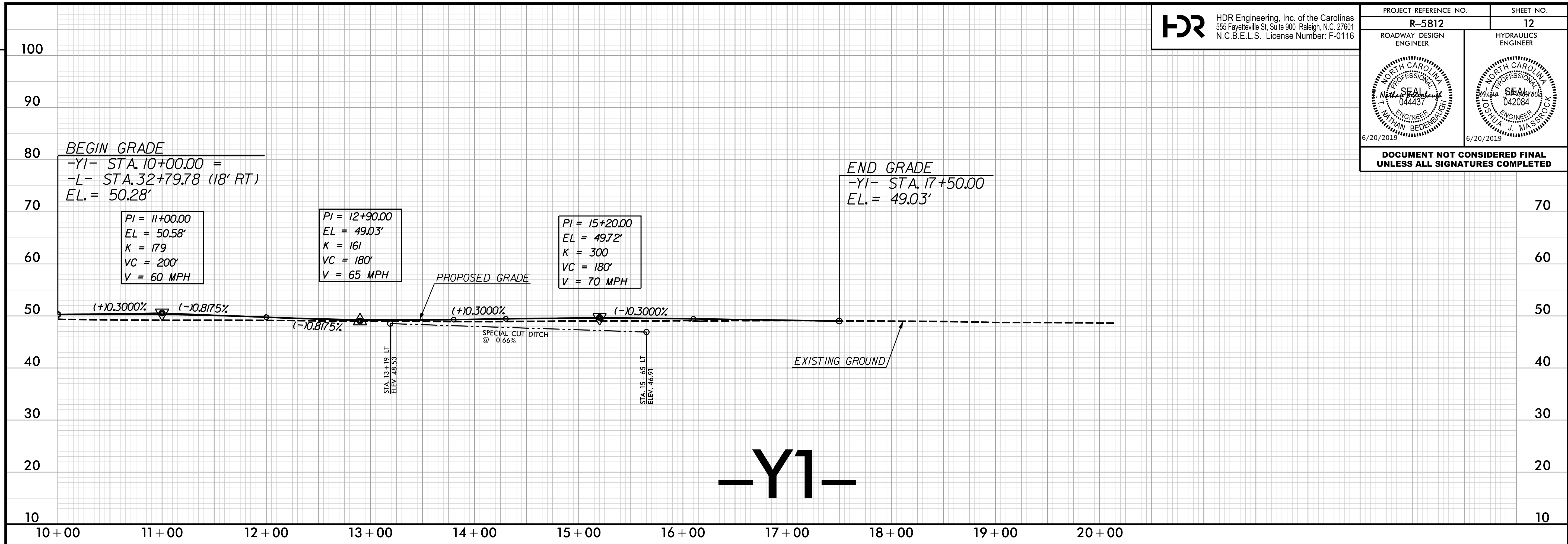


REVISIONS

PLOT DRIVER: NCDOT\_color\_eng\_50.plt  
 USER: DWA INWRI  
 FILE: NCDOT\2015.NCDOT\_East\_Reg.Div\_Planning\_Design\_LSA\NCDOT-R-5812\_US\_13\_Widening\6.0.CAD.BTM\6.2.Work\In\_Progress\R-5812\_Roadway\Proc\RSB12.RDY\_PFL11.dgn  
 PENTABLE: NCDOT\_pshp.plt.tdi  
 TIME: 6:35:02 PM  
 DATE: 6/5/2019



PROJECT REFERENCE NO. <b>R-5812</b>	SHEET NO. <b>12</b>
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
<b>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</b>	



PLOT DRIVER: NCDOT\_color\_eng\_50.plt  
 USER: DWA INWRI  
 FILE: NCDOT\2015\NCDOT\_East\_Reg.Div\_Planing\_Design\LSA\NCDOT-R-5812\_US\_13\_Widening\6.0\_CAD\_BIM\6.2\_Work\In\_Progress\R-5812\_Roadway\Proc\195812\_RDY\_PFL12.dgn  
 PENTABLE: NCDOT\_pshp.fltd  
 TIME: 6:35:10 PM  
 DATE: 6/5/2019

REVISIONS