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09/20/2022

2/18/2022  
 E:\Roadway\Proj\U2519BB-RDY\_TSH.dgn  
 Eric.WarTn

**TIP PROJECT: U-2519BB**

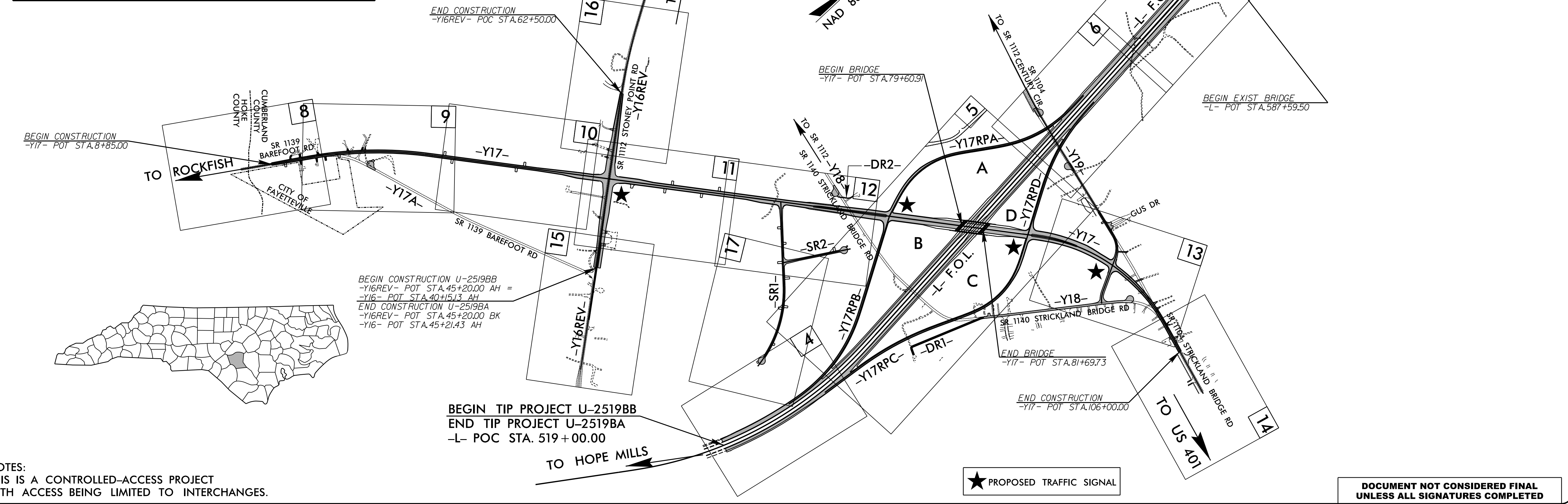
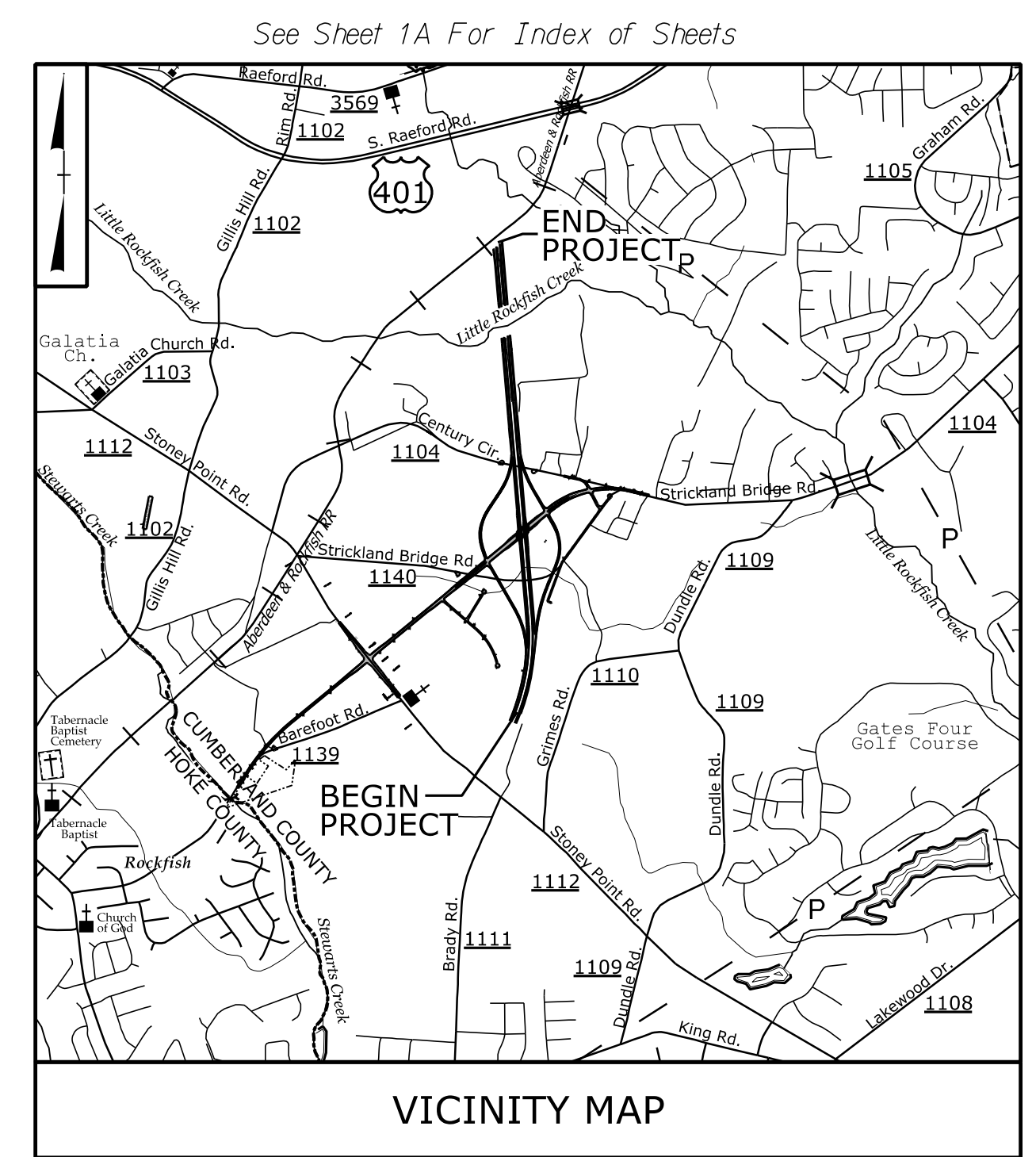
**CONTRACT: C204110**

STATE OF NORTH CAROLINA  
 DIVISION OF HIGHWAYS

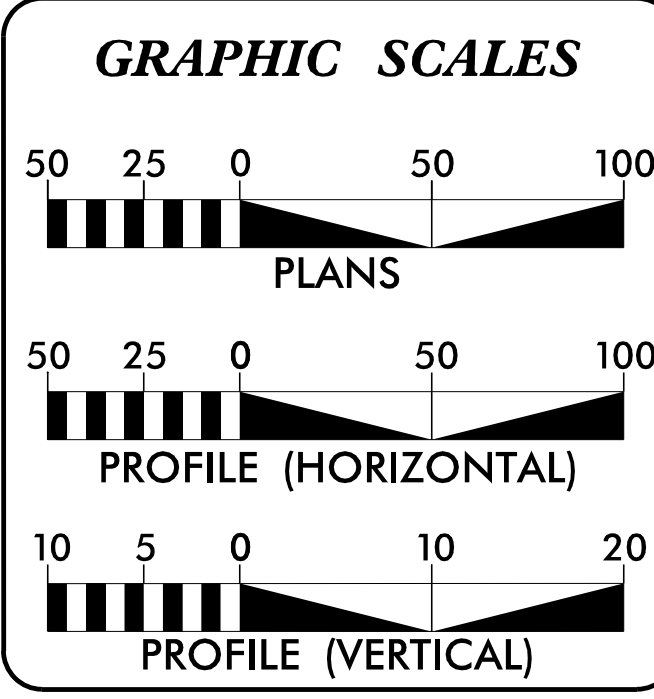
**CUMBERLAND COUNTY**

**LOCATION: FAYETTEVILLE - OUTER LOOP (F.O.L.) FROM SOUTH OF SR 1104 (STRICKLAND BRIDGE ROAD) TO SOUTH OF US 401**  
**TYPE OF WORK: DRAINAGE, GRADING, PAVING, STRUCTURE, RETAINING WALLS, SIGNALS, SIGNING**

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U-2519BB	1	
STATE WBS NO.	F.A. PROJ. NO.	DESCRIPTION	
34817.1.FR8	NHF-0100(25)	PE	
34817.2.FR15	NHF-0100(025)	ROW	
34817.2.11	NHF-0100(025)	UTIL	
34817.3.15	NHF-0100(025)	CONST	



NOTES:  
 THIS IS A CONTROLLED-ACCESS PROJECT  
 WITH ACCESS BEING LIMITED TO INTERCHANGES.



**DESIGN DATA**

ADT 2022 =	39,280
ADT 2042 =	48,680
K =	8 %
D =	55 %
T =	12 % *
V =	70 MPH
* 4% TTST + 8% DUAL	
FUNC CLASS = INTERSTATE STATEWIDE TIER	

**PROJECT LENGTH**

LENGTH ROADWAY TIP PROJECT U-2519BB	=	1.524 MILES
TOTAL LENGTH TIP PROJECT U-2519BB	=	1.524 MILES

Prepared in the Office of:

**NV15**  
 FOR THE NORTH CAROLINA DEPARTMENT OF TRANSPORTATION  
 2018 STANDARD SPECIFICATIONS

**RIGHT OF WAY DATE:**  
 SEPTEMBER 29, 2016

**LETTING DATE:**  
 JUNE 21, 2022

**NCDOT CONTACT:** JOHN CONFORTI, REM  
 NCDOT PROJECT MANAGER

**JOHNNY BANKS**  
 NV5 PROJECT MANAGER

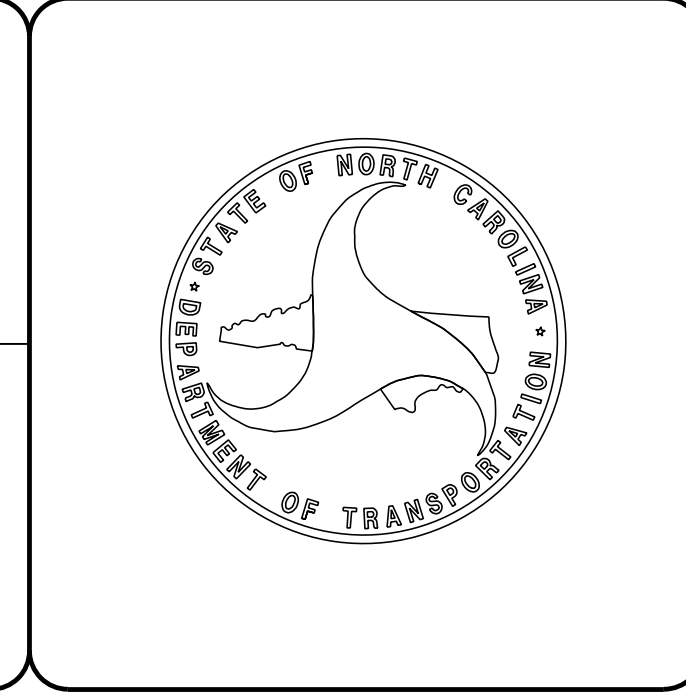
**STEVE ANTHONY DRUM, PE**  
 NV5 PROJECT DESIGN ENGINEER

**HYDRAULICS ENGINEER**

DocuSigned by:  
 David P. Becker  
 SEAL 029984  
 P.E. 3/16/2022

**ROADWAY DESIGN ENGINEER**

DocuSigned by:  
 Steve Anthony Drum  
 SEAL 017265  
 P.E. 3/22/2022

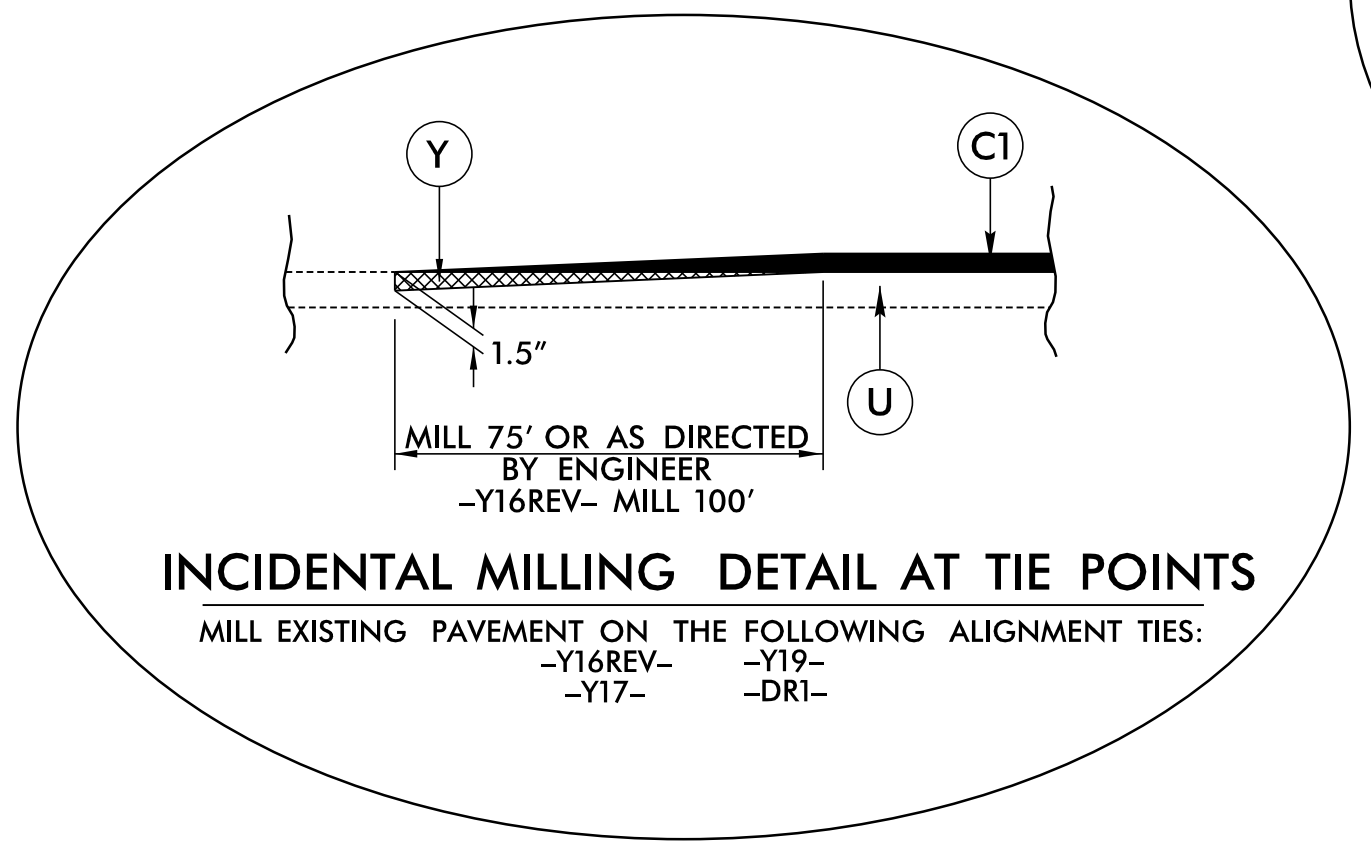
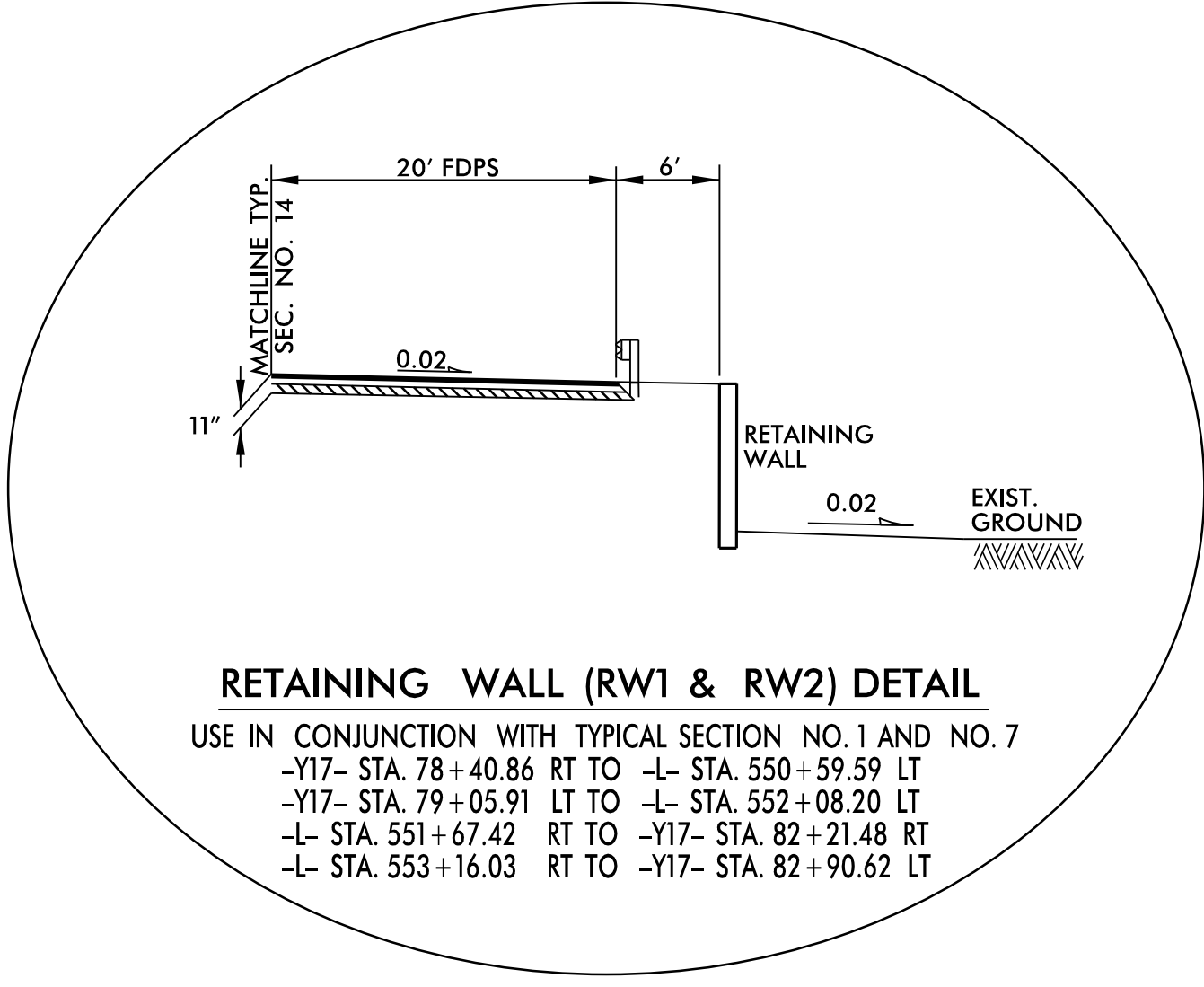
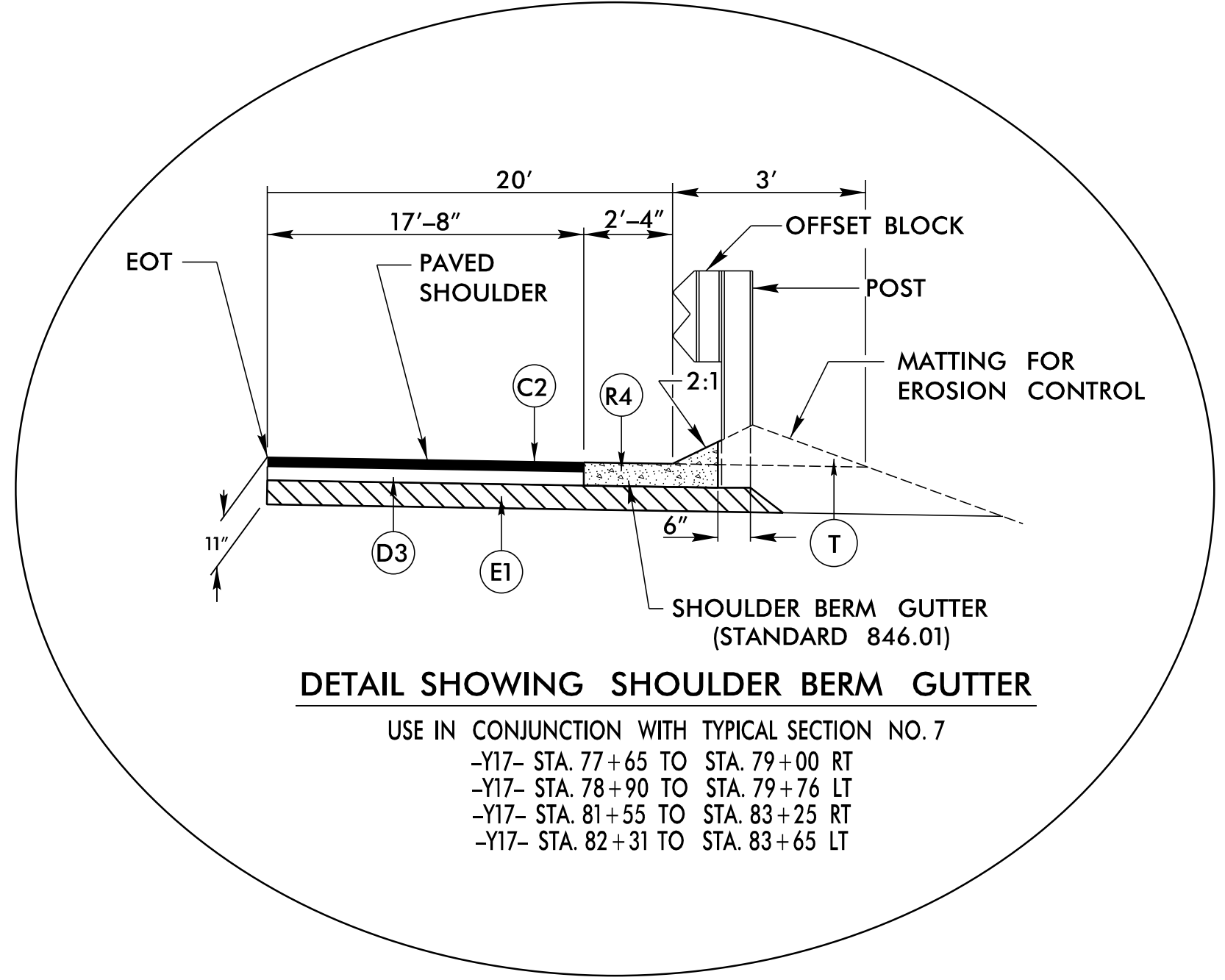
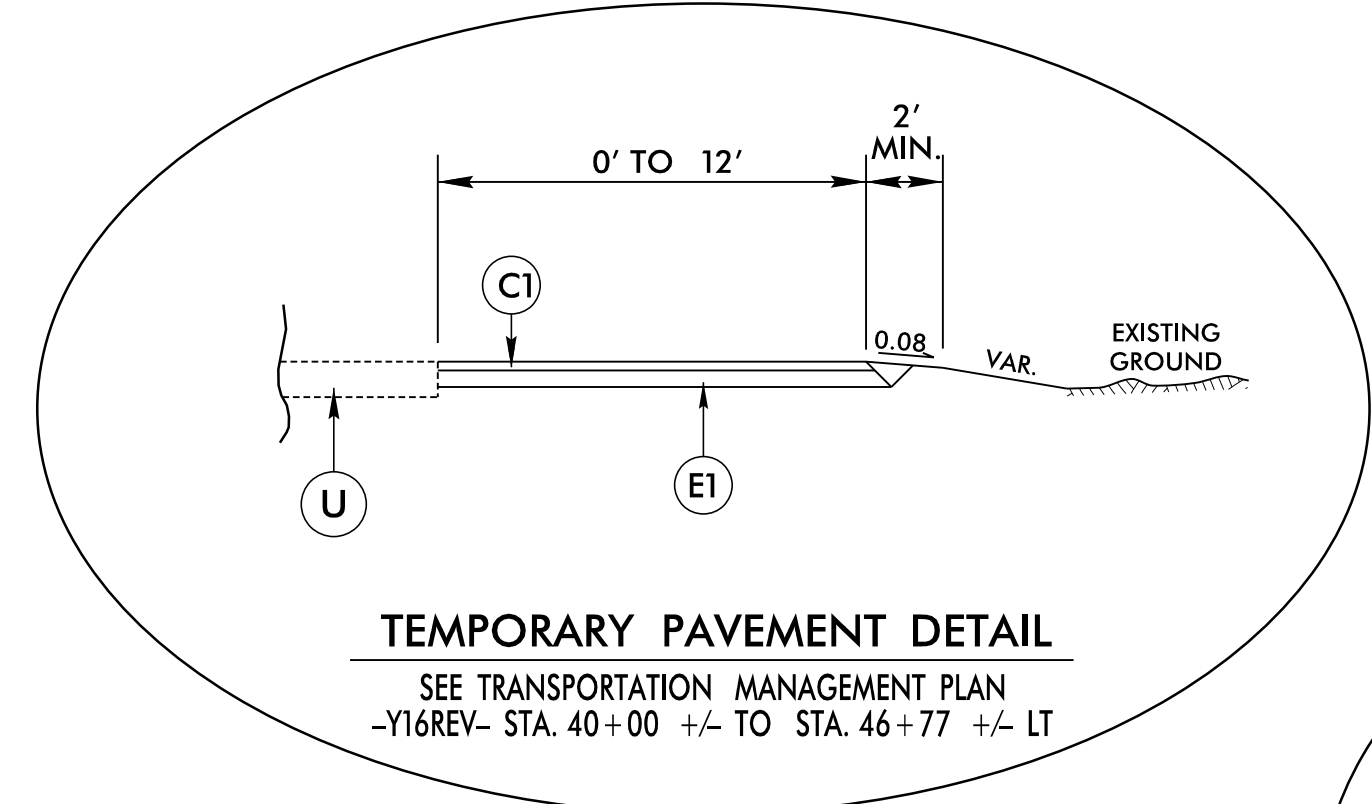


DOCUMENT NOT CONSIDERED FINAL  
 UNLESS ALL SIGNATURES COMPLETED

6/2/2022

3/2/2022  
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 E:\C:\Users\jmorris\Documents

PAVEMENT SCHEDULE (FINAL PAVEMENT DESIGN)			
A1	6" PORTLAND CEMENT CONCRETE.	V	MILLED RUMBLE STRIP.
C1	PROP. APPROX. 1.5" ASPHALT CONCRETE SURFACE COURSE TYPE S9.5B, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD. IN ONE LAYER.	W1	WEDGING EXISTING PAVEMENT.
C2	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE TYPE S9.5B, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.	W2	WEDGING EXISTING PAVEMENT.
C3	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD. PER 1" DEPTH TO BE PLACED IN LAYERS NOT TO EXCEED 1.5" IN DEPTH.	W3	WEDGING EXISTING PAVEMENT.
C4	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.	Y	INCIDENTAL MILLING.
D1	PROP. APPROX. 2.5" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 285 LBS. PER SQ. YD.	NOTE: ALL PAVEMENT EDGE SLOPES ARE 1:1 UNLESS OTHERWISE NOTED.	
D2	PROP. APPROX. 3" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 342 LBS. PER SQ. YD.		
D3	PROP. APPROX. 4" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.		
D4	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" 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. APPROX. 5" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 570 LBS. PER SQ. YD.		
E3	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 4" IN DEPTH OR GREATER THAN 5.5" IN DEPTH.		
J1	PROP. 8" AGGREGATE BASE COURSE.		
J2	PROP. 6" AGGREGATE BASE COURSE.		
J3	6" INCIDENTAL STONE		
R1	1'-6" CONCRETE CURB AND GUTTER.		
R2	2'-9" CONCRETE CURB AND GUTTER.		
R3	5" SURFACE MOUNTED MONOLITHIC CONCRETE ISLAND		
R4	SHOULDER BERM GUTTER.		
R5	5" KEYED IN MONOLITHIC CONCRETE ISLAND.		
R6	SINGLE FACED CONCRETE BARRIER		
R7	2'-6" CONCRETE CURB AND GUTTER.		
R8	5½" MODIFIED SHOULDER BERM GUTTER (U-2519BA SHEET 2C-1)		
R9	6" MODIFIED SHOULDER BERM GUTTER (U-2519BA SHEET 2C-2)		
S	4" CONCRETE SIDEWALK		
T	EARTH MATERIAL.		
U	EXISTING PAVEMENT.		



PROJECT REFERENCE NO. **U-2519BB** SHEET NO. **2A-1**

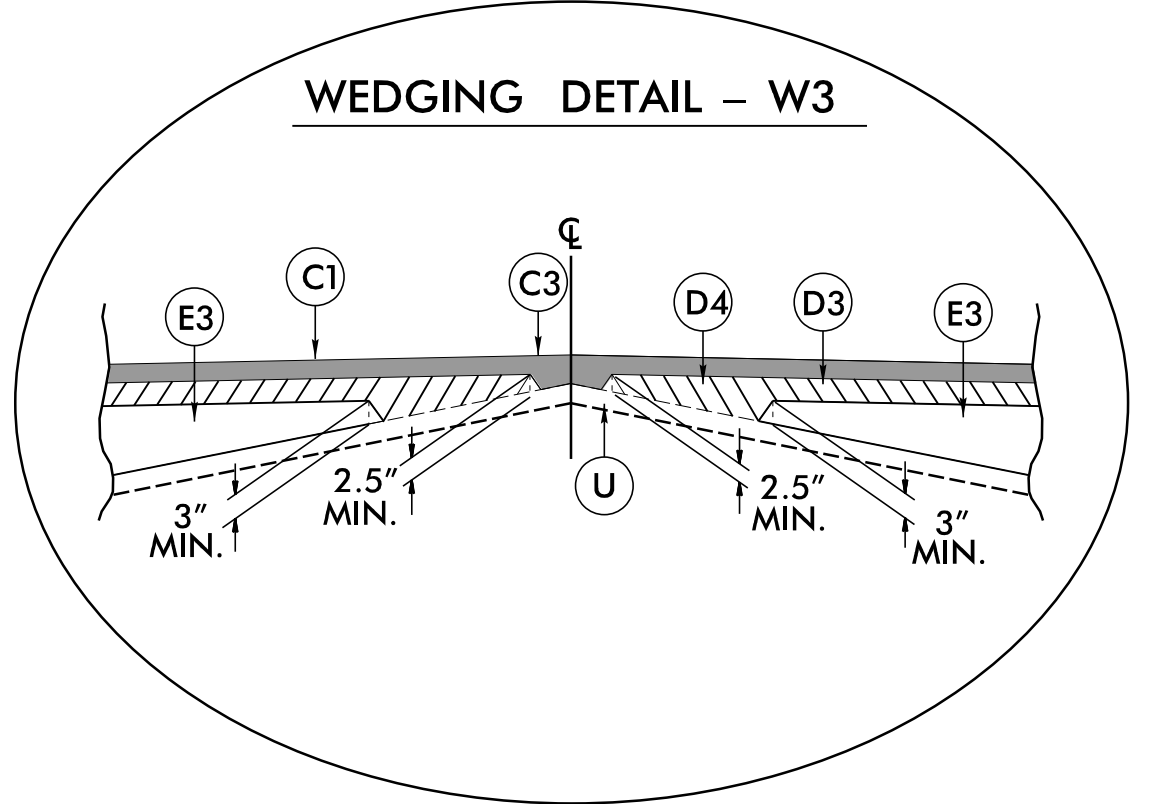
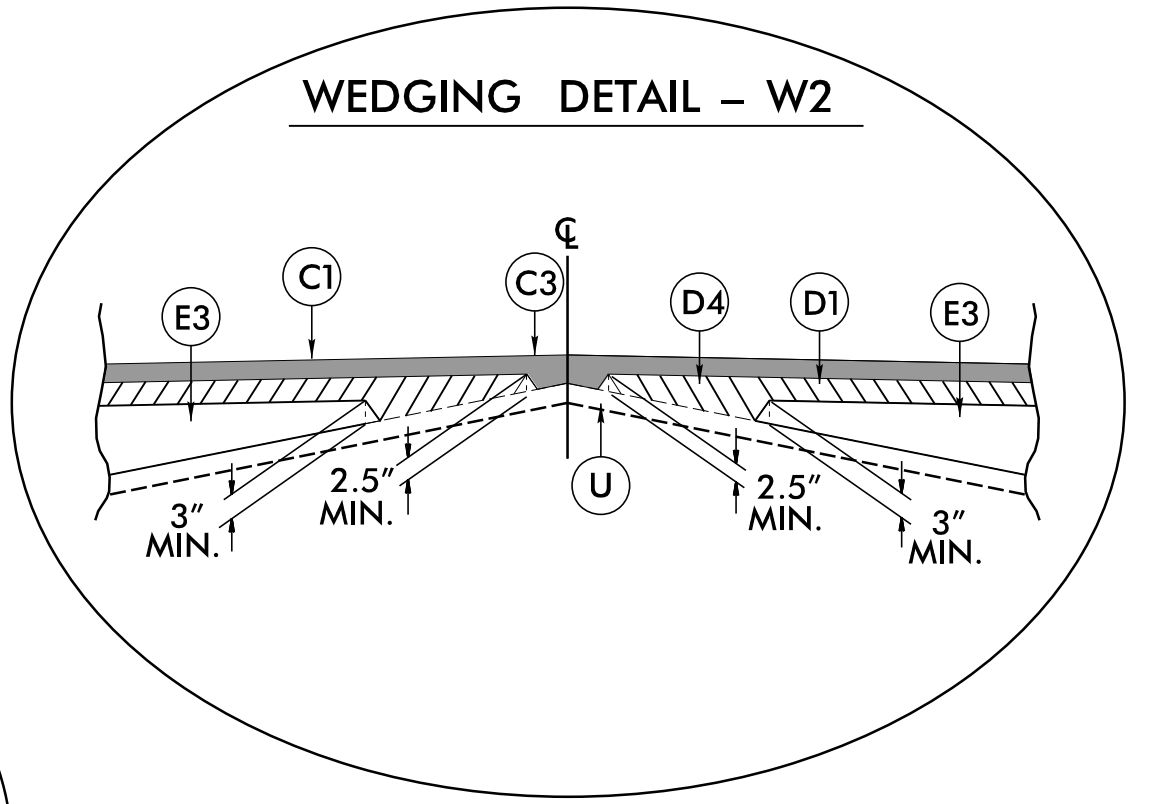
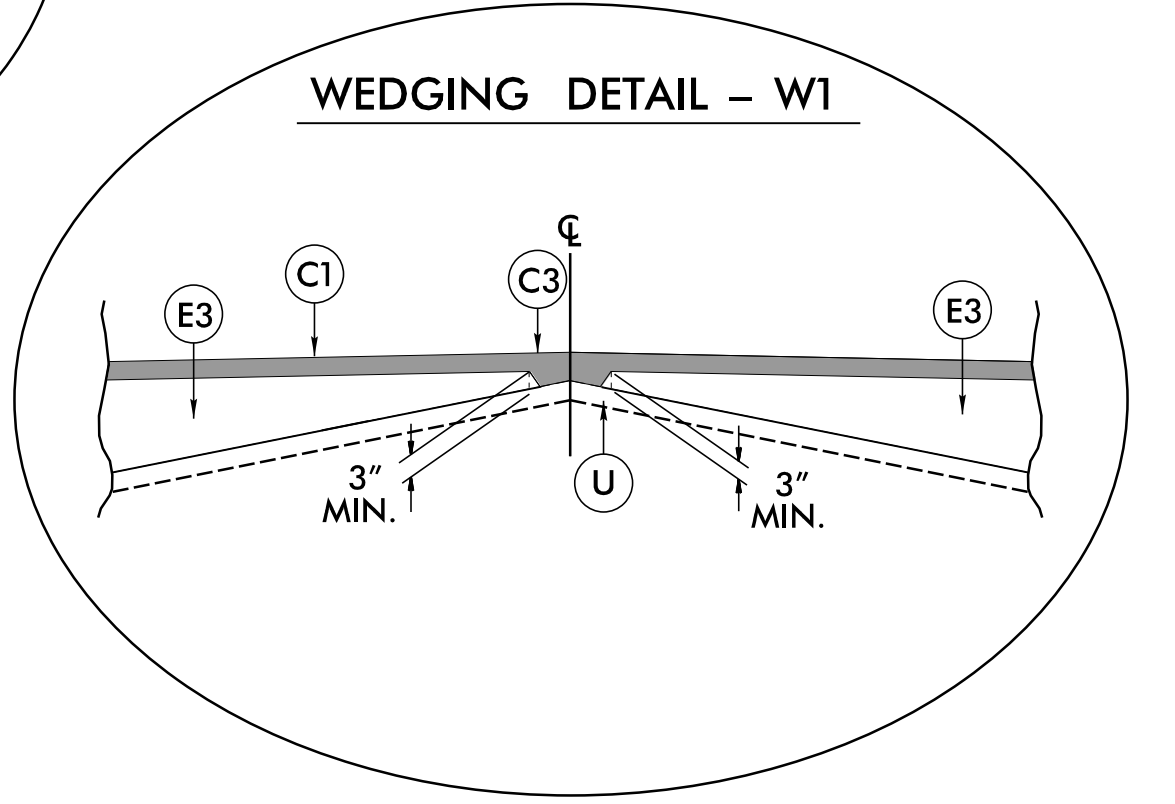
ROADWAY DESIGN ENGINEER 3/22/2022  
 PAVEMENT DESIGN ENGINEER 3/18/2022

**NV5**  
 NV5 ENGINEERS & CONSULTANTS, INC.  
 3300 REGENCY PARKWAY, SUITE 100  
 CARY, NC 27518  
 P: 919.851.1912 www.NV5.com  
 NC License # FJ1333  
 formerly CALYX Engineers & Consultants

SEAL 017265  
 SEVE ANTHONY DRUM  
 ENGINEER

SEAL 022896  
 CLARK S. MORRISON  
 ENGINEER

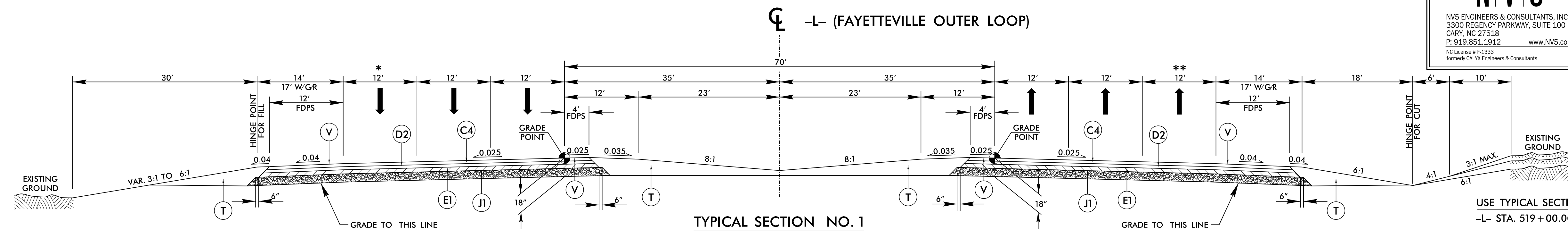
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 UNLESS ALL SIGNATURES COMPLETED**



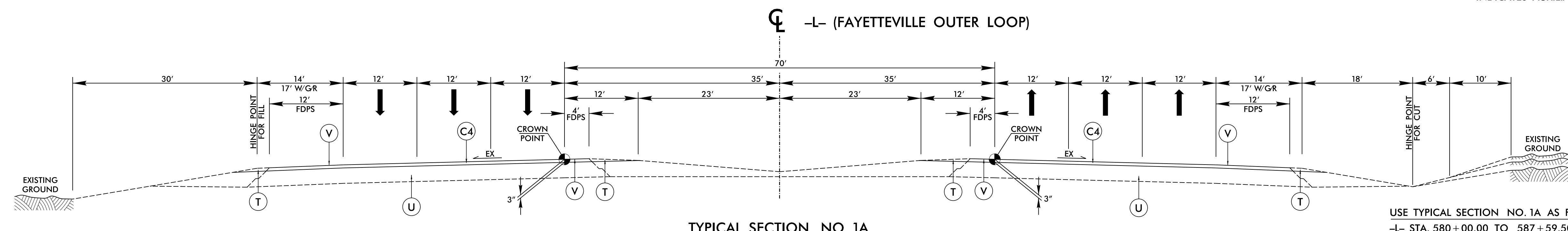
6/2/2022



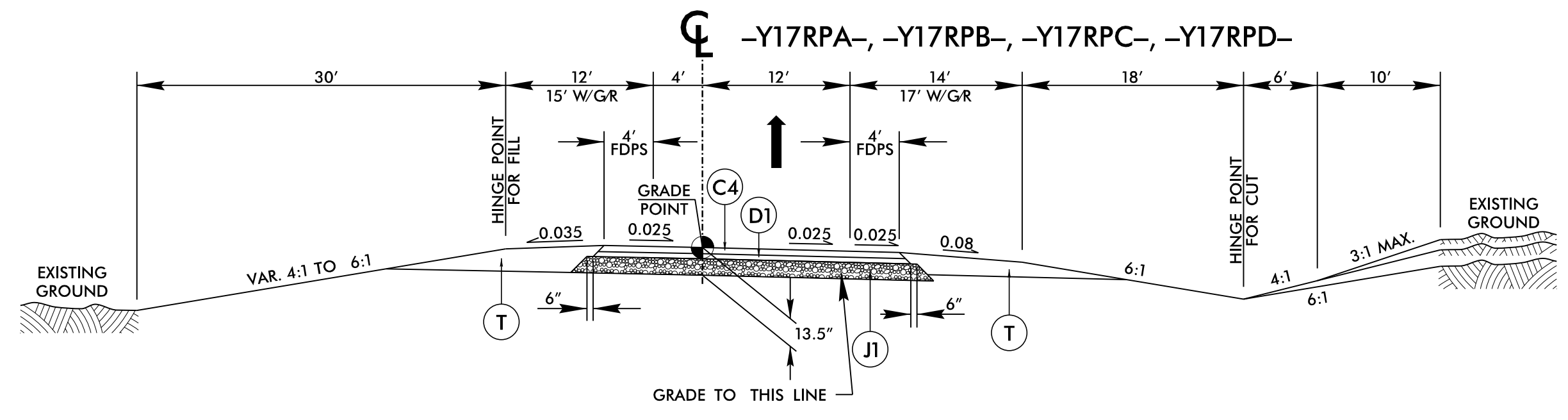
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ROADWAY DESIGN ENGINEER 3/22/2022	PAVEMENT DESIGN ENGINEER 3/18/2022
<b>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</b>	



USE TYPICAL SECTION NO. 1 AS FOLLOWS:  
 -L- STA. 519+00.00 TO 580+00.00  
 \* INDICATES AUXILIARY LANE -L- STA. 568+84.53 TO 580+00.00  
 \*\* INDICATES AUXILIARY LANE -L- STA. 569+06.16 TO 580+00.00



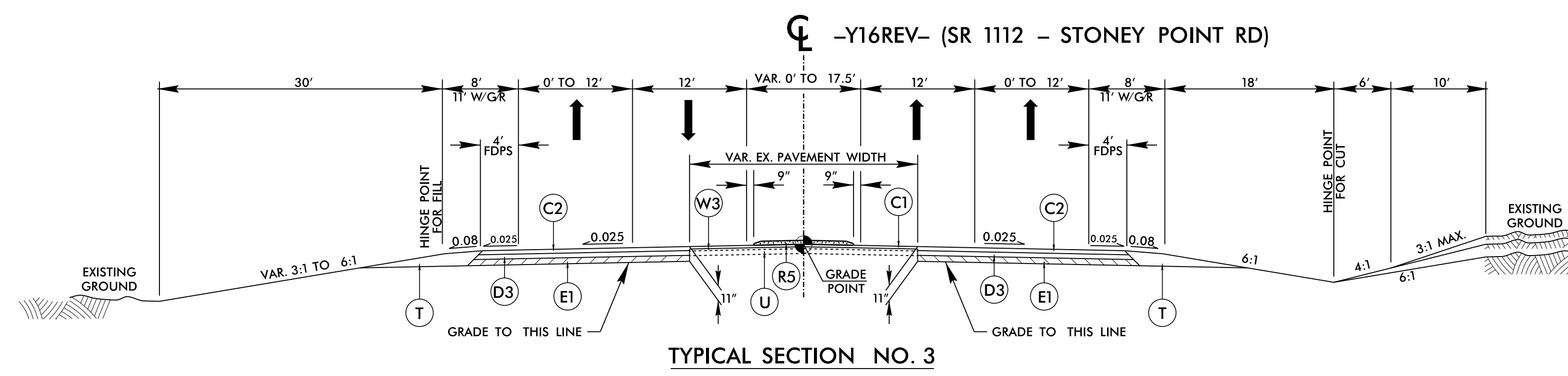
USE TYPICAL SECTION NO. 1A AS FOLLOWS:  
 -L- STA. 580+00.00 TO 587+59.50 (BEGIN EXISTING BRIDGE)  
 -L- STA. 592+53.71 (END EXISTING BRIDGE) TO 604+15.50 (BEGIN EXISTING BRIDGE)



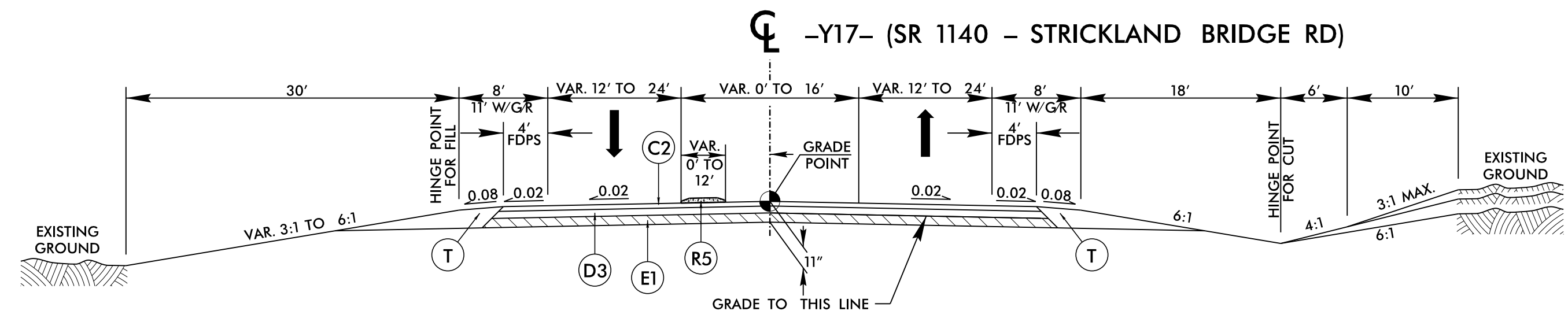
USE TYPICAL SECTION NO. 2 AS FOLLOWS:  
 -Y17RPA- STA. 10+00.00 TO 33+25.56  
 -Y17RPB- STA. 10+00.00 TO 31+23.54 (MIRRORED TYPICAL)  
 -Y17RPC- STA. 10+00.00 TO 36+07.93  
 -Y17RPD- STA. 10+00.00 TO 24+44.52 (MIRRORED TYPICAL)

FINAL PAVEMENT SCHEDULE	
C1	1.5" S9.5B
C2	3" S9.5B
C4	3" S9.5C
D1	2.5" I19.0C
D2	3" I19.0C
D3	4" I19.0C
E1	4" B25.0C
E2	5" B25.0C
J1	PROP. 8" AGGREGATE BASE COURSE
R5	5" KEYED IN MONOLITHIC CONCRETE ISLAND
T	EARTH MATERIAL
U	EXISTING PAVEMENT
W1	WEDGING
V	RUMBLE STRIP

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



USE TYPICAL SECTION NO. 3 AS FOLLOWS:  
 -Y16REV- STA. 57+24.93 TO 62+50.00



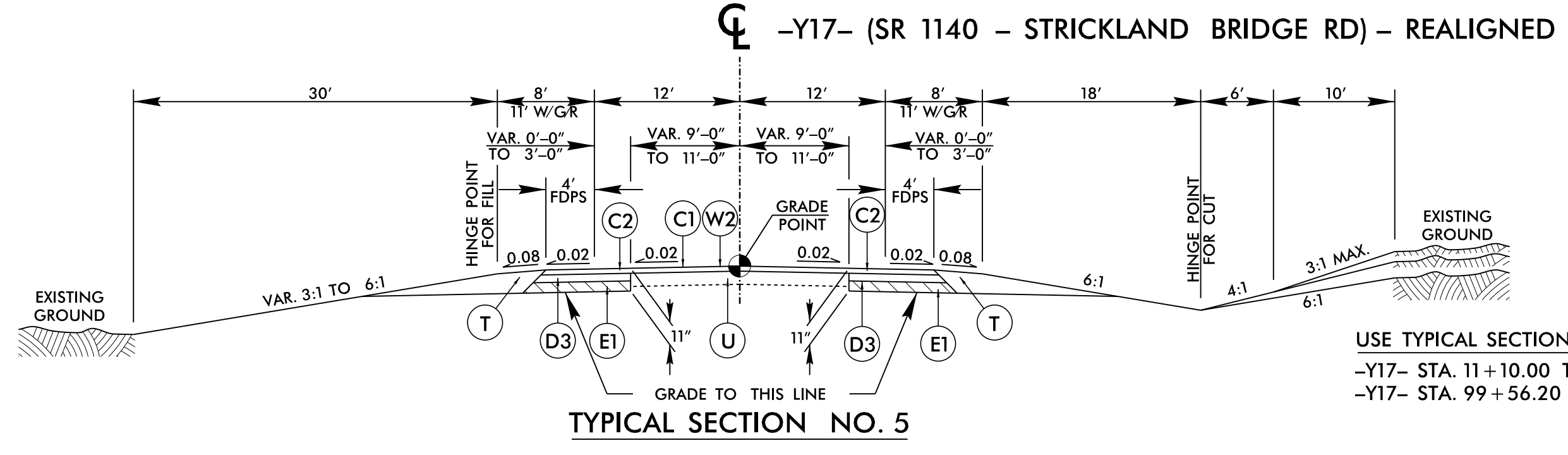
USE TYPICAL SECTION NO. 4 AS FOLLOWS:  
 -Y17- STA. 18+00.00 TO 61+98.00  
 -Y17- STA. 91+12.69 TO 99+56.20

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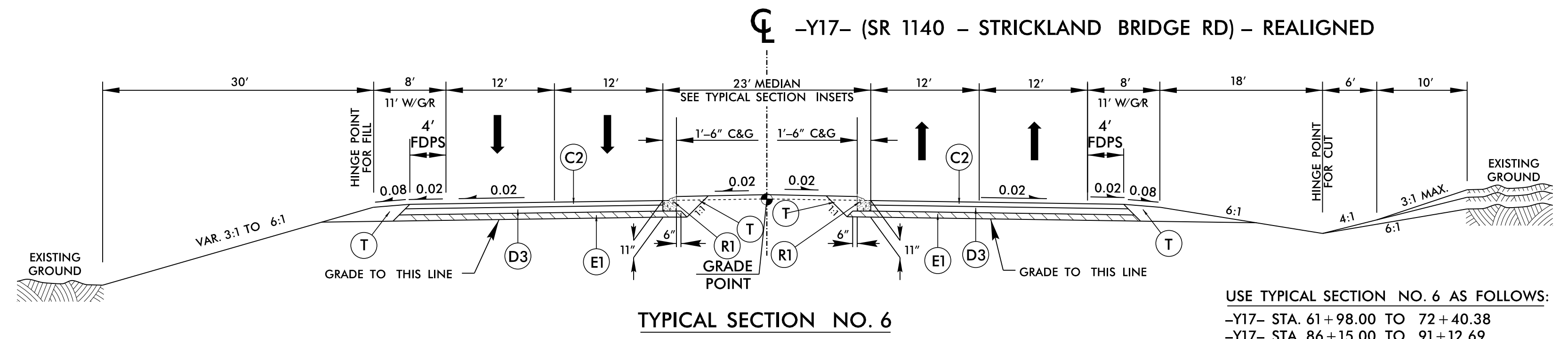
6/2/2019

FINAL PAVEMENT SCHEDULE	
C1	1.5" S9.5B
C2	3" S9.5B
D3	4" I19.0C
E1	4" B25.0C
J1	PROP. 8" AGGREGATE BASE COURSE
R1	1'-6" CURB AND GUTTER
R2	2'-9" CURB AND GUTTER
R5	5" KEYED IN MONOLITHIC CONCRETE ISLAND
T	EARTH MATERIAL
U	EXISTING PAVEMENT
W1	WEDGING
W2	WEDGING

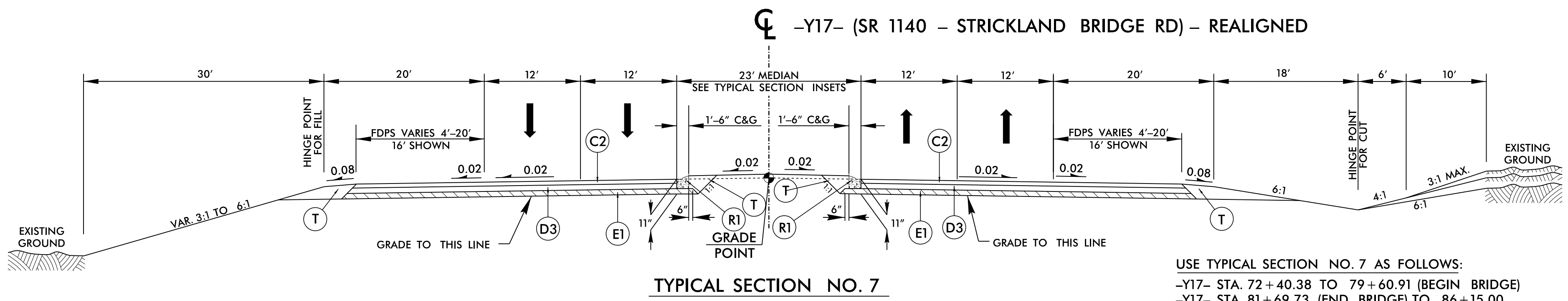
NOTE: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE



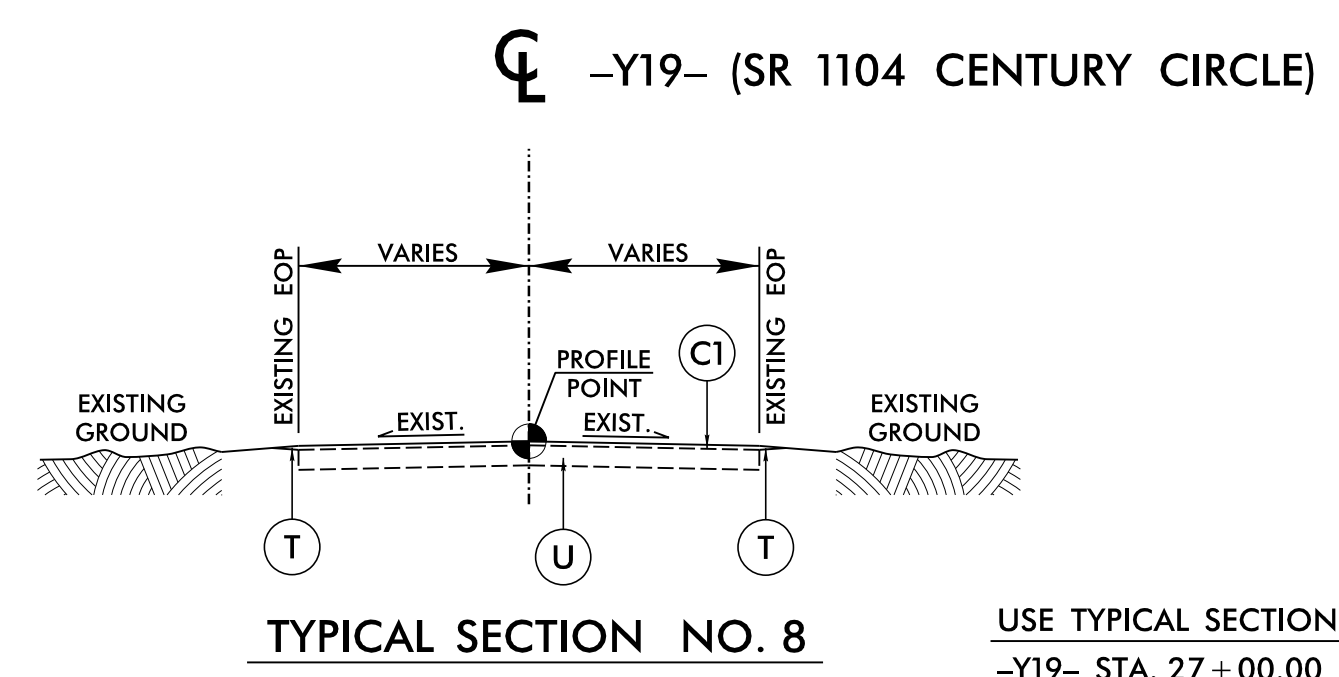
USE TYPICAL SECTION NO. 5 AS FOLLOWS:  
 -Y17- STA. 11+10.00 TO 18+00.00  
 -Y17- STA. 99+56.20 TO 106+00.00



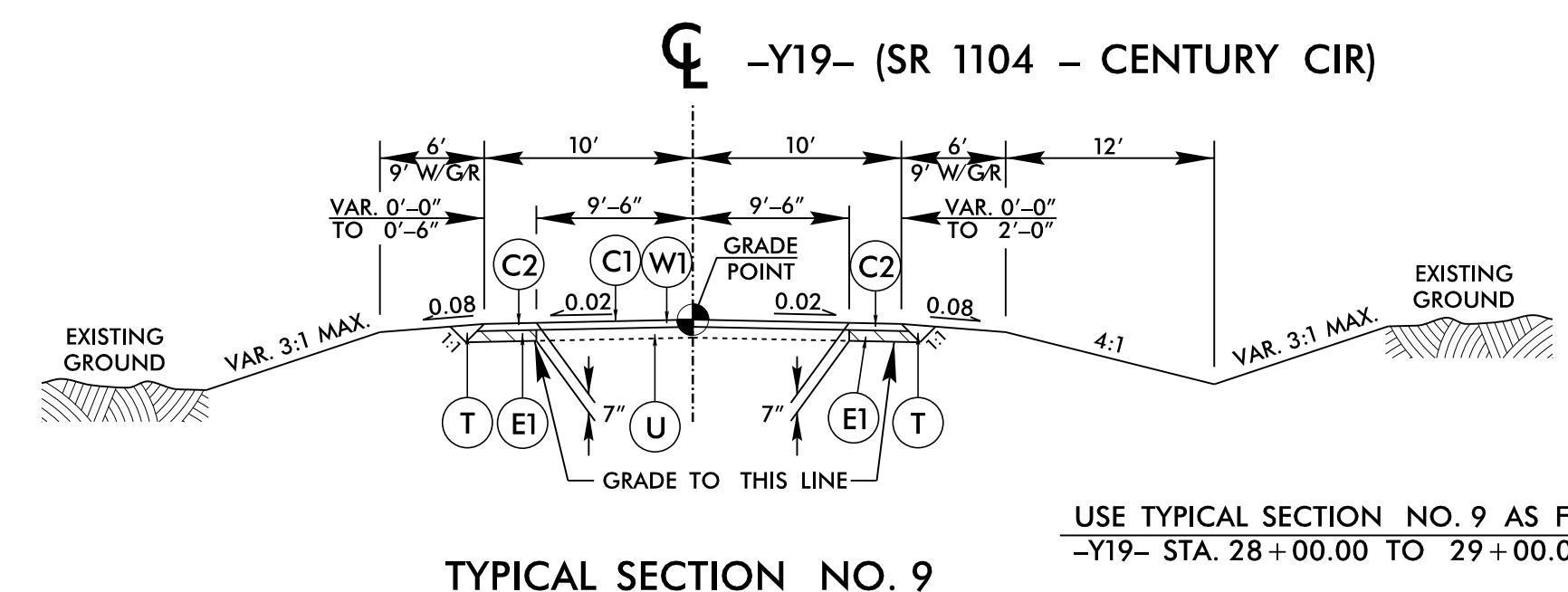
USE TYPICAL SECTION NO. 6 AS FOLLOWS:  
 -Y17- STA. 61+98.00 TO 72+40.38  
 -Y17- STA. 86+15.00 TO 91+12.69  
 NOTE: SEE INSET A  
 SEE INSET B



USE TYPICAL SECTION NO. 7 AS FOLLOWS:  
 -Y17- STA. 72+40.38 TO 79+60.91 (BEGIN BRIDGE)  
 -Y17- STA. 81+69.73 (END BRIDGE) TO 86+15.00



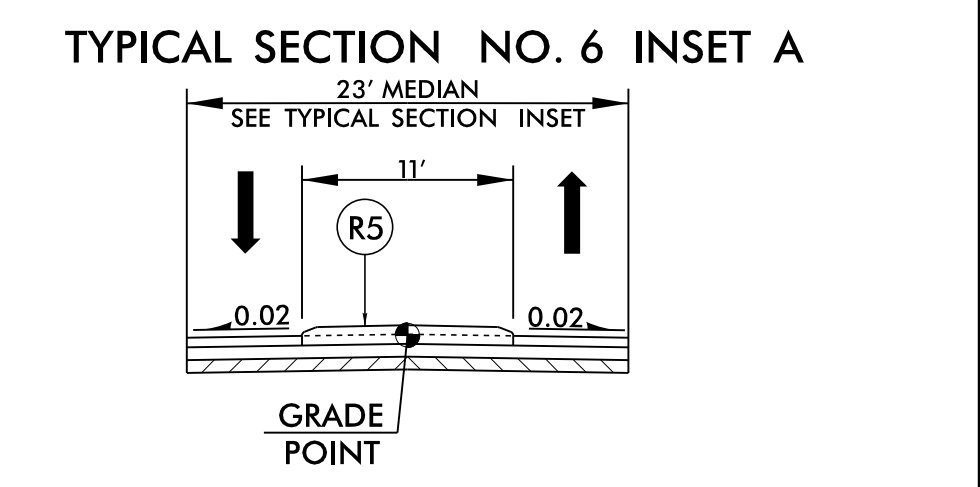
USE TYPICAL SECTION NO. 8 AS FOLLOWS:  
 -Y19- STA. 27+00.00 TO 28+00.00



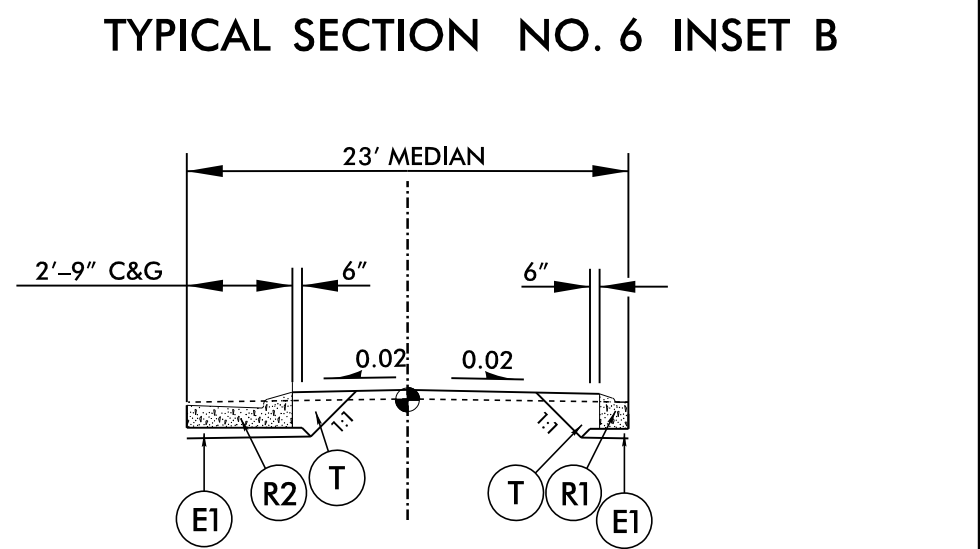
USE TYPICAL SECTION NO. 9 AS FOLLOWS:  
 -Y19- STA. 28+00.00 TO 29+00.00



PROJECT REFERENCE NO. <b>U-2519BB</b>	SHEET NO. <b>2A-3</b>
ROADWAY DESIGN ENGINEER 3/22/2022 SEAL 017265 Steve Anthony Dean	PAVEMENT DESIGN ENGINEER 3/18/2022 SEAL 022896 Clark S. Morrison
<b>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</b>	



USE TYPICAL SECTION NO. 6 INSET A AS FOLLOWS:  
 -Y17- STA. 61+98.00 TO 64+84.40  
 -Y17- STA. 72+99.50 TO 79+60.91 (BEGIN BRIDGE)  
 -Y17- STA. 81+69.73 (END BRIDGE) TO 85+61.50



USE TYPICAL SECTION NO. 6 INSET B AS FOLLOWS:  
 -Y17- STA. 86+61.00 TO 91+06.77  
 SEE SHEET 2-C3 FOR DETAIL

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6/2/2019

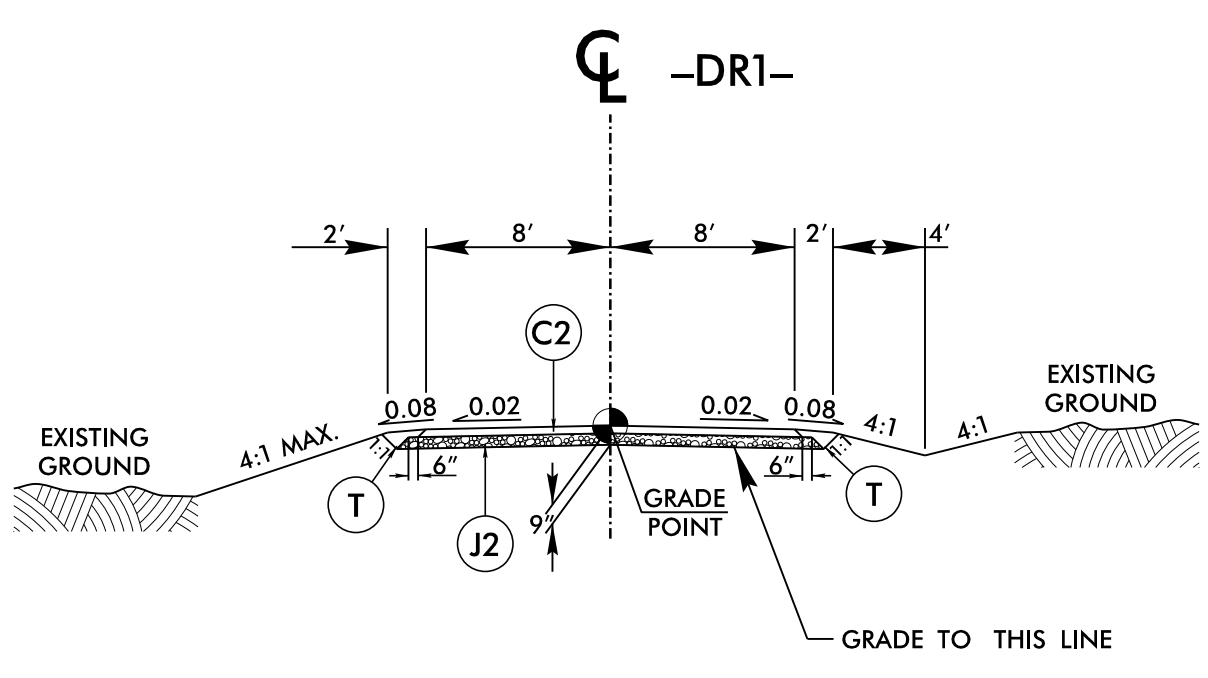
FINAL PAVEMENT SCHEDULE	
A1	6" CONCRETE
C1	1.5" S9.5B
C2	3" S9.5B
D3	4" I19.0C
E1	4" B25.0C
J1	PROP. 8" AGGREGATE BASE COURSE
J2	PROP. 6" AGGREGATE BASE COURSE
R1	1'-6" CURB AND GUTTER
R5	5" KEYED IN MONOLITHIC CONCRETE ISLAND
T	EARTH MATERIAL
U	EXISTING PAVEMENT

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



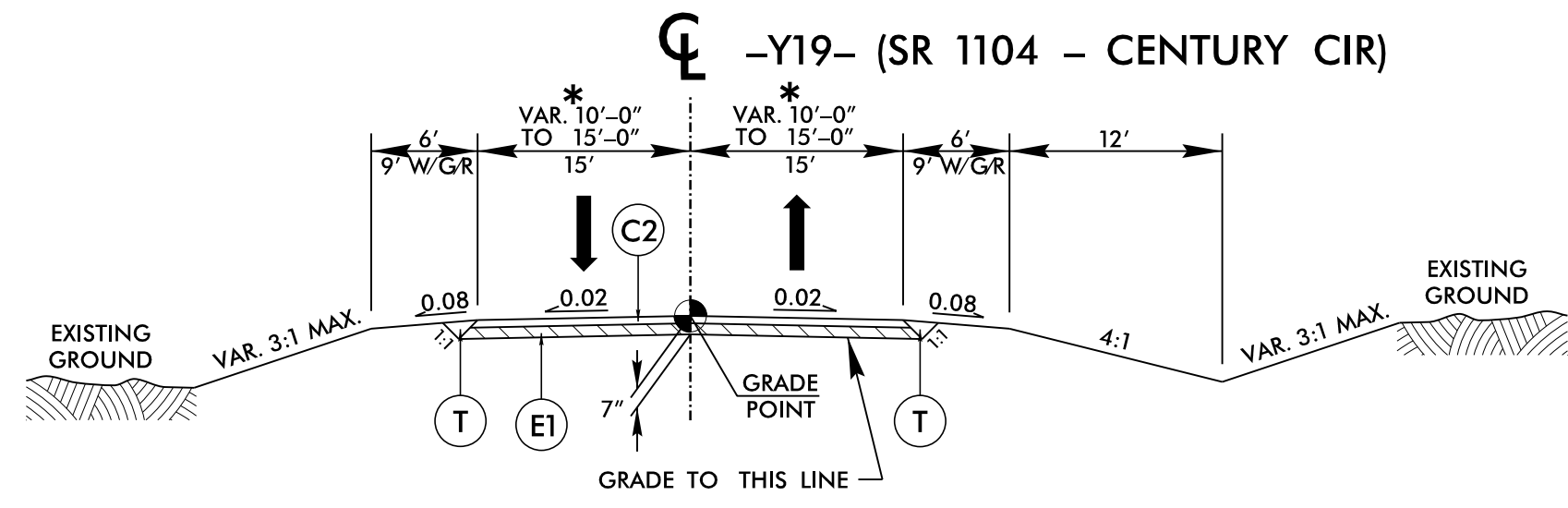
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ROADWAY DESIGN ENGINEER 3/22/2022 SEAL 017265 STIVE ANTHONY DRUM	PAVEMENT DESIGN ENGINEER 3/18/2022 SEAL 022896 CLARK S. MORRISON

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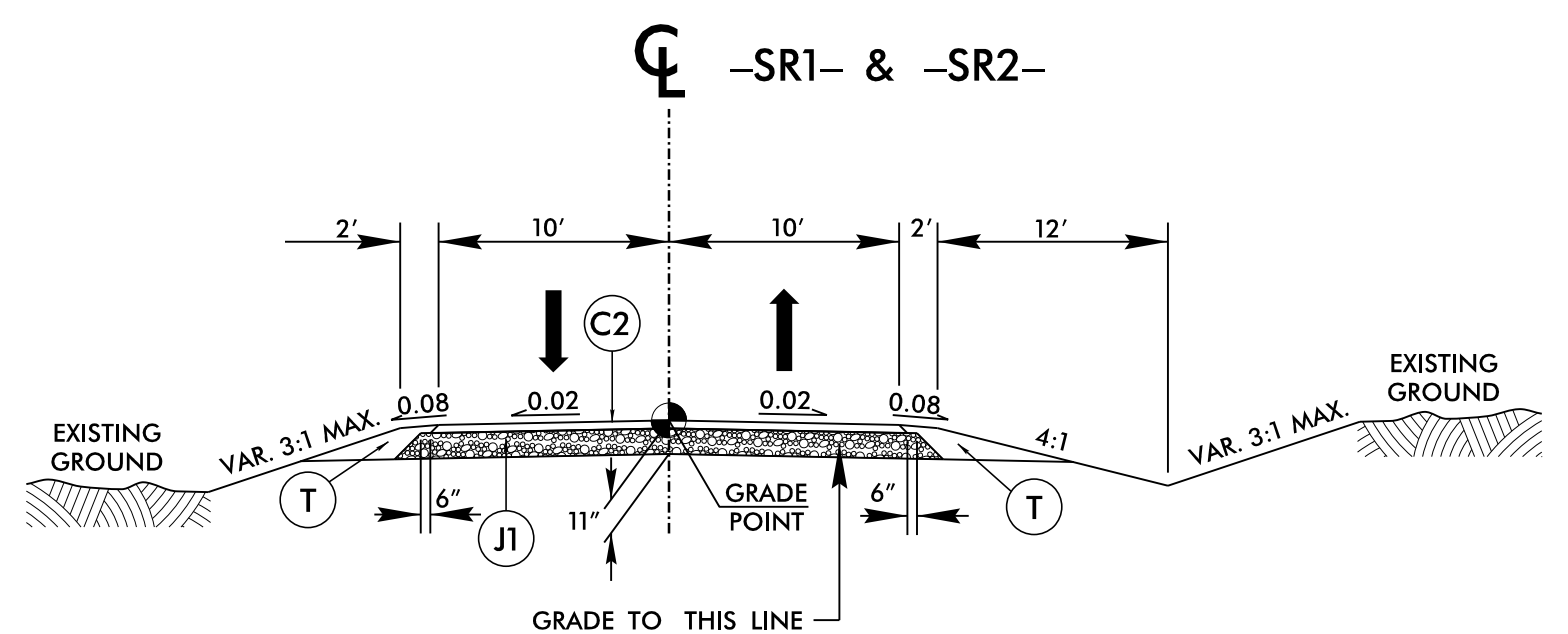
TYPICAL SECTION NO. 10

USE TYPICAL SECTION NO. 10 AS FOLLOWS:  
-DR1- STA. 10+00.00 TO 17+96.46



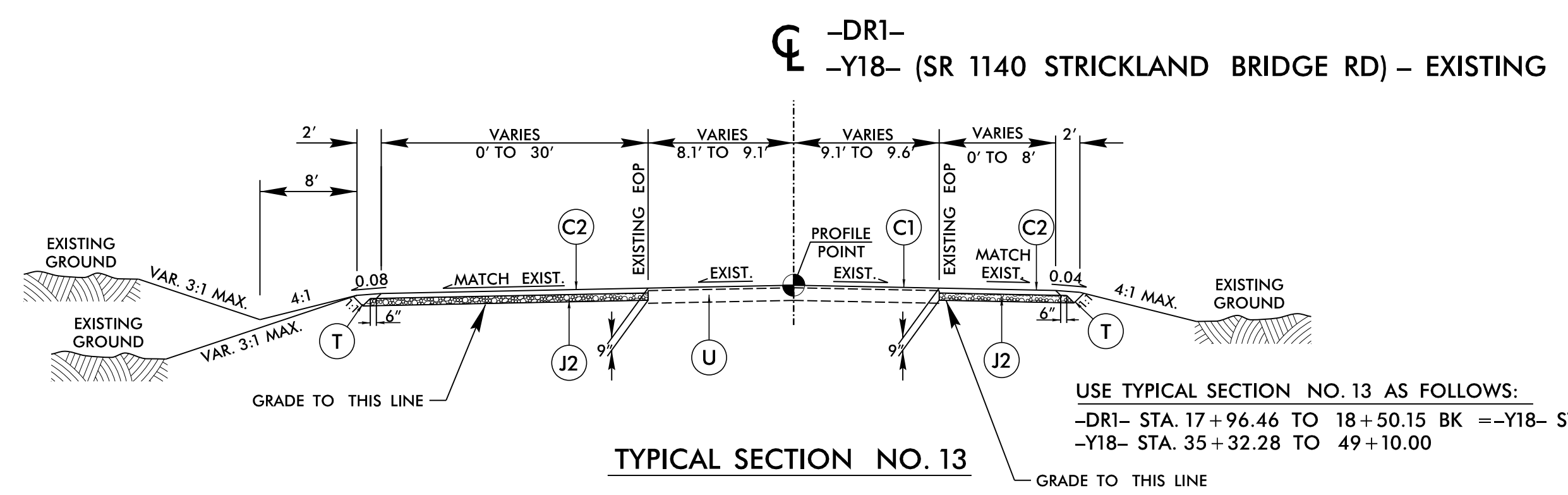
TYPICAL SECTION NO. 11

USE TYPICAL SECTION NO. 11 AS FOLLOWS:  
\* -Y19- STA. 29+00.00 TO 32+59.69  
-Y19- STA. 32+96.94 TO 36+71.95



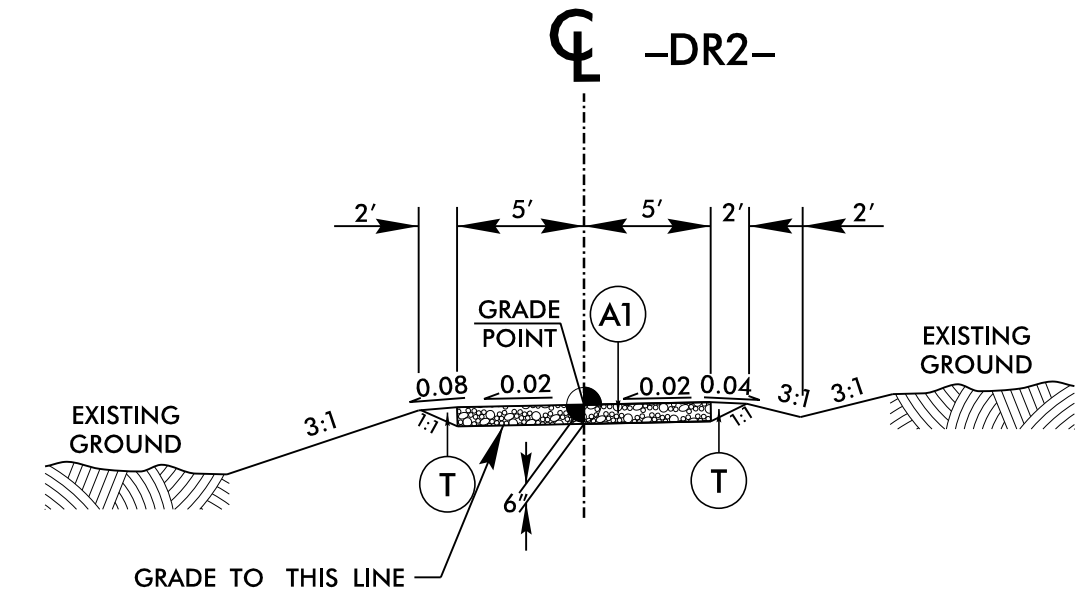
TYPICAL SECTION NO. 12

USE TYPICAL SECTION NO. 12 AS FOLLOWS:  
-SR1- STA. 10+31.00 TO 26+58.23  
-SR2- STA. 10+10.14 TO 16+47.00



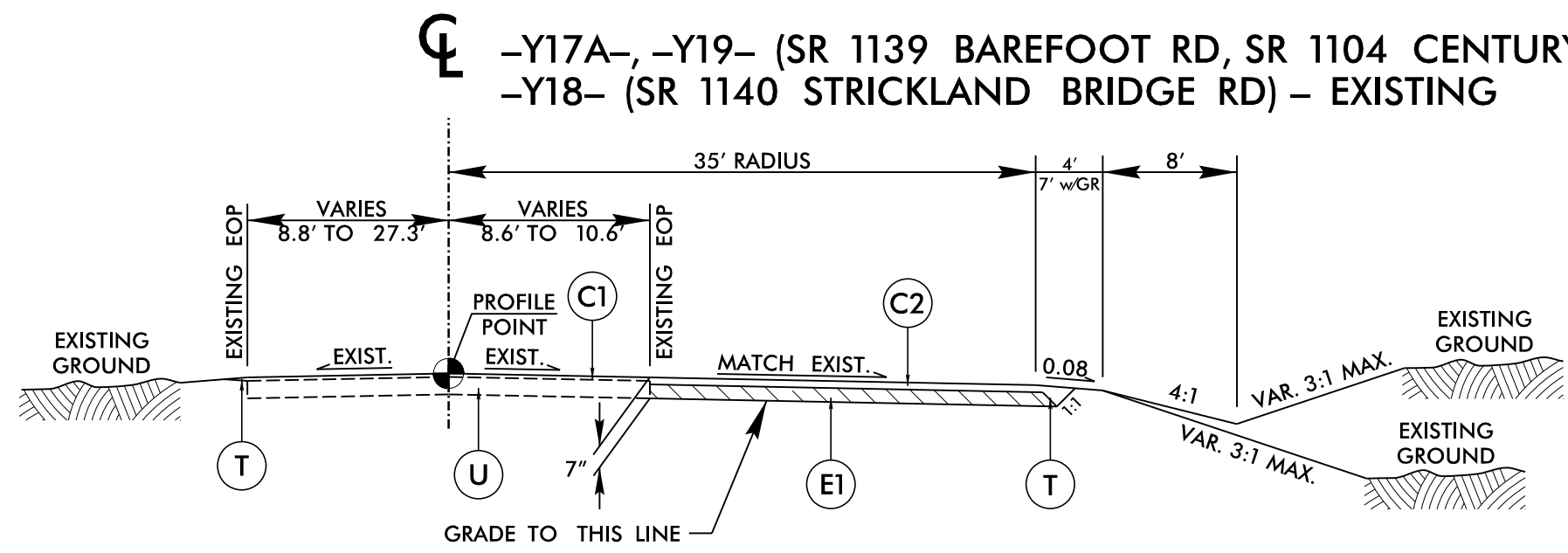
TYPICAL SECTION NO. 13

USE TYPICAL SECTION NO. 13 AS FOLLOWS:  
-DR1- STA. 17+96.46 TO 18+50.15 BK --Y18- STA. 35+32.28 AH  
-Y18- STA. 35+32.28 TO 49+10.00



TYPICAL SECTION NO. 14

USE TYPICAL SECTION NO. 14 AS FOLLOWS:  
-DR2- STA. 10+00.00 TO 11+60.00



CUL-DE-SAC WIDENING DETAIL NO. 1

USE CUL-DE-SAC WIDENING AS FOLLOWS:  
-Y17A- STA. 18+68.82 TO 19+70.51 (MIRRORED TYPICAL)  
-Y19- STA. 15+00.00 TO 15+96.41 (MIRRORED TYPICAL)  
-Y19- STA. 21+20.33 TO 22+25.00  
-Y18- STA. 14+30.00 TO 15+33.97  
-Y18- STA. 49+10.00 TO 50+11.34 (MIRRORED TYPICAL)

6/10/2022  
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E:\C:\Users\jmorrisson

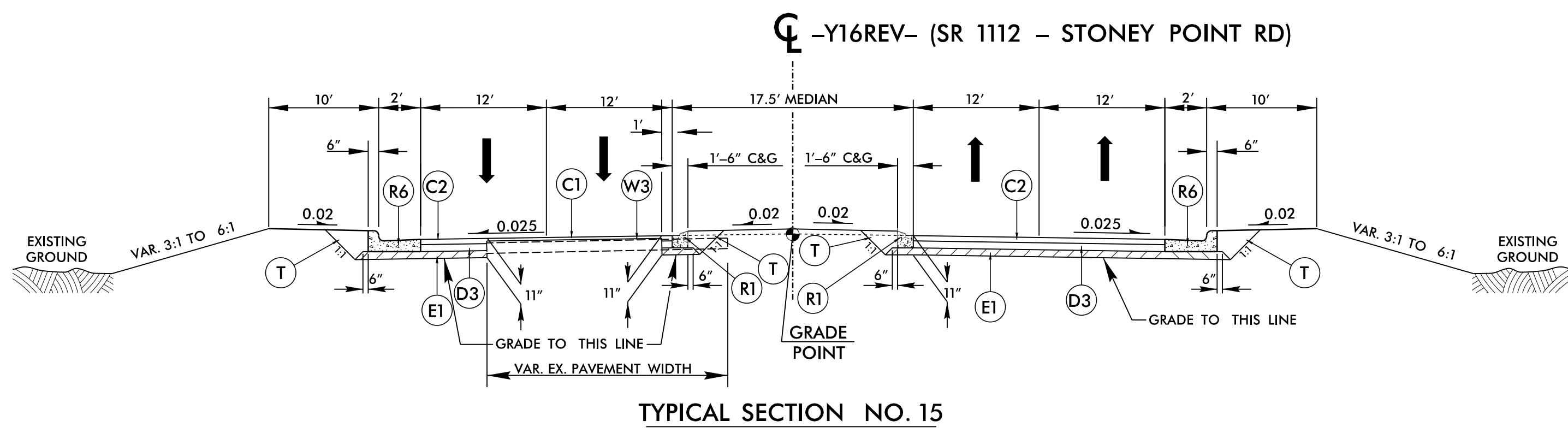
6/2/2022

FINAL PAVEMENT SCHEDULE	
A1	6" CONCRETE
C1	1.5" S9.5B
C2	3" S9.5B
C3	VAR. DEPTH S9.5B
D3	4" I19.0C
E1	4" B25.0C
J1	PROP. 8" AGGREGATE BASE COURSE
J2	PROP. 6" AGGREGATE BASE COURSE
R1	1'-6" CURB AND GUTTER
R5	5" KEYED IN MONOLITHIC CONCRETE ISLAND
R6	2'-6" CURB AND GUTTER
T	EARTH MATERIAL
U	EXISTING PAVEMENT
W3	WEDGING

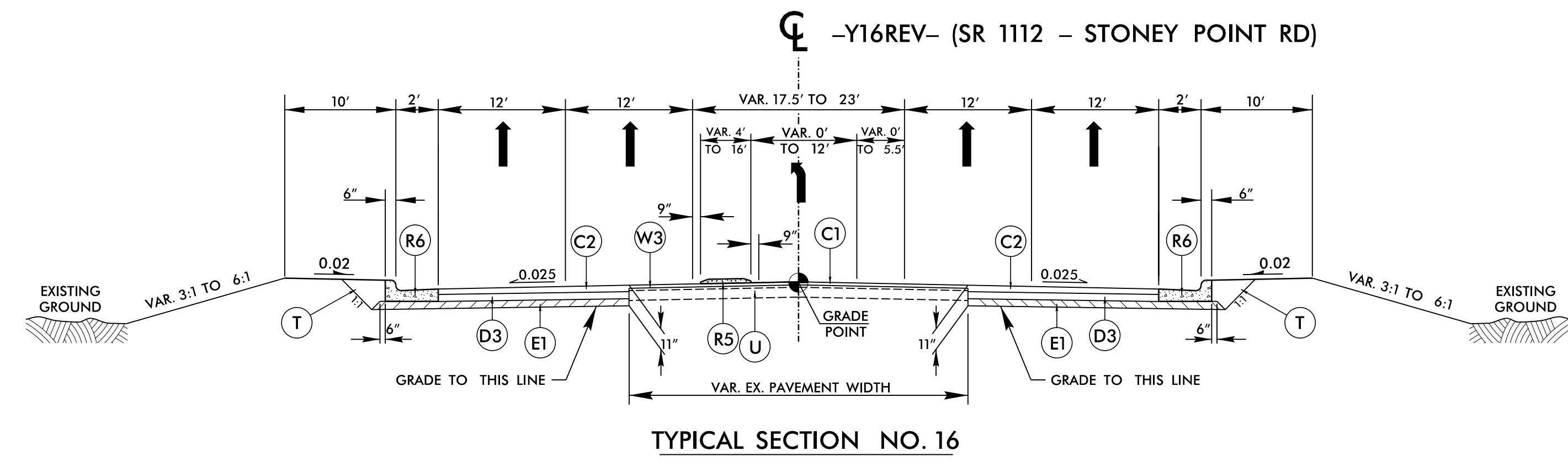
NOTE: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE

**NV5**  
 NV5 ENGINEERS & CONSULTANTS, INC.  
 3300 REGENCY PARKWAY, SUITE 100  
 ORY, NC 27518  
 P: 919.851.1912 www.NV5.com  
 NC License # F-5333  
 formerly CALVX Engineers & Consultants

PROJECT REFERENCE NO. <b>U-2519BB</b>	SHEET NO. <b>2A-5</b>
ROADWAY DESIGN ENGINEER 3/22/2022 <i>Steve Anthony Down</i>	PAVEMENT DESIGN ENGINEER 3/18/2022 <i>Clark S. Morrison</i>
<b>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</b>	



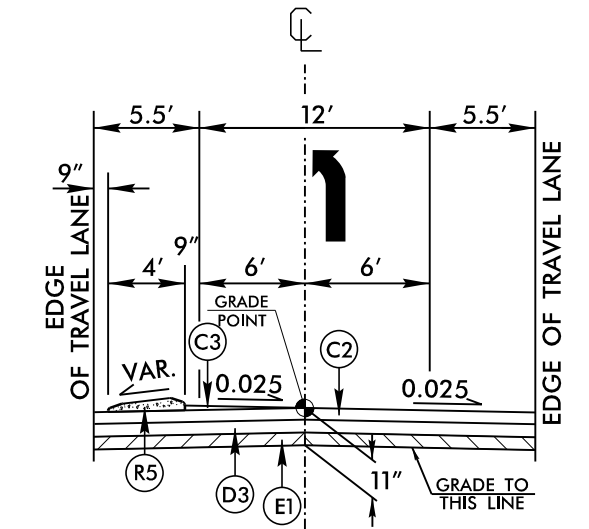
USE TYPICAL SECTION NO. 15 AS FOLLOWS:  
 -Y16REV- STA. 45+20.00 TO 47+66.00



USE TYPICAL SECTION NO. 16 AS FOLLOWS:  
 -Y16REV- STA. 47+66.00 TO 53+82.05  
 -Y16REV- STA. 54+22.05 TO 57+24.93 (MIRRORED TYPICAL)

NOTE:  
 SEE PLANS FOR TURN LANES  
 SEE INSET A

**TYPICAL SECTION NO. 16 INSET A**



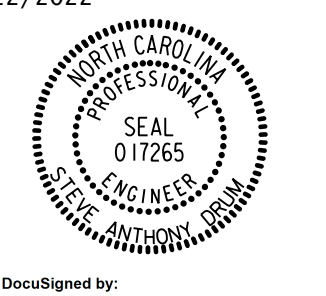
USE TYPICAL SECTION NO. 16 INSET A AS FOLLOWS:  
 -Y16REV- STA. 48+50.00 TO -Y16REV- STA. 53+18.00  
 -Y16REV- STA. 54+85.00 TO -Y16REV- STA. 57+88.00 (MIRRORED TYPICAL DETAIL)

2/10/2022  
 R:\Projects\2519BB\RDY\_TYP.dgn  
 F:\C:\Users\jmorris\Documents



6/2/2022

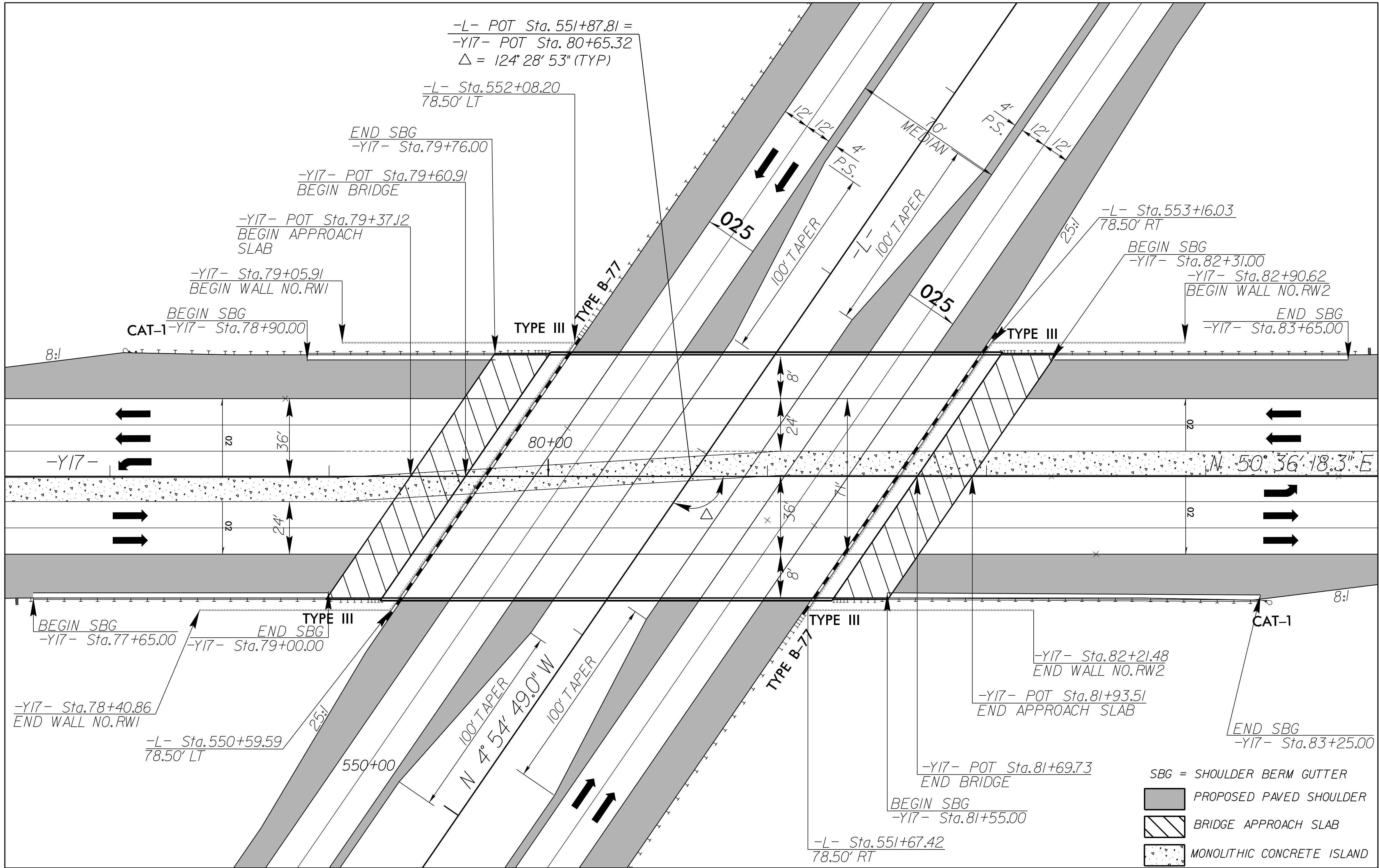
**NV5**  
 NV5 ENGINEERS & CONSULTANTS, INC.  
 3300 REGENCY PARKWAY, SUITE 100  
 CARY, NC 27518  
 P: 919.851.1912 www.NV5.com  
 NC License # F-1333  
 formerly NV5 Engineers & Consultants



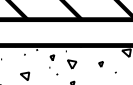
PROJECT REFERENCE NO. U-2519BB	SHEET NO. 2B-1
ROADWAY DESIGN ENGINEER 3/22/2022	
	
Documented by: Steve Anthony Dray DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

# DETAIL SHOWING BRIDGE /PAVEMENT RELATIONSHIP

## -Y17- SR 1140 (STRICKLAND BRIDGE ROAD) OVER -L- (FAYETTEVILLE OUTER LOOP)

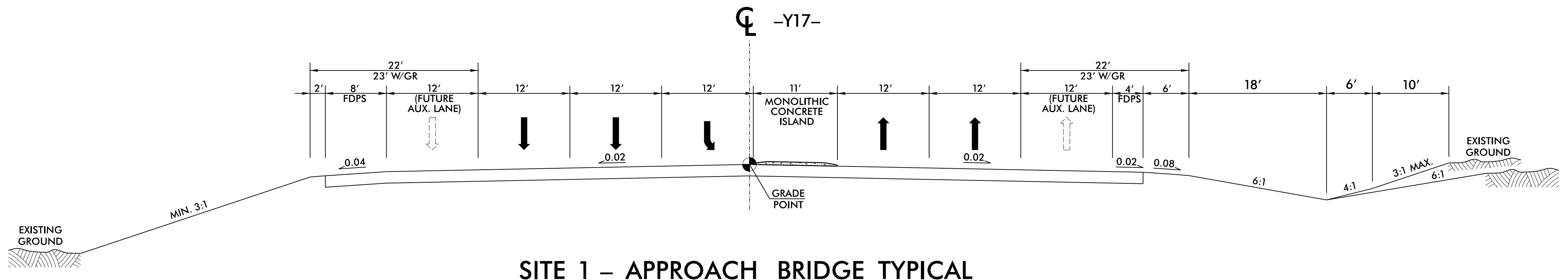
NOT TO SCALE



- SBG = SHOULDER BERM GUTTER
-  PROPOSED PAVED SHOULDER
-  BRIDGE APPROACH SLAB
-  MONOLITHIC CONCRETE ISLAND

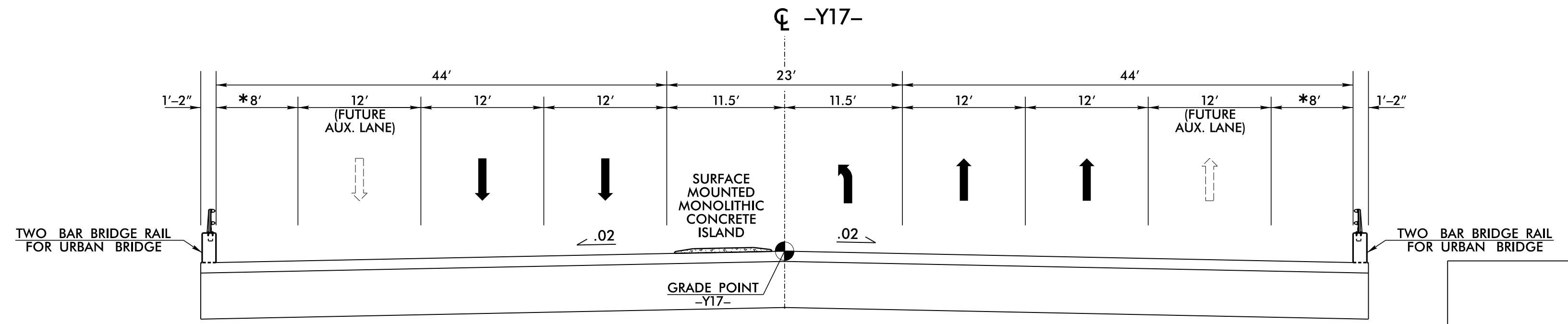
2/10/2022  
B:\Projects\2022\U2519BB\RDY\_STR\_REC\_2B-1.dgn  
Steve Anthony Dray  
Professional Engineer

PROJECT REFERENCE NO. <b>U-2519BB</b>	SHEET NO. <b>2B-2</b>
RW SHEET NO.	
ROADWAY DESIGN ENGINEER 3/23/2022	
Documented by <b>Steve Anthony Drann</b>	
<b>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</b>	



**SITE 1 – APPROACH BRIDGE TYPICAL**

STRUCTURE ON (-Y17-)



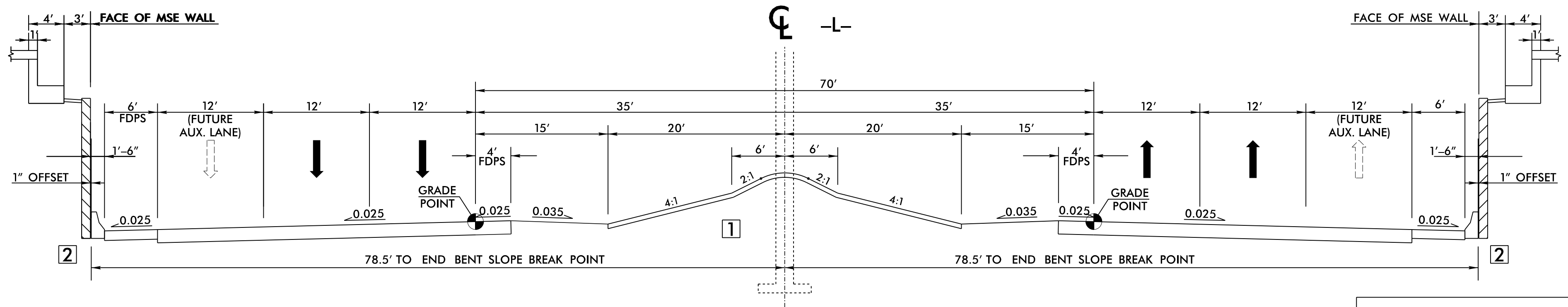
**SITE 1 – TYPICAL ON BRIDGE**

STRUCTURE ON (-Y17-)  
-Y17- STA. 79 + 60.91 (BEGIN BRIDGE) TO 81 + 69.73 (END BRIDGE)

**-Y17-**

2022 ADT = 14,570	TTST = 1%
2042 ADT = 21,045	DUAL = 2%
	K = 9%
	DIR = 60%

**FUNCTIONAL CLASS.: URBAN COLLECTOR**  
\*8' SHOULDERS AND 2 BAR BRIDGE RAIL FOR BRIDGE WITHIN AN URBAN BOUNDARY AND FUTURE SIDEWALK.



**SITE 1 – TYPICAL UNDER BRIDGE**

(-L-)

- 1 SEE NCDOT STD. 225.08
- 2 SEE NCDOT STD. 610.04

NOTES: 1. TYPICAL SECTION ON ROADWAY UNDER STRUCTURE  
MINIMUM VERTICAL CLEARANCE OVER FREEWAY = 17'-6"

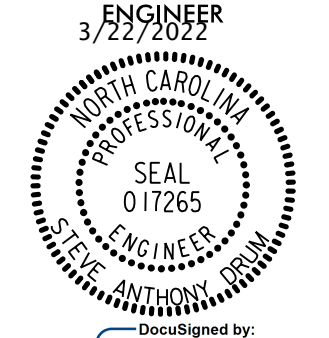
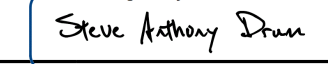
**-L-**

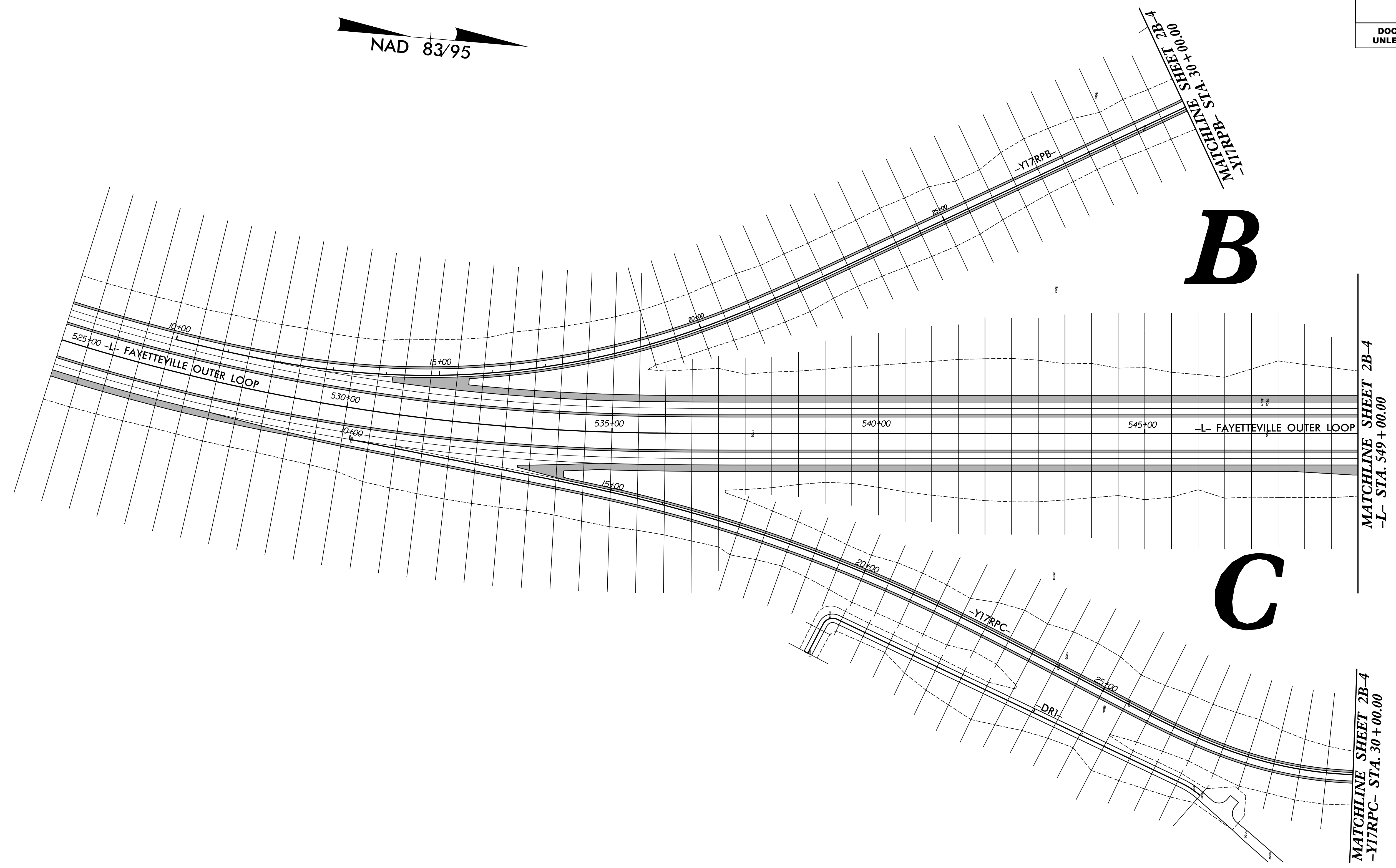
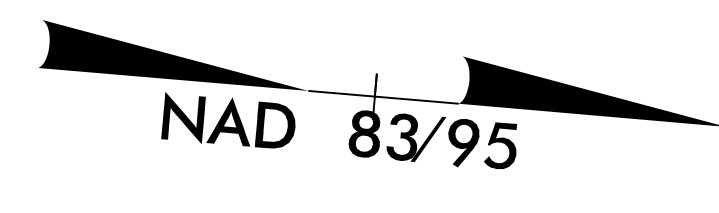
2022 ADT = 39,275	TTST = 4%
2042 ADT = 48,645	DUAL = 8%
	K = 8%
	DIR = 55%

**FUNCTIONAL CLASS.: INTERSTATE**

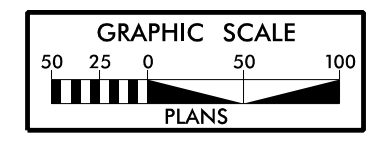
5/14/99

# CROSS SECTION LAYOUT

PROJECT REFERENCE NO. U-2519BB	SHEET NO. 2B-3
RW SHEET NO.	
ROADWAY DESIGN ENGINEER 3/22/2022	
	
Discussed by:  <b>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</b>	

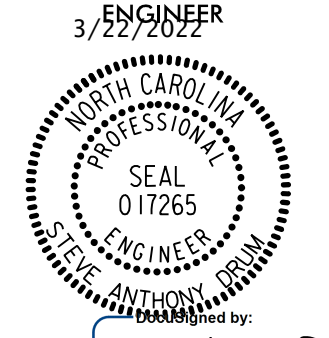


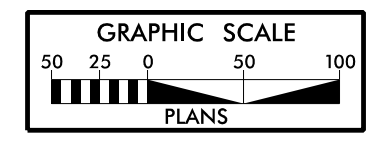
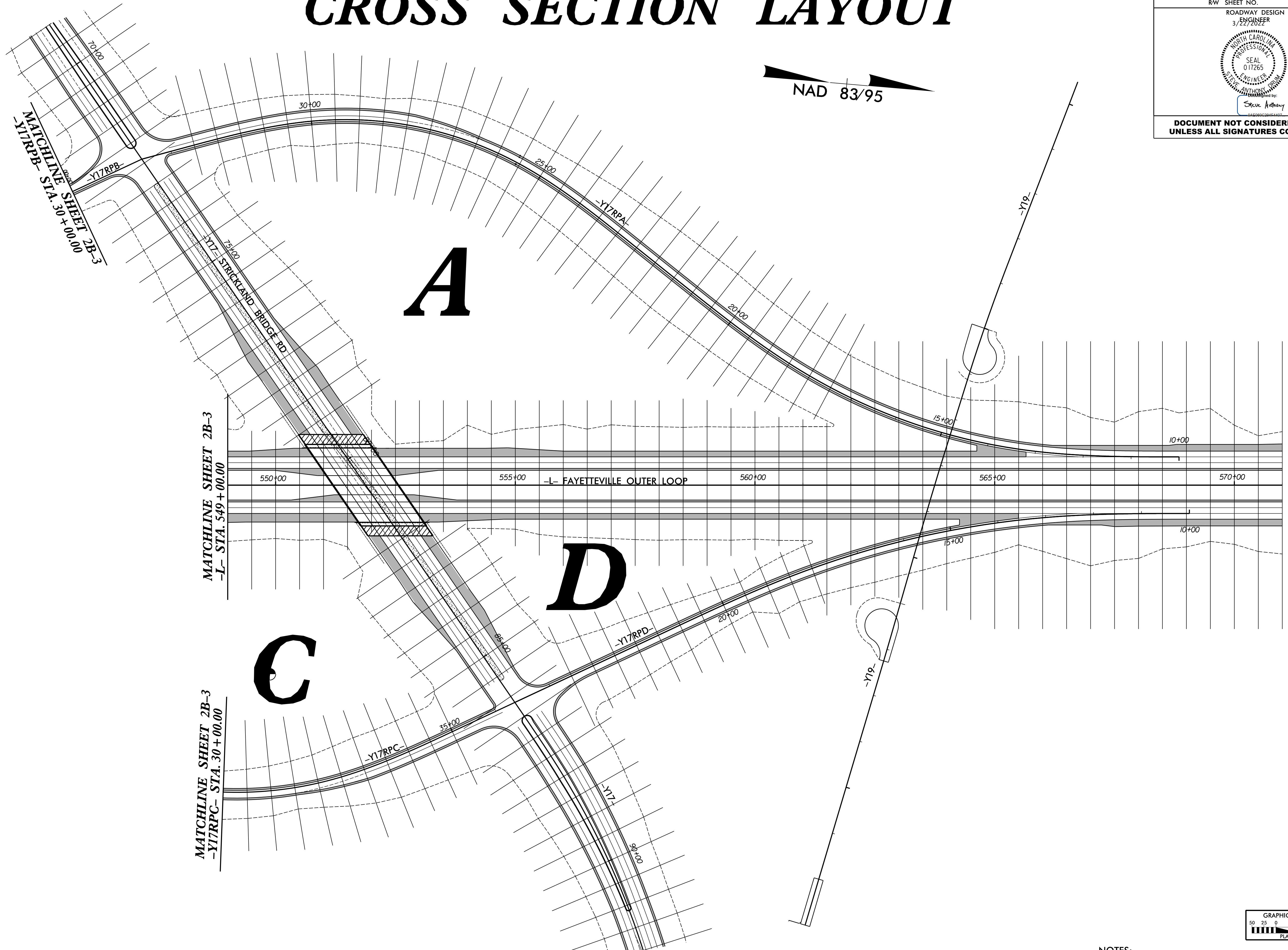
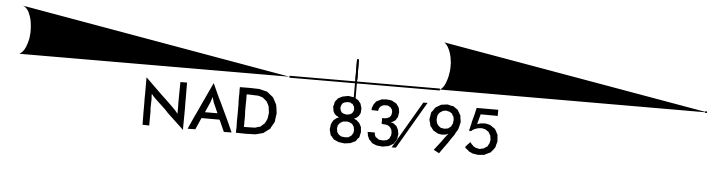
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NOTES:  
SEE SHEETS 4, 5 & 6 FOR INTERCHANGE DESIGN

# CROSS SECTION LAYOUT

PROJECT REFERENCE NO. U-2519BB	SHEET NO. 2B-4
RW SHEET NO.	
ROADWAY DESIGN ENGINEER 3/22/2022	
	
Drawn by: <i>Steve Anthony Dren</i> DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



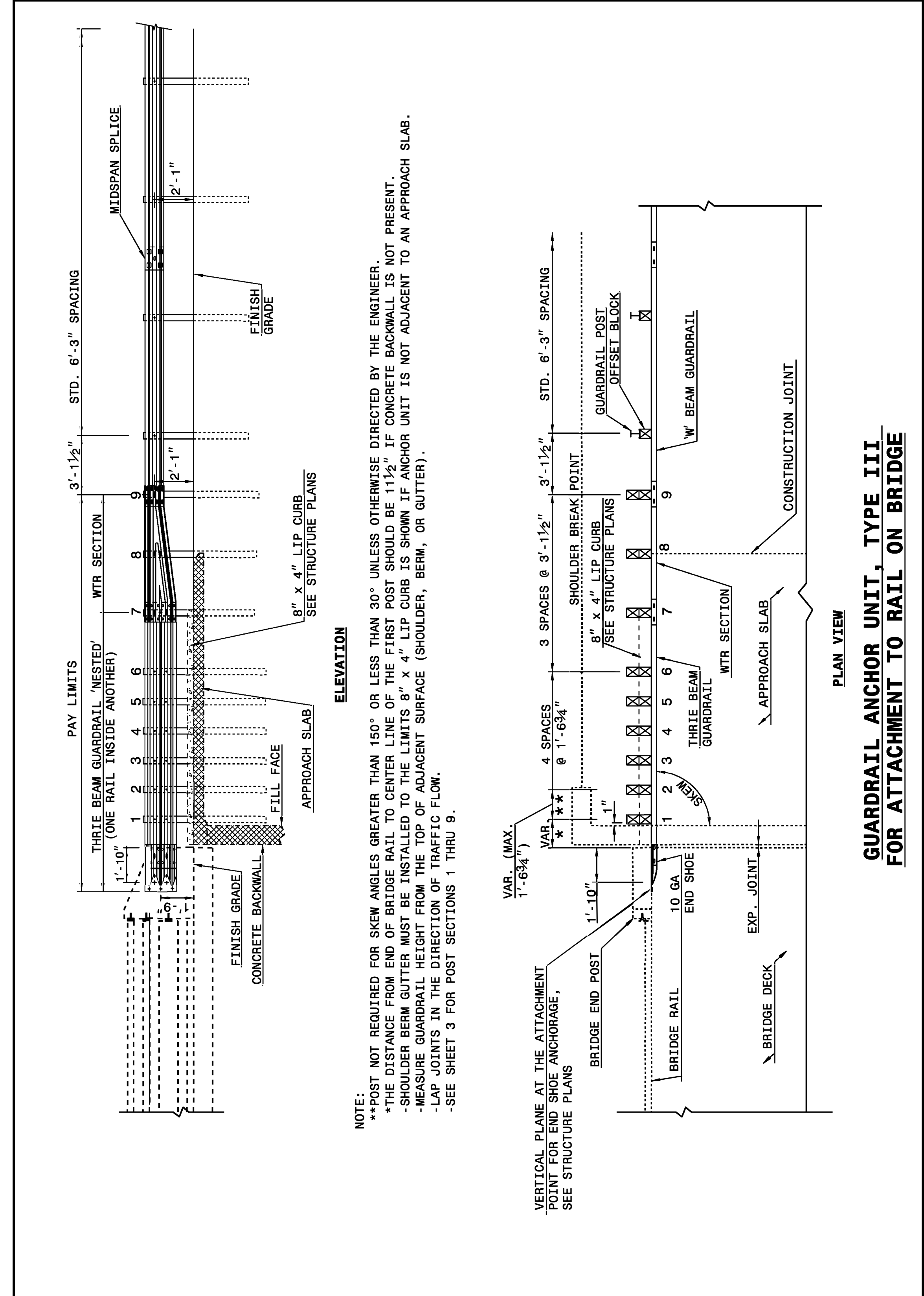
NOTES:  
SEE SHEETS 4, 5 & 6 FOR INTERCHANGE DESIGN

I4-DEC-2017 10:36 S:\Contracts\Drawings\Special Details\Standard Drawings\Division 8\0662d0301.dgn  
 Jhowerton AT: CSU-212955

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.

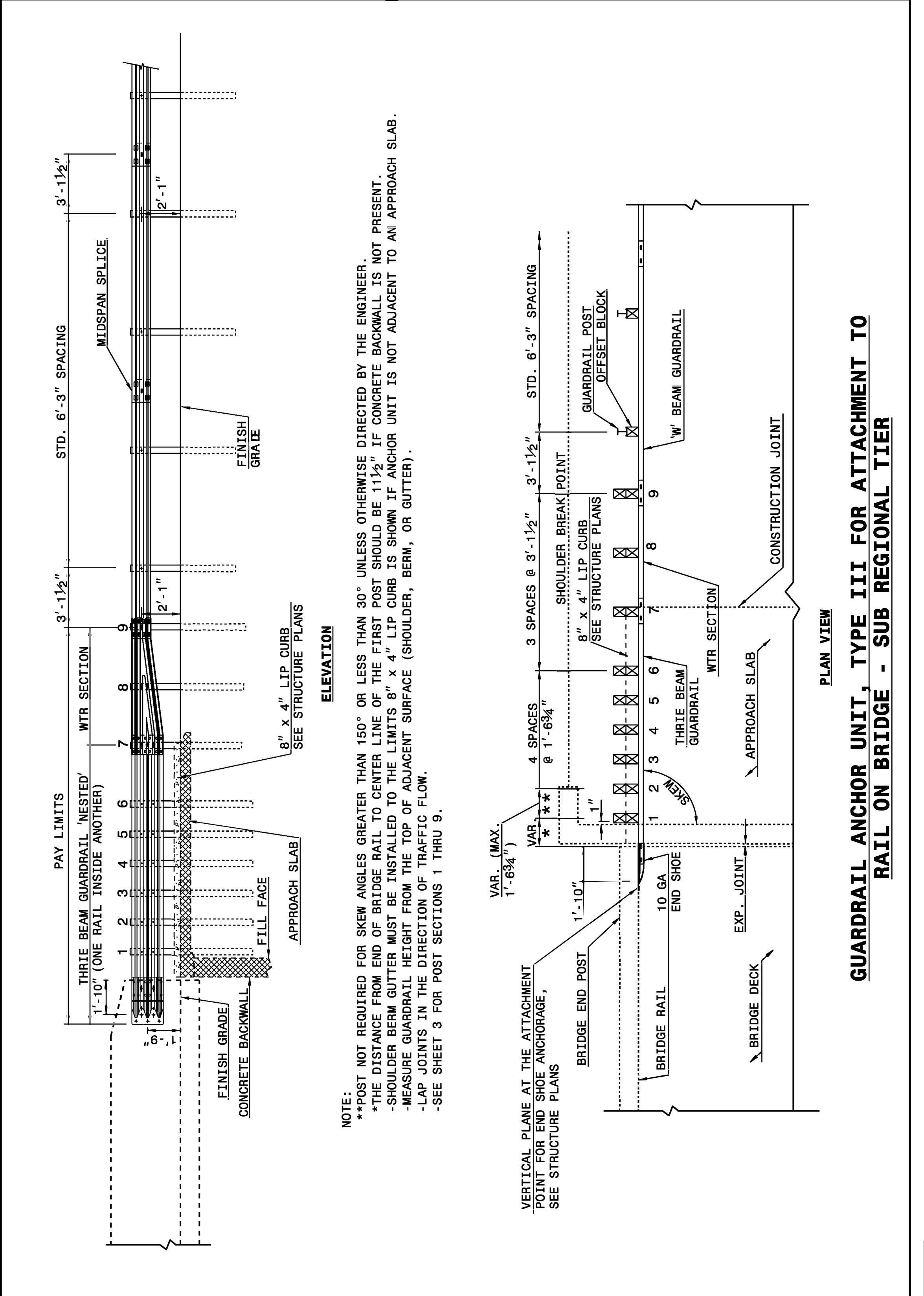
ROADWAY DETAIL DRAWING FOR STRUCTURE ANCHOR UNITS GUARDRAIL ANCHOR UNIT, TYPE III FOR ATTACHMENT TO RAIL ON BRIDGE

SHEET 1 OF 7 **862D03**

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

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**



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

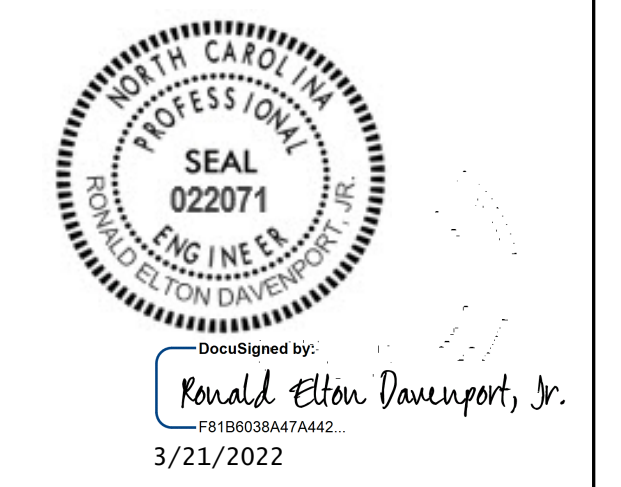
SHEET 2 OF 7 **862D03**

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

**SEE TITLE BLOCK**

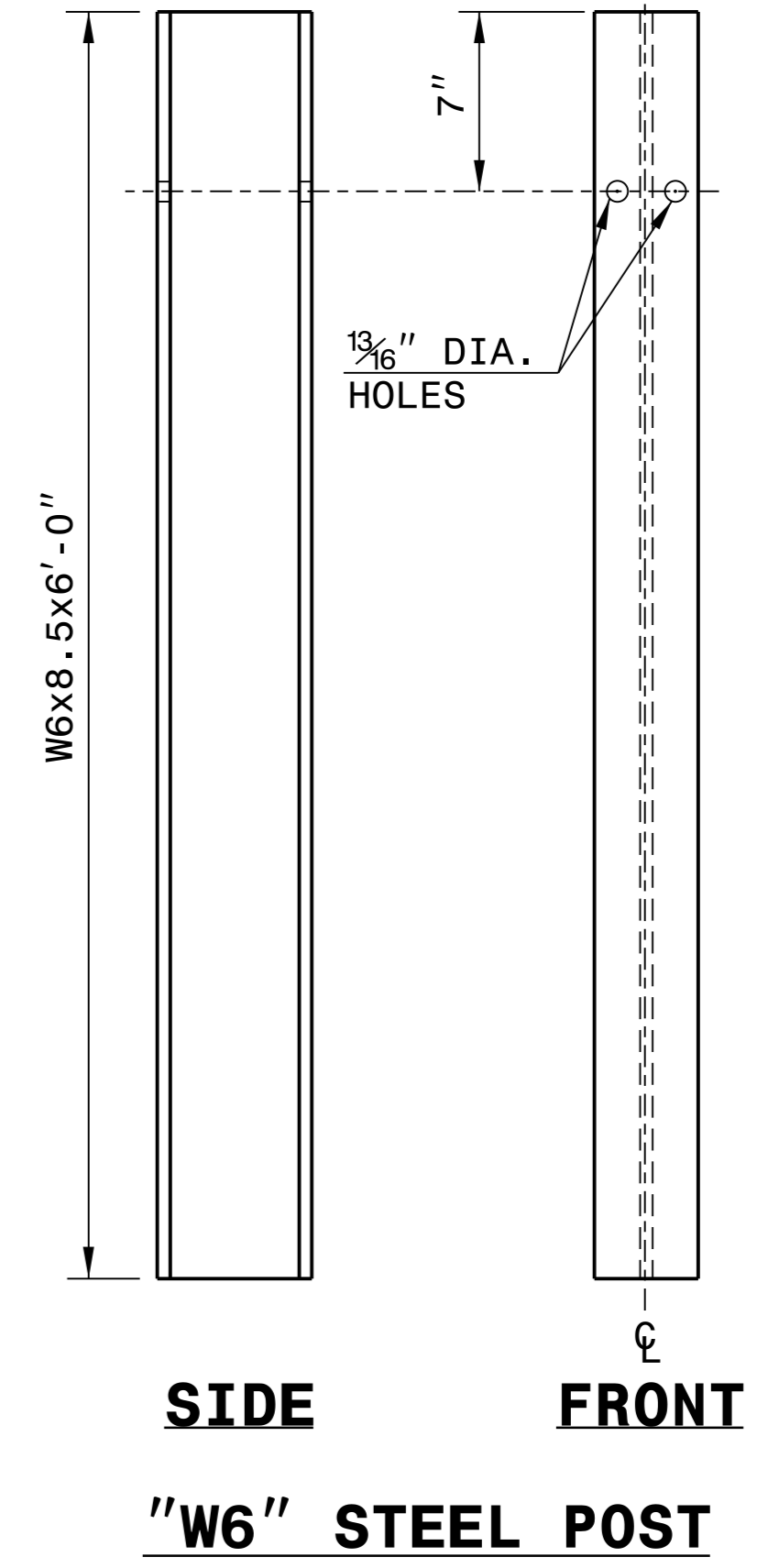
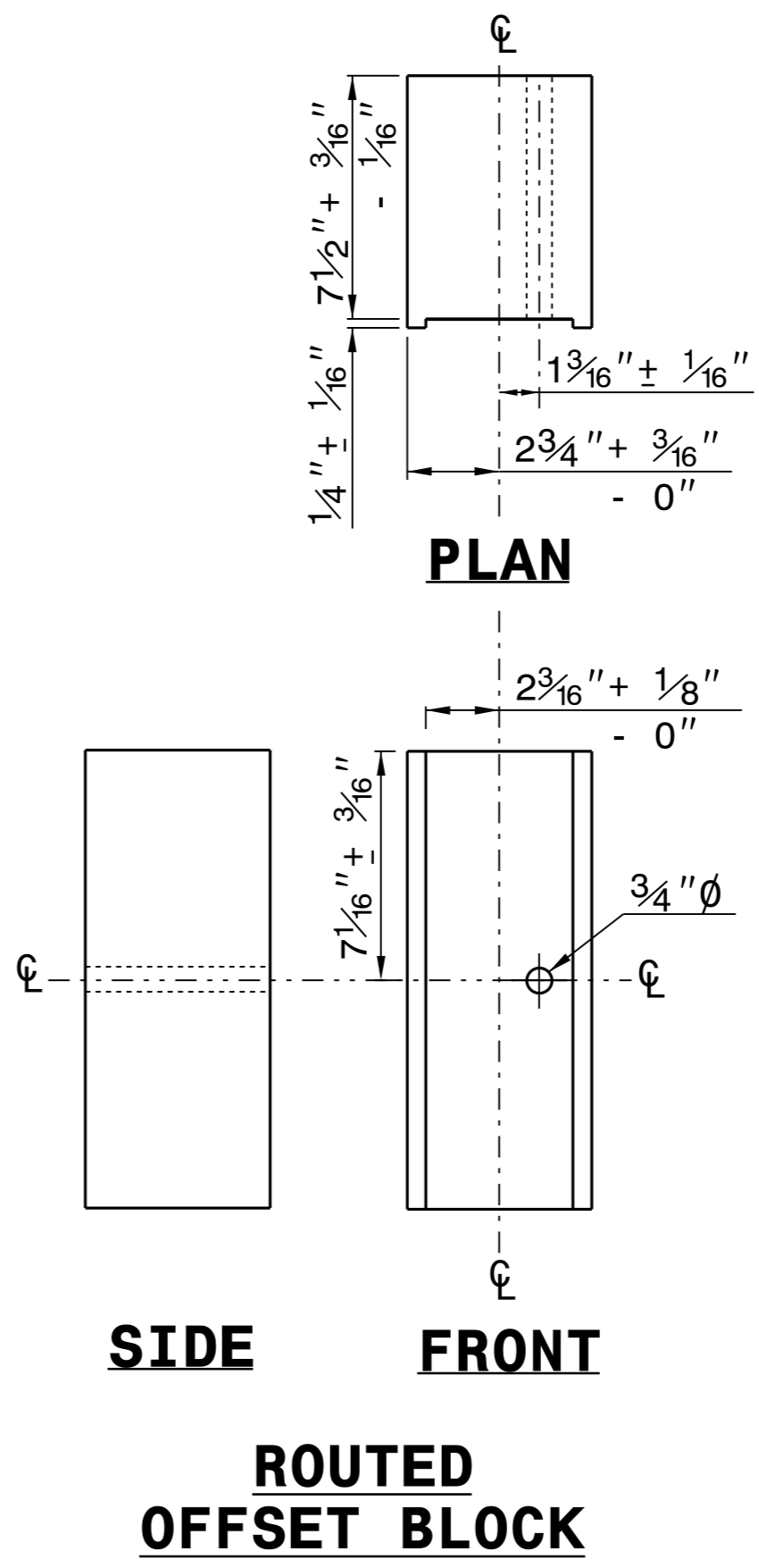
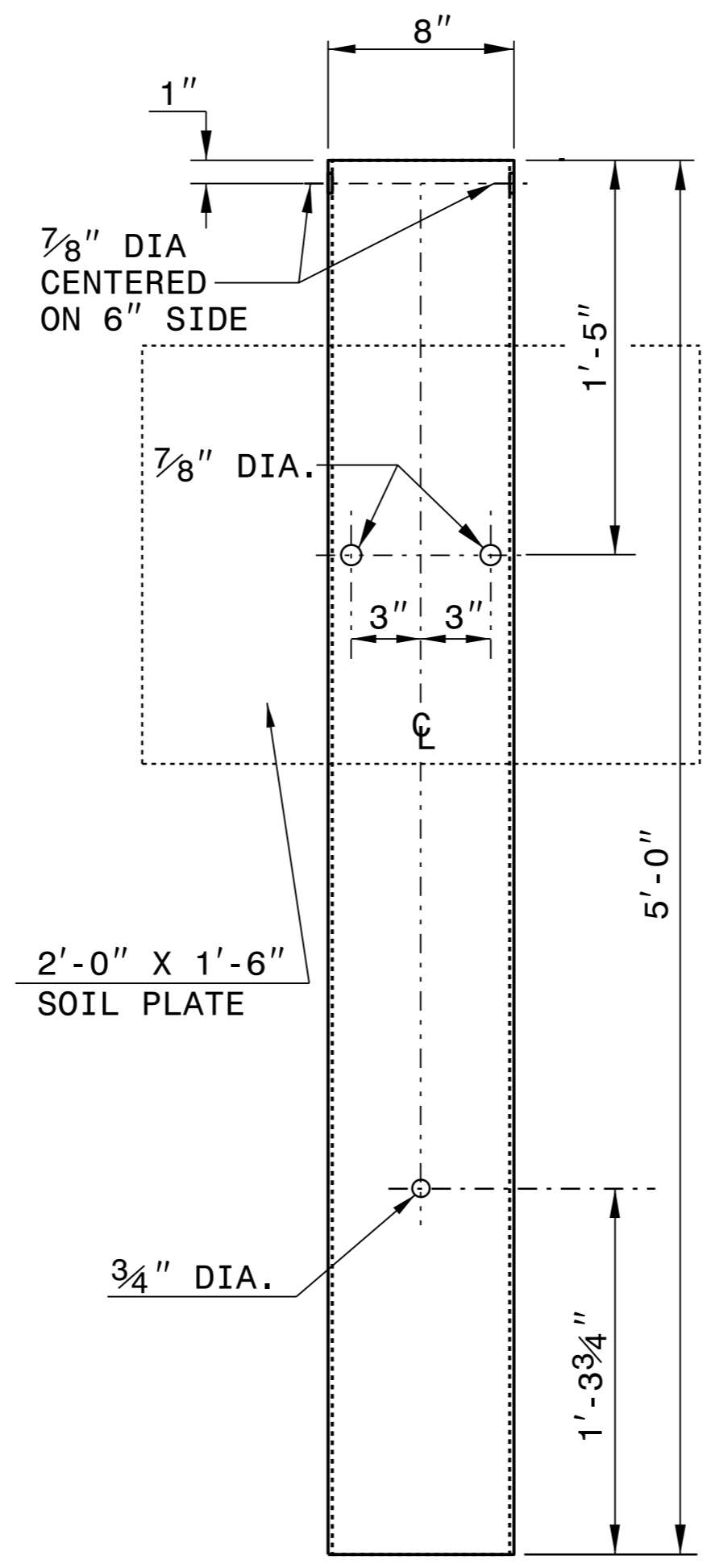
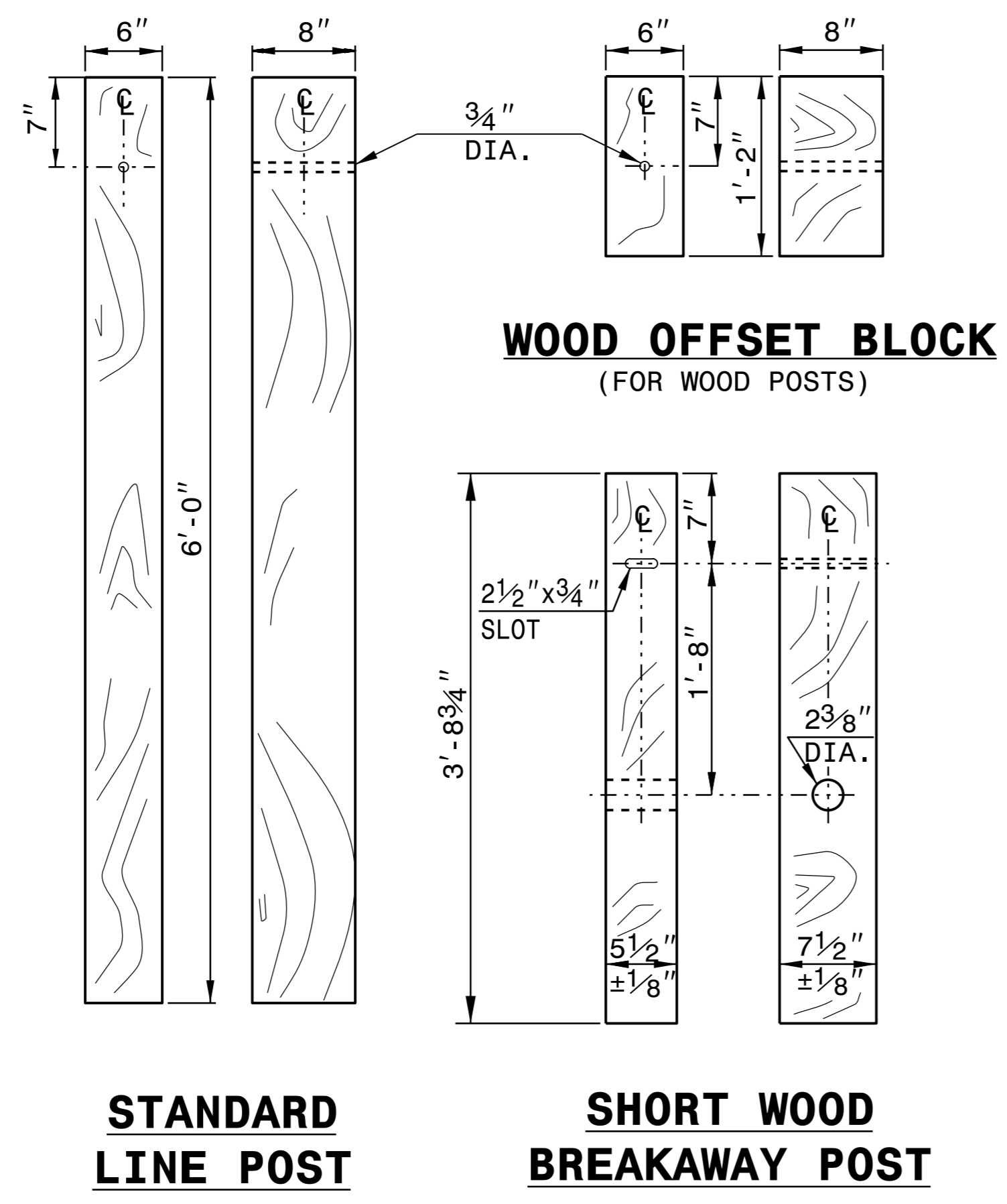
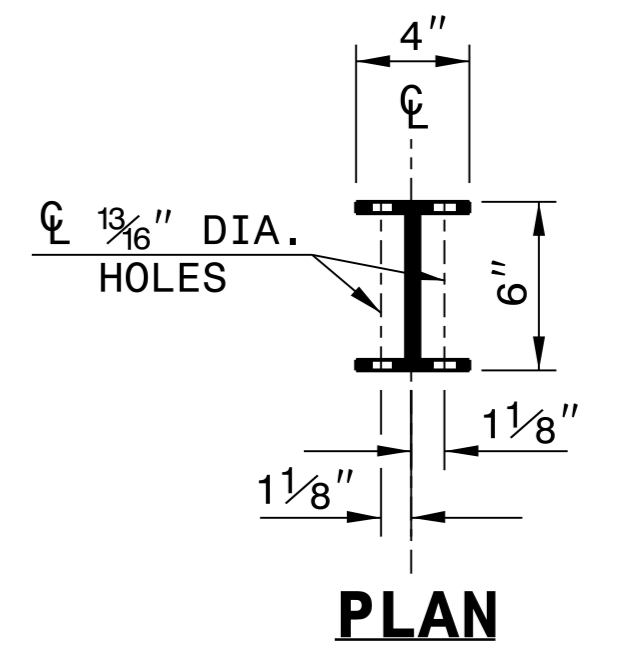
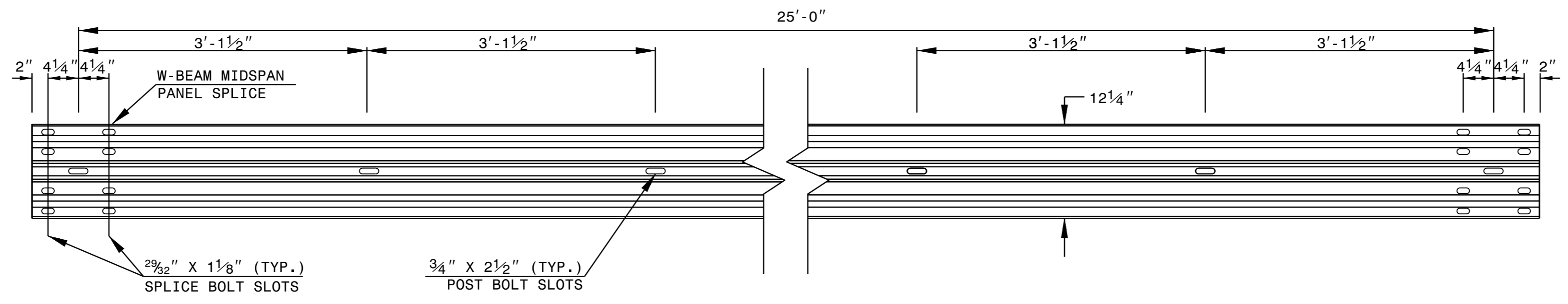
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 CHECKED BY: DATE:  
 FILE SPEC.:



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**

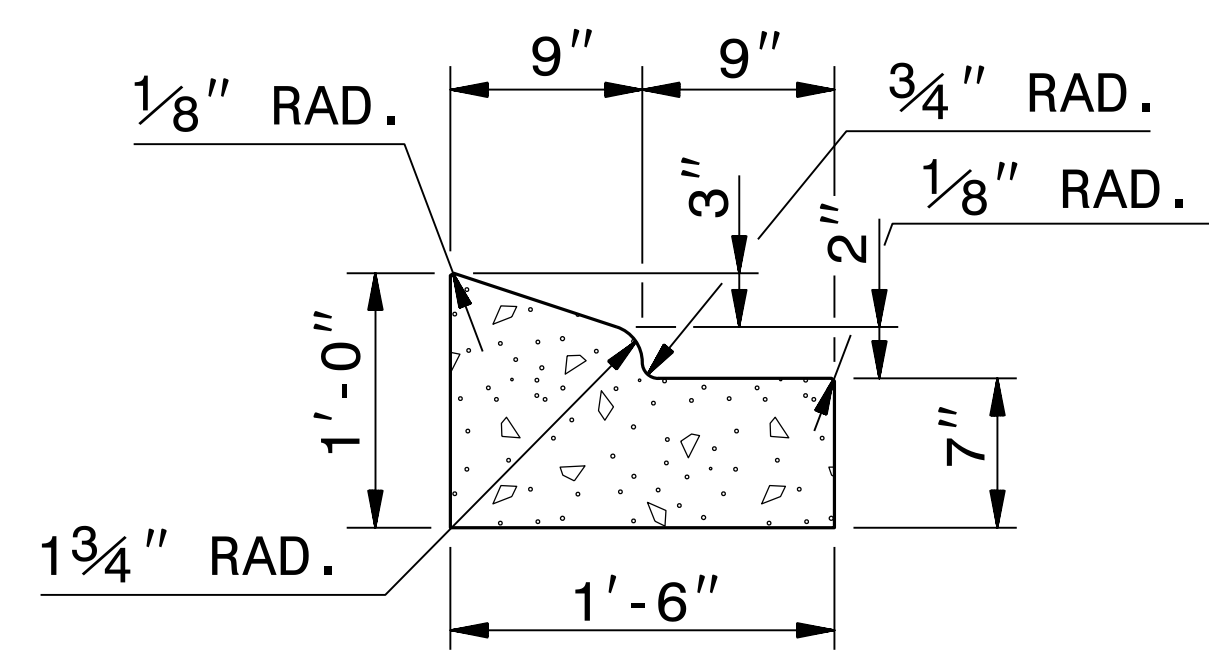
STATE OF NORTH CAROLINA  
DEPT. OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR  
**GUARDRAIL INSTALLATION**

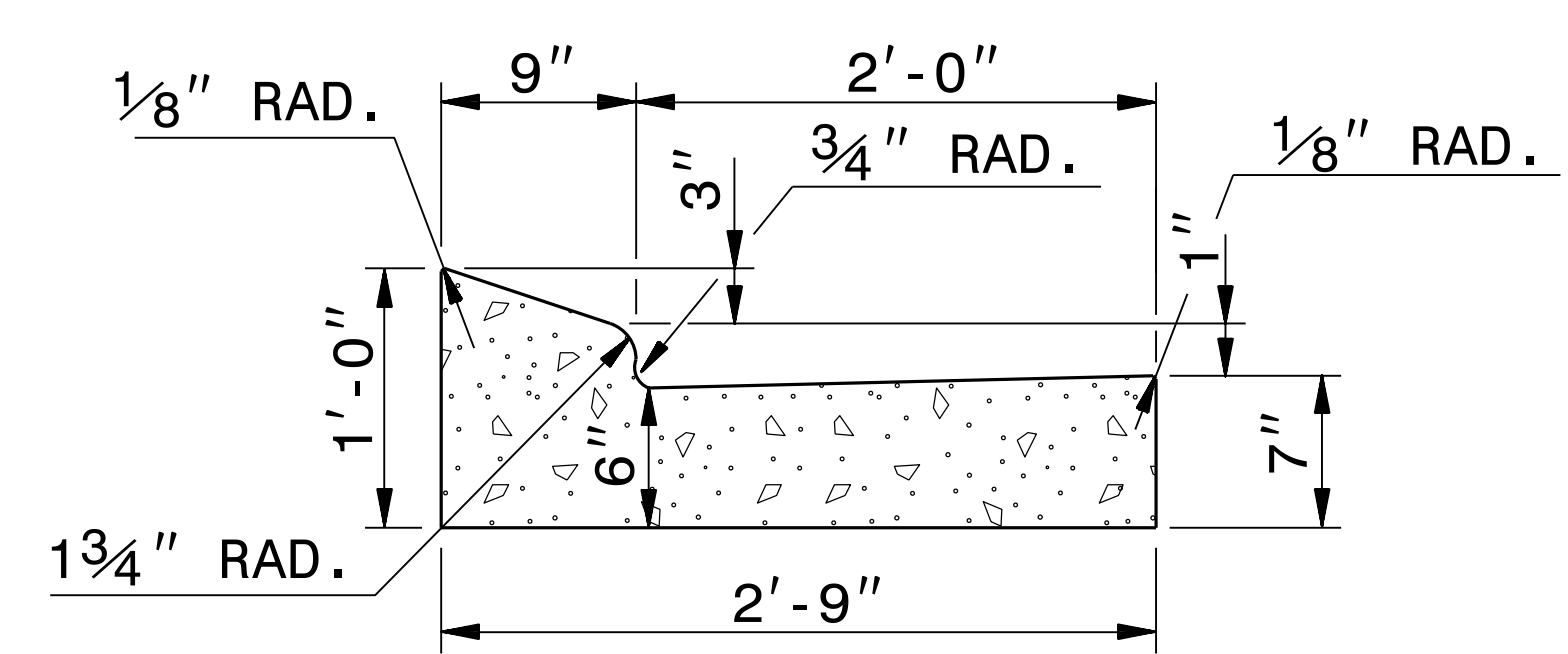
SHEET 6 OF 8  
**862D02**



<b>CONTRACTS STANDARDS AND DEVELOPMENT UNIT</b>	
Office 919-707-6950 FAX 919-250-4119	
<b>SEE TITLE BLOCK</b>	
ORIGINAL BY: J. HOWERTON	DATE: 3-7-2018
MODIFIED BY:	DATE:
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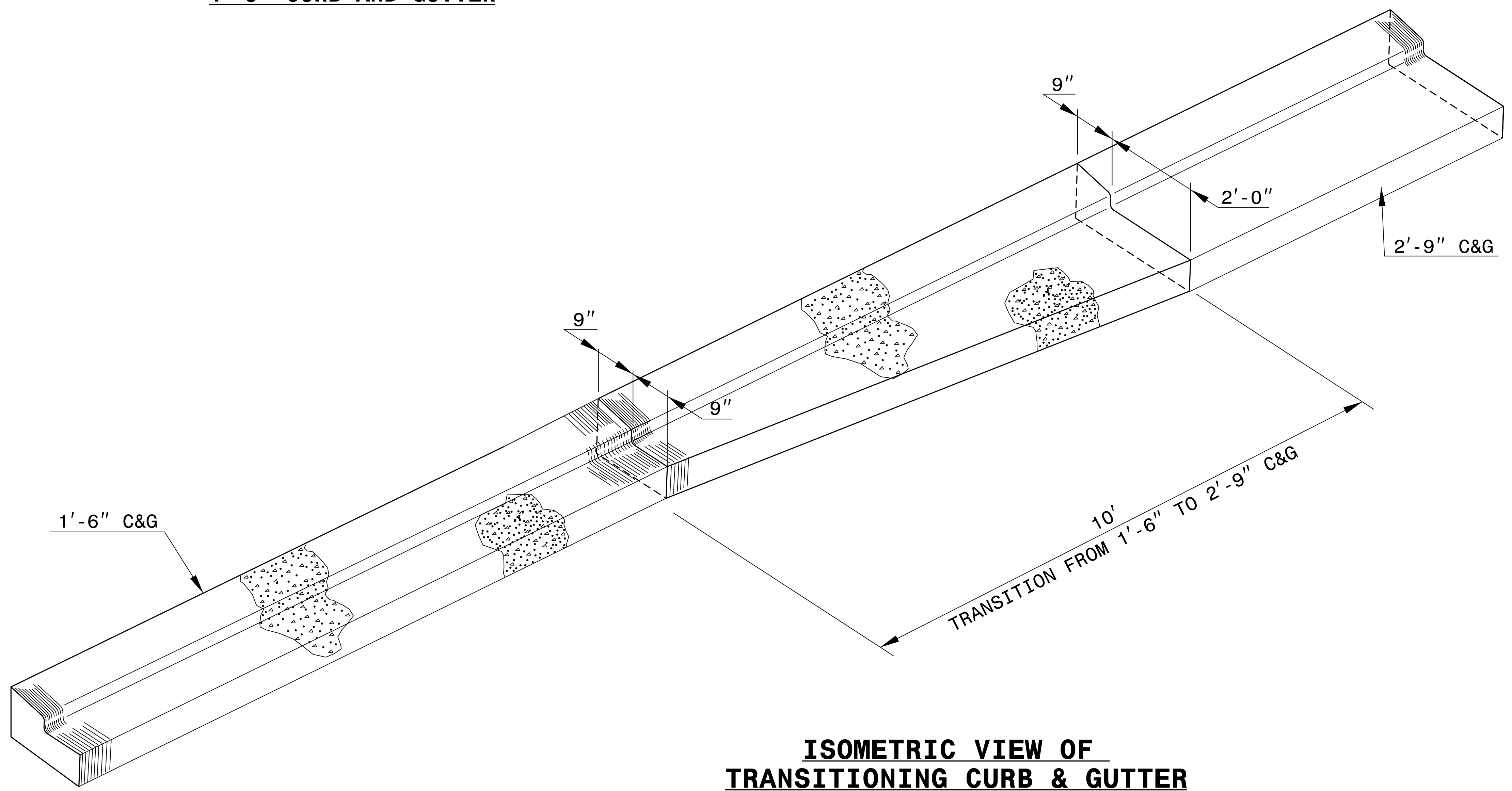
**1'-6" CURB AND GUTTER**



**2'-9" CURB AND GUTTER**

NOTE: SEE STD. DWG. 846.01 FOR ADDITIONAL CURB AND GUTTER INFORMATION.

SEE ROADWAY PLANS FOR LOCATION OF CURB TRANSITION.



**ISOMETRIC VIEW OF  
TRANSITIONING CURB & GUTTER**



Designed by:  
*Ronald Elton Davenport, Jr.*  
3/21/2002

DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED

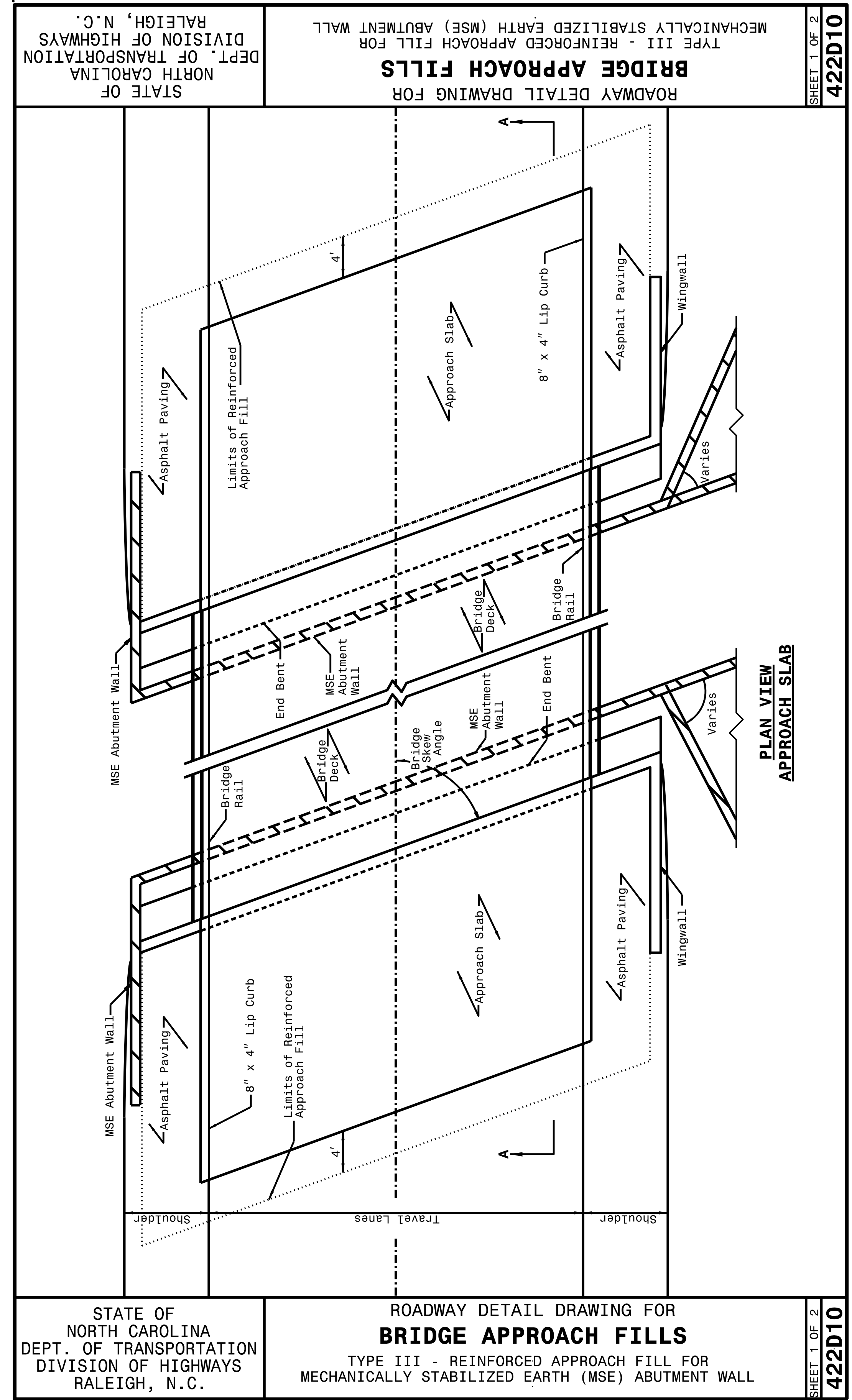
**CONTRACT STANDARDS  
AND DEVELOPMENT UNIT**  
Office 919-707-6950 FAX 919-250-4119

**DETAIL OF 1'-6"  
TO 2'-9" CURB & GUTTER  
TRANSITION SECTION**

ORIGINAL BY: T.S.SPELL DATE: NOV. 26, 2001  
 MODIFIED BY: T.S.SPELL DATE: JAN. 23, 2007  
 CHECKED BY: DATE:  
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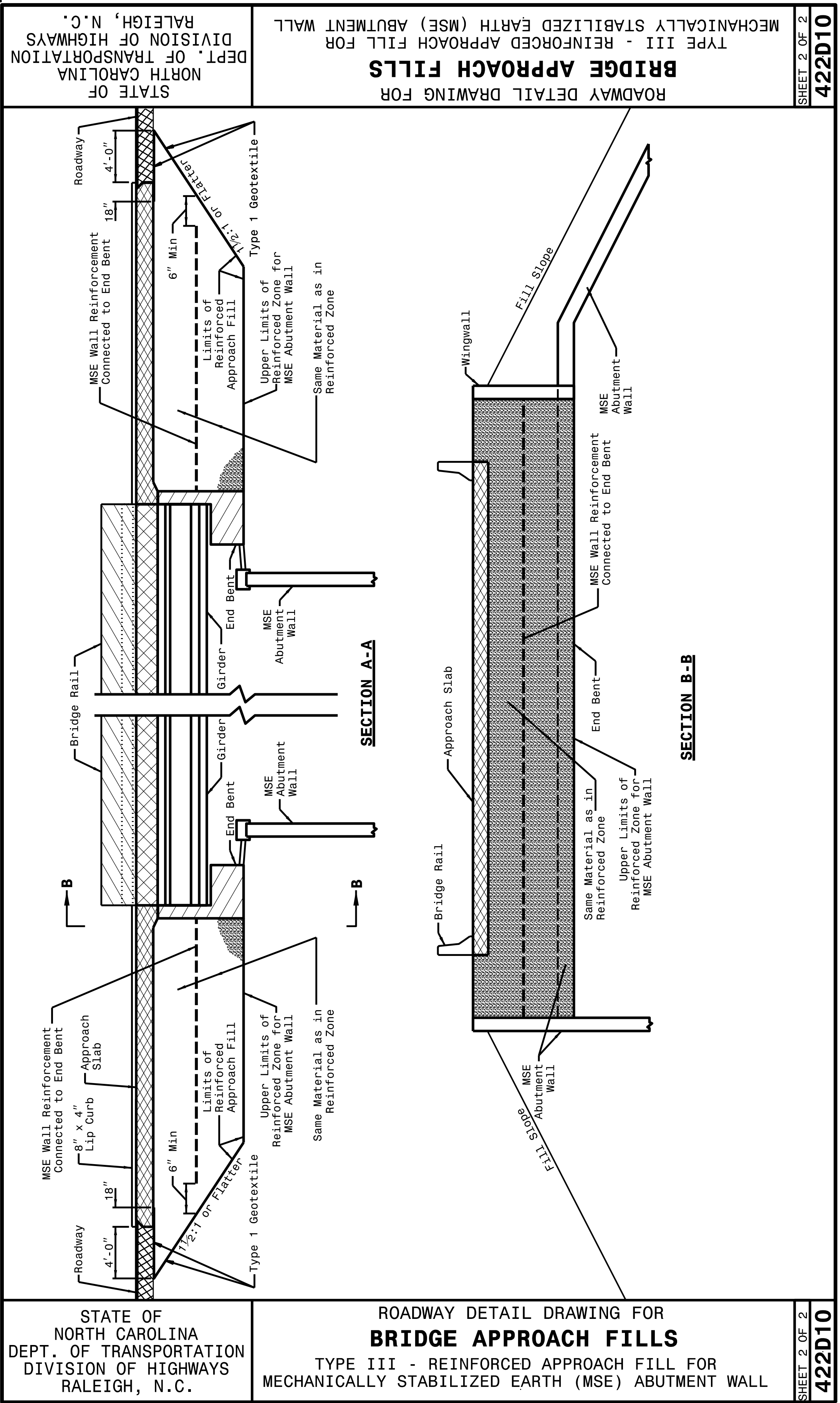






STATE OF NORTH CAROLINA  
DEPT. OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR  
**BRIDGE APPROACH FILLS**  
TYPE III - REINFORCED APPROACH FILL FOR  
MECHANICALLY STABILIZED EARTH (MSE) ABUTMENT WALL



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

ROADWAY DETAIL DRAWING FOR  
**BRIDGE APPROACH FILLS**  
TYPE III - REINFORCED APPROACH FILL FOR  
MECHANICALLY STABILIZED EARTH (MSE) ABUTMENT WALL



DocuSigned by:  
Ronald Elton Davenport, Jr.  
F81B6038A47A442  
3/21/2022

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UNLESS ALL SIGNATURES COMPLETED**

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

**TYPE III  
REINFORCED  
APPROACH FILLS**

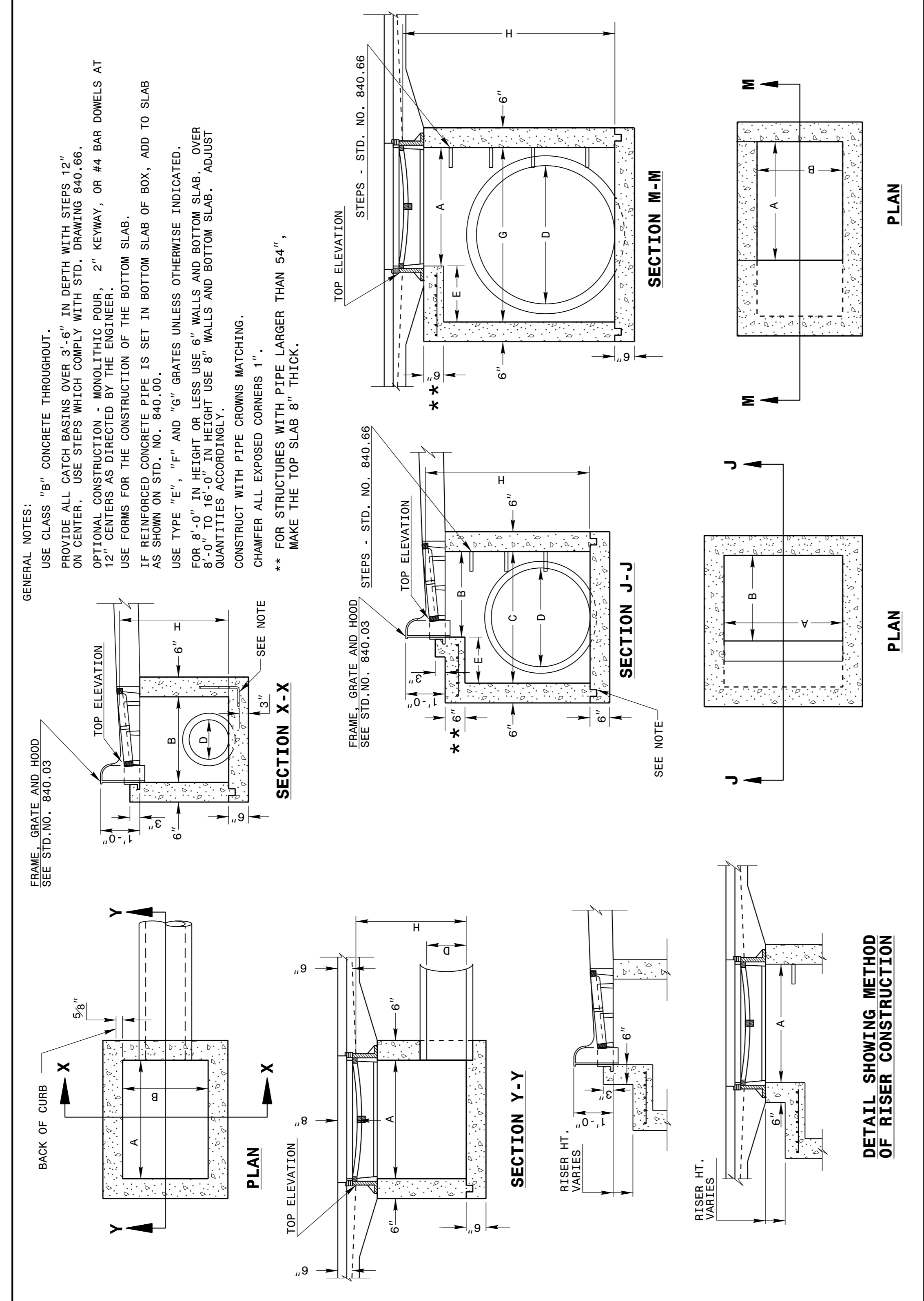
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5/14/99

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

ENGLISH DETAIL DRAWING FOR MINIMUM DEPTH CONCRETE CATCH BASIN 12" THRU 84" PIPE

SHEET 1 OF 2 840D02



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

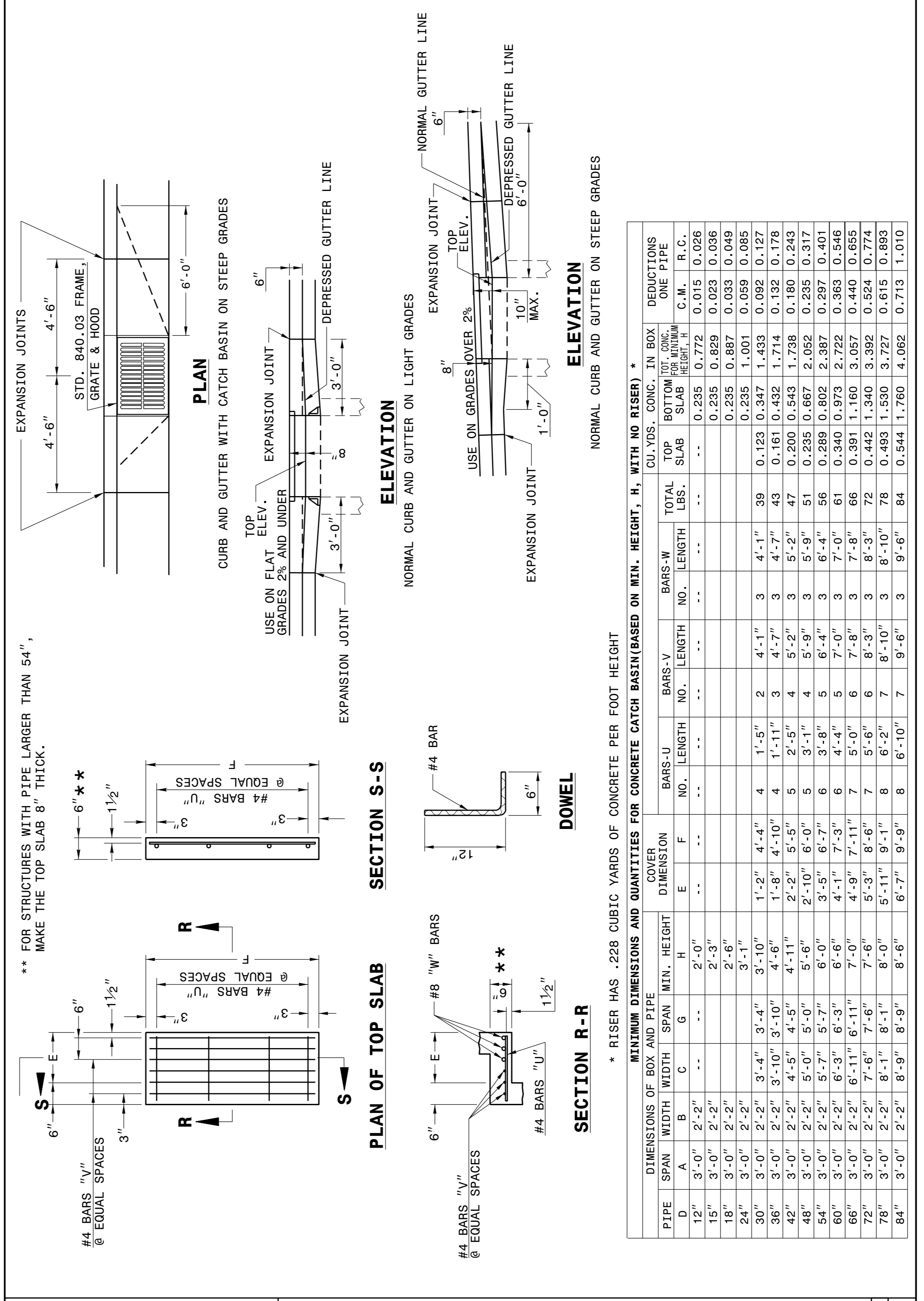
ENGLISH DETAIL DRAWING FOR MINIMUM DEPTH CONCRETE CATCH BASIN 12" THRU 84" PIPE

SHEET 1 OF 2 840D02

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

ENGLISH DETAIL DRAWING FOR MINIMUM DEPTH CONCRETE CATCH BASIN 12" THRU 84" PIPE

SHEET 2 OF 2 840D02



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

ENGLISH DETAIL DRAWING FOR MINIMUM DEPTH CONCRETE CATCH BASIN 12" THRU 84" PIPE

SHEET 2 OF 2 840D02

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

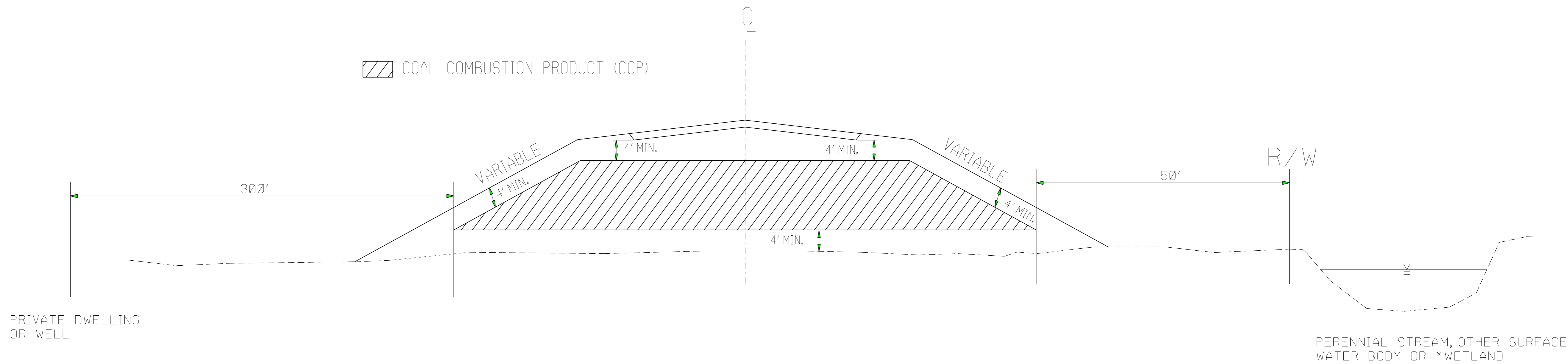
**SEE PLATE FOR TITLE**

ORIGINAL BY: 2002 Std.840.01 DATE: \_\_\_\_\_  
 MODIFIED BY: E.E. WARD DATE: 3-1-02  
 CHECKED BY: \_\_\_\_\_ DATE: \_\_\_\_\_  
 FILE SPEC.: s:Special\_Details/jhowerton/840d02.dgn



Designed by:  
 Ronald Elton Davenport, Jr.  
 3/23/2022

# COAL COMBUSTION PRODUCT PLACEMENT



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

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

PLACE AT LOCATIONS AS APPROVED BY THE ENGINEER

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

\*(OBTAIN PERMISSION FROM ARMY CORPS OF ENGINEERS)



DocuSigned by:  
 Ronald Elton Davenport, Jr.  
 F819603847A442  
 3/21/2022

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

**COAL COMBUSTION PRODUCT PLACEMENT DETAIL**

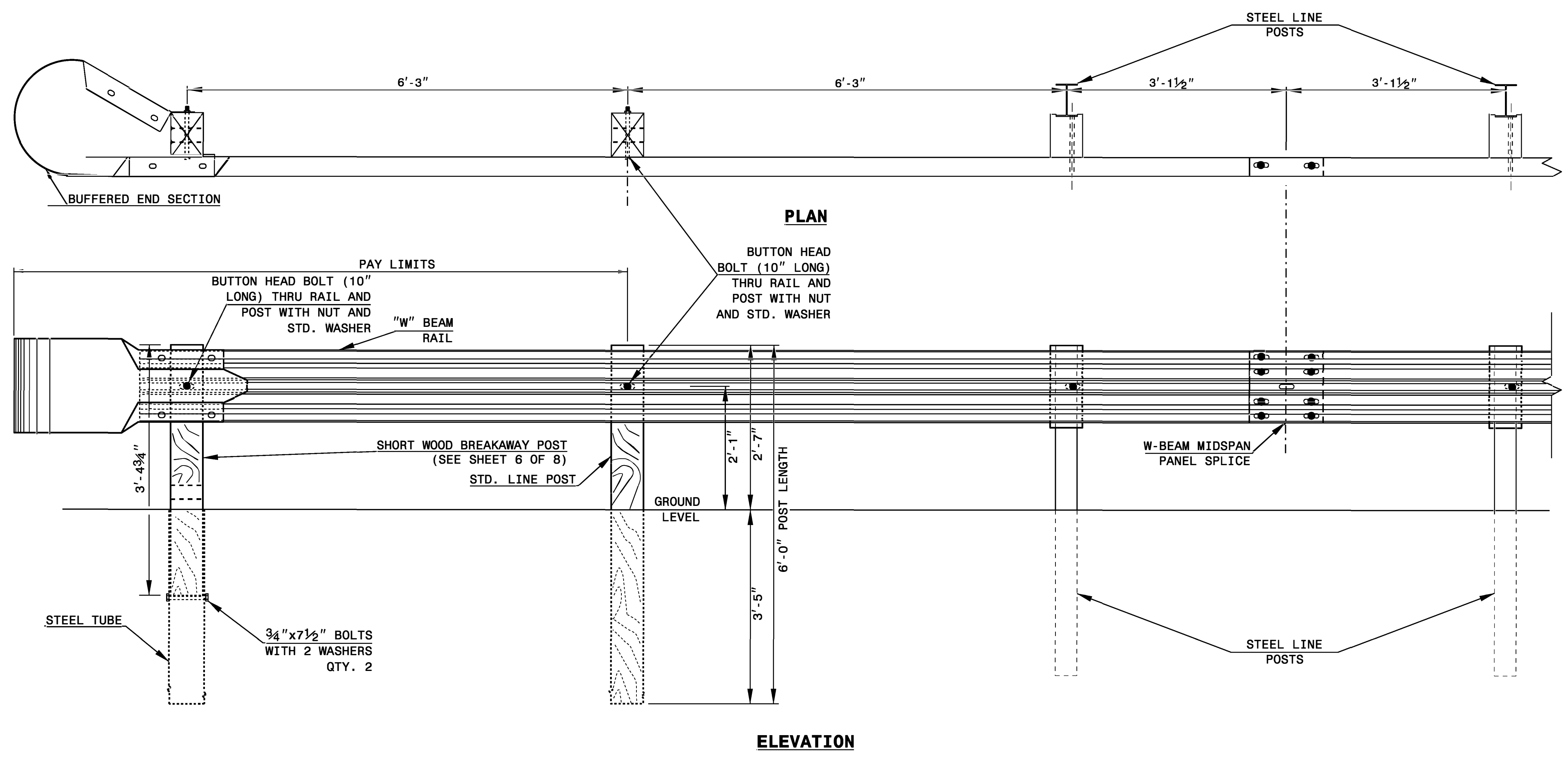
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STATE OF  
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DIVISION OF HIGHWAYS  
RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR  
**GUARDRAIL INSTALLATION**

SHEET OF



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

ROADWAY DETAIL DRAWING FOR  
**GUARDRAIL INSTALLATION**

SHEET OF

**TRAILING END UNIT ASSEMBLY**  
**A.T. - 1 SYSTEM**



DocuSigned by:  
Ronald Elton Davenport,  
372179692217A442

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UNLESS ALL SIGNATURES COMPLETED

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

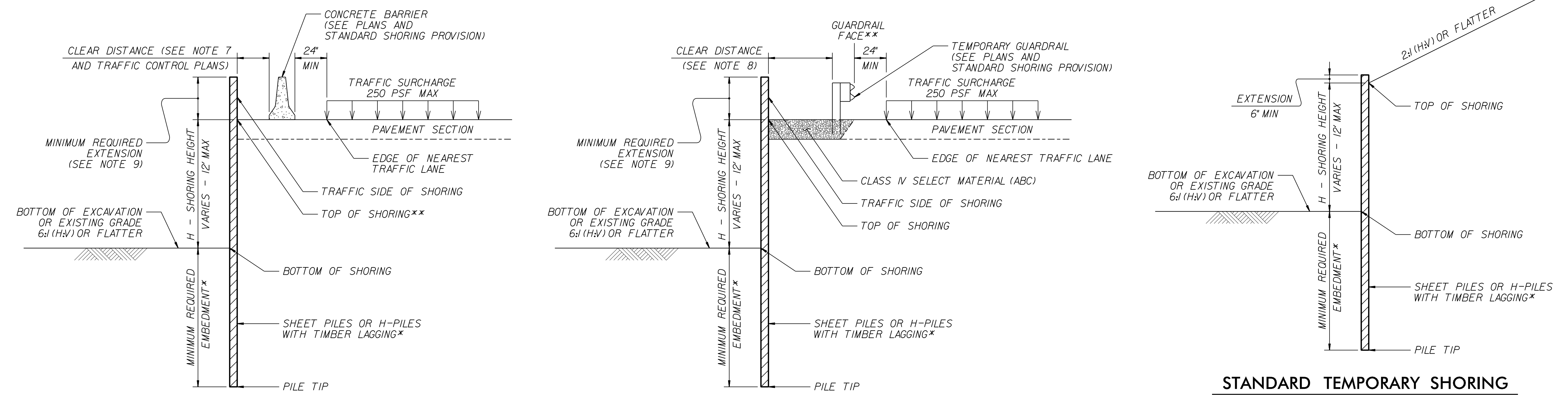
**A.T. - 1 SYSTEM**

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MODIFIED BY: \_\_\_\_\_ DATE: \_\_\_\_\_  
CHECKED BY: \_\_\_\_\_ DATE: \_\_\_\_\_  
FILE SPEC.: \_\_\_\_\_

GROUNDWATER CONDITION (SEE NOTE 6)	H SHORING HEIGHT (FT)	SLOPE OR SURCHARGE CASE WITH NO TRAFFIC IMPACT					SURCHARGE CASE WITH TRAFFIC IMPACT				
		SHEET PILES		H-PILES WITH TIMBER LAGGING			SHEET PILES		H-PILES WITH TIMBER LAGGING		
		MINIMUM REQUIRED EMBEDMENT (FT)	MINIMUM REQUIRED SECTION MODULUS (IN <sup>3</sup> /FT)	MINIMUM REQUIRED EMBEDMENT* (FT) (SEE NOTE 10)			MINIMUM REQUIRED EMBEDMENT (FT)	MINIMUM REQUIRED SECTION MODULUS (IN <sup>3</sup> /FT)	MINIMUM REQUIRED EMBEDMENT* (FT) (SEE NOTE 10)		
				HP 10x42	HP 12x53	HP 14x73			HP 10x42	HP 12x53	HP 14x73
GROUNDWATER ELEVATION BETWEEN BOTTOM OF SHORING AND PILE TIP	< 6	11.5	4.5	11.5	11.5	11.5	16.0	12.0	13.0	13.0	13.0
	7	13.0	7.0	13.0	13.0	13.0	17.0	14.5	14.5	14.5	14.5
	8	15.0	10.0	--	15.0	15.0	18.0	17.0	--	15.5	15.5
	9	17.0	14.0	--	17.0	17.0	19.0	20.0	--	17.0	17.0
	10	18.5	19.5	--	--	18.5	20.0	23.5	--	--	18.5
	11	20.5	26.0	--	--	--	21.0	28.0	--	--	20.0
12	22.5	33.0	--	--	--	22.0	33.0	--	--	21.5	
GROUNDWATER ELEVATION BELOW PILE TIP	< 6	7.5	3.0	8.0	8.0	8.0	11.0	10.0	9.5	9.5	9.5
	7	8.5	4.5	9.5	9.5	9.5	12.0	12.0	10.5	10.5	10.5
	8	10.0	6.5	10.5	10.5	10.5	12.5	14.0	11.5	11.5	11.5
	9	11.0	9.5	--	12.0	12.0	13.5	16.5	--	12.5	12.5
	10	12.5	13.0	--	--	13.5	14.0	19.5	--	13.5	13.5
	11	13.5	17.0	--	--	14.5	15.0	22.5	--	--	14.5
12	15.0	21.5	--	--	16.0	16.0	25.5	--	--	15.5	

- NOTES:**
- AT THE CONTRACTOR'S OPTION, USE STANDARD TEMPORARY SHORING AS NOTED IN THE PLANS.
  - FOR STANDARD TEMPORARY SHORING, SEE STANDARD SHORING PROVISION.
  - STANDARD TEMPORARY SHORING IS 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 TEMPORARY SHORING IF ASSUMED SOIL PARAMETERS ARE NOT APPLICABLE.
  - DO NOT USE STANDARD TEMPORARY SHORING WHEN VERY LOOSE OR SOFT SOIL OR MUCK IS WITHIN THE EMBEDMENT DEPTH.
  - USE GROUNDWATER ELEVATION NOTED IN THE PLANS. IF NO GROUNDWATER ELEVATION IS SHOWN IN THE PLANS, USE "GROUNDWATER ELEVATION BETWEEN BOTTOM OF SHORING AND PILE TIP" FOR GROUNDWATER CONDITION. DO NOT USE STANDARD TEMPORARY SHORING IF GROUNDWATER IS ABOVE BOTTOM OF SHORING.
  - AT THE CONTRACTOR'S OPTION OR IF AVAILABLE CLEAR DISTANCE IS LESS THAN THE MINIMUM REQUIRED FOR CONCRETE BARRIER, SET BARRIER NEXT TO AND UP AGAINST TRAFFIC SIDE OF PILES AND USE "SURCHARGE CASE WITH TRAFFIC IMPACT".
  - AT THE CONTRACTOR'S OPTION OR IF AVAILABLE CLEAR DISTANCE IS LESS THAN 4' FOR TEMPORARY GUARDRAIL, ATTACH GUARDRAIL TO TRAFFIC SIDE OF PILES AS SHOWN IN THE PLANS AND USE "SURCHARGE CASE WITH TRAFFIC IMPACT".
  - MINIMUM REQUIRED EXTENSION IS 6" FOR "SLOPE OR SURCHARGE CASE WITH NO TRAFFIC IMPACT" AND 32" FOR "SURCHARGE CASE WITH TRAFFIC IMPACT".
  - MINIMUM REQUIRED EMBEDMENT FOR H-PILES WITH TIMBER LAGGING IS BASED ON DRIVEN H-PILES AT MAXIMUM 6' SPACING. AT THE CONTRACTOR'S OPTION, EMBEDMENT DEPTHS MAY BE REDUCED BY 25% FOR DRILLED-IN H-PILES.
  - SUBMIT A "STANDARD TEMPORARY SHORING SELECTION FORM" AT LEAST 7 DAYS BEFORE STARTING TEMPORARY SHORING CONSTRUCTION. UP TO 3 SHORING LOCATIONS MAY BE INCLUDED ON EACH FORM. STANDARD SHORING SELECTION FORMS ARE AVAILABLE FROM:  
[connect.ncdot.gov/resources/Geological/Pages/Geotech\\_Forms\\_Details.aspx](http://connect.ncdot.gov/resources/Geological/Pages/Geotech_Forms_Details.aspx)
  - CONTACT THE ENGINEER IF PILES DO NOT ATTAIN THE MINIMUM REQUIRED EMBEDMENT.

**MINIMUM REQUIRED EMBEDMENT AND SECTION MODULUS**  
**\*DO NOT USE H-PILES WITH TIMBER LAGGING FOR GROUNDWATER CONDITION, SHORING HEIGHT AND H-PILE SIZE SHOWN IF MINIMUM REQUIRED EMBEDMENT IS "--".**

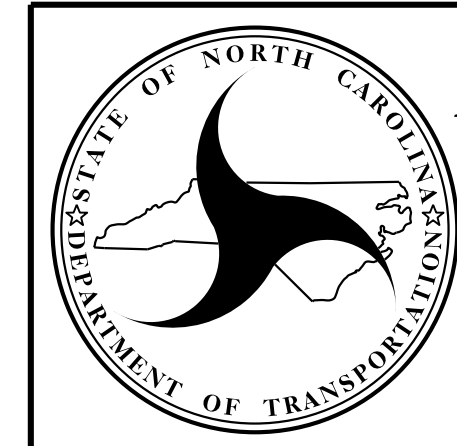


**CONCRETE BARRIER**  
**\*\*TOP OF SHORING = EDGE OF PAVEMENT**

**TEMPORARY GUARDRAIL**  
**\*\*GUARDRAIL FACE = EDGE OF PAVEMENT**

**STANDARD TEMPORARY SHORING (SLOPE CASE)**  
**\*SEE TABLE ABOVE.**

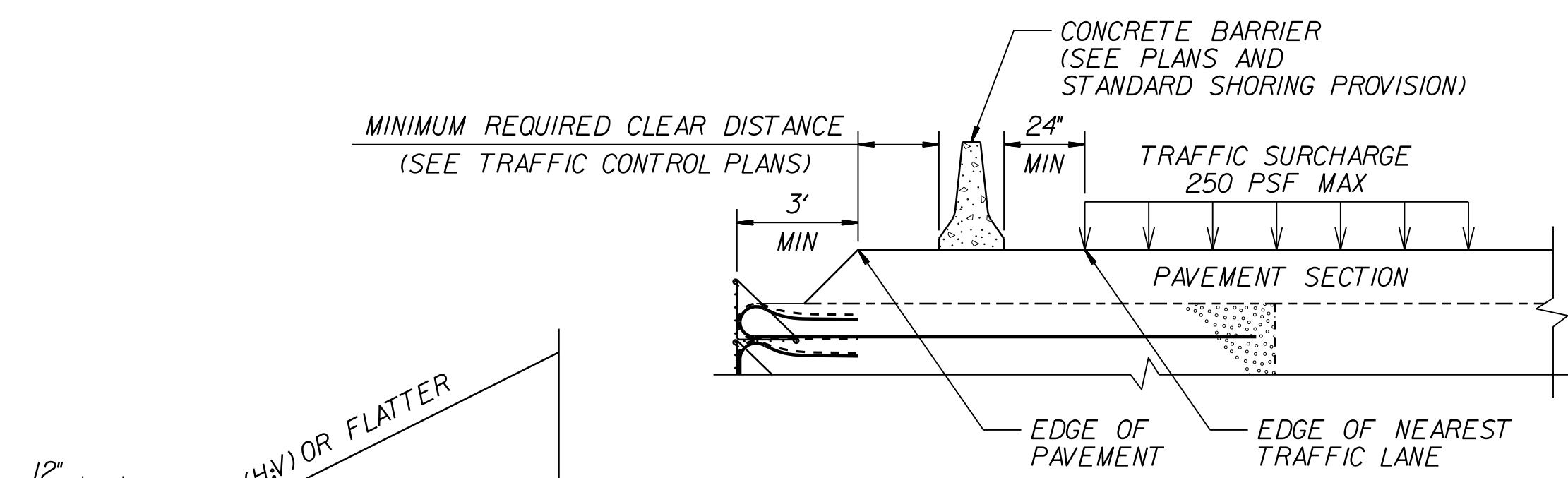
**STANDARD TEMPORARY SHORING (SURCHARGE CASE)**  
**\*SEE TABLE ABOVE.**



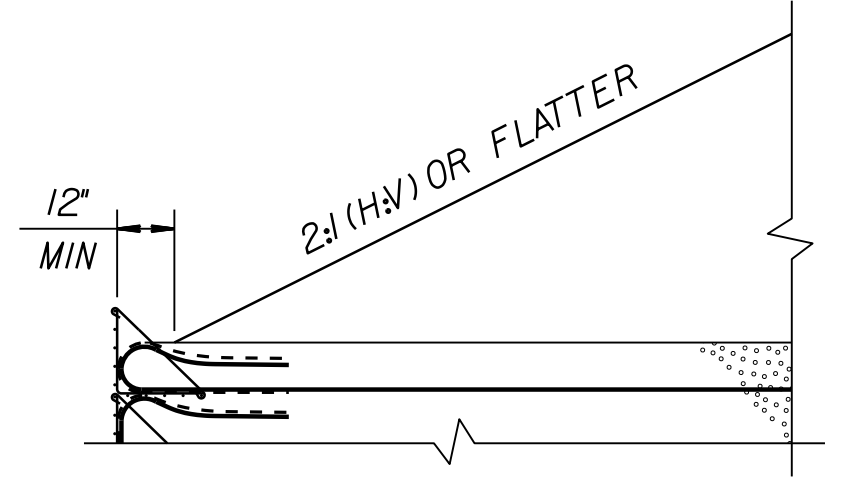
NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 DIVISION OF HIGHWAYS  
**GEOTECHNICAL ENGINEERING UNIT**

STANDARD DETAIL NO. 1801.01

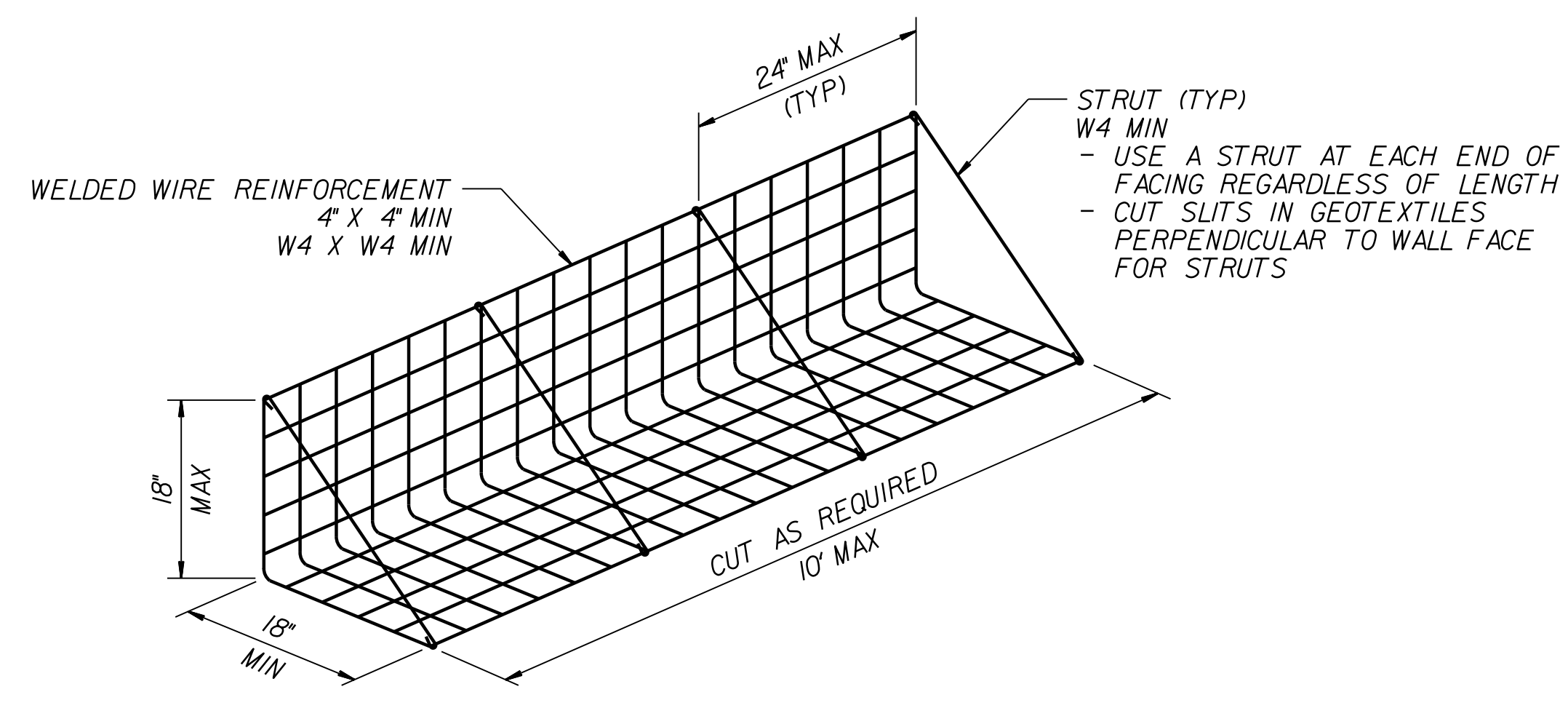
STANDARD TEMPORARY SHORING



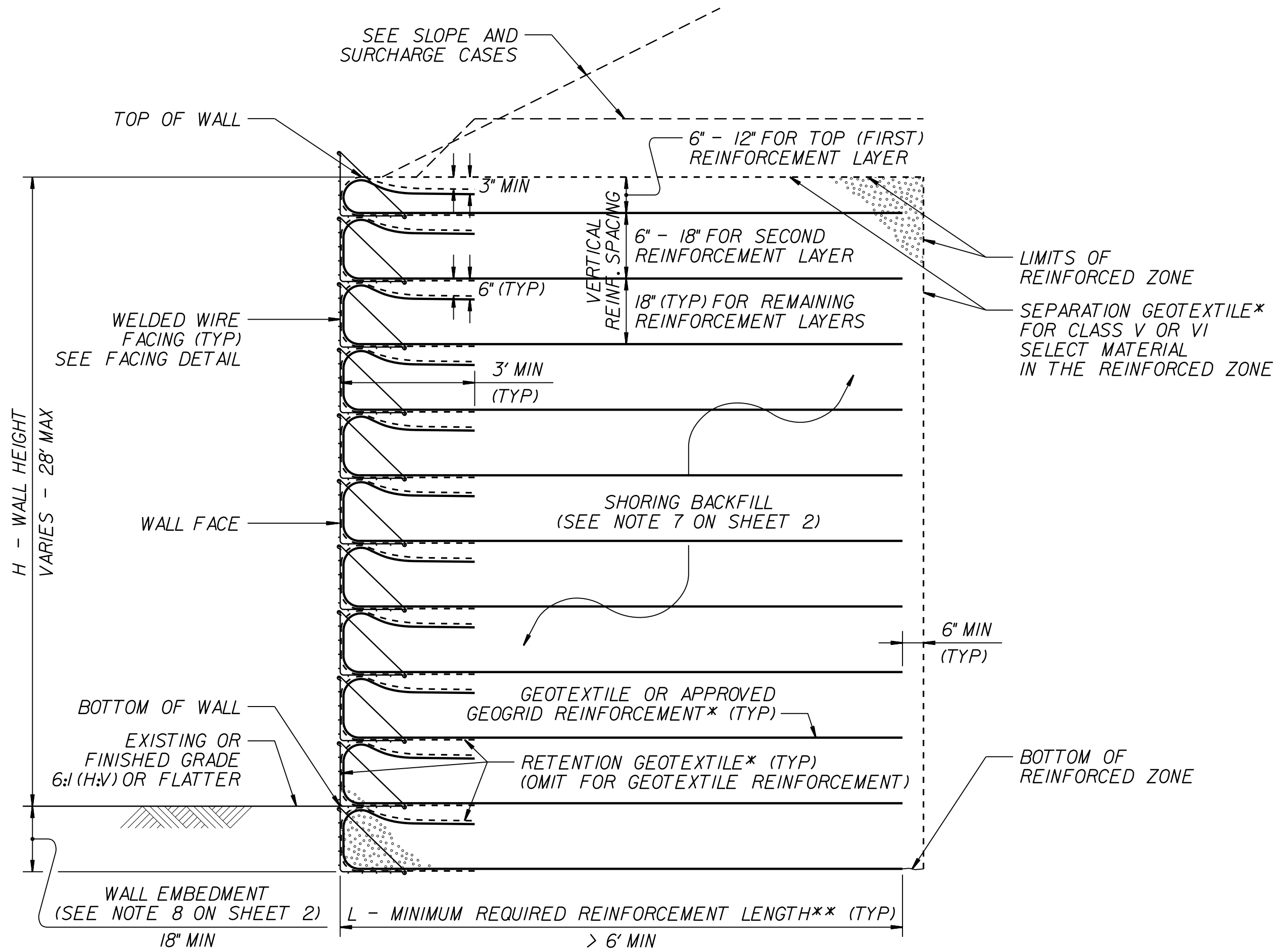
**SURCHARGE CASE**



**SLOPE CASE**

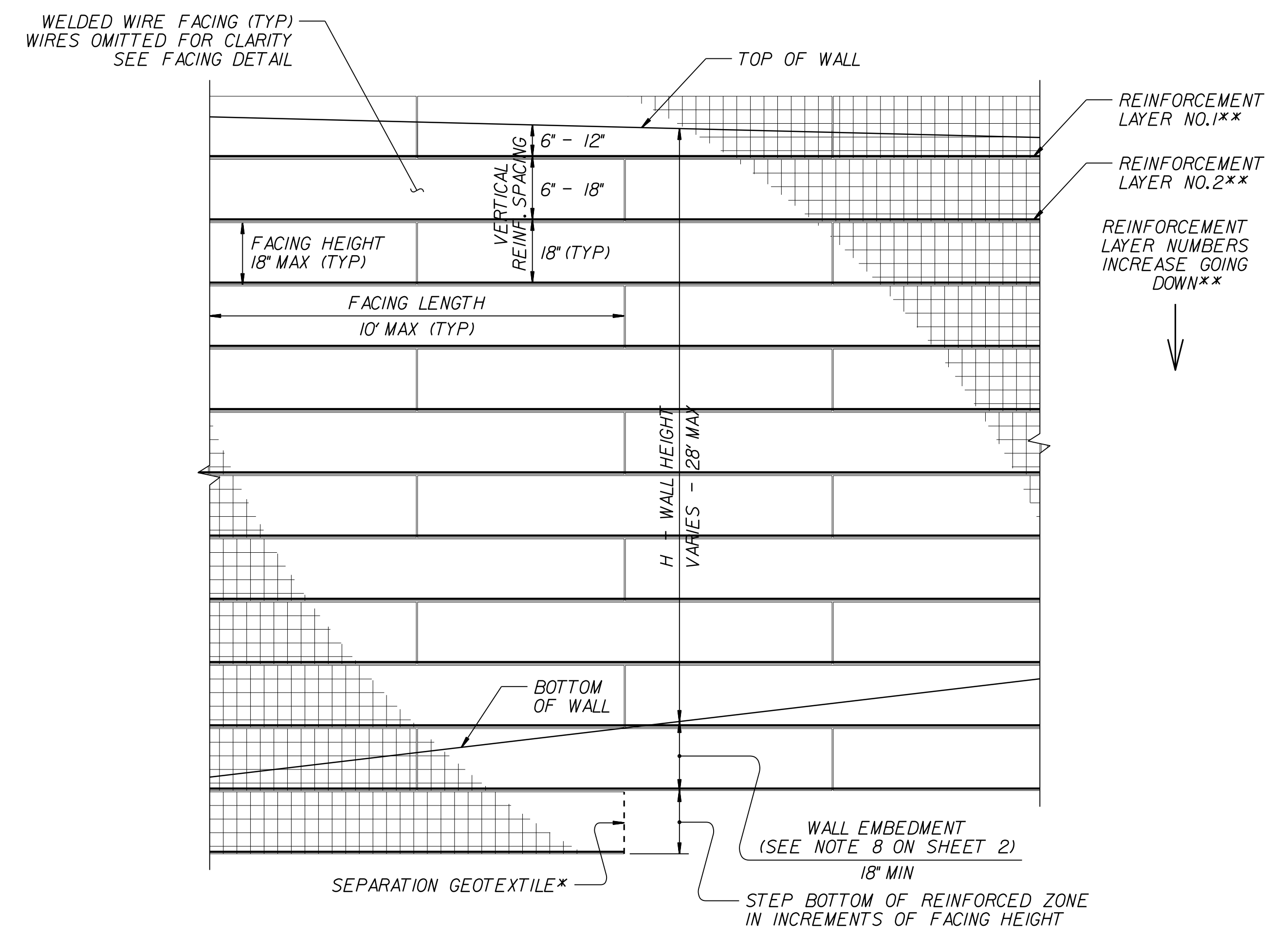


**FACING DETAIL**



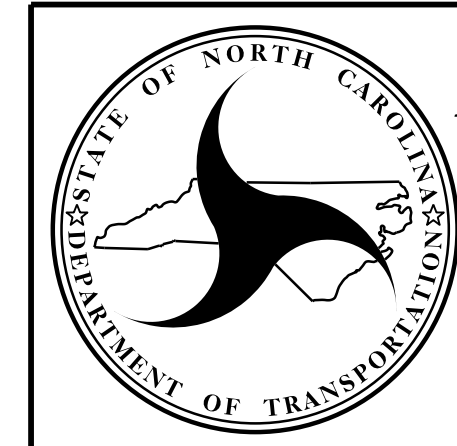
**STANDARD TEMPORARY WALL**

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



**STANDARD TEMPORARY WALL - PARTIAL ELEVATION**

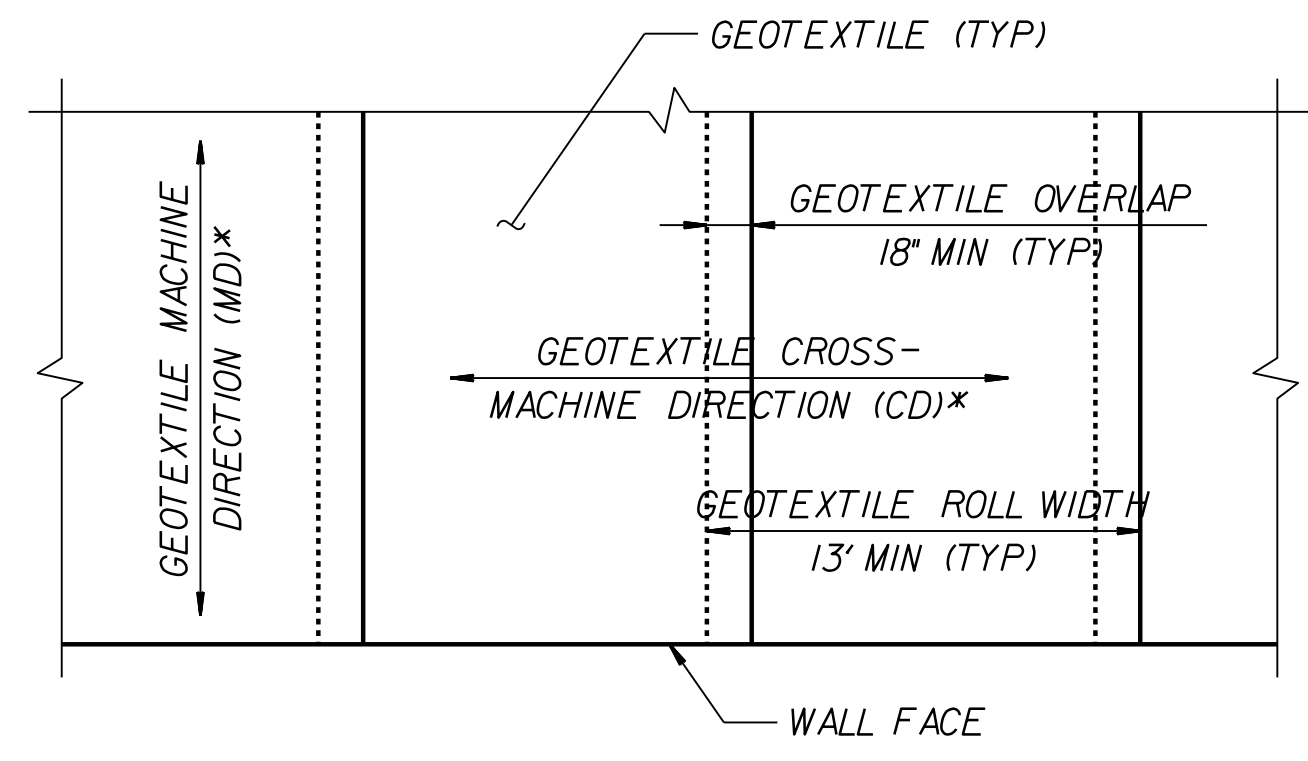
\*SEE GEOSYNTHETIC PLACEMENT DETAILS ON SHEET 2.  
 \*\*SEE REINFORCEMENT TABLES ON SHEET 3.



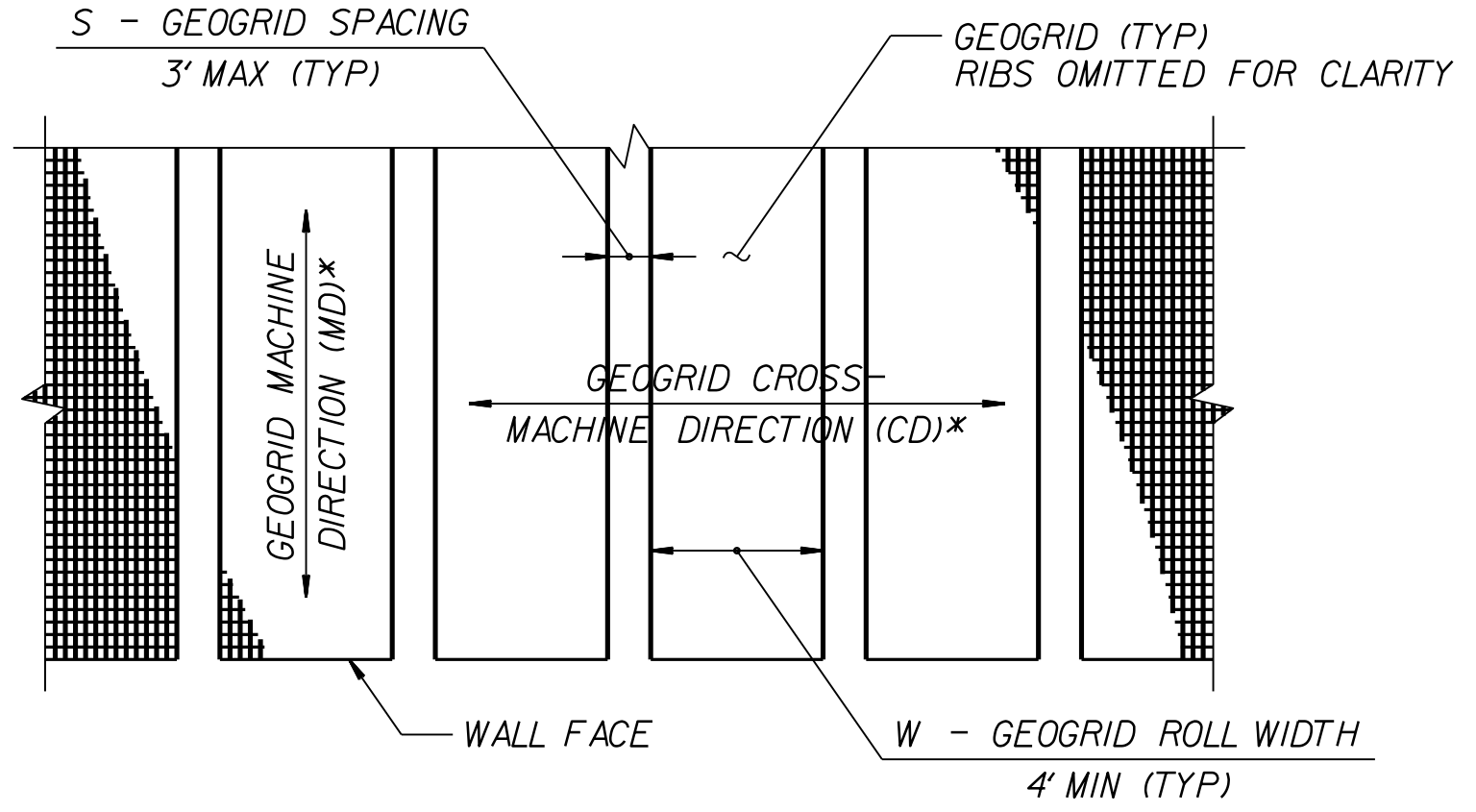
NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 DIVISION OF HIGHWAYS  
**GEOTECHNICAL  
 ENGINEERING UNIT**

STANDARD DETAIL NO. 1801.02

STANDARD  
 TEMPORARY WALL  
 SHEET 1 OF 3

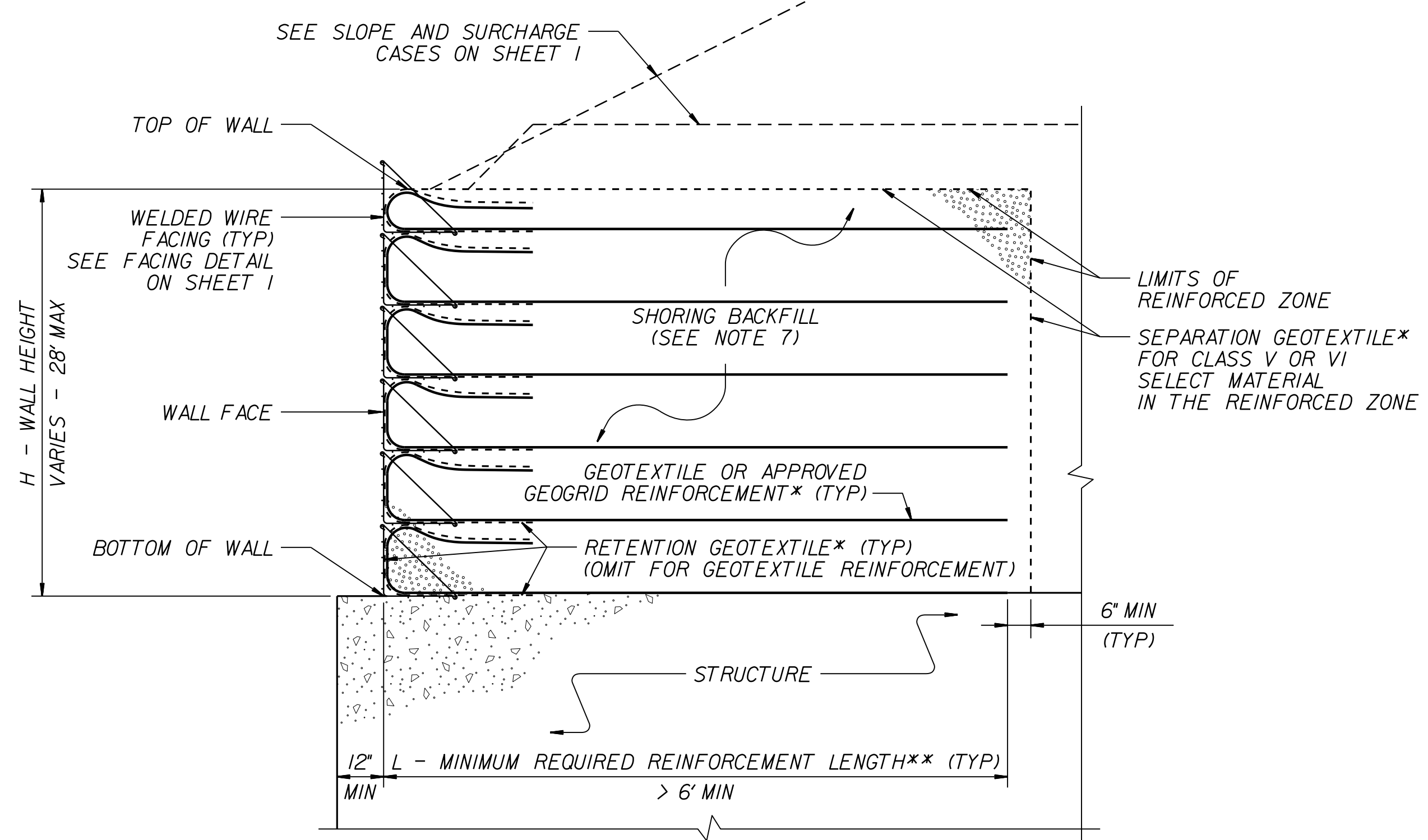


**GEOTEXTILE PLACEMENT**  
(100% COVERAGE MIN FOR GEOTEXTILE REINFORCEMENT)



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

**GEOSYNTHETIC PLACEMENT DETAILS**  
(PLAN VIEW)  
\*SEE NOTE 12.



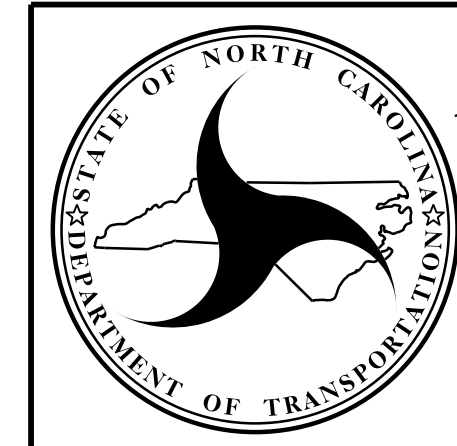
**TEMPORARY WALL ON STRUCTURE DETAIL**  
\*SEE GEOSYNTHETIC PLACEMENT DETAILS.  
\*\*SEE REINFORCEMENT TABLES ON SHEET 3.

**NOTES:**

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

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

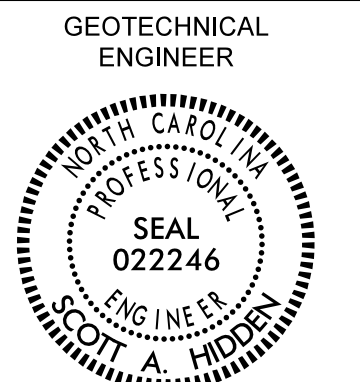
11. FOR GEOGRID REINFORCEMENT WITH LESS THAN 100% COVERAGE, STAGGER REINFORCEMENT SO GEOGRIDS ARE CENTERED OVER GAPS IN THE REINFORCEMENT LAYER BELOW.
12. AT THE CONTRACTOR'S OPTION, REINFORCEMENT MAY BE INSTALLED WITH THE MD PARALLEL TO THE WALL FACE IF BOTH OF THE FOLLOWING CONDITIONS OCCUR:  
- W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



NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
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GEOTECHNICAL  
ENGINEERING UNIT

STANDARD DETAIL NO. 1801.02

STANDARD  
TEMPORARY WALL  
SHEET 2 OF 3

<b>PROJECT REFERENCE NO.</b> U-2519BB	<b>SHEET NO.</b> 2G-4
 GEOTECHNICAL ENGINEER ENGINEER	ENGINEER  DATE: _____ SIGNATURE: _____
<b>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</b>	

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

**L - MINIMUM REQUIRED REINFORCEMENT LENGTH (FT)**  
(FOR ALL REINFORCEMENT TYPES)

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

\*BASED ON VERTICAL REINFORCEMENT SPACING SHOWN ON SHEET 1.

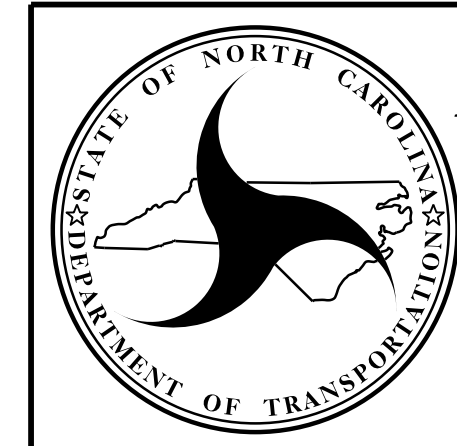
REINFORCEMENT LAYER NUMBER*	SHORING BACKFILL TYPE IN THE REINFORCED ZONE (SEE NOTE 7 ON SHEET 2)				
	SLOPE CASE		SURCHARGE CASE		
	CLASS II, TYPE I OR CLASS III SELECT MATERIAL	CLASS V SELECT MATERIAL	A-2-4 SOIL	CLASS II, TYPE I OR CLASS III SELECT MATERIAL	CLASS V SELECT MATERIAL
1	2400	2400	2400	2400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

**GEOTEXTILE REINFORCEMENT  
ULTIMATE TENSILE STRENGTH (LB/FT)**

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

**GEOGRID REINFORCEMENT  
SHORT-TERM DESIGN STRENGTH (LB/FT)**  
(SEE NOTE 10 ON SHEET 2.)

**MINIMUM REQUIRED REINFORCEMENT STRENGTH IN MD**  
(SEE NOTE 9 ON SHEET 2.)  
\*SEE PARTIAL ELEVATION ON SHEET 1 FOR REINFORCEMENT LAYER NUMBERING.



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

STANDARD DETAIL NO. 1801.02
STANDARD TEMPORARY WALL SHEET 3 OF 3
DATE: 11-19-13



12/06/20

COMPUTED BY: ELS DATE: 5/9/2017  
CHECKED BY: AEV DATE: 5/8/2020

STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

PROJECT REFERENCE NO. U-2519BB  
SHEET NO. 3B-1

SUMMARY OF EARTHWORK (IN CUBIC YARDS)

PAVEMENT REMOVAL SUMMARY

Table with columns: SURVEY LINE, STATION, STATION, LOCATION, AREA (SF). Rows include station ranges like 11+42.10 to 10+79.61 and totals for SF and SY.

SUMMARY OF BREAKING EXISTING ASPHALT PAVEMENT

Table with columns: SURVEY LINE, STATION, STATION, LOCATION, AREA (SF). Rows include station ranges like 98+50.00 to 100+00.00 and totals for SF and SY.

WOVEN WIRE FENCE, 47" FABRIC SUMMARY

Table with columns: SURVEY LINE, STATION, STATION, LOCATION, FABRIC LENGTH (LF), END BRACE (EACH), CORNER BRACE (EACH), LINE BRACE (EACH), 4" LINE POSTS (EACH), 5" TERMINAL POSTS (EACH). Includes a TOTAL row.

CABLE GUIDERAIL SUMMARY

Table with columns: SURVEY LINE, STATION, STATION, LENGTH (LF), END ANCHOR UNIT (EACH), INTERMEDIATE ANCHOR UNIT, COMMENTS. Includes a TOTAL row and a note: ADDITIONAL GUIDERAIL POST=15 EACH.

SHOULDER BERM GUTTER SUMMARY

Table with columns: SURVEY LINE, STATION, STATION, LOCATION, LENGTH (LF). Rows include station ranges like 77+65 to 79+00 and a TOTAL row.

GUARDRAIL 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

Main summary table for earthwork with columns: STATION, STATION, UNCL. EXCAV., UNDERCUT EXCAVATION, EMBANK. +%, BORROW, WASTE. Includes multiple rows for different station ranges and a final GRAND TOTAL row.

THESE EARTHWORK QUANTITIES ARE BASED IN PART ON SUBSURFACE DATA PROVIDED BY THE GEOTECHNICAL ENGINEERING UNIT.

DDE = 2,050 CY  
PAVEMENT STRUCTURE VOLUME = 52,700 CY

Main guardrail summary table with columns: SURVEY LINE, BEG. STA., END STA., LOCATION, LENGTH (LF), WARRANT POINT, "N" DIST. FROM E.O.L., TOTAL SHOUL. WIDTH, FLARE LENGTH, W, ANCHORS (EACH), IMPACT ATTENUATOR TYPE 350, SINGLE FACED BARRIER, REMOVE EXISTING GUARDRAIL, REMOVE AND STOCKPILE EXISTING GUARDRAIL, REMARKS. Includes a detailed breakdown of anchor deductions and a final GRAND TOTAL row.

12/06/2022  
R:\Roadway\Proje\U2519BB.RDY\_SUM\_03B-1.dgn













COMPUTED BY: THEIN T. ZAN DATE: 12-13-2017  
 CHECKED BY: \_\_\_\_\_ DATE: \_\_\_\_\_

(12-17-19)

PROJECT NO.	SHEET NO.
U-2519BB	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
-L-	575+50	579+00	LT	SD	350
-L-	575+50	580+00	CL	SD	450
-L-	575+50	580+00	RT	SD	450
CONTINGENCY				SD	5,000
<b>TOTAL LF:</b>					6,250

\*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
			ASU				11300		
CONTINGENCY			ASU		500	1000	3500		
<b>TOTAL CY/TONS/SY:</b>					500	1000**	14800**	0	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.





DIVISION OF HIGHWAYS  
STATE OF NORTH CAROLINA

**PARCEL INDEX SHEET**

PARCEL NO.	SHEET NO.	PROPERTY OWNERS NAME
1	4, 17	NCDOT (FORMERLY GERTRUDE GODWIN)
2	4, 17	MARVIN LINDSEY
2A	4	FLOYD PROPERTIES
3	4, 5, 17	ALEX THOMPSON
4	4	W. M. LINDSAY
4A	4	FLOYD PROPERTIES
5	4, 5	ST JAMES SQUARE INC
5A	5	ST JAMES SQUARE
6	5	AQUA NORTH CAROLINA
7	5, 12, 17	GF MOODY PROPERTIES
7A	5	GF MOODY PROPERTIES
8	5	WENDY HANCUFF
9	5	CHRISTINE COSTANZO
10	5	TARLETON PLANTATION
11	5	MARIO ZELAYA
12	5	NCDOT
13	5	RICHARD BAILEY
14	5	KENNETH LOCKAMY
15	5, 13	SHERI RUNFOLA
16	5, 6, 13	NORMA STROTHER
16A	6, 7, 13	NORMA STROTHER
17	5	GUATAVIUS PARKER
17A	13	GUATAVIUS PARKER
17B	13	GARY PARKER AND NORMA STROTHER
18	5, 6	OTHA MCFAYDEN

PARCEL NO.	SHEET NO.	PROPERTY OWNERS NAME
19	5, 6	JOSEPH GILLIS
20	5, 6	DAVID MCFAYDEN
20A	13	OTHA T. MCFAYDEN
21	5, 13	LUMBEE RIVER ELECTRIC
22	12	CLARENCE KOONCE
22A	5, 12	CLARENCE KOONCE
22B	12	CLARENCE KOONCE
23	5, 6	CUMBERLAND COUNTY
23A	6	GF MOODY PROPERTIES
24	8	KENNETH CHARLES RITTER
25	8, 9	K AUTRY FAMILY LLC
26A	9	KENNY J. CLICK
27	8, 9	EDDIE MASON
28	9	LAWRENCE LONG
29	9	VALERIE AUTRY
30	9, 10	WILLIAM BAREFOOT ERNEST BAREFOOT
31	9	ERNEST BAREFOOT
32	10, 11	ANTHONY GORDY
33	10, 16	JOHN GILLIS
33A	11, 12	JOHN GILLIS
34	10, 11	JIMMY RAY
35	11, 16	DENNIS CANADY
36	11, 15	JUDY CLICK
37	11, 16	KENNETH RITTER

PARCEL NO.	SHEET NO.	PROPERTY OWNERS NAME
38	11, 12, 17	JANE BUIE
39	12, 17	FRANCES MOYE
40	12	JEANETTE HUBBARD
41	13	VIRGINIA CUNDIFF
42	13	MARWAN HASSIB ABDALLAH & RANA SHAABAN
43	13	WILLIAM HEMINGWAY
44	13	ELLA LEE LOCKAMY
45	13	JAMES LOCKAMY
47	13	STRICKLAND BRIDGE 2791 TRUST
48	13, 14	HECTOR CRUZ
49	14	JERRY LOCKAMY
50	14	LYNDEL JENKINS
53	15	COLONIAL BAPTIST CHURCH
54	15, 16	JUDY DAVIS
54A	15	JUDY DAVIS
55	16	ROLAND YOUNG
56	16	DANIEL A. PHILLIPS
57	9	LEWIS O. REESE, JR
58	16	MARY GILLIS
59	16	GILLIS DEVELOPMENT CORP.
60	5	DELMER WILTON BAREFOOT
61	16	OLIVIA KAY LEE COOK
62	16	JOSEPH HARMON GILLIS & WIFE BETTY HYDE GILLIS & JAMES D. GILLIS ET AL.



PROJECT REFERENCE NO. U-2519BB  
SHEET NO. 4

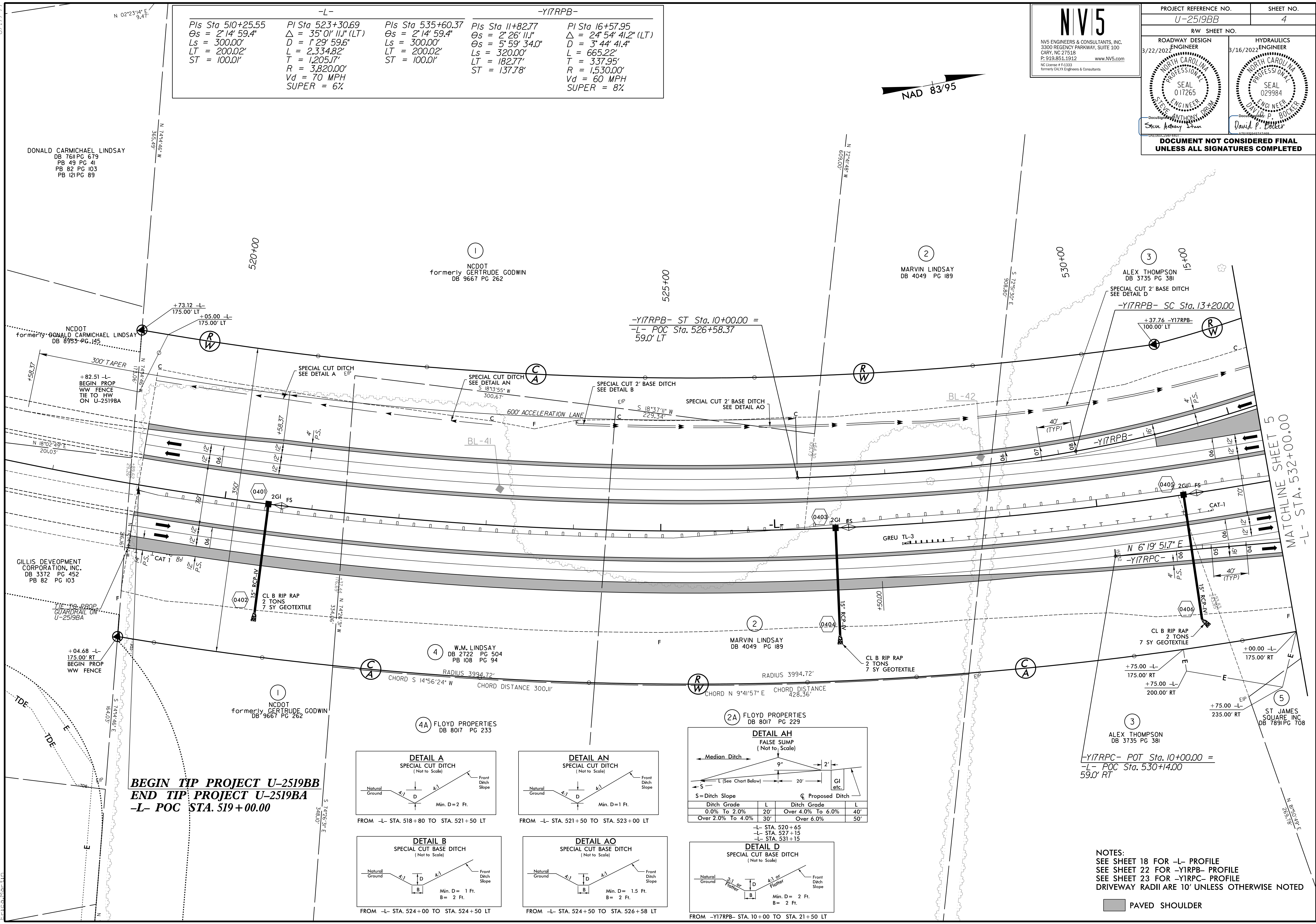
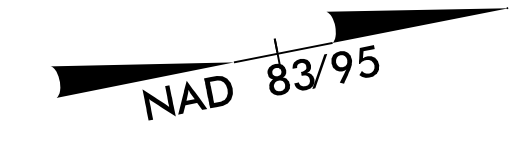
Roadway Design Engineer: 3/22/2022  
Hydraulics Engineer: 3/16/2022

Professional Engineer Seal: 017265  
Professional Engineer Seal: 029984

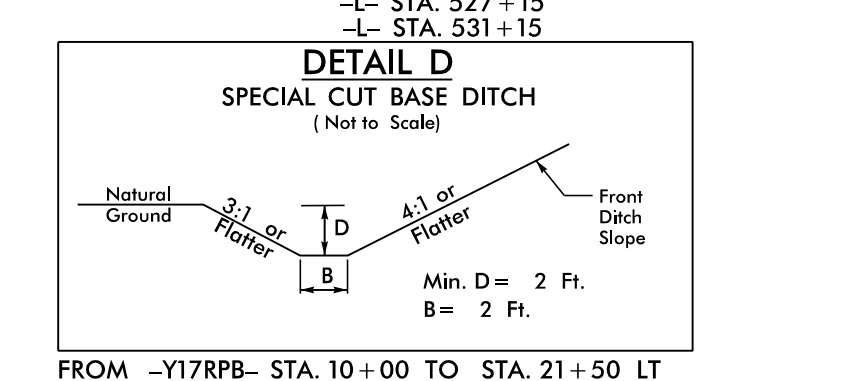
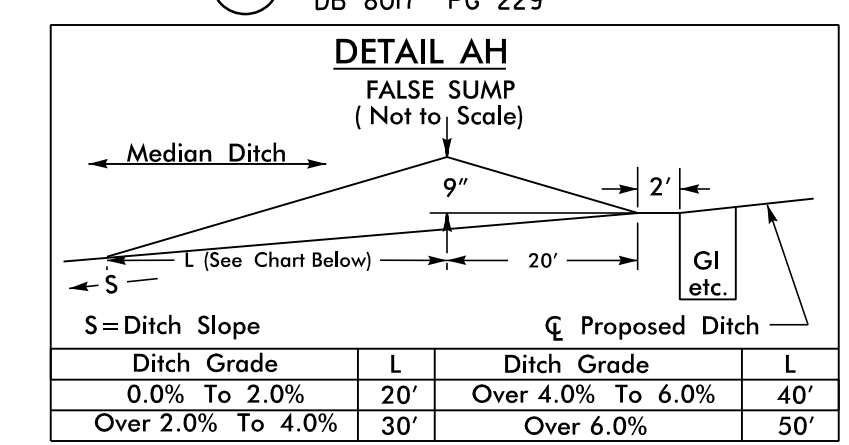
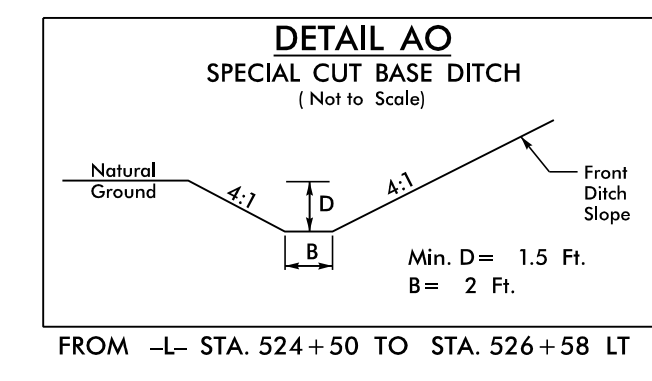
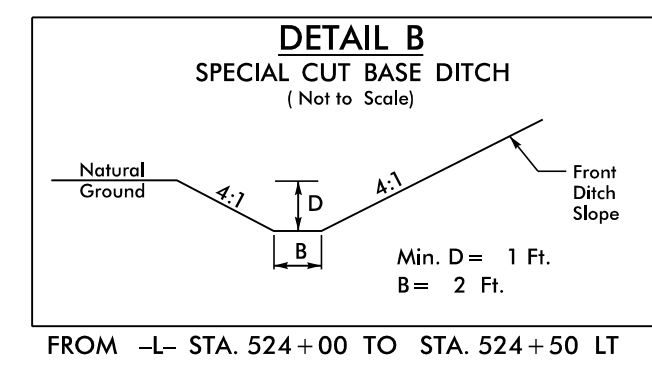
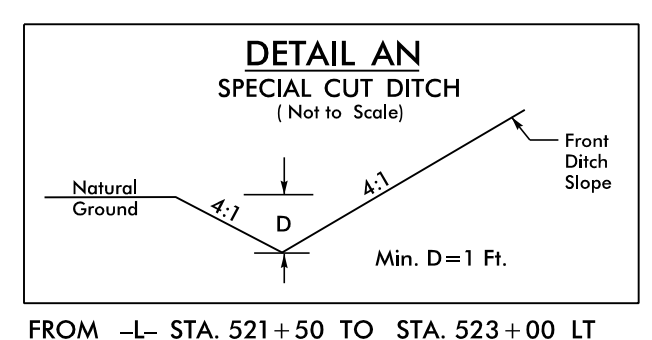
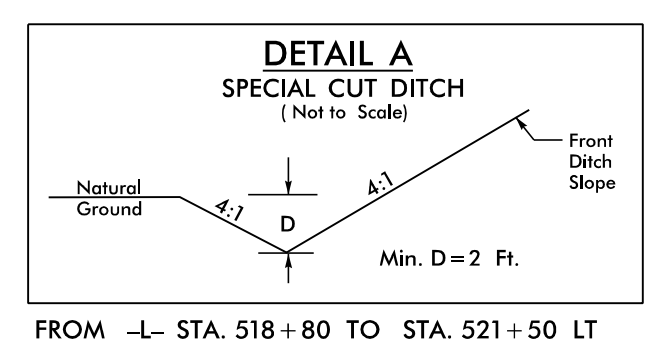
Steve Anthony Dean  
David P. Decker

DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED

-L-		-Y17RPB-		
Pls Sta 510+25.55	PI Sta 523+30.69	Pls Sta 535+60.37	Pls Sta 11+82.77	Pls Sta 16+57.95
$\Delta s = 2' 14" 59.4"$	$\Delta = 35' 01" 11.1" (LT)$	$\Delta s = 2' 14" 59.4"$	$\Delta s = 2' 26" 11.1"$	$\Delta = 24' 54" 41.2" (LT)$
$Ls = 300.00'$	$D = 1' 29" 59.6"$	$Ls = 300.00'$	$\Delta s = 5' 59" 34.0"$	$D = 3' 44" 41.4"$
$LT = 200.02'$	$L = 2,334.82'$	$LT = 200.02'$	$Ls = 320.00'$	$L = 665.22'$
$ST = 100.01'$	$T = 1,205.17'$	$ST = 100.01'$	$LT = 182.77'$	$T = 337.95'$
	$R = 3,820.00'$		$ST = 137.78'$	$R = 1,530.00'$
	$Vd = 70 \text{ MPH}$			$Vd = 60 \text{ MPH}$
	$\text{SUPER} = 6\%$			$\text{SUPER} = 8\%$



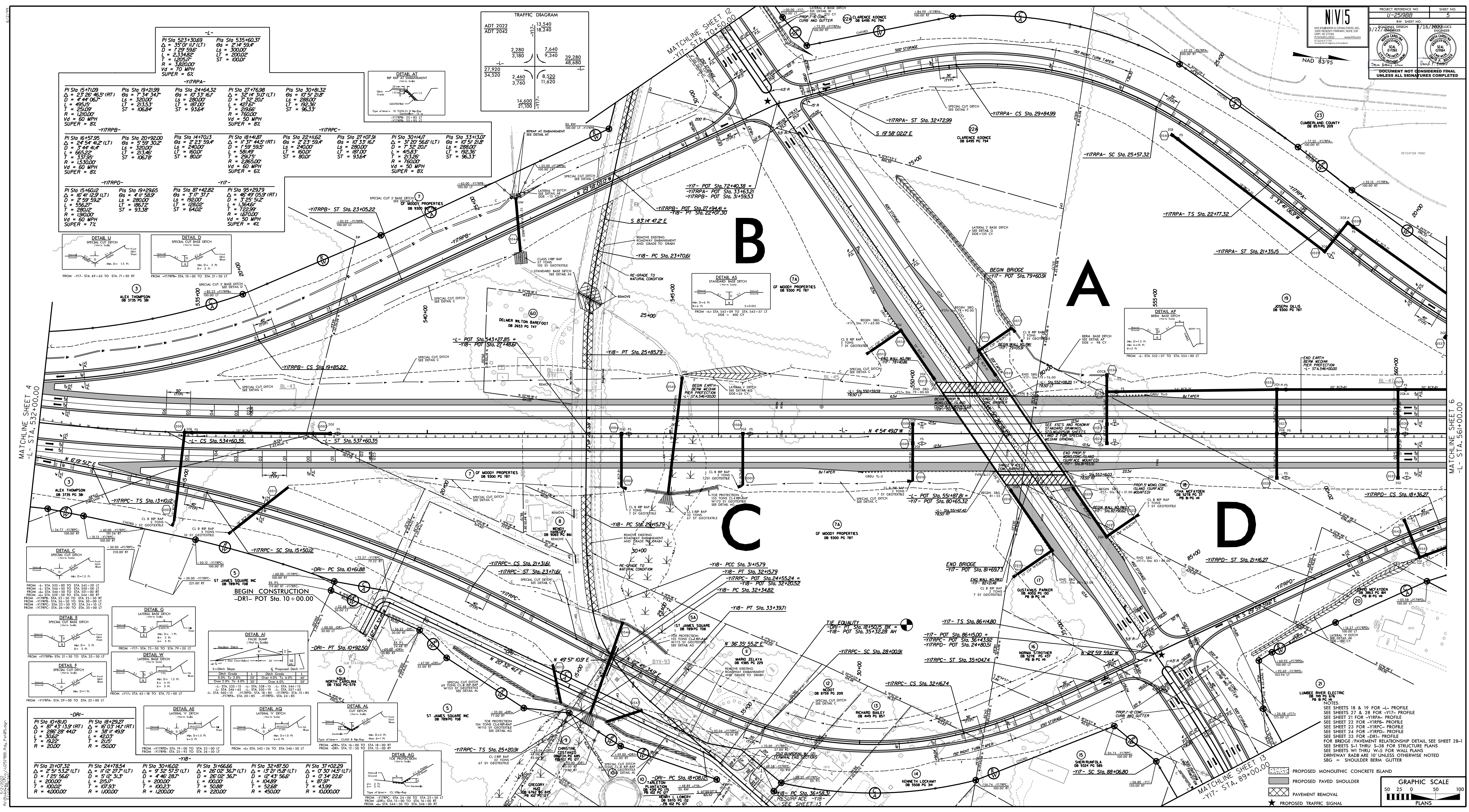
**BEGIN TIP PROJECT U-2519BB**  
**END TIP PROJECT U-2519BA**  
**-L- POC STA. 519+00.00**



**-Y17RPB- POT Sta. 10+00.00 =**  
**-L- POC Sta. 530+14.00**  
**59.0' RT**

**NOTES:**  
SEE SHEET 18 FOR -L- PROFILE  
SEE SHEET 22 FOR -Y17RPB- PROFILE  
SEE SHEET 23 FOR -Y17RPC- PROFILE  
DRIVEWAY RADII ARE 10' UNLESS OTHERWISE NOTED





TRAFFIC DIAGRAM

ADT 2022	13,540
ADT 2045	18,240
	2,280
	7,640
	9,340
	39,280
	48,680
	27,920
	34,520
	2,460
	8,530
	3,760
	11,620
	14,600
	21,700

YITRPA

PI Sta 15+71.09 Δ = 23°26'46.5" (RT) D = 129.595' L = 233.482' T = 120.00' R = 120.00' Vd = 60 MPH SUPER = 6%	PI Sta 19+21.99 Δ = 7°34'34.7" D = 300.00' L = 213.53' T = 106.64' R = 120.00' Vd = 60 MPH SUPER = 6%	PI Sta 24+64.32 Δ = 17°31'56.7" D = 280.00' L = 187.07' T = 106.64' R = 120.00' Vd = 60 MPH SUPER = 6%	PI Sta 27+76.98 Δ = 32°14'30.0" (LT) D = 173.201' L = 42.67' T = 29.75' R = 160.00' Vd = 50 MPH SUPER = 6%	PI Sta 30+81.32 Δ = 17°51'21.8" D = 300.00' L = 192.36' T = 96.33' R = 120.00' Vd = 60 MPH SUPER = 6%
--	--	---	---	--

YITRBP

PI Sta 16+57.95 Δ = 24°54'41.2" (LT) D = 314.414' L = 665.22' T = 337.35' R = 150.00' Vd = 60 MPH SUPER = 6%	PI Sta 20+92.00 Δ = 5°59'30.2" D = 320.00' L = 213.46' T = 106.64' R = 120.00' Vd = 60 MPH SUPER = 6%	PI Sta 14+07.13 Δ = 31°07'31.7" D = 240.00' L = 152.00' T = 80.00' R = 120.00' Vd = 60 MPH SUPER = 6%	PI Sta 18+41.87 Δ = 11°37'44.5" (RT) D = 317.595' L = 158.45' T = 79.25' R = 160.00' Vd = 50 MPH SUPER = 6%	PI Sta 22+11.62 Δ = 2°23'59.4" D = 240.00' L = 152.00' T = 80.00' R = 120.00' Vd = 60 MPH SUPER = 6%	PI Sta 27+07.91 Δ = 17°31'56.7" D = 280.00' L = 187.07' T = 106.64' R = 120.00' Vd = 60 MPH SUPER = 6%	PI Sta 30+14.47 Δ = 17°31'56.7" (LT) D = 280.00' L = 187.07' T = 106.64' R = 120.00' Vd = 50 MPH SUPER = 6%	PI Sta 33+13.07 Δ = 17°51'21.8" D = 300.00' L = 192.36' T = 96.33' R = 120.00' Vd = 60 MPH SUPER = 6%
---	--	--	--	---	---	--	--

YITRPP

PI Sta 15+45.95 Δ = 16°41'29.1" (LT) D = 259.595' L = 556.22' T = 280.00' R = 150.00' Vd = 60 MPH SUPER = 7%	PI Sta 19+29.65 Δ = 7°34'34.7" D = 300.00' L = 213.53' T = 106.64' R = 120.00' Vd = 60 MPH SUPER = 7%	PI Sta 14+28.22 Δ = 48°49'09.5" (RT) D = 325.215' L = 136.48' T = 72.925' R = 160.00' Vd = 50 MPH SUPER = 4%	PI Sta 18+41.87 Δ = 11°37'44.5" (RT) D = 317.595' L = 158.45' T = 79.25' R = 160.00' Vd = 50 MPH SUPER = 4%
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YITRPS

PI Sta 15+45.95 Δ = 16°41'29.1" (LT) D = 259.595' L = 556.22' T = 280.00' R = 150.00' Vd = 60 MPH SUPER = 7%	PI Sta 19+29.65 Δ = 7°34'34.7" D = 300.00' L = 213.53' T = 106.64' R = 120.00' Vd = 60 MPH SUPER = 7%	PI Sta 14+28.22 Δ = 48°49'09.5" (RT) D = 325.215' L = 136.48' T = 72.925' R = 160.00' Vd = 50 MPH SUPER = 4%	PI Sta 18+41.87 Δ = 11°37'44.5" (RT) D = 317.595' L = 158.45' T = 79.25' R = 160.00' Vd = 50 MPH SUPER = 4%
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YITRPC

PI Sta 15+45.95 Δ = 16°41'29.1" (LT) D = 259.595' L = 556.22' T = 280.00' R = 150.00' Vd = 60 MPH SUPER = 7%	PI Sta 19+29.65 Δ = 7°34'34.7" D = 300.00' L = 213.53' T = 106.64' R = 120.00' Vd = 60 MPH SUPER = 7%	PI Sta 14+28.22 Δ = 48°49'09.5" (RT) D = 325.215' L = 136.48' T = 72.925' R = 160.00' Vd = 50 MPH SUPER = 4%	PI Sta 18+41.87 Δ = 11°37'44.5" (RT) D = 317.595' L = 158.45' T = 79.25' R = 160.00' Vd = 50 MPH SUPER = 4%
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YITRPA

PI Sta 15+45.95 Δ = 16°41'29.1" (LT) D = 259.595' L = 556.22' T = 280.00' R = 150.00' Vd = 60 MPH SUPER = 7%	PI Sta 19+29.65 Δ = 7°34'34.7" D = 300.00' L = 213.53' T = 106.64' R = 120.00' Vd = 60 MPH SUPER = 7%	PI Sta 14+28.22 Δ = 48°49'09.5" (RT) D = 325.215' L = 136.48' T = 72.925' R = 160.00' Vd = 50 MPH SUPER = 4%	PI Sta 18+41.87 Δ = 11°37'44.5" (RT) D = 317.595' L = 158.45' T = 79.25' R = 160.00' Vd = 50 MPH SUPER = 4%
---	--	---	--

YITRPP

PI Sta 15+45.95 Δ = 16°41'29.1" (LT) D = 259.595' L = 556.22' T = 280.00' R = 150.00' Vd = 60 MPH SUPER = 7%	PI Sta 19+29.65 Δ = 7°34'34.7" D = 300.00' L = 213.53' T = 106.64' R = 120.00' Vd = 60 MPH SUPER = 7%	PI Sta 14+28.22 Δ = 48°49'09.5" (RT) D = 325.215' L = 136.48' T = 72.925' R = 160.00' Vd = 50 MPH SUPER = 4%	PI Sta 18+41.87 Δ = 11°37'44.5" (RT) D = 317.595' L = 158.45' T = 79.25' R = 160.00' Vd = 50 MPH SUPER = 4%
---	--	---	--

YITRPC

PI Sta 15+45.95 Δ = 16°41'29.1" (LT) D = 259.595' L = 556.22' T = 280.00' R = 150.00' Vd = 60 MPH SUPER = 7%	PI Sta 19+29.65 Δ = 7°34'34.7" D = 300.00' L = 213.53' T = 106.64' R = 120.00' Vd = 60 MPH SUPER = 7%	PI Sta 14+28.22 Δ = 48°49'09.5" (RT) D = 325.215' L = 136.48' T = 72.925' R = 160.00' Vd = 50 MPH SUPER = 4%	PI Sta 18+41.87 Δ = 11°37'44.5" (RT) D = 317.595' L = 158.45' T = 79.25' R = 160.00' Vd = 50 MPH SUPER = 4%
---	--	---	--

NIV5

PROJECT REFERENCE NO: 17-25789B

SHEET NO: 5

DATE: 7/16/2024

DESIGNER: NIV5

CHECKER: NIV5

APPROVER: NIV5

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

MATCHLINE SHEET 4 - STA. 532+00.00

MATCHLINE SHEET 6 - STA. 561+00.00

NOTES:

- SEE SHEETS 18 & 19 FOR -L- PROFILE
- SEE SHEETS 27 & 28 FOR -17- PROFILE
- SEE SHEET 21 FOR -YITRPA- PROFILE
- SEE SHEET 22 FOR -YITRBP- PROFILE
- SEE SHEET 23 FOR -YITRPC- PROFILE
- SEE SHEET 24 FOR -YITRPP- PROFILE
- SEE SHEET 25 FOR -DRI- PROFILE
- FOR BRIDGE/PAVEMENT RELATIONSHIP DETAIL SEE SHEET 28-1
- SEE SHEETS 5-1 THRU 5-38 FOR STRUCTURE PLANS
- SEE SHEETS W1 THRU W-5 FOR WALL PLANS
- DRIVEWAY RADII ARE 10' UNLESS OTHERWISE NOTED
- SHOULDER BEAM GUTTER

LEGEND:

- PROPOSED MONOLITHIC CONCRETE ISLAND
- PROPOSED PAVED SHOULDER
- PAVEMENT REMOVAL
- PROPOSED TRAFFIC SIGNAL

GRAPHIC SCALE

50 25 0 50 100

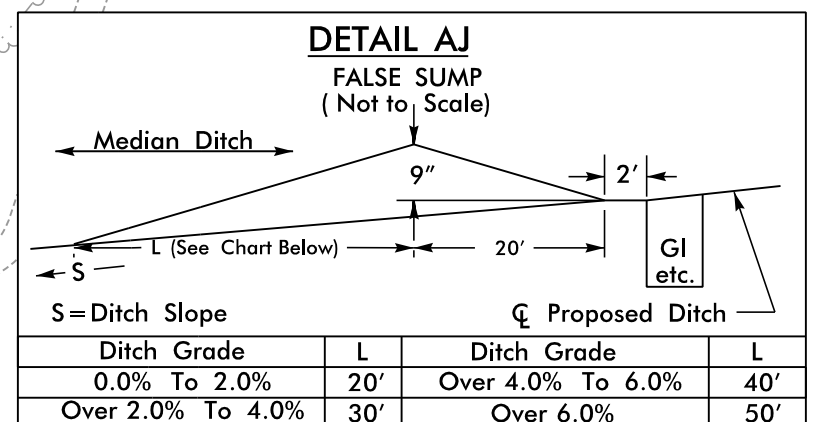
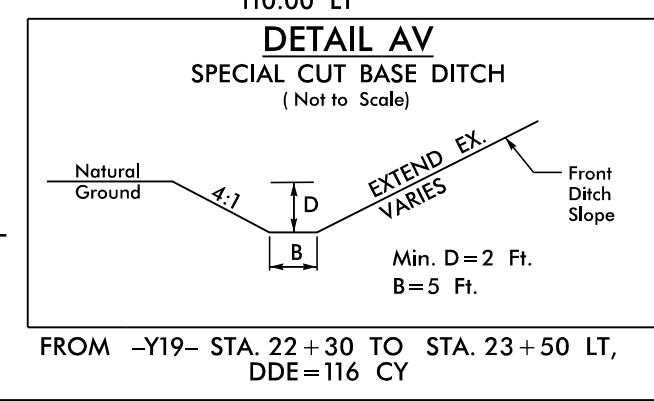
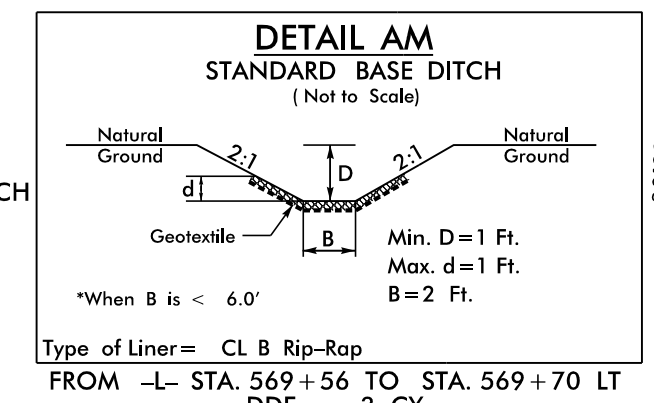
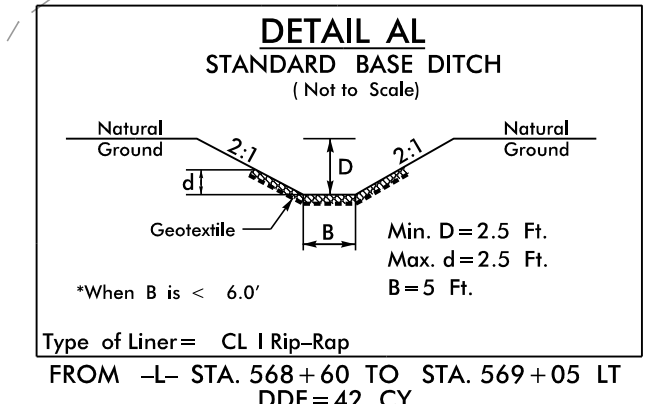
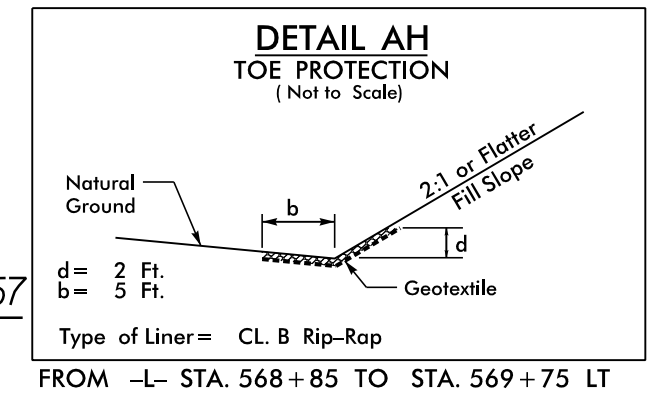
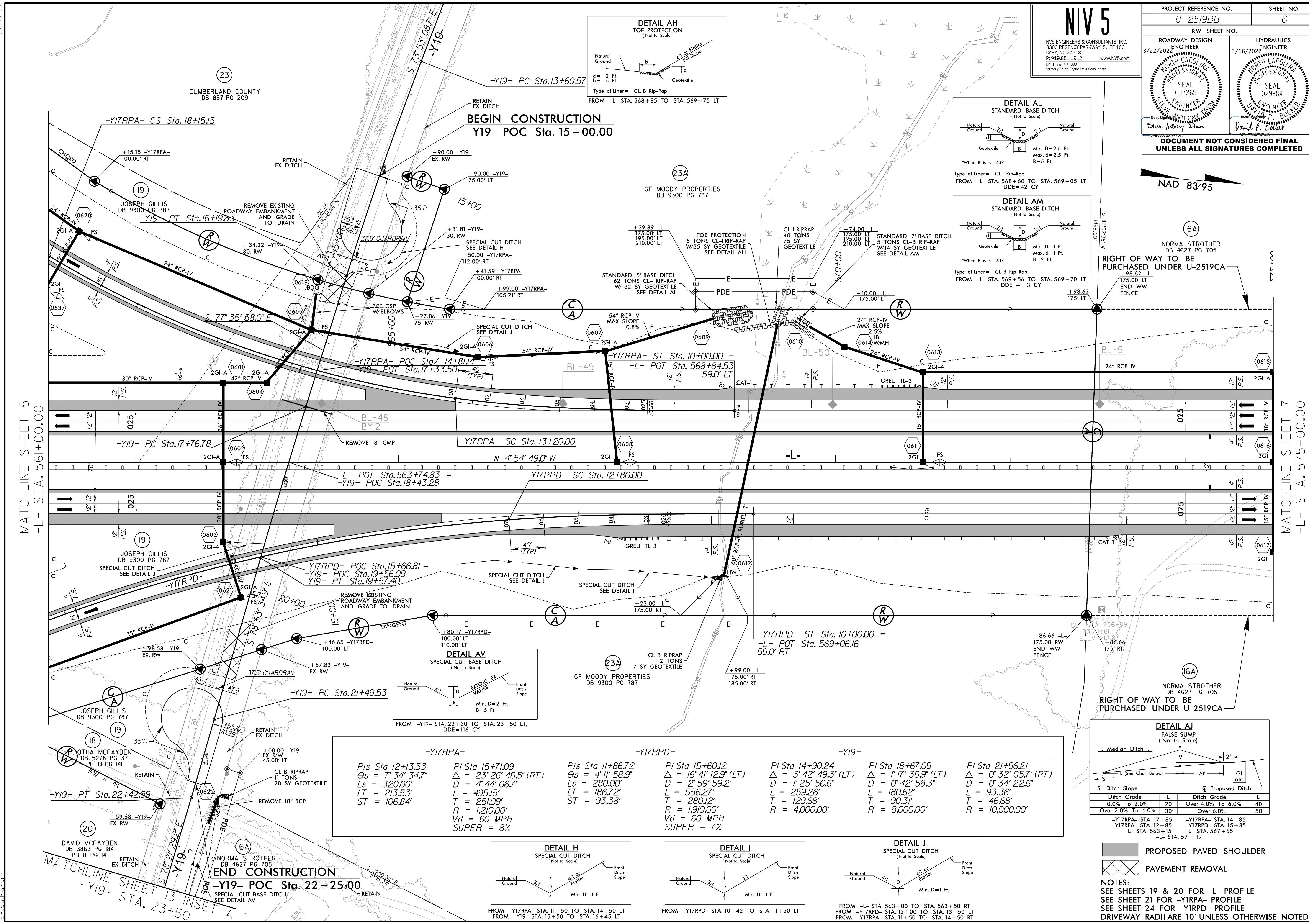
PLANS

8/17/19

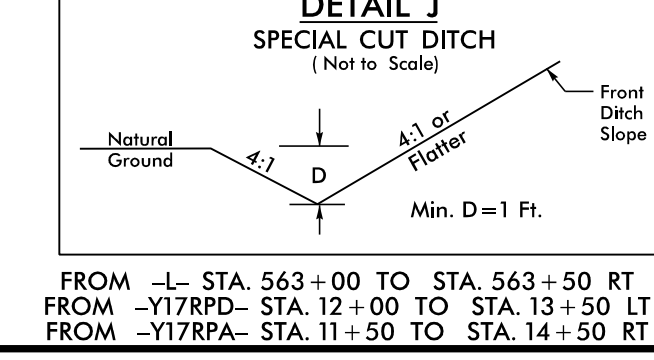
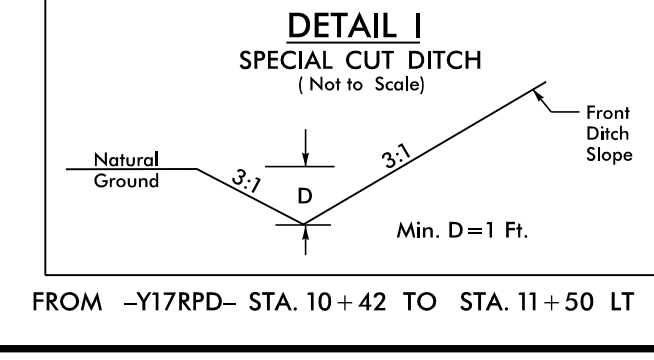
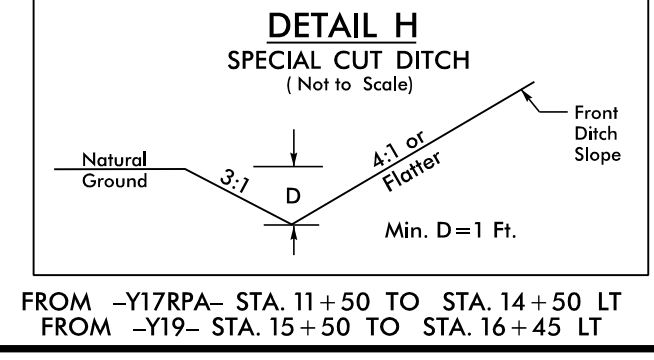
**NV15**  
NV15 ENGINEERS & CONSULTANTS, INC.  
3300 REGENCY PARKWAY, SUITE 100  
CARY, NC 27518  
P: 919.851.1912  
www.nv15.com  
NC License # F-3333  
Formerly CALIX Engineers & Consultants

PROJECT REFERENCE NO. <b>U-2519BB</b>	SHEET NO. <b>6</b>
Roadway Design ENGINEER 3/22/2022	Hydraulics ENGINEER 3/16/2022
<b>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</b>	

NAD 83/95



-Y17RPA-		-Y17RPD-		-Y19-	
PI Sta 12+13.53	PI Sta 15+71.09	PI Sta 14+90.24	PI Sta 18+67.09	PI Sta 21+96.21	PI Sta 21+96.21
Δs = 7' 34" 34.7"	Δ = 23' 26" 46.5" (RT)	Δ = 16' 41" 12.9" (LT)	Δ = 1' 17" 36.9" (LT)	Δ = 0' 32" 05.7" (RT)	Δ = 0' 32" 05.7" (RT)
Ls = 320.00'	D = 4' 44" 06.7"	D = 2' 59" 59.2"	D = 0' 42" 58.3"	D = 0' 34" 22.6"	D = 0' 34" 22.6"
LT = 213.53'	L = 495.15'	L = 556.27'	L = 180.62'	L = 93.36'	L = 93.36'
ST = 106.84'	T = 251.09'	T = 280.12'	T = 46.68'	T = 129.68'	T = 46.68'
	R = 1,210.00'	R = 1,910.00'	R = 8,000.00'	R = 10,000.00'	R = 10,000.00'
	Vd = 60 MPH	Vd = 60 MPH			
	SUPER = 8%	SUPER = 7%			



**NOTES:**  
SEE SHEETS 19 & 20 FOR -L- PROFILE  
SEE SHEET 21 FOR -Y1RPA- PROFILE  
SEE SHEET 24 FOR -Y1RPD- PROFILE  
DRIVEWAY RADII ARE 10' UNLESS OTHERWISE NOTED

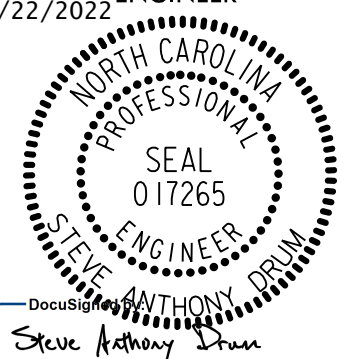
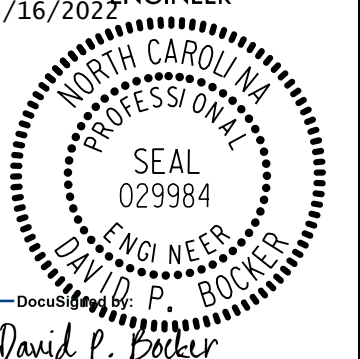
MATCHLINE SHEET 5  
-L- STA. 56+00.00

MATCHLINE SHEET 7  
-L- STA. 575+00.00

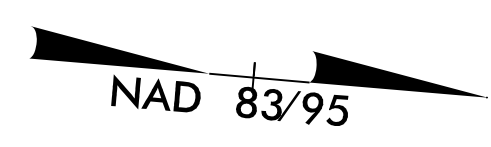
3/2/2022  
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8/17/99

**NV15**  
 NV5 ENGINEERS & CONSULTANTS, INC.  
 3300 REGENCY PARKWAY, SUITE 100  
 CARY, NC 27518  
 P: 919.851.1912 www.NV5.com  
 NC License # F-5333  
 formerly CALYX Engineers & Consultants

PROJECT REFERENCE NO. <b>U-2519BB</b>	SHEET NO. <b>7</b>
RW SHEET NO.	
ROADWAY DESIGN ENGINEER 3/22/2022  <b>STEVE ANTHONY</b> ENGINEER SEAL 017265	HYDRAULICS ENGINEER 3/16/2022  <b>DAVID P. BOKER</b> ENGINEER SEAL 029984

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

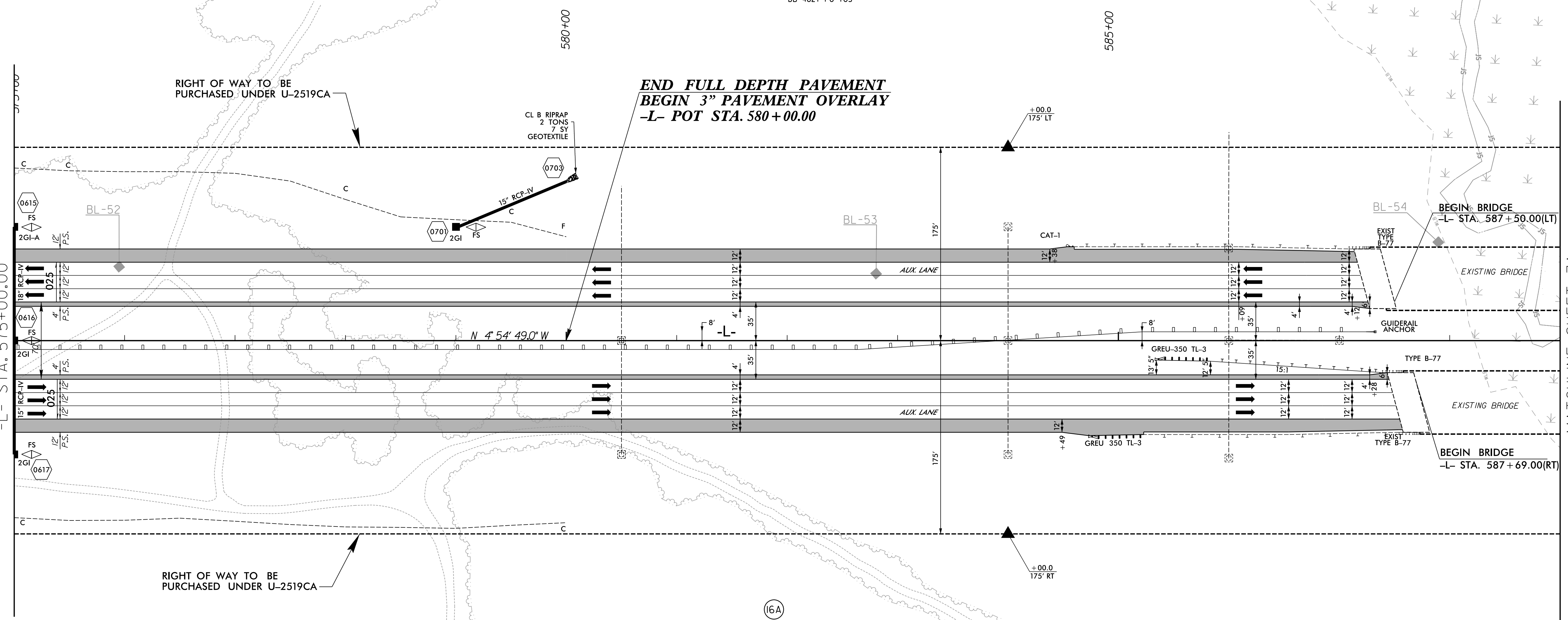


(16A)  
NORMA STROTHER  
DB 4627 PG 705

**END FULL DEPTH PAVEMENT  
BEGIN 3" PAVEMENT OVERLAY  
-L- POT STA. 580+00.00**

MATCHLINE SHEET 6  
-L- STA. 575+00.00



MATCHLINE SHEET 7A  
-L- STA. 589+00.00



**DETAIL AK  
FALSE SUMP  
(Not to Scale)**

S = Ditch Slope		Q = Proposed Ditch	
Ditch Grade	L	Ditch Grade	L
0.0% To 2.0%	20'	Over 4.0% To 6.0%	40'
Over 2.0% To 4.0%	30'	Over 6.0%	50'

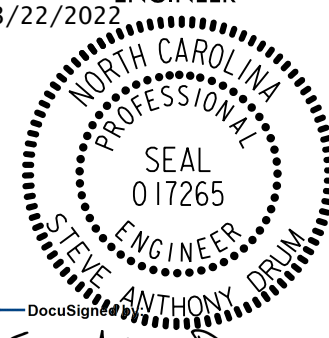
-L- STA. 575+15

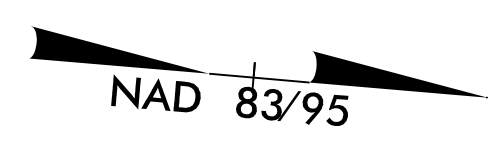
- NOTES:**  
 SEE SHEET 20 & 20A FOR -L- PROFILE  
 DRIVEWAY RADII ARE 10' UNLESS OTHERWISE NOTED  
 --- DRAINAGE PIPE AS PLACED ON U-2519CA  
 DRAINAGE STRUCTURE AS PLACED ON U-2519CA  
 PROPOSED PAVED SHOULDER

3/2/2022  
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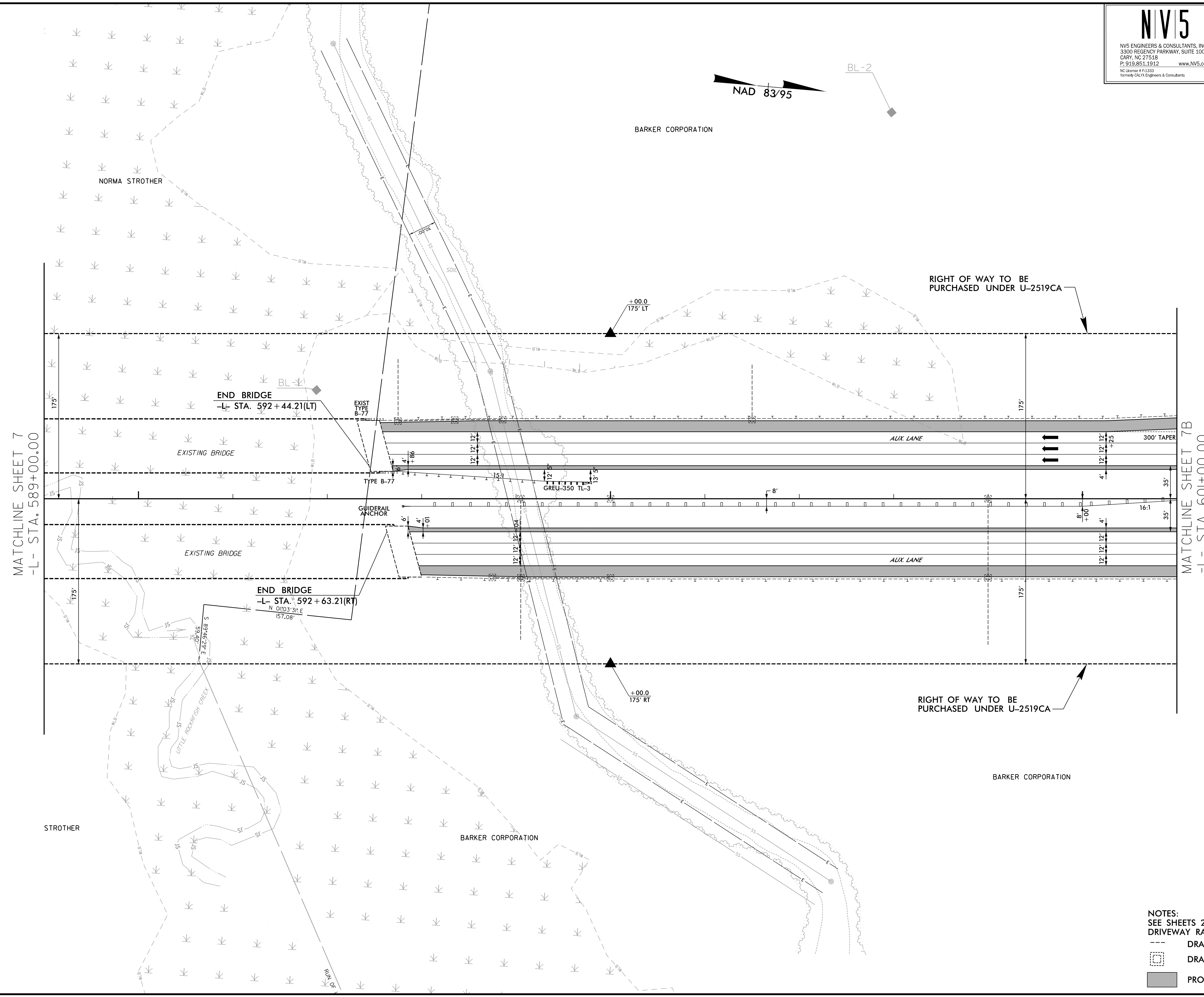
8/17/99

**NV15**  
 NV5 ENGINEERS & CONSULTANTS, INC.  
 3300 REGENCY PARKWAY, SUITE 100  
 CARY, NC 27518  
 P: 919.851.1912 www.NV5.com  
 NC License # F-5333  
 formerly CALYX Engineers & Consultants

PROJECT REFERENCE NO. <i>U-2519BB</i>	SHEET NO. <i>7A</i>
ROADWAY DESIGN ENGINEER 3/22/2022	HYDRAULICS ENGINEER
 SEAL 017265 STEVE ANTHONY STATE ENGINEER NORTH CAROLINA 3/22/2022 Steve Anthony	
<b>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</b>	





BL-2



MATCHLINE SHEET 7  
-L- STA. 589+00.00

MATCHLINE SHEET 7B  
-L- STA. 601+00.00

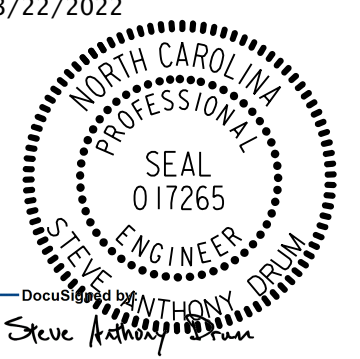
- NOTES:**  
 SEE SHEETS 20A & 20 B FOR -L- PROFILE  
 DRIVEWAY RADII ARE 10' UNLESS OTHERWISE NOTED  
 --- DRAINAGE PIPE AS PLACED ON U-2519CA  
 DRAINAGE STRUCTURE AS PLACED ON U-2519CA  
 PROPOSED PAVED SHOULDER

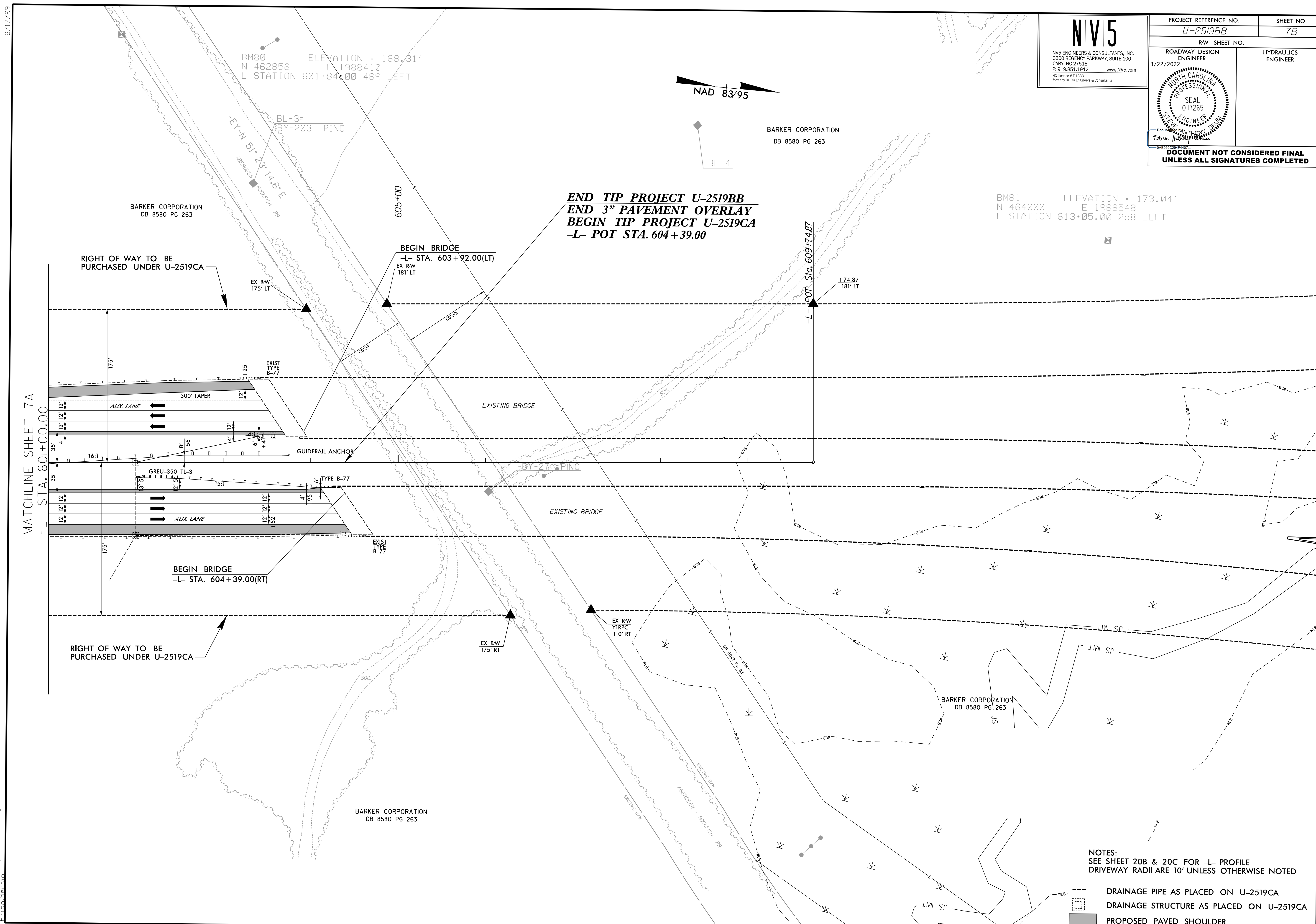
3/22/2022  
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8/17/99

# NV5

NV5 ENGINEERS & CONSULTANTS, INC.  
3300 REGENCY PARKWAY, SUITE 100  
CARY, NC 27518  
P: 919.851.1912 www.NV5.com  
NC License # F-4333  
formerly CACTI Engineers & Consultants

PROJECT REFERENCE NO. <i>U-2519BB</i>	SHEET NO. <i>7B</i>
RW SHEET NO.	
ROADWAY DESIGN ENGINEER 3/22/2022	HYDRAULICS ENGINEER
	
<b>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</b>	






MATCHLINE SHEET 7A  
-L- STA. 601+00.00

**END TIP PROJECT U-2519BB  
END 3" PAVEMENT OVERLAY  
BEGIN TIP PROJECT U-2519CA  
-L- POT STA. 604+39.00**

RIGHT OF WAY TO BE  
PURCHASED UNDER U-2519CA

RIGHT OF WAY TO BE  
PURCHASED UNDER U-2519CA

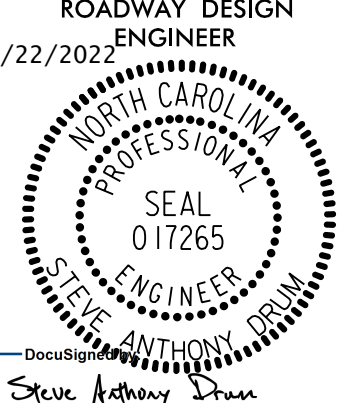
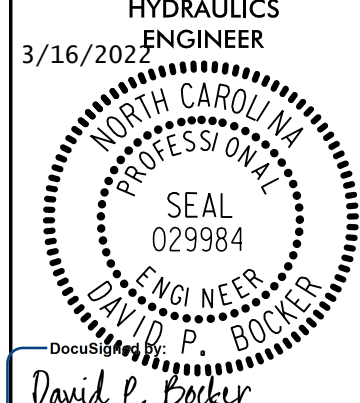
NOTES:  
SEE SHEET 20B & 20C FOR -L- PROFILE  
DRIVEWAY RADII ARE 10' UNLESS OTHERWISE NOTED

-  DRAINAGE PIPE AS PLACED ON U-2519CA
-  DRAINAGE STRUCTURE AS PLACED ON U-2519CA
-  PROPOSED PAVED SHOULDER

3/2/2022  
E:\Projects\U-2519BB-Rdy\_Psh\07B.dgn  
E:\Projects\U-2519BB-Rdy\_Psh\07B.dgn

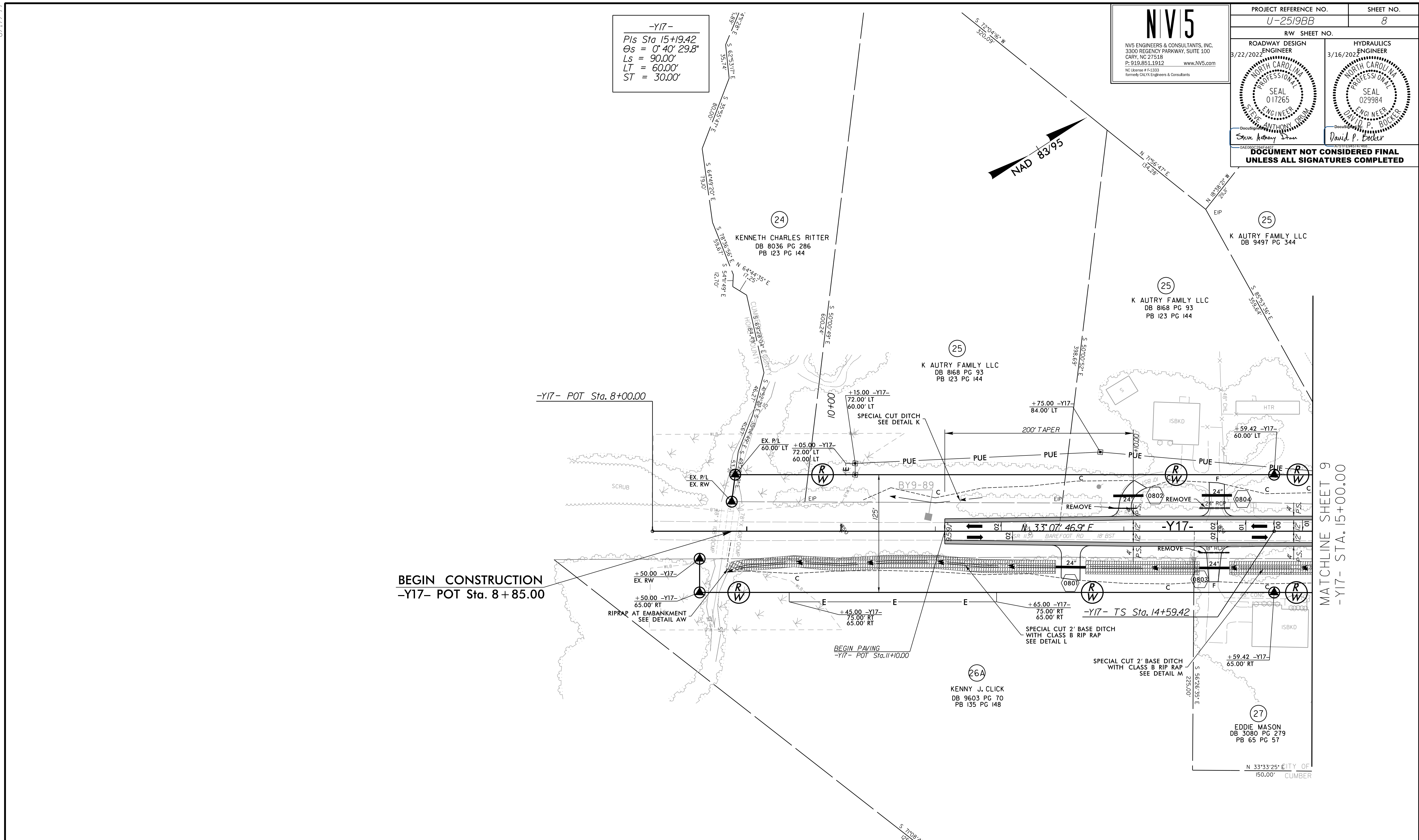
8/17/19

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 NC License #1-1333  
 formerly CAVY Engineers & Consultants

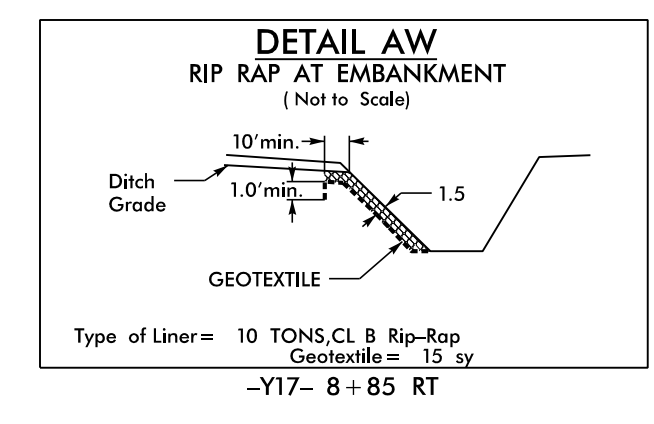
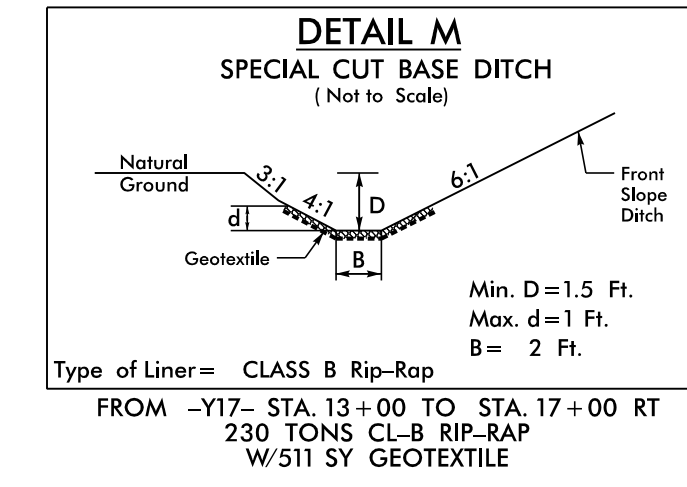
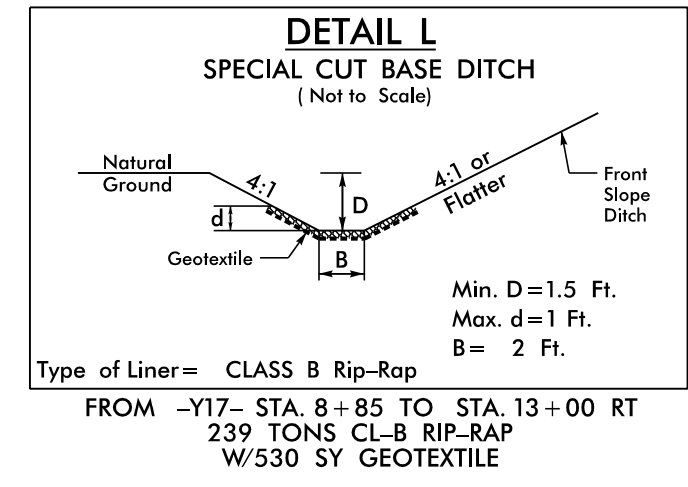
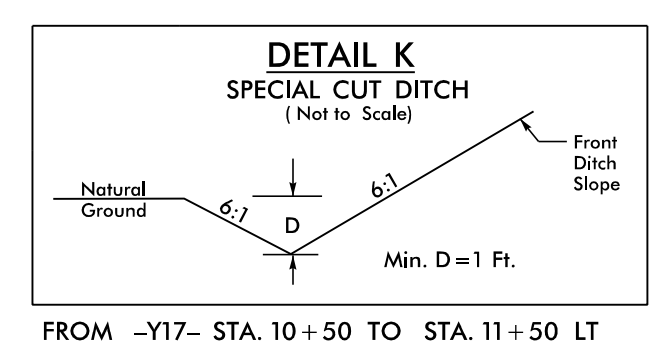
PROJECT REFERENCE NO. <b>U-2519BB</b>	SHEET NO. <b>8</b>
RW SHEET NO.	
ROADWAY DESIGN ENGINEER 3/22/2022 	HYDRAULICS ENGINEER 3/16/2022 

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


**-Y17-**  
 PIs Sta 15+19.42  
 $\theta_s = 0^\circ 40' 29.8''$   
 Ls = 90.00'  
 LT = 60.00'  
 ST = 30.00'



MATCHLINE SHEET 9  
-Y17- STA. 15+00.00



**NOTES:**  
 SEE SHEET 25 FOR -Y17- PROFILE  
 DRIVEWAY RADII ARE 10' UNLESS OTHERWISE NOTED

 PAVED SHOULDER

3/2/2022  
 R:\Projects\U2519BB\Redy\_Psh08.dgn  
 E:\CADD\U2519BB



8.17.19

-Y17-

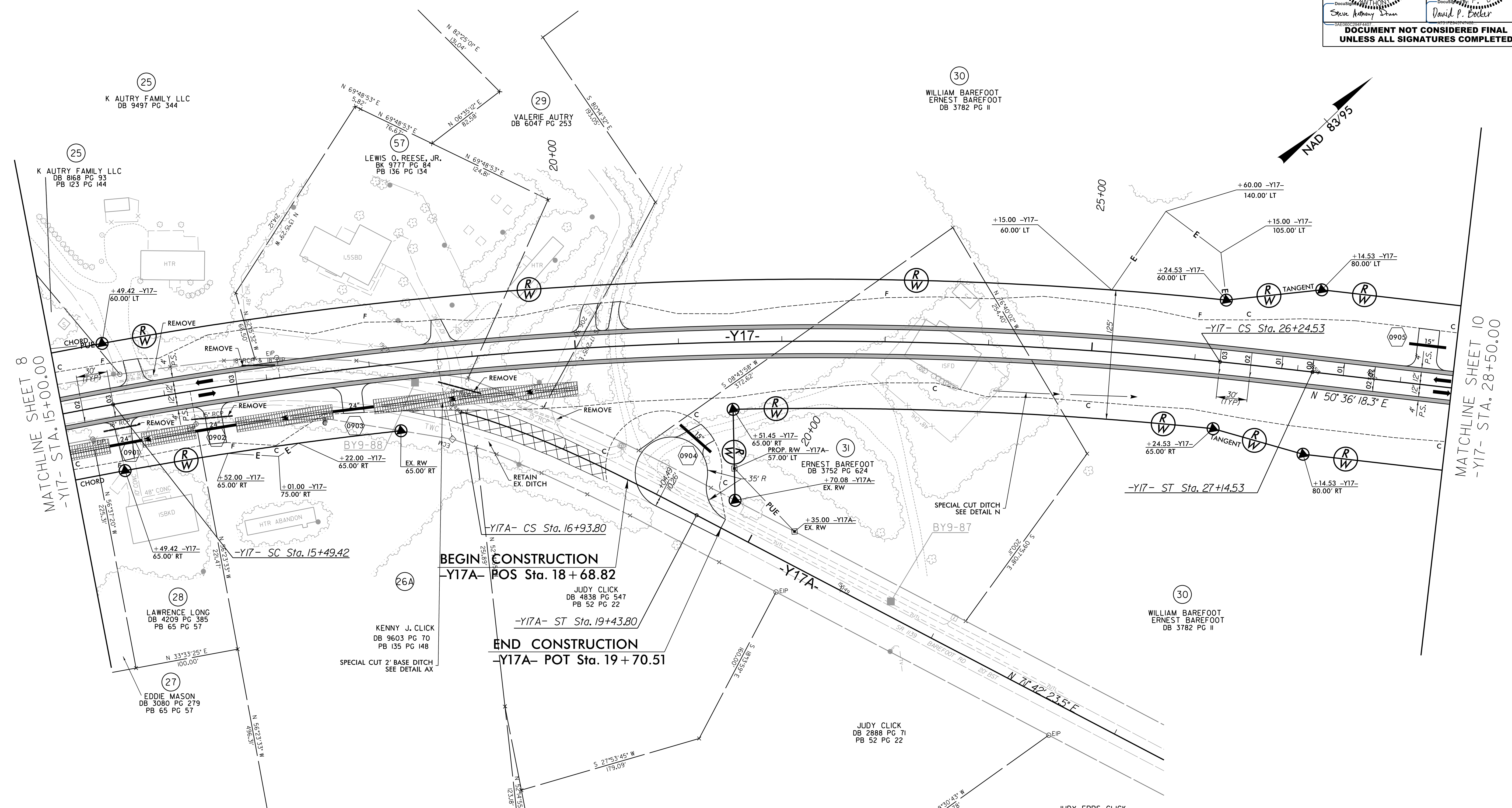
PIs Sta 15+19.42	PI Sta 20+90.55	PIs Sta 26+54.53
$\Theta s = 0^{\circ} 40' 29.8''$	$\Delta = 16^{\circ} 07' 31.8''$ (RT)	$\Theta s = 0^{\circ} 40' 29.8''$
LS = 90.00'	D = 1' 29' 59.6"	LS = 90.00'
LT = 60.00'	L = 1,075.11'	LT = 60.00'
ST = 30.00'	T = 54.13'	ST = 30.00'
	R = 3,820.00'	
	Vd = 50 MPH	
	SUPER = 3%	

-Y17A-

PIs Sta 17+77.48
$\Theta s = 1^{\circ} 56' 11.8''$
LS = 250.00'
LT = 167.05'
ST = 83.68'

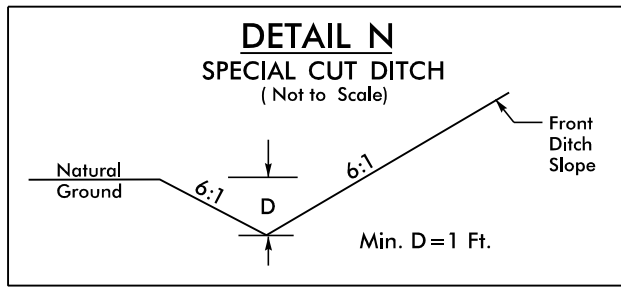
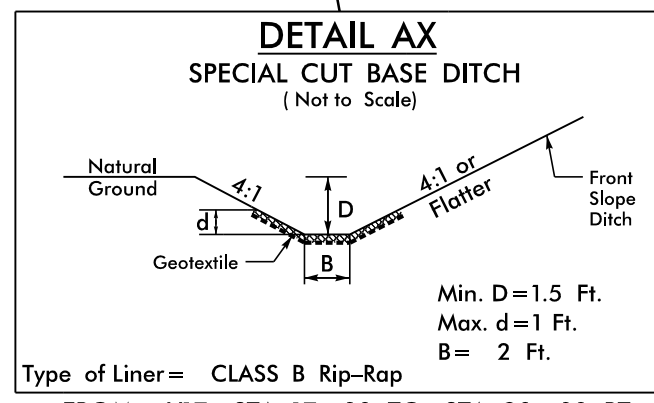


PROJECT REFERENCE NO. U-2519BB	SHEET NO. 9
ROADWAY DESIGN ENGINEER 3/22/2022 STEVE ANTHONY STAN Professional Seal 017265	HYDRAULICS ENGINEER 3/16/2022 DAVID P. BOCKER Professional Seal 029984
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



MATCHLINE SHEET 8  
-Y17- STA. 15+00.00

MATCHLINE SHEET 10  
-Y17- STA. 28+50.00



NOTES:  
SEE SHEETS 25 & 26 FOR -Y17- PROFILE  
DRIVEWAY RADII ARE 10' UNLESS OTHERWISE NOTED

PAVEMENT REMOVAL

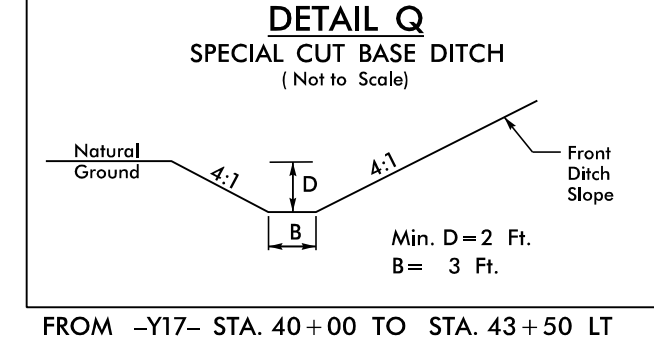
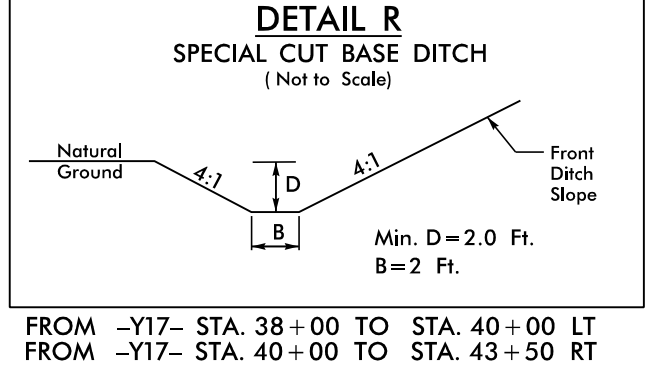
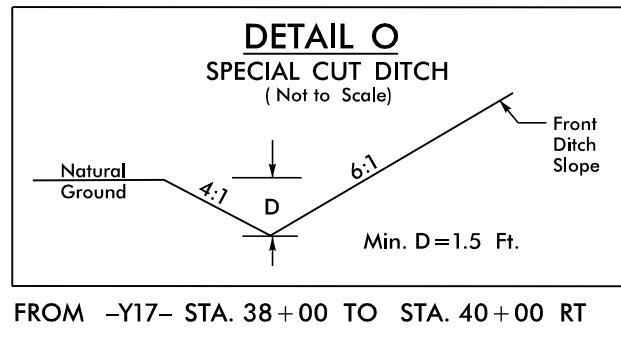
PROPOSED PAVED SHOULDER

3/22/2022  
R:\Projects\2519BB\U2519BB\_Rdy\_Psh09.dgn  
E:\Projects\2519BB\U2519BB.dwg

8/17/2022  
R:\Projects\2022\U2519BB\_Rdwy\_Psh10.dgn  
E:\psh10

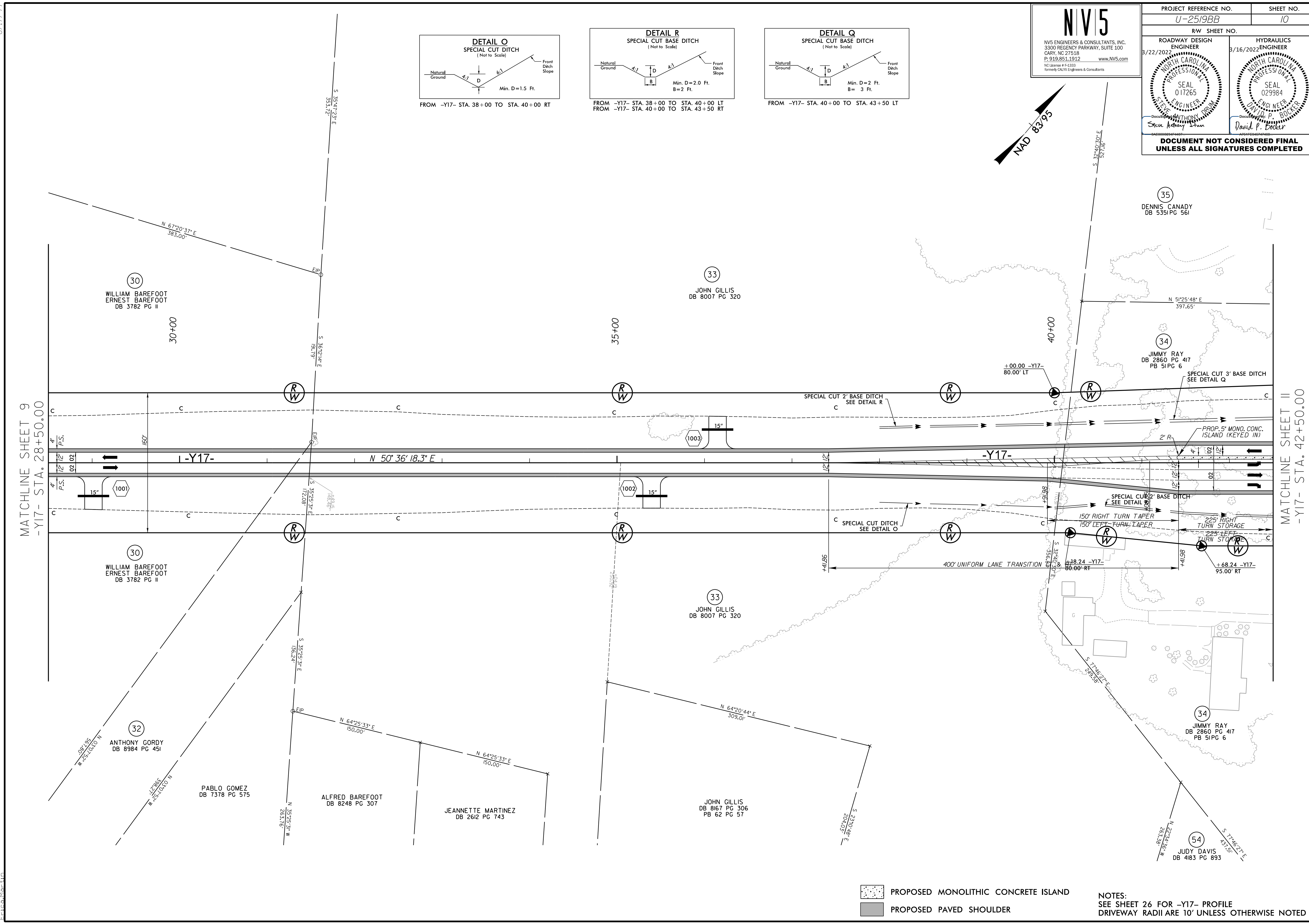
MATCHLINE SHEET 9  
-Y17- STA. 28+50.00

MATCHLINE SHEET 11  
-Y17- STA. 42+50.00



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NC License # 14533  
formerly CAVY Engineers & Consultants

PROJECT REFERENCE NO. U-2519BB	SHEET NO. 10
RW SHEET NO.	HYDRAULICS
ROADWAY DESIGN ENGINEER 3/22/2022 ANTHONY GORDY SEAL 017265	ENGINEER 3/16/2022 DAVID P. BOCKER SEAL 029984
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



- PROPOSED MONOLITHIC CONCRETE ISLAND
- PROPOSED PAVED SHOULDER

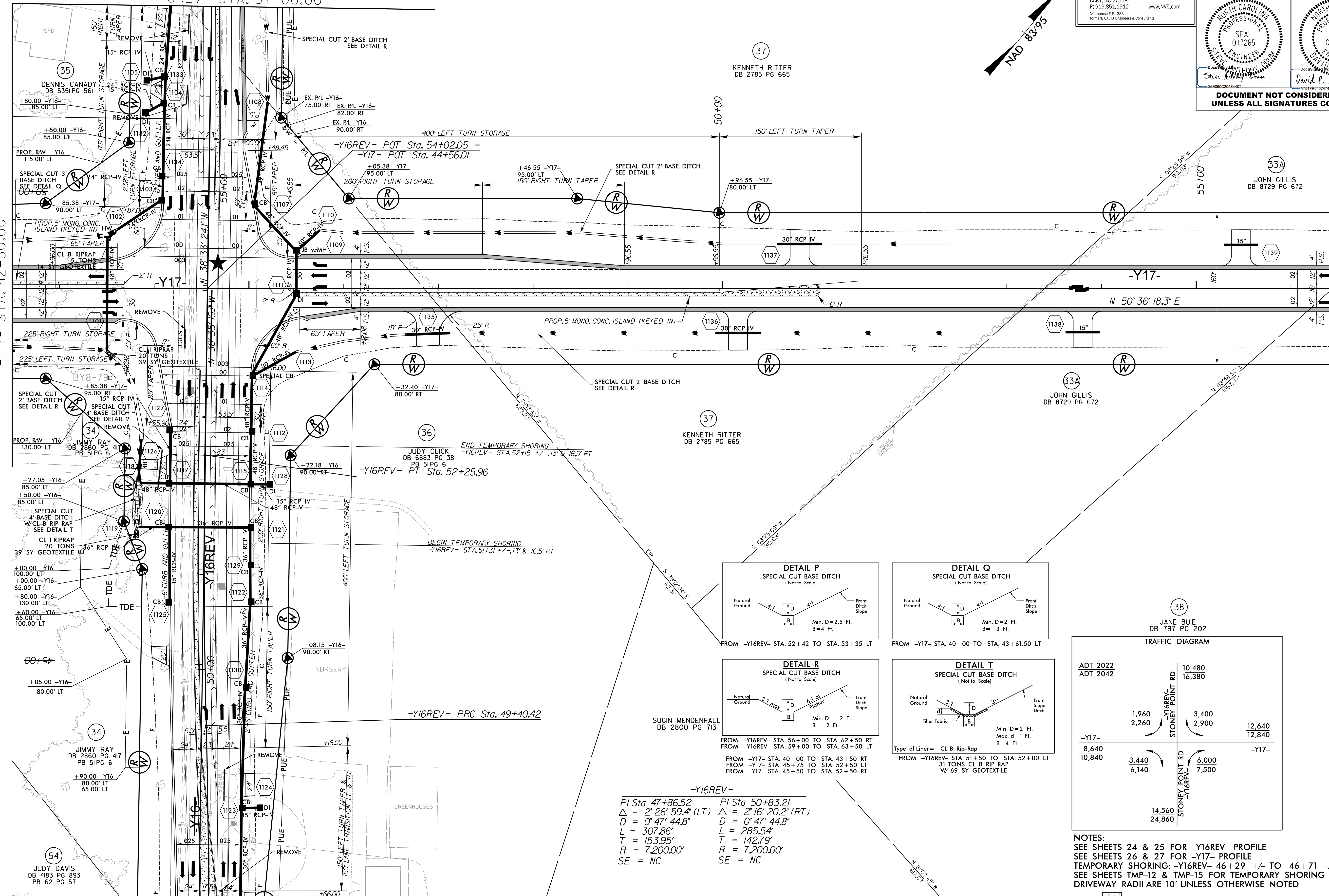
NOTES:  
SEE SHEET 26 FOR -Y17- PROFILE  
DRIVEWAY RADII ARE 10' UNLESS OTHERWISE NOTED

8/17/99  
3/2/2022  
R:\Projects\2022\U2519BB\_Rdy\_Psh11.dgn  
E:\Projects\2022\U2519BB\_Rdy\_Psh11.dgn

MATCHLINE SHEET 16  
-Y16REV- STA. 57+00.00

MATCHLINE SHEET 10  
-Y17- STA. 42+50.00

MATCHLINE SHEET 12  
-Y17- STA. 56+50.00



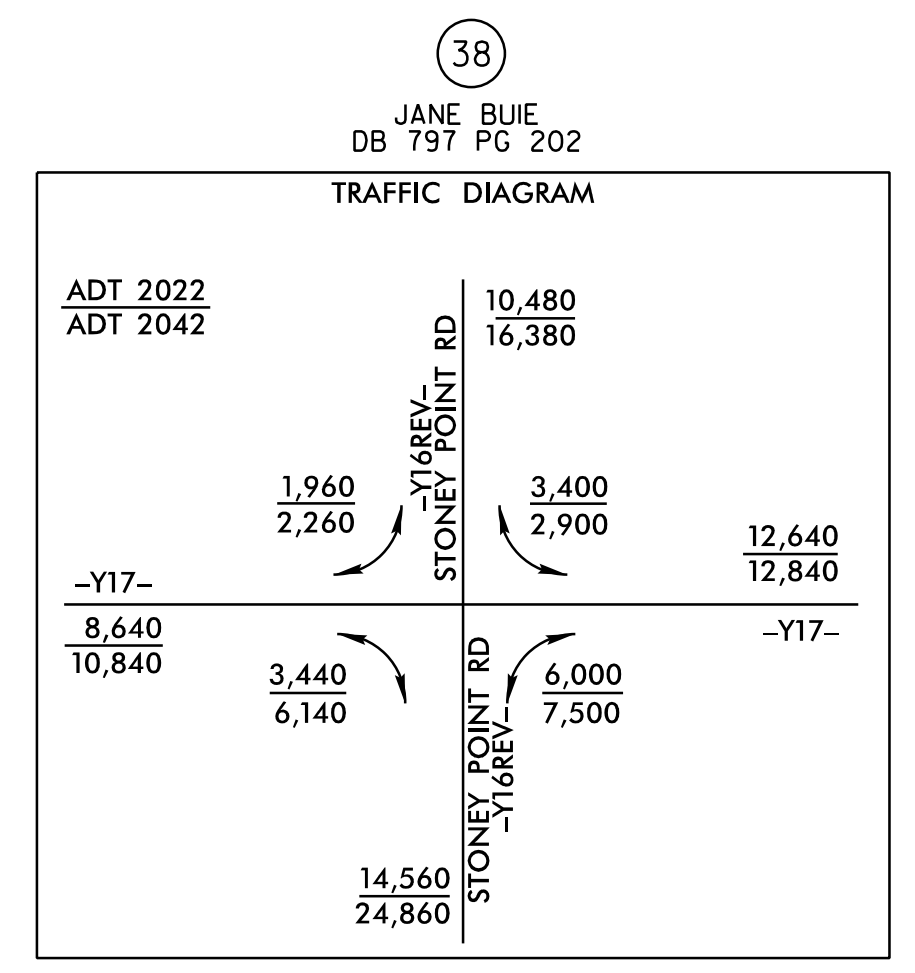
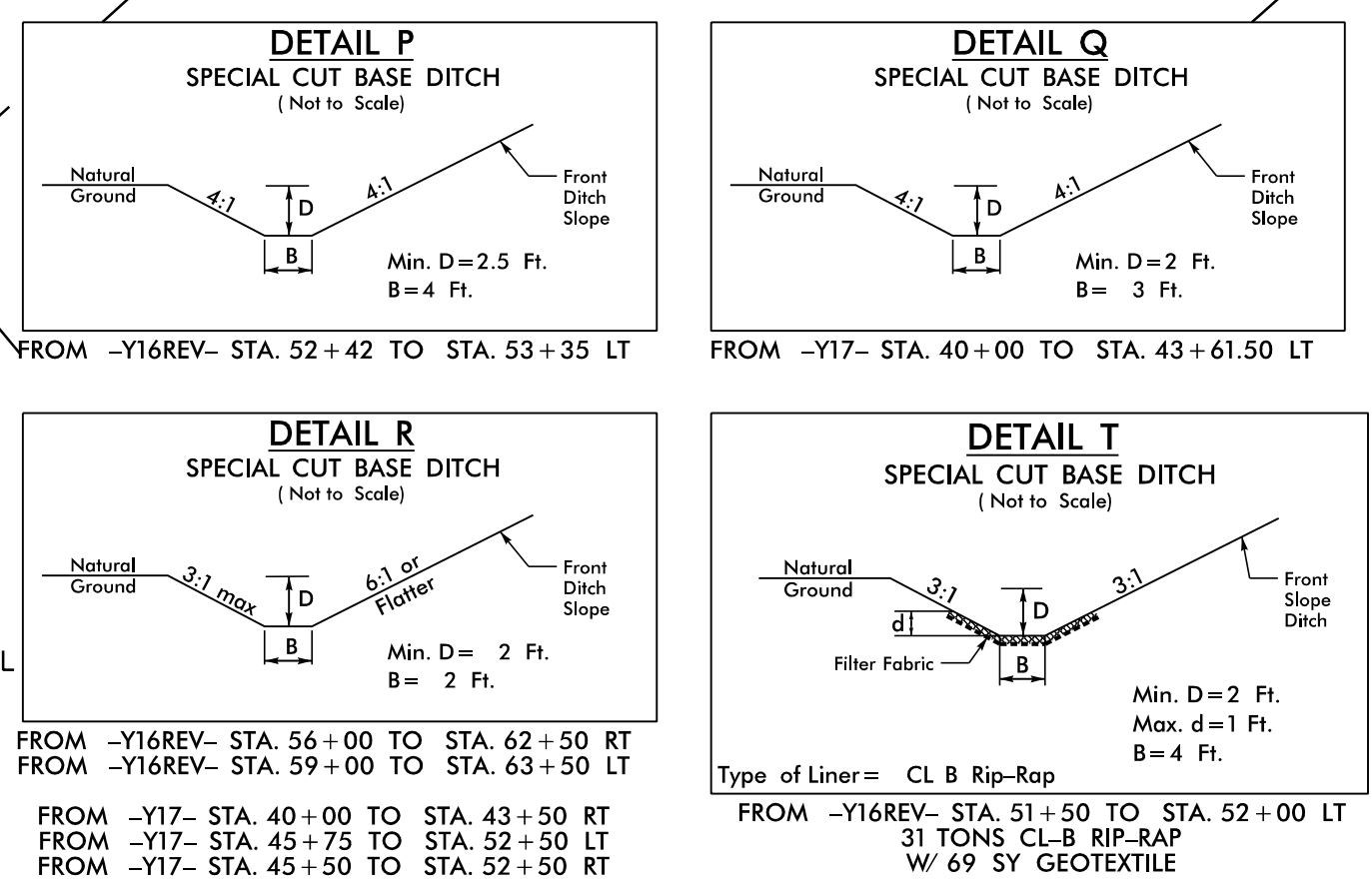
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PROJECT REFERENCE NO. U-2519BB  
 SHEET NO. 11  
 RW SHEET NO.

ROADWAY DESIGN 3/22/2022 ENGINEER  
 HYDRAULICS 3/16/2022 ENGINEER

SEAL 017265  
 SEAL 029984

DOCUMENT NOT CONSIDERED FINAL  
 UNLESS ALL SIGNATURES COMPLETED



**-Y16REV-**

PI Sta 47+86.52	PI Sta 50+83.21
$\Delta = 2' 26" 59.4" (LT)$	$\Delta = 2' 16" 20.2" (RT)$
$D = 0' 47" 44.8"$	$D = 0' 47" 44.8"$
$L = 307.86'$	$L = 285.54'$
$T = 153.95'$	$T = 142.79'$
$R = 7,200.00'$	$R = 7,200.00'$
SE = NC	SE = NC

NOTES:  
 SEE SHEETS 24 & 25 FOR -Y16REV- PROFILE  
 SEE SHEETS 26 & 27 FOR -Y17- PROFILE  
 TEMPORARY SHORING: -Y16REV- 46+29 +/- TO 46+71 +/-  
 SEE SHEETS TMP-12 & TMP-15 FOR TEMPORARY SHORING LOCATIONS  
 DRIVEWAY RADII ARE 10' UNLESS OTHERWISE NOTED

- PROPOSED CONCRETE MONOLITHIC ISLAND
- PROPOSED PAVED SHOULDER
- PROPOSED TRAFFIC SIGNAL

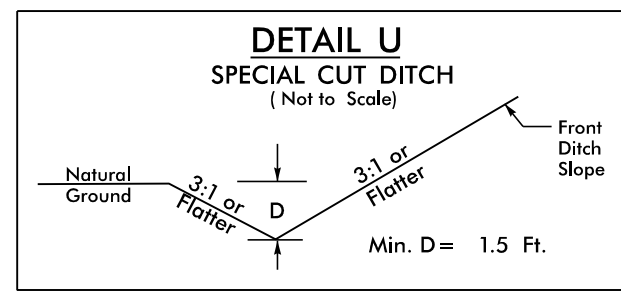
8.17.2022

MATCHLINE SHEET II -Y17- STA. 56+50.00

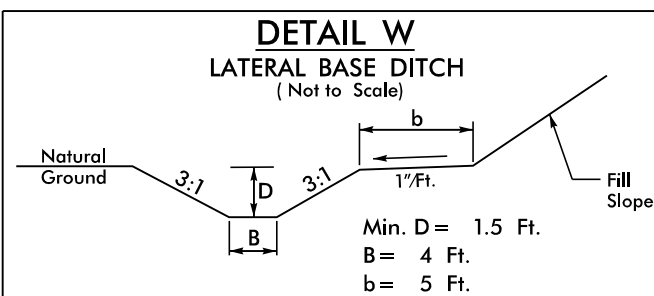
MATCHLINE SHEET 5 -Y17- STA. 70+50.00

-Y18-	
PI Sta 15+01.51	PI Sta 21+07.32
$\Delta = 1'15" 22.4" (LT)$	$\Delta = 2'51" 53.2" (LT)$
$D = 0'10" 44.6"$	$D = 1'25" 56.6"$
$L = 701.61'$	$L = 200.00'$
$T = 350.82'$	$T = 100.02'$
$R = 32,000.00'$	$R = 4,000.00'$

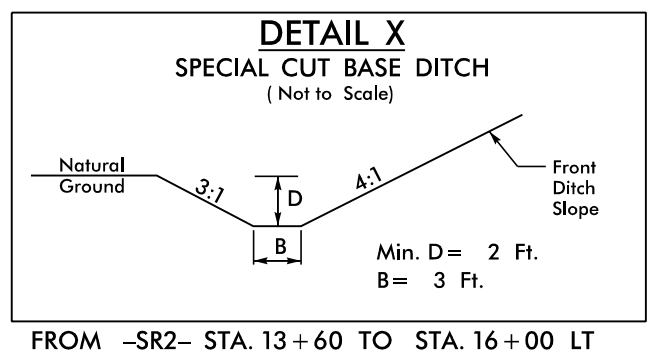
-DR2-	
PI Sta 10+13.87	PI Sta 11+27.40
$\Delta = 49'51" 52.3" (LT)$	$\Delta = 41'07" 02.9" (LT)$
$D = 286'28" 44.0"$	$D = 76'23" 39.7"$
$L = 17.41'$	$L = 53.82'$
$T = 9.30'$	$T = 28.13'$
$R = 20.00'$	$R = 75.00'$
SE = NC	SE = NC



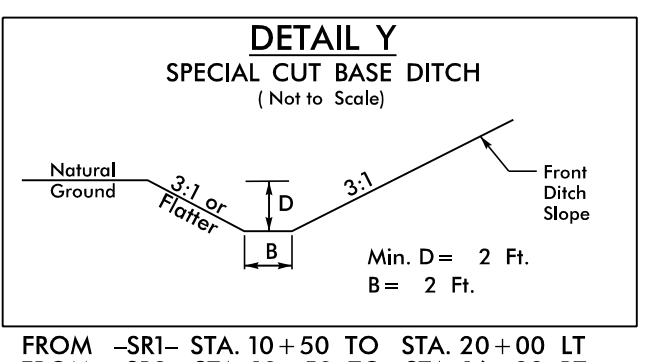
FROM -Y17- STA. 59+00 TO STA. 65+18 LT  
 FROM -Y17- STA. 59+00 TO STA. 61+00 RT  
 FROM -Y17- STA. 65+00 TO STA. 66+38 RT  
 FROM -Y17- STA. 66+38 TO STA. 68+63 RT  
 FROM -Y17- STA. 69+00 TO STA. 69+63 RT  
 FROM -Y17- STA. 69+63 TO STA. 71+50 RT



FROM -Y17- STA. 65+18 TO STA. 72+00 LT



FROM -SR1- STA. 21+50 TO STA. 25+50 RT  
 FROM -SR1- STA. 20+00 TO STA. 26+29 LT  
 FROM -SR2- STA. 10+50 TO STA. 13+60 LT



FROM -SR1- STA. 10+50 TO STA. 20+00 LT  
 FROM -SR2- STA. 10+50 TO STA. 16+38 RT

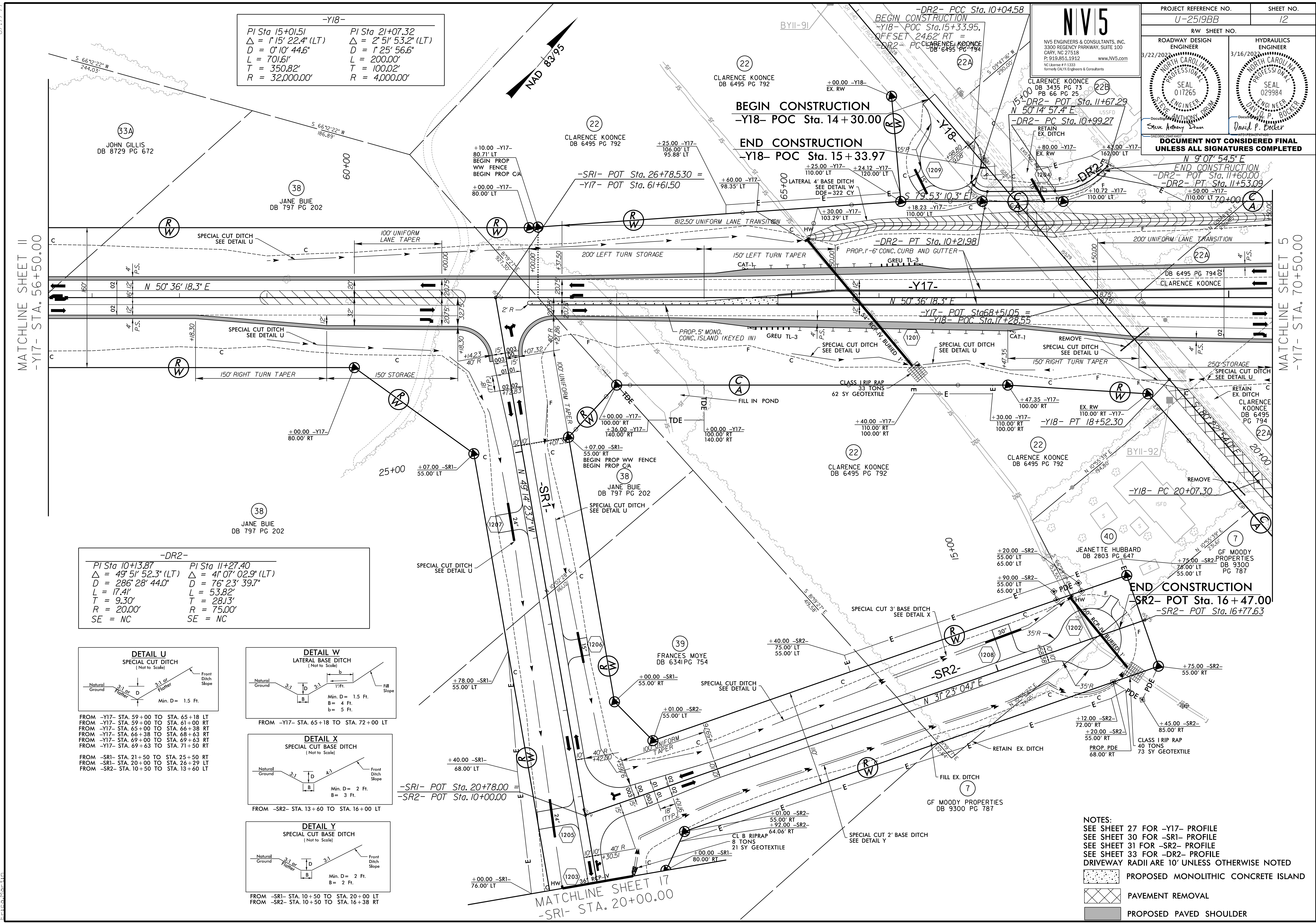
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PROJECT REFERENCE NO. U-2519BB  
SHEET NO. 12

ROADWAY DESIGN ENGINEER  
3/22/2022  
SEAL 017265  
STEVE ANTHONY STON

HYDRAULICS ENGINEER  
3/16/2022  
SEAL 029984  
DAVID P. BOCKER

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



- NOTES:**
- SEE SHEET 27 FOR -Y17- PROFILE
  - SEE SHEET 30 FOR -SR1- PROFILE
  - SEE SHEET 31 FOR -SR2- PROFILE
  - SEE SHEET 33 FOR -DR2- PROFILE
  - DRIVEWAY RADII ARE 10' UNLESS OTHERWISE NOTED
- PROPOSED MONOLITHIC CONCRETE ISLAND
  - PAVEMENT REMOVAL
  - PROPOSED PAVED SHOULDER

MATCHLINE SHEET 17  
-SR1- STA. 20+00.00

3/2/2022  
R:\Projects\2022\U2519BB\_Rdwy\_Psh12.dgn  
E:\COM

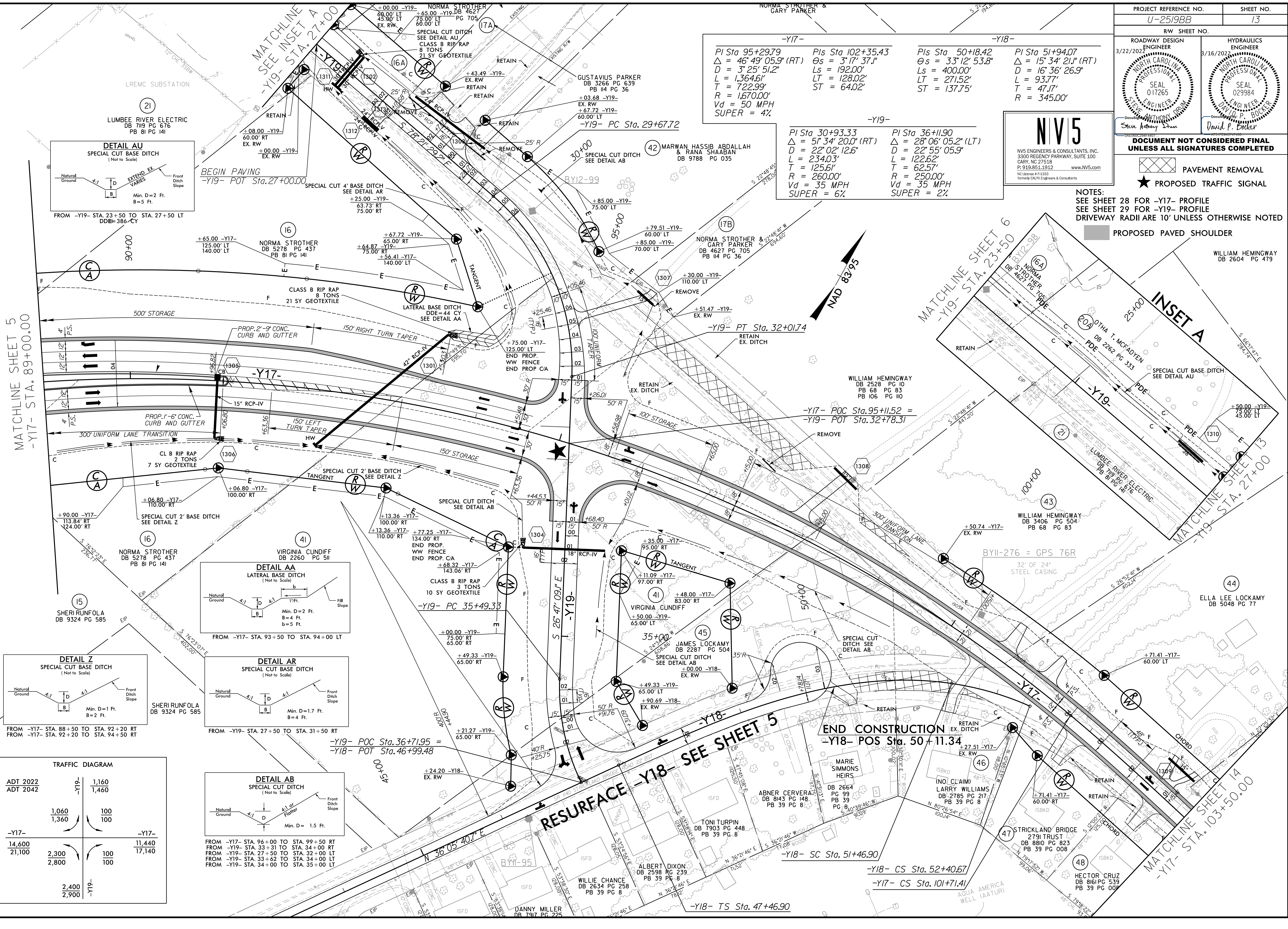
<p><b>-Y17-</b></p> <p>PI Sta 95+29.79  <math>\Delta = 46' 49" 05.9" (RT)</math>  <math>D = 3' 25" 51.2"</math>  <math>L = 1,364.61'</math>  <math>T = 722.99'</math>  <math>R = 1,670.00'</math>  <math>Vd = 50 MPH</math>  <b>SUPER = 4%</b></p>	<p><b>-Y18-</b></p> <p>PI Sta 102+35.43  <math>\Delta = 3' 17" 37.1"</math>  <math>Ls = 192.00'</math>  <math>LT = 128.02'</math>  <math>ST = 64.02'</math></p>	<p><b>-Y19-</b></p> <p>PI Sta 50+18.42  <math>\Delta = 33' 12" 53.8"</math>  <math>Ls = 400.00'</math>  <math>LT = 271.52'</math>  <math>ST = 137.75'</math></p>	<p><b>-Y18-</b></p> <p>PI Sta 51+94.07  <math>\Delta = 15' 34" 21.1" (RT)</math>  <math>D = 16' 36" 26.9"</math>  <math>L = 93.77'</math>  <math>T = 47.17'</math>  <math>R = 345.00'</math></p>
--	---	--	--



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

PAVEMENT REMOVAL  
 ★ PROPOSED TRAFFIC SIGNAL

**NOTES:**  
 SEE SHEET 28 FOR -Y17- PROFILE  
 SEE SHEET 29 FOR -Y19- PROFILE  
 DRIVEWAY RADII ARE 10' UNLESS OTHERWISE NOTED



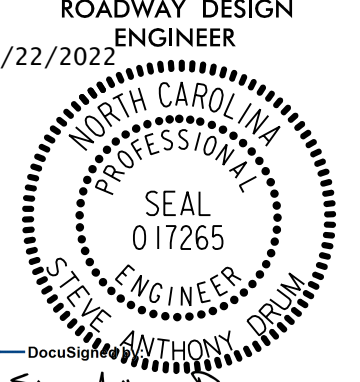
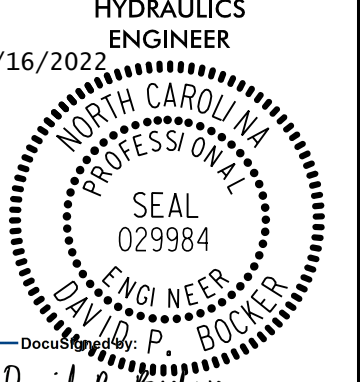
**TRAFFIC DIAGRAM**

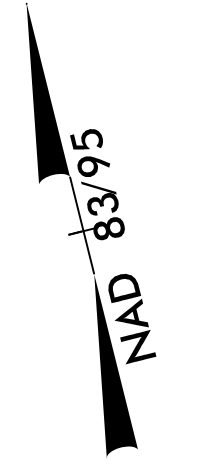
ADT 2022	-Y19-	1,160	
ADT 2042	-Y19-	1,460	
		1,060	100
		1,360	100
-Y17-			
14,600			11,440
21,100	2,300		17,140
	2,800		
		100	
		100	
		2,400	
		2,900	

3/2/2022  
 P:\Projects\U-2519BB\_Rdy\_Psh13.dgn  
 Eric Minton

8/17/99

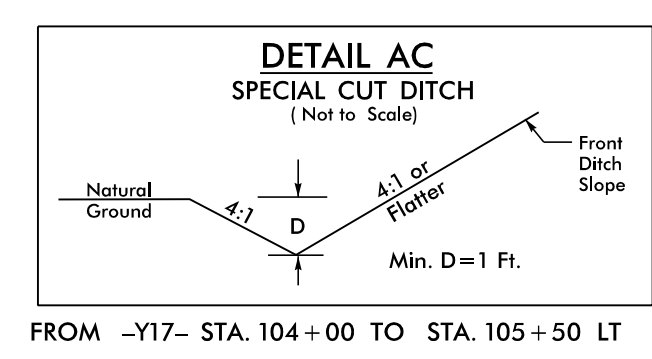
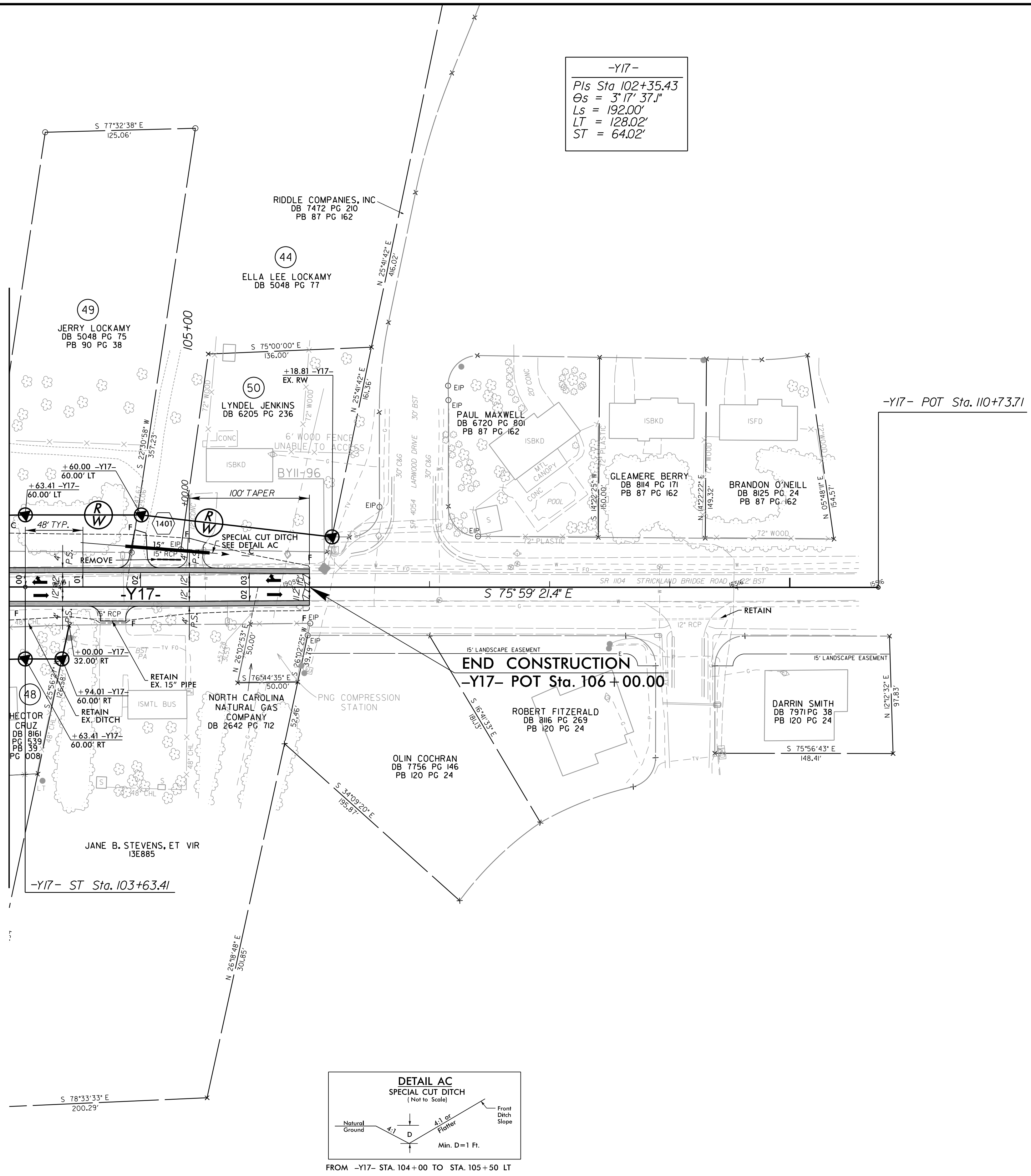
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 Formerly CALYX Engineers & Consultants

PROJECT REFERENCE NO. U-2519BB	SHEET NO. 14
RW SHEET NO.	HYDRAULICS ENGINEER
ROADWAY DESIGN ENGINEER 3/22/2022	HYDRAULICS ENGINEER 3/16/2022
 Steve Anthony Dean	 David P. Bocker
<b>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</b>	



-Y17-  
 PIs Sta 102+35.43  
 Os = 3' 17' 37.1"  
 Ls = 192.00'  
 LT = 128.02'  
 ST = 64.02'

MATCHLINE SHEET 13  
-Y17- STA. 103+50.00



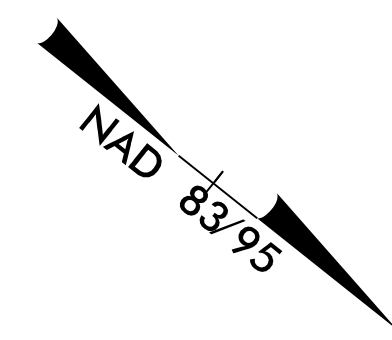
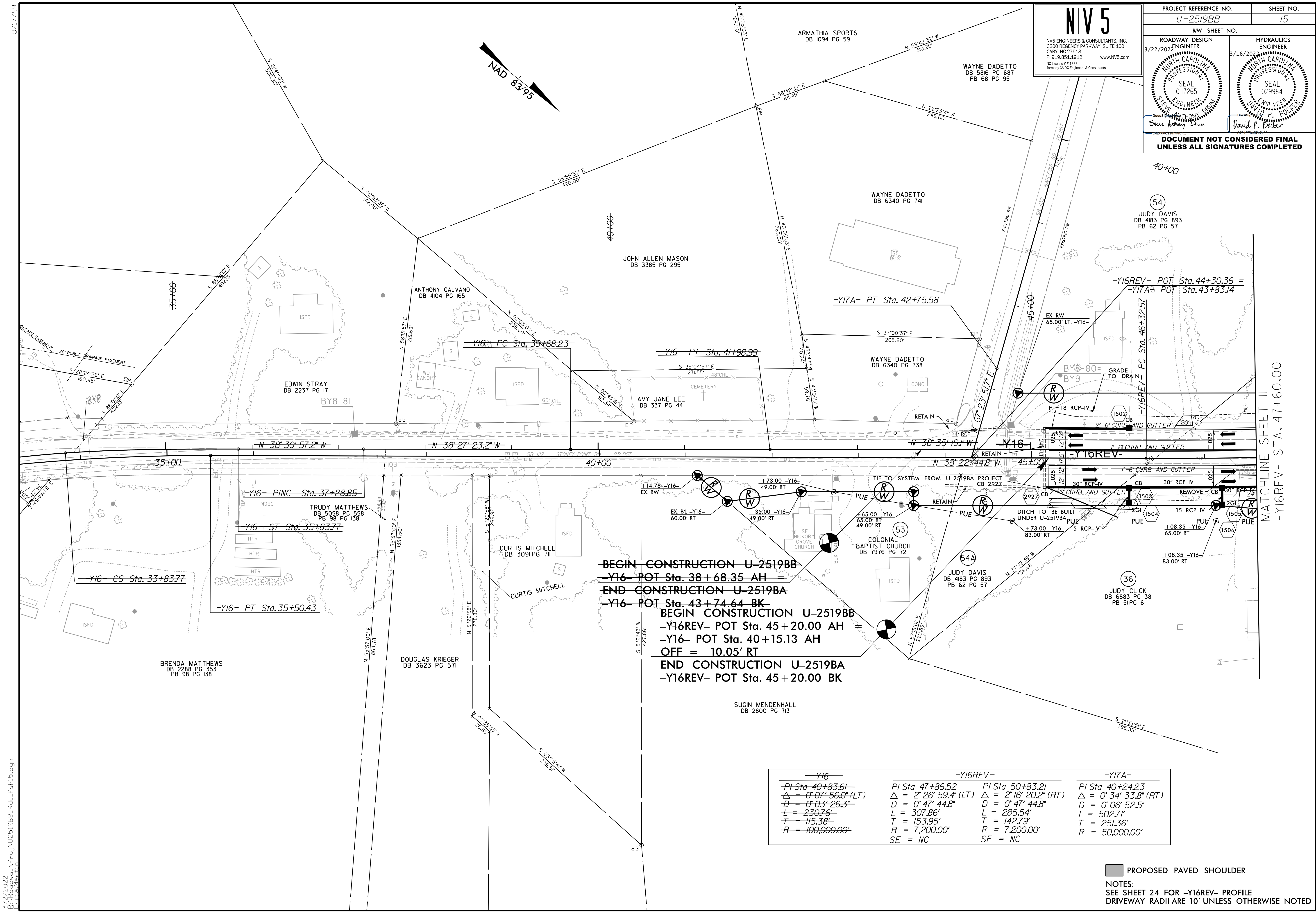
PROPOSED PAVED SHOULDER

**NOTES:**  
 SEE SHEET 28 FOR -Y17- PROFILE  
 DRIVEWAY RADII ARE 10' UNLESS OTHERWISE NOTED

3/2/2022  
 R:\Projects\2519BB\Proj\U2519BB\_Rdwy\_Psh14.dgn  
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PROJECT REFERENCE NO. U-2519BB	SHEET NO. 15
RW SHEET NO.	
ROADWAY DESIGN 3/22/2022 ENGINEER	HYDRAULICS ENGINEER 3/16/2022
 Steve Anthony Strain Formerly CALVE Engineers & Consultants	 David P. Boker
<b>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</b>	



**BEGIN CONSTRUCTION U-2519BB**  
 -Y16- POT Sta. 38+68.35 AH  
**END CONSTRUCTION U-2519BA**  
 -Y16- POT Sta. 43+74.64 BK  
**BEGIN CONSTRUCTION U-2519BB**  
 -Y16REV- POT Sta. 45+20.00 AH =  
 -Y16- POT Sta. 40+15.13 AH  
 OFF = 10.05' RT  
**END CONSTRUCTION U-2519BA**  
 -Y16REV- POT Sta. 45+20.00 BK

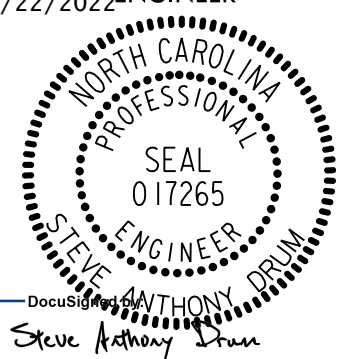
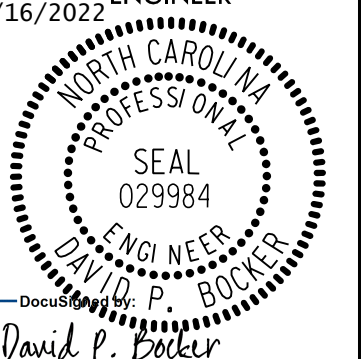
-Y16-	-Y16REV-	-Y17A-
PI Sta. 40+83.61	PI Sta. 47+86.52	PI Sta. 50+83.21
Δ = 0° 07' 56.0" (LT)	Δ = 2° 26' 59.4" (LT)	Δ = 2° 16' 20.2" (RT)
D = 0° 03' 26.3"	D = 0° 47' 44.8"	D = 0° 47' 44.8"
L = 230.76'	L = 307.86'	L = 285.54'
T = 115.38'	L = 153.95'	T = 142.79'
R = 100,000.00'	R = 7,200.00'	R = 7,200.00'
	SE = NC	SE = NC

■ PROPOSED PAVED SHOULDER  
 NOTES:  
 SEE SHEET 24 FOR -Y16REV- PROFILE  
 DRIVEWAY RADII ARE 10' UNLESS OTHERWISE NOTED

3/22/2022  
 R:\Projects\U2519BB\_Rdwy\_Psh15.dgn  
 E:\psh15

8/17/2022

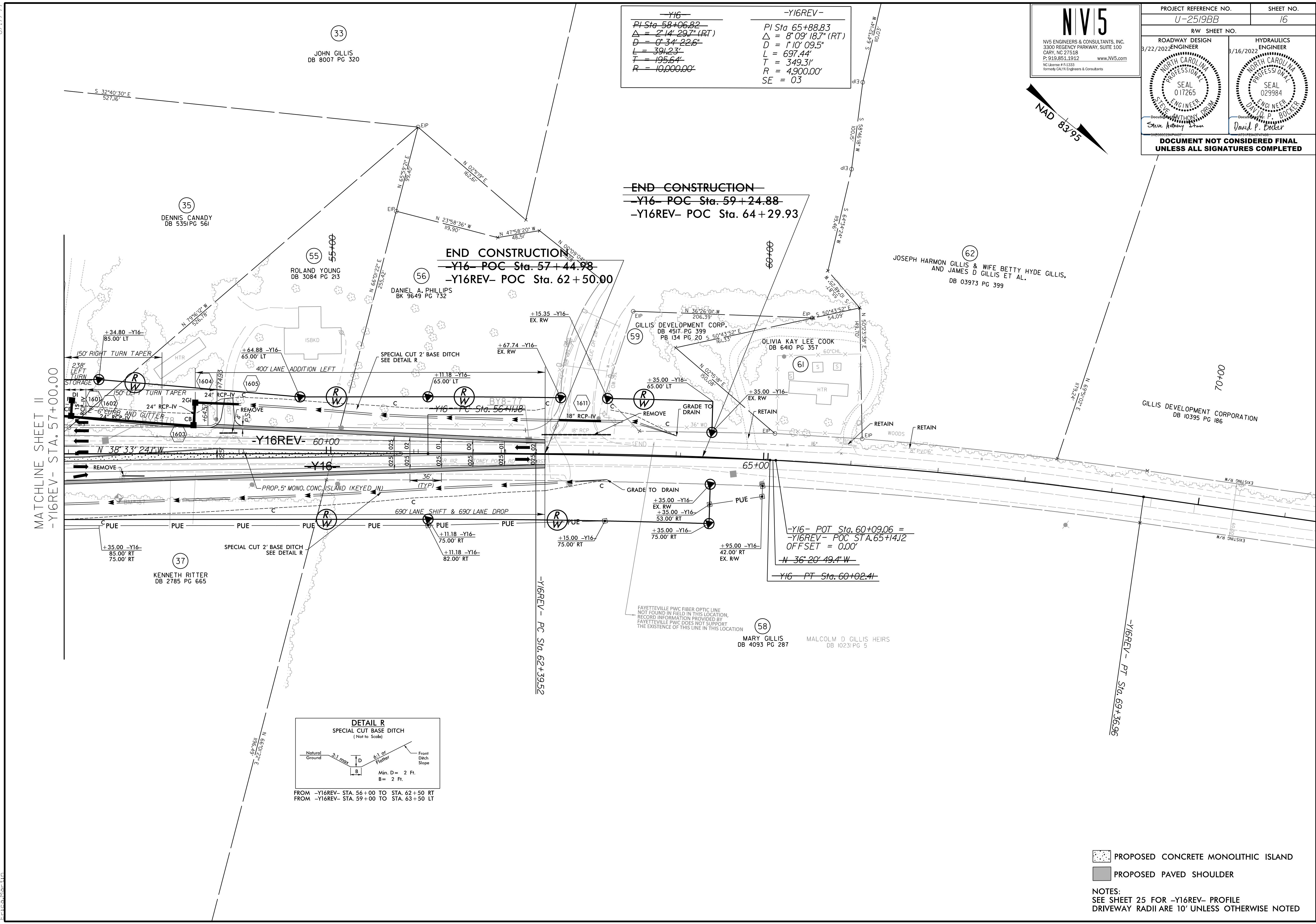
3/2/2022  
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Facilities

PROJECT REFERENCE NO. U-2519BB		SHEET NO. 16	
RW SHEET NO.		HYDRAULICS ENGINEER	
ROADWAY DESIGN 3/22/2022 ENGINEER		3/16/2022 ENGINEER	
 Steve Anthony Sloan		 David P. Boker	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED			

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NAD 83.95

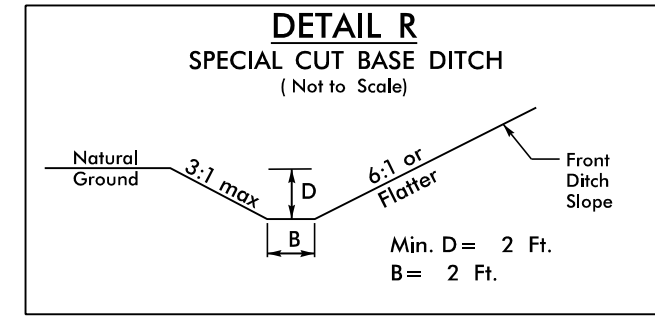
-Y16-	-Y16REV-
PI Sta 58+06.82	PI Sta 65+88.83
$\Delta = 2' 14" 29.7" (RT)$	$\Delta = 8' 09" 18.7" (RT)$
$D = 0' 34" 22.6"$	$D = 1' 10" 09.5"$
$L = 391.23'$	$L = 697.44'$
$T = 195.64'$	$T = 349.31'$
$R = 10,000.00'$	$R = 4,900.00'$
	SE = 03





**END CONSTRUCTION**  
 -Y16- POC Sta. 57+44.98  
 -Y16REV- POC Sta. 62+50.00

**END CONSTRUCTION**  
 -Y16- POC Sta. 59+24.88  
 -Y16REV- POC Sta. 64+29.93

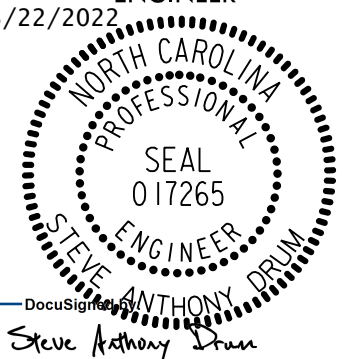
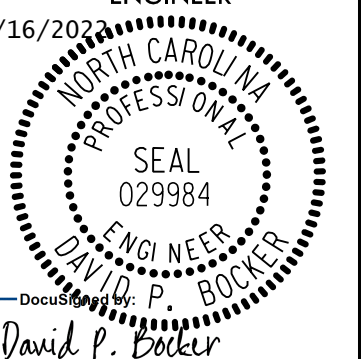
-Y16- POT Sta. 60+09.06 =  
 -Y16REV- POC Sta. 65+14.12  
 OFFSET = 0.00'  
 N 36° 20' 49.4" W  
 -Y16- PT Sta. 60+02.41



FROM -Y16REV- STA. 56+00 TO STA. 62+50 RT  
 FROM -Y16REV- STA. 59+00 TO STA. 63+50 LT

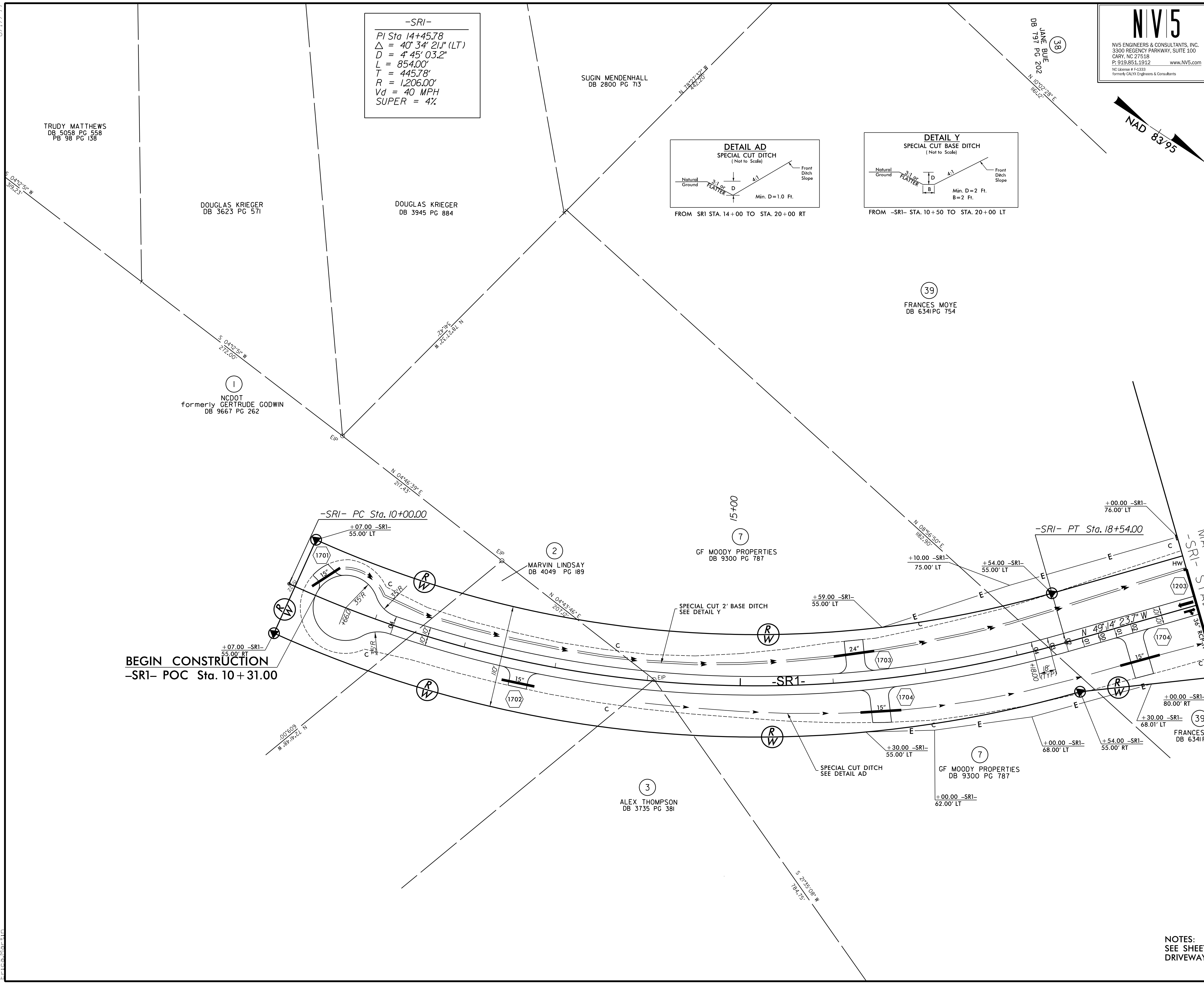
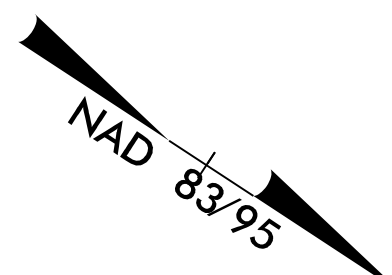
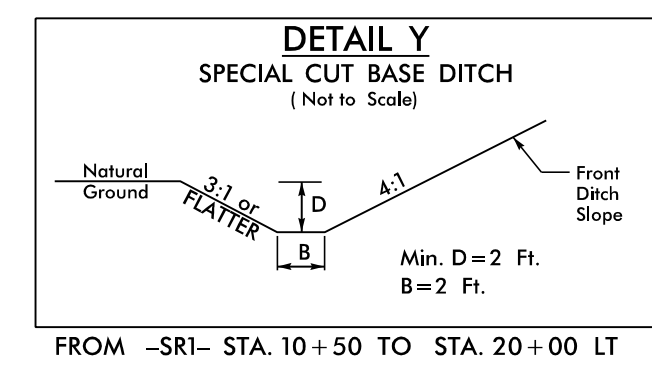
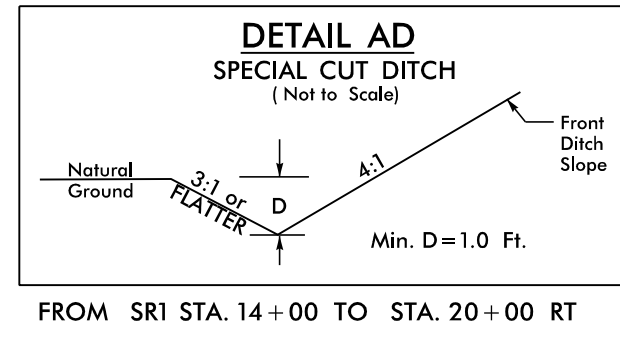
-  PROPOSED CONCRETE MONOLITHIC ISLAND
  -  PROPOSED PAVED SHOULDER
- NOTES:  
 SEE SHEET 25 FOR -Y16REV- PROFILE  
 DRIVEWAY RADII ARE 10' UNLESS OTHERWISE NOTED



PROJECT REFERENCE NO. U-2519BB		SHEET NO. 17	
RW SHEET NO.			
ROADWAY DESIGN ENGINEER 3/22/2022		HYDRAULICS ENGINEER 3/16/2022	
			
<p>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</p>			



-SRI-  
 PI Sta 14+45.78  
 $\Delta = 40^\circ 34' 21''$  (LT)  
 $D = 4^\circ 45' 03.2''$   
 $L = 854.00'$   
 $T = 445.78'$   
 $R = 1,206.00'$   
 $Vd = 40$  MPH  
 SUPER = 4%



BEGIN CONSTRUCTION  
-SRI- POC Sta. 10+31.00

MATCHLINE SHEET 12  
-SRI- STA. 20+00.00

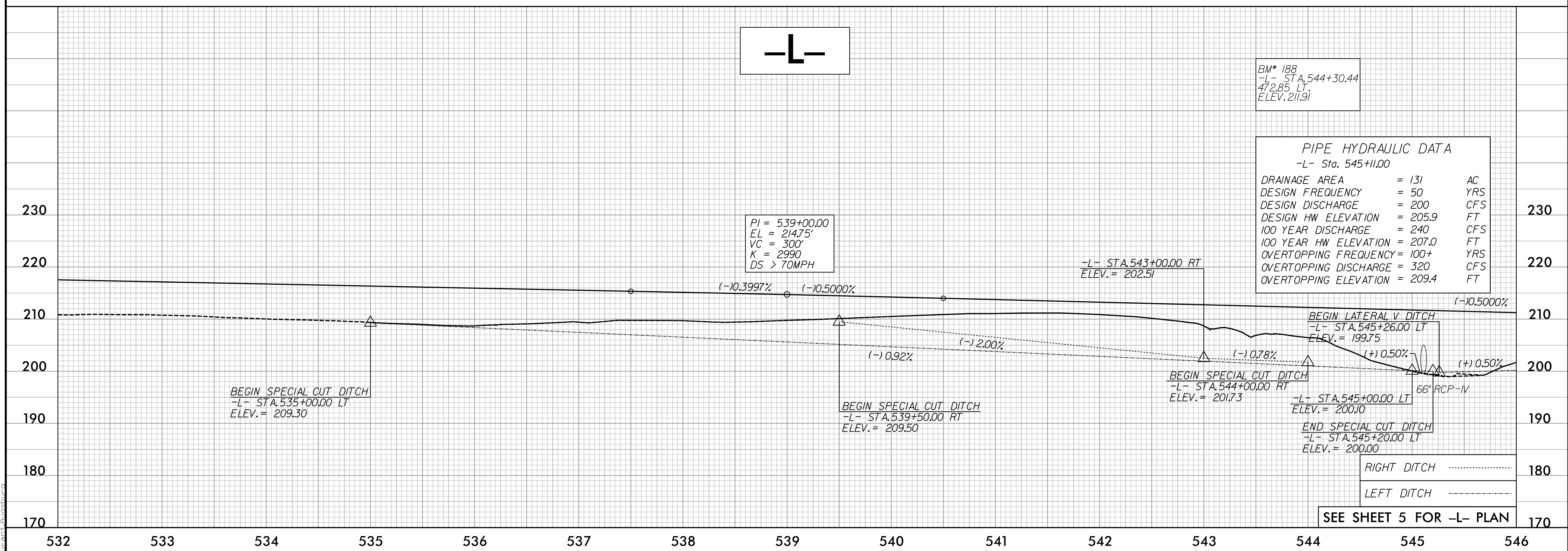
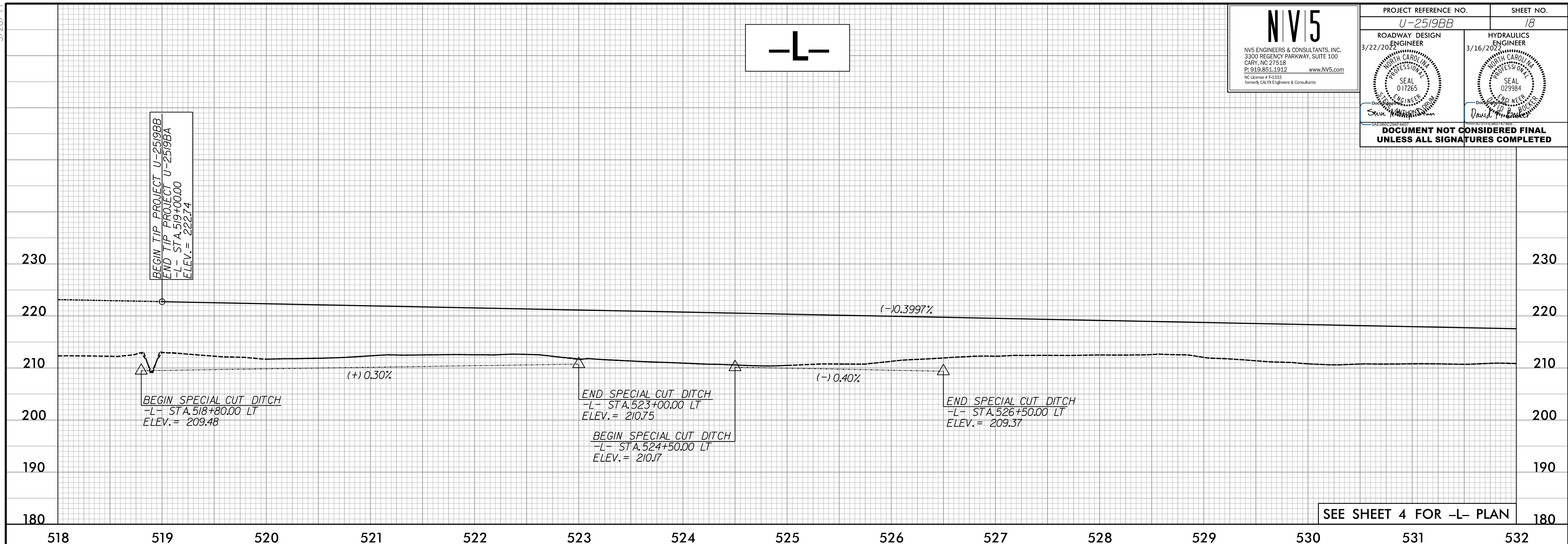
NOTES:  
SEE SHEET 30 FOR -SRI- PROFILE  
DRIVEWAY RADII ARE 10' UNLESS OTHERWISE NOTED

3/22/2022  
 R:\Projects\U2519BB\_Rdwy\_Psh17.dgn  
 E:\Users\jones\Documents\U2519BB\_Rdwy\_Psh17.dgn

5/28/99

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 formerly, CAI/X Engineers & Consultants

PROJECT REFERENCE NO. <i>U-2519BB</i>		SHEET NO. <i>18</i>
ROADWAY DESIGN 3/22/2022 ENGINEER SEAL 017265 Steve [Signature]	HYDRAULICS 3/16/2022 ENGINEER SEAL 029984 David [Signature]	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED		



2/7/2022  
 P:\Projects\U2519BB\RDY\_PFL.dgn  
 David [Signature]