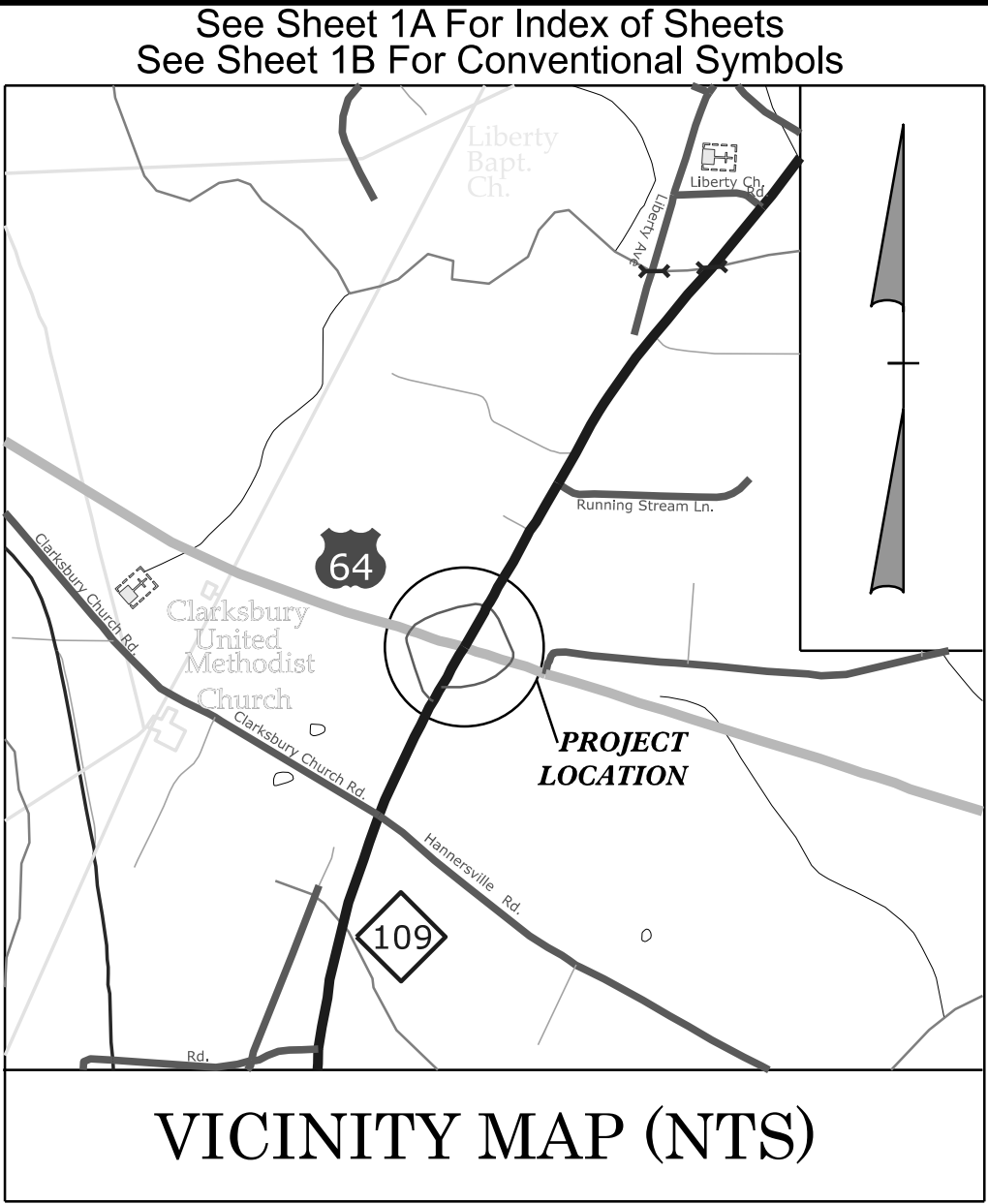


09/08/99

TIP PROJECT: B-5777

CONTRACT: C205016



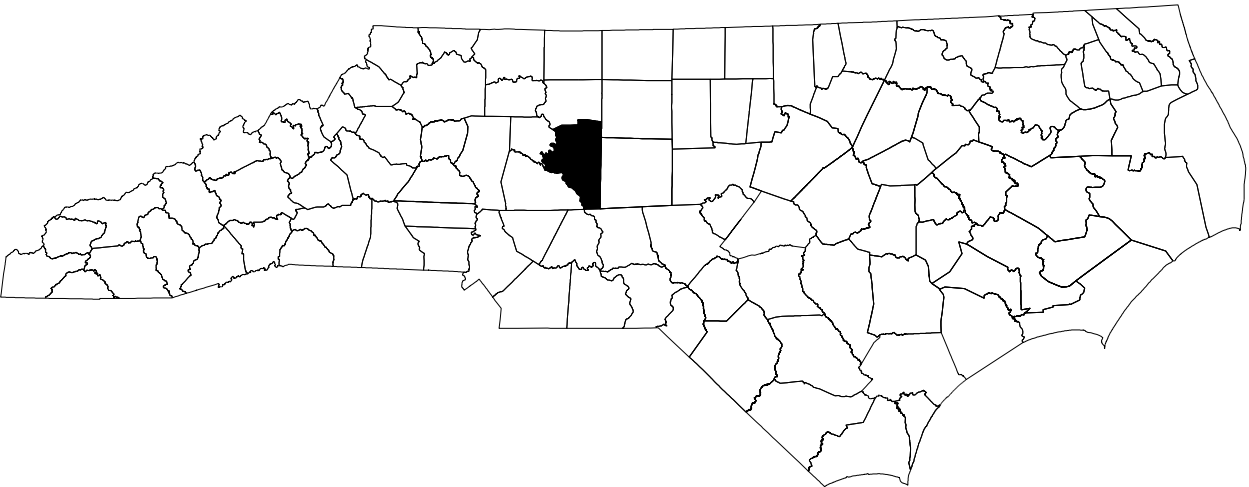
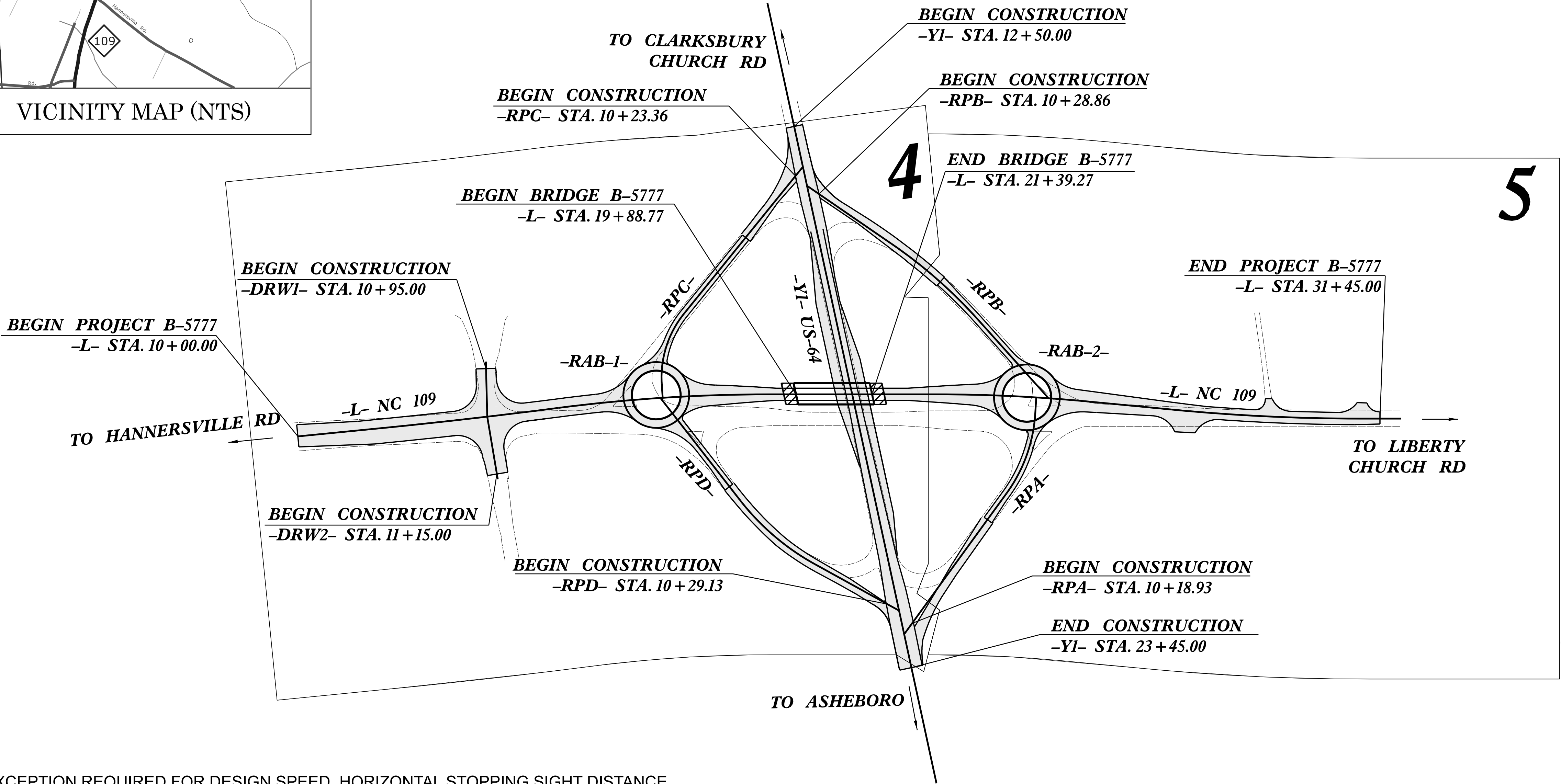
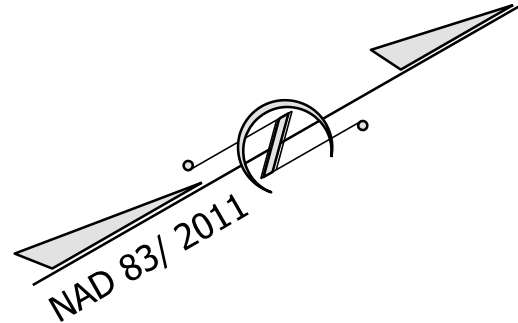
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

DAVIDSON COUNTY

LOCATION: *REPLACE BRIDGE 58 OVER US 64 ON NC 109*

TYPE OF WORK: *GRADING, PAVING, DRAINAGE, AND STRUCTURE (BRIDGE)*

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-5777	11	
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION	
45733.1.1		PE	
45733.2.2		UTIL.	
45733.3.1		CONST.	



DESIGN EXCEPTION REQUIRED FOR DESIGN SPEED, HORIZONTAL STOPPING SIGHT DISTANCE, VERTICAL STOPPING SIGHT DISTANCE (CREST ONLY), AND MAXIMUM GRADE.
THIS IS A PARTIAL CONTROLLED ACCESS PROJECT WITH ACCESS BEING LIMITED TO POINTS SHOWN ON THE PLANS.

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

GRAPHIC SCALES

50 25 0 50 100
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

DESIGN DATA

ADT 2025 = 11,470
ADT 2045 = 13,380
K = 9 %
D = 60 %
T = 3 %
V = 60 MPH

FUNC CLASS =
PRINCIPAL ARTERIAL

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B-5777 = 0.377 MILES

LENGTH STRUCTURE TIP PROJECT B-5777 = 0.029 MILES

TOTAL LENGTH TIP PROJECT B-5777 = 0.406 MILES

PREPARED IN THE OFFICE OF:
RS&H
8521 SIX FORKS ROAD, SUITE 400
RALEIGH, NC 27615
NC FIRM LICENSE No: F-0493

FOR THE NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
2024 STANDARD SPECIFICATIONS

STEVEN SHUMAN, PE
PROJECT ENGINEER

DANA PACZEK, PE
PROJECT DESIGN ENGINEER

RYAN NEWCOMB, PE
NCDOT CONTACT

RIGHT OF WAY DATE:
APRIL 30, 2024

LETTING DATE:
JUNE 17, 2025

HYDRAULICS ENGINEER

DocuSigned by:
Alexander R. Vinson
SIGNATURE: 3/31/2025

ROADWAY DESIGN ENGINEER

Signed by:
Steven J. Shuman
SIGNATURE: 3/31/2025

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

INDEX OF SHEETS		
SHEET NUMBER	SHEET	
1	TITLE SHEET	
1A	INDEX OF SHEETS, GENERAL NOTES, AND STANDARD DRAWINGS	
1B	CONVENTIONAL SYMBOLS	
2A-1 THRU 2A-8	PAVEMENT SCHEDULE AND TYPICAL SECTIONS	
2B-1 THRU 2B-2	ROADWAY DETAILS	
2C-1 THRU 2C-6	SPECIAL DETAILS	
2D-1	GRADING PLAN	
2G-1 THRU 2G-3	GEOTECHNICAL DETAILS	
3B-1	EARTHWORK SUMMARY, PAVEMENT REMOVAL SUMMARY, AND SUMMARY OF GUARDRAIL	
3D-1	DRAINAGE SUMMARY	
3G-1	GEOTECHNICAL SUMMARY	
4 THRU 5	PLAN SHEETS	
6 THRU 9	PROFILE SHEETS	
RW-1 THRU RW2D-1	SURVEY CONTROL SHEETS	
TMP-1 THRU TMP- 19	TRANSPORTATION MANAGEMENT PLANS	
PMP-1 THRU PMP-3	PAVEMENT MARKING PLANS	
EC-1 THRU EC-7	EROSION CONTROL PLANS	
SIGN-1 THRU SIGN-7	SIGNING PLANS	
UC-1 THRU UC-5	UTILITY CONSTRUCTION PLANS	
UO-1 THRU UO-6	UTILITY BY OTHERS PLANS	
X-1A	CROSS-SECTION SUMMARY	
X-1 THRU X-49	CROSS-SECTIONS	
S-1 THRU S-30	STRUCTURE PLANS	
SN	STRUCTURE STANDARD NOTES SHEET	
W-1 THRU W-7	WALL PLANS	

GENERAL NOTES:

2024 SPECIFICATIONS

EFFECTIVE: 01-16-2024

REVISED:

GRADE LINE:

GRADING AND SURFACING OR RESURFACING AND WIDENING:

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

CLEARING:

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

SUPERELEVATION:

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

SHOULDER CONSTRUCTION:

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

SIDE ROADS:

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

SUBSURFACE DRAINS:

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

STREET TURNOUT:

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

GUARDRAIL:

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

TEMPORARY SHORING:

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

END BENTS:

THE ENGINEER SHALL CHECK THE STRUCTURE END BENT PLANS, DETAILS, AND CROSS-SECTION PRIOR TO SETTING OF THE SLOPE STAKES FOR THE EMBANKMENT OR EXCAVATION APPROACHING A BRIDGE.

UTILITIES:

UTILITY OWNERS ON THIS PROJECT ARE CITY OF THOMASVILLE SEWER,

DAVIDSON WATER, ENERGY UNITED

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

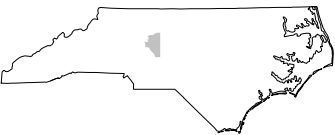
B-5777

1A

NORTH CAROLINA

DEPARTMENT OF TRANSPORTATION

DAVIDSON COUNTY



ROADWAY DESIGN UNIT

ROADWAY DESIGN

ENGINEER



3/31/2024

PREPARED BY



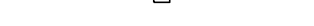
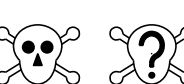
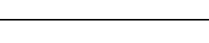
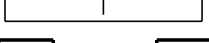
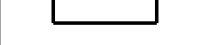
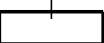
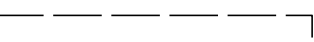
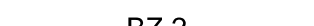
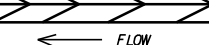
8521 SHILOH FARM ROAD, SUITE 400
RALEIGH, NC 27615
NC CIVIL LICENSE NO. P-8493

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

REVISIONS

Note: Not to Scale

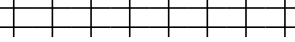
BOUNDARIES AND PROPERTY:

State Line	
County Line	
Township Line	
City Line	
Reservation Line	
Property Line	
Existing Iron Pin (EIP)	
Computed Property Corner	
Existing Concrete Monument (ECM)	
Parcel / Sequence Number	
Existing Fence Line	
Proposed Woven Wire Fence	
Proposed Chain Link Fence	
Proposed Barbed Wire Fence	
Existing Wetland Boundary	
Proposed Wetland Boundary	
Existing Endangered Animal Boundary	
Existing Endangered Plant Boundary	
Existing Historic Property Boundary	
Known Contamination Area: Soil	
Potential Contamination Area: Soil	
Known Contamination Area: Water	
Potential Contamination Area: Water	
Contaminated Site: Known or Potential	
BUILDINGS AND OTHER CULTURE:	
Gas Pump Vent or U/G Tank Cap	
Sign	
Well	
Small Mine	
Foundation	
Area Outline	
Cemetery	
Building	
School	
Church	
Dam	
HYDROLOGY:	
Stream or Body of Water	
Hydro, Pool or Reservoir	
Jurisdictional Stream	
Buffer Zone 1	
Buffer Zone 2	
Flow Arrow	
Disappearing Stream	
Spring	
Wetland	
Proposed Lateral, Tail, Head Ditch	
False Sump	

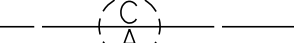
STATE OF NORTH CAROLINA, DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

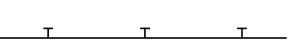
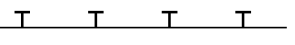
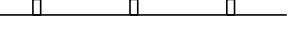
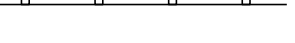
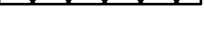
RAILROADS:

Standard Gauge	
RR Signal Milepost	
Switch	
RR Abandoned	
RR Dismantled	

RIGHT OF WAY & PROJECT CONTROL:

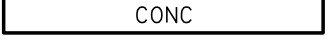
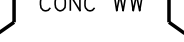
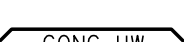
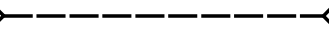
Primary Horiz Control Point	
Primary Horiz and Vert Control Point	
Secondary Horiz and Vert Control Point	
Vertical Benchmark	
Existing Right of Way Monument	
Proposed Right of Way Monument (Rebar and Cap)	
Proposed Right of Way Monument (Concrete)	
Existing Permanent Easement Monument	
Proposed Permanent Easement Monument (Rebar and Cap)	
Existing C/A Monument	
Proposed C/A Monument (Rebar and Cap)	
Proposed C/A Monument (Concrete)	
Existing Right of Way Line	
Proposed Right of Way Line	
Existing Control of Access Line	
Proposed Control of Access Line	
Proposed ROW and CA Line	
Existing Easement Line	
Proposed Temporary Construction Easement	
Proposed Temporary Drainage Easement	
Proposed Permanent Drainage Easement	
Proposed Permanent Drainage/Utility Easement	
Proposed Permanent Utility Easement	
Proposed Temporary Utility Easement	
Proposed Aerial Utility Easement	

ROADS AND RELATED FEATURES:

Existing Edge of Pavement	
Existing Curb	
Proposed Slope Stakes Cut	
Proposed Slope Stakes Fill	
Proposed Curb Ramp	
Existing Metal Guardrail	
Proposed Guardrail	
Existing Cable Guiderail	
Proposed Cable Guiderail	
Equality Symbol	
Pavement Removal	
VEGETATION:	
Single Tree	
Single Shrub	
Hedge	

Woods Line	
Orchard	
Vineyard	

EXISTING STRUCTURES:

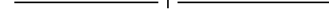
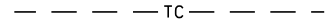
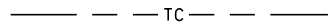
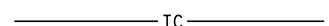
MAJOR:	
Bridge, Tunnel or Box Culvert	
Bridge Wing Wall, Head Wall and End Wall	
MINOR:	
Head and End Wall	
Pipe Culvert	
Footbridge	
Drainage Box: Catch Basin, DI or JB	
Paved Ditch Gutter	
Storm Sewer Manhole	
Storm Sewer	

UTILITIES:

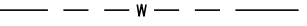
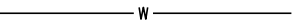
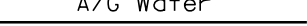
** SUE - Subsurface Utility Engineering
LOS - Level of Service - A,B,C or D (Accuracy)*

POWER:	
Existing Power Pole	
Proposed Power Pole	
Existing Joint Use Pole	
Proposed Joint Use Pole	
Power Manhole	
Power Line Tower	
Power Transformer	
U/G Power Cable Hand Hole	
H-Frame Pole	
U/G Power Line Test Hole (SUE - LOS A)*	
U/G Power Line (SUE - LOS B)*	
U/G Power Line (SUE - LOS C)*	
U/G Power Line (SUE - LOS D)*	

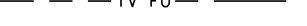
TELEPHONE:

Existing Telephone Pole	
Proposed Telephone Pole	
Telephone Manhole	
Telephone Pedestal	
Telephone Cell Tower	
U/G Telephone Cable Hand Hole	
U/G Telephone Test Hole (SUE - LOS A)*	
U/G Telephone Cable (SUE - LOS B)*	
U/G Telephone Cable (SUE - LOS C)*	
U/G Telephone Cable (SUE - LOS D)*	
U/G Telephone Conduit (SUE - LOS B)*	
U/G Telephone Conduit (SUE - LOS C)*	
U/G Telephone Conduit (SUE - LOS D)*	
U/G Fiber Optics Cable (SUE - LOS B)*	
U/G Fiber Optics Cable (SUE - LOS C)*	
U/G Fiber Optics Cable (SUE - LOS D)*	

WATER:

Water Manhole	
Water Meter	
Water Valve	
Water Hydrant	
U/G Water Line Test Hole (SUE - LOS A)*	
U/G Water Line (SUE - LOS B)*	
U/G Water Line (SUE - LOS C)*	
U/G Water Line (SUE - LOS D)*	
Above Ground Water Line	

TV:

TV Pedestal	
TV Tower	
U/G TV Cable Hand Hole	
U/G TV Test Hole (SUE - LOS A)*	
U/G TV Cable (SUE - LOS B)*	
U/G TV Cable (SUE - LOS C)*	
U/G TV Cable (SUE - LOS D)*	
U/G Fiber Optic Cable (SUE - LOS B)*	
U/G Fiber Optic Cable (SUE - LOS C)*	
U/G Fiber Optic Cable (SUE - LOS D)*	

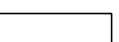
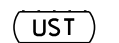
GAS:

Gas Valve	
Gas Meter	
U/G Gas Line Test Hole (SUE - LOS A)*	
U/G Gas Line (SUE - LOS B)*	
U/G Gas Line (SUE - LOS C)*	
U/G Gas Line (SUE - LOS D)*	
Above Ground Gas Line	

SANITARY SEWER:

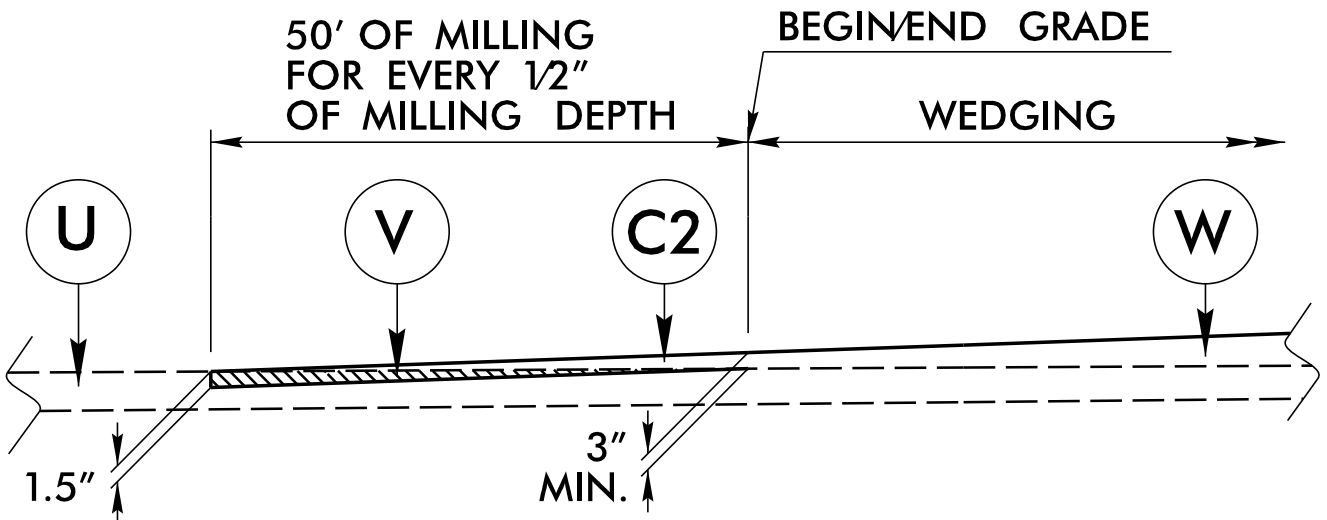
Sanitary Sewer Manhole	
Sanitary Sewer Cleanout	
U/G Sanitary Sewer Line	
Above Ground Sanitary Sewer	
SS Force Main Line Test Hole (SUE - LOS A)*	
SS Force Main Line (SUE - LOS B)*	
SS Force Main Line (SUE - LOS C)*	
SS Force Main Line (SUE - LOS D)*	

MISCELLANEOUS:

Utility Pole	
Utility Pole with Base	
Utility Located Object	
Utility Traffic Signal Box	
Utility Unknown U/G Line (SUE - LOS B)*	
U/G Tank; Water, Gas, Oil	
Underground Storage Tank, Approx. Loc.	
A/G Tank; Water, Gas, Oil	
Geoenviromental Boring	
Abandoned According to Utility Records	
End of Information	

5/26/20

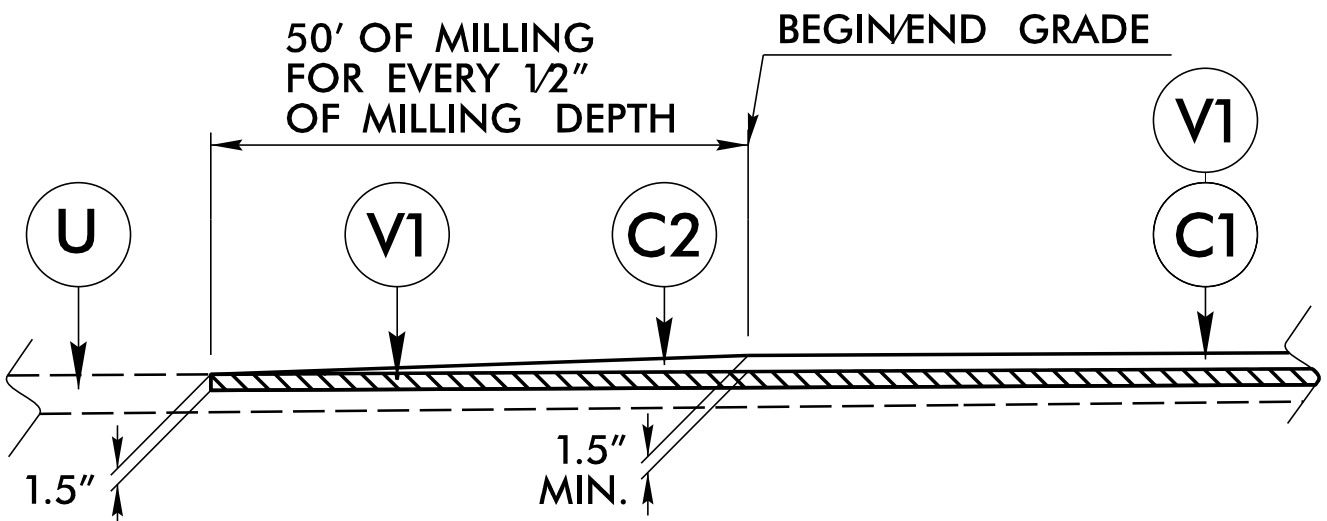
PAVEMENT SCHEDULE (FINAL PAVEMENT DESIGN)			
C1	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.	R2	VALLEY CURB & GUTTER (MODIFIED)
C2	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1" DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 1.5" IN DEPTH OR GREATER THAN 2" IN DEPTH.	R3	2'-6" CONCRETE CURB & GUTTER (MODIFIED)
D1	PROP. APPROX. 4" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.	R4	5" MONOLITHIC CONCRETE ISLAND (KEYED IN)
D2	PROP. APPROX. 2.5" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 285 LBS. PER SQ. YD.	R5	12.0" JOINTED CONCRETE TRUCK APRON W/ WELDED WIRE MESH (4X4 W5.5 X W5.5 OR 6X6 W8.5 X W8.5 OR HEAVIER)
D3	PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH TO BE PLACED IN LAYERS NOT LESS THAN 2.5" IN DEPTH OR GREATER THAN 4" IN DEPTH.	R6	4" CONCRETE ISLAND COVER
E1	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.	T	EARTH MATERIAL
E2	PROP. APPROX. 4.5" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 513 LBS. PER SQ. YD.	U	EXISTING PAVEMENT
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 3" IN DEPTH OR GREATER THAN 5.5" IN DEPTH.	V	MILLING, 0"-1.5" (SEE MILLING DETAIL THIS SHEET)
E4	PROP. APPROX. 7" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, PLACED IN TWO LAYERS. THE FIRST LAYER AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD. THE SECOND LAYER AT AN AVERAGE RATE OF 342 LBS. PER SQ. YD.	V1	MILLING, 1.5" (SEE MILLING DETAIL THIS SHEET)
L	CLASS IV SUBGRADE STABILIZATION	W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE STANDARD WEDGING DETAIL.)
N	GEOTEXTILE FOR SUBGRADE STABILIZATION	Y	RUMBLE STRIPS
R1	2'-6" CONCRETE CURB & GUTTER	NOTE: ALL PAVEMENT SLOPES 1:1 UNLESS NOTED OTHERWISE	



DETAIL OF 1.5" MILLING AT PAVEMENT TIE-INS BEGIN/END -L-

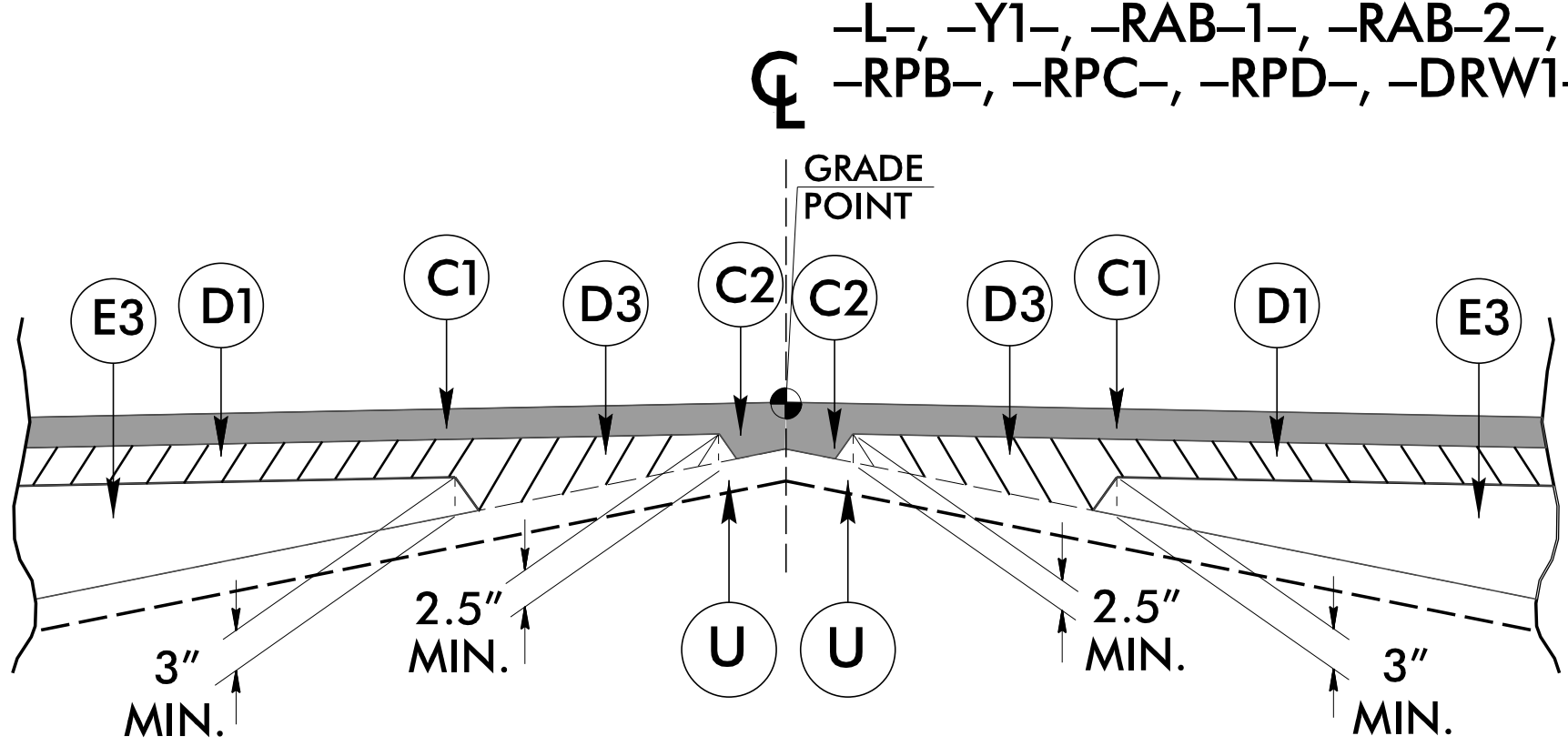
NOTE: CONTRACTOR TO REESTABLISH NORMAL CROWN AT CENTERLINE

NOTE: CONTRACTOR TO REMOVE EXISTING RUMBLE STRIP ALONG NC 109 USING INCIDENTAL MILLING.

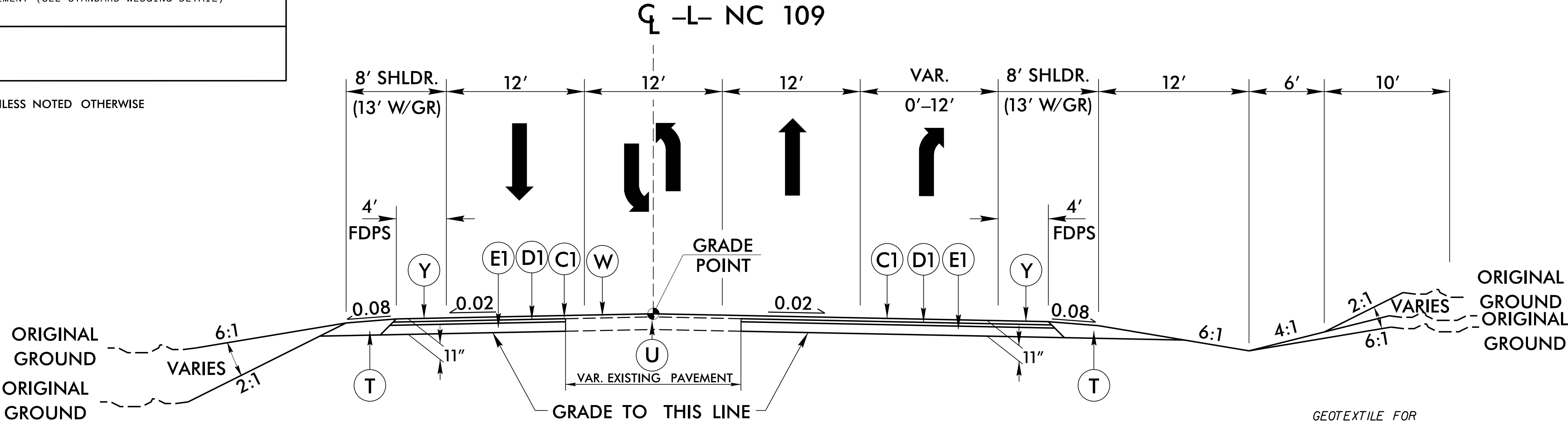


DETAIL OF 1.5" MILLING AT PAVEMENT TIE-INS BEGIN/END -Y1-

NOTE: CONTRACTOR TO REESTABLISH NORMAL CROWN AT CENTERLINE

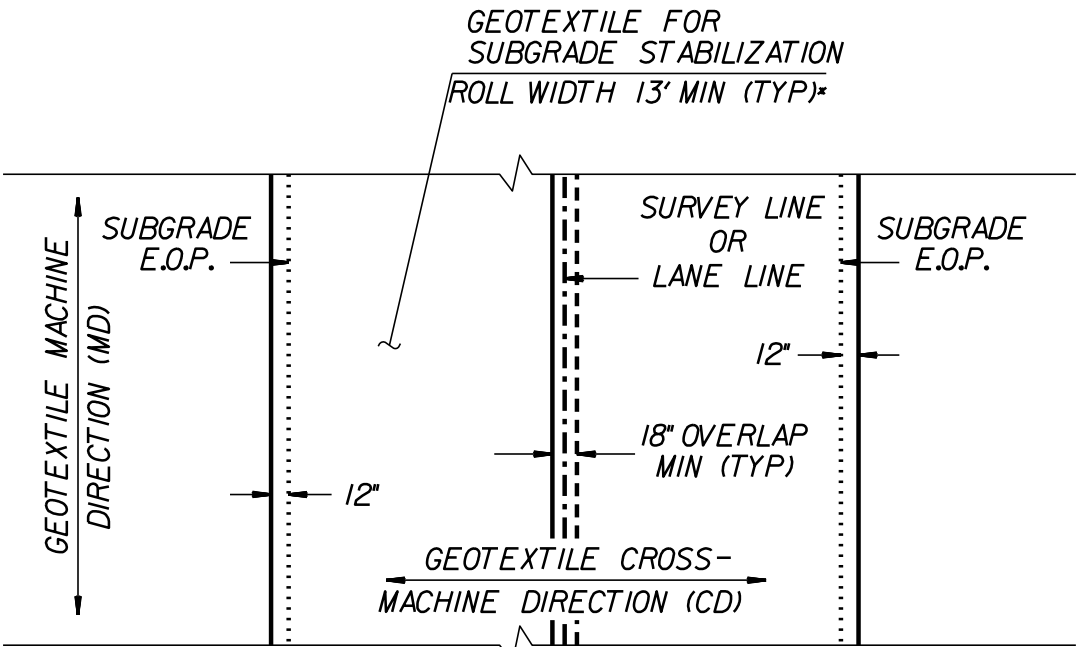


DETAIL SHOWING METHOD OF WEDGING



TYPICAL SECTION NO. 1

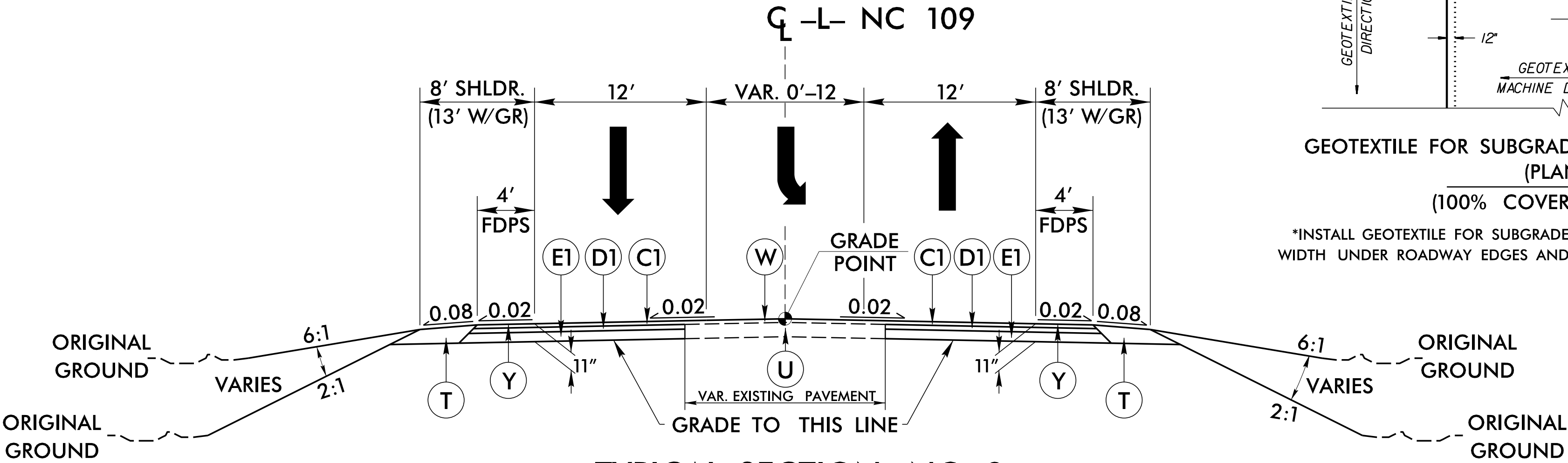
-L- STA. 10+00.00 TO 14+03.69



GEOTEXTILE FOR SUBGRADE STABILIZATION PLACEMENT (PLAN VIEW)

(100% COVERAGE REQUIRED)

*INSTALL GEOTEXTILE FOR SUBGRADE STABILIZATION WITH MINIMUM ROLL WIDTH UNDER ROADWAY EDGES AND SHOULDERS ADJACENT TO FILL SLOPES



TYPICAL SECTION NO. 2

-L- STA. 14+03.69 TO 15+63.59

B-5777

2A-1

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
DAVIDSON COUNTY

ROADWAY DESIGN UNIT
ROADWAY DESIGN
ENGINEER

STEVEN J. SHUMAN
3/31/2025

ANDREW D. WARREN
4/1/2025

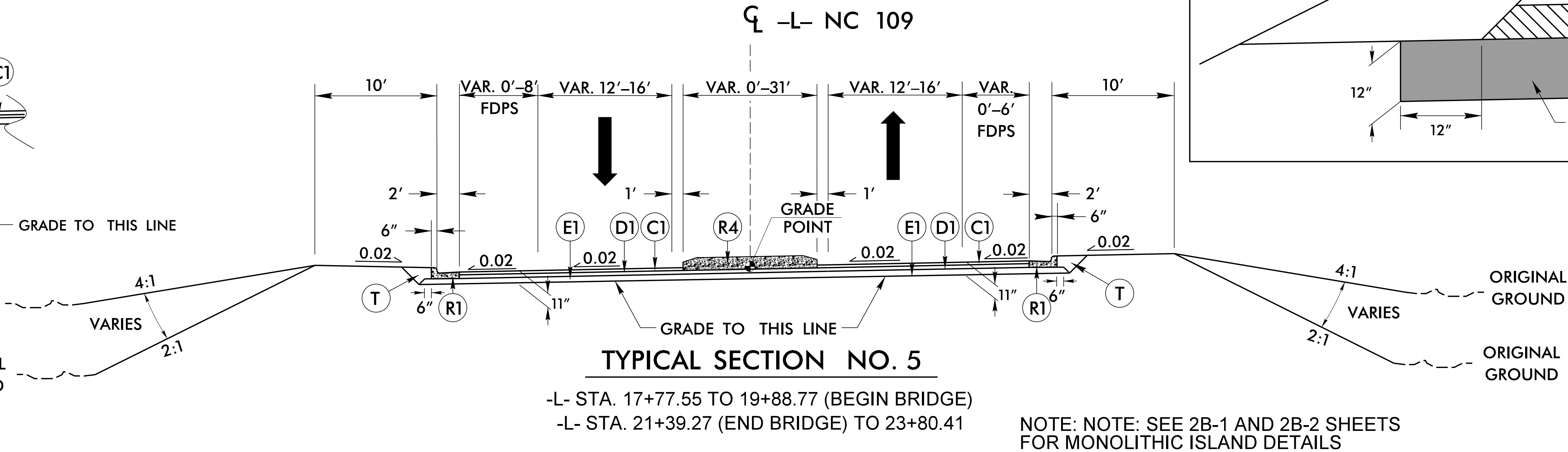
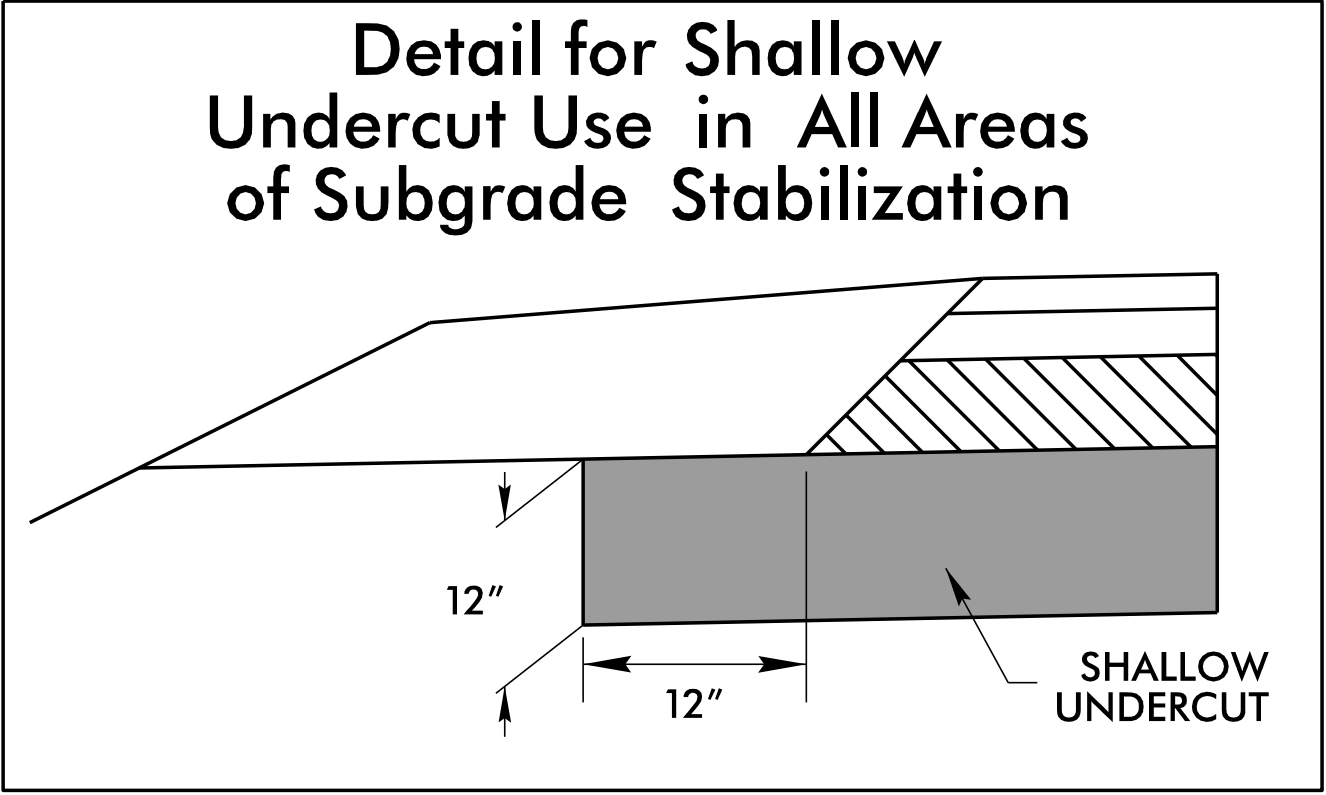
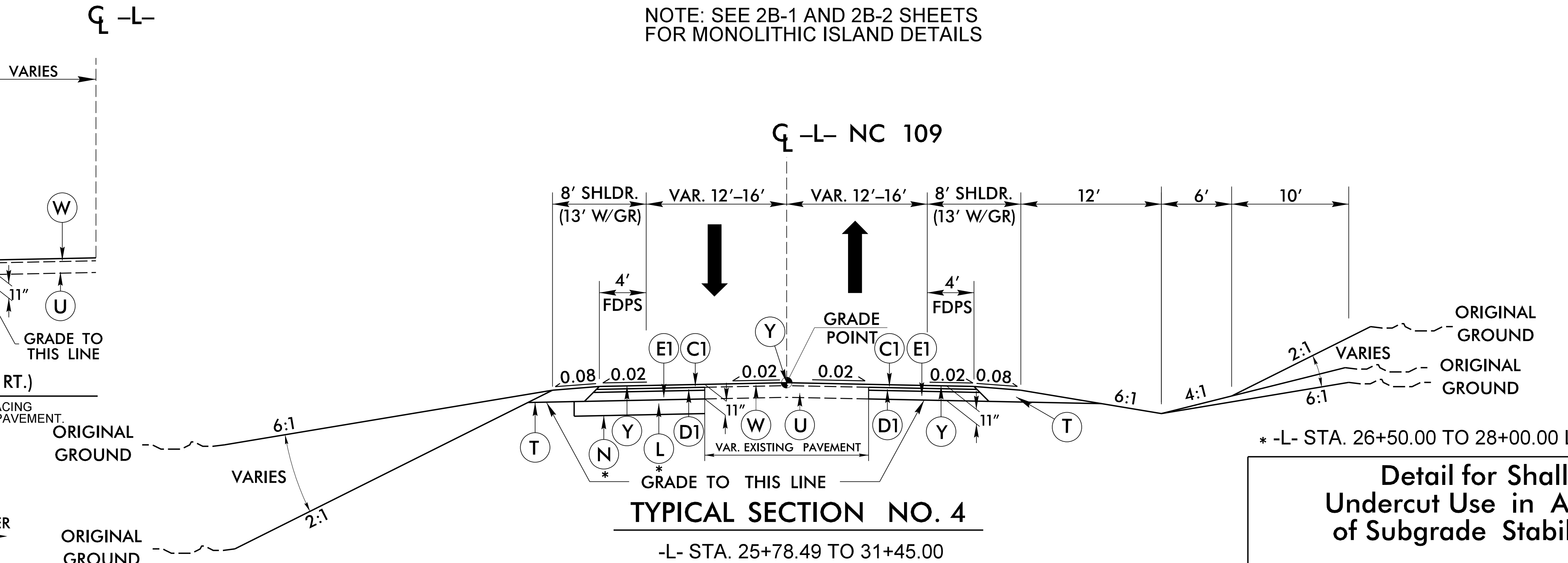
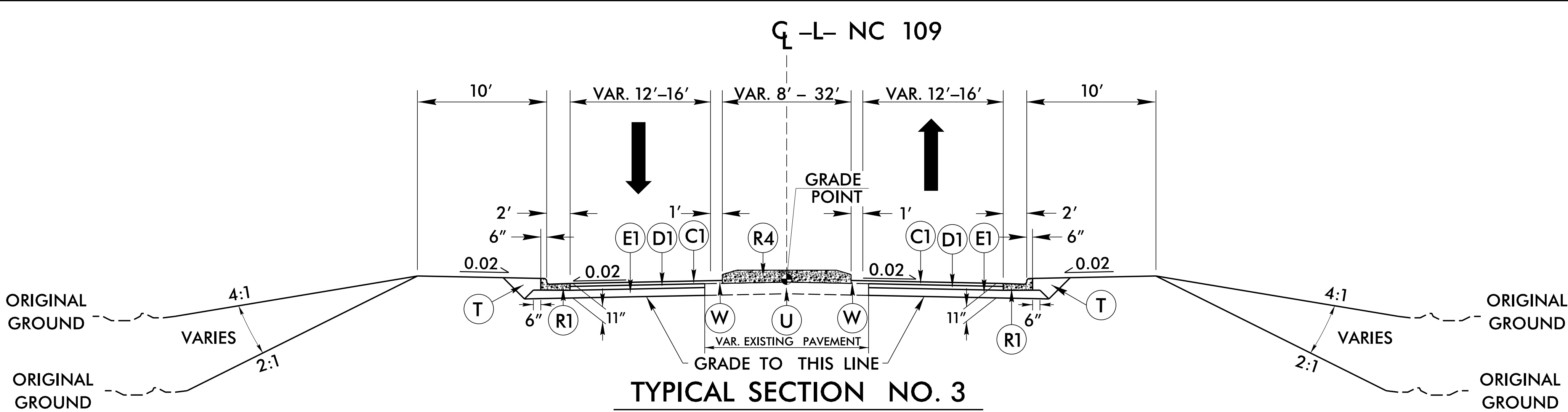
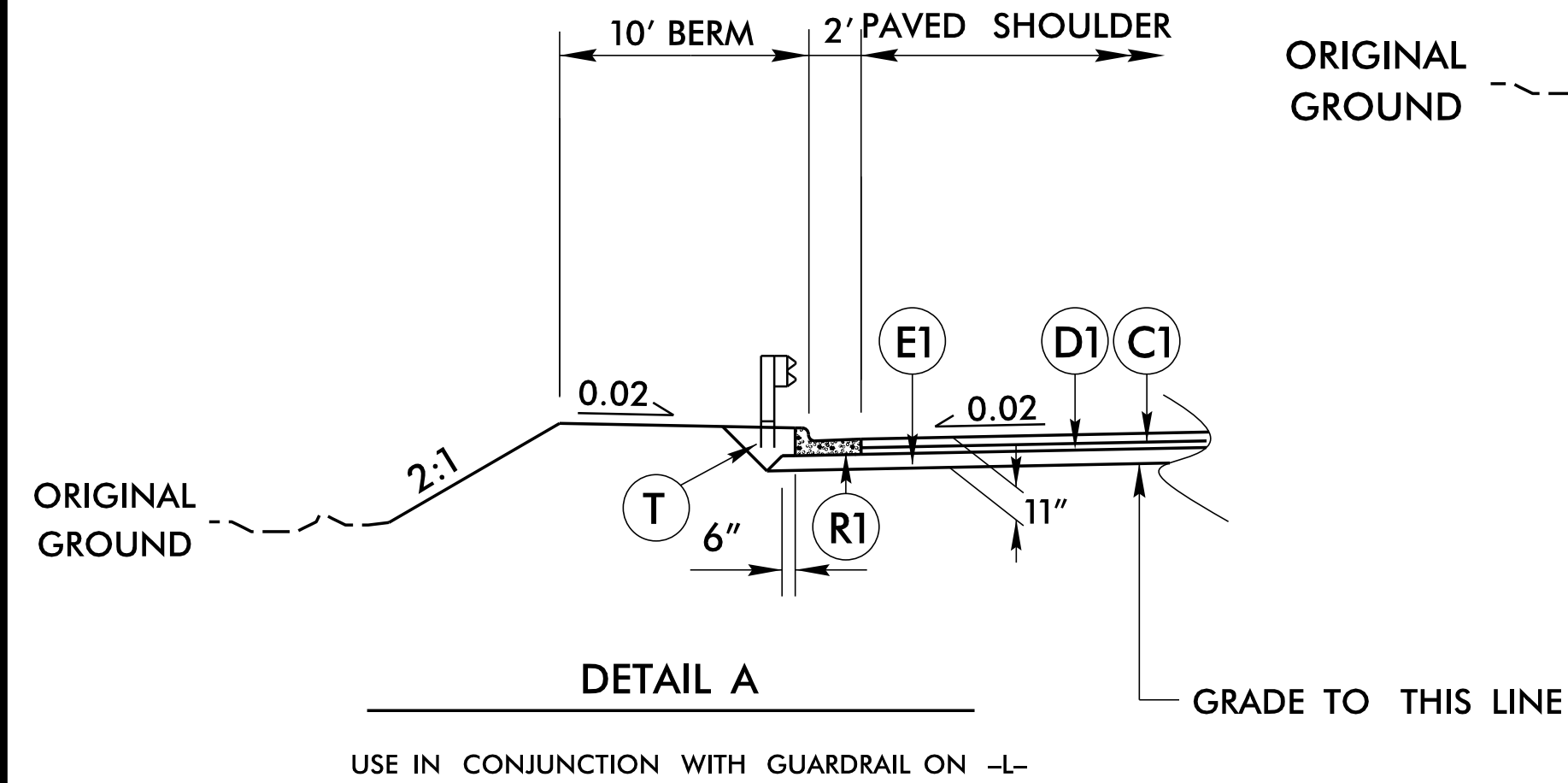
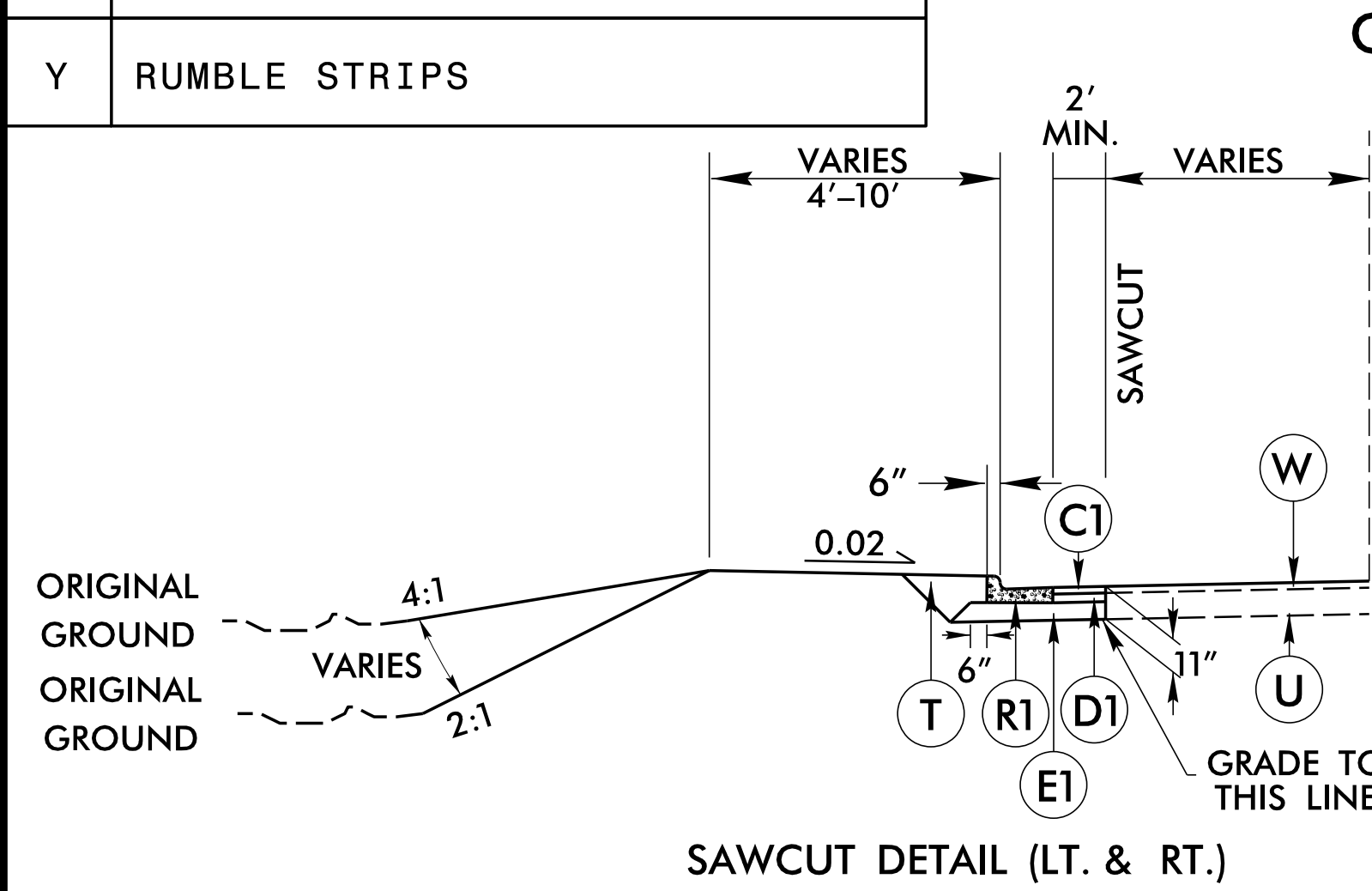
PREPARED BY

8521 SIX FORKS ROAD, SUITE 400
RALEIGH, NC 27615
NC FIRM LICENSE NO. F-6493

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

REVISIONS

C1	3.0" S9.5C
D1	4.0" I19.0C
E1	4.0" B25.0C
L	CLASS IV SUBGRADE STAB.
N	GEOTEXTILE FOR SUBGRADE STAB.
R1	2'-6" C&G
R4	CONC. MONO. ISLAND (KEYED IN)
T	EARTH MATERIAL
U	EXIST. PAVEMENT
W	WEDGING
Y	RUMBLE STRIPS



B-5777

2A-2

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
DAVIDSON COUNTY

ROADWAY DESIGN UNIT
ROADWAY DESIGN
ENGINEER

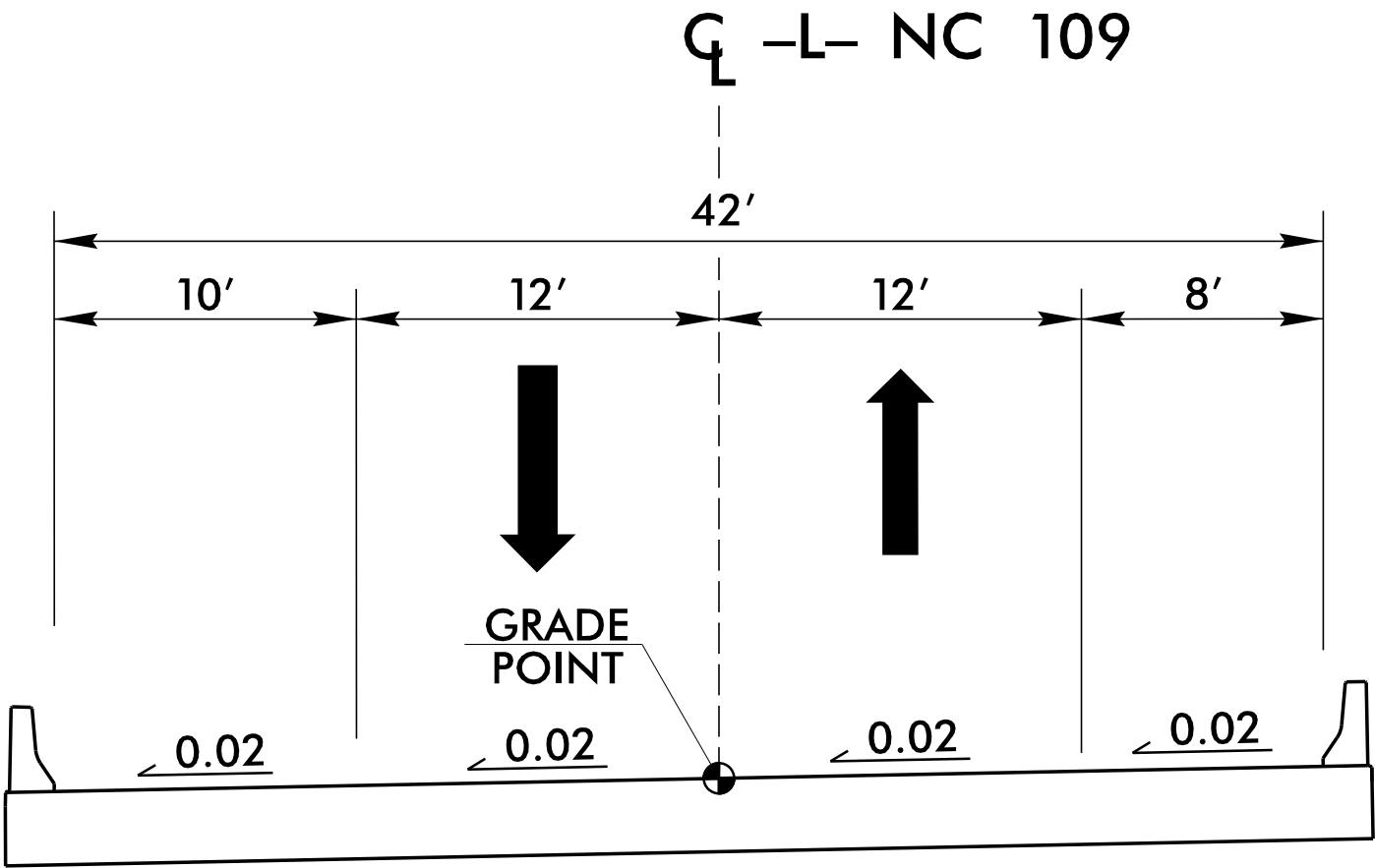
PAVEMENT DESIGN
ENGINEER

PREPARED BY
RS&H
8521 SIX FORKS ROAD, SUITE 400
RALEIGH, NC 27615
NC FIRM LICENSE NO. F-0493

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

REVISIONS

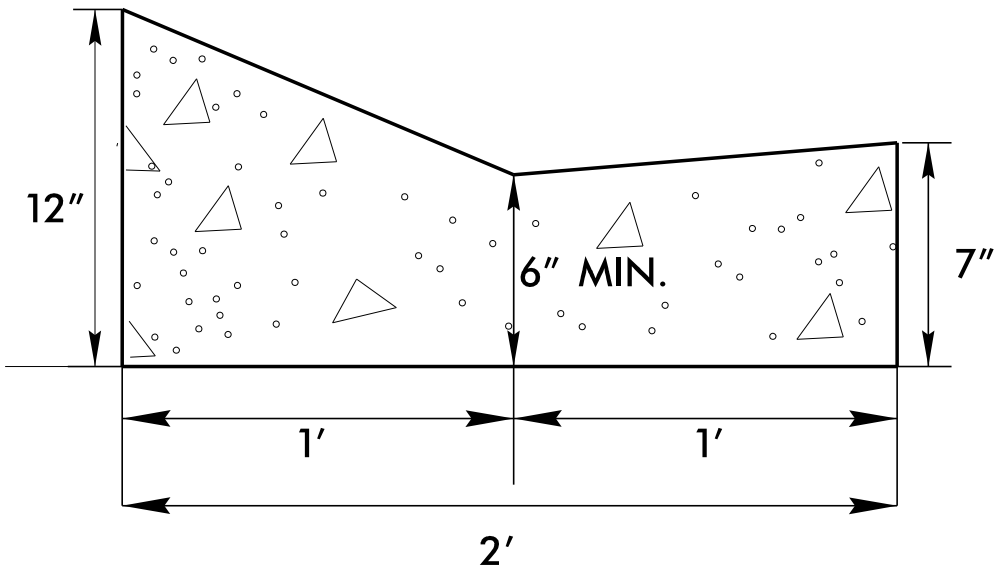
C1	3.0" S9.5C
D1	4.0" I19.0C
E1	4.0" B25.0C
E2	4.5" B25.0C
R1	2'-6" C&G
R2	VALLEY C&G (MOD.)
R3	2'-6" C&G (MOD.)
R5	12" JOINTED CONC.
R6	4" CONC. ISLAND COVER
T	EARTH MATERIAL
U	EXIST. PAVEMENT
W	WEDGING



TYPICAL SECTION NO. 6

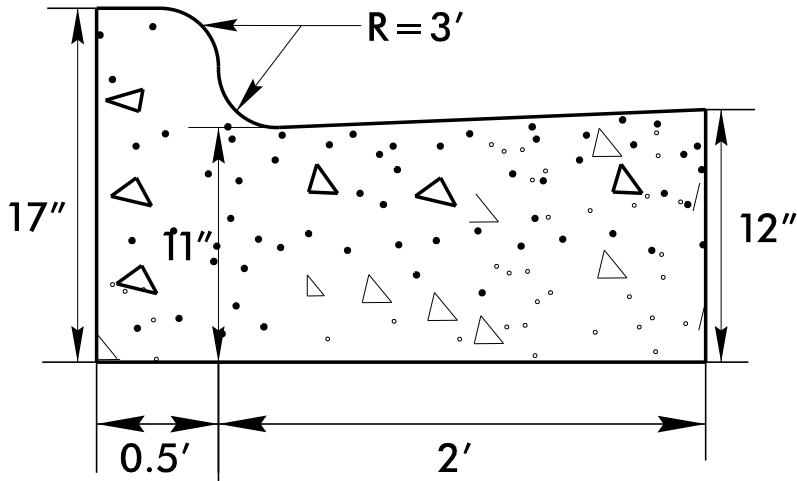
-L- STA. 19+88.77 TO 21+39.27

SEE STRUCTURE PLANS FOR STRUCTURE CONSTRUCTION DETAILS.



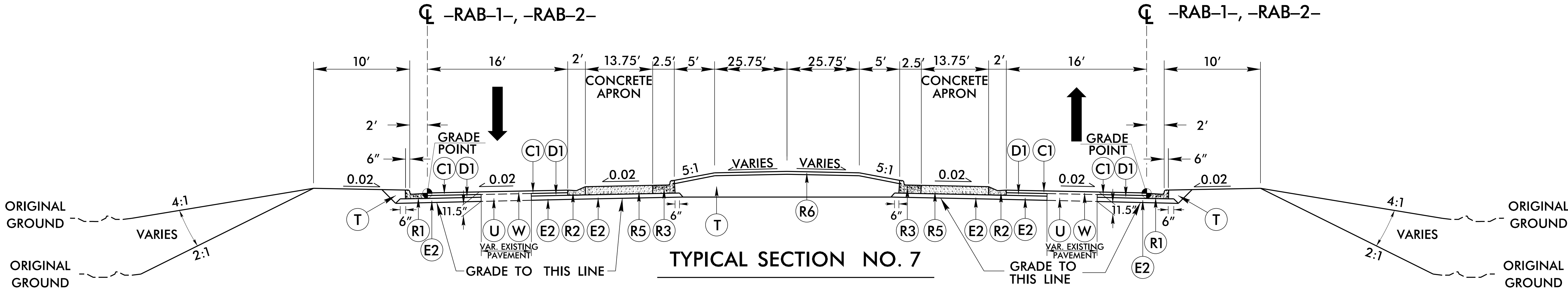
2' MODIFIED VALLEY GUTTER

USE IN CONJUNCTION WITH TYPICAL SECTION 7



MODIFIED 2'-6" CURB AND GUTTER

USE IN CONJUNCTION WITH TYPICAL SECTION 7



TYPICAL SECTION NO. 7

-RAB-1- STA. 10+00.00 TO 14+08.41

-RAB-2- STA. 10+00.00 TO 14+08.41

B-5777

2A-3

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
DAVIDSON COUNTY

ROADWAY DESIGN UNIT
ROADWAY DESIGN
ENGINEER

SEAL

049619

STEVEN J. SHUMANN

3/31/2025

SEAL

049619

STEVEN J. SHUMANN

3/31/2025

PAVEMENT DESIGN
ENGINEER

SEAL

049619

STEVEN J. SHUMANN

3/31/2025

SEAL

049619

STEVEN J. SHUMANN

3/31/2025

PREPARED BY

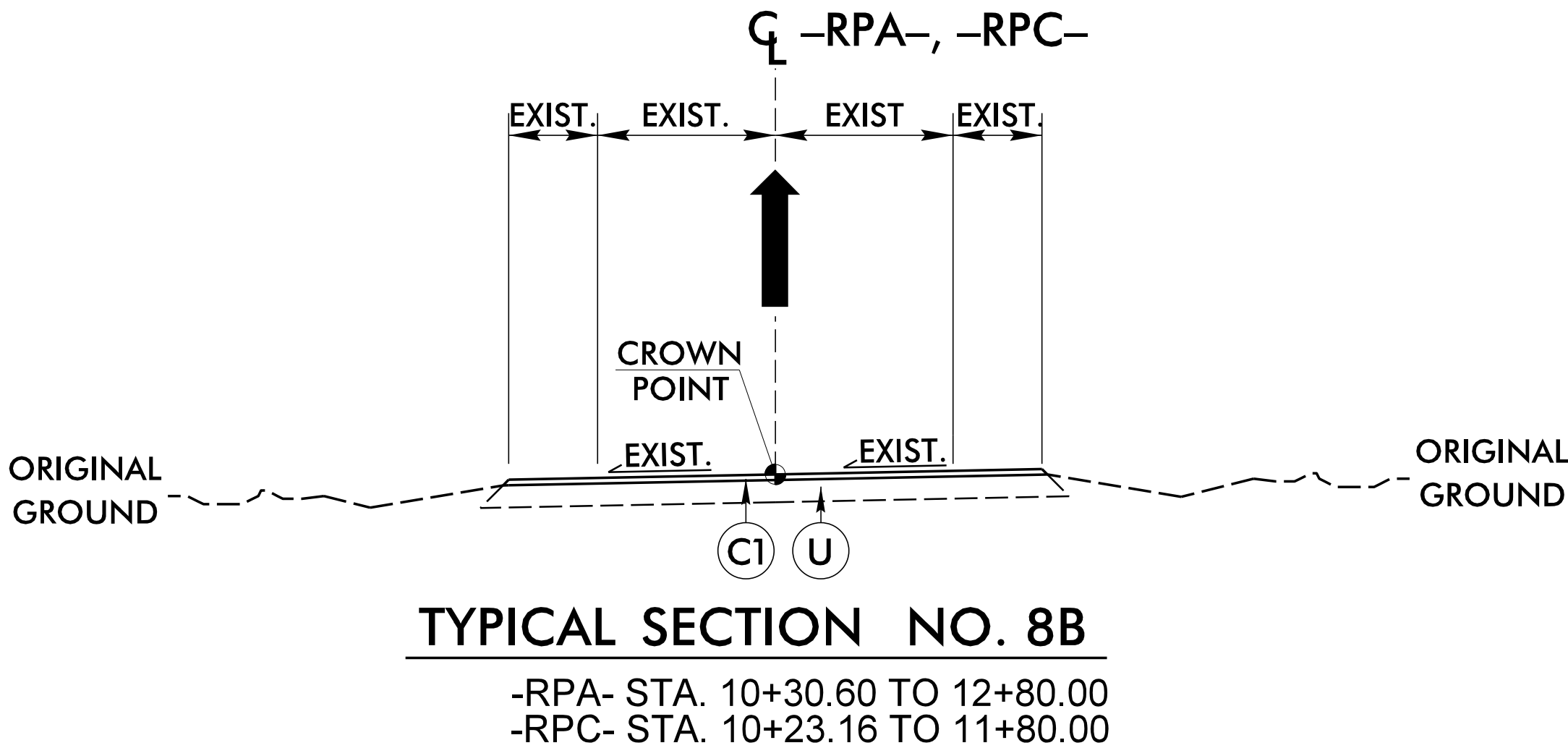
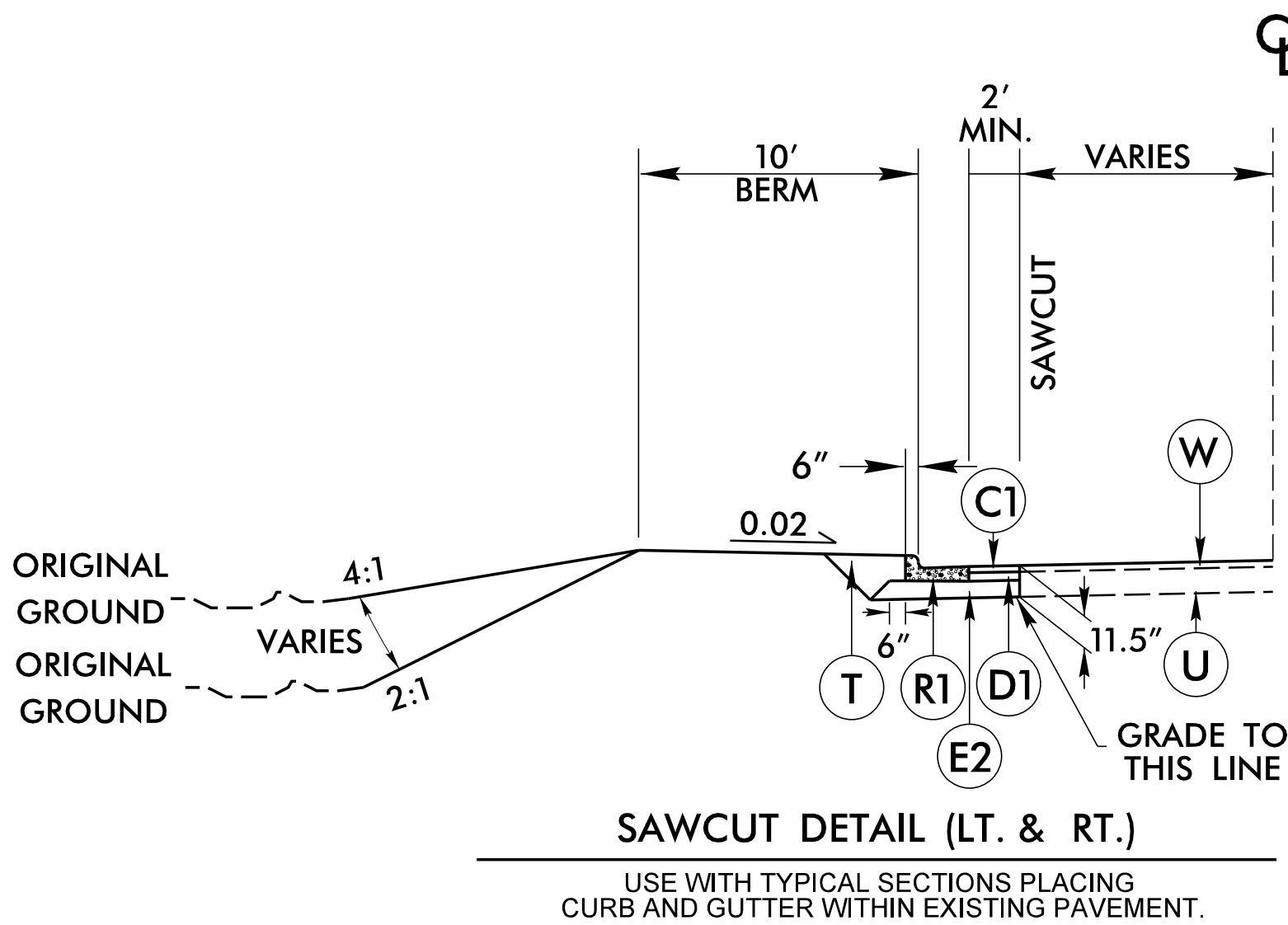
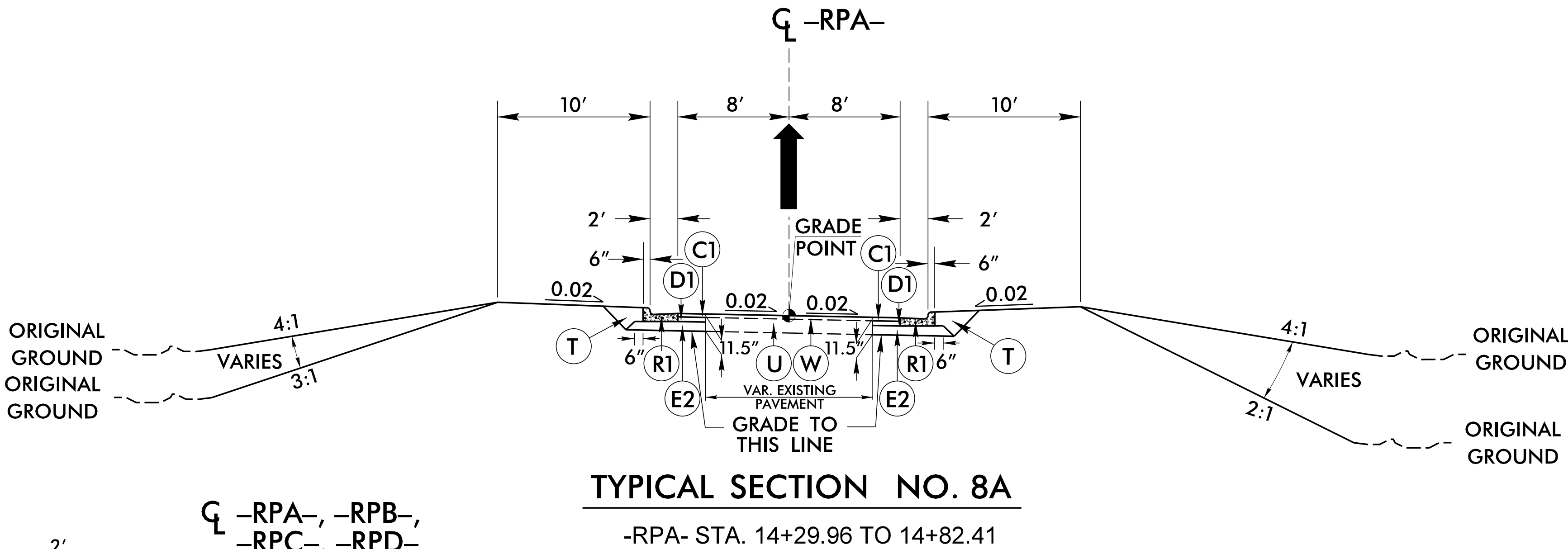
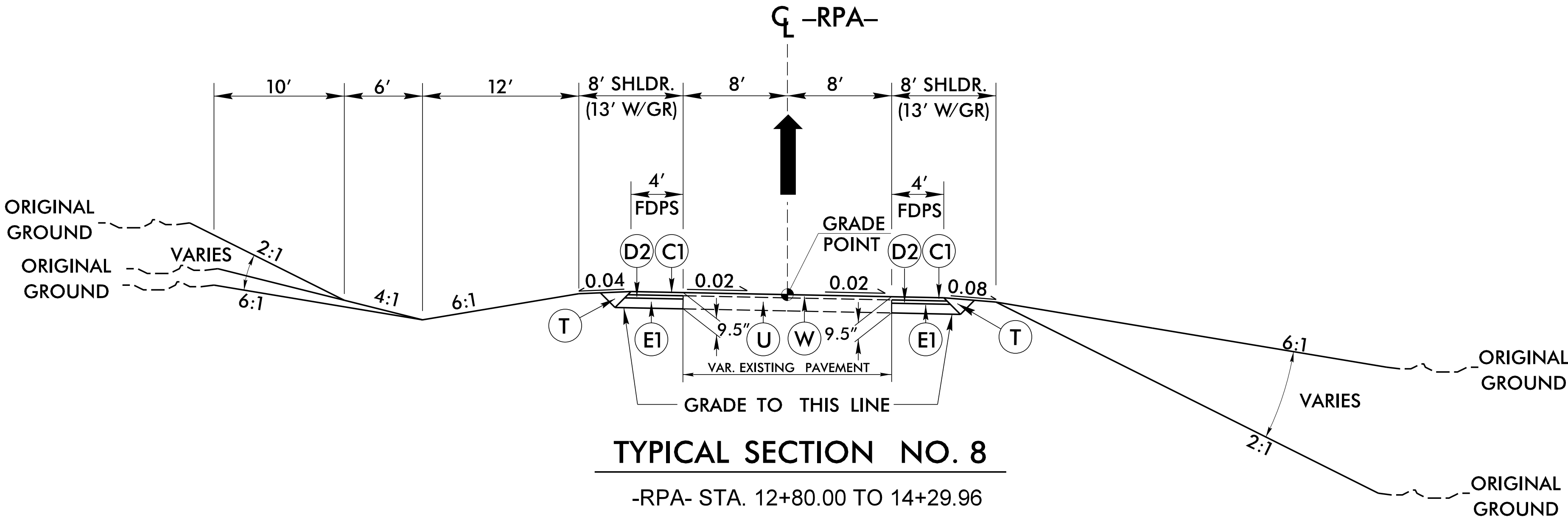
RS&H

8521 SIX FORKS ROAD, SUITE 400
RALEIGH, NC 27615
NC FIRM LICENSE NO. F-6493

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

REVISIONS

C1	3.0" S9.5C
D1	4.0" I19.0C
D2	2.5" I19.0C
E1	4.0" B25.0C
E2	4.5" B25.0C
R1	2'-6" C&G
T	EARTH MATERIAL
U	EXIST. PAVEMENT
W	WEDGING



B-5777

2A-4

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
DAVIDSON COUNTY

ROADWAY DESIGN UNIT
ROADWAY DESIGN
ENGINEER

STEVEN J. SHUMAN
3/31/2022
PAVEMENT DESIGN
ENGINEER

ANDREW D. WARD
4/1/2022
PAVEMENT DESIGN
ENGINEER

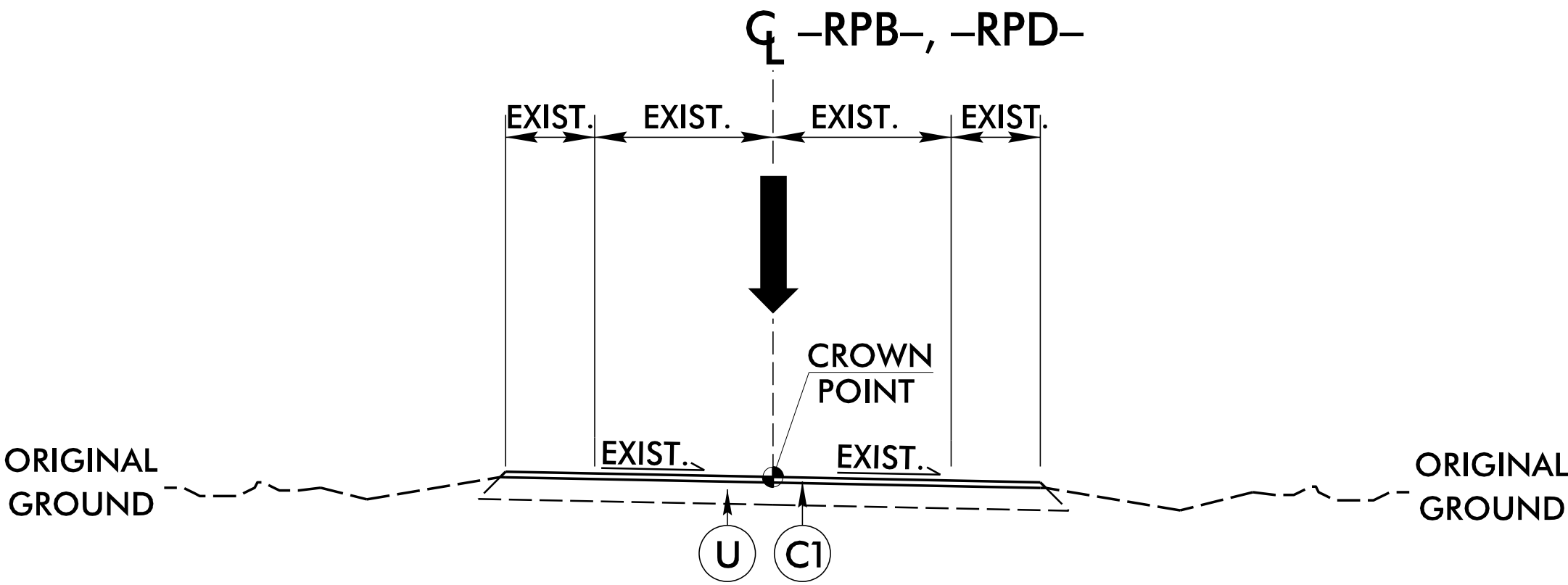
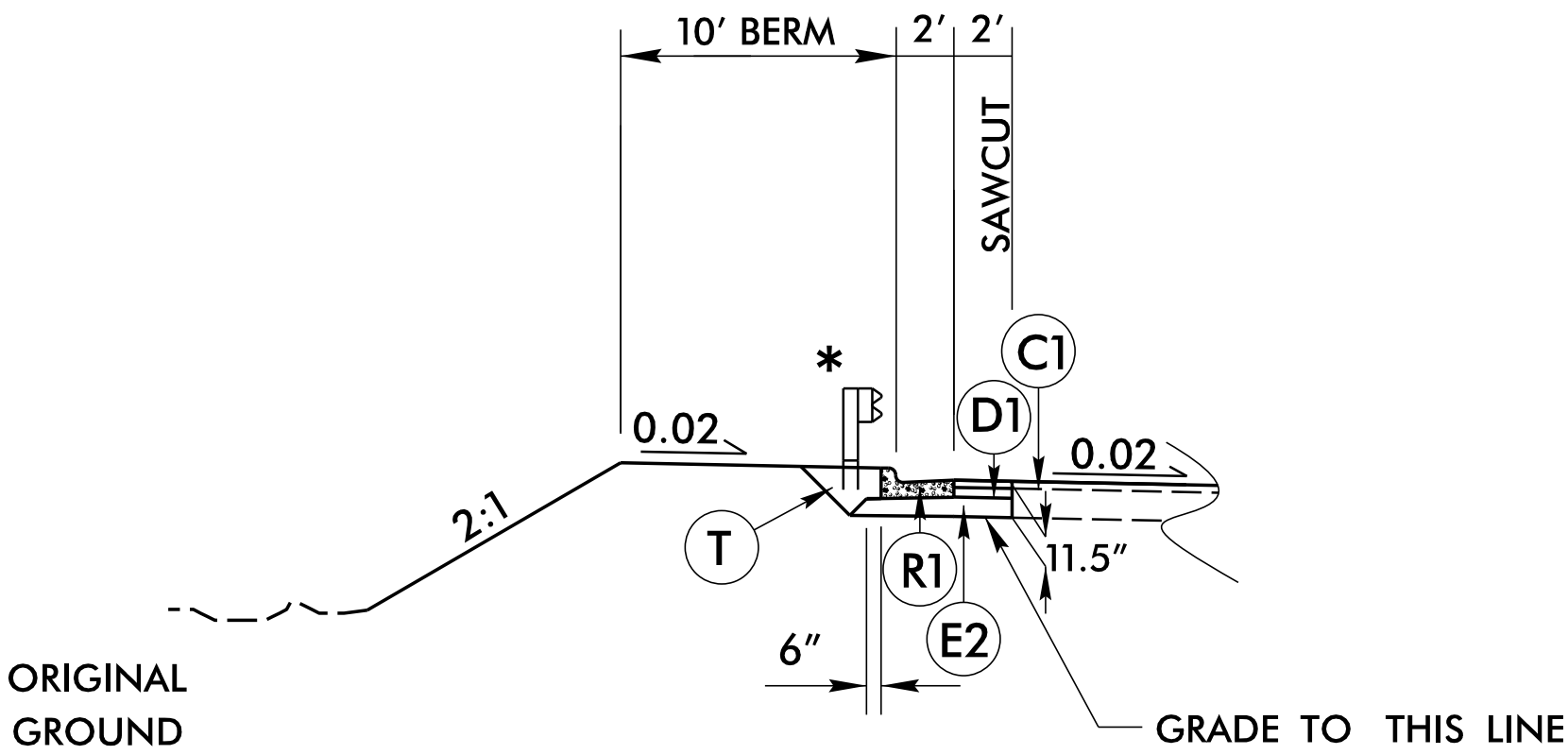
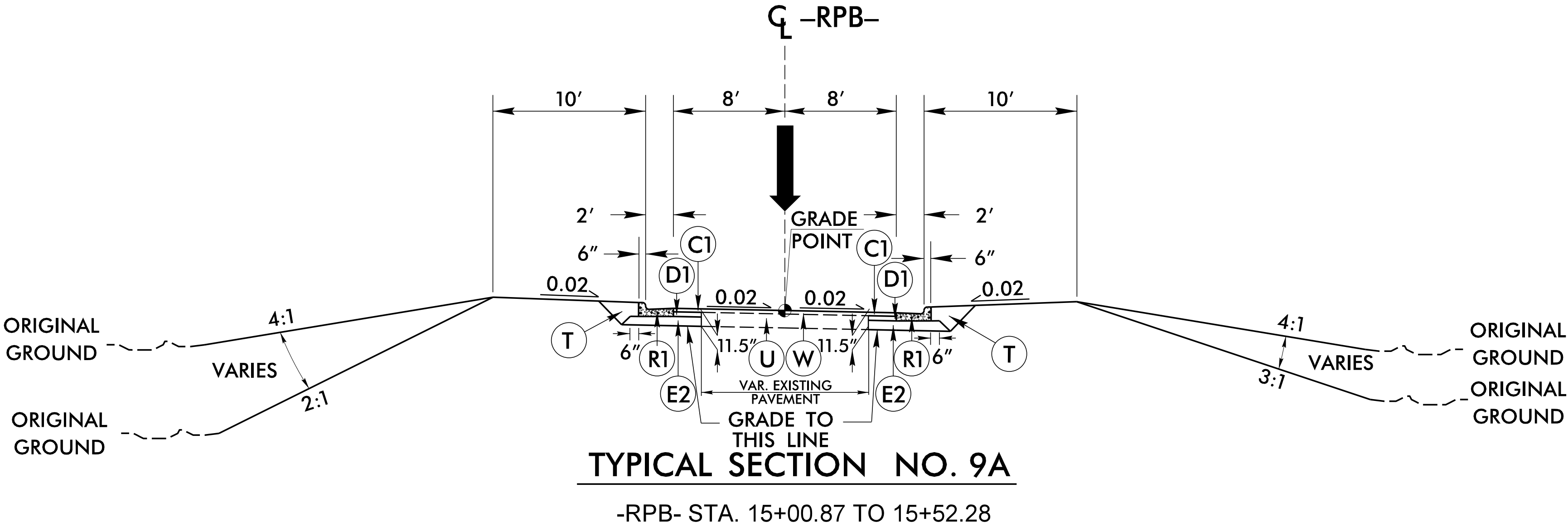
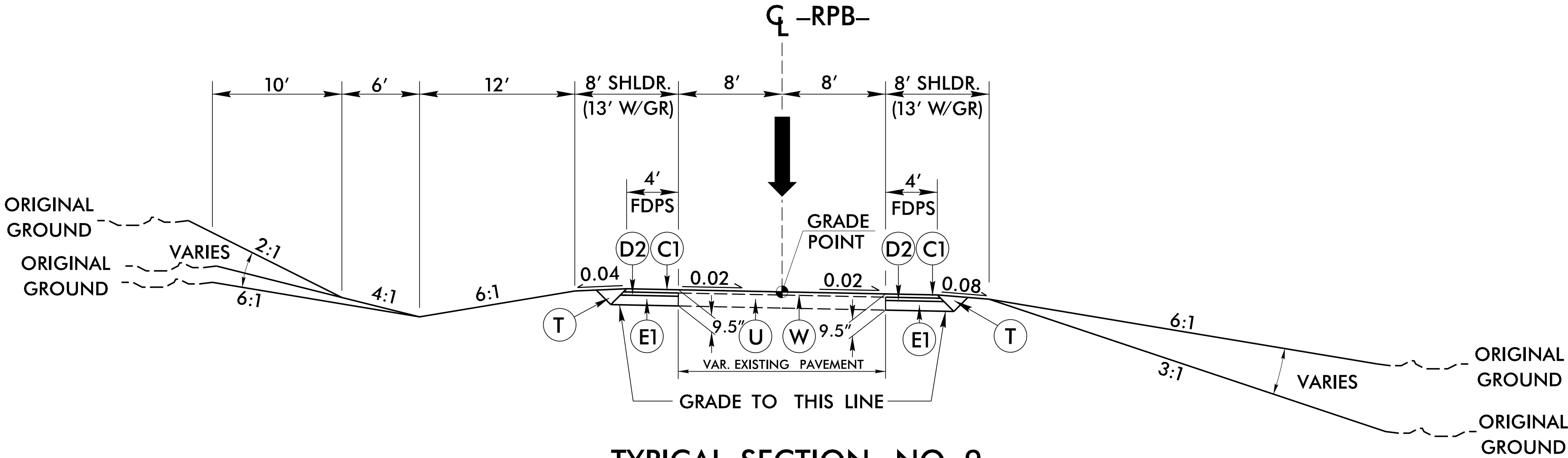
PREPARED BY

8521 SIX FORKS ROAD, SUITE 400
RALEIGH, NC 27615
NC FIRM LICENSE NO. F-6493

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

REVISIONS

C1	3.0" S9.5C
D1	4.0" I19.0C
D2	2.5" I19.0C
E1	4.0" B25.0C
E2	4.5" B25.0C
R1	2'-6" C&G
T	EARTH MATERIAL
U	EXIST. PAVEMENT
W	WEDGING



B-5777

2A-5

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
DAVIDSON COUNTY

ROADWAY DESIGN UNIT

ROADWAY DESIGN
ENGINEER

SEAL

049419 J. Shuman

00000000000000000000

STEVEN J. SHUMAN

3/31/2023

SEAL

049419 J. Shuman

00000000000000000000

STEVEN J. SHUMAN

4/1/2023

PAVEMENT DESIGN
ENGINEER

SEAL

049419 J. Shuman

00000000000000000000

STEVEN J. SHUMAN

4/1/2023

PREPARED BY

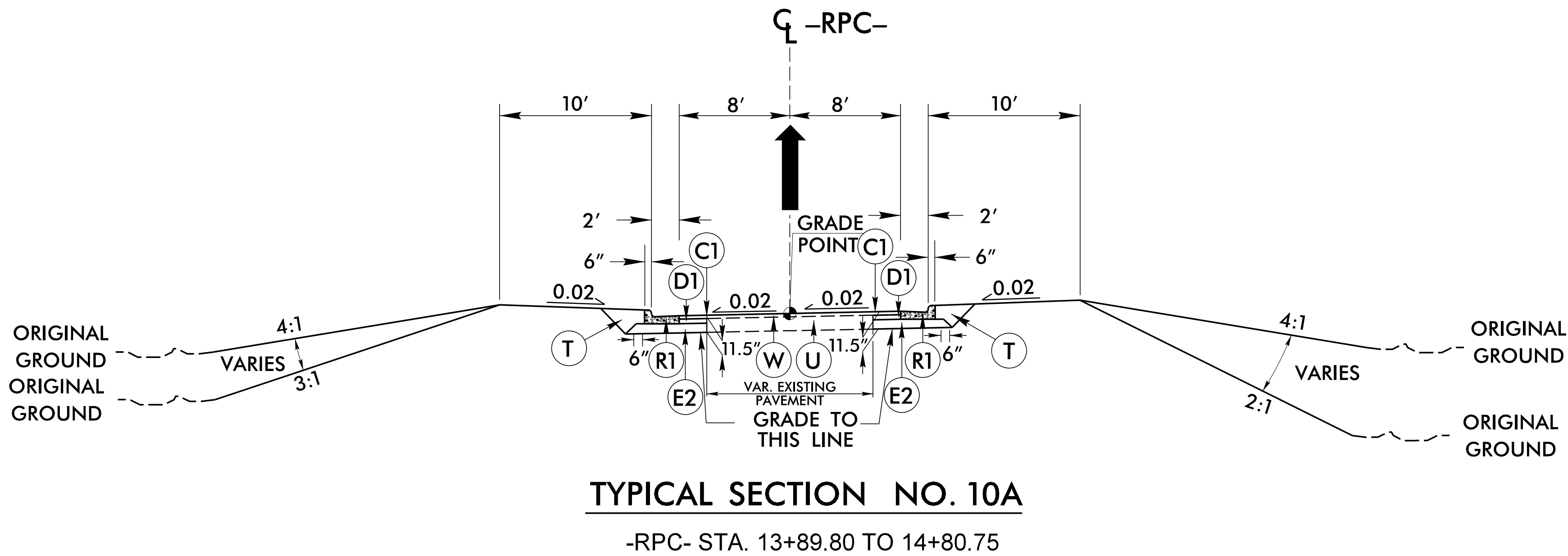
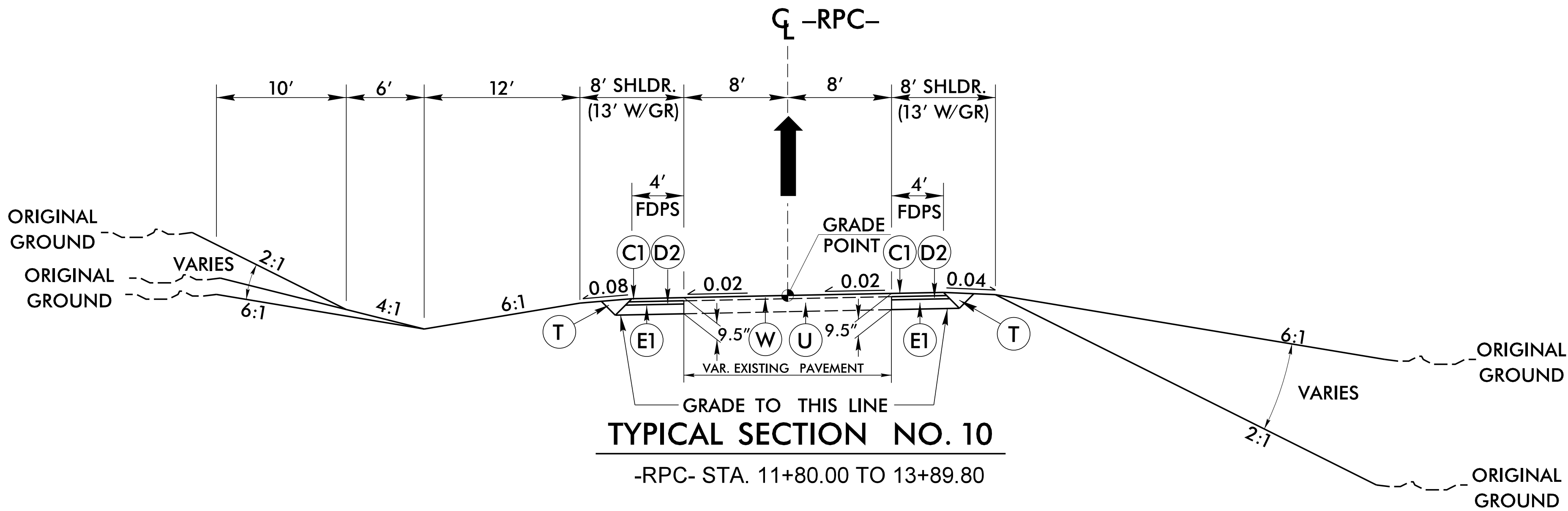
RS&H

8521 SIX FORKS ROAD, SUITE 400
RALEIGH, NC 27615
NC FIRM LICENSE NO. F-6493

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

REVISIONS

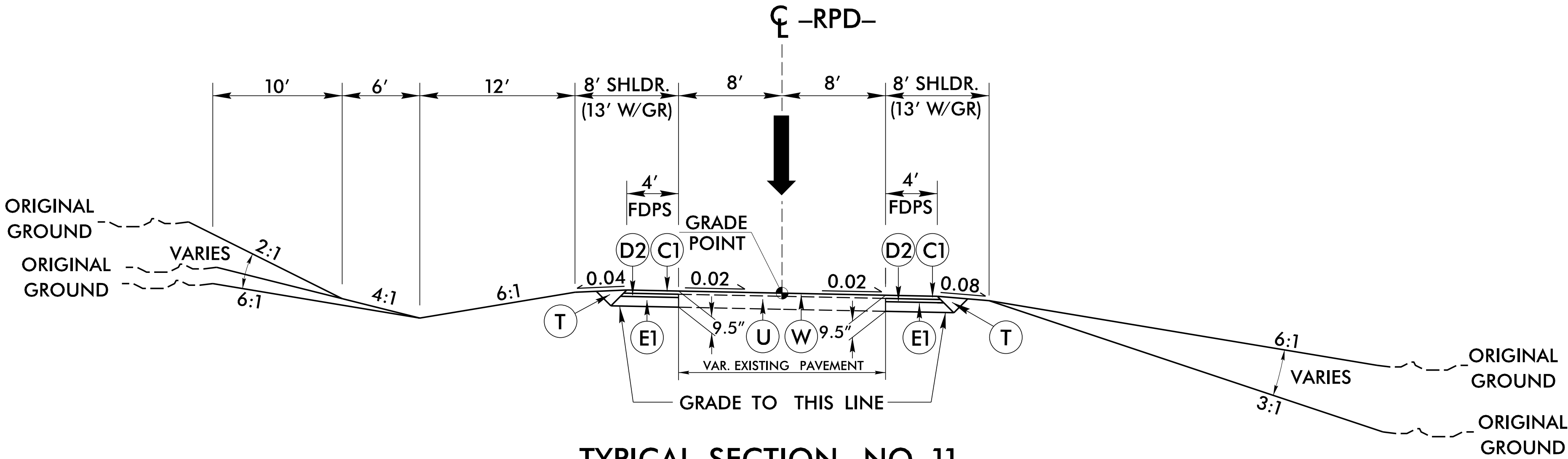
C1	3.0" S9.5C
D1	4.0" I19.0C
D2	2.5" I19.0C
E1	4.0" B25.0C
E2	4.5" B25.0C
R1	2'-6" C&G
T	EARTH MATERIAL
U	EXIST. PAVEMENT
W	WEDGING



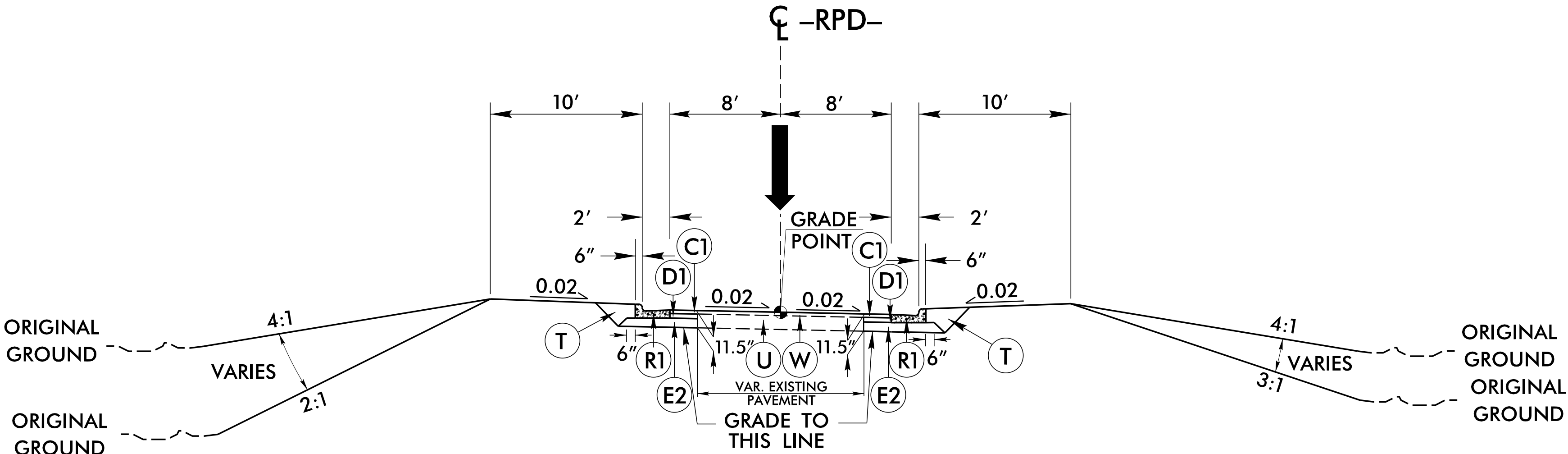
REVISIONS

B-5777	
	2A-6
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION DAVIDSON COUNTY	
	
ROADWAY DESIGN UNIT	
ROADWAY DESIGN ENGINEER	
	
3/31/2014	
PAVEMENT DESIGN ENGINEER	
	
4/1/2014	
PREPARED BY	
	
8521 5th FORK ROAD, SUITE 400 HALEGHAM, NC 27645 PHONE LICENSE NO. 7-0483	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETE	

C1	3.0" S9.5C
D1	4.0" I19.0C
E1	4.0" B25.0C
E2	4.5" B25.0C
R1	2'-6" C&G
T	EARTH MATERIAL
U	EXIST. PAVEMENT
W	WEDGING



-RPD- STA. 14+20.00 TO 15+06.08



-RPD- STA. 15+06.08 TO 15+87.02

B-5777

2A-7

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
DAVIDSON COUNTY

ROADWAY DESIGN UNIT

ROADWAY DESIGN
ENGINEER

PAVEMENT DESIGN
ENGINEER

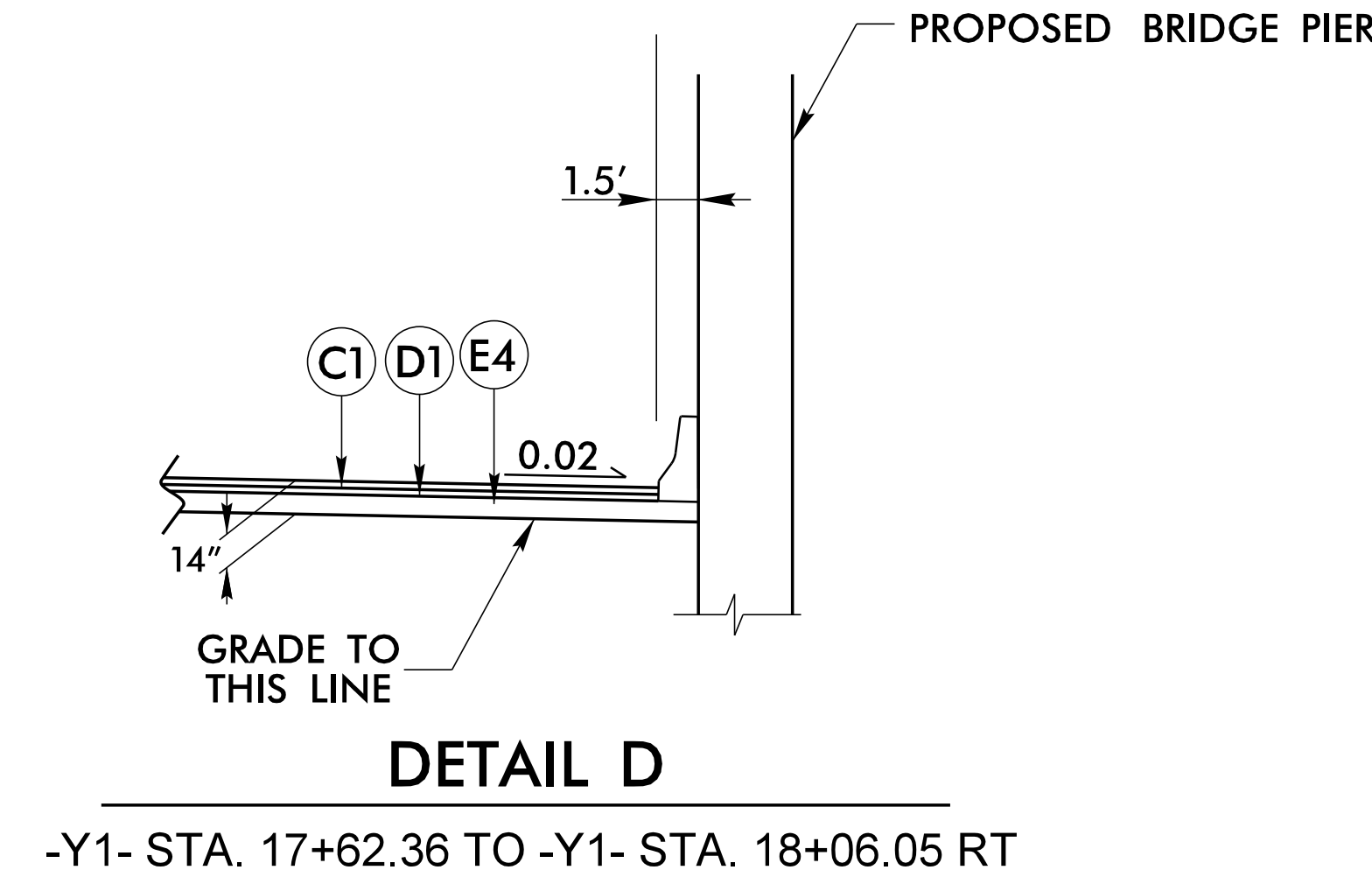
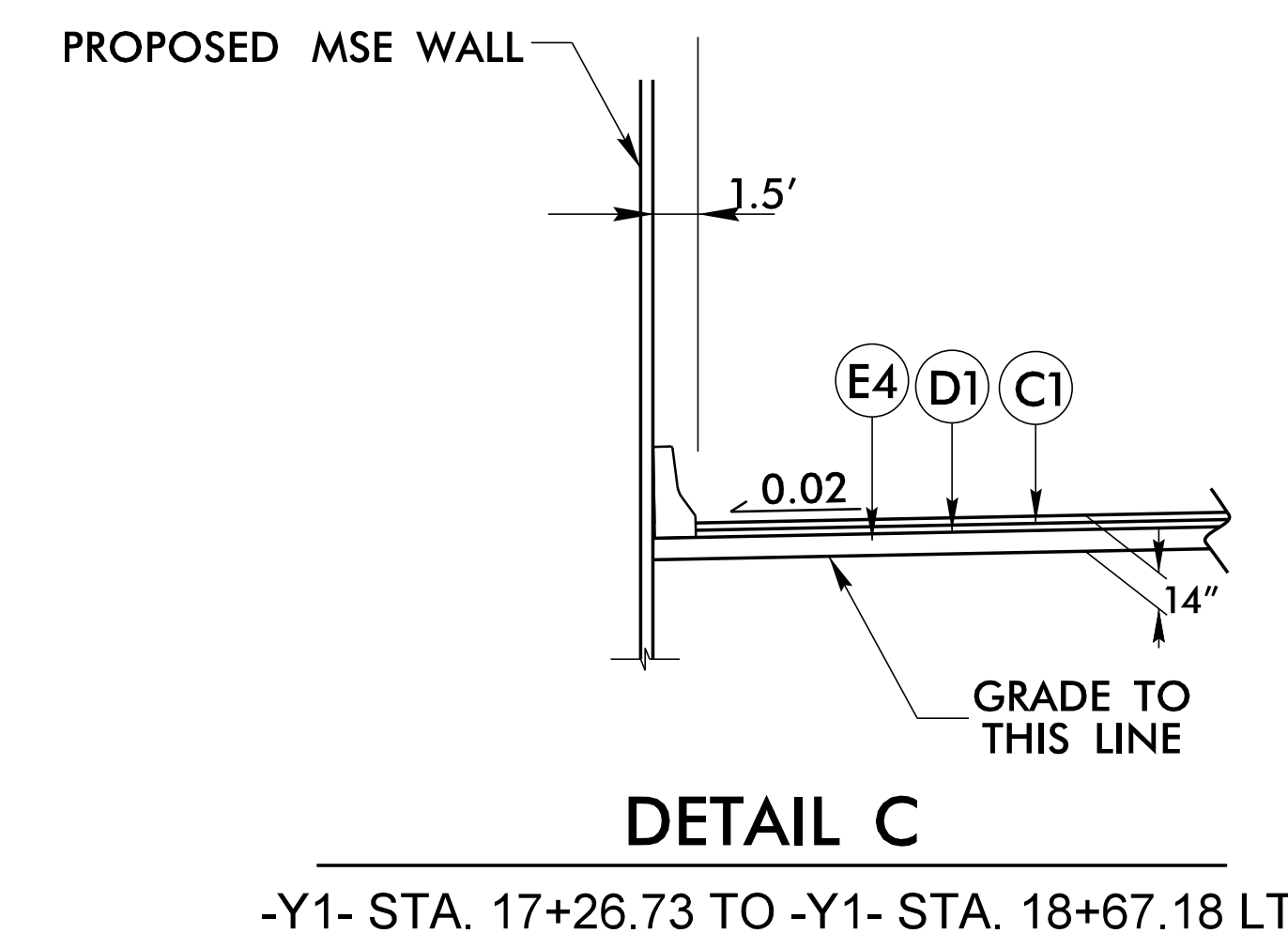
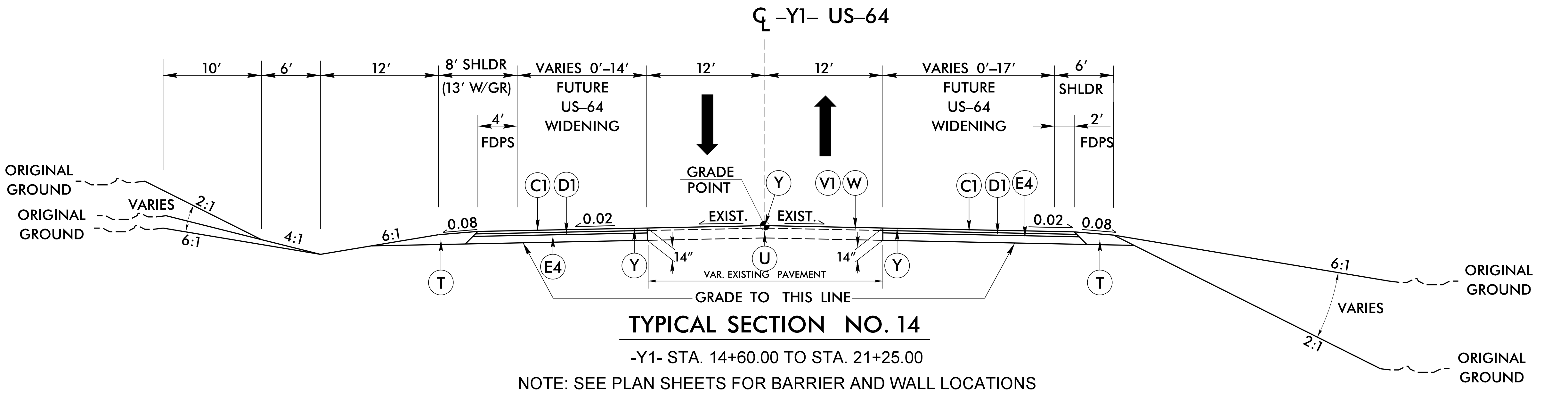
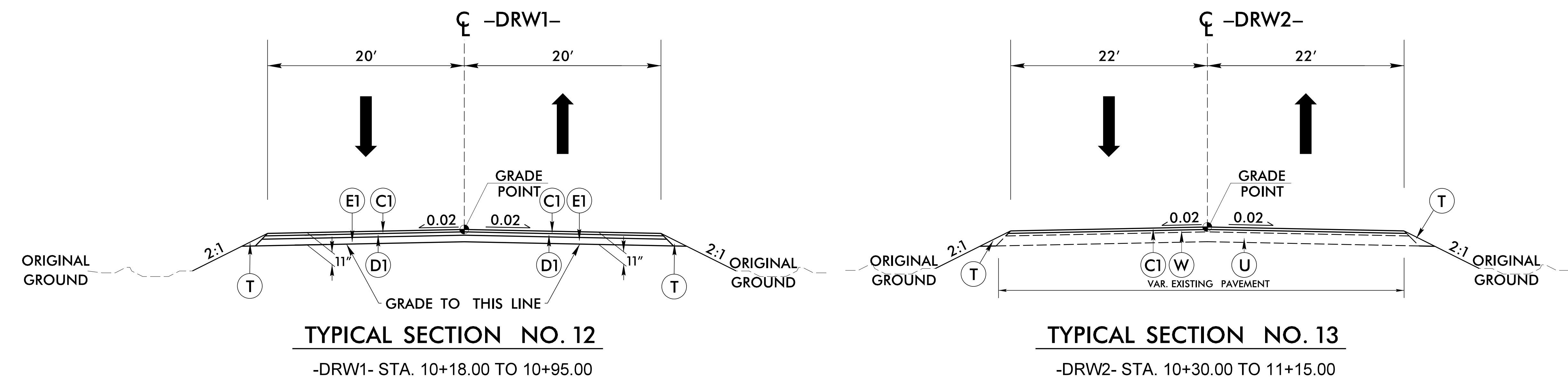
PREPARED BY

8521 SIX FORKS ROAD, SUITE 400
RALEIGH, NC 27615
NC FIRM LICENSE NO. F-6493

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

REVISIONS

C1	3.0" S9.5C
D1	4.0" I19.0C
E1	4.0" B25.0C
E4	7.0" B25.0C
T	EARTH MATERIAL
U	EXIST. PAVEMENT
V1	1.5" MILLING
W	WEDGING
Y	RUMBLE STRIPS



B-5777

2A-8

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
DAVIDSON COUNTY

ROADWAY DESIGN UNIT
ROADWAY DESIGN
ENGINEER

3/31/2025

4/1/2025

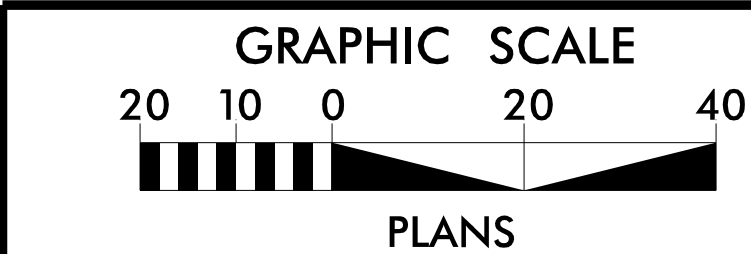
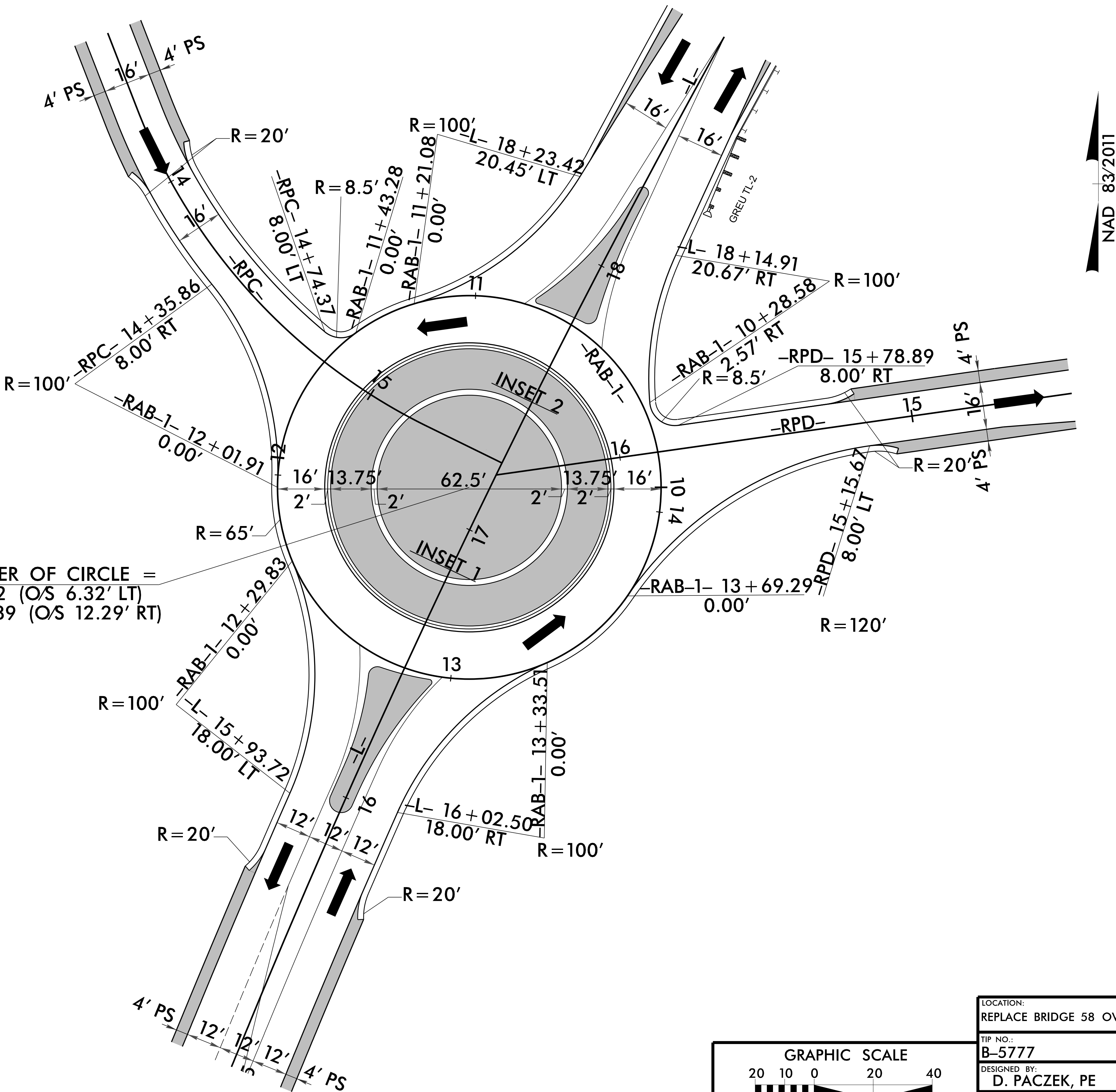
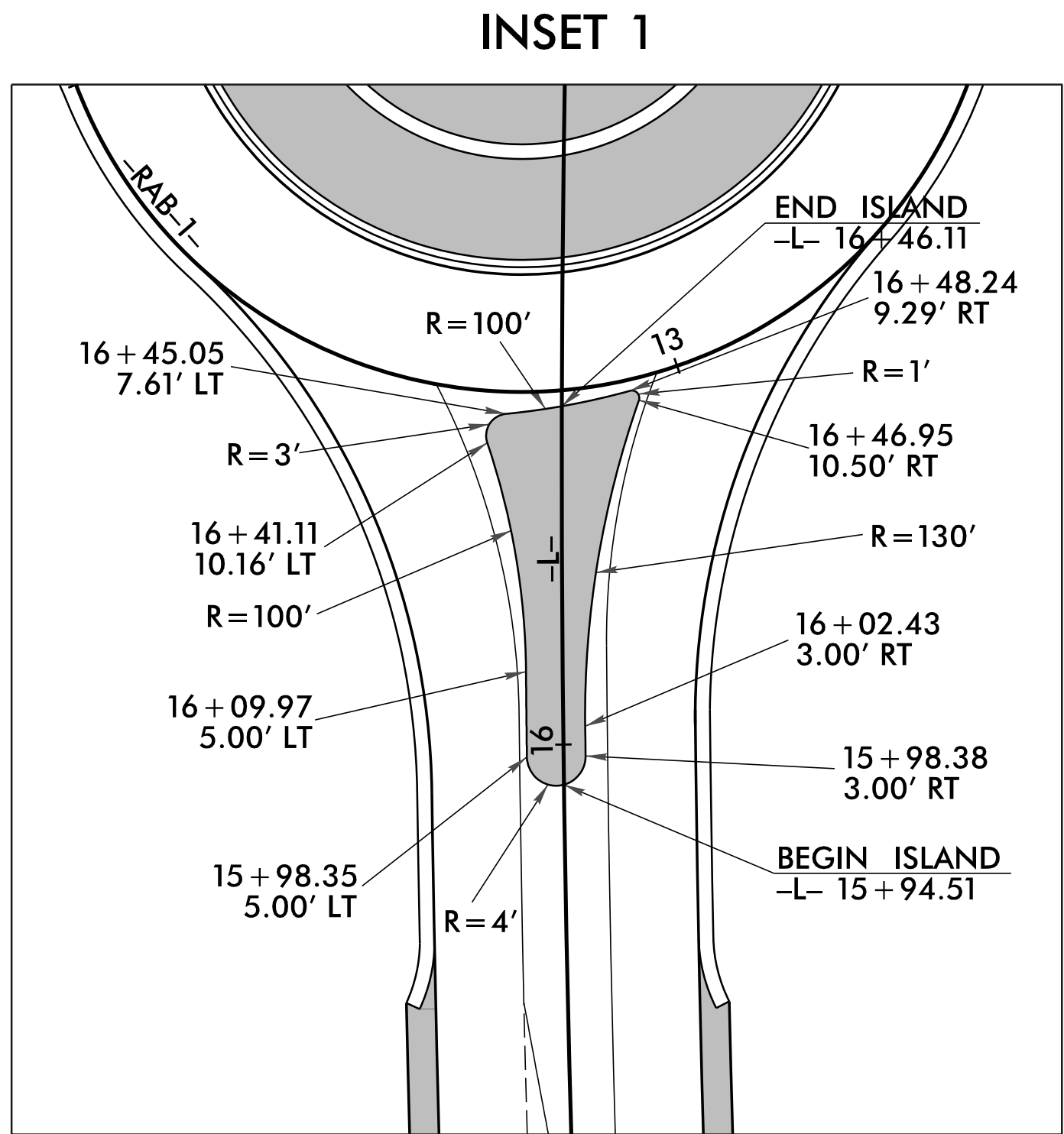
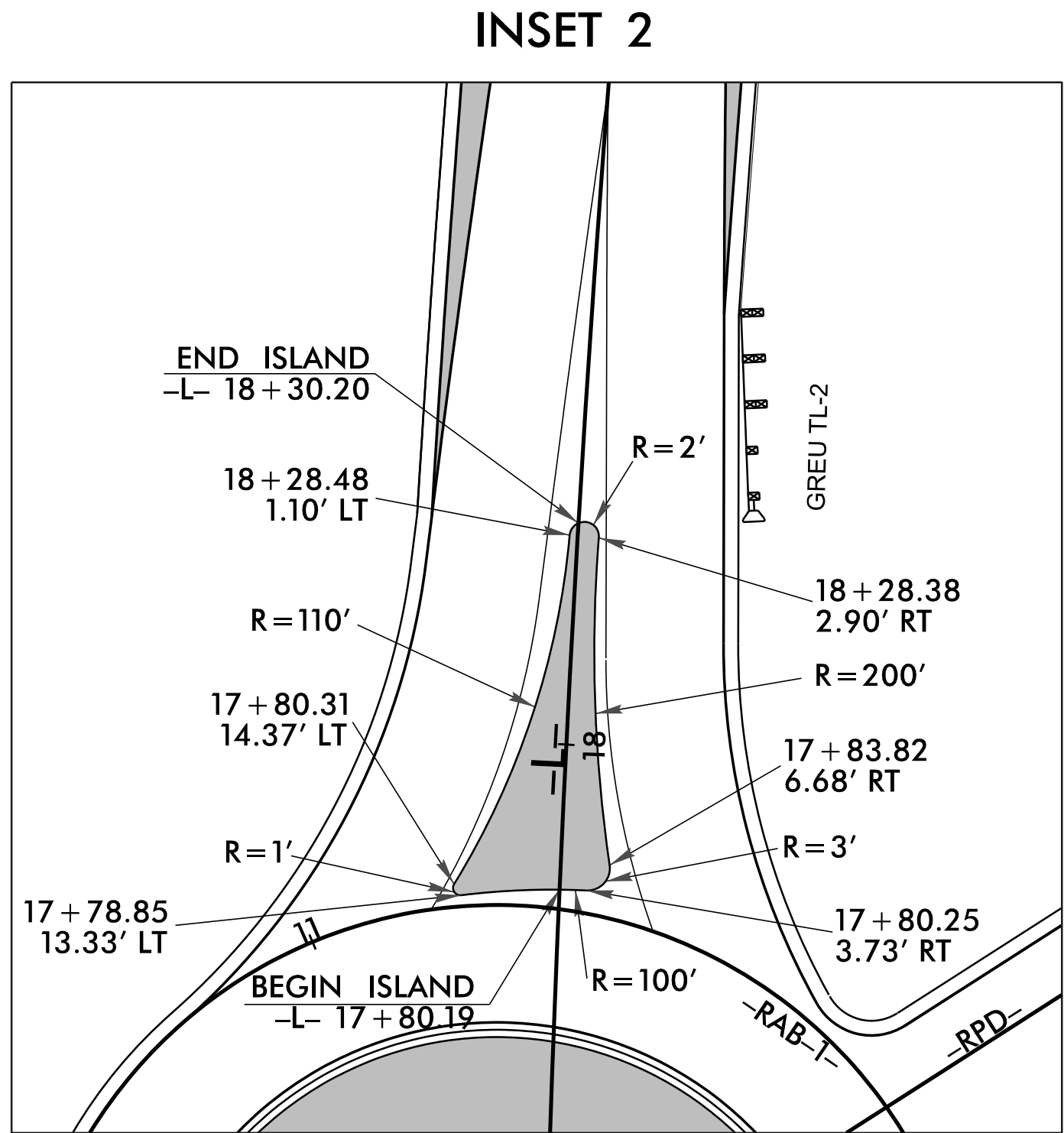
PREPARED BY

8521 SIX FORKS ROAD, SUITE 400
RALEIGH, NC 27615
NC FIRM LICENSE NO. F-0493

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

REVISIONS

ROUNDAABOUT –RAB-1– DETAIL

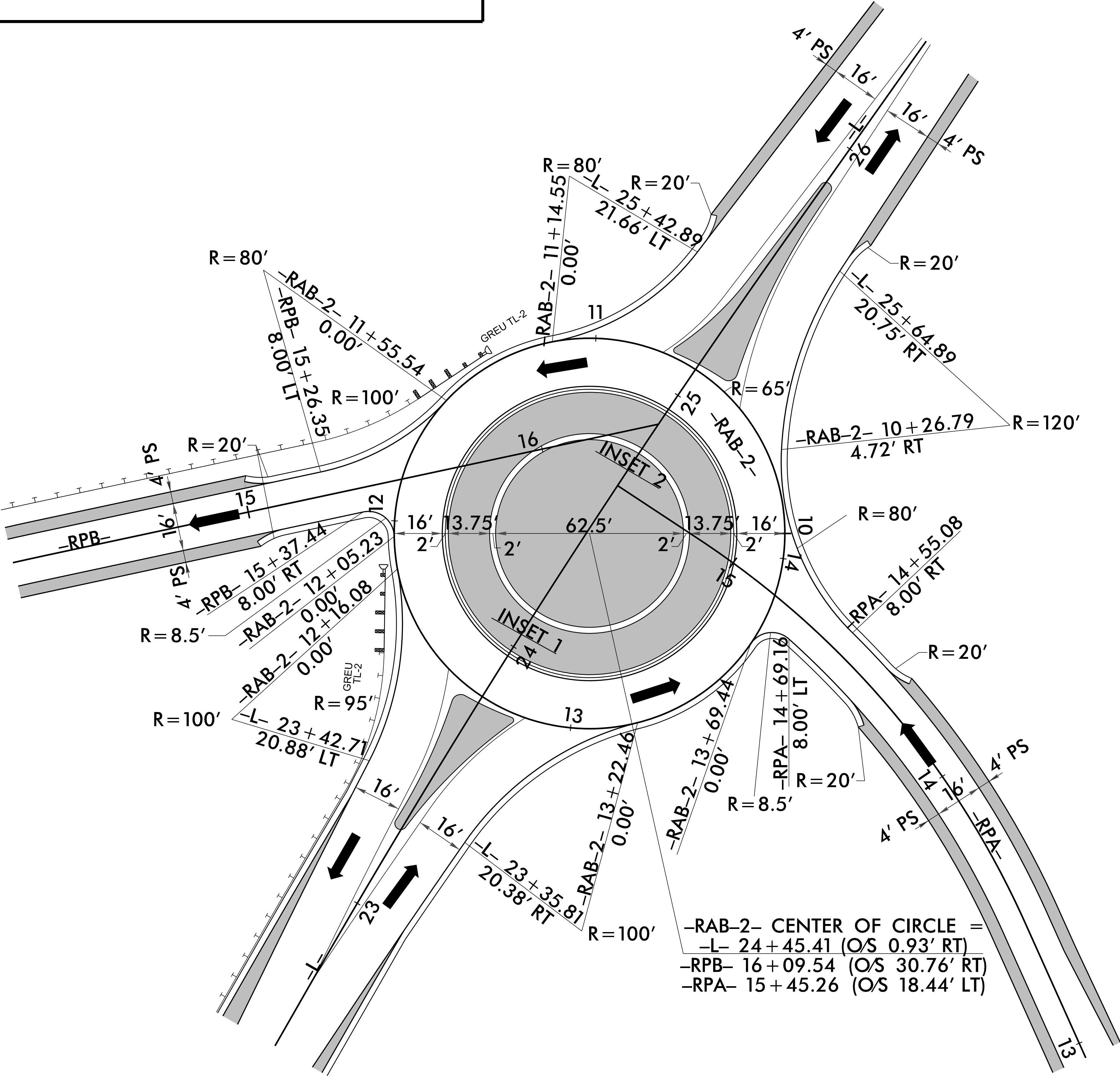


LOCATION:	
REPLACE BRIDGE 58 OVER US 64 ON NC 109	
BIP NO.:	COUNTY:
B-5777	DAVIDSON
DESIGNED BY:	
D. PACZEK, PE	
CHECKED BY:	DATE:
S. SHUMAN, PE	10/25/2024

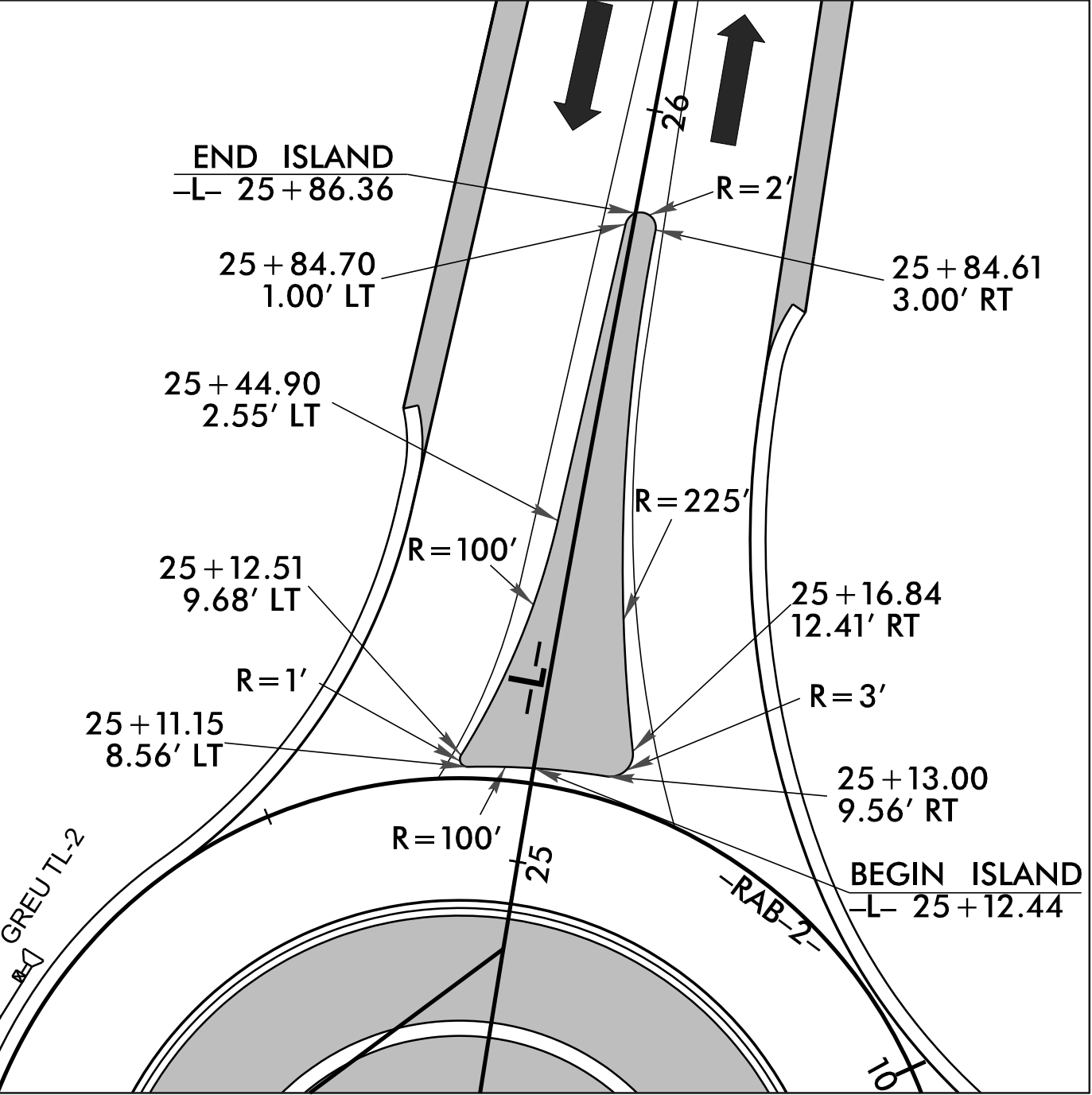
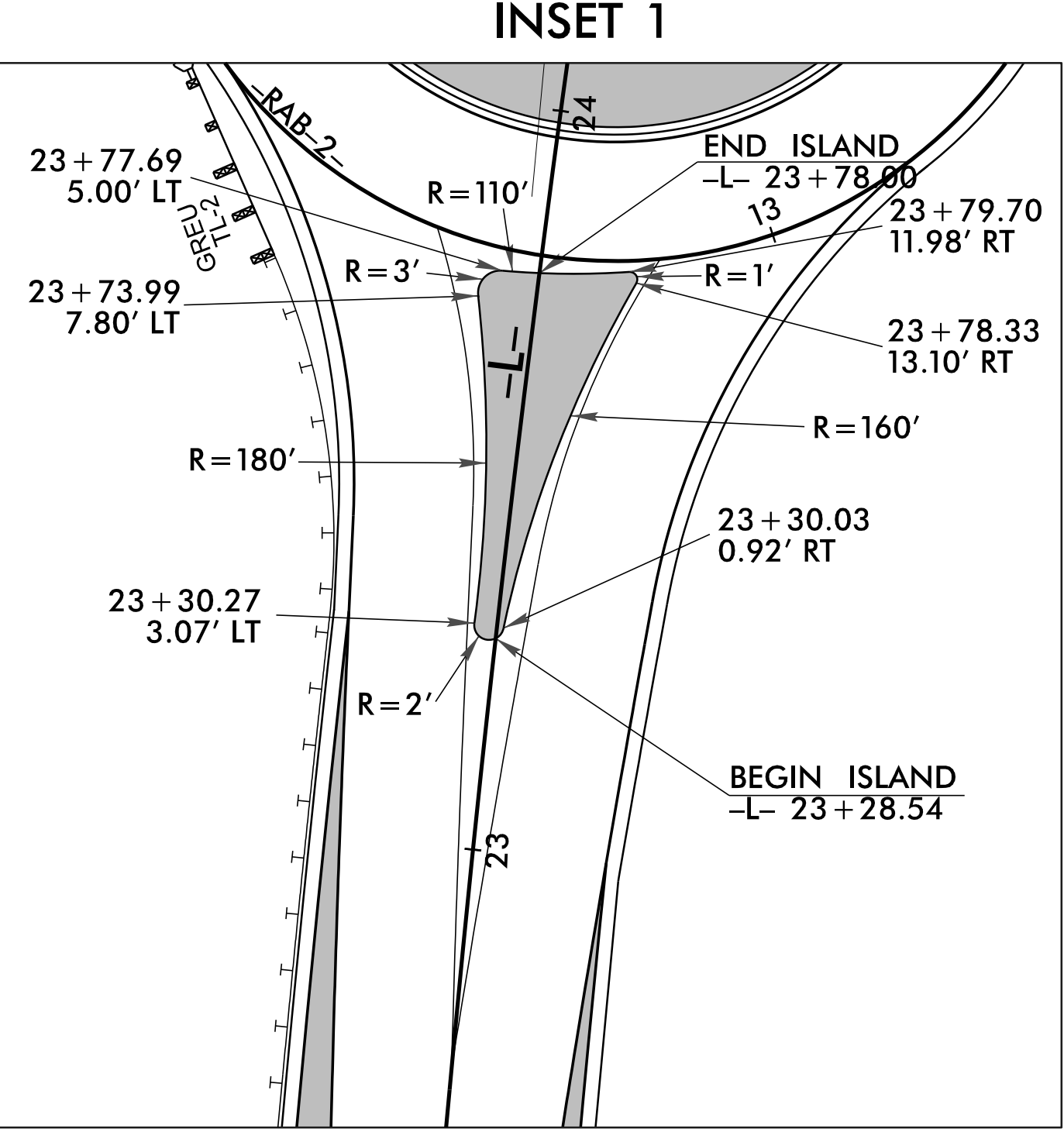
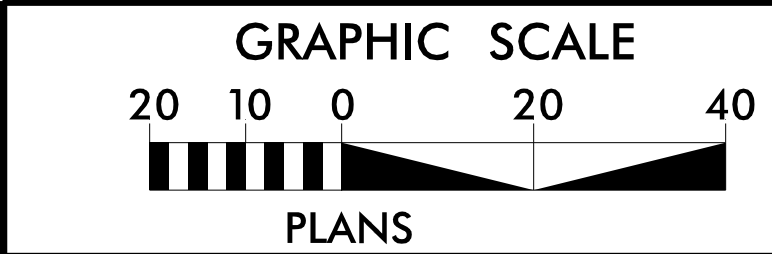
B-5777	
	28-1
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION DAVISON COUNTY	
	
ROADWAY DESIGN UNIT	
ROADWAY DESIGN ENGINEER	
	
3/31/2017	
PREPARED BY	
 8021 SIX FORKES ROAD, SUITE 400 WAXHAM, NC 27157 NC FIRM LICENSE NO. F-6493	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

REVISIONS

ROUNDAABOUT -RAB-2- DETAIL



NAD 83/2011



REVISIONS

B-5777

28-2

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
DAVIDSON COUNTY

ROADWAY DESIGN UNIT
ROADWAY DESIGN
ENGINEER

SEAL

049419 J. Shuman

ENGINEER

3/31/2020

PREPARED BY

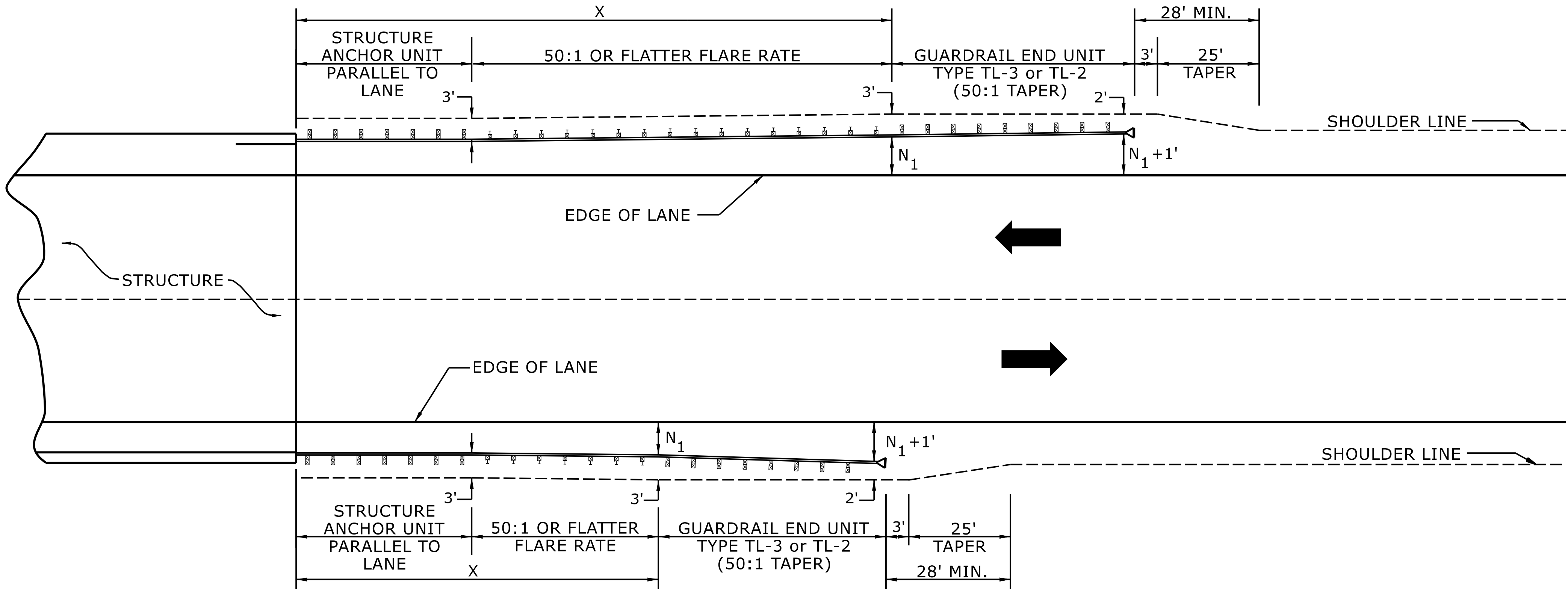
RS&H

8521 SIX FORKS ROAD, SUITE 400
RALEIGH, NC 27615
NC FIRM LICENSE NO. F-6493

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

LOCATION: REPLACE BRIDGE 58 OVER US 64 ON NC 109	
TIP NO.: B-5777	COUNTY: DAVIDSON
DESIGNED BY: D. PACZEK, PE	
CHECKED BY: S. SHUMAN, PE	DATE: 10/25/2024

PROJECT REFERENCE NO.	SHEET NO.
B-5777	2C-1



USE FLARE RATE AS THE CONTROL IF THE " N_1 " DISTANCE IS NOT OBTAINED.
(" N_1 " IS BASED ON SHOULDER WIDTHS IN THE ROADWAY DESIGN MANUAL)

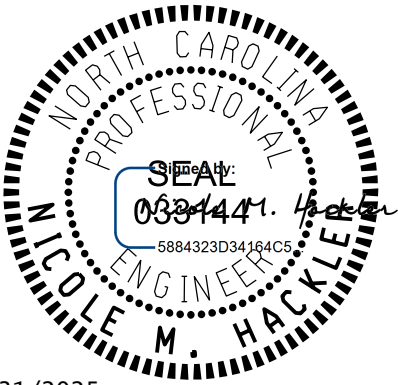
SEE STD. 862.03 FOR STRUCTURE ANCHOR UNITS

FOR POSTED SPEEDS $\geq$ 45MPH USE GREU TYPE TL-3
FOR POSTED SPEEDS $<$ 45MPH USE GREU TYPE TL-2

GUARDRAIL LENGTH OF NEED (X) IS CALCULATED BASED ON THE AASHTO ROADSIDE DESIGN GUIDE.

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

ROADWAY DETAIL DRAWING FOR
GUARDRAIL PLACEMENT



3/31/2025

LENGTHS AND OFFSETS FOR PROPOSED GUARDRAIL AT TWO LANE - TWO WAY LOCATIONS

SHEET 4 OF 15
862D01

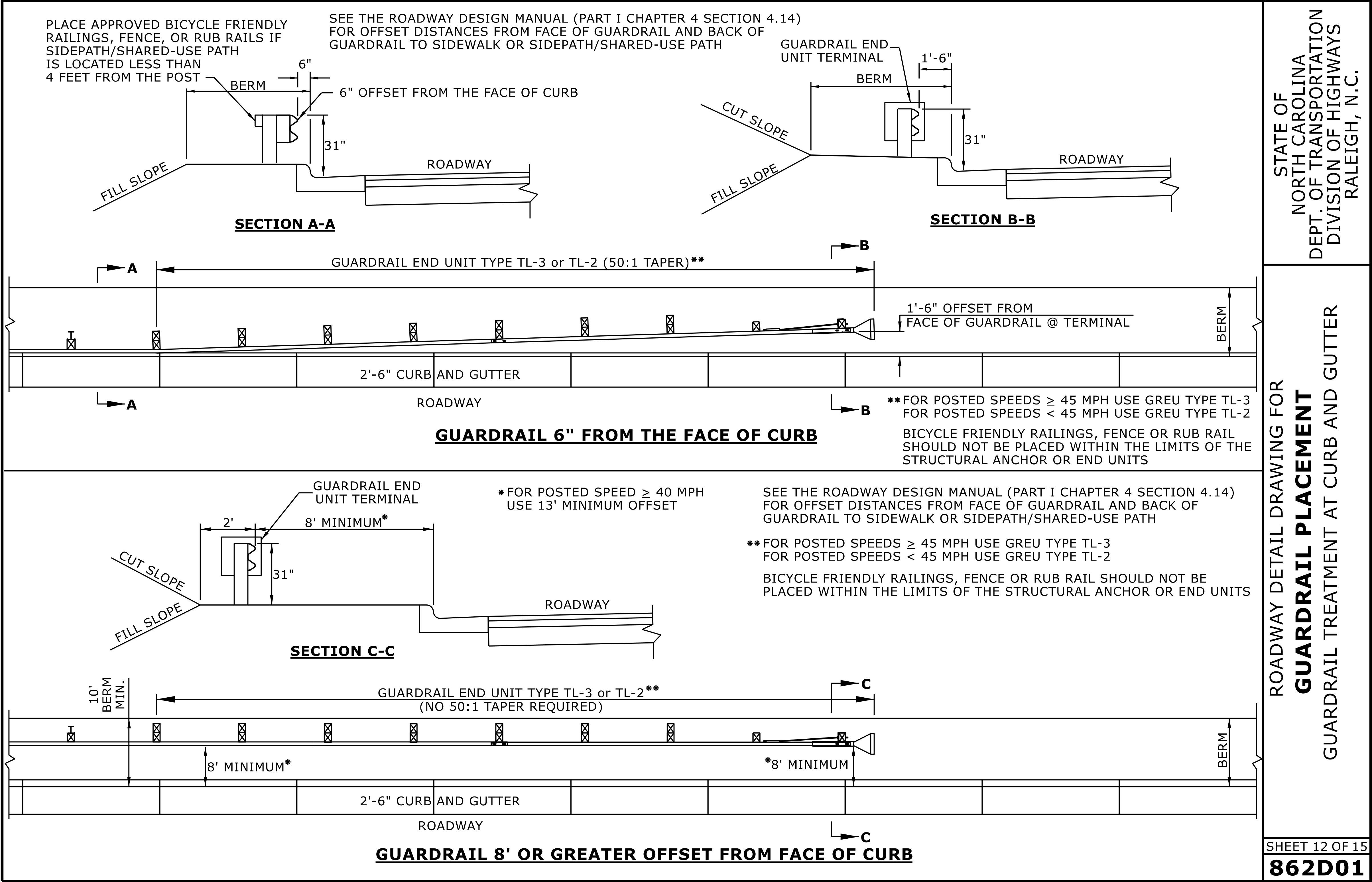
DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

**CONTRACTS STANDARDS
AND DEVELOPMENT UNIT**

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

SEE TITLE BLOCK

ORIGINAL BY: S.CALHOUN DATE: 7-25-2024
MODIFIED BY: DATE:
CHECKED BY: DATE:
FILE SPEC.:



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

ROADWAY DETAIL DRAWING FOR
GUARDRAIL PLACEMENT
GUARDRAIL TREATMENT AT CURB AND GUTTER



3/31/2025

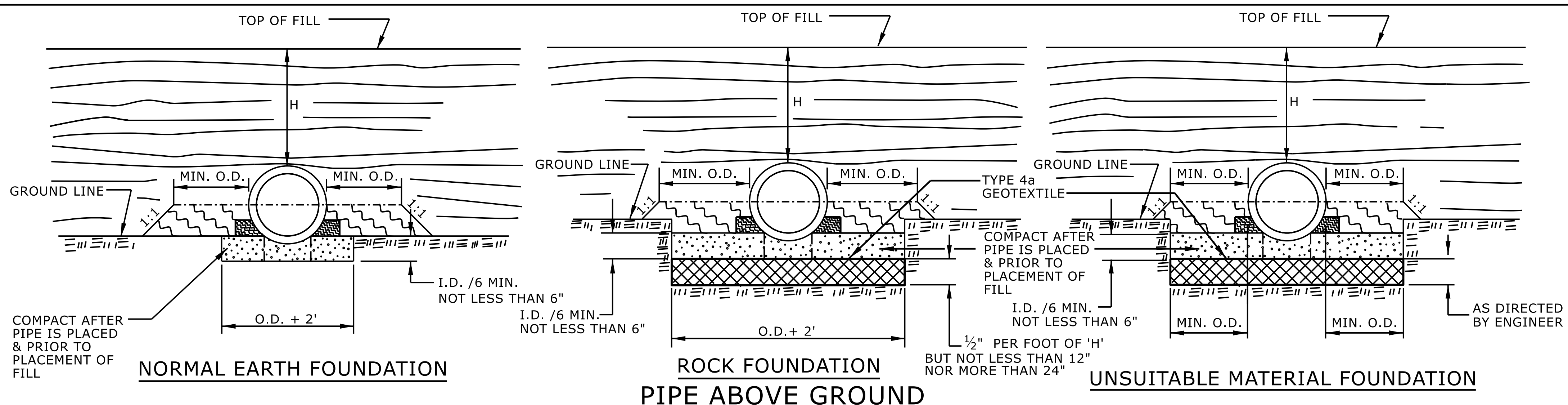
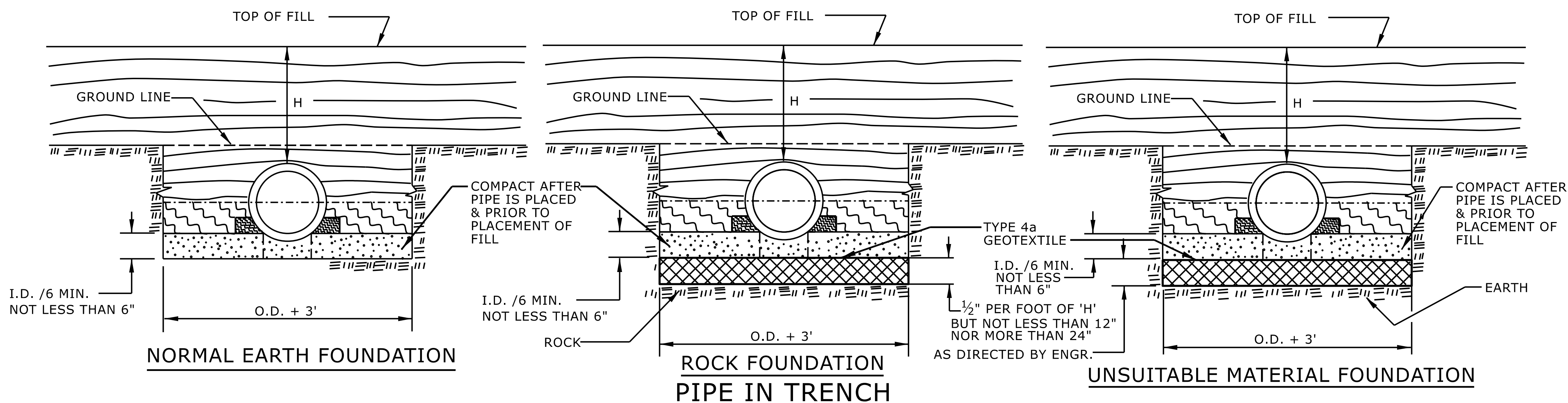
SHEET 12 OF 15
862D01

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

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

SEE TITLE BLOCK

ORIGINAL BY: S.CALHOUN	DATE: 7-25-2024
MODIFIED BY:	DATE:
CHECKED BY:	DATE:
FILE SPEC.:	



GENERAL NOTES:
I.D. = THE MAXIMUM HORIZONTAL INSIDE DIAMETER DIMENSION.
O.D. = THE MAXIMUM HORIZONTAL OUTSIDE DIAMETER DIMENSION.
H = THE FILL HEIGHT MEASURED VERTICALLY AT ANY POINT
ALONG THE PIPE FROM THE TOP OF THE PIPE TO THE TOP
OF THE EMBANKMENT AT THAT POINT.

	APPROVED SUITABLE LOCAL MATERIAL.
	TAKE CARE TO FULLY COMPACT HAUNCH ZONE OF PIPE BACKFILL.
	LOOSELY PLACED SELECT MATERIAL CLASS III OR CLASS II, TYPE 1 FOR PIPE BEDDING. LEAVE SECTION DIRECTLY BENEATH PIPE UNCOMPACTED AS PIPE SEATING AND BACKFILL WILL ACCOMPLISH COMPACTION.

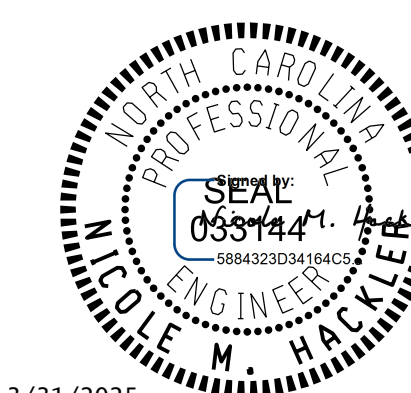
DO NOT OPERATE HEAVY EQUIPMENT OVER ANY PIPE CULVERT UNTIL THE PIPE CULVERT HAS BEEN PROPERLY BACKFILLED AND COVERED WITH AT LEAST 3 FEET OF APPROVED MATERIAL.

REFER TO NCDOT PIPE MATERIAL SELECTION GUIDE AND STANDARD SPECIFICATIONS
FOR ALLOWABLE PIPE FILL HEIGHTS AND PIPE SPECIFICATIONS.

	SPRINGLINE OF PIPE
	SELECT BACKFILL MATERIAL CLASS III OR CLASS II, BELOW SPRINGLINE.
	UNDISTURBED EARTH MATERIAL
	SELECT MATERIAL CLASS V OR VI FOR FOUNDATION CONDITIONING. ENCAPSULATE WITH TYPE IV GEOTEXTILE AS DIRECTED BY THE ENGINEER.

ROADWAY DETAIL DRAWING FOR METHOD OF PIPE INSTALLATION RIGID PIPE	STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.
---	---

SHEET 2 OF 2
300.01



3/31/2025

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

**CONTRACTS STANDARDS
AND DEVELOPMENT UNIT**
e 919-707-6950 FAX 919-250-4

SEE TITLE BLOCK

ORIGINAL BY: S.CALHOUN DATE: 7-25-2024
MODIFIED BY: _____ DATE: _____
CHECKED BY: _____ DATE: _____
FILE SPEC.: _____

SHEET 1 OF 7

MILLING DETAIL:

SECTION A-A'

7"

3/8"

SECTION B-B'

12" MILLED RUMBLE

3/8"

The diagram illustrates two cross-sections of a pavement structure. SECTION A-A' shows a 7-inch wide milling area with a 3/8-inch depth. SECTION B-B' shows a 12-inch wide milled rumble area with a 3/8-inch depth. Both sections show a base layer and a subgrade layer.

SHEET 1 OF 7

REVISIONS

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

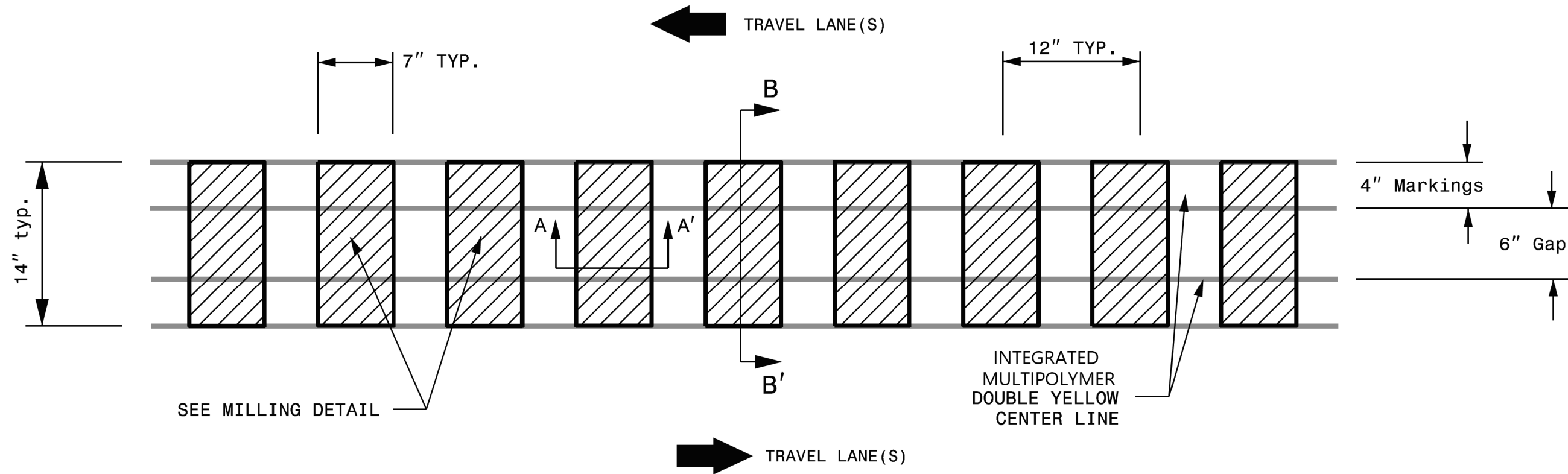
2-23

ENGLISH DETAIL DRAWING FOR
RUMBLE STRIPS / STRIPES
TRADITIONAL CENTERLINE RUMBLE STRIPE

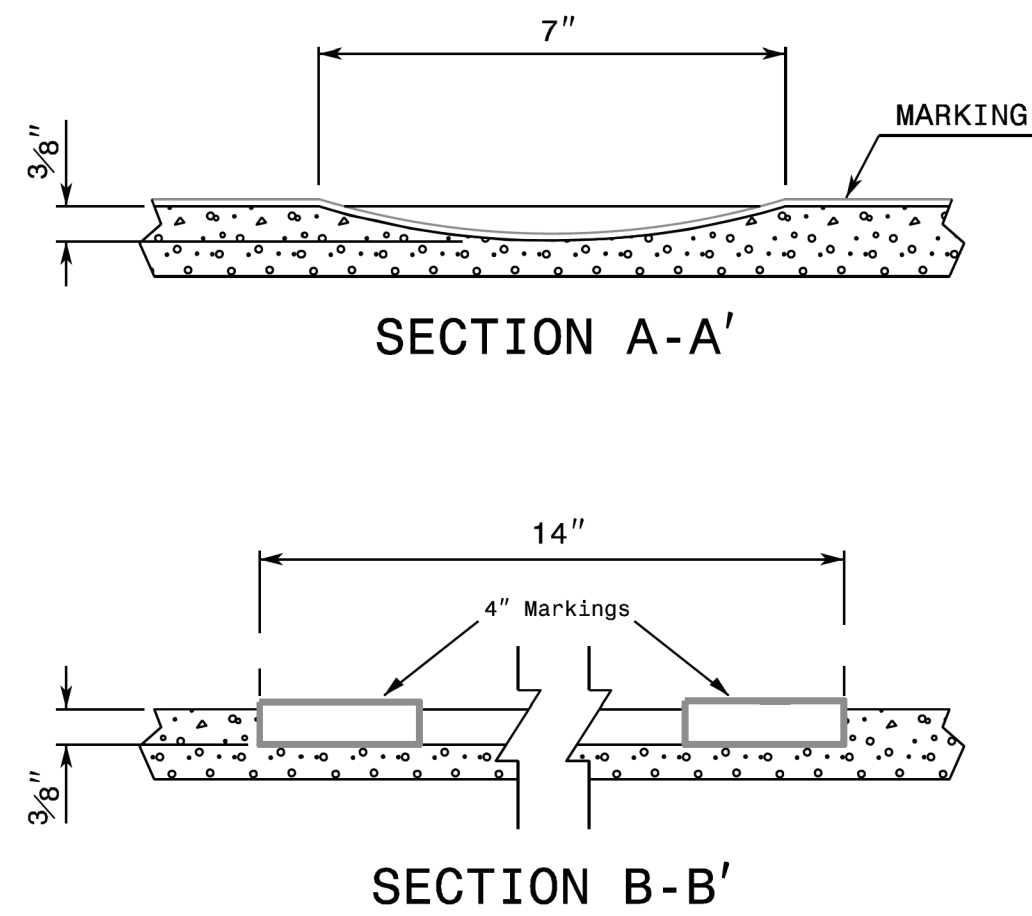
SHEET 5 OF 7

See Table 2 within Rumble Strip
Policy for Design Guidance

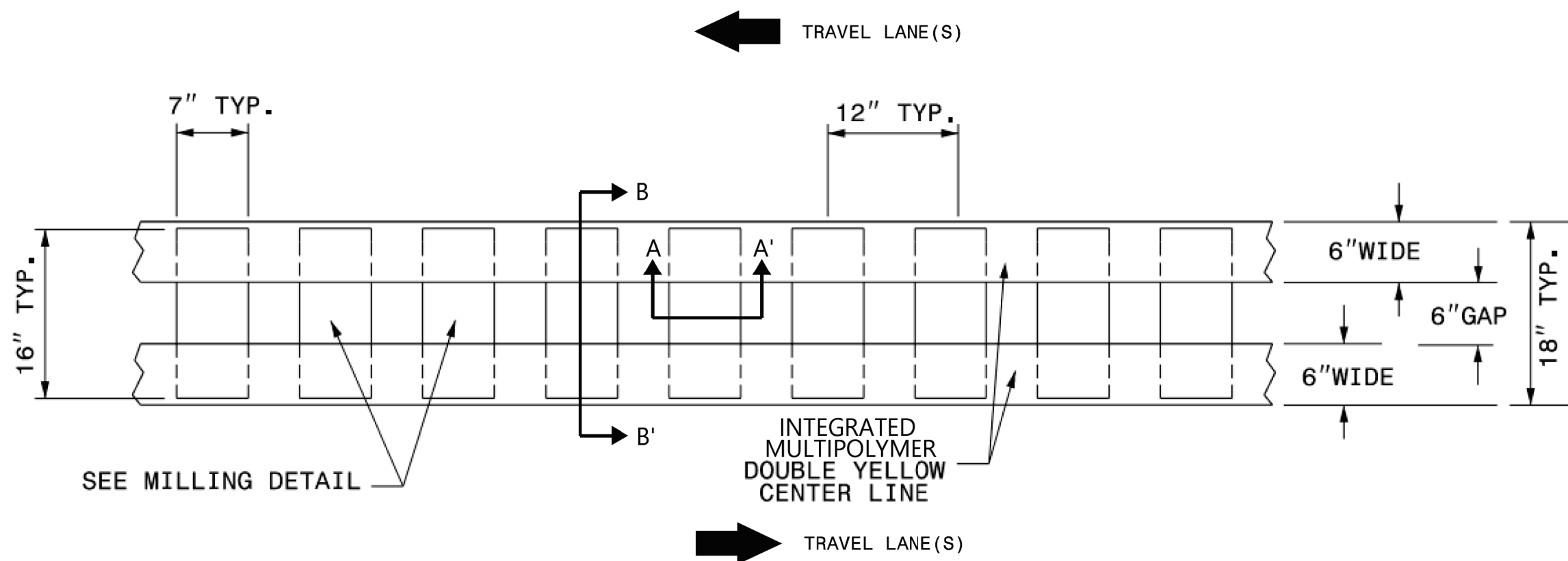
If 4" Markings will be used:



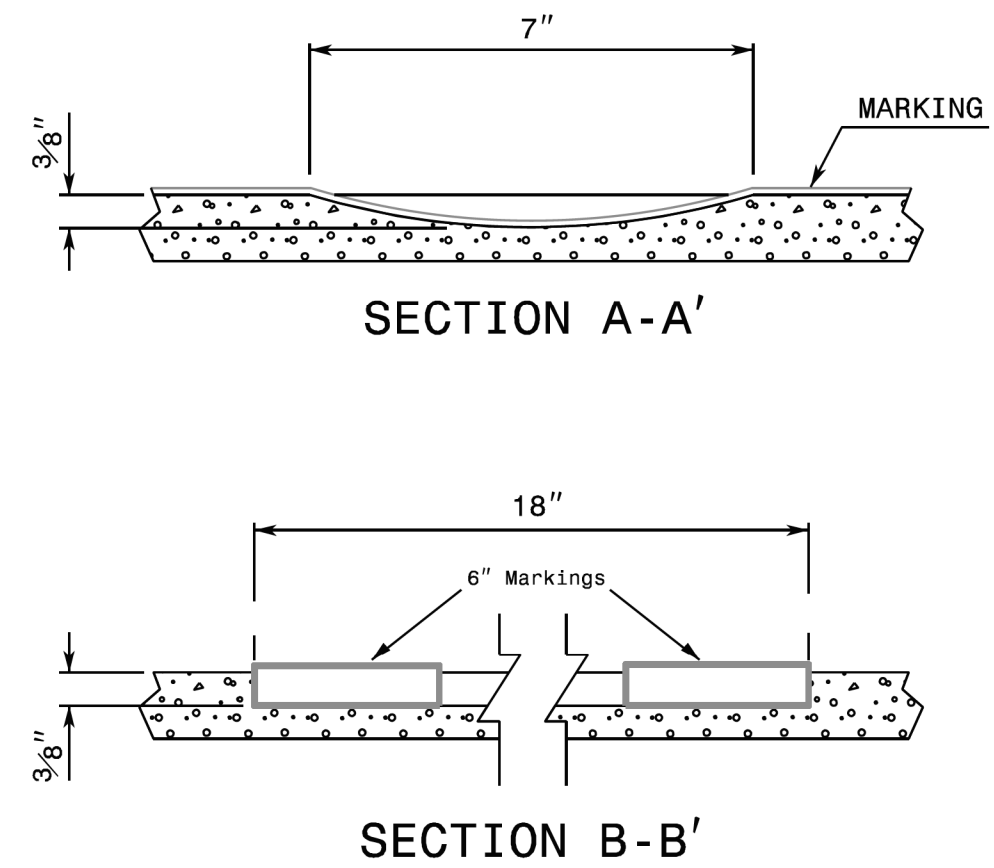
MILLING DETAIL - 4" Markings



If 6" Markings will be used:



MILLING DETAIL - 6" Markings



REFERENCE DRAWING ID: Trad.CL

NOTES:

- 1) USING A VACUUM, REMOVE ALL DEBRIS FROM THE MILLINGS JUST PRIOR TO PLACING ANY PAVEMENT MARKINGS.
- 2) ENSURE GLASS BEADS ARE SPREAD UNIFORMLY OVER THE ENTIRE SURFACE OF THE PAVEMENT MARKING MATERIAL.

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

2-23

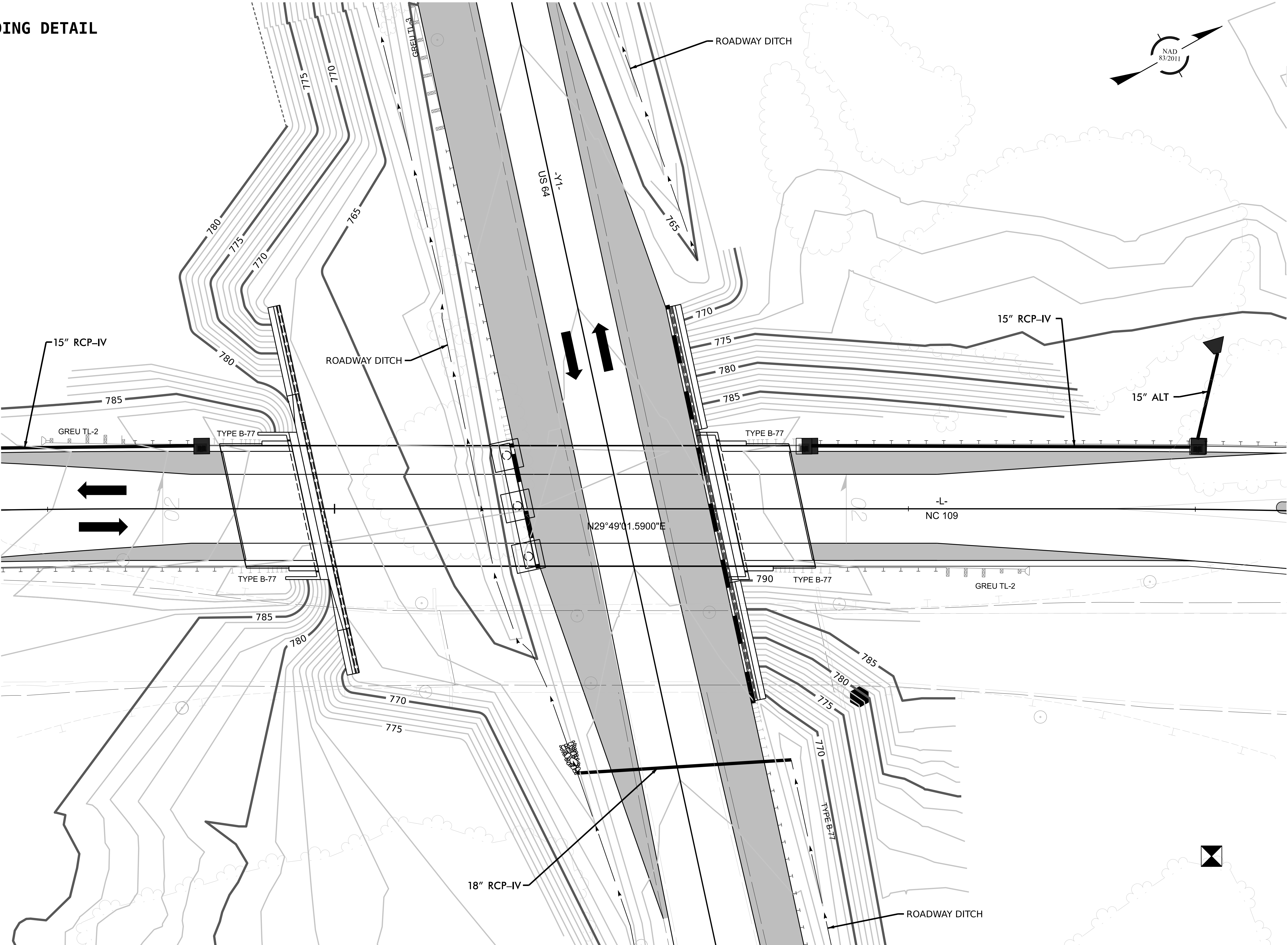
ENGLISH DETAIL DRAWING FOR
RUMBLE STRIPS / STRIPES
TRADITIONAL CENTERLINE RUMBLE STRIPE

SHEET 5 OF 7

B-5777
2C-6
NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
DAVIDSON COUNTY
ROADWAY DESIGN UNIT
ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL ENGINEER
SEAL: 049449
3/31/2023
STEVEN J. SHUMAN
HYDRAULICS ENGINEER
PREPARED BY
RS&H
8521 SHILOH FARM ROAD, SUITE 400
RALEIGH, NC 27615
NC FIRM LICENSE NO. P-0493
DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

REVISIONS

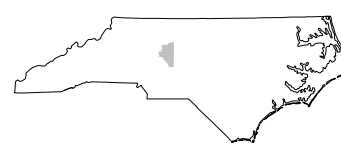
GRADING DETAIL



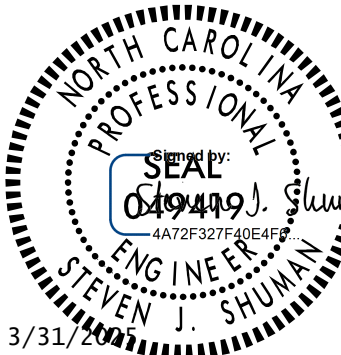
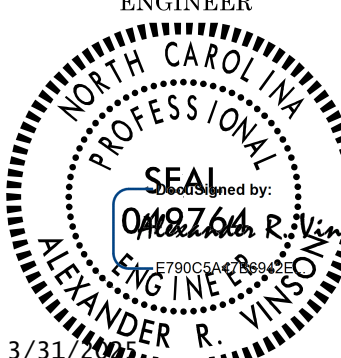
B-5777

2D-1

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
DAVIDSON COUNTY



ROADWAY DESIGN UNIT

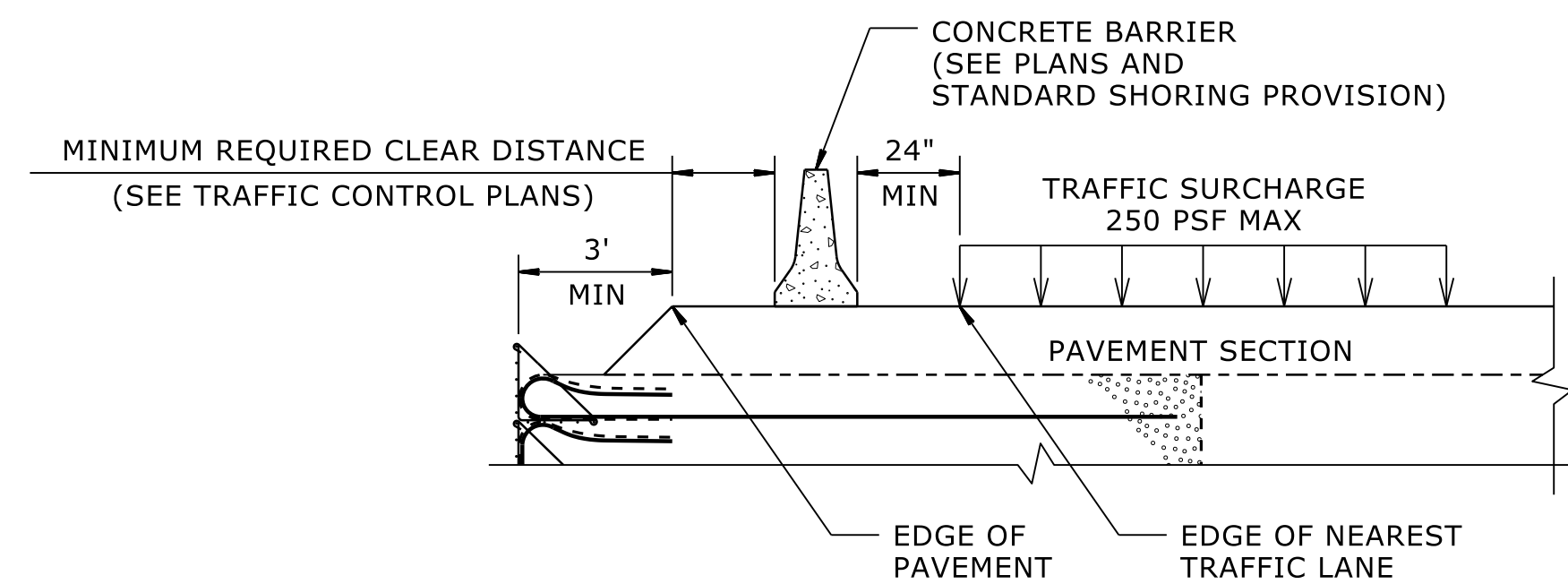
ROADWAY DESIGN
ENGINEERHYDRAULICS
ENGINEERING

PREPARED BY

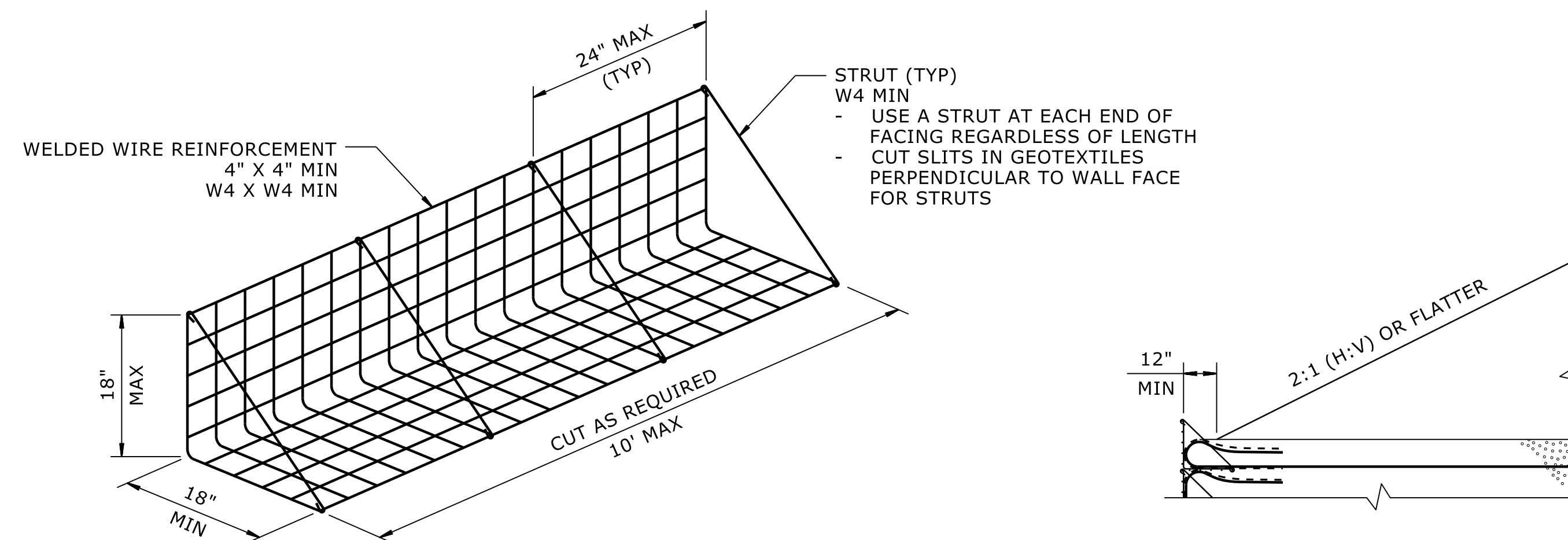
RS&H
8521 SIX FORKS ROAD, SUITE 400
RALEIGH, NC 27615
NC FIRM LICENSE No: F-0493

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

REVISIONS

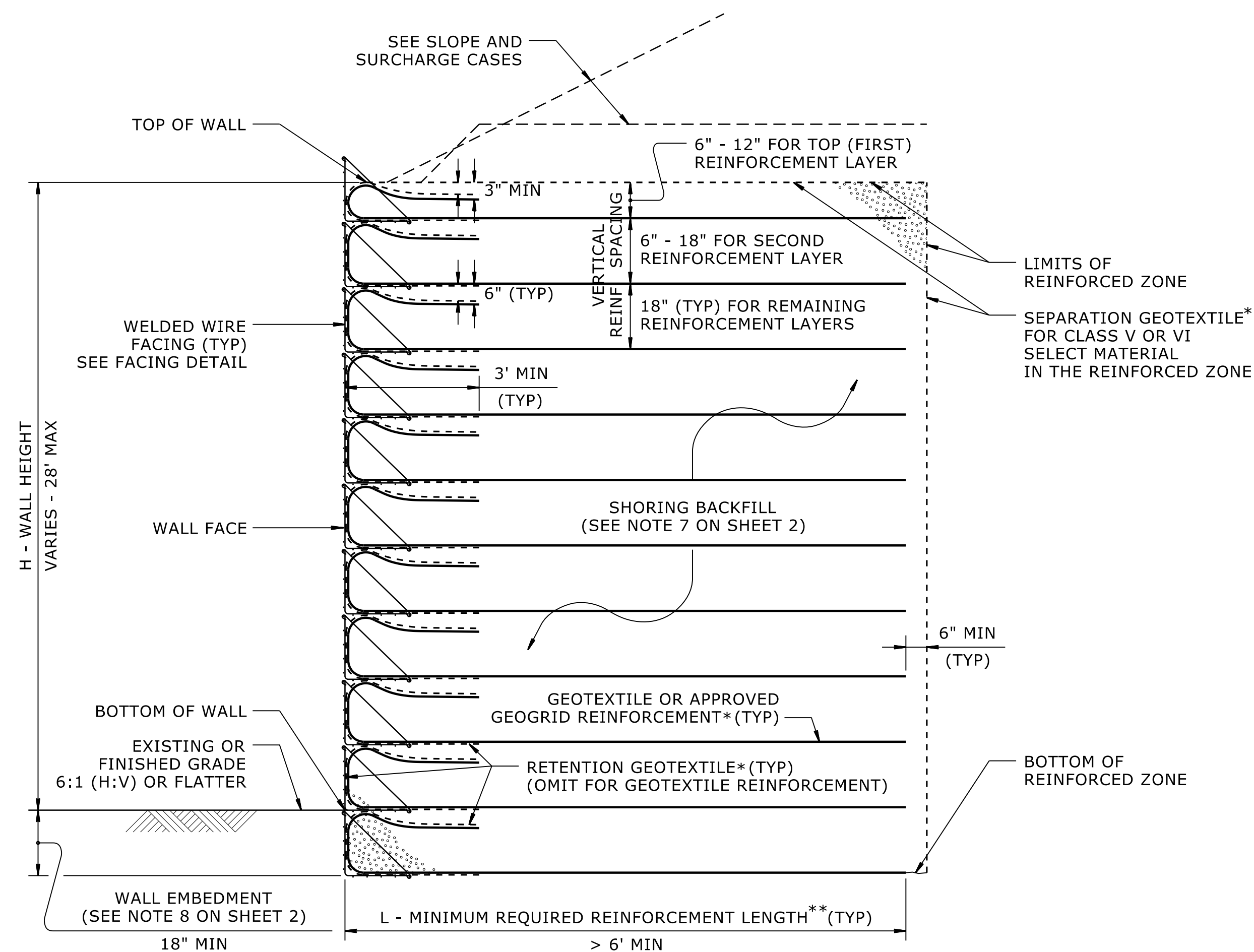


SURCHARGE CASE



FACING DETAIL

SLOPE CASE

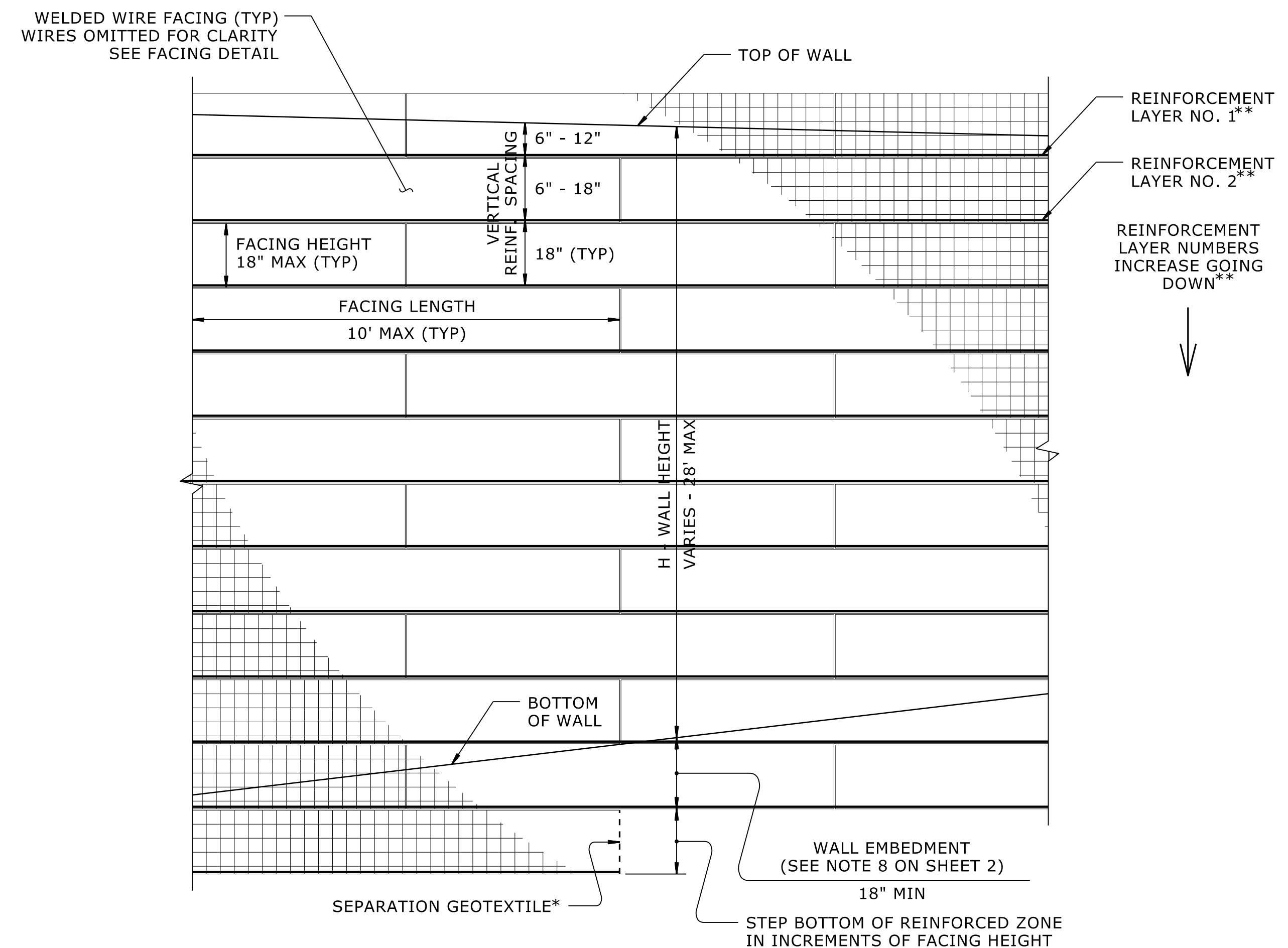


STANDARD TEMPORARY WALL

(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

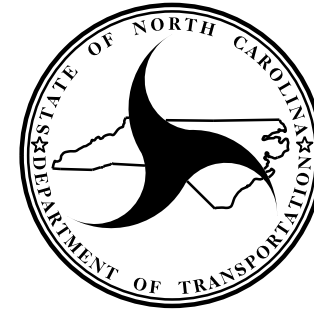
*SEE GEOSYNTHETIC PLACEMENT DETAILS ON SHEET 2.

**SEE REINFORCEMENT TABLES ON SHEET 3.

B-5777

2G-1 -

NORTH CAROLINA
DEPARTMENT
OF TRANSPORTATION



GEOTECHNICAL
ENGINEERING UNIT

GEOTECHNICAL
ENGINEER

Scott A. Hildebrand

12/2025



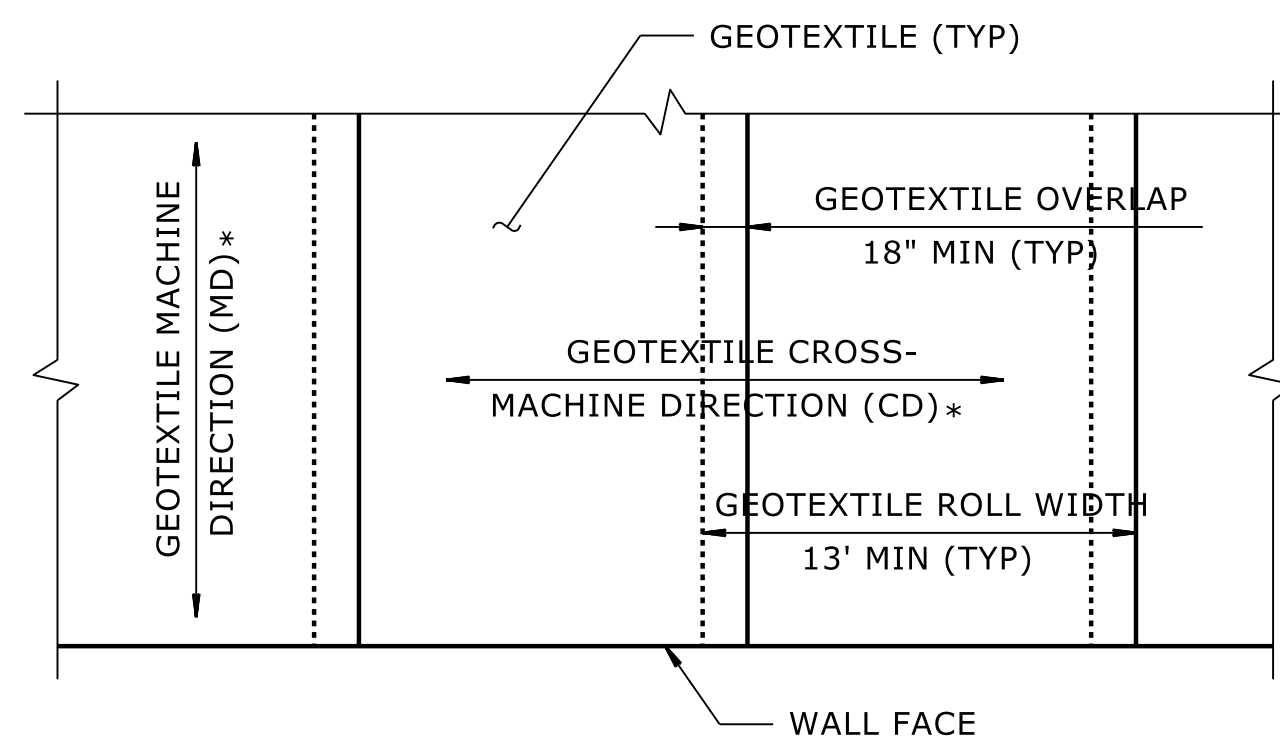
DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

STANDARD
DETAIL NO. 1801.02

GEOTECHNICAL STANDARD DETAIL FOR

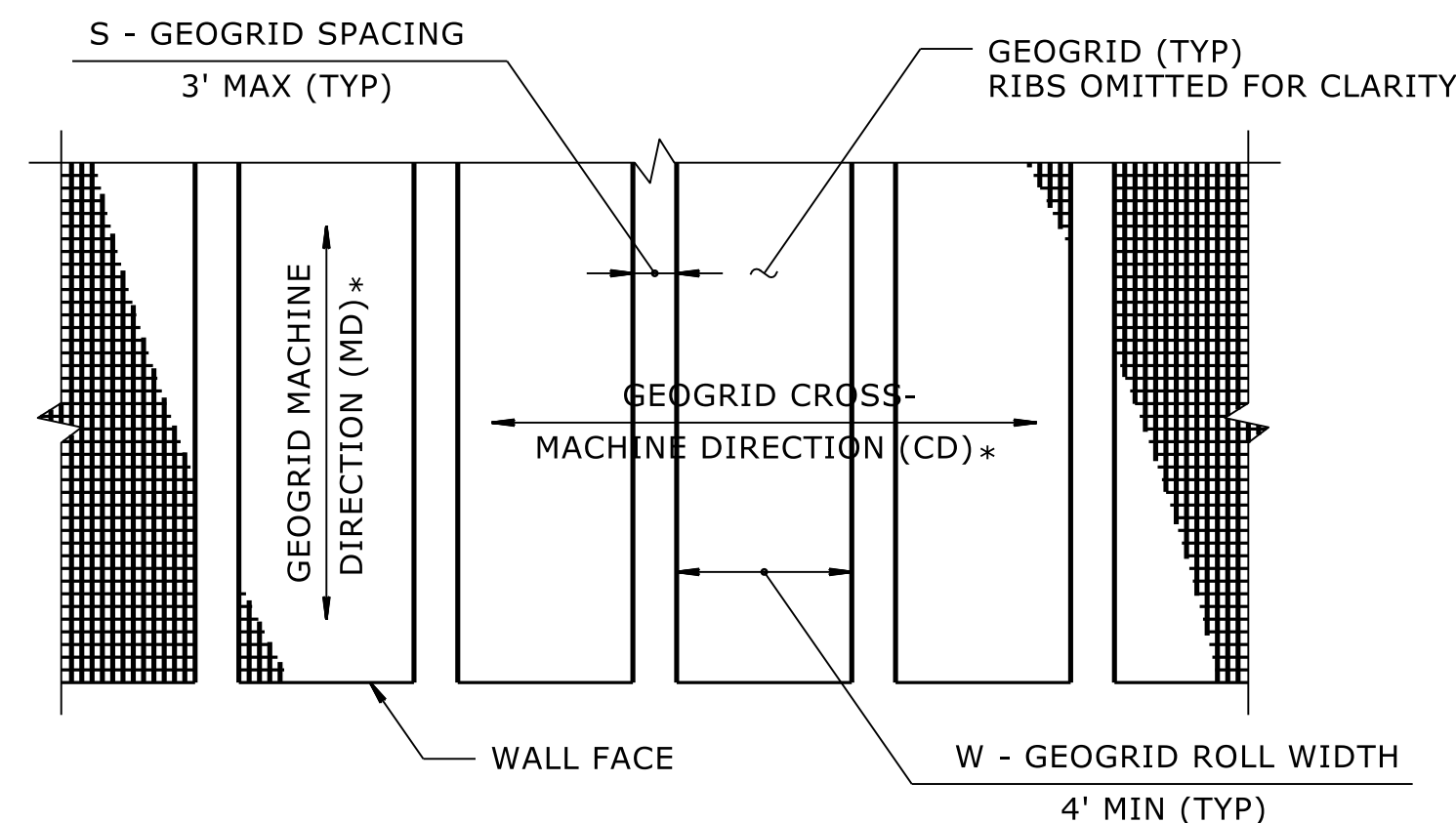
TEMPORARY WALL (SHEET 1 OF 3)

DATE: 02-18-2025



GEOTEXTILE PLACEMENT

(100% COVERAGE MIN FOR
GEOTEXTILE REINFORCEMENT)

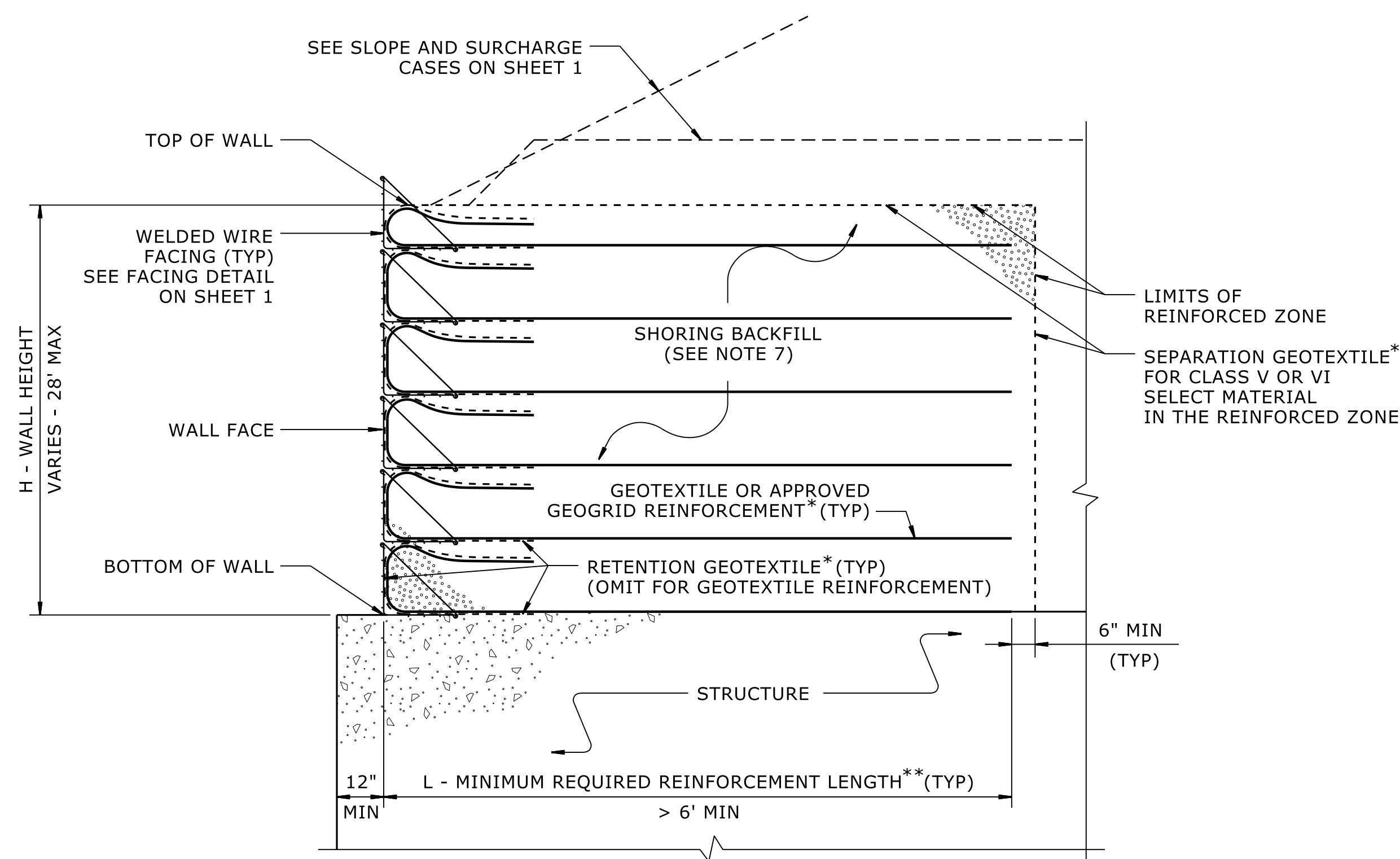


GEOGRID PLACEMENT

(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
DEFINE MATERIAL TYPE FROM THE WEBSITE ABOVE FOR SHORING BACKFILL AS FOLLOWS:

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

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

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 1, CLASS III, CLASS V OR CLASS VI SELECT MATERIAL	6	6	7	8	9	11	12	13	13	14	15	16	17	18	19	20	21	22	23	24	24	25	26	27	27			
SURCHARGE CASE	> 0 TO 7 FOR H < 20' > 0 TO 10 FOR H > 20'	ALL SHORING BACKFILL TYPES	6	7	7	8	8	9	9	10	11	11	12	12	13	14	14	15	16	17	17	18	19	19	20	21	22			
	> 7 FOR H < 20' > 10 FOR H > 20'	A-2-4 SOIL	6	6	7	8	8	9	9	10	11	11	12	12	13	14	14	15	16	16	17	18	18	19	20	20	21			
		CLASS II, TYPE 1 OR CLASS III SELECT MATERIAL	6	6	7	7	8	8	9	10	10	11	11	12	12	13	14	15	15	16	16	17	17	18	18	19	20			
		CLASS V OR CLASS VI SELECT MATERIAL	6	6	7	7	7	8	8	9	9	10	10	11	12	13	13	14	14	15	15	16	17	17	18	19	19			

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

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 1 OR CLASS III SELECT MATERIAL	CLASS V SELECT MATERIAL	A-2-4 SOIL	CLASS II, TYPE 1 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)

MINIMUM REQUIRED REINFORCEMENT STRENGTH IN MD

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

REINFORCEMENT LAYER NUMBER *	SHORING BACKFILL TYPE IN THE REINFORCED ZONE (SEE NOTE 7 ON SHEET 2)				
	SLOPE CASE		SURCHARGE CASE		
	CLASS II, TYPE 1 OR CLASS III SELECT MATERIAL	CLASS V OR CLASS VI SELECT MATERIAL	A-2-4 SOIL	CLASS II, TYPE 1 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)

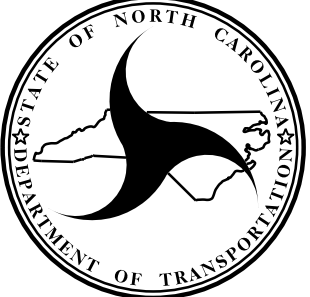
(SEE NOTE 10 ON SHEET 2.)

B-5777

2G-3

-

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION



GEOTECHNICAL ENGINEERING UNIT

GEOTECHNICAL ENGINEER

DocuSign

Scott A. Hiden

02/12/2025



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

STANDARD
DETAIL NO. 1801.02

GEOTECHNICAL STANDARD DETAIL FOR
TEMPORARY WALL (SHEET 3 OF 3)

COMPUTED BY: DMP DATE: 03/26/2025
CHECKED BY: SJS DATE: 03/26/2025

SUMMARY OF EARTHWORK

IN CUBIC YARDS

STATION	STATION	UNCL EXCAV.	EMBANK. +%	BORROW	WASTE
PHASE II:					
-L- 18 + 00.00 LT	-L- 19 + 88.77 LT (BEGIN BRIDGE)	786	1,090	304	
-L- 21 + 39.27 LT (END BRIDGE)	-L- 23 + 00.00 LT	10	2,785	2,775	
-L- 18 + 00.00 RT	-L- 19 + 88.77 RT (BEGIN BRIDGE)	27	186	159	
-L- 21 + 39.27 RT (END BRIDGE)	-L- 23 + 00.00 RT	6	704	698	
-Y1- 16 + 81.27 RT	-Y1- 18 + 11.82 RT	2,326	12		2,314
-Y1- 17 + 14.32 LT	-Y1- 18 + 20.79 LT	96	352	256	
SUBTOTAL		3,251	5,129	4,192	2,314
PHASE IV:					
-RPB- 13 + 25.00	-RPB- 15 + 50.00	20	1,020	1,000	
-L- 23 + 00.00 LT	-L- 31 + 45.00 LT	27	3,022	2,995	
-L- 23 + 00.00 RT	-L- 26 + 50.00 RT	160	174	14	
SUBTOTAL		207	4,216	4,009	
PHASE V:					
-RPC- 11 + 80.00	-RPC- 14 + 81.25	17	628	611	
-L- 10 + 00.00 LT	-L- 18 + 00.00 LT	332	1,711	1,379	
-L- 14 + 30.00 RT	-L- 18 + 00.00 RT	235	146		89
SUBTOTAL		584	2,485	1,990	89
PHASE VI:					
-RPD- 14 + 20.00	-RPD- 15 + 80.00	115	90		25
-Y1- 17 + 88.12 RT	-Y1- 18 + 39.44 RT	644			644
-L- 10 + 00.00 RT	-L- 19 + 88.77 RT (BEGIN BRIDGE)	363	431	68	
SUBTOTAL		1,122	521	68	669
PHASE VII:					
-RPA- 12 + 80.00	-RPA- 14 + 50.00	11	132	121	
-L- 21 + 70.00 RT	-L- 31 + 45.00 RT	236	308	72	
SUBTOTAL		247	440	193	
PHASE VIII:					
-Y1- 14 + 60.00 LT	-Y1- 21 + 25.00 LT	1,682	626		1,056
-Y1- 14 + 60.00 RT	-Y1- 21 + 25.00 RT	5,930	90		5,840
SUBTOTAL		7,612	716		6,896
PHASE IX:					
-Y1- 14 + 60.00 LT	-Y1- 21 + 25.00 LT	84	35		49
-Y1- 14 + 60.00 RT	-Y1- 21 + 25.00 RT	87	28		59
SUBTOTAL		171	63		108
TOTALS		13,194	13,570	10,452	10,076
MATERIAL FOR SHOULDER CONSTRUCTION			456	456	
LOSS DUE TO CLEARING AND GRUBBING		-100		100	
WASTE IN LIEU OF BORROW				-2,575	-2,575
PROJECT TOTALS:		13,094	14,026	8,433	7,501
EST. 5% TO REPLACE SOIL IN BORROW PIT				422	
GRAND TOTALS:		13,094		8,854	7,501
SAY:		13,100		9,000	

EST. SHALLOW UNDERCUT = 200 CUBIC YARDS
EST. SHALLOW UNDERCUT 26+50.00 TO 28+00.00 = 125 CUBIC YARDS
TOTAL SHALLOW UNDERCUT = 325 CUBIC YARDS
CLASS IV SUBGRADE STABILIZATION = 500 TONS
PER GEOTECH RECOMMENDATION, ESTIMATED 900 CUBIC YARDS OF UNDERCUT TO BE USED AT THE DISCRETION OF THE RESIDENT ENGINEER.

EARTHWORK QUANTITIES ARE CALCULATED BY RS&H. THESE EARTHWORK QUANTITIES ARE BASED IN PART ON SUBSURFACE DATA PROVIDED BY ECS SOUTHEAST, LLC.	APPROXIMATE QUANTITIES ONLY. UNCLASSIFIED EXCAVATION, BORROW EXCAVATION, FINE GRADING, CLEARING AND GRUBBING, AND REMOVAL OF EXISTING PAVEMENT WILL BE PAID FOR AT THE LUMP SUM PRICE FOR "GRADING".
---	---

"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

STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS

ASPHALT PAVEMENT REMOVAL SUMMARY

SURVEY LINE	STATION	STATION	LOCATION LT/RT/CL	YD ¹
-L-	11 + 72.83	13 + 58.00	RT	108.85
-L-	14 + 04.00	20 + 41.02	RT	2,385.92
-L-	21 + 69.00	30 + 24.00	RT	2,085.04
-L-	30 + 13.73	30 + 82.87	LT	4.45
-RPA-	10 + 76.00	12 + 80.00	LT	356.56
-RPB-	10 + 84.00	12 + 29.00	RT	393.18
-RPC-	10 + 60.00	11 + 80.00	LT	274.38
-RPC-	13 + 92.00	15 + 20.00	RT	155.45
-RPD-	10 + 74.00	12 + 40.00	RT	288.45
-RAB-1-	10 + 00.00	14 + 08.41	CL	240.58
-RAB-2-	10 + 00.00	14 + 08.41	CL	269.24
			TOTAL:	6,562.11
			SAY:	6,570

CONCRETE BARRIER SUMMARY

SURVEY LINE	STATION	STATION	LENGTH	COMMENTS
-Y1- RT	17 + 62.36	18 + 06.05	43.69	BRIDGE COLUMN
-Y1- LT	17 + 26.73	18 + 67.18	140.45	MSE WALL
SUBTOTAL:			184.14	
GRAND TOTALS:			184.14	
SAY:			190.00	

GUARDRAIL SUMMARY

[illegible]

STATE OF NORTH CAROLINA

DIVISION OF HIGHWAYS

SUMMARY OF SUBSURFACE DRAINAGE

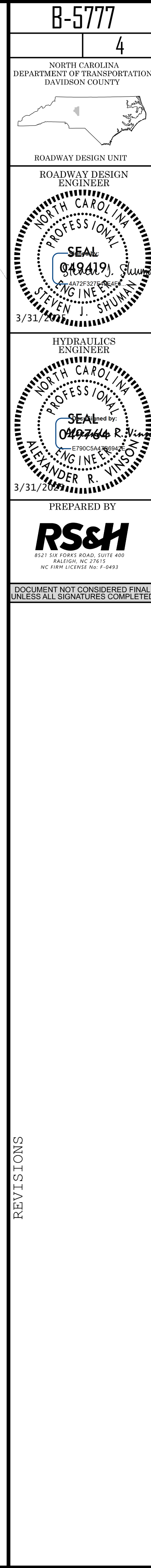
LINE	Station	Station	Location LT/RT/CL	Drain Type* UD/BD/SD	LF
CONTINGENCY				SD	200
				TOTAL LF:	200

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

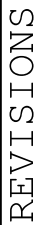
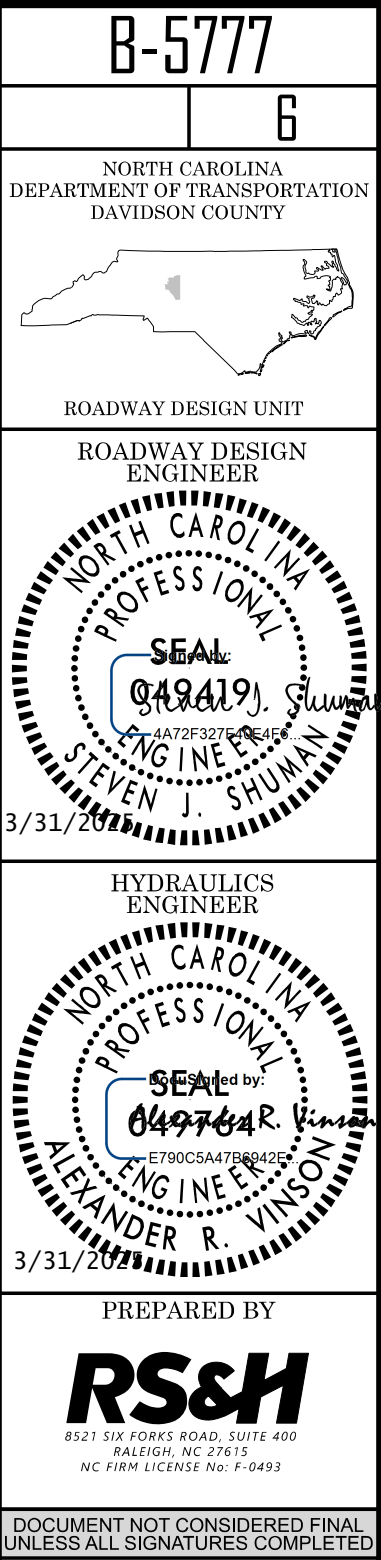
SUMMARY OF AGGREGATE SUBGRADE/STABILIZATION

LINE	Station	Station	Aggregate Type* ASU(1/2)/ AST	Aggregate Thickness INCHES [8" for ASU(2)]	Shallow Undercut CY	Class IV Subgrade Stabilization TONS	Geotextile for Subgrade Stabilization SY	Stabilizer Aggregate TONS	Class IV Aggregate Stabilization TONS
-L-	26+50	28+00	ASU	12	125	250	375		
CONTINGENCY			ASU	12	200	250	300		
			TOTAL CY/TONS/SY:		325	500**	675**	0	0

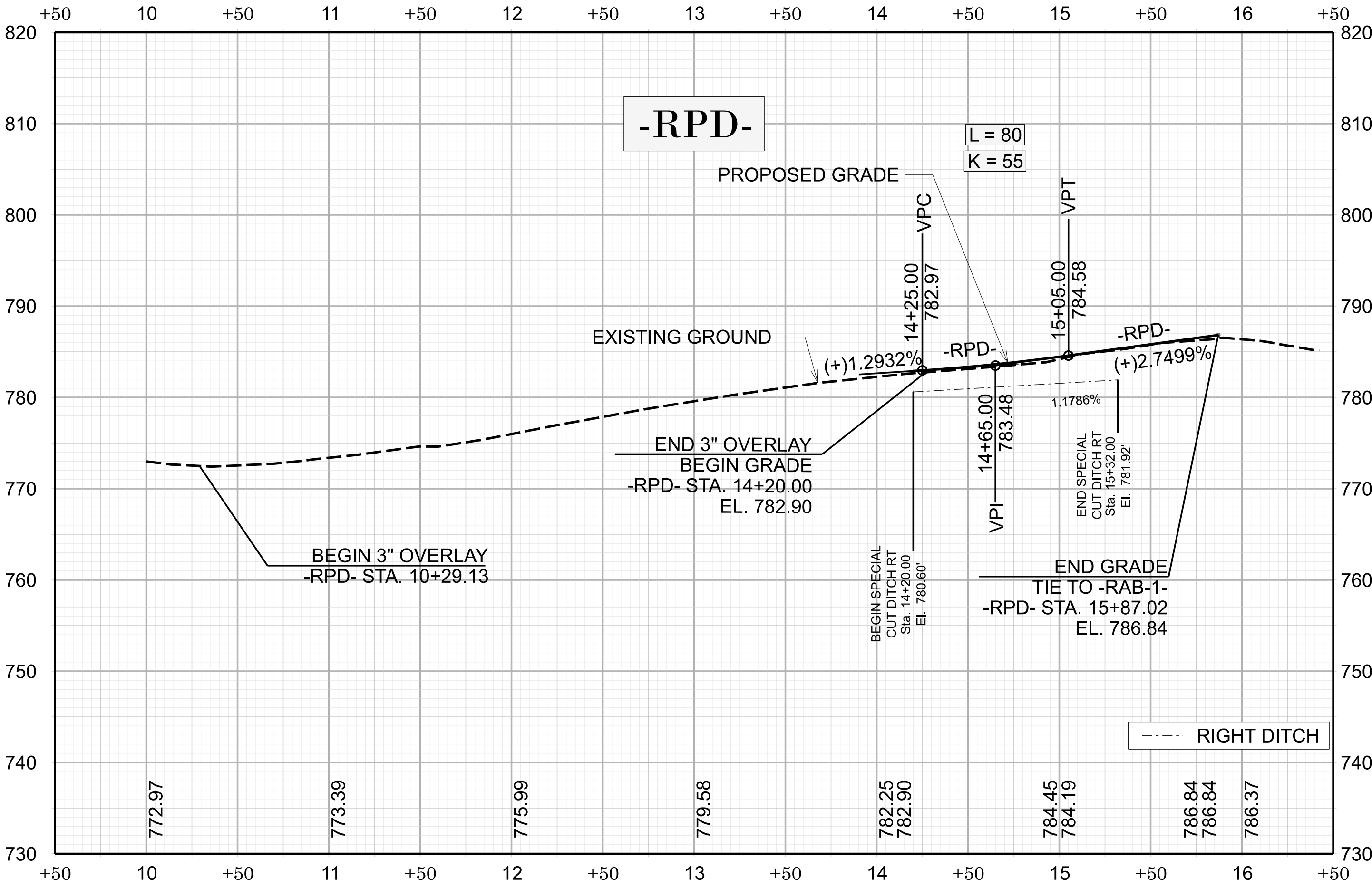
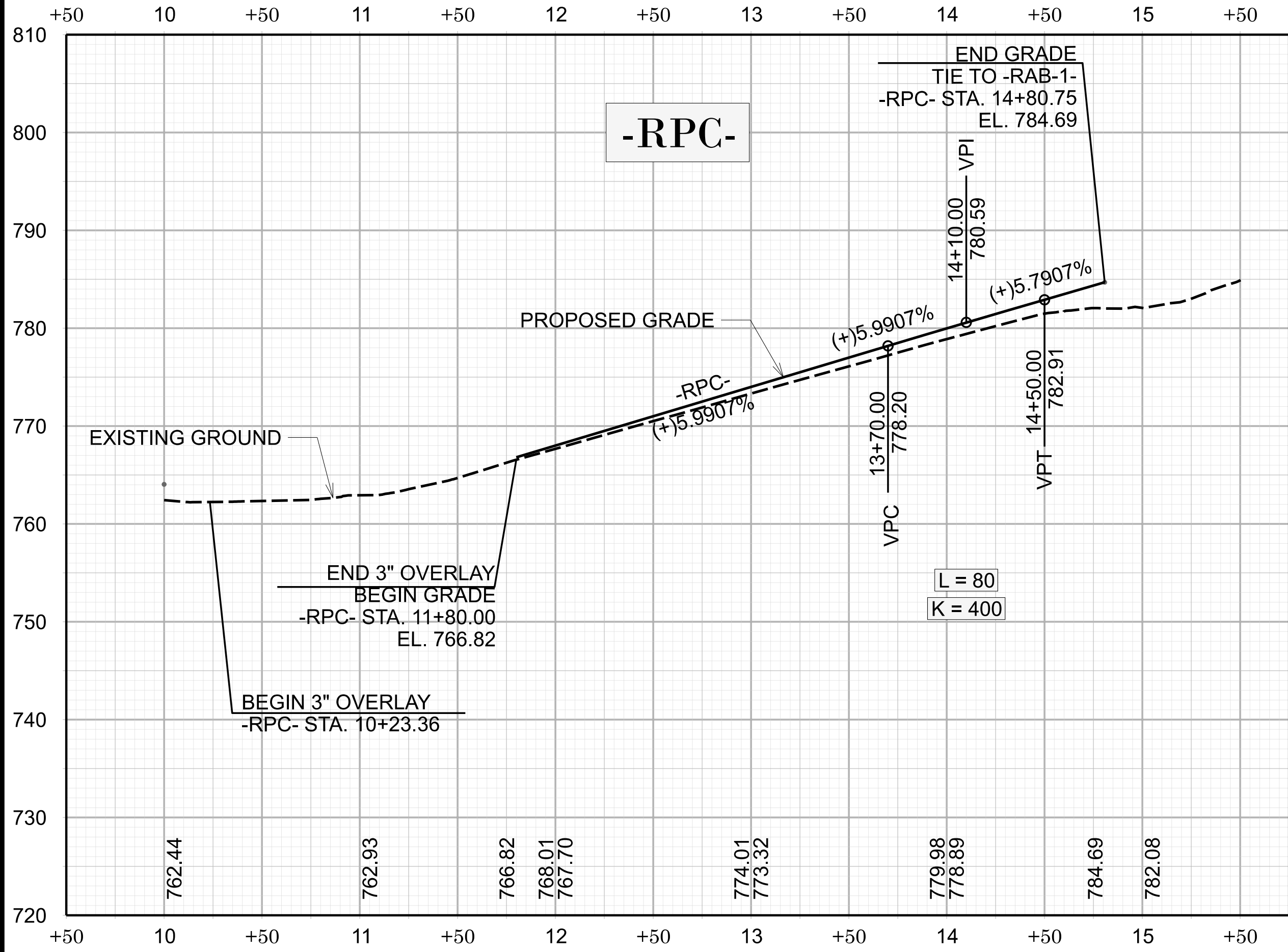
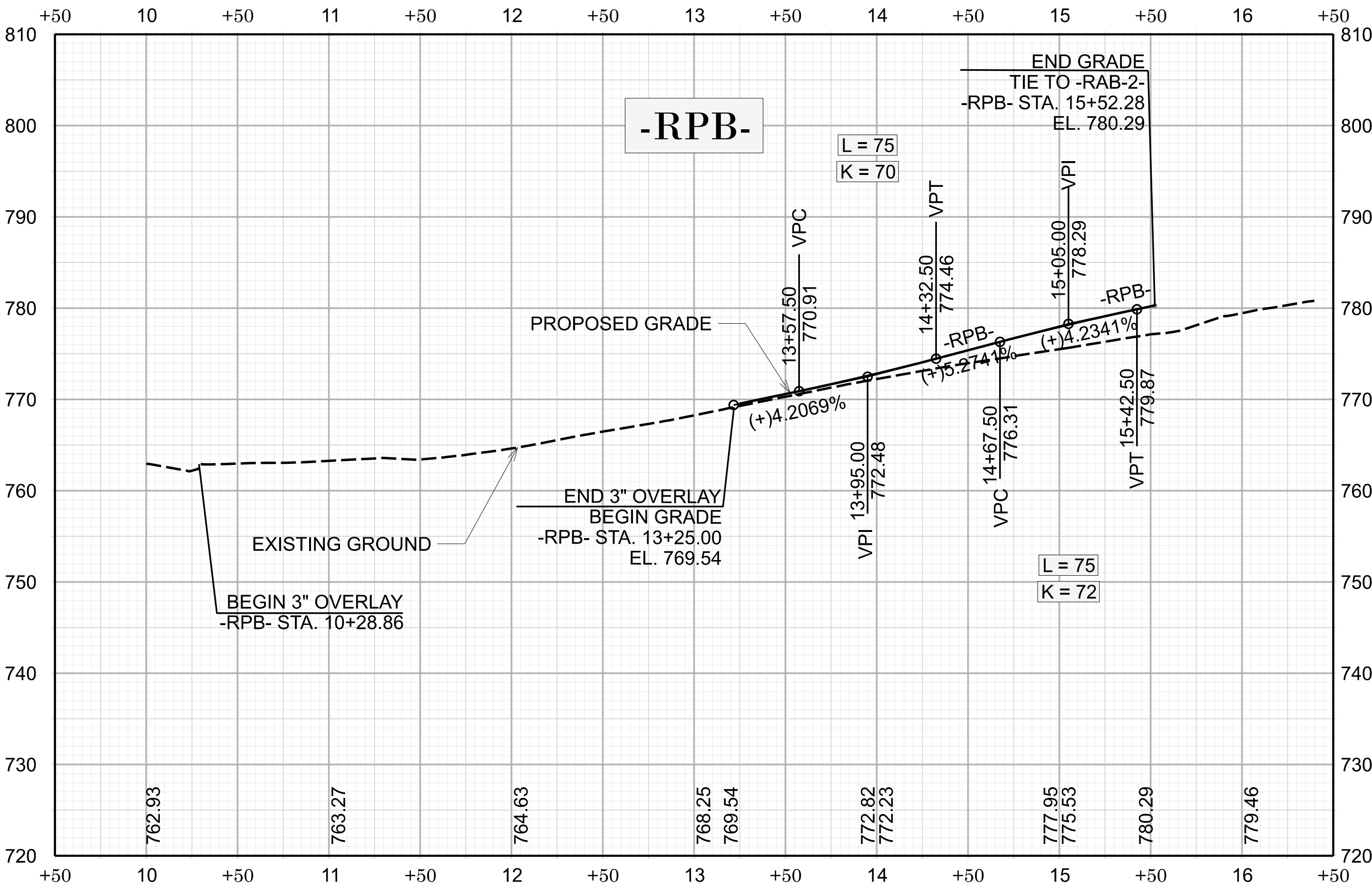
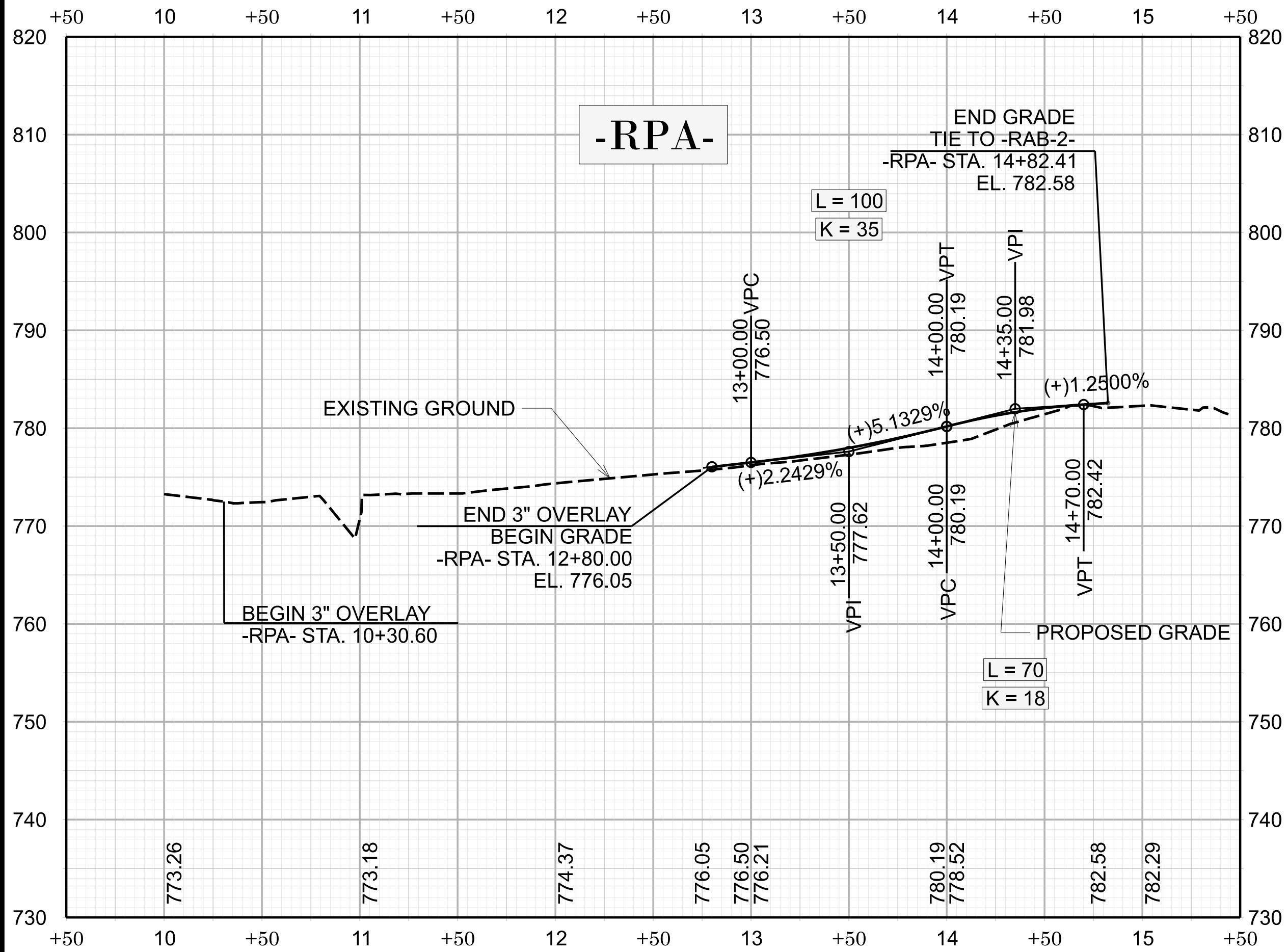
*ASU(1/2) = Aggregate Subgrade (Type 1 or 2)
*AST = Aggregate Stabilization
**Total tons of "Class IV Subgrade Stabilization" and total square yards of "Geotextile for Subgrade Stabilization" are only the estimated quantities for ASU(1/2)/AST and may only represent a portion of the subgrade stabilization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







FOR -L- ALIGNMENT, SEE SHEETS NO. 4 & 5



FOR -RPA- ALIGNMENT, SEE SHEET NO. 5
FOR -RPB- ALIGNMENT, SEE SHEET NO. 5
FOR -RPC- ALIGNMENT, SEE SHEET NO. 4
FOR -RPD- ALIGNMENT, SEE SHEET NO. 4

B-5777

7

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
DAVIDSON COUNTY

ROADWAY DESIGN UNIT
ROADWAY DESIGN
ENGINEER

PROFESSIONAL SEAL

STEVEN J. SHUMIN

3/31/2020

HYDRAULICS
ENGINEER

PROFESSIONAL SEAL

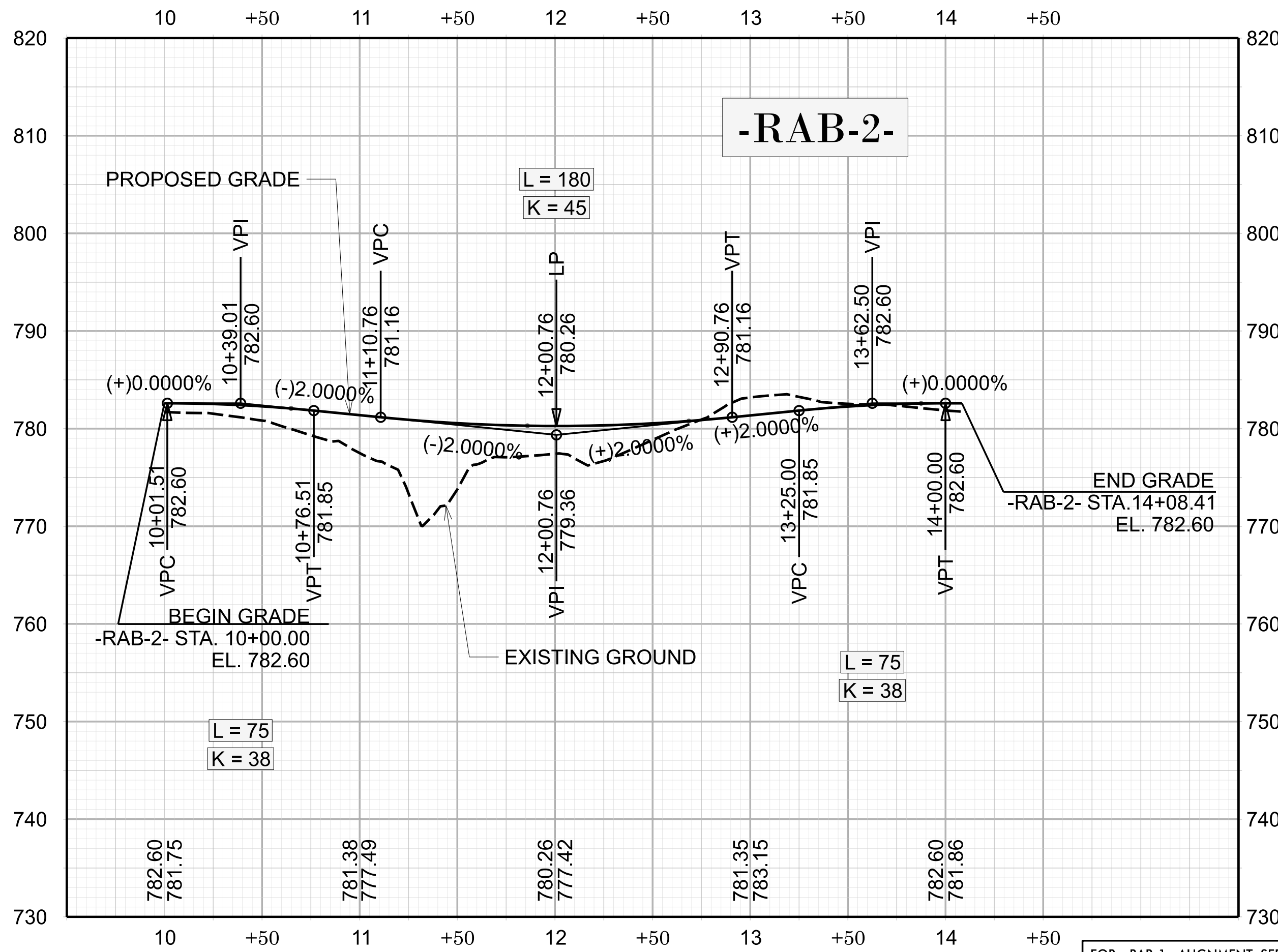
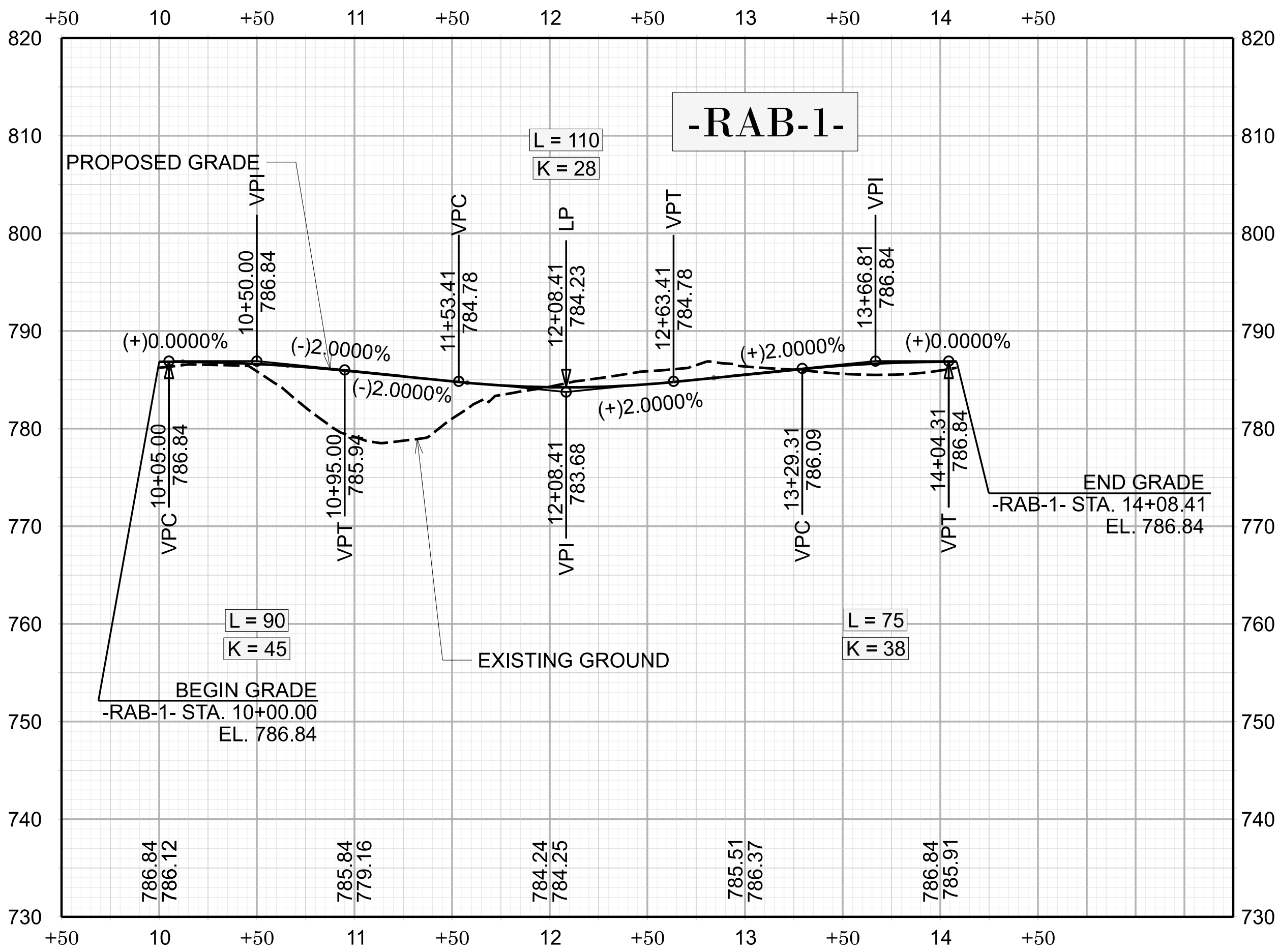
ALEXANDER R. VINSON

3/31/2020

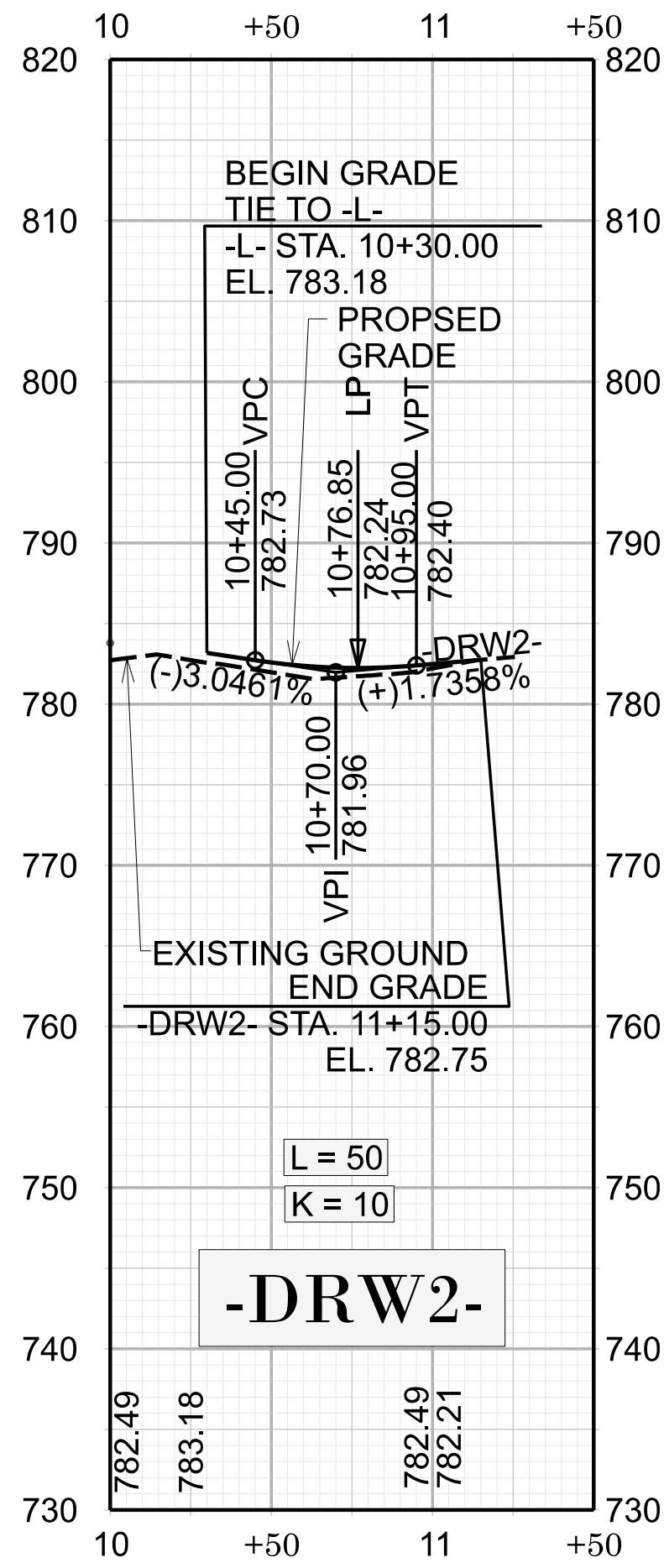
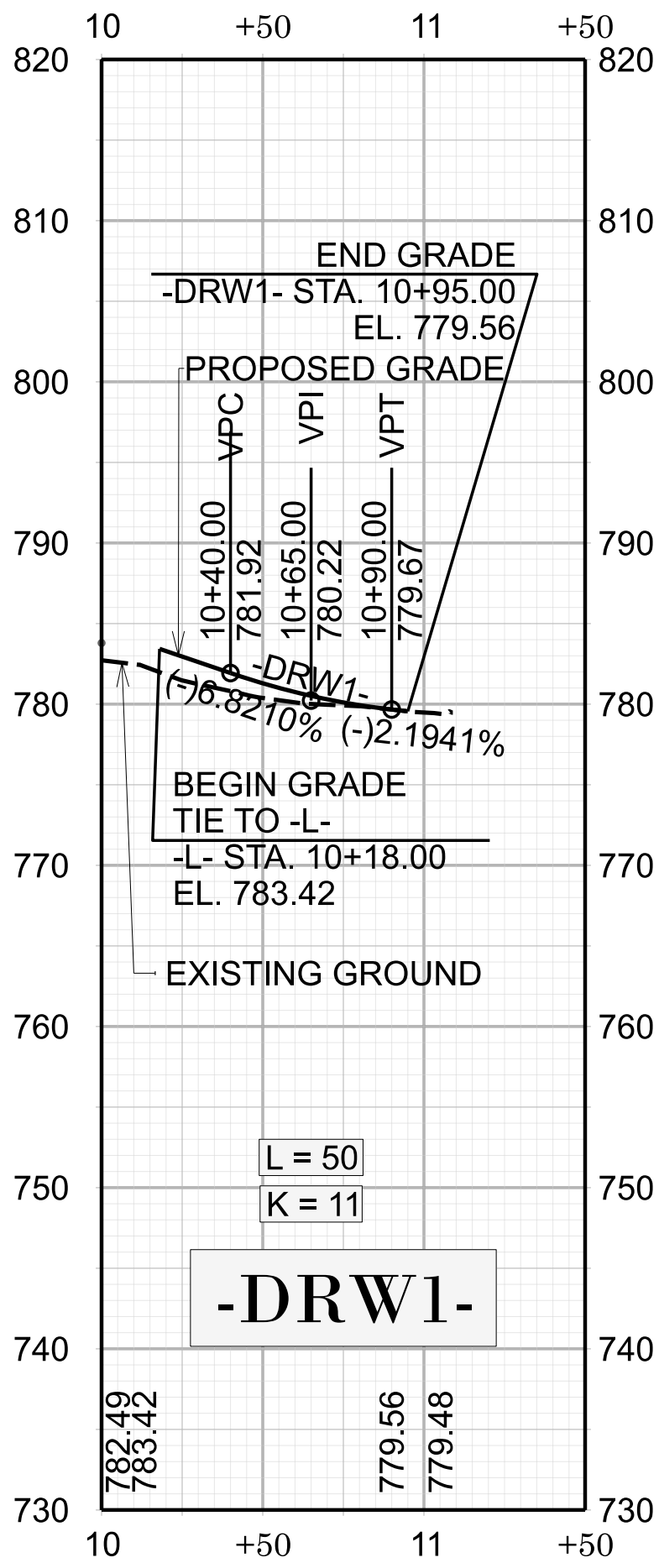
PREPARED BY
RS&H
8521 SIX FORDS ROAD, SUITE 400
RALEIGH, NC 27615
NC FIRM LICENSE NO. F-6493

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

REVISIONS



FOR -RAB-1- ALIGNMENT, SEE SHEET NO. 4
FOR -RAB-2- ALIGNMENT, SEE SHEET NO. 5



FOR -DRW1- & -DRW2- ALIGNMENTS, SEE SHEET NO. 4

B-5777

8

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
DAVIDSON COUNTY

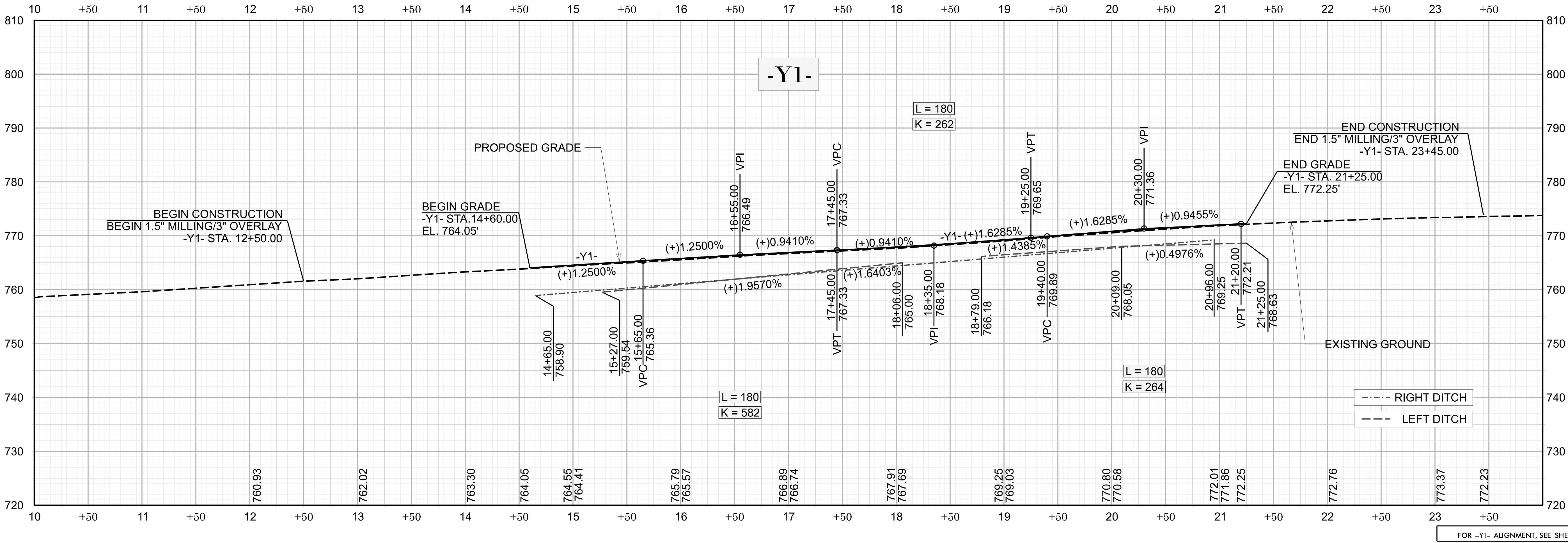
ROADWAY DESIGN UNIT
ROADWAY DESIGN
ENGINEER

HYDRAULICS
ENGINEER

PREPARED BY
RS&H
8521 SIX FORDS ROAD, SUITE 400
RALEIGH, NC 27615
NC FIRM LICENSE NO. F-0493

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

REVISIONS



THIS SPACE INTENTIONALLY LEFT BLANK

8-5777

9

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
DAVIDSON COUNTY

ROADWAY DESIGN UNIT
ROADWAY DESIGN
ENGINEER

STEVEN J. SHUMAN
3/31/2020

HYDRAULICS
ENGINEER

ALEXANDER R. VINSON
3/31/2020

PREPARED BY

8521 SIX FORDS ROAD, SUITE 400
RALEIGH, NC 27615
NC FIRM LICENSE NO. F-6493

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

REVISIONS