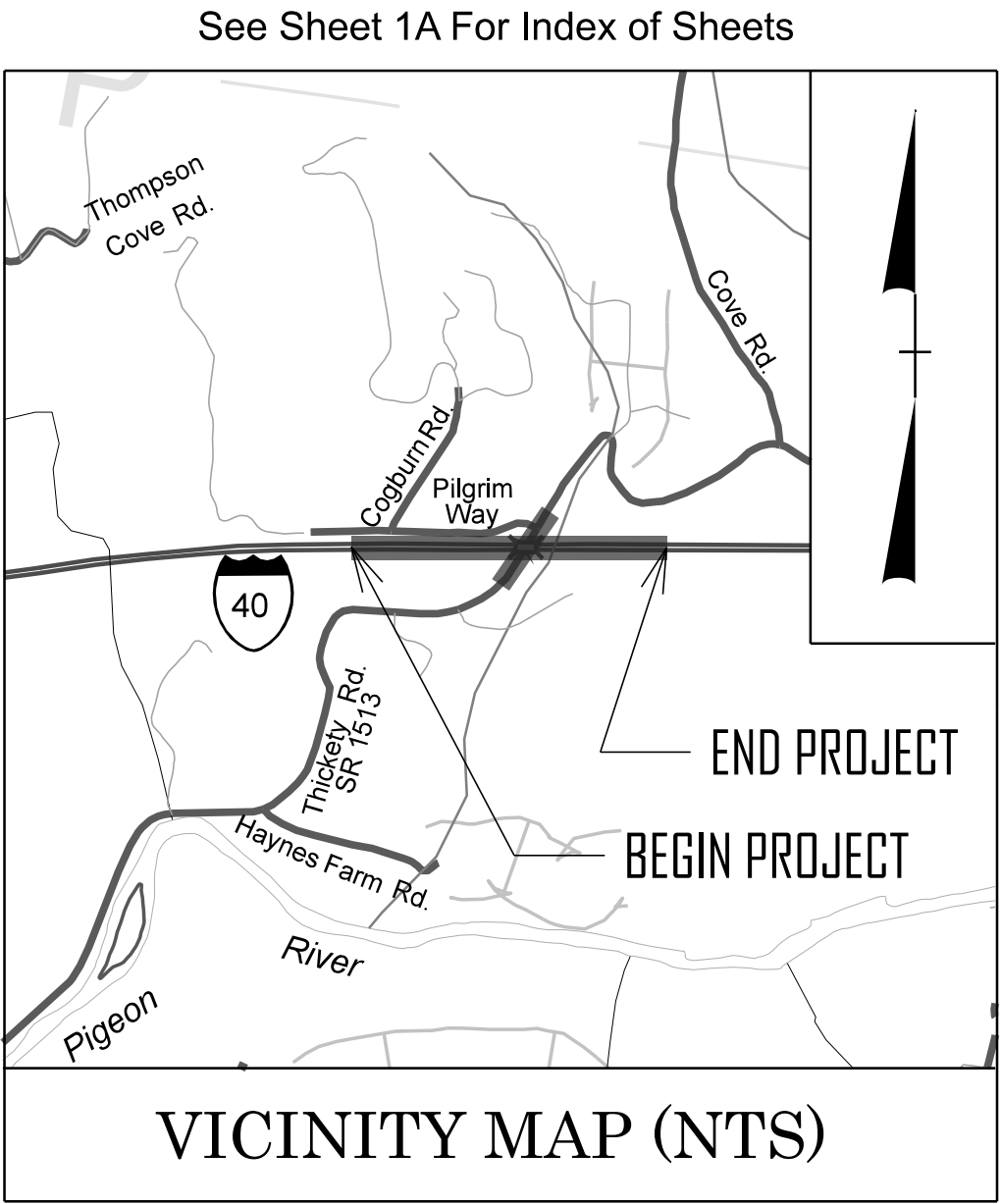


TIP PROJECT: B-5541

CONTRACT: C205015



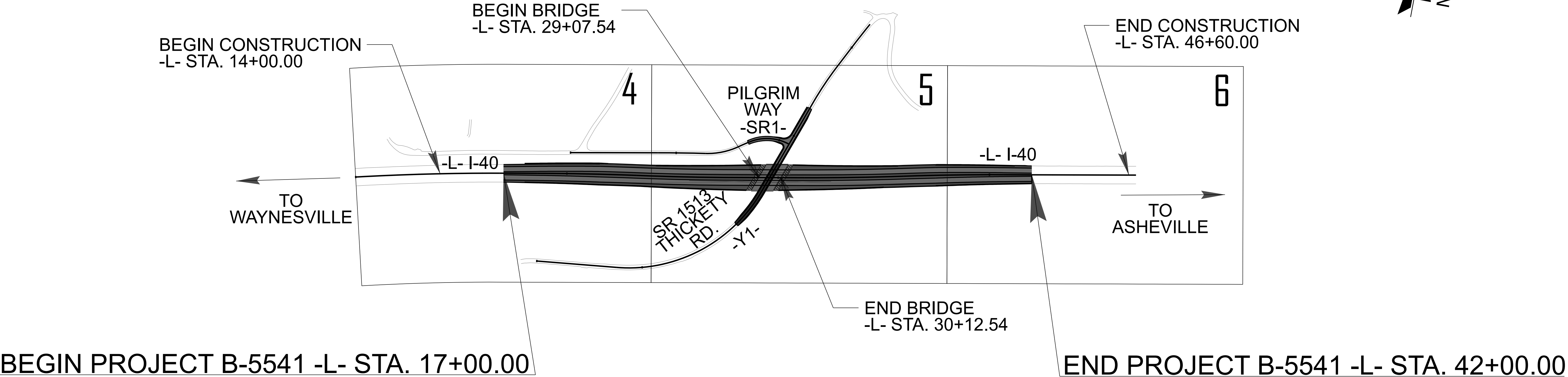
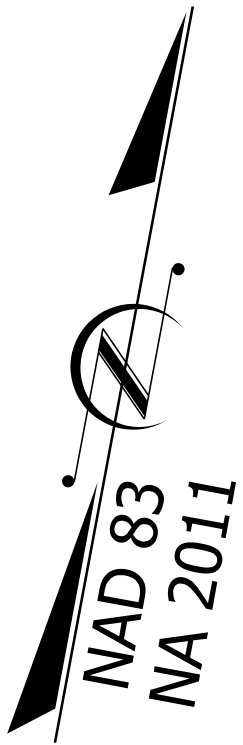
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

HAYWOOD COUNTY

LOCATION: *REPLACE BRIDGE NO. 430236 OVER SR 1513 ON I-40*

TYPE OF WORK: *GRADING, PAVING, DRAINAGE AND STRUCTURES*

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-5541	11	
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION	
55041.1.1		P.E.	
55041.1.1		R/W	
55041.2.2		UTL RELOC	
55041.3.1		CONST	



THERE IS FULL CONTROL OF ACCESS ON THIS PROJECT.

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 = 60875
ADT 2045 = 78375

K = 8 %
D = 55 %
T = 15 % *
V = 65 MPH

* TTST =12%DUAL 3%
FUNC CLASS =
INTERSTATE
STATE WIDE TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B-5541 = 0.453 MILES
LENGTH STRUCTURE TIP PROJECT B-5541 = 0.020 MILES
TOTAL LENGTH TIP PROJECT B-5541 = 0.473 MILES

Prepared in the Office of:
NV5
NVS ENGINEERS & CONSULTANTS, INC.
3300 REGENCY PARKWAY, SUITE 100
CARY, NC 27518
P: 919.851.1912 www.NV5.com
NC License # F-1333

FOR NORTH CAROLINA DEPT. OF TRANSPORTATION, DIVISION 14

2024 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
OCTOBER 8, 2024

LETTING DATE:
JUNE 17, 2025

M. SCOTT CLARK
PROJECT ENGINEER

ERICA MARTIN
PROJECT DESIGN ENGINEER

ANDREW BUCHANAN
NCDOT CONTACT

HYDRAULICS ENGINEER

DocuSigned by:
Will Weatherbee
SIGNATURE

DocuSigned by:
Scott Clark
SIGNATURE

Seal: WILL WEATHERBEE, P.E., 036188, 8/1/2025

Seal: SCOTT CLARK, P.E., 024416, 8/1/2025

Seal: 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-4	PAVEMENT SCHEDULE AND TYPICAL SECTIONS
2B-1	PROPOSED RETAINING WALL
2C-1	DETAIL OF SHOULDER BERM GUTTER TO EXPRESSWAY GUTTER TRANSITION SECTION
2C-2	DETAIL OF PROPOSED GUARDRAIL AT TWO LANE - TWO WAY LOCATIONS
2C-3	DETAIL OF BEGINNING OF GUARDRAIL IN CUT OR FILL SECTION
2C-4	DETAIL OF INLAID RAISED PAVEMENT MARKER
2G-1 THRU 2G-4	GEOTECHNICAL DETAILS
3B-1	ROADWAY SUMMARIES
3D-1	DRAINAGE SUMMARIES
3G-1	GEOTECHNICAL SUMMARIES
3P-1	PARCEL INDEX SHEET
4 THRU 10	PLAN AND PROFILE SHEETS
RWO2C-1 THRU RWO2C-2	RIGHT OF WAY CONTROL SHEETS
TMP-01 THRU TMP-30	TRANSPORTATION MANAGEMENT PLANS
PMP-01 THRU PMP-04	PAVEMENT MARKING PLANS
EC-01 THRU EC-09/CONST. 6	EROSION CONTROL PLANS
SIGN-01 THRU SIGN-06	SIGNING PLANS
X-000	CROSS-SECTION INDEX SHEET
X-001A	CROSS-SECTION SUMMARIES
X-002 THRU X-069	CROSS-SECTIONS
S-1 THRU S-45	STRUCTURE PLANS
W-1 THRU W-3	WALL PLANS

GENERAL NOTES: 2024 SPECIFICATIONS
EFFECTIVE: 01-16-2024
REVISED:

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. 225.05 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.

ANY RELOCATION OF EXISTING UTILITIES WILL BE ACCOMPLISHED BY OTHERS.

RIGHT-OF-WAY MARKERS:

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

EFF. 01-16-2024
REV.
2024 ROADWAY ENGLISH STANDARD DRAWINGS

The following Roadway Standards as appear in "Roadway Standard Drawings" Contracts Standards and Development Unit - N. C. Department of Transportation - Raleigh, N. C., Dated January 16, 2024 are applicable to this project and by reference hereby are considered a part of these plans:

STD.NO. TITLE

DIVISION 2 - EARTHWORK
200.03 Method of Clearing - Method III
225.01 Guide for Grading Subgrade - Interstate and Freeway
225.02 Guide for Grading Subgrade - Secondary and Local
225.04 Method of Obtaining Superelevation - Two Lane Pavement
225.05 Method of Obtaining Superelevation - Divided Highways
275.01 Rock Plating

DIVISION 3 - PIPE CULVERTS
300.01 Method of Pipe Installation
310.03 Cross Pipe End Section - Precast Concrete Section for 18" to 30" Pipe

DIVISION 4 - MAJOR STRUCTURES
423.01 Bridge Approach Fills - Type 1 Approach Fill for Bridge Abutment
423.02 Bridge Approach Fills - Type 1A Alternate Approach Fill for Integral Bridge Abutment

DIVISION 5 - SUBGRADE, BASES AND SHOULDERS
560.01 Method of Shoulder Construction - High Side of Superelevated Curve - Method I
560.02 Method of Shoulder Construction - High Side of Superelevated Curve - Method II

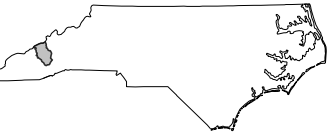
DIVISION 6 - ASPHALT BASES AND PAVEMENTS
610.02 Guide for Paving Shoulders Under Bridges - Method II
610.03 Guide for Paving Shoulders Under Bridges - Method III
665.01 Asphalt Shoulders - Milled Rumble Strips
665.02 Limits for Asphalt Shoulders - Milled Rumble Strips

DIVISION 8 - INCIDENTALS
815.02 Subsurface Drain
840.00 Concrete Base Pad for Drainage Structures
840.14 Concrete Drop Inlet - 12" thru 30" Pipe
840.15 Brick Drop Inlet - 12" thru 30" Pipe
840.16 Drop Inlet Frame and Grates - for use with Std. Dwg 840.14 and 840.15
840.17 Concrete Grated Drop Inlet Type 'A' - 12" thru 72" Pipe
840.18 Concrete Grated Drop Inlet Type 'B' - 12" thru 36" Pipe
840.20 Frames and Wide Slot Flat Grates
840.22 Frames and Wide Slot Sag Grates
840.24 Frames and Narrow Slot Sag Grates
840.25 Anchorage for Frames - Brick or Concrete or Precast
840.26 Brick Grated Drop Inlet Type 'A' - 12" thru 72" Pipe
840.27 Brick Grated Drop Inlet Type 'B' - 12" thru 36" Pipe
840.29 Frames and Narrow Slot Flat Grates
840.45 Precast Drainage Structure
840.66 Drainage Structure Steps
846.01 Concrete Curb, Gutter and Curb & Gutter
846.02 Drop Inlet Installation in Expressway Gutter
848.04 Street Turnout
850.01 Concrete Paved Ditches
854.02 Double Faced Concrete Barrier - Types T, T1 and T2
862.01 Guardrail Placement
862.02 Guardrail Installation
862.03 Structure Anchor Units
862.04 Anchoring End of Guardrail - for B-77 and B-83 Anchor Units
866.02 Woven Wire Fence - with Wood Post
866.04 Barbed Wire Fence - with Wood Posts
876.01 Rip Rap in Channels and Ditches
876.02 Guide for Rip Rap at Pipe Outlets
876.04 Drainage Ditches with Class 'B' Rip Rap

B-5541

R/W001A

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
HAYWOOD COUNTY



ROADWAY DESIGN UNIT

ROADWAY DESIGN
ENGINEER

5/7/2025

NORTH CAROLINA
PROFESSIONAL
SEAL
024416
ENGINEER
SCOTT CLARK

Scott Clark

1CEABA06CB0CEP

PREPARED BY

NIVIS

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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:

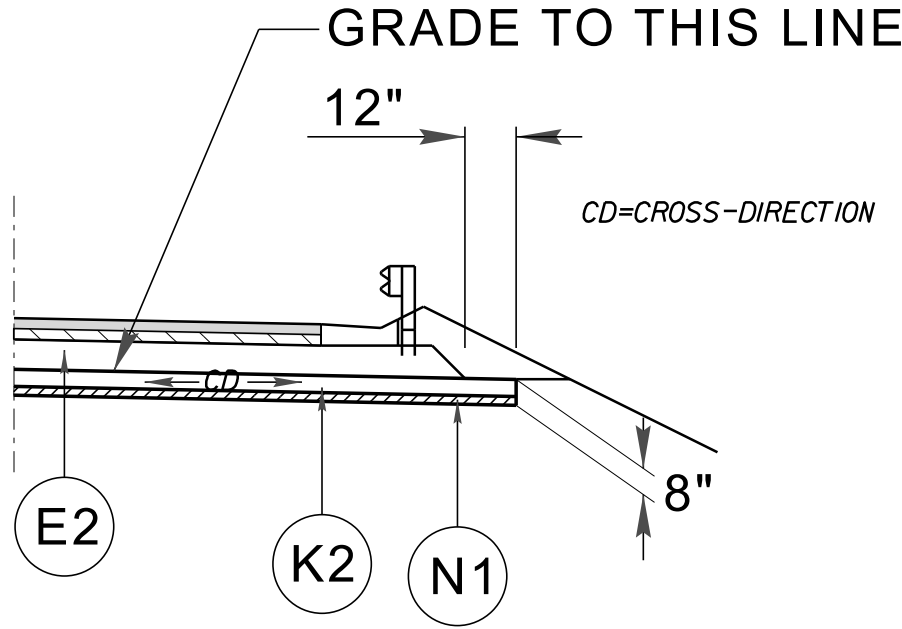
Sanitary Sewer Manhole	
Sanitary Sewer Cleanout	
U/G Sanitary Sewer Line	
Above Ground Sanitary Sewer	
SS Force Main Line Test Hole (SUE - LOS A)*	
SS Force Main Line (SUE - LOS B)*	
SS Force Main Line (SUE - LOS C)*	
SS Force Main Line (SUE - LOS D)*	

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	

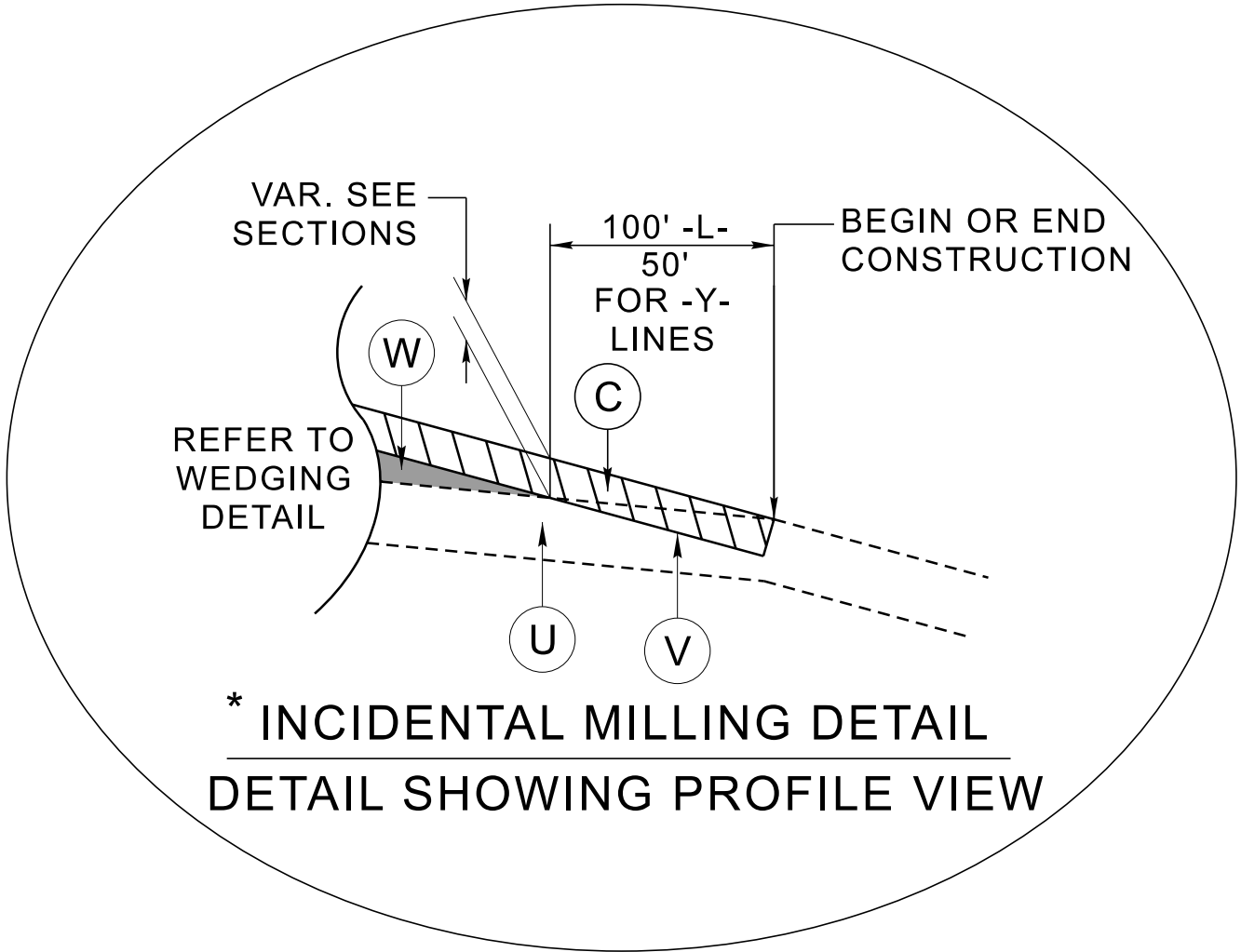
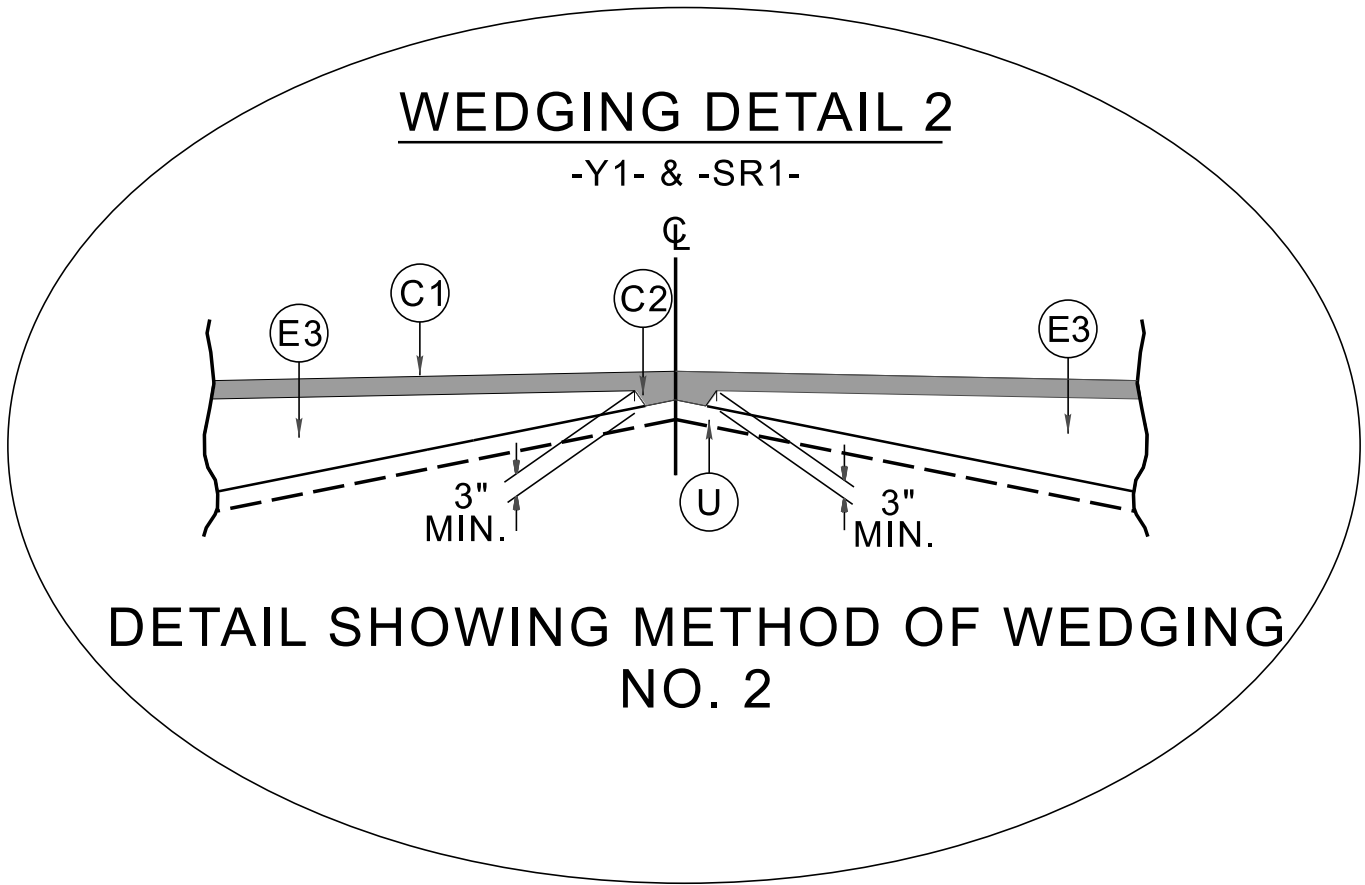
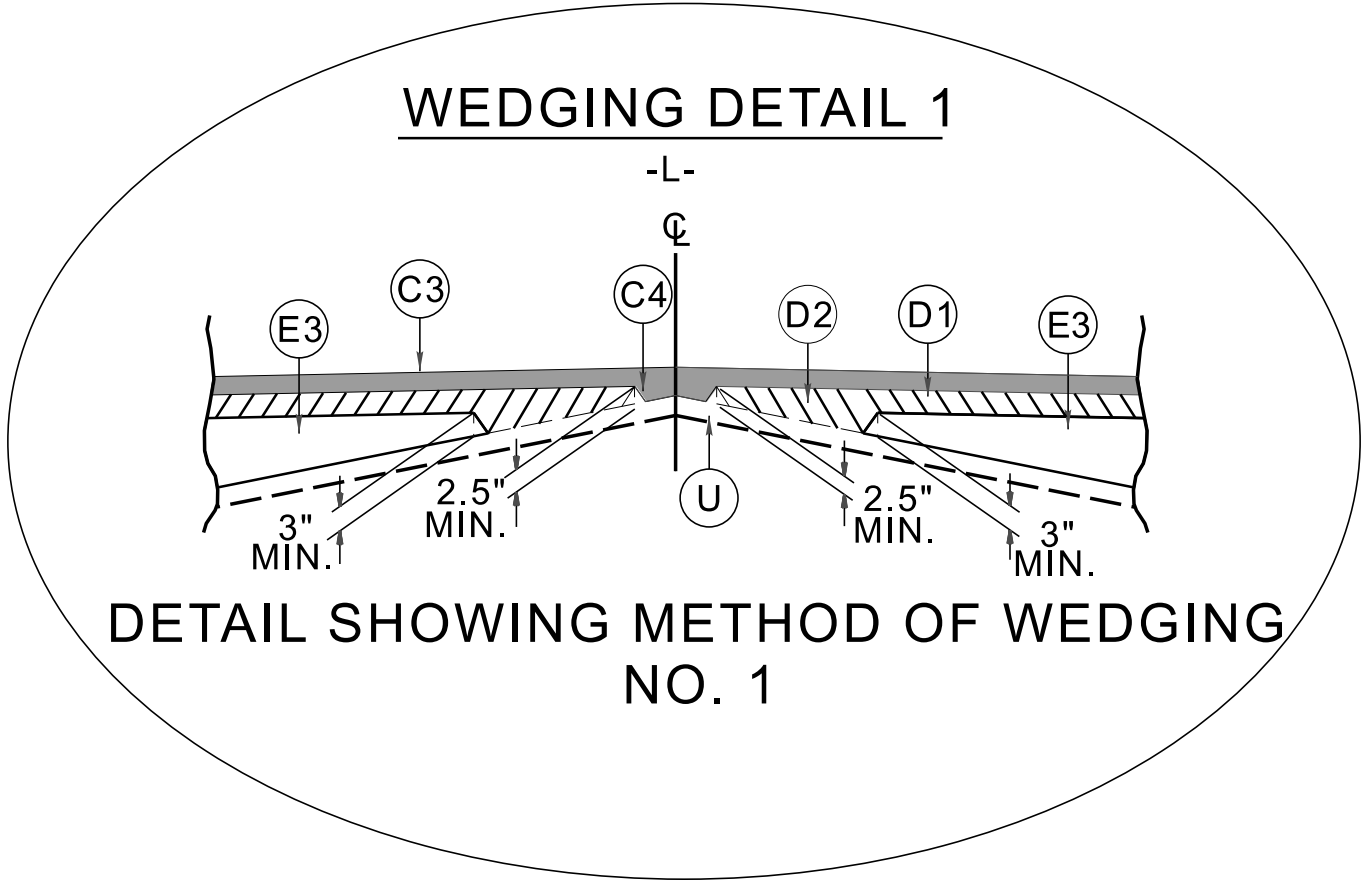
FINAL PAVEMENT SCHEDULE	
B1	OPEN-GRADED ASPHALT FRICTION COURSE, TYPE FC-1 MODIFIED, AT AN AVERAGE RATE OF 90 LBS. PER SQ. YD.
C1	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE TYPE S9.5B, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
C2	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD. PER 1" DEPTH TO BE PLACED IN LAYERS NOT LESS THAN 1.0" IN DEPTH OR GREATER THAN 1.5" IN DEPTH.
C3	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE TYPE S9.5D, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
C4	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5D, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1" DEPTH TO BE PLACED IN LAYERS NOT LESS THAN 1.0" IN DEPTH OR GREATER THAN 1.5" IN DEPTH.
D1	PROP. APPROX. 4" ASPHALT CONCRETE INTERMEDIATE COURSE TYPE I19.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
D2	PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH TO BE PLACED IN LAYERS NOT LESS THAN 2.5" IN DEPTH OR GREATER THAN 4" IN DEPTH.
E1	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
E2	PROP. APPROX. 13" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 494 LBS. PER SQ. YD. IN EACH OF THREE LAYERS.
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.
E4	PROP. APPROX. 5" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 570 LBS. PER SQ. YD.
K2	8" CLASS IV SUBGRADE STABILIZATION
N1	GEOTEXTILE FOR SUBGRADE STABILIZATION
R1	TYPE T BARRIER
R2	EXPRESSWAY GUTTER
R3	SHOULDER BERM GUTTER (STANDARD 846.01)
T	EARTH MATERIAL
U	EXISTING PAVEMENT
V1	MILLING ASPHALT PAVEMENT, 2.25" DEPTH
V2	INCIDENTAL MILLING
W1	VARIABLE DEPTH ASPHALT PAVEMENT (SEE WEDGING DETAIL 1)
W2	VARIABLE DEPTH ASPHALT PAVEMENT (SEE WEDGING DETAIL 2)

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

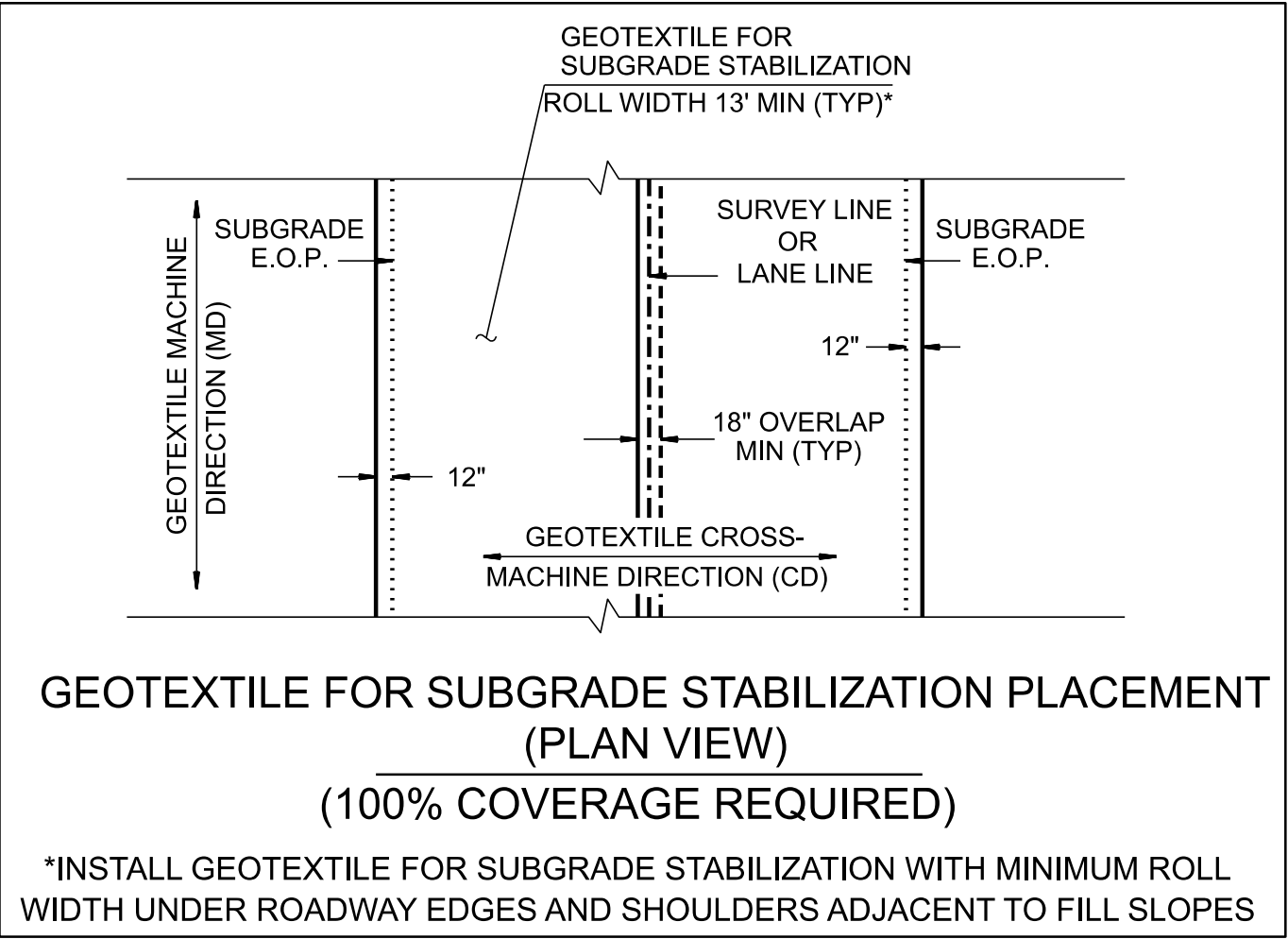


GEOTEXTILE FOR AGGREGATE SUBGRADE STABILIZATION FOR CURBS WITH ASHALT BASE
GEOTEXTILE FOR AGGREGATE SUBGRADE STABILIZATION STATIONS

- L- STA. 28+00 TO STA. 28+83 RT
- L- STA. 30+00 TO STA. 30+50 RT
- L- STA. 30+50 TO STA. 31+00 LT TO RT
- L- STA. 31+00 TO STA. 33+00 RT



* SEE TYPICAL SECTIONS FOR DEPTHS OF MILLING, SURFACE COURSE THICKNESS AND WEDGING METHOD.



B-5541

R/W2A-1

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
HAYWOOD COUNTY

ROADWAY DESIGN UNIT

5/4/2025

NORTH CAROLINA
PROFESSIONAL
SEAL
024416
ENGINEER

SCOTT CLARK

Design Engineer

NORTH CAROLINA
PROFESSIONAL
SEAL
024964
ENGINEER

JOSEPH T. HOLLAND

Prepared By

PAVEMENT DESIGN
ENGINEER

5/4/2025

PREPARED BY

NIVIS

NIVIS ENGINEERING & CONSULTANTS, INC.
2300 RESERVACY PARKWAY, SUITE 100
DURHAM, NC 27705
(919) 486-1111

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REVISIONS

NOTE: PAVEMENT EDGE SLOPES ARE
UNLESS SHOWN OTHERWISE.



-L STA. 21+95.00 TO STA. 29+42.74 LT (BEGIN BRIDGE)
 -L STA. 30+47.74 (END BRIDGE) TO STA. 41+20.00 LT
 -L STA. 27+55.81 TO STA. 28+72.34 RT (BEGIN BRIDGE) (MIRROR)
 -L STA. 29+77.34 (END BRIDGE) TO STA. 30+15.79 RT (MIRROR)
 -L STA. 32+35.00 TO STA. 34+00.00 RT (MIRROR)
 -L STA. 37+28.86 TO STA. 42+00.00 RT (MIRROR)



-L- STA. 18+00.00 TO STA. 27+55.81 RT
-L- STA. 34+00.00 TO STA. 37+28.86 RT



-L- STA. 30+15.79 TO STA. 32+35.00 RT

* SEE DETAIL OF AGGREGATE SUBGRADE STABILIZATION ON SHEET 2A-1 FOR STATION RANGE

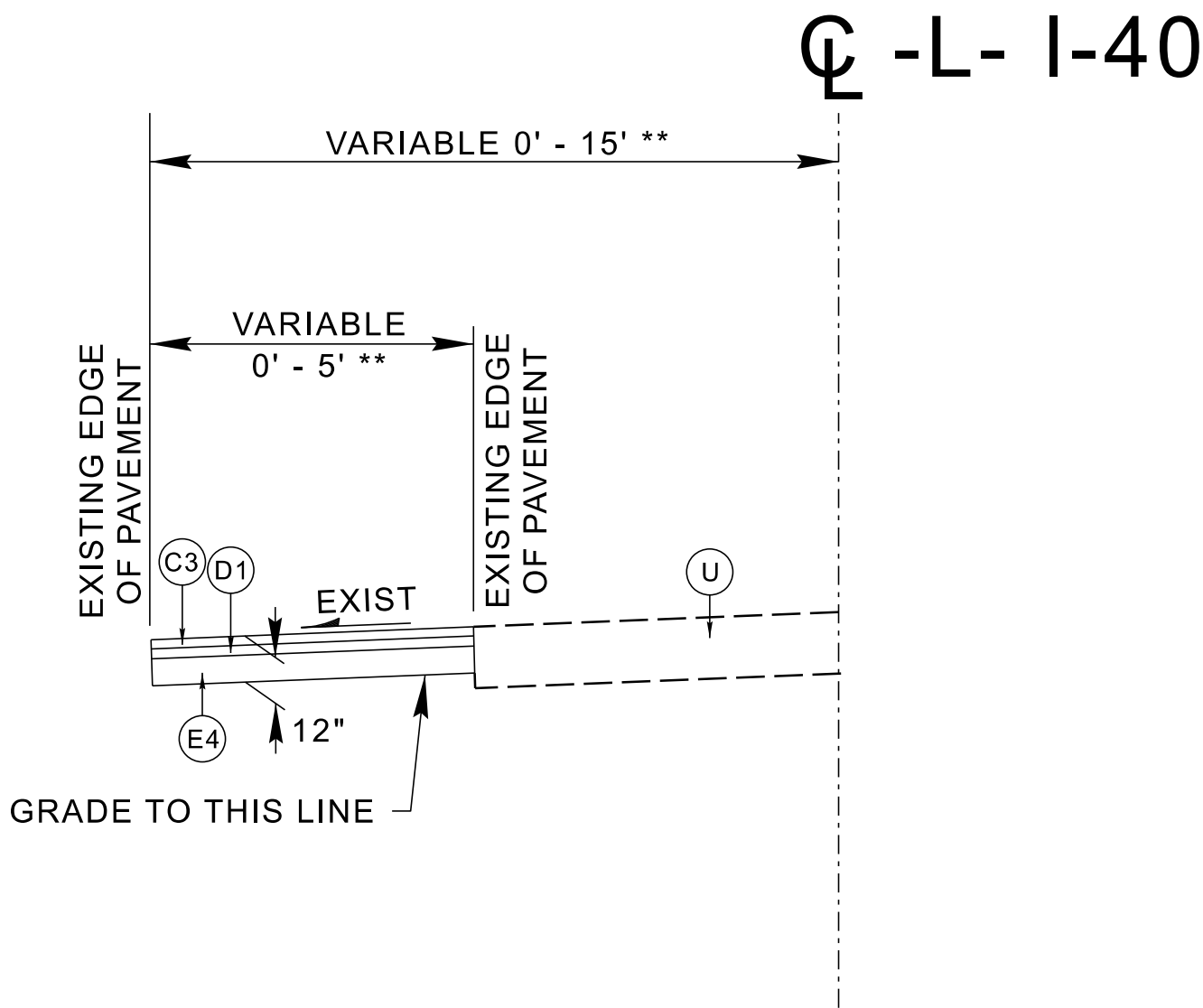
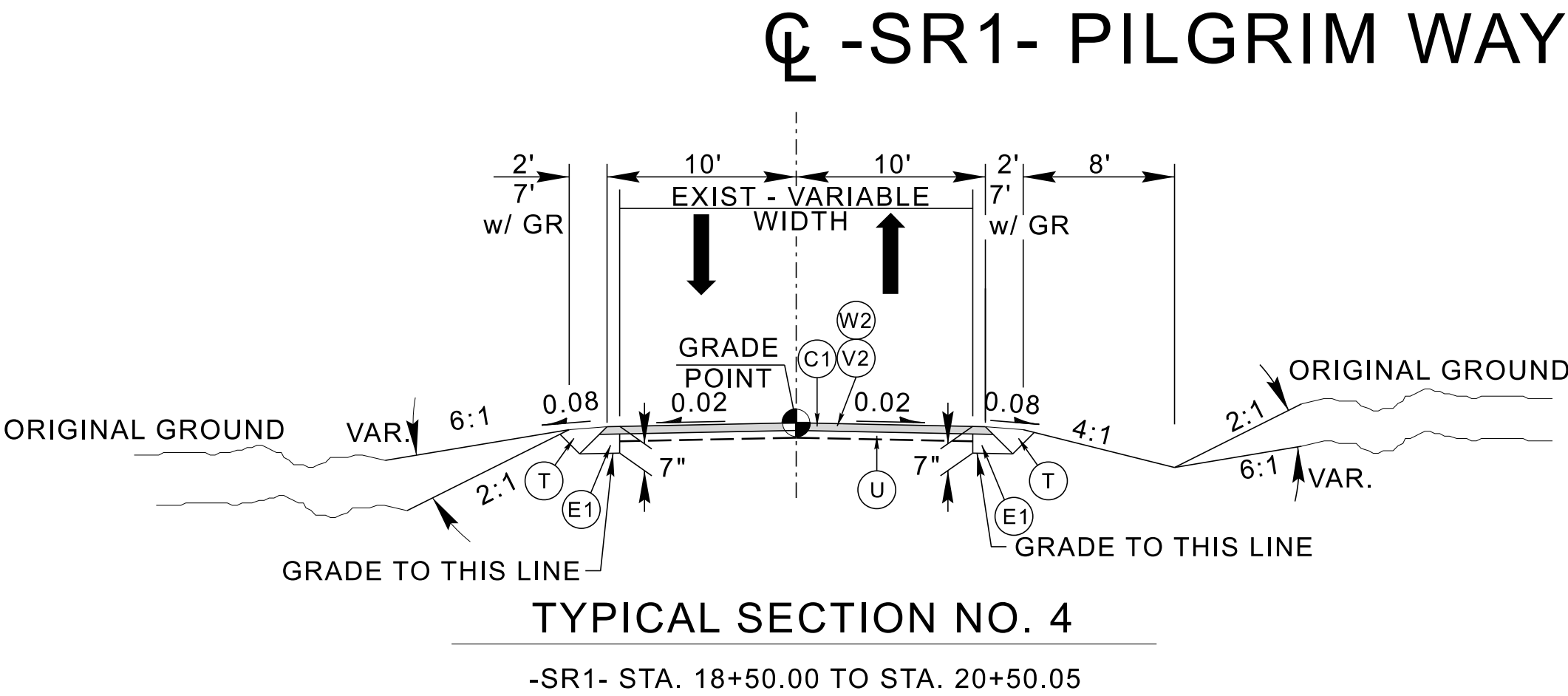
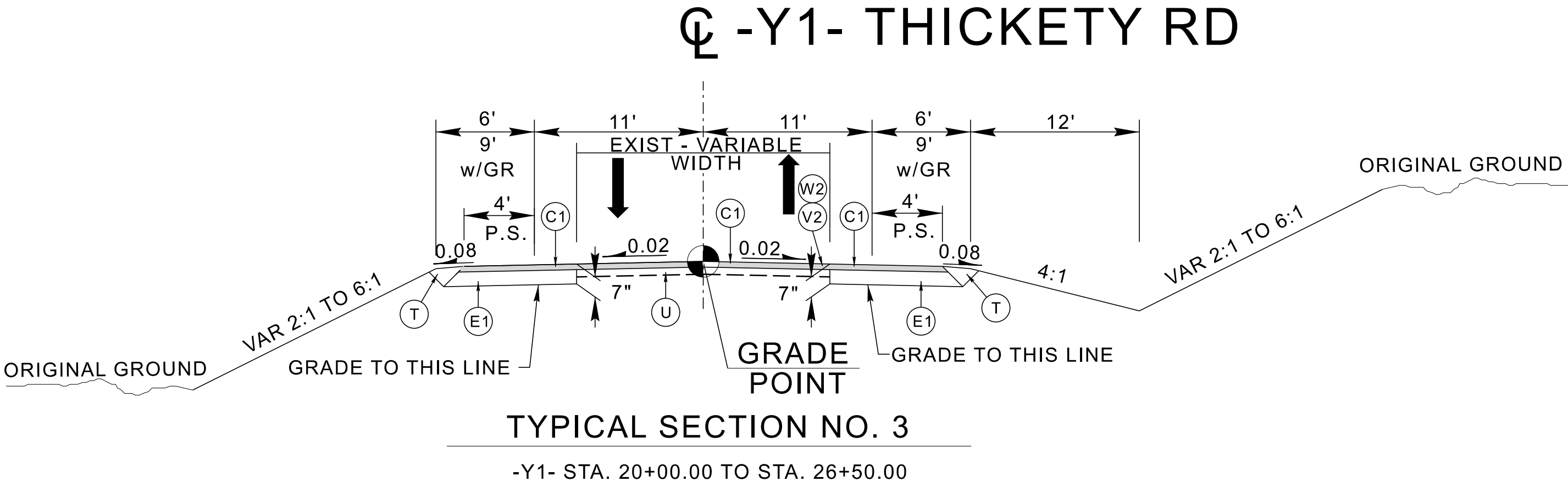


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REVISIONS

FINAL PAVEMENT SCHEDULE	
B1	FC-1 MODIFIED
C1	3" S9.5B
C2	VAR. S9.5B
C3	3" S9.5D
C4	VAR. S9.5D
D1	4" I19.0C
D2	VAR. I19.0C
E1	4" B25.0C
E2	13" B25.0C
E3	VAR. B25.0C
E4	5" B25.0C
K2	CLASS IV SUB. STAB.
N1	GEO. FOR SUB. STAB.
R1	TYPE T BARRIER
R2	EXPRESSWAY GUTTER
R3	SHOULDER BERM GUTTER (STD. 846.01)
T	EARTH MATERIAL
U	EXISTING PAVEMENT
V1	2.25" MILLING
V2	INCIDENTAL MILLING
W1	SEE WEDGING DETAIL 1
W2	SEE WEDGING DETAIL 2

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



** SEE TMP PLANS FOR EXACT WIDTHS AND OFFSETS OF TEMPORARY PAVEMENT

B-5541

R/W2A-3

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
HAYWOOD COUNTY

ROADWAY DESIGN UNIT
ROADWAY DESIGN
ENGINEER

6/4/2025

NORTH CAROLINA
PROFESSIONAL
SEAL
024416
ENGINEER
SCOTT CLARK

Design By
Scott Clark

6/4/2025

NORTH CAROLINA
PROFESSIONAL
SEAL
024964
ENGINEER
JOSEPH T. HOLLAND

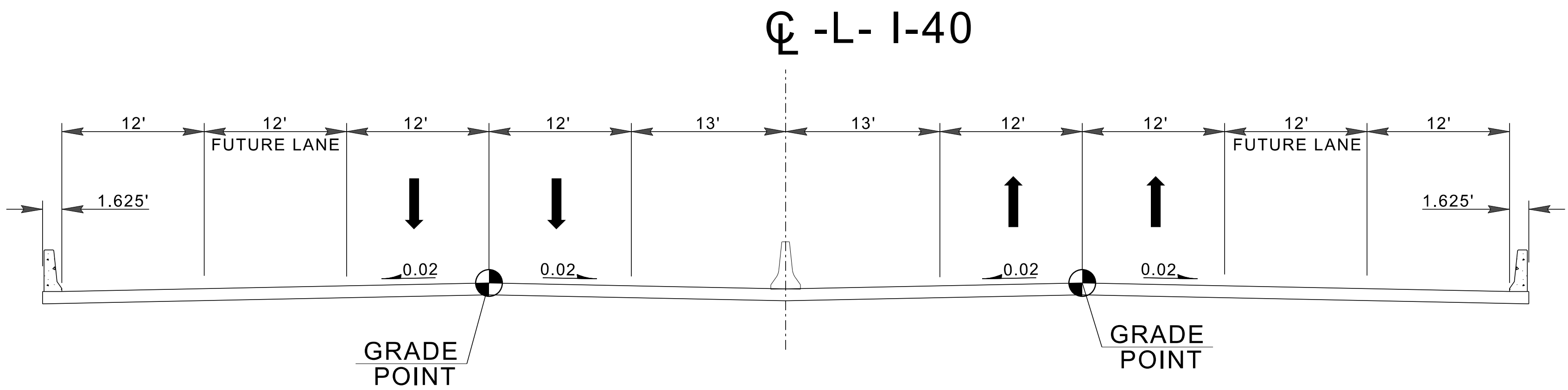
Prepared By
Joseph Holland

7/16/2025

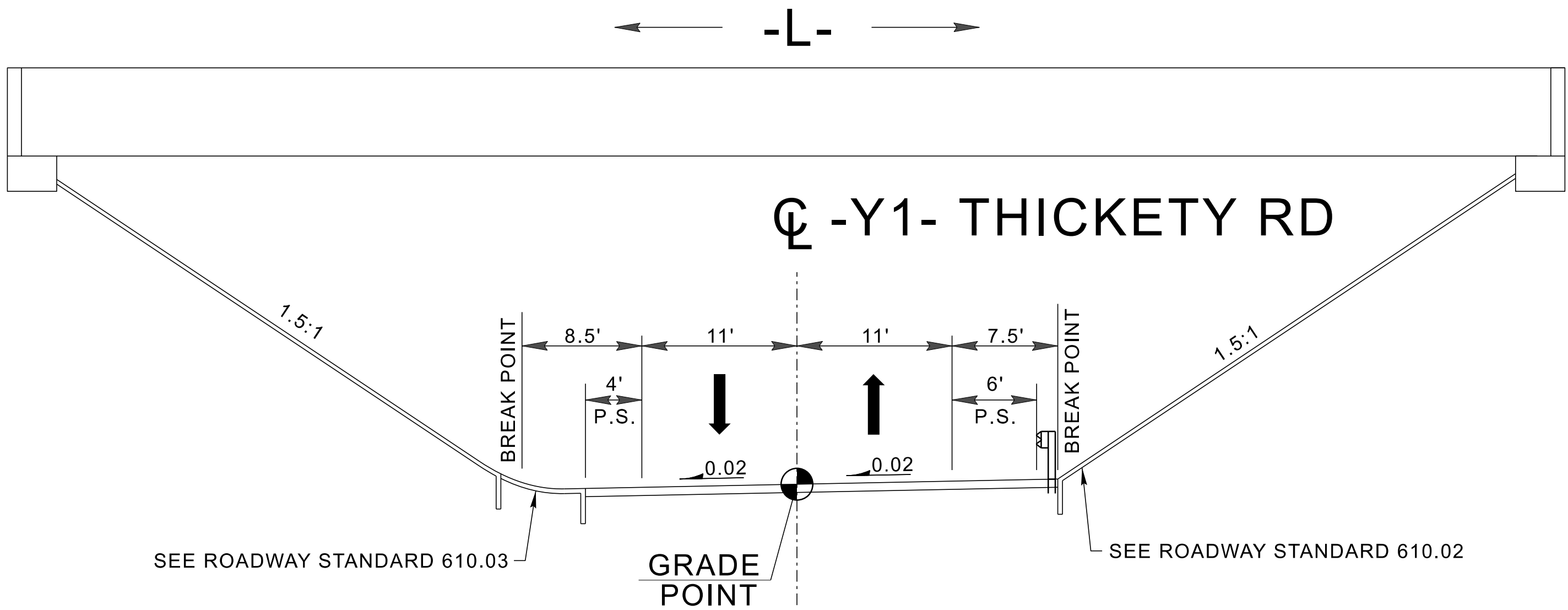
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UNLESS ALL SIGNATURES COMPLETED

REVISIONS

BRIDGE AT -L- STA. 29+69.15 OVER -Y1- STA. 22+91.15



STRUCTURE TYPICAL SECTION



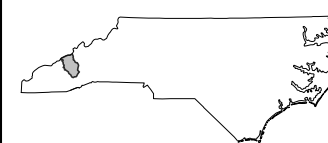
TYPICAL SECTION UNDER STRUCTURE

(15'-0" MINIMUM VERTICAL CLEARANCE)

B-5541

R/W 2A-4

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
HAYWOOD COUNTY



ROADWAY DESIGN UNIT

ROADWAY DESIGN
ENGINEER

4/1/2025



TCBABAECBCE4EF

PREPARED BY

NIVIS

NIVIS ENGINEERING & CONSULTANTS, INC.
2300 REGENCY PARKWAY, SUITE 100
CARY, NC 27513
(919) 467-1111
WWW.NIVIS-NC.COM

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REVISIONS



DETAIL B
CONCRETE DITCH
BEHIND RETAINING WALL
 (Not to Scale)

RETAINING WALL

BOND BREAKER

NATURAL GROUND

VARIES

2:1

D

B

4"

D = 1.0'

B = 1.0'

The diagram shows a cross-section of a retaining wall on the left. A concrete ditch is constructed behind the wall, separated by a vertical bond breaker. The ditch has a flat bottom of width 'B' and a depth of 'D'. The ditch walls are sloped at a 2:1 ratio. The ditch is filled with material that meets the 'NATURAL GROUND' line. The top surface of the ditch material is labeled 'VARIES'. Dimensions are given as D = 1.0' and B = 1.0'. A 4-inch dimension is shown for the bond breaker. The entire diagram is titled 'DETAIL B CONCRETE DITCH BEHIND RETAINING WALL (Not to Scale)'.

Diagram illustrating a 100-foot section (English) divided into two 50-foot segments. The left 50-foot segment is black, and the right 50-foot segment is white. A 25-foot white section is indicated in the middle of the 100-foot section.

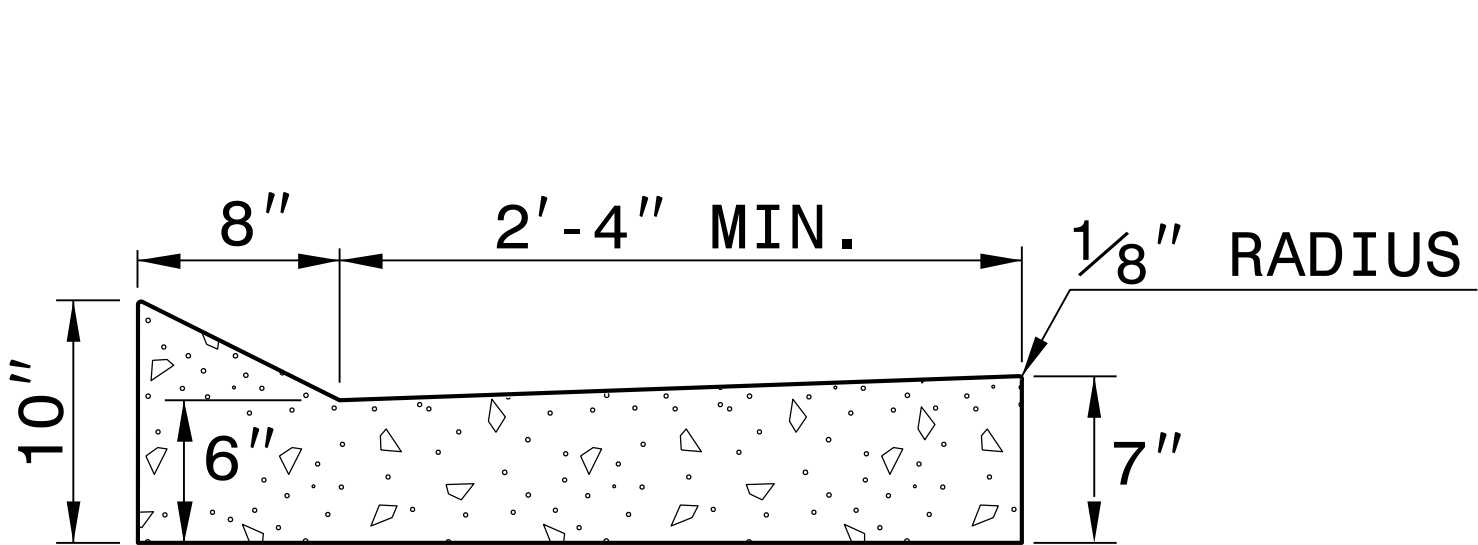
NOTES:
SEE SHEET 5 FOR -L- PROFILE
SEE SHEET W-1 THRU W-3 FOR WALL PLANS



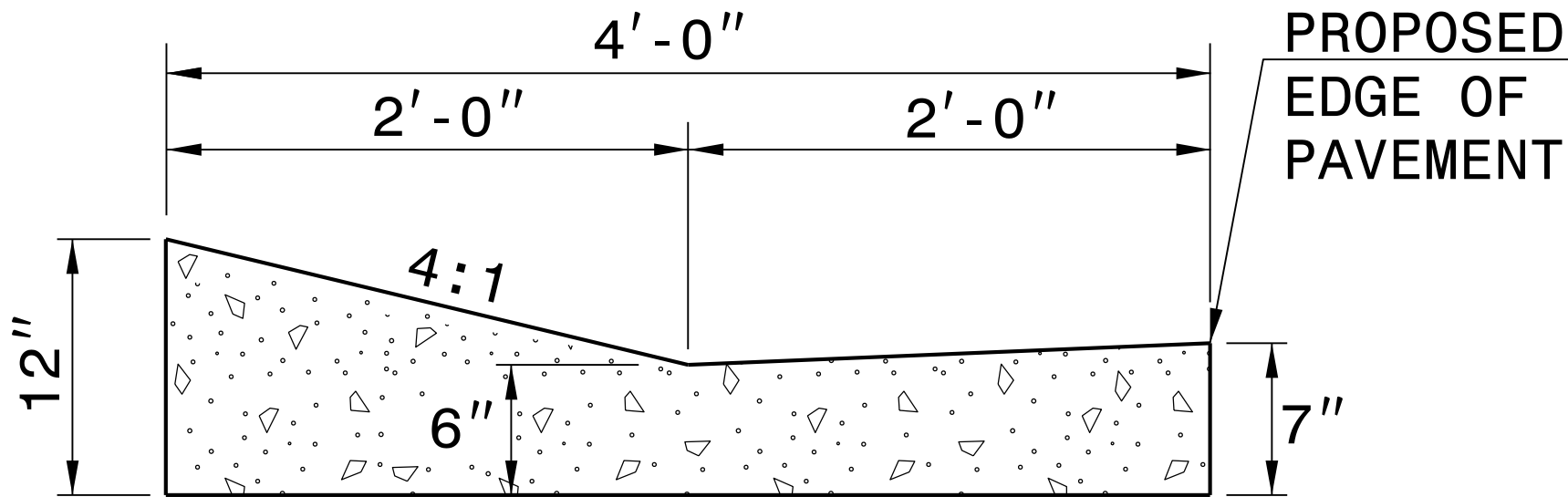
REVISIONS

5/14/99

PROJECT REFERENCE NO.	SHEET NO.
B-5541	2C-1



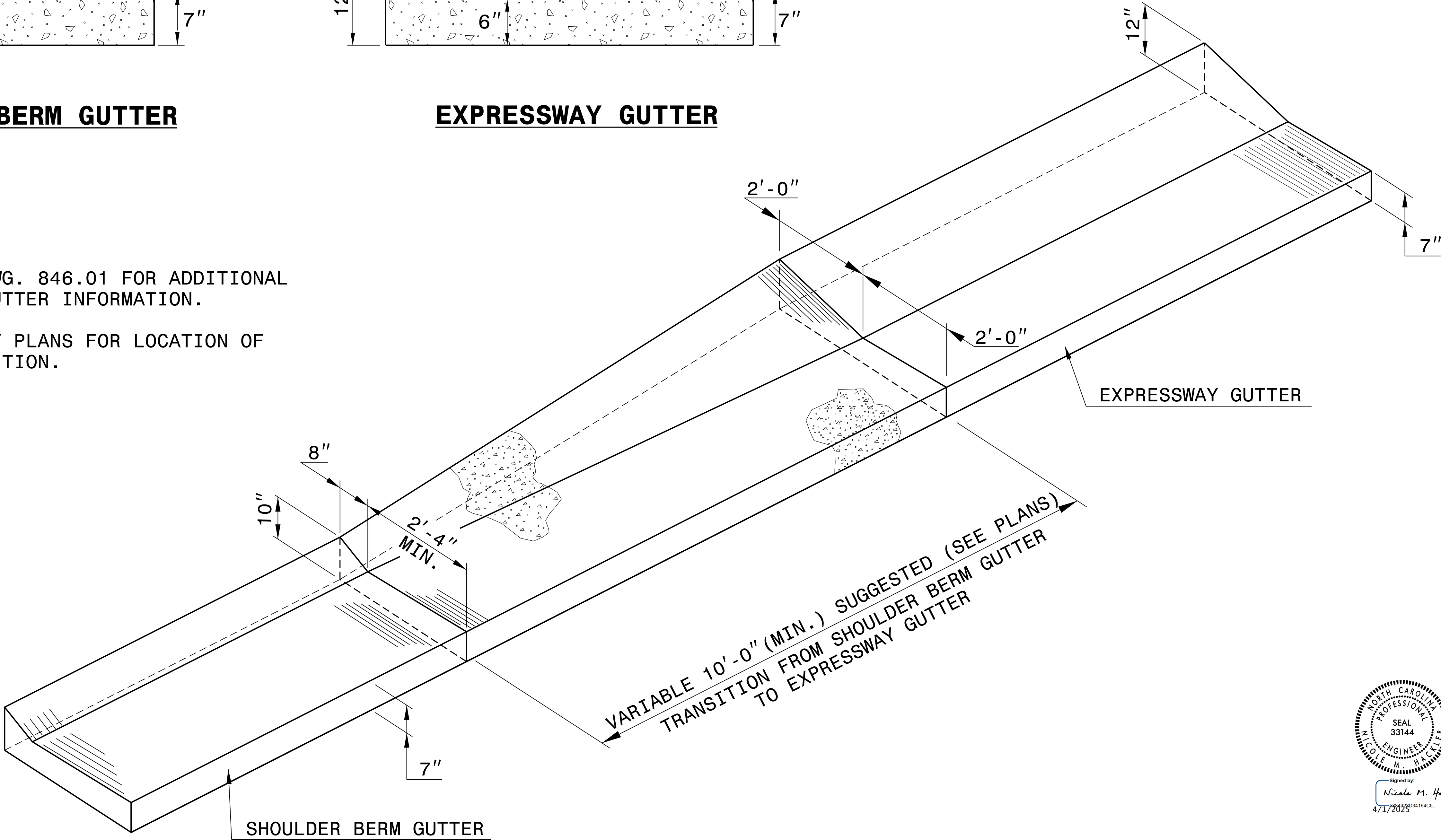
SHOULDER BERM GUTTER



EXPRESSWAY GUTTER

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

SEE ROADWAY PLANS FOR LOCATION OF CURB TRANSITION.



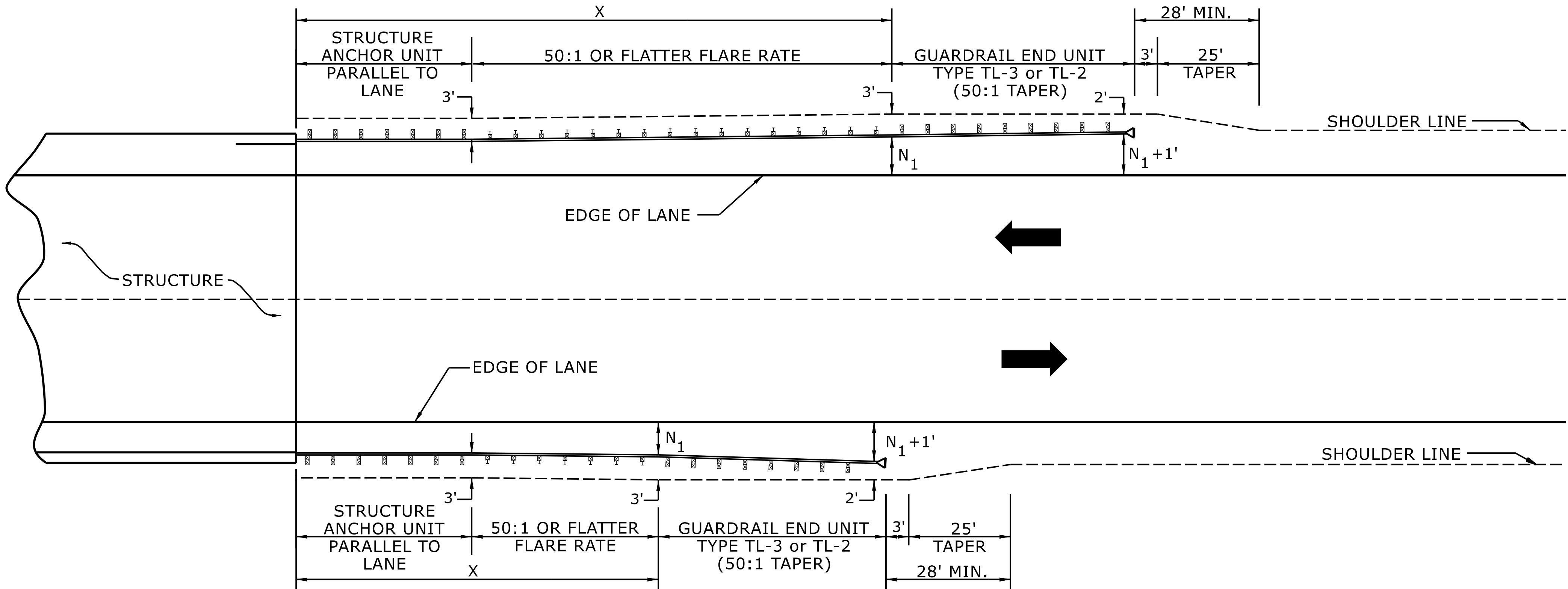
ISOMETRIC VIEW OF TRANSITION



DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

CONTRACT STANDARDS AND DEVELOPMENT UNIT	
Office 919-707-6950	FAX 919-250-4119
DETAIL OF SHOULDER BERM GUTTER TO EXPRESSWAY GUTTER TRANSITION SECTION	
ORIGINAL BY: T.S.Spell	DATE: 8-13-02
MODIFIED BY:	DATE:
CHECKED BY:	DATE:
FILE SPEC.: wwwr/details/stand/cgtransit.dgn	

PROJECT REFERENCE NO.	SHEET NO.
B-5541	2C-2



USE FLARE RATE AS THE CONTROL IF THE "N₁" DISTANCE IS NOT OBTAINED.
("N₁" IS BASED ON SHOULDER WIDTHS IN THE ROADWAY DESIGN MANUAL)

SEE STD. 862.03 FOR STRUCTURE ANCHOR UNITS

FOR POSTED SPEEDS ≥ 45MPH USE GREU TYPE TL-3
FOR POSTED SPEEDS < 45MPH USE GREU TYPE TL-2

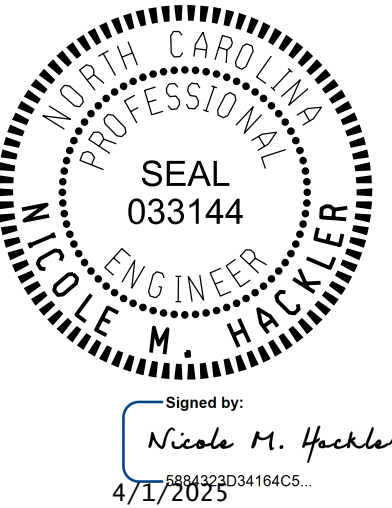
GUARDRAIL LENGTH OF NEED (X) IS CALCULATED BASED ON THE AASHTO ROADSIDE DESIGN GUIDE.

STATE OF
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DIVISION OF HIGHWAYS
RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR
GUARDRAIL PLACEMENT

SHEET 4 OF 15

862D01



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

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UNLESS ALL SIGNATURES COMPLETED

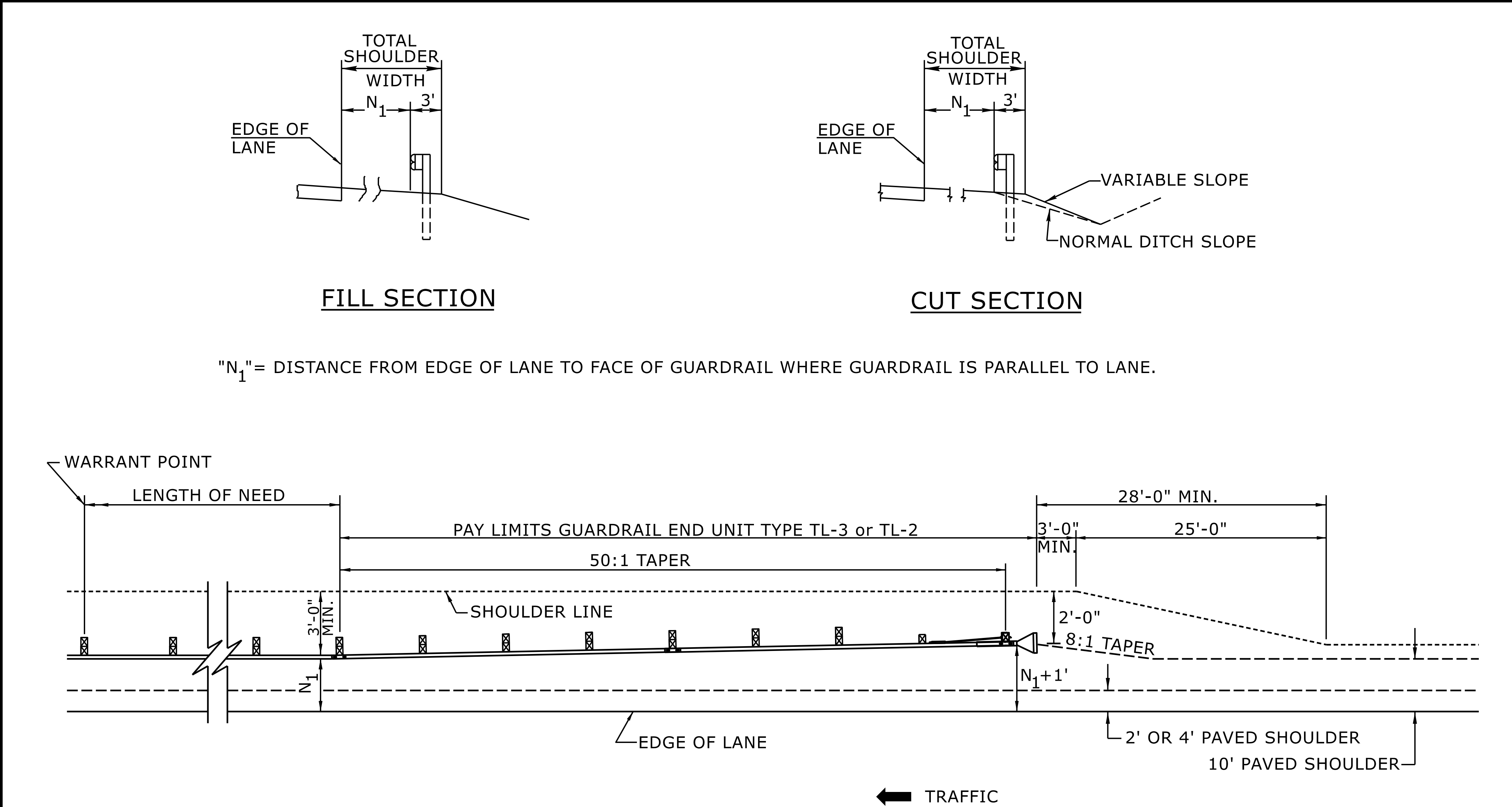
**CONTRACTS STANDARDS
AND DEVELOPMENT UNIT**

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.:

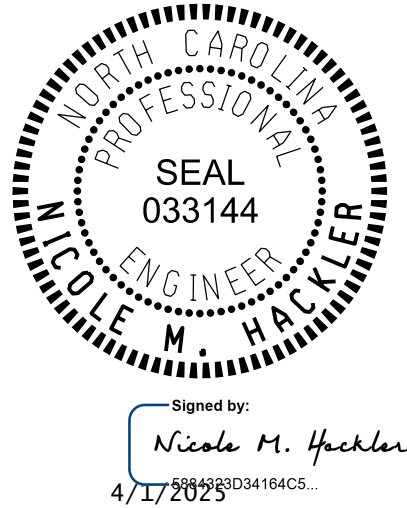


FOR POSTED SPEEDS $\geq$ 45mph USE GREU TYPE TL-3
FOR POSTED SPEEDS $<$ 45mph USE GREU TYPE TL-2

DETAIL OF BEGINNING OF GUARDRAIL IN CUT OR FILL SECTION

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

ROADWAY DETAIL DRAWING FOR
GUARDRAIL PLACEMENT



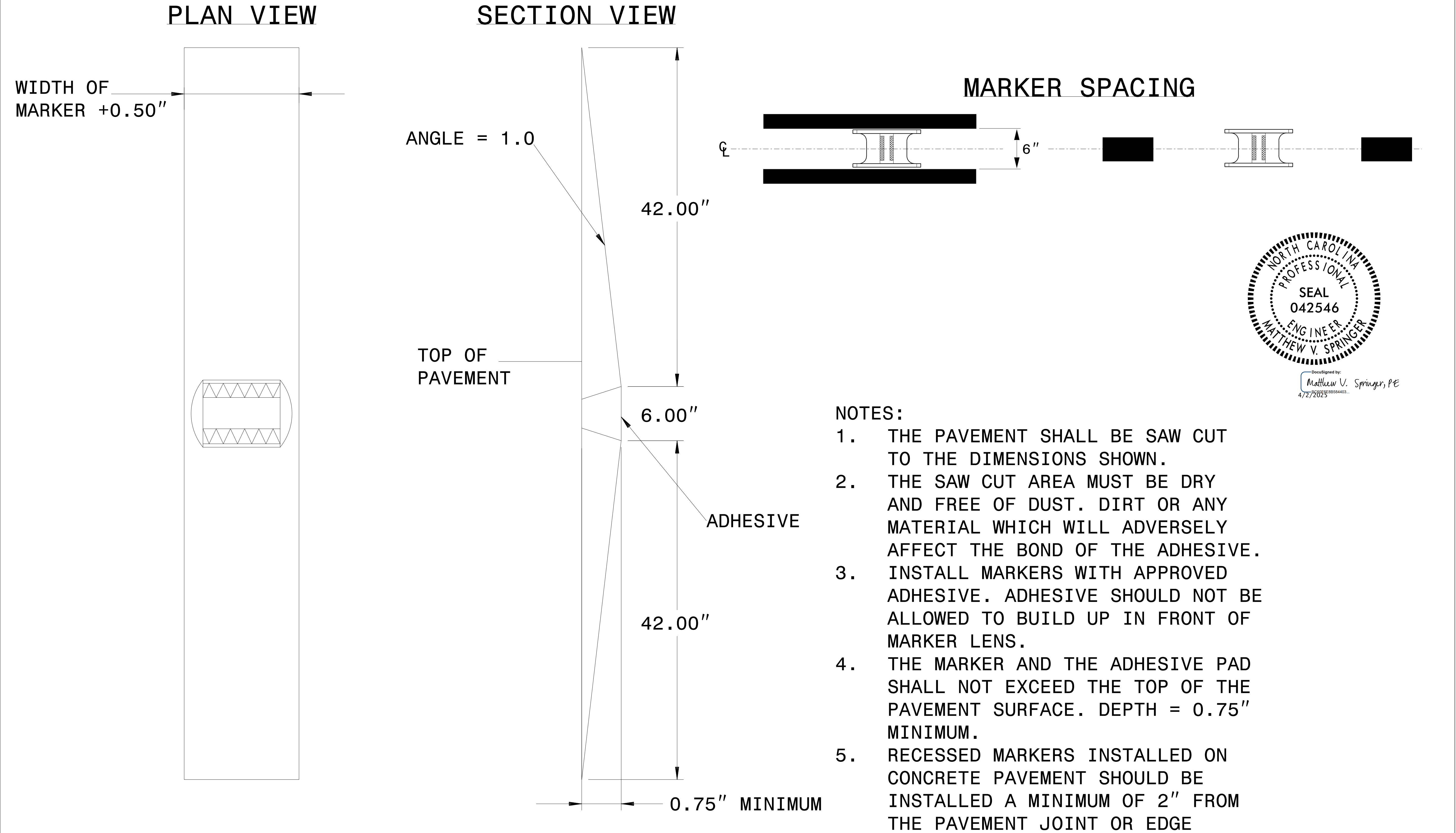
SHEET 6 OF 15
862D01

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**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.:			



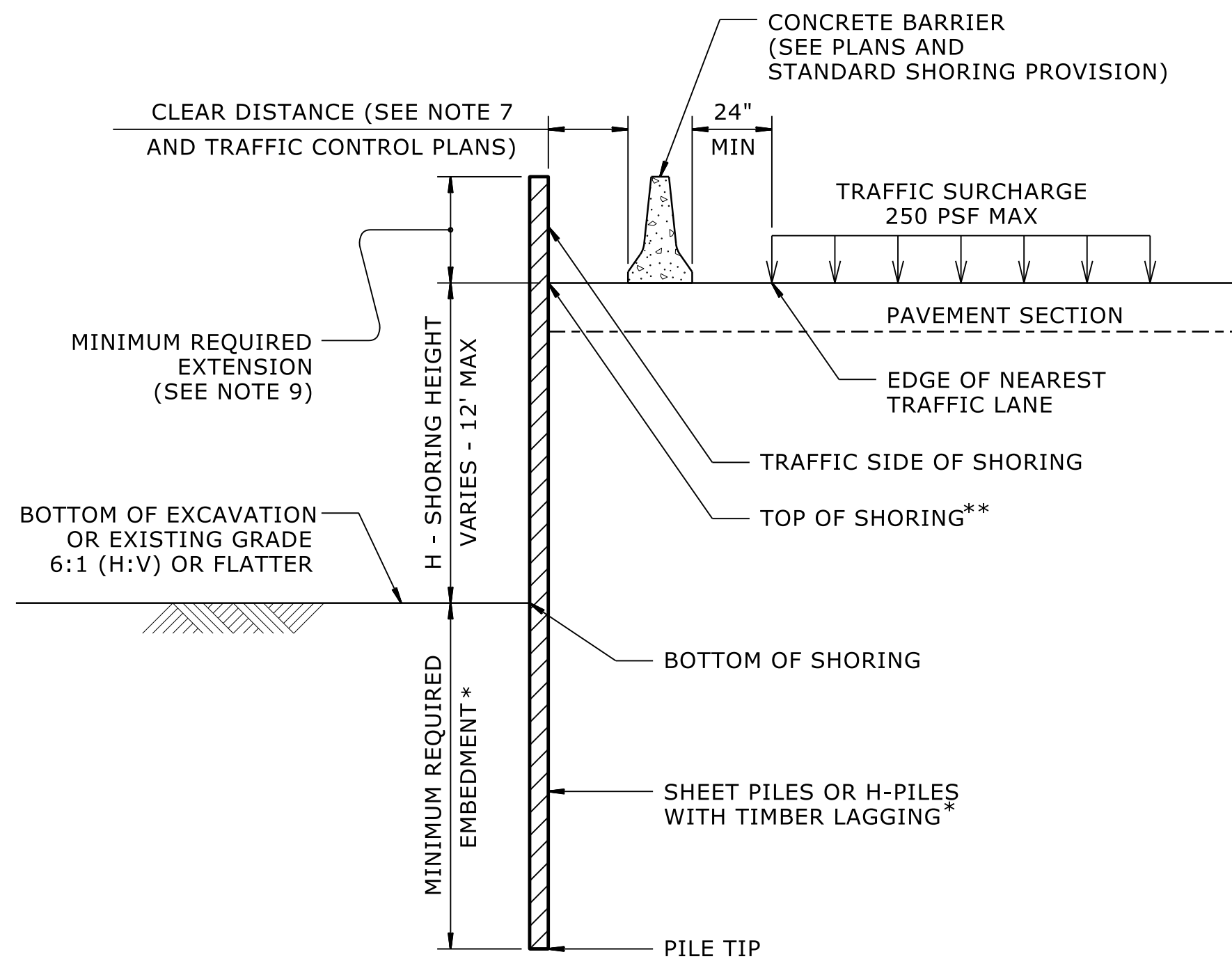
DocuSigned by:
Matthew V. Springer, PE
4/2/2025

CONTRACTS STANDARDS AND DEVELOPMENT UNIT			
Office 919-707-8950		FAX 919-250-4119	
DETAIL OF INLAID RAISED PAVEMENT MARKER			
ORIGINAL BY:	rgwatson	DATE:	02-06-2024
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 ⁴ /FT)	MINIMUM REQUIRED EMBEDMENT * (FT) (SEE NOTE 10)			MINIMUM REQUIRED EMBEDMENT (FT)	MINIMUM REQUIRED SECTION MODULUS (IN ⁴ /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

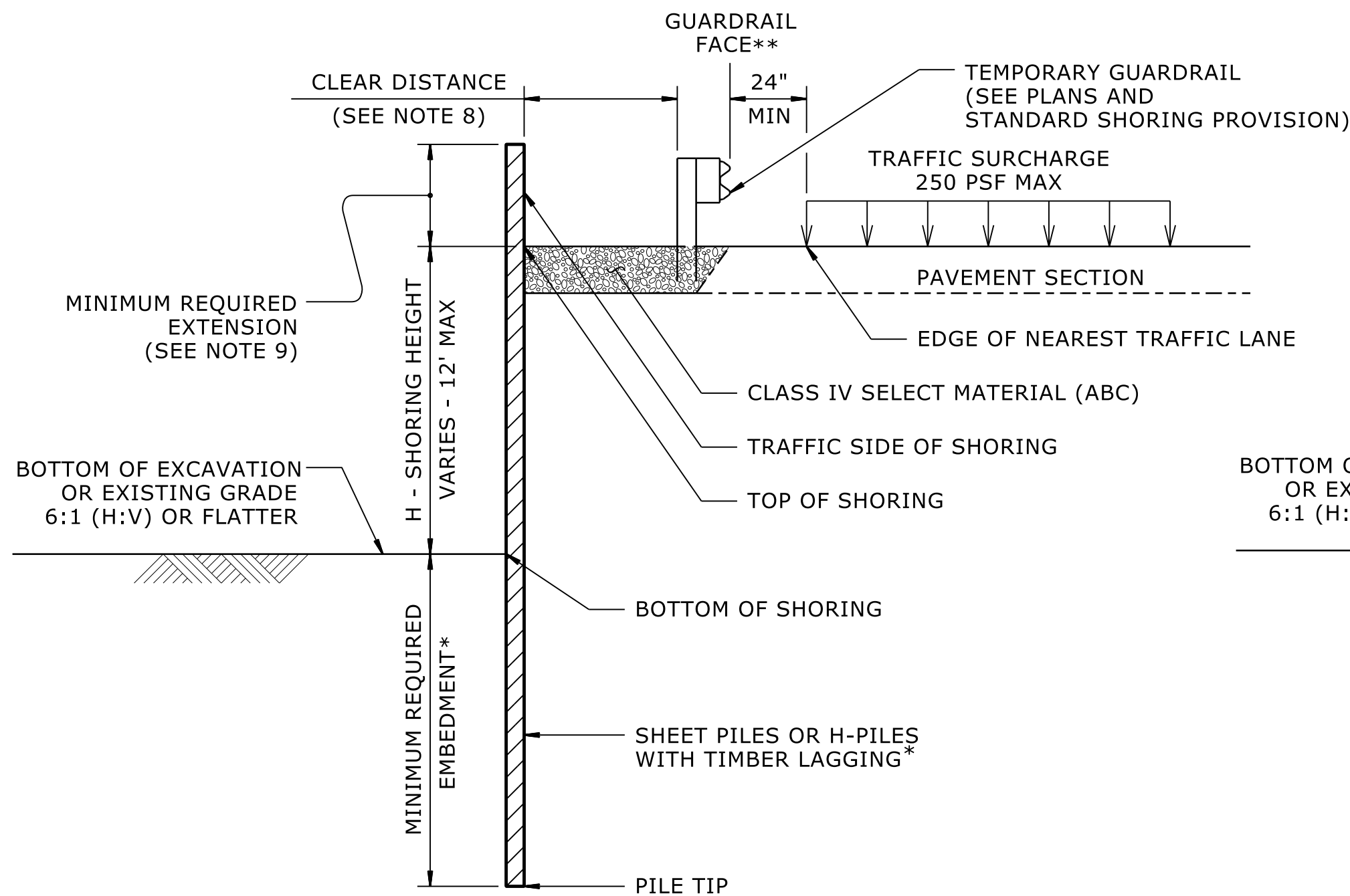
MINIMUM REQUIRED EMBEDMENT AND SECTION MODULUS

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



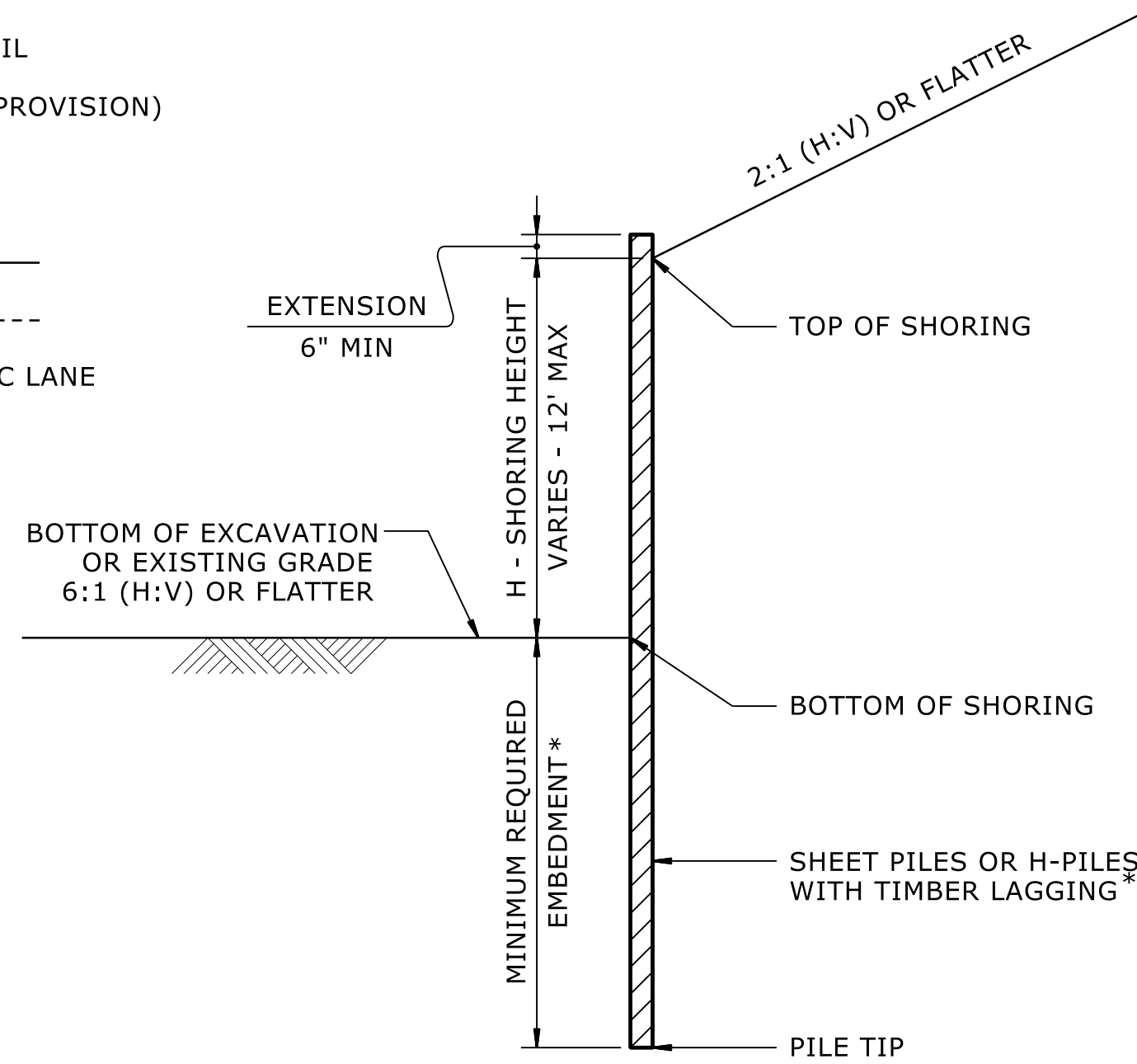
CONCRETE BARRIER

**TOP OF SHORING =
EDGE OF PAVEMENT



TEMPORARY GUARDRAIL

****GUARDRAIL FACE =
EDGE OF PAVEMENT**



STANDARD TEMPORARY SHORING

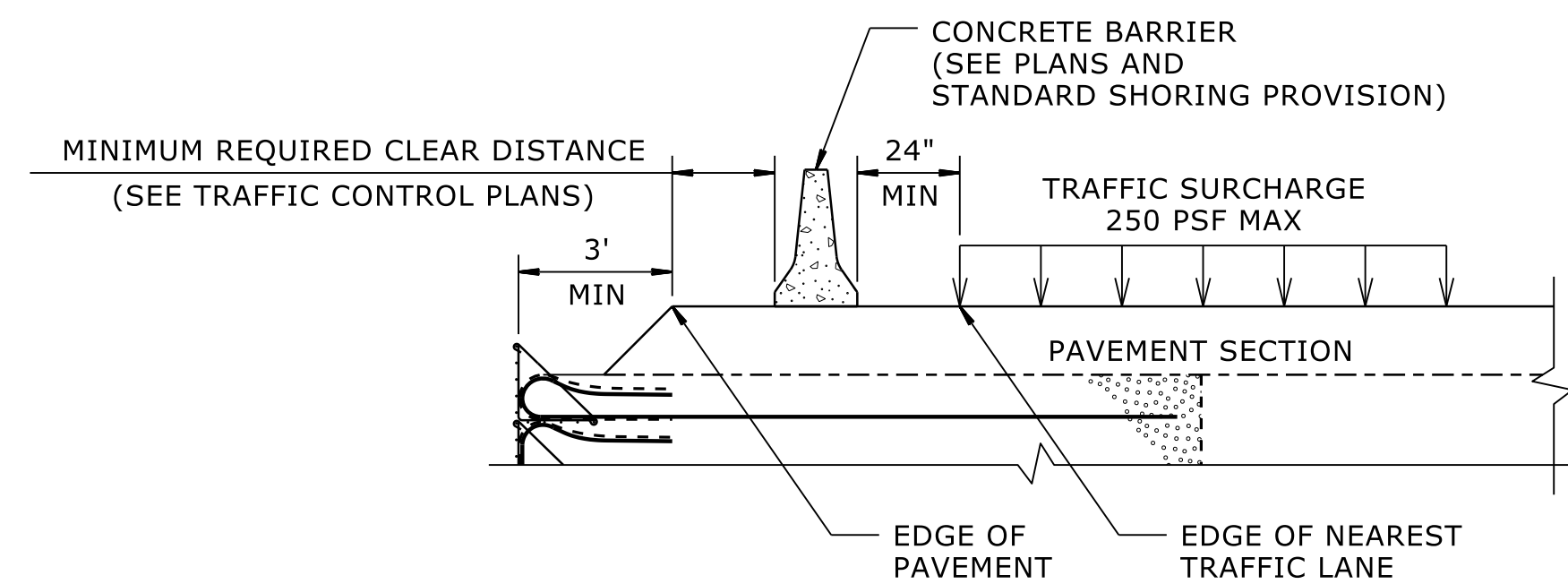
(SLOPE CASE)
*SEE TABLE ABOVE.

STANDARD TEMPORARY SHORING

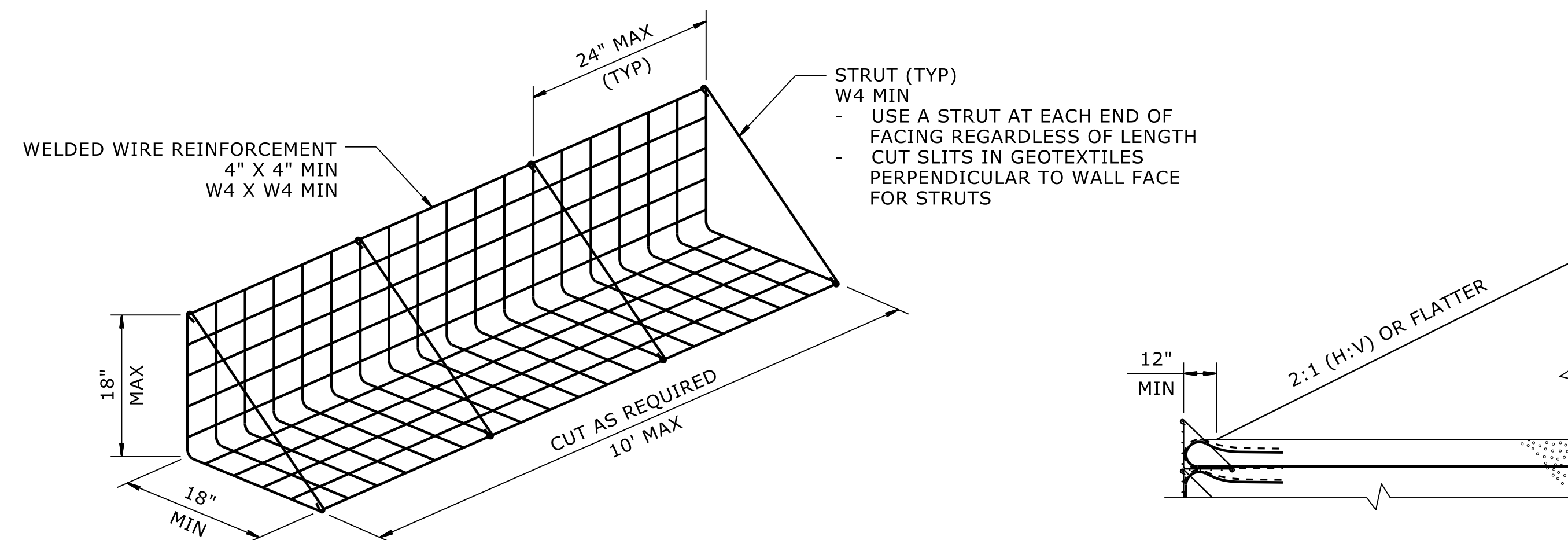
(SURCHARGE CASE)
*SEE TABLE ABOVE.

NOTES:

1. AT THE CONTRACTOR'S OPTION, USE STANDARD TEMPORARY SHORING AS NOTED IN THE PLANS.
2. FOR STANDARD TEMPORARY SHORING, SEE STANDARD SHORING PROVISION.
3. 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
4. DO NOT USE STANDARD TEMPORARY SHORING IF ASSUMED SOIL PARAMETERS ARE NOT APPLICABLE.
5. DO NOT USE STANDARD TEMPORARY SHORING WHEN VERY LOOSE OR SOFT SOIL OR MUCK IS WITHIN THE EMBEDMENT DEPTH.
6. 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.
7. 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".
8. 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".
9. MINIMUM REQUIRED EXTENSION IS 6" FOR "SLOPE OR SURCHARGE CASE WITH NO TRAFFIC IMPACT" AND 32" FOR "SURCHARGE CASE WITH TRAFFIC IMPACT".
10. 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.
11. 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
12. CONTACT THE ENGINEER IF PILES DO NOT ATTAIN THE MINIMUM REQUIRED EMBEDMENT.

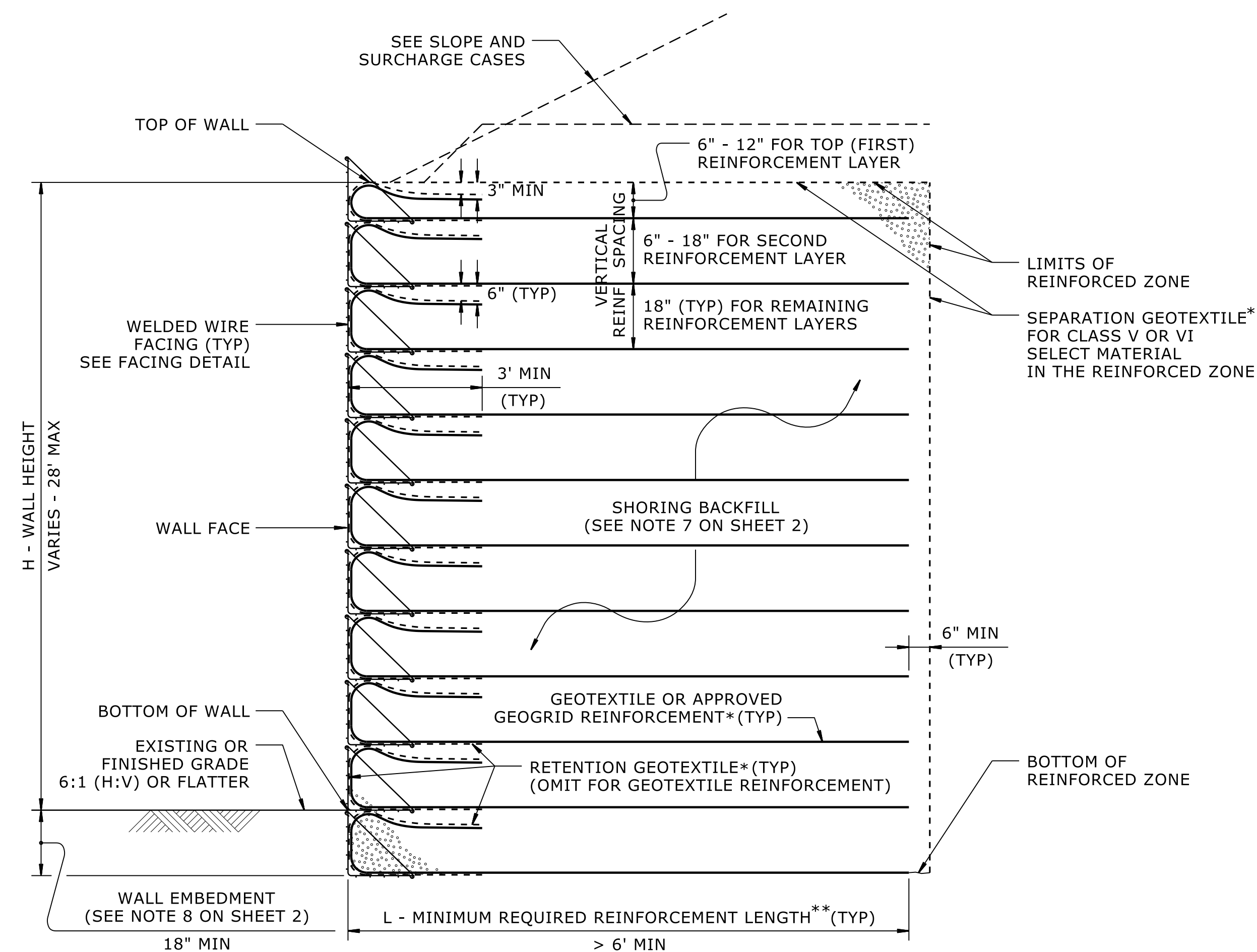


SURCHARGE CASE



FACING DETAIL

SLOPE CASE

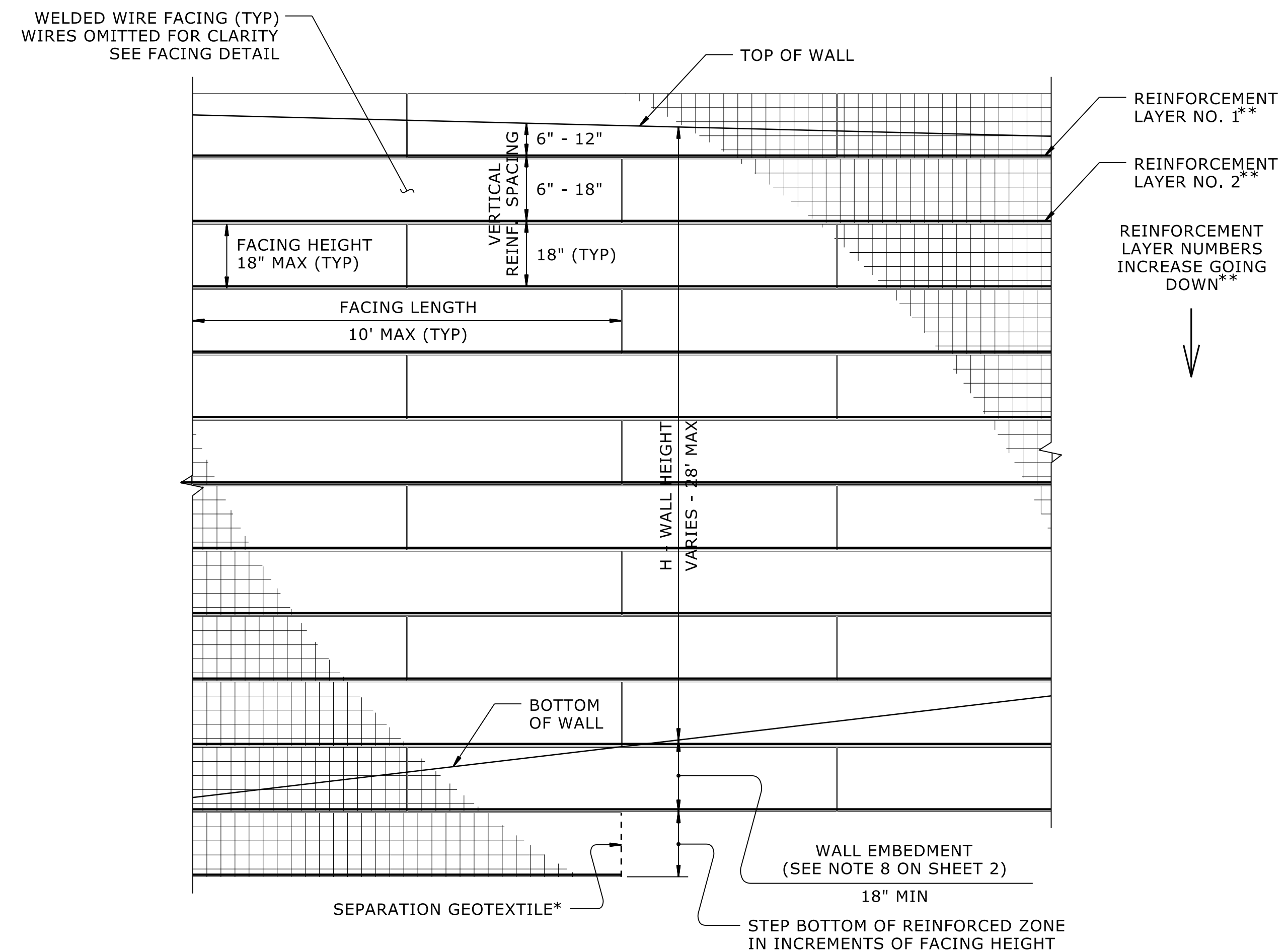


STANDARD TEMPORARY WALL

(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

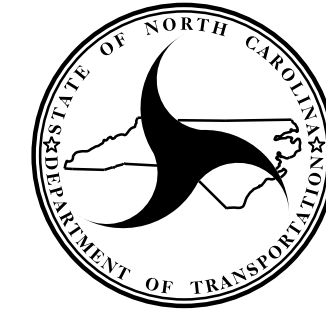
*SEE GEOSYNTHETIC PLACEMENT DETAILS ON SHEET 2.

**SEE REINFORCEMENT TABLES ON SHEET 3.

B-5541

2G-2 -

NORTH CAROLINA
DEPARTMENT
OF TRANSPORTATION



GEOTECHNICAL
ENGINEERING UNIT

GEOTECHNICAL
ENGINEER

Scott A. Hildebrand
12/2025

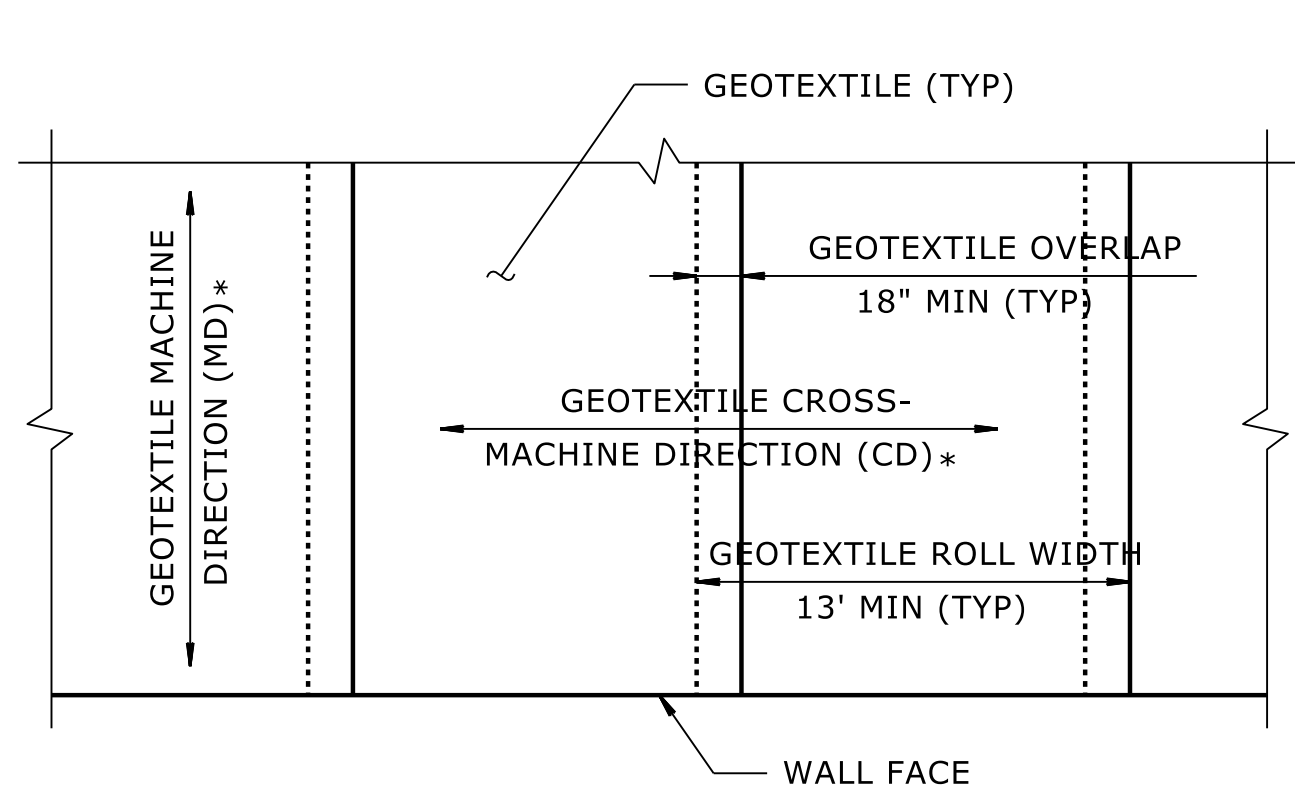


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STANDARD
DETAIL NO. 1801.02

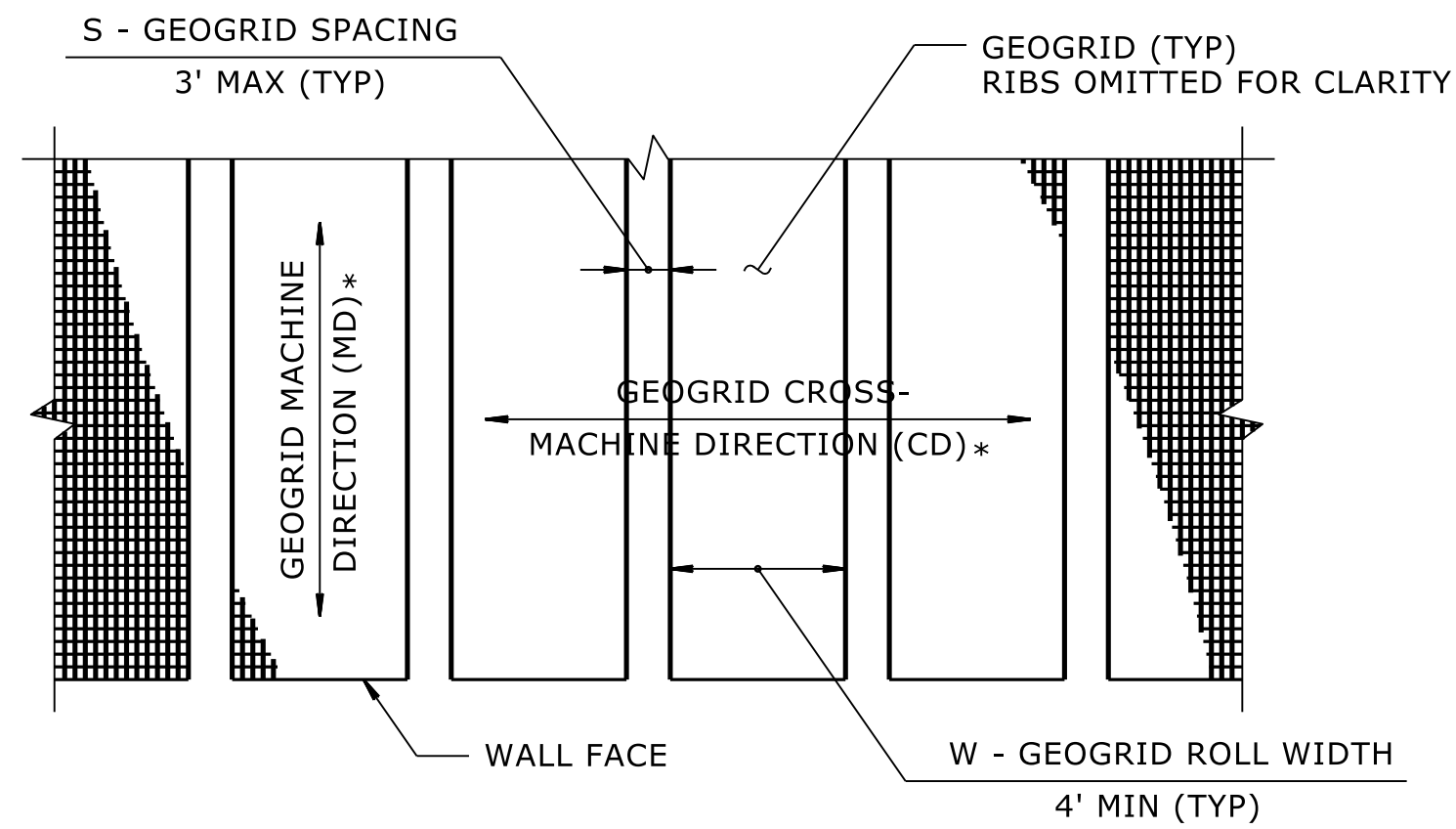
GEOTECHNICAL STANDARD DETAIL FOR

TEMPORARY WALL (SHEET 1 OF 3)



GEOTEXTILE PLACEMENT

(100% COVERAGE MIN FOR
GEOTEXTILE REINFORCEMENT)

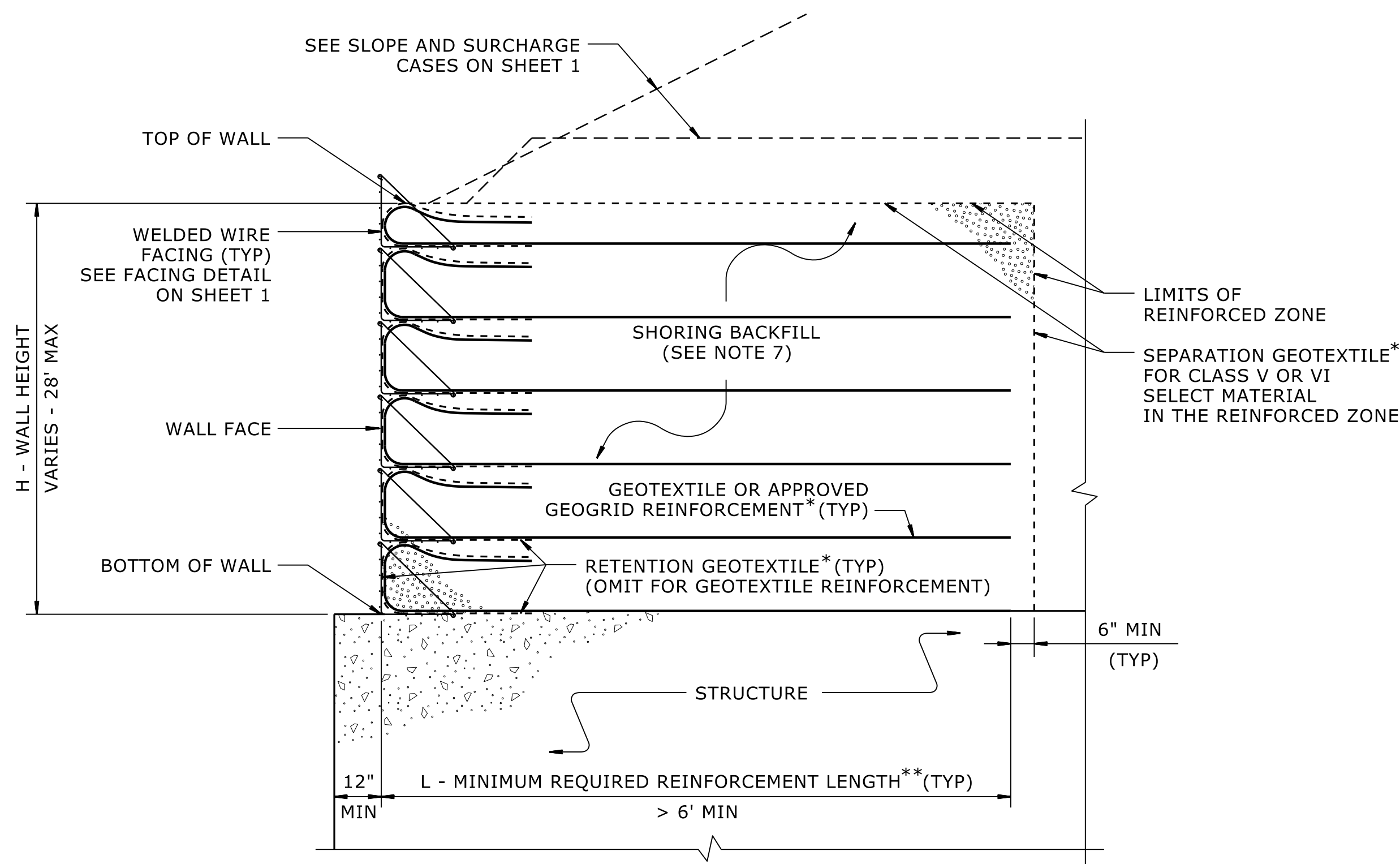


GEOGRID PLACEMENT

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

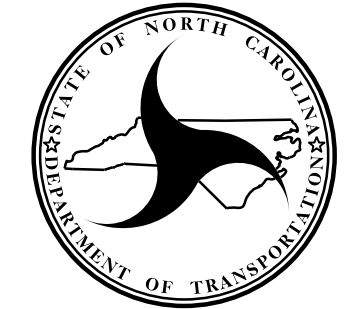
MATERIAL TYPE	SHORING BACKFILL
BORROW	A-2-4 SOIL
FINE AGGREGATE	CLASS II, TYPE 1 OR CLASS III SELECT MATERIAL
COARSE AGGREGATE	CLASS V OR VI SELECT MATERIAL

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.

B-5541

2G-3 -

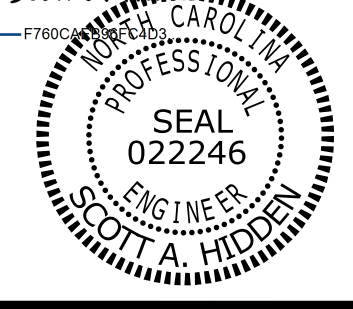
NORTH CAROLINA
DEPARTMENT
OF TRANSPORTATION



GEOTECHNICAL
ENGINEERING UNIT

GEOTECHNICAL
ENGINEER

DocuSigned by:
Scott A. Hiden 03/12/2025



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STANDARD
DETAIL NO. 1801.02

GEOTECHNICAL STANDARD DETAIL FOR

TEMPORARY WALL (SHEET 2 OF 3)

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)

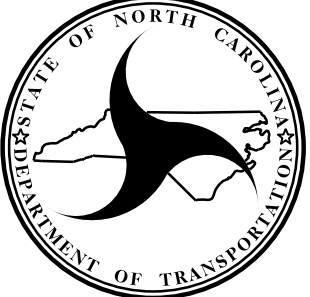
(SEE NOTE 10 ON SHEET 2.)

B-5541

2G-4

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NORTH CAROLINA DEPARTMENT OF TRANSPORTATION



GEOTECHNICAL ENGINEERING UNIT

GEOTECHNICAL ENGINEER

Document by: *Scott A. Hiden* 03/12/2025



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STANDARD
DETAIL NO. 1801.02

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

COMPUTED BY: _____	CMM	DATE: _____	6/2/2025
CHECKED BY: _____	WJW	DATE: _____	6/2/2025

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

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

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

[illegible]

COMPUTED BY: J. B. Barfield DATE: 3/26/25
CHECKED BY: S Yang DATE: 3/26/2025

(9-17-24)

PROJECT NO.	SHEET NO.
B-5541	3G-1

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SUMMARY OF SUBSURFACE DRAINAGE

LINE	Station	Station	Location LT/RT/CL	Drain Type* UD/BD/SD	LF
CONTINGENCY				SD	400
				TOTAL LF:	400

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

SUMMARY OF ROCK PLATING

LINE	Beginning Slope (H:V)	Approx. Station	Ending Slope (H:V)	Approx. Station	Location LT/RT	Rock Plating Detail No. 1/2/3/4	Riprap Class* 1/2/B	Rock Plating SY
-L-	1.5:1	29+80 +/-	Wall	30+15.79	RT	2	2	925
							TOTAL SY:	925

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

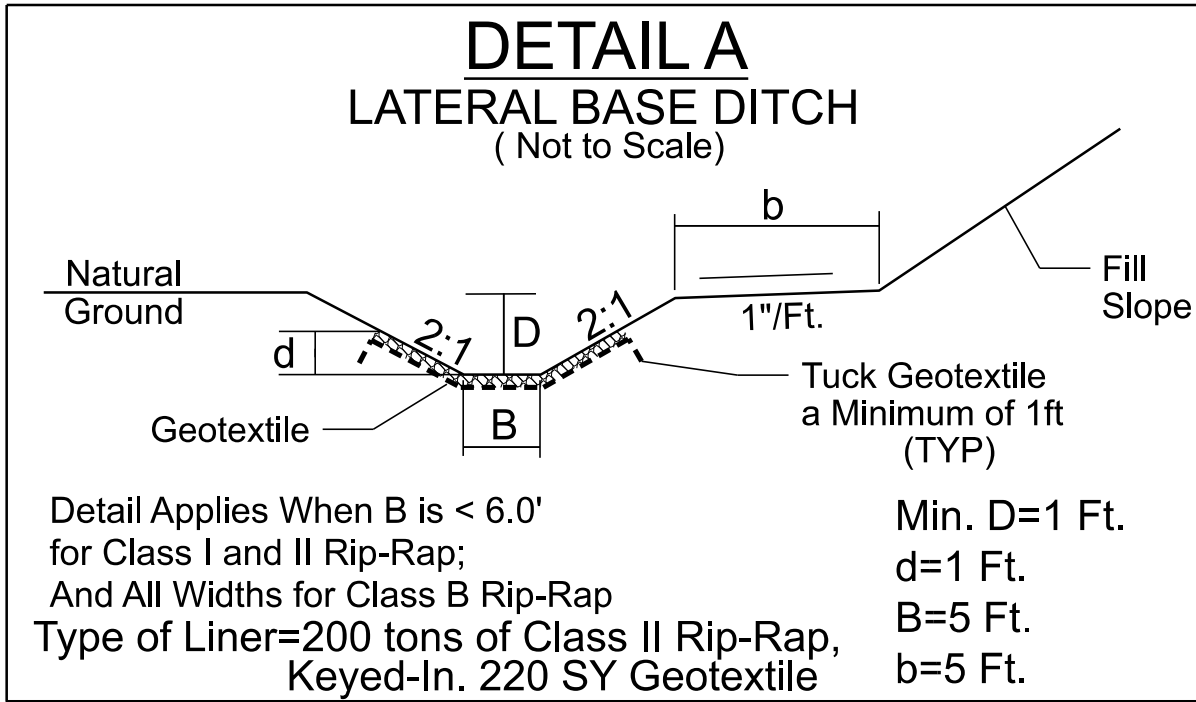
SUMMARY OF AGGREGATE SUBGRADE/STABILIZATION

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-	28+00	28+83	ASU(1)	8	0	200	500		
-L-	30+00	30+50	ASU(1)	8	0	150	300		
-L-	30+50	31+00	ASU(1)	8	0	350	750		
-L-	31+00	33+00	ASU(1)	8	0	500	1200		
CONTINGENCY			ASU(1)	8	50				
CONTINGENCY			AST	3				350	
CONTINGENCY			ASU(1)	12	235	470	705		
			TOTAL CY/TONS/SY:		285	1670**	3455**	350	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.

CUR DATA -L-
Plc 13+40.42
 $\Delta c = 03^{\circ}23'32.5''$ (RT)
D = 00°29'54.2"
Lc = 680.65
Tc = 340.42
R = 11,495.89
SE = EXIST

CUR DATA -L-
Plc 20+95.09
 $\Delta c = 02^{\circ}04'19.4''$ (RT)
D = 00°26'26.7"
Lc = 470.13
Tc = 235.09
R = 13,000
SE = 0.02



FROM -L- STA. 19+35 TO STA. 18+00 RT, DDE = 390 CY

PROPOSED PAVED SHOULDER

FOR -L- PROFILE SEE SHEET 7, 8, & 9

REVISIONS

B-5541
R/W 04
NORTH CAROLINA
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HAYWOOD COUNTY

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CUR DATA -SR1-
Plc 15+26.73
 $\Delta c = 01^{\circ}27'08.5''$ (RT)
D = $00^{\circ}38'48.0''$
Lc = 224.59
Tc = 112.30
R = 8,860
SE = EXIST

CUR DATA -SR1-
Plc 17+21.38
 $\Delta c = 26^{\circ}29'01.4''$ (LT)
D = $16^{\circ}22'12.8''$
Lc = 161.78
Tc = 82.36
R = 350
SE = EXIST

CUR DATA -SR1-
Plc 18+28.77
 $\Delta c = 02^{\circ}47'12.3''$ (RT)
D = $04^{\circ}58'56.1''$
Lc = 55.93
Tc = 27.97
R = 1,150
SE = EXIST

CUR DATA -SR1-
Plc 19+60.34
 $\Delta c = 51^{\circ}02'38.1''$ (RT)
D = $26^{\circ}24'12.9''$
Lc = 193.32
Tc = 103.61
R = 217
SE = 0.04

MYRA D. STEADMAN
JOSEPH C. STEADMAN
RB 1101 PG 925

END CONSTRUCTION
-Y1- POT STA. 26+50.00

BEGIN CONSTRUCTION
-SR1- POC STA. 18+50.00

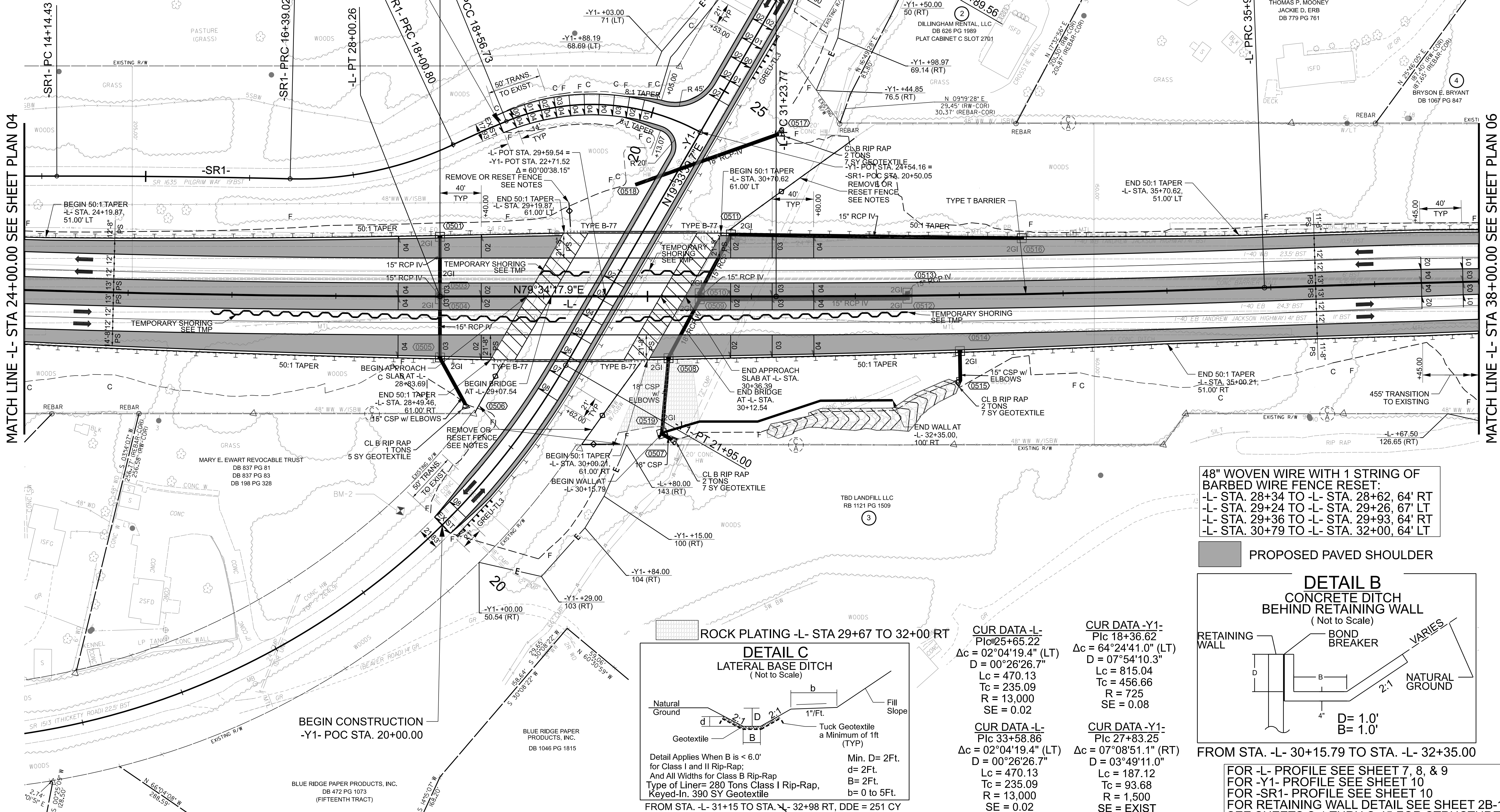
-SR1- PC 14+14.43

-SR1- PRC 16+39.02
-L- PT 28+00.26

MATCH LINE -L- STA 24+00.00 SEE SHEET PLAN 04

MATCH LINE -L- STA 38+00.00 SEE SHEET PLAN 06

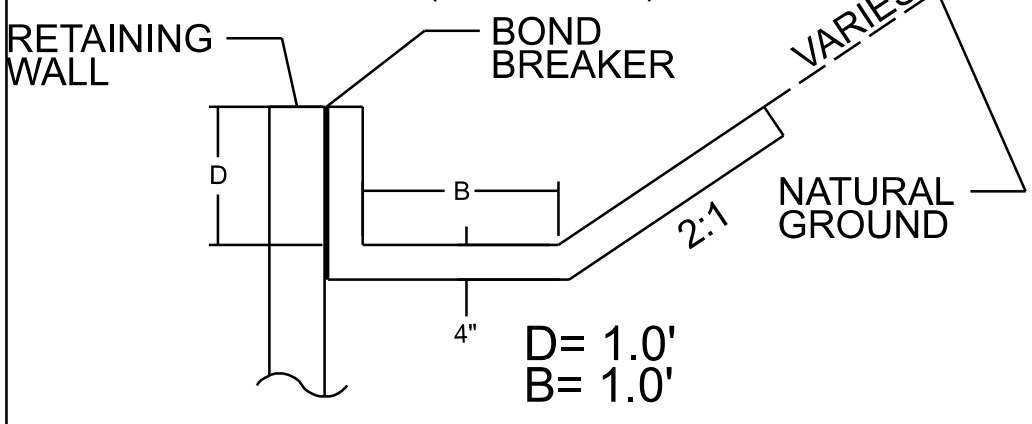
FENCE REMOVAL:
-L- STA. 28+62, 64' RT TO -L- STA. 28+68, 52' RT
-L- STA. 29+26, 52' LT TO -L- STA. 29+26, 67' LT
-L- STA. 29+93, 64' RT TO -L- STA. 30+25, 21' RT
-L- STA. 30+66, 54' LT TO -L- STA. 30+79, 64' LT



48" WOVEN WIRE WITH 1 STRING OF
BARBED WIRE FENCE RESET:
-L- STA. 28+34 TO -L- STA. 28+62, 64' RT
-L- STA. 29+24 TO -L- STA. 29+26, 67' LT
-L- STA. 29+36 TO -L- STA. 29+93, 64' RT
-L- STA. 30+79 TO -L- STA. 32+00, 64' LT

PROPOSED PAVED SHOULDER

DETAIL B
CONCRETE DITCH
BEHIND RETAINING WALL
(Not to Scale)

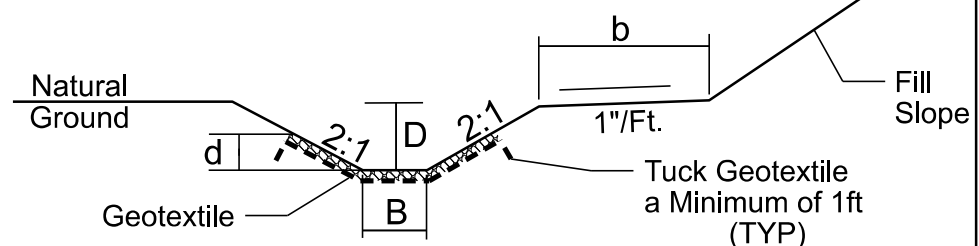


FROM STA. -L- 30+15.79 TO STA. -L- 32+35.00

FOR -L- PROFILE SEE SHEET 7, 8, & 9
FOR -Y1- PROFILE SEE SHEET 10
FOR -SR1- PROFILE SEE SHEET 10
FOR RETAINING WALL DETAIL SEE SHEET 2B-1
SEE SHEETS S-1 THRU S-45 FOR STRUCTURE PLANS

ROCK PLATING -L- STA 29+67 TO 32+00 RT

DETAIL C
LATERAL BASE DITCH
(Not to Scale)



Detail Applies When B is < 6.0'
for Class I and II Rip-Rap:
And All Widths for Class B Rip-Rap
Type of Liner= 280 Tons Class I Rip-Rap,
Keyed-In. 390 SY Geotextile
FROM STA. -L- 31+15 TO STA. -L- 32+98 RT, DDE = 251 CY

CUR DATA -L-
Plc 25+65.22
 $\Delta c = 02^{\circ}04'19.4''$ (LT)
D = $00^{\circ}26'26.7''$
Lc = 470.13
Tc = 235.09
R = 13,000
SE = 0.02

CUR DATA -L-
Plc 33+58.86
 $\Delta c = 02^{\circ}04'19.4''$ (LT)
D = $00^{\circ}26'26.7''$
Lc = 470.13
Tc = 235.09
R = 13,000
SE = 0.02

CUR DATA -Y1-
Plc 18+36.62
 $\Delta c = 64^{\circ}24'41.0''$ (LT)
D = $07^{\circ}54'10.3''$
Lc = 815.04
Tc = 456.66
R = 725
SE = 0.08

CUR DATA -Y1-
Plc 27+83.25
 $\Delta c = 07^{\circ}08'51.1''$ (RT)
D = $03^{\circ}49'11.0''$
Lc = 187.12
Tc = 93.68
R = 1,500
SE = EXIST

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B-5541
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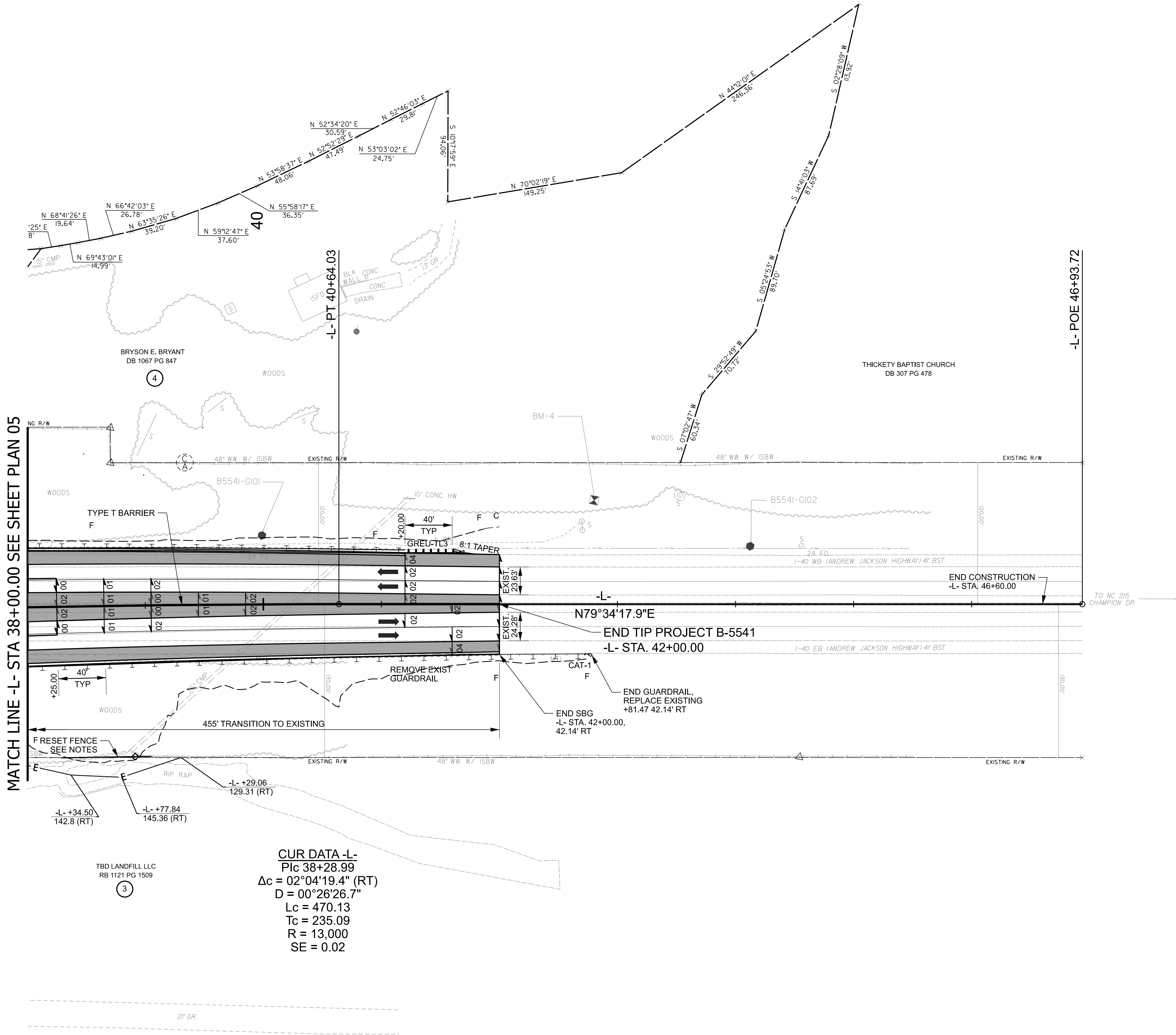
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48" WOVEN WIRE WITH 1 STRING OF BARBED WIRE FENCE RESET:
-L- STA. 38+05 TO -L- STA. 39+04, 128' RT

PROPOSED PAVED SHOULDER

FOR -L- PROFILE SEE SHEET 7, 8, & 9

8-5541

R/W06

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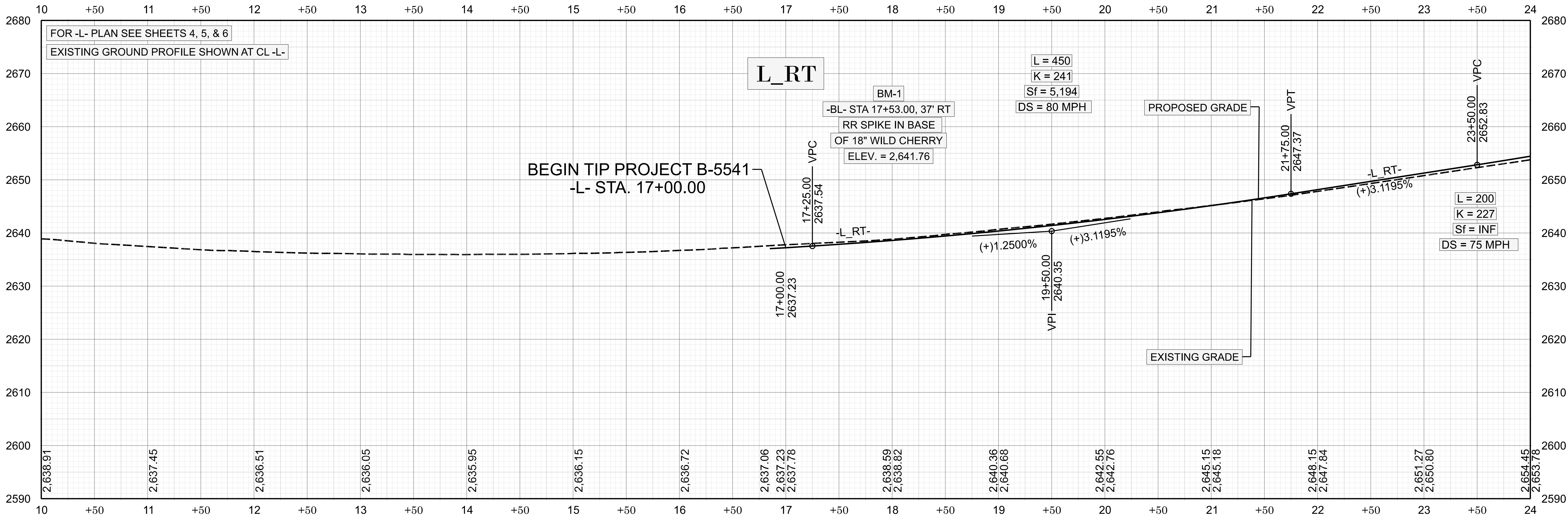
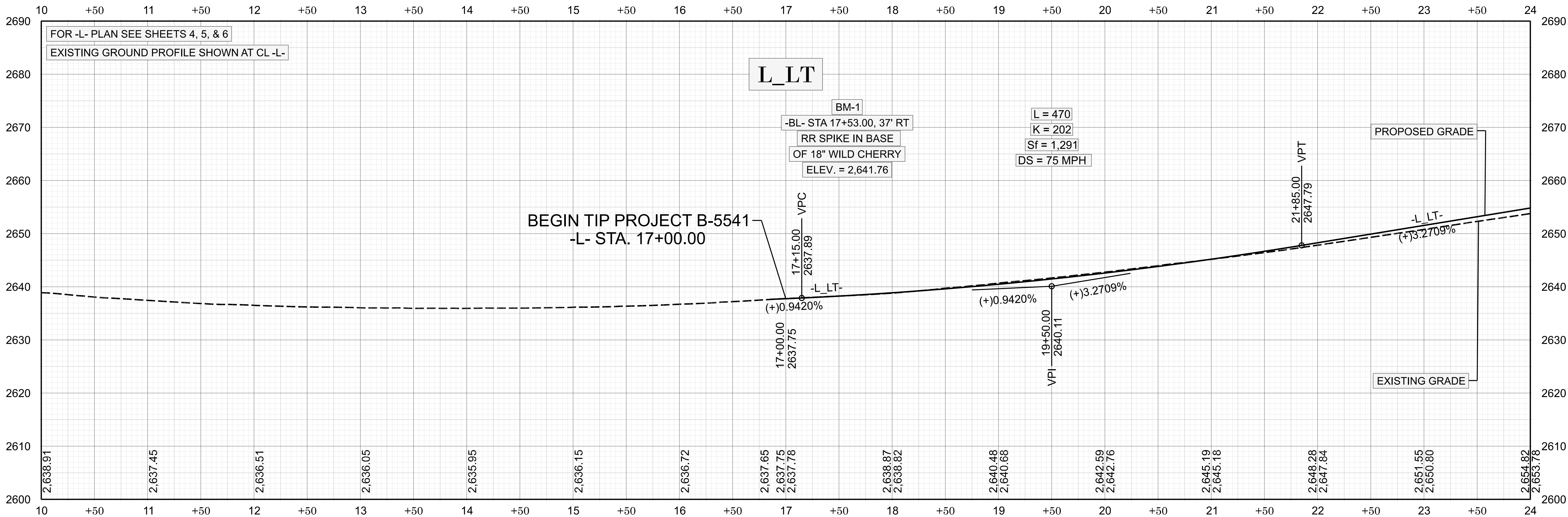
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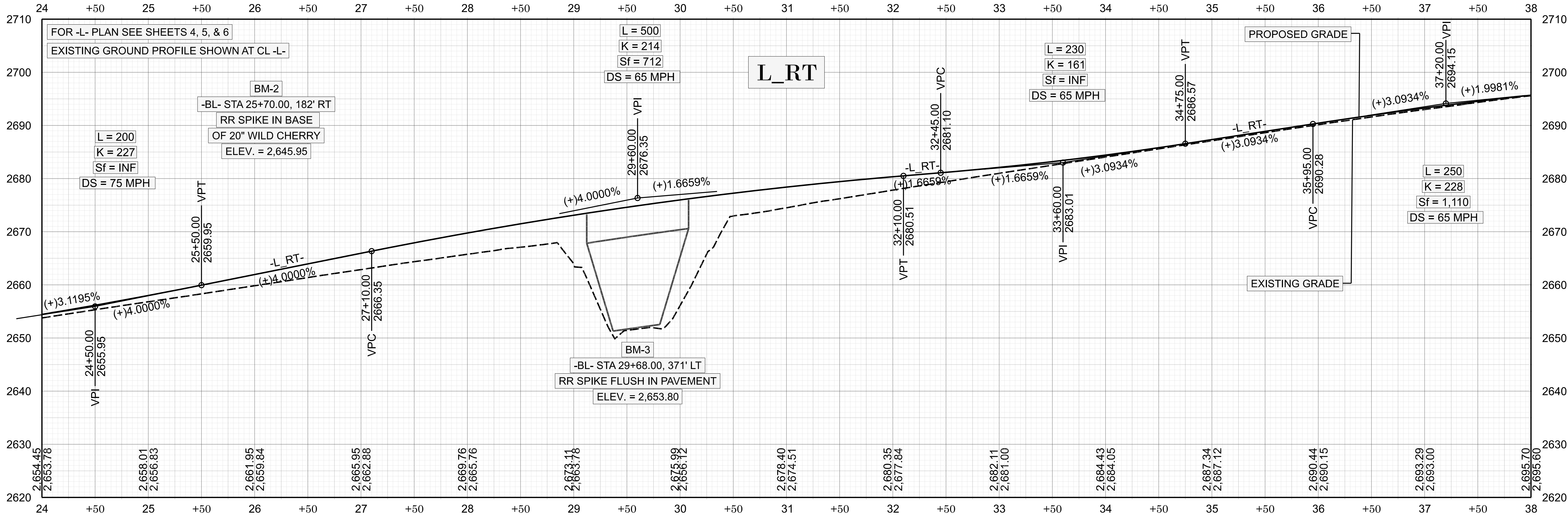
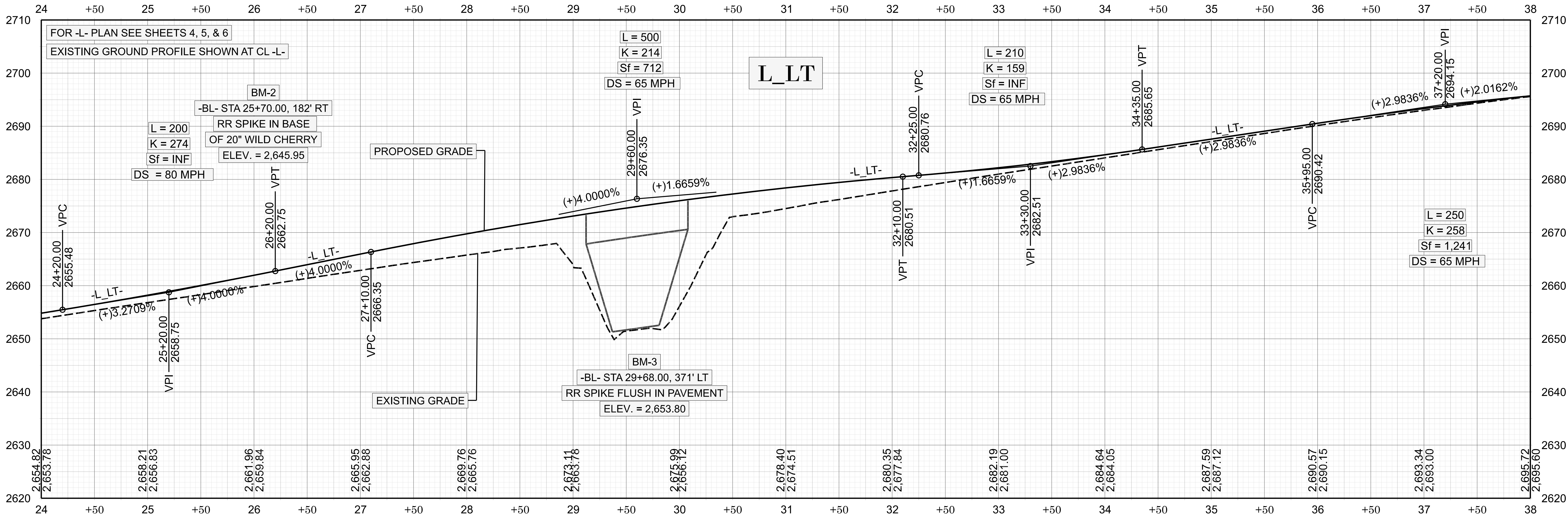
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Scott Clark
Professional Engineer

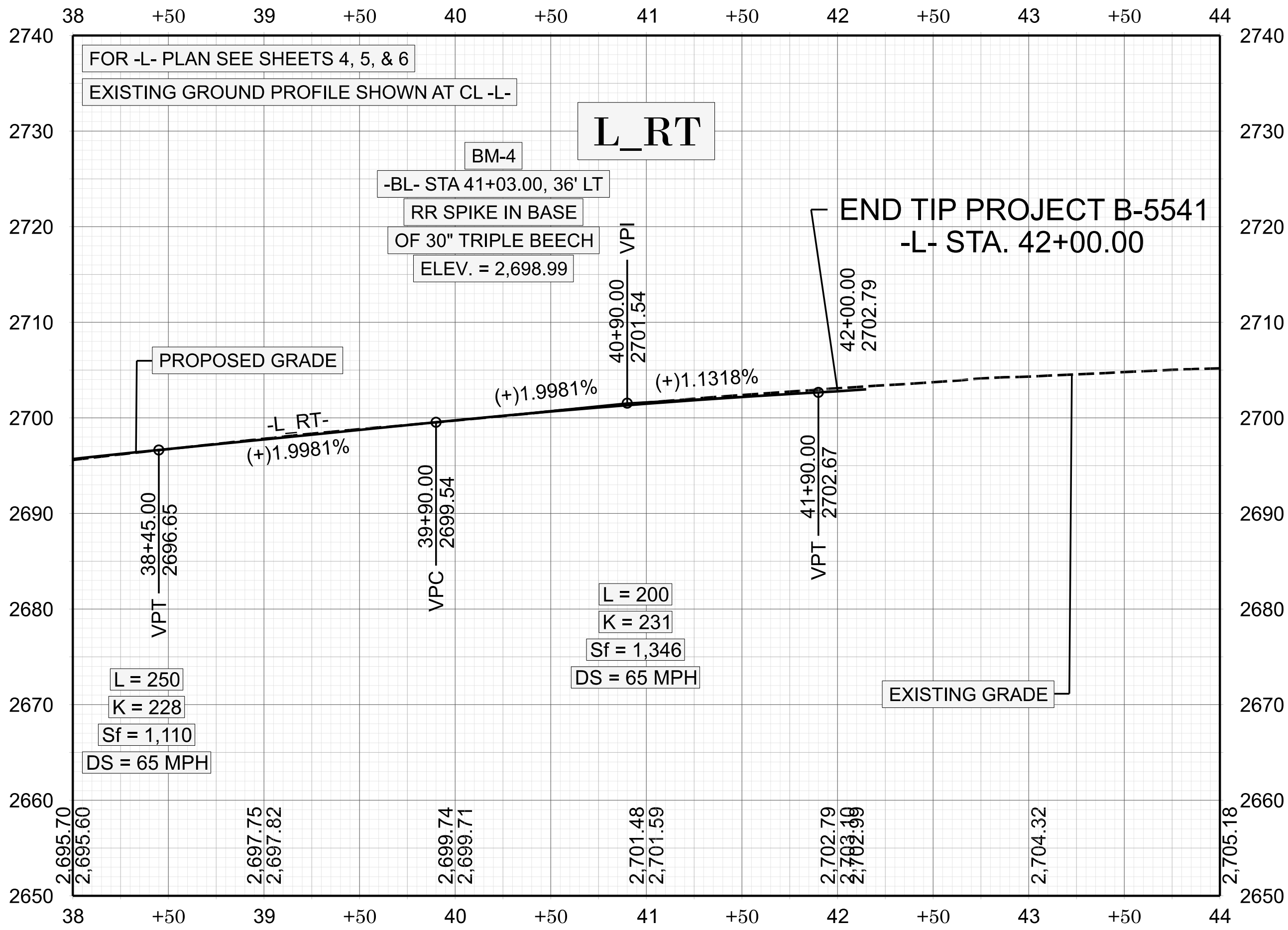
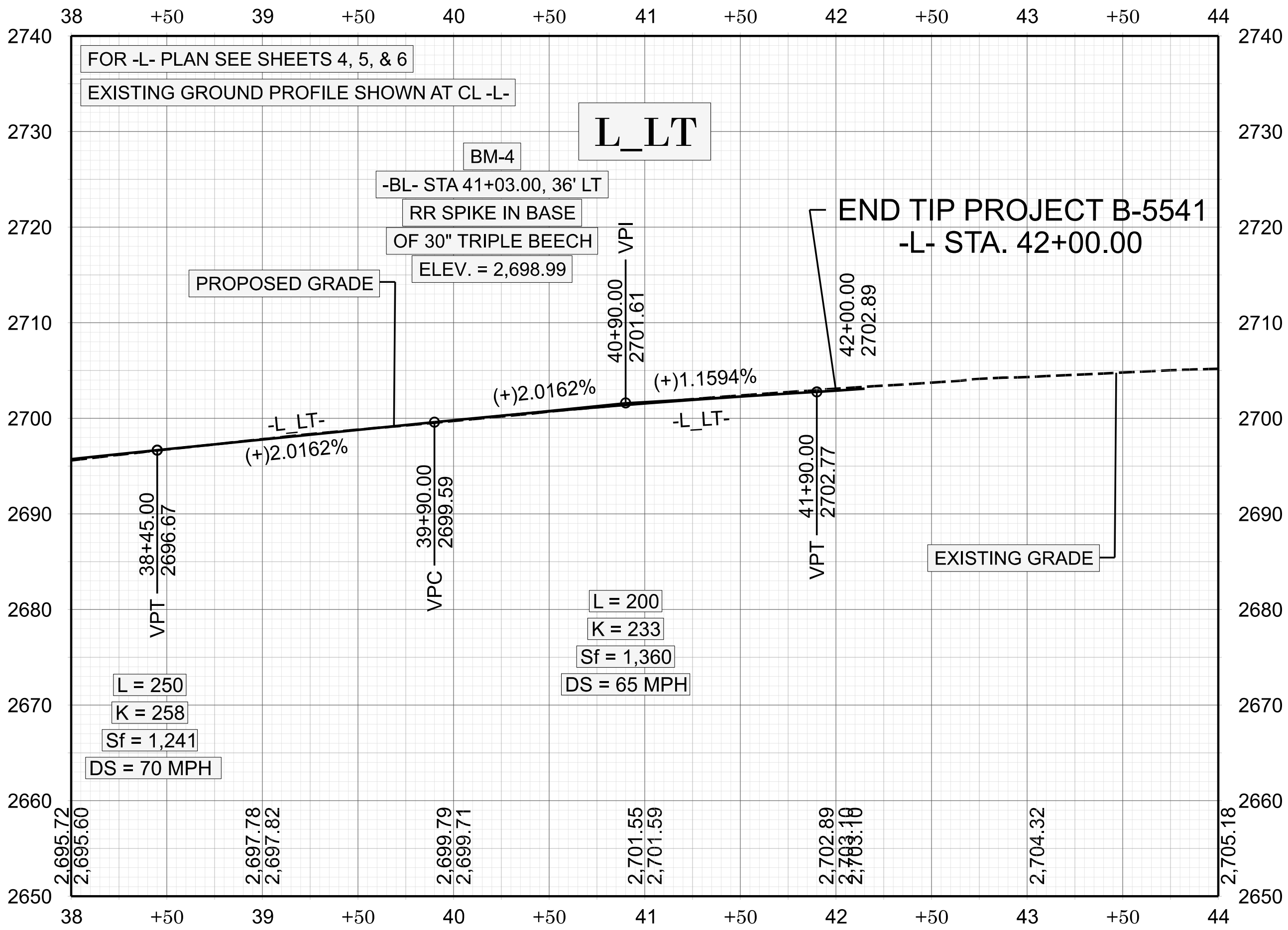
Will Weatherford
Professional Engineer

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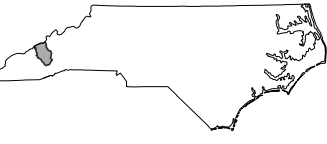
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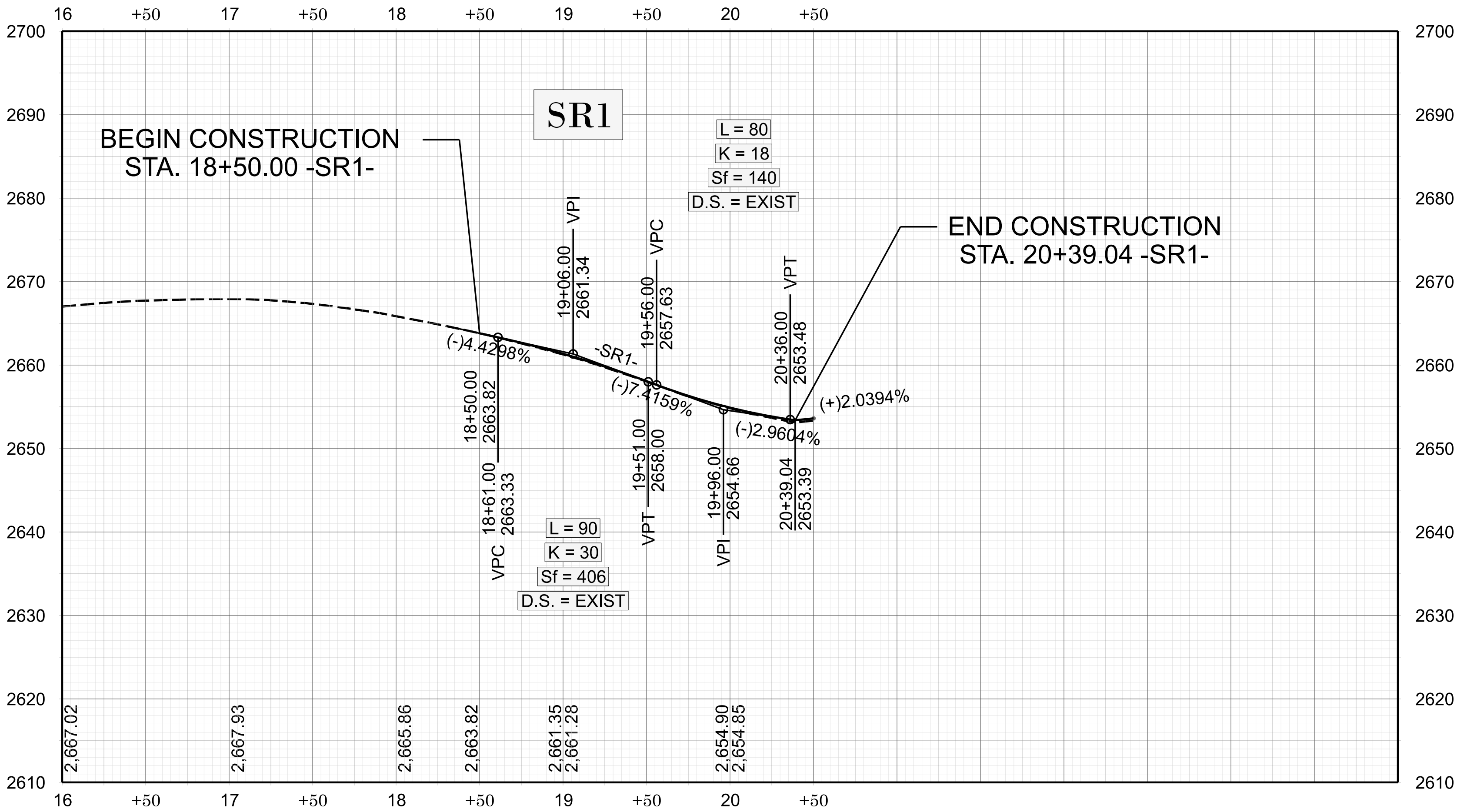
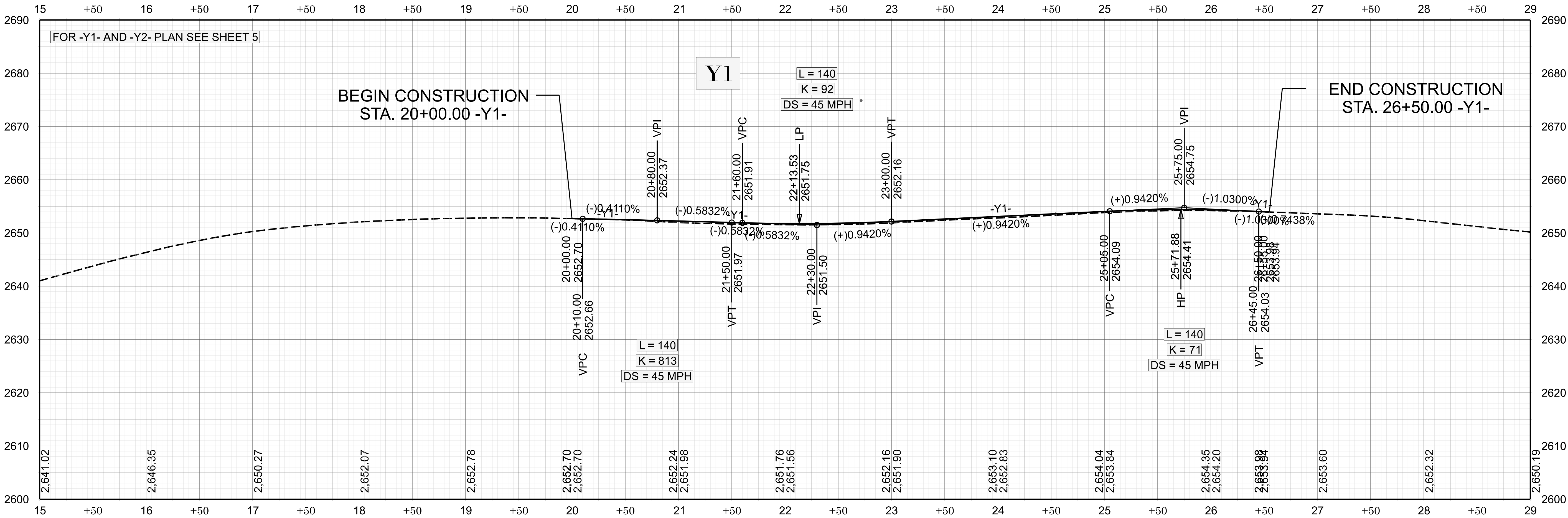


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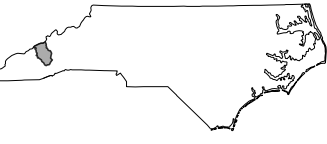
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