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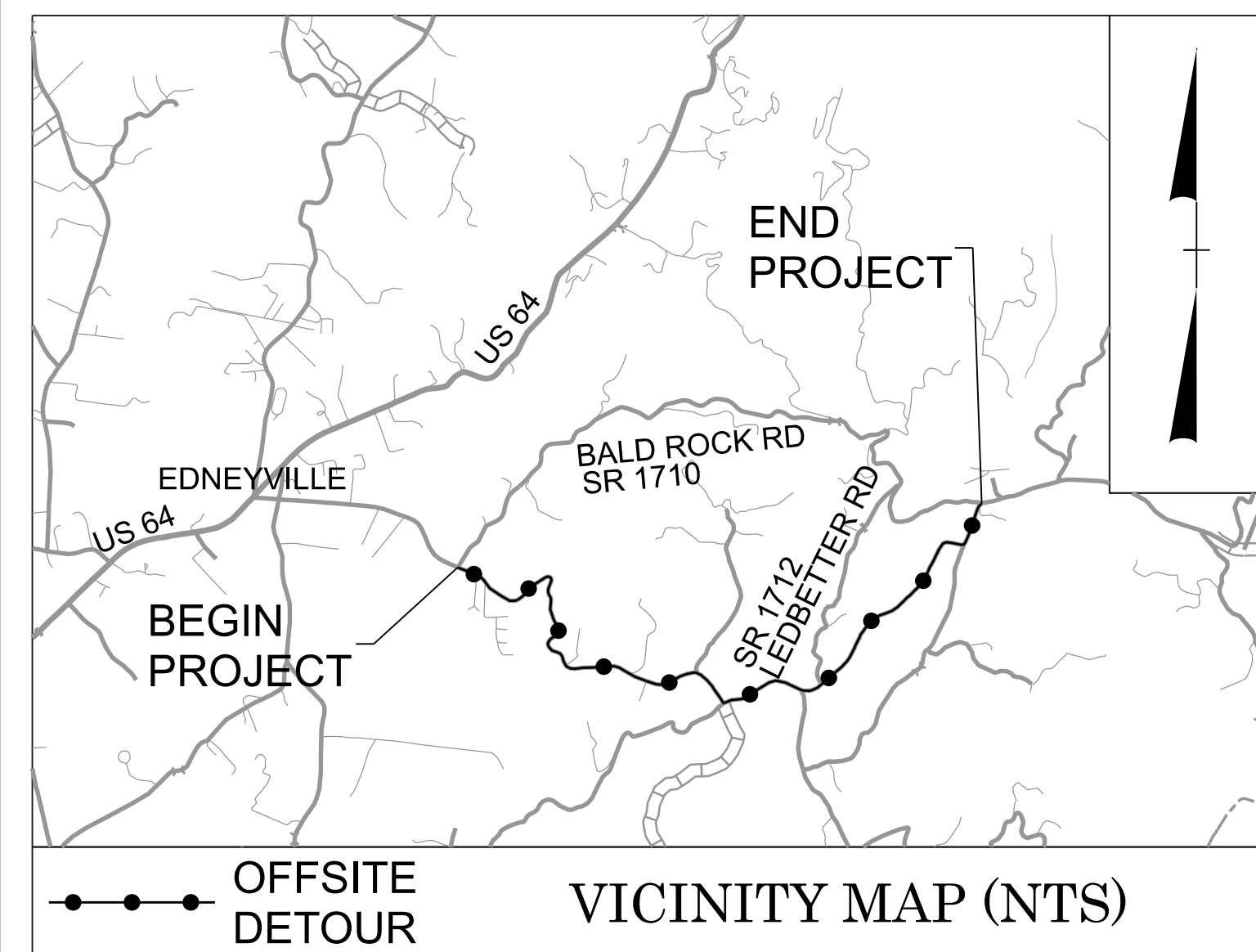
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WBS: DF18314.2045060

CONTRACT: DN01128

See Sheet 1A For Index of Sheets



STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS

HENDERSON COUNTY

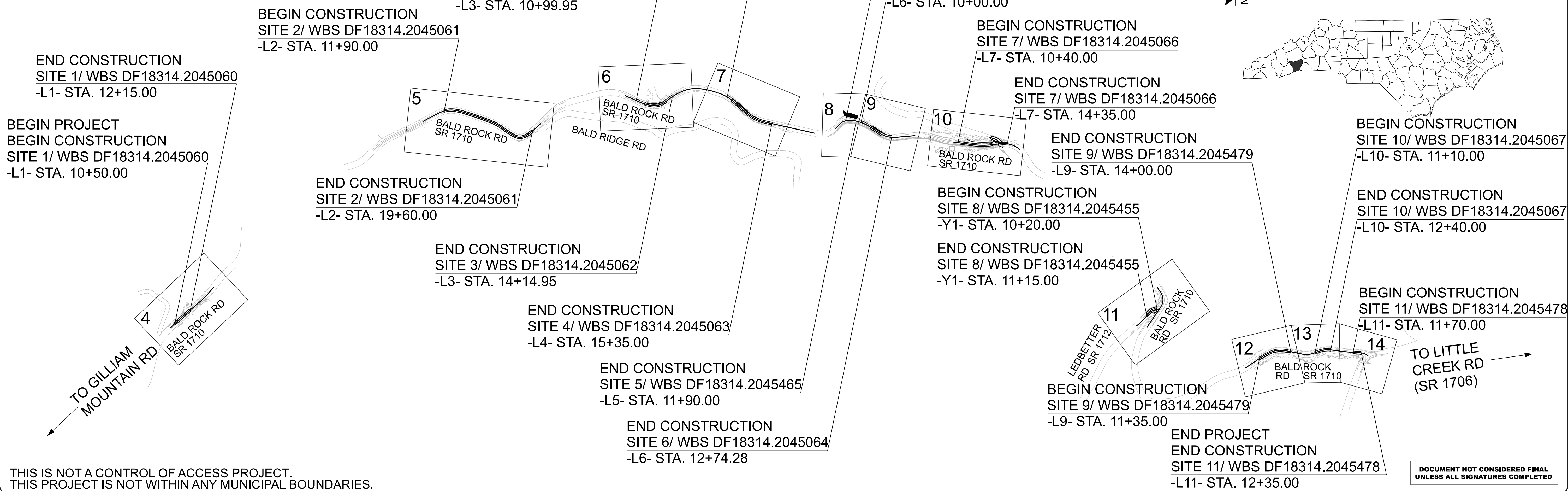
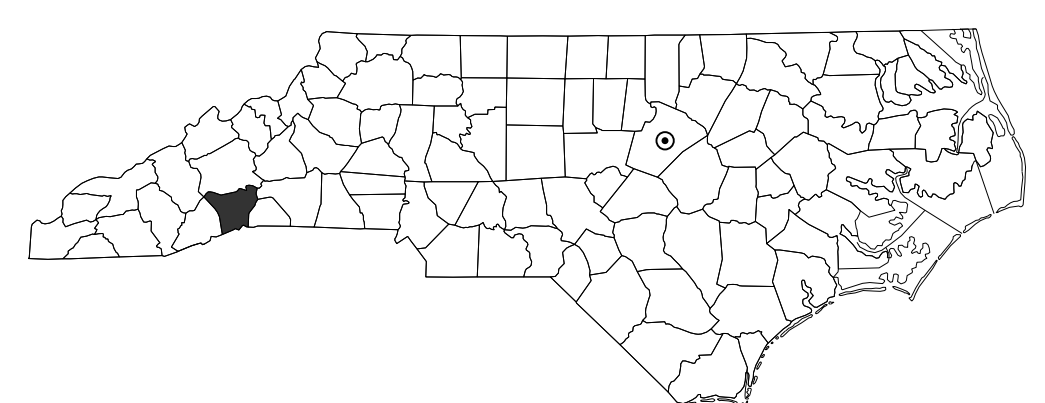
LOCATION: *SLOPE AND PAVEMENT REPAIRS ALONG BALD
ROCK ROAD (SR 1710) FROM HURRICANE HELENE*

TYPE OF WORK: *GRADING, DRAINAGE, PAVING, WIDENING*

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	DF18314.2045060	11	

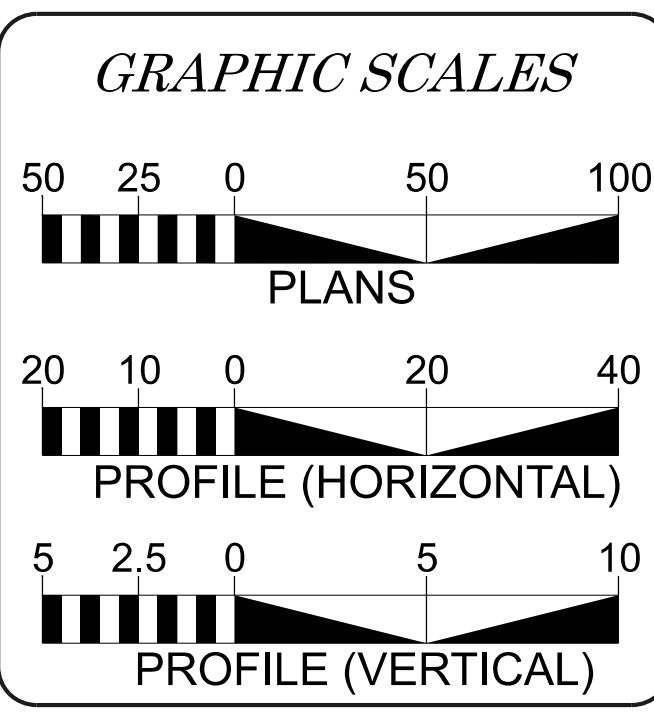
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
DF18314.2045060	N/A	PE, RW, UTIL., CONST.
DF18314.2045061	N/A	PE, RW, UTIL., CONST.
DF18314.2045062	N/A	PE, RW, UTIL., CONST.
DF18314.2045063	N/A	PE, RW, UTIL., CONST.
DF18314.2045465	N/A	PE, RW, UTIL., CONST.
DF18314.2045064	N/A	PE, RW, UTIL., CONST.
DF18314.2045066	N/A	PE, RW, UTIL., CONST.
DF18314.2045455	N/A	PE, RW, UTIL., CONST.
DF18314.2045479	N/A	PE, RW, UTIL., CONST.
DF18314.2045067	N/A	PE, RW, UTIL., CONST.
DF18314.2045478	N/A	PE, RW, UTIL., CONST.

FINAL PLAN SET
Plans Developed with
OpenRoads (ORD)



THIS IS NOT A CONTROL OF ACCESS PROJECT.
THIS PROJECT IS NOT WITHIN ANY MUNICIPAL BOUNDARIES.

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED



DESIGN DATA

ADT 2025 =	500
ADT 2045 =	600
K =	N/A %
D =	N/A %
T =	3 % *
** V =	35 MPH
* TTST =	1% DUAL 2%
FUNC CLASS =	LOCAL RURAL
SUBREGIONAL TIER	

PROJECT LENGTH

LENGTH ROADWAY PROJECT WBS PROJECT DF18314.2045060	=	0.565 MILES
TOTAL LENGTH PROJECT WBS PROJECT DF18314.2045060	=	0.565 MILES

Prepared in the Office of: **KCA**
KISINGER CAMPO & ASSOCIATES

NC FIRM LICENSE No: C-1506
301 Fayetteville St., Suite 1500
Raleigh, NC 27601
(919)862-7839

2024 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: N/A

LETTING DATE: SEPTEMBER 23, 2025

NIKKI T. HONEYCUTT, P.E.
PROJECT ENGINEER

ALLEN J. MCSWAIN
PROJECT DESIGNER

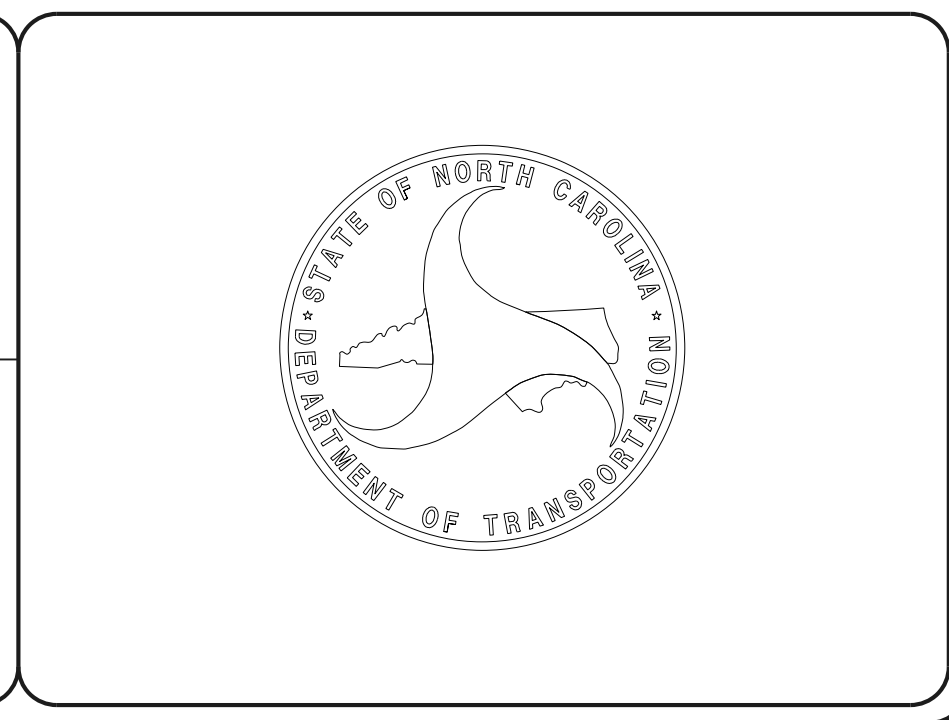
BARRY MOSTELLER
NCDOT CONTACT

HYDRAULICS ENGINEER
7/29/2025

Signed by: **Erik P. Adland**
151995624805491
P.E.

ROADWAY DESIGN ENGINEER
7/29/2025

Signed by: **Nikki Honeycutt**
030117023618468
P.E.



INDEX OF SHEETS

SHEET NUMBER	SHEET
1	TITLE SHEET
1A-1 THRU 1A-2	INDEX OF SHEETS, GENERAL NOTES, AND STANDARD DRAWINGS
1B	CONVENTIONAL SYMBOLS
2A-1	PAVEMENT SCHEDULE AND TYPICAL SECTIONS - SITE # 1
2A-2	PAVEMENT SCHEDULE AND TYPICAL SECTIONS - SITE # 2
2A-3	PAVEMENT SCHEDULE AND TYPICAL SECTIONS - SITE # 3
2A-4	PAVEMENT SCHEDULE AND TYPICAL SECTIONS - SITE # 4
2A-5	PAVEMENT SCHEDULE AND TYPICAL SECTIONS - SITE # 5
2A-6	PAVEMENT SCHEDULE AND TYPICAL SECTIONS - SITE # 6
2A-7	PAVEMENT SCHEDULE AND TYPICAL SECTIONS - SITE # 7
2A-8	PAVEMENT SCHEDULE AND TYPICAL SECTIONS - SITE # 8
2A-9	PAVEMENT SCHEDULE AND TYPICAL SECTIONS - SITE # 9
2A-10	PAVEMENT SCHEDULE AND TYPICAL SECTIONS - SITE # 10
2A-11	PAVEMENT SCHEDULE AND TYPICAL SECTIONS - SITE # 11
2C-1 THRU 2C-3	SPECIAL DETAILS
2G-1A THRU 2G-1B	GEOTECHNICAL DETAILS - SITE # 1
2G-3A THRU 2G-3B	GEOTECHNICAL DETAILS - SITE # 3
2G-4A THRU 2G-4C	GEOTECHNICAL DETAILS - SITE # 4
2G-5A THRU 2G-5B	GEOTECHNICAL DETAILS - SITE # 5
2G-6A THRU 2G-6B	GEOTECHNICAL DETAILS - SITE # 6
2G-7	GEOTECHNICAL DETAILS - SITE # 7
2G-8	GEOTECHNICAL DETAILS - SITE # 8
2G-9	GEOTECHNICAL DETAILS - SITE # 9
2G-10	GEOTECHNICAL DETAILS - SITE # 10
2G-11	GEOTECHNICAL DETAILS - SITE # 11
3B-1	ROADWAY SUMMARIES - SITE # 1
3B-2	ROADWAY SUMMARIES - SITE # 2
3B-3	ROADWAY SUMMARIES - SITE # 3
3B-4	ROADWAY SUMMARIES - SITE # 4
3B-5	ROADWAY SUMMARIES - SITE # 5
3B-6	ROADWAY SUMMARIES - SITE # 6
3B-7	ROADWAY SUMMARIES - SITE # 7
3B-8	ROADWAY SUMMARIES - SITE # 8
3B-9	ROADWAY SUMMARIES - SITE # 9
3B-10	ROADWAY SUMMARIES - SITE # 10
3B-11	ROADWAY SUMMARIES - SITE # 11
3D-1	DRAINAGE SUMMARY
3G-1	GEOTECHNICAL SUMMARY
3P-1	PARCEL INDEX SHEET

INDEX OF SHEETS CONT.

SHEET NUMBER	SHEET
4	PLAN PROFILE SHEET - SITE # 1
5	PLAN PROFILE SHEET - SITE # 2
6	PLAN PROFILE SHEET - SITE # 3
7	PLAN PROFILE SHEET - SITE # 4
8	PLAN PROFILE SHEET - SITE # 5
9	PLAN PROFILE SHEET - SITE # 6
10	PLAN PROFILE SHEET - SITE # 7
11	PLAN PROFILE SHEET - SITE # 8
12	PLAN PROFILE SHEET - SITE # 9
13	PLAN PROFILE SHEET - SITE # 10
14	PLAN PROFILE SHEET - SITE # 11
RW02C-1 THRU RW02C-	* SURVEY CONTROL SHEETS
TMP-1 THRU TMP-6	TRAFFIC MANAGEMENT PLANS
PMP-1	PAVEMENT MARKING PLANS - SITE # 1
PMP-2	PAVEMENT MARKING PLANS - SITE # 2
PMP-3	PAVEMENT MARKING PLANS - SITE # 3
PMP-4	PAVEMENT MARKING PLANS - SITE # 4
PMP-5	PAVEMENT MARKING PLANS - SITE # 5
PMP-6	PAVEMENT MARKING PLANS - SITE # 6
PMP-7	PAVEMENT MARKING PLANS - SITE # 7
PMP-8	PAVEMENT MARKING PLANS - SITE # 8
PMP-9	PAVEMENT MARKING PLANS - SITE # 9
PMP-10	PAVEMENT MARKING PLANS - SITE # 10
PMP-11	PAVEMENT MARKING PLANS - SITE # 11
EC-1 THRU EC-25	EROSION CONTROL PLANS
RF-1	REFORESTATION DETAIL SHEET
UO-1 THRU UO-	* UTILITIES BY OTHERS PLANS
X-1	CROSS-SECTION INDEX
X-1A	CROSS-SECTION SUMMARY
X-2 THRU X-15	CROSS-SECTIONS - SITE # 1
X-16 THRU X-23	CROSS-SECTIONS - SITE # 2
X-24 THRU X-39	CROSS-SECTIONS - SITE # 3
X-40 THRU X-54	CROSS-SECTIONS - SITE # 4
X-55 THRU X-62	CROSS-SECTIONS - SITE # 5
X-63 THRU X-76	CROSS-SECTIONS - SITE # 6
X-77 THRU X-96	CROSS-SECTIONS - SITE # 7
X-97 THRU X- 108	CROSS-SECTIONS - SITE # 8
X-109 THRU X-138	CROSS-SECTIONS - SITE # 9
X-139 THRU X-147	CROSS-SECTIONS - SITE # 10
X-148 THRU X-153	CROSS-SECTIONS - SITE # 11

INDEX OF SHEETS CONT.

SHEET NUMBER	SHEET
W-1	WALL PLAN - SITE # 3
W-2	WALL PLAN - SITE # 4
W-3	WALL PLAN - SITE # 6
W-4	WALL PLAN - SITE # 7
*	TO BE INCLUDED IN SUBSEQUENT SUBMITTALS

DF18314.
2045060

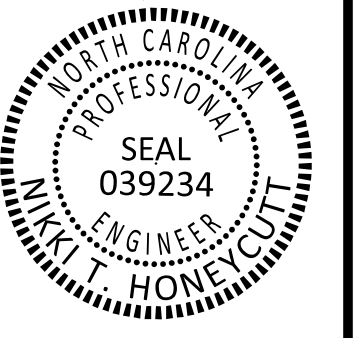
FINAL | IA-1

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
HENDERSON COUNTY



HIGHWAY DIVISION 14

ROADWAY DESIGN
ENGINEER



DOCUMENT NOT CONSIDERED FINAL
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PREPARED BY

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KISINGER CAMPO
& ASSOCIATES
NC FIRM LICENSE No: C-1506
301 Fayetteville St.,
Suite 1500
Raleigh, NC 27601
(919)882-7839

REVISIONS

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	
200.02	Method of Clearing - Method II
225.02	Guide for Grading Subgrade - Secondary and Local
225.04	Method of Obtaining Superelevation - Two Lane Pavement

DIVISION 3 - PIPE CULVERTS	
300.01	Method of Pipe Installation (Use Details in Lieu of Standards for Sheets 1 and 2 of 2)

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

DIVISION 8 - INCIDENTALS	
815.02	Subsurface Drain
840.72	Pipe Collar
848.02	Driveway Turnout - Radius Type
862.01	Guardrail Placement (Use Details in Lieu of Standards for Sheets 4, 6, 12, and 14 of 15)
862.02	Guardrail Installation
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

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

GRADE LINE:
GRADING AND SURFACING:

THE GRADE LINES SHOWN DENOTE THE FINISHED ELEVATION OF THE PROPOSED SURFACING AT GRADE POINTS SHOWN ON THE TYPICAL SECTIONS. GRADE LINES MAY BE ADJUSTED AT THEIR BEGINNING AND ENDING AND AT STRUCTURES AS DIRECTED BY THE ENGINEER IN ORDER TO SECURE A PROPER TIE-IN.

CLEARING:

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

SUPERELEVATION:

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

SHOULDER CONSTRUCTION:

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

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.

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.

SUBSURFACE PLANS:

NO SUBSURFACE PLANS ARE AVAILABLE ON THIS PROJECT. THE CONTRACTOR SHOULD MAKE HIS OWN INVESTIGATION AS TO THE SUBSURFACE CONDITIONS.

UTILITIES:

UTILITY OWNERS ON THIS PROJECT ARE DUKE, AT&T, CHARTER

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 CONTRACT.

DF18314.

FINAL

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
HENDESON COUNTY



HIGHWAY DIVISION 14

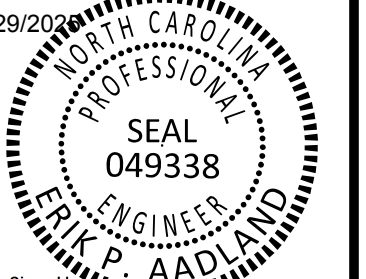
ROADWAY DESIGN
ENGINEER



Signed by: *Mike Honeycutt*

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HYDRAULICS
ENGINEER



Signed by: *Erik P. Adland*

PREPARED BY

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REVISIONS

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

DF18314.2045060
FINAL IB

Note: Not to Scale

BOUNDARIES AND PROPERTY:

State Line	-----
County Line	-----
Township Line	-----
City Line	-----
Reservation Line	-----
Property Line	-----
Existing Iron Pin (EIP)	○ EIP
Computed Property Corner	✕
Existing Concrete Monument (ECM)	◻ ECM
Parcel / Sequence Number	⑫③
Existing Fence Line	-x-x-x-
Proposed Woven Wire Fence	○
Proposed Chain Link Fence	▣
Proposed Barbed Wire Fence	◇
Existing Wetland Boundary	-WLB-
Proposed Wetland Boundary	-WLB-
Existing Endangered Animal Boundary	-EAB-
Existing Endangered Plant Boundary	-EPB-
Existing Historic Property Boundary	-HPB-
Known Contamination Area: Soil	-S-S-
Potential Contamination Area: Soil	-S-S-
Known Contamination Area: Water	-W-W-
Potential Contamination Area: Water	-W-W-
Contaminated Site: Known or Potential	-----

BUILDINGS AND OTHER CULTURE:

Gas Pump Vent or U/G Tank Cap	○
Sign	○ S
Well	○ W
Small Mine	✕
Foundation	▭
Area Outline	▭
Cemetery	▭ +
Building	▭
School	▭
Church	▭
Dam	▭

HYDROLOGY:

Stream or Body of Water	-----
Hydro, Pool or Reservoir	▭
Jurisdictional Stream	-JS-
Buffer Zone 1	-BZ 1-
Buffer Zone 2	-BZ 2-
Flow Arrow	←
Disappearing Stream	→
Spring	○
Wetland	▭
Proposed Lateral, Tail, Head Ditch	→
False Sump	▭

RAILROADS:

Standard Gauge	-----
RR Signal Milepost	○ MILEPOST 35
Switch	▭ SWITCH
RR Abandoned	-----
RR Dismantled	-----

RIGHT OF WAY & PROJECT CONTROL:

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	-C-
Proposed Slope Stakes Fill	-F-
Proposed Curb Ramp	CR
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	CONC
Bridge Wing Wall, Head Wall and End Wall	CONC WW
MINOR:	
Head and End Wall	CONC HW
Pipe Culvert	-----
Footbridge	-----
Drainage Box: Catch Basin, DI or JB	CB
Paved Ditch Gutter	-----
Storm Sewer Manhole	⊕
Storm Sewer	S

UTILITIES:

* 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	A/G Water

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	A/G Gas

SANITARY SEWER:

Sanitary Sewer Manhole	⊕
Sanitary Sewer Cleanout	⊕
U/G Sanitary Sewer Line	SS
Above Ground Sanitary Sewer	A/G Sanitary Sewer
SS 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)*	-----

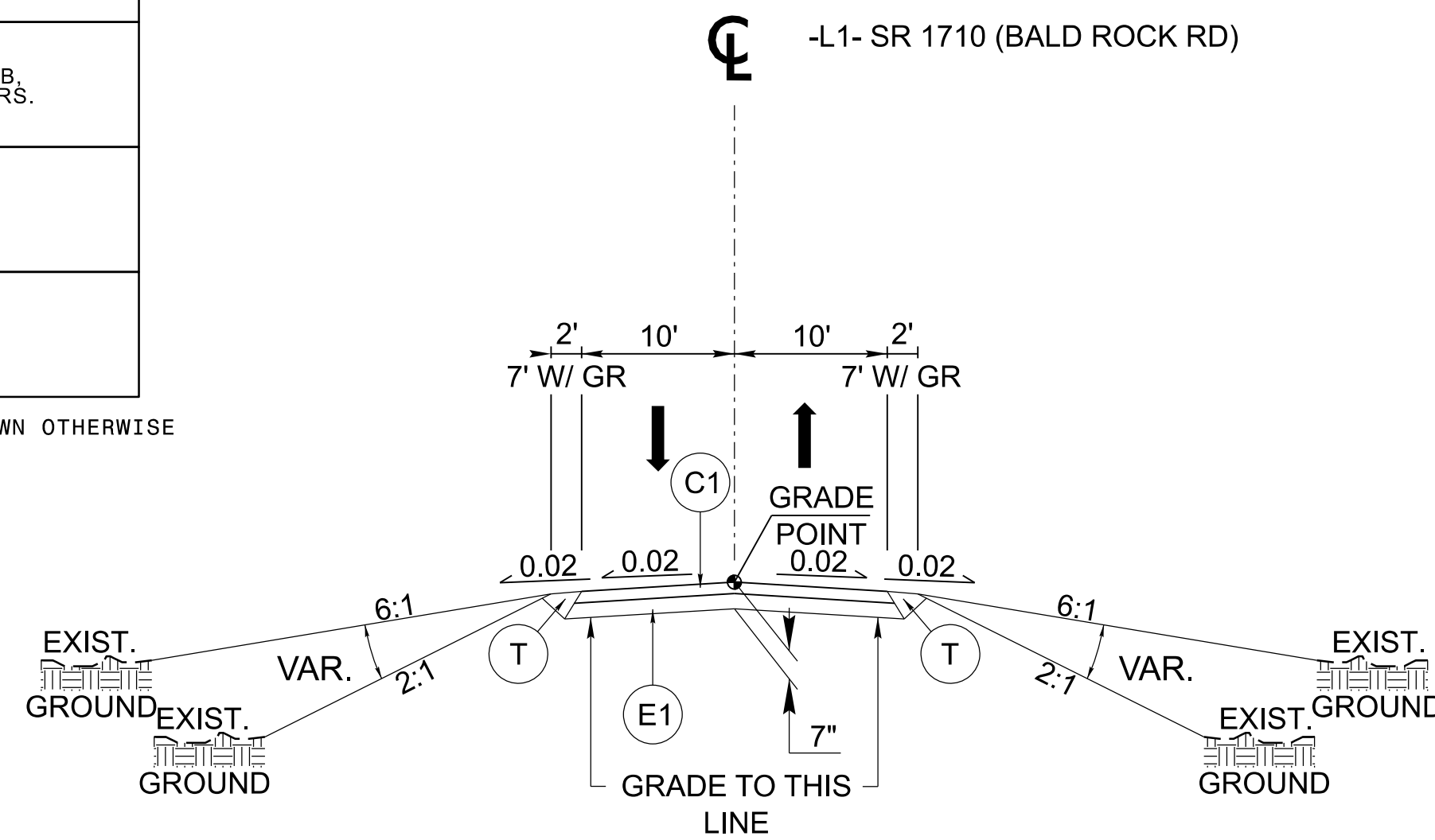
MISCELLANEOUS:

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	▭
Geoenvironmental Boring	⊕
Abandoned According to Utility Records	AATUR
End of Information	E.O.I.

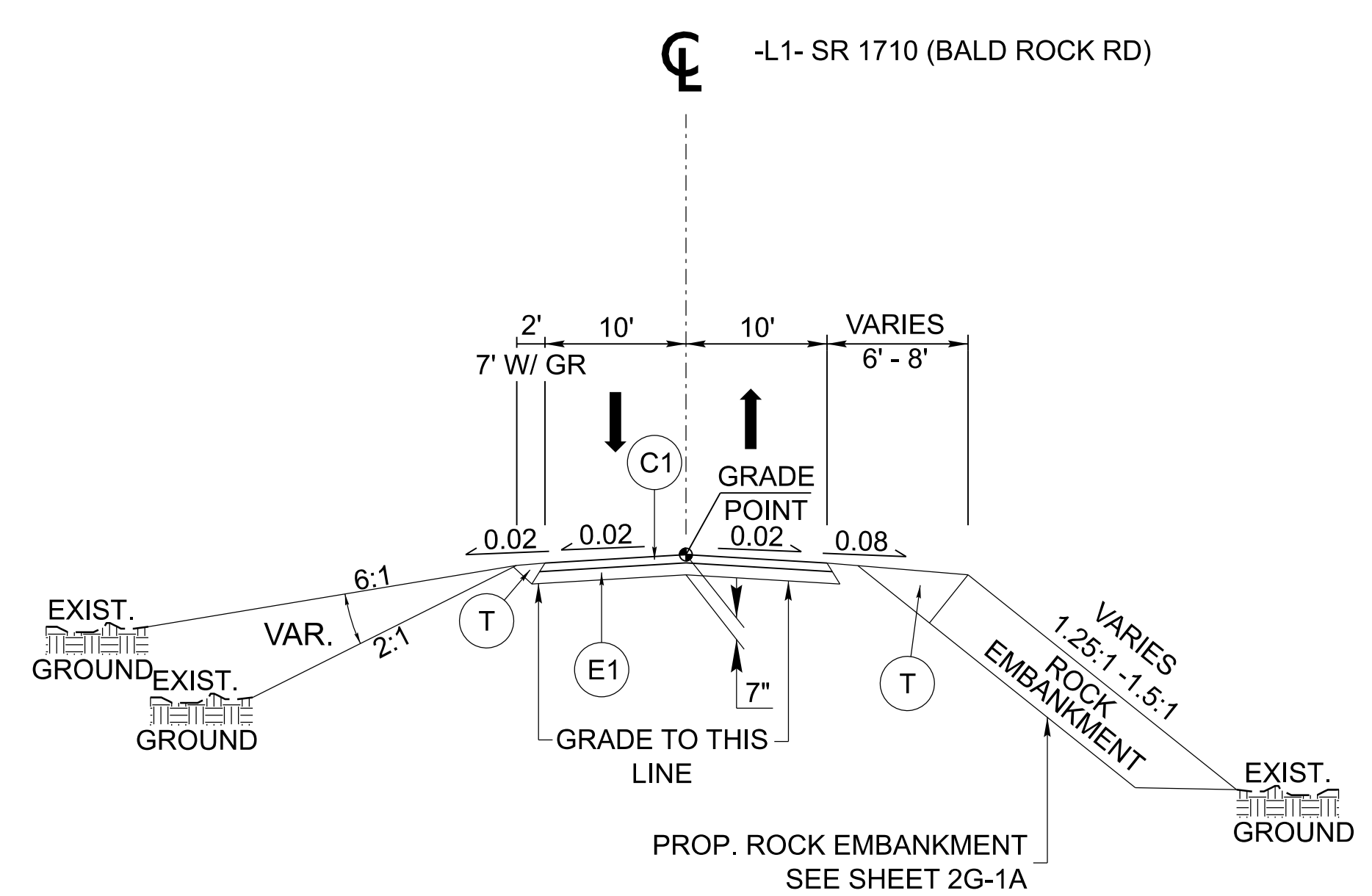
PAVEMENT SCHEDULE
(FINAL)

C1	PROP. APPROX. 3.0" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 165.0 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
E1	PROP. APPROX. 4.0" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 456 LBS PER SQ. YD.
T	EARTH MATERIAL

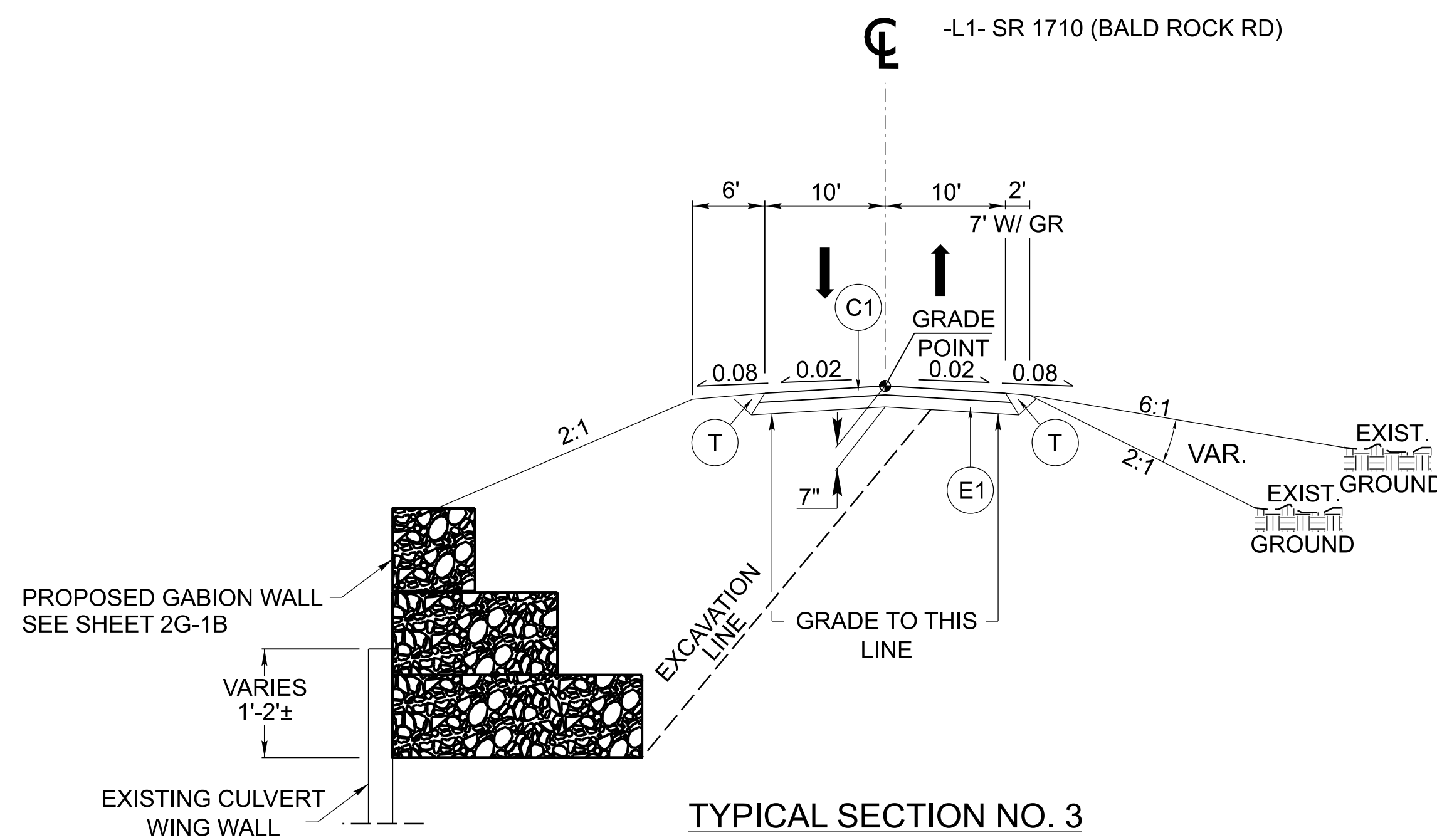
NOTE: PAVEMENT EDGE SLOPES AND TRENCH SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE



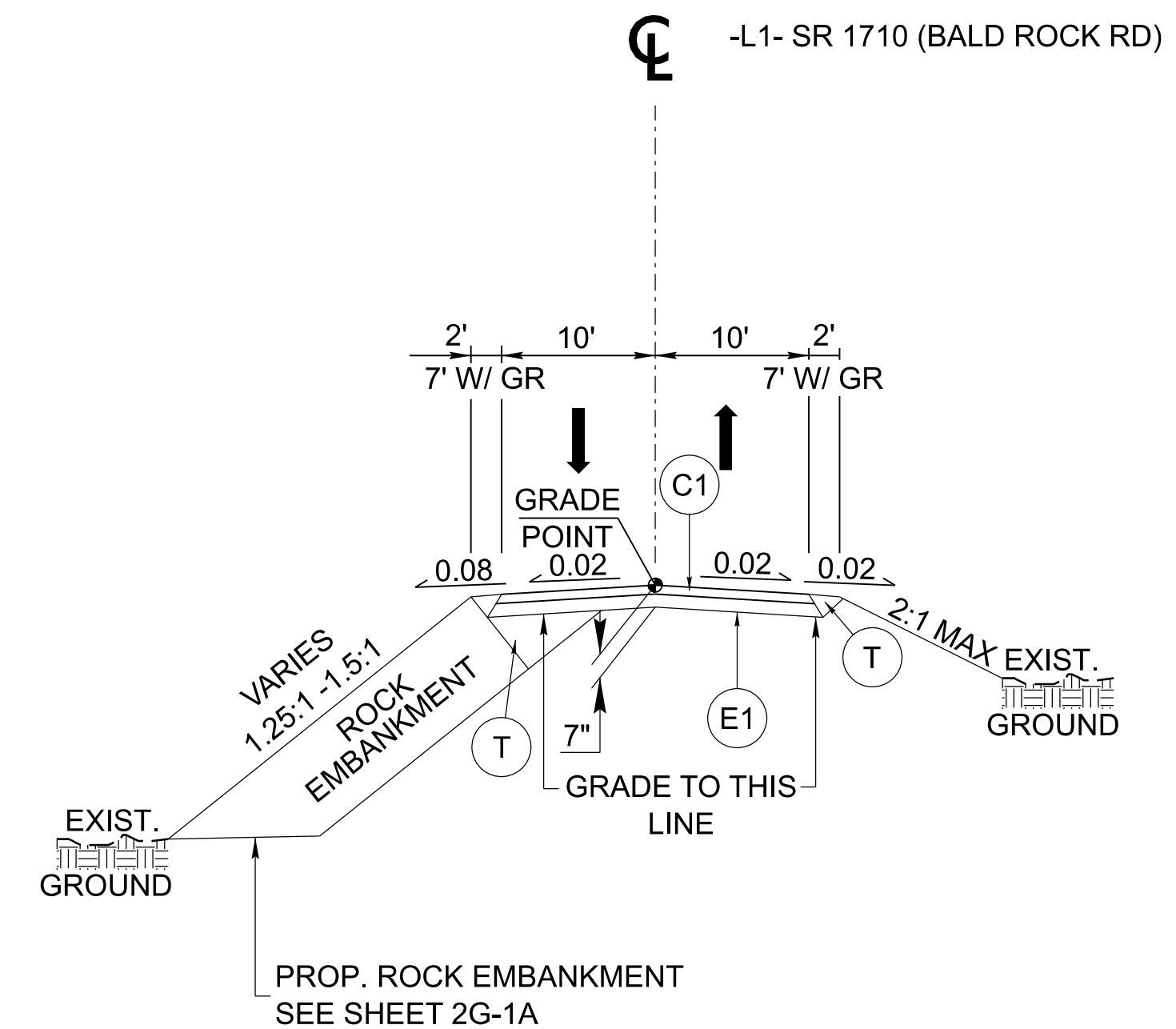
TYPICAL SECTION NO. 1
 -L1- STA. 10+50.00 TO STA. 10+60.00
 -L1- STA. 11+05.00 TO STA. 11+66.95
 -L1- STA. 12+05.00 TO STA. 12+15.00



TYPICAL SECTION NO. 2
 -L1- STA. 10+60.00 TO STA. 11+05.00



TYPICAL SECTION NO. 3
 -L1- STA. 11+66.95 TO STA. 11+78.42

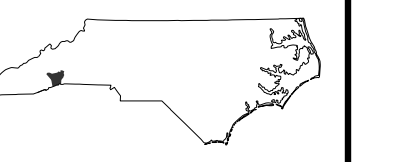


TYPICAL SECTION NO. 4
 -L1- STA. 11+78.42 TO STA. 12+05.00

DF18314.
2045060

FINAL 2A-1

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
HENDERSON COUNTY



HIGHWAY DIVISION 14

ROADWAY DESIGN
ENGINEER

7/29/2025



Signed by: Joseph T. Honecutt

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

PAVEMENT DESIGN
ENGINEER

7/29/2025



Signed by: Joseph T. Holland

PREPARED BY

7/29/2025

PREPARED BY

KCA

KISINGER CAMPO
& ASSOCIATES

NC FIRM LICENSE No.: C-1506

301 Fayetteville St.,

Suite 1500

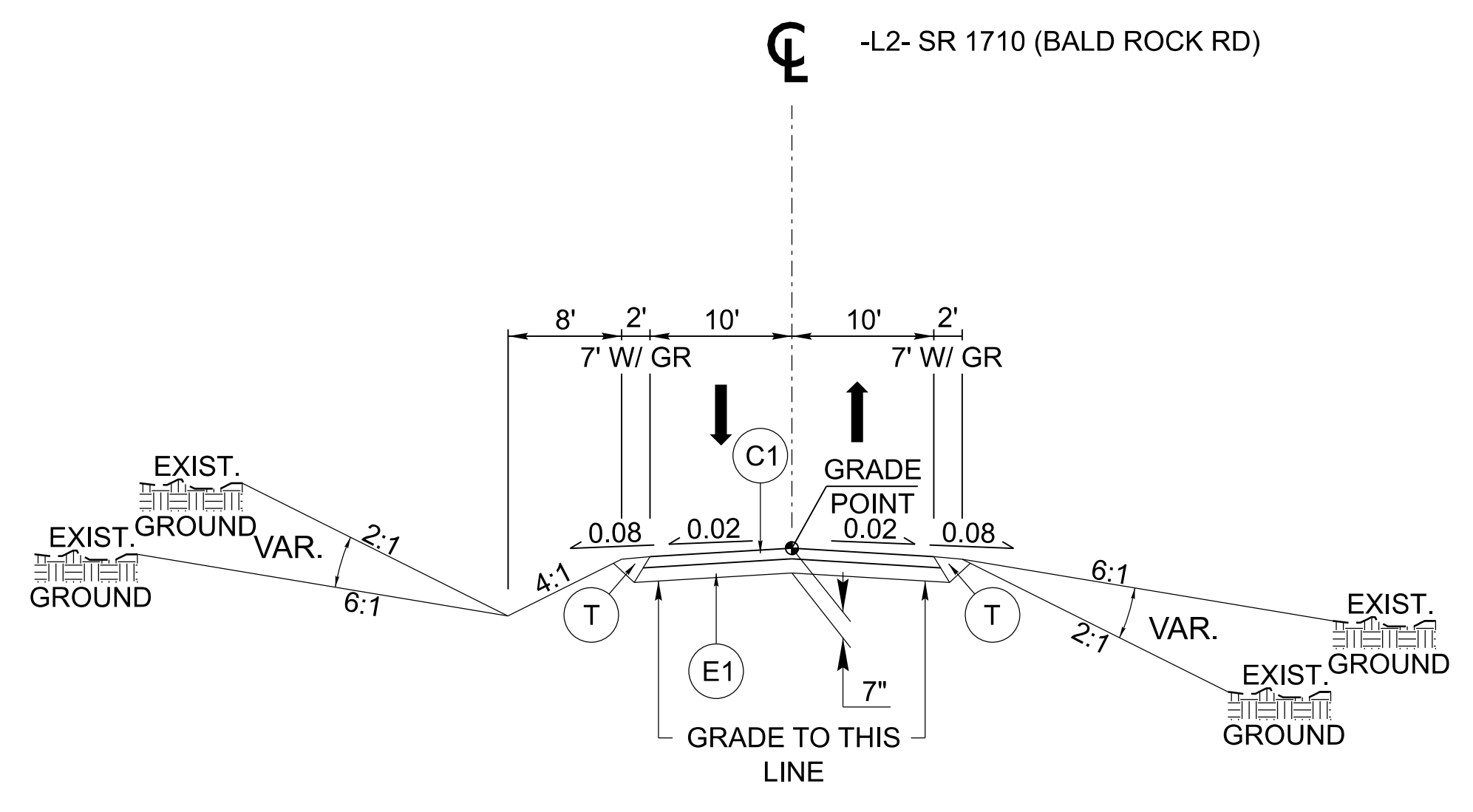
Raleigh, NC 27601

(919)882-7839

REVISIONS

PAVEMENT SCHEDULE (FINAL)	
C1	PROP. APPROX. 3.0" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 165.0 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
E1	PROP. APPROX. 4.0" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 456 LBS PER SQ. YD.
T	EARTH MATERIAL

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

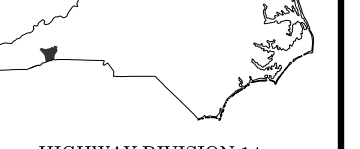


TYPICAL SECTION NO. 1
 -L2- STA. 11+90.00 TO STA. 19+60.00

DF18314.
2045061

FINAL 2A-2

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
HENDERSON COUNTY



HIGHWAY DIVISION 14

ROADWAY DESIGN
ENGINEER

7/29/2025



Signed by:
Nikki Housport

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

PAVEMENT DESIGN
ENGINEER

7/29/2025



Signed by:
Joseph T. Holland

PREPARED BY

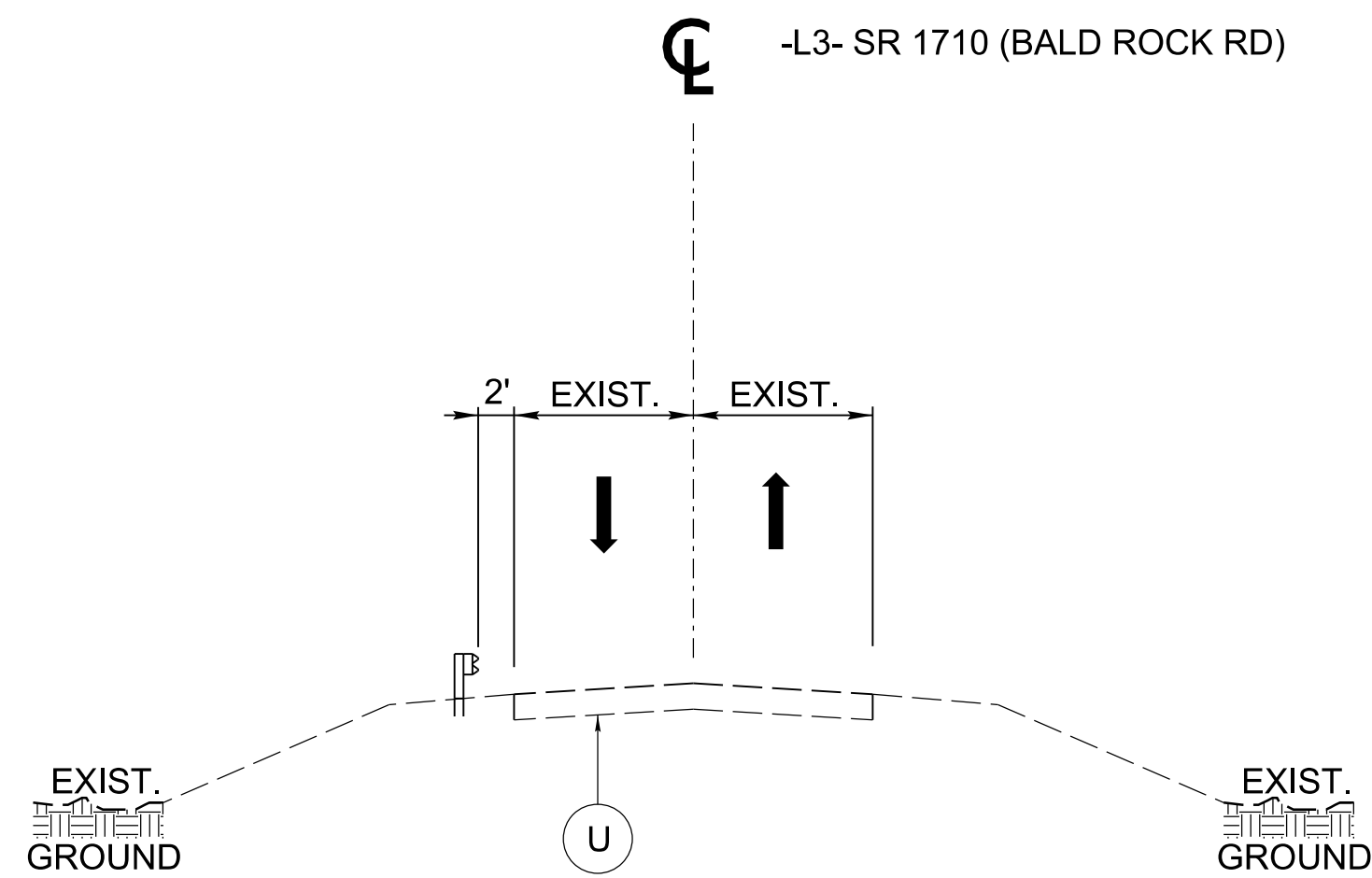


NC FIRM LICENSE No: C-1506
301 Fayetteville St.,
Suite 1500
Raleigh, NC 27601
(919) 882-7839

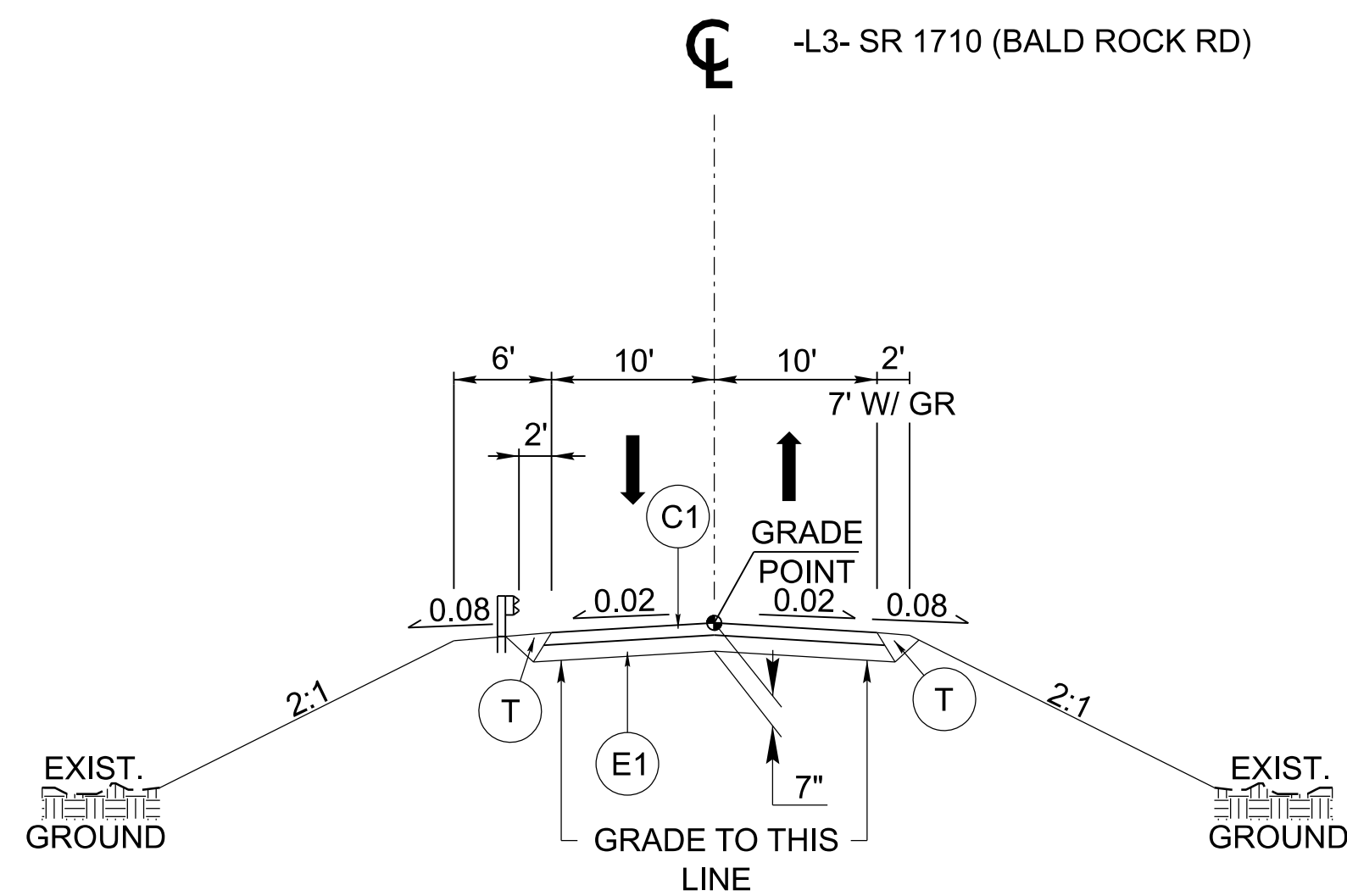
REVISIONS

PAVEMENT SCHEDULE (FINAL)	
C1	PROP. APPROX. 3.0" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 165.0 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
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T	EARTH MATERIAL
U	EXISTING PAVEMENT

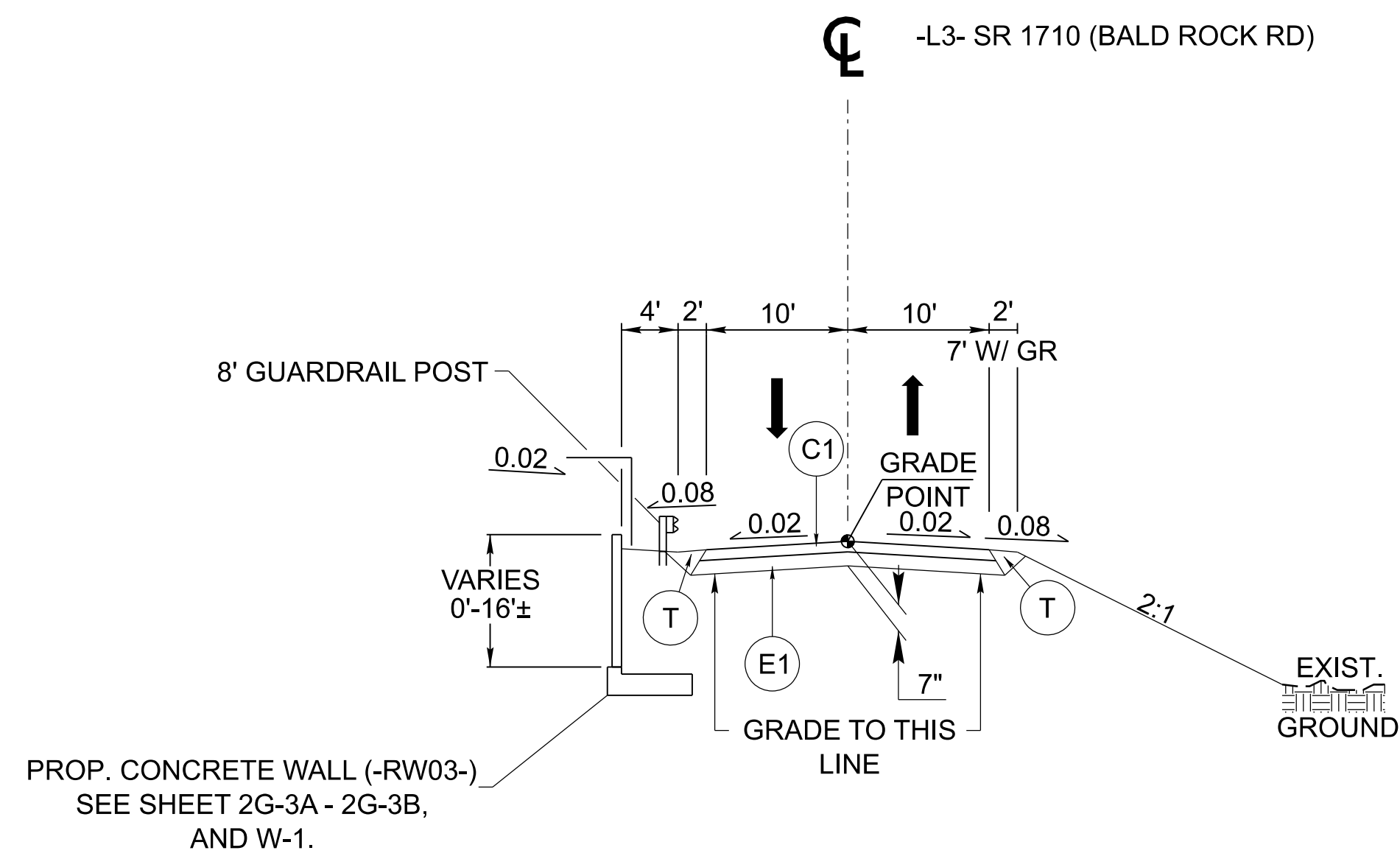
NOTE: PAVEMENT EDGE SLOPES AND TRENCH SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE



TYPICAL SECTION NO. 1
 -L3- STA. 10+99.95 TO STA. 11+75.00
 -L3- STA. 13+50.00 TO STA. 14+14.95



TYPICAL SECTION NO. 2
 -L3- STA. 11+75.00 TO STA. 11+85.96
 -L3- STA. 13+15.00 TO STA. 13+50.00

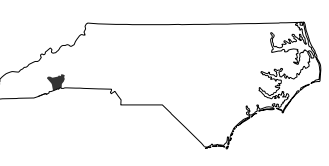


TYPICAL SECTION NO. 3
 -L3- STA. 11+855.96 TO STA. 13+40.10

DF18314.
2045062

FINAL 2A-3

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
HENDERSON COUNTY



HIGHWAY DIVISION 14

ROADWAY DESIGN
ENGINEER

7/29/2025

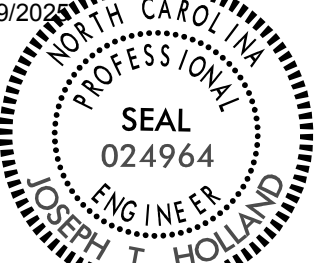


Signed by:
Nikki Honecutt

EXPIRES 7/29/2028

PAVEMENT DESIGN
ENGINEER

7/29/2025



Signed by:
Joseph T. Holland

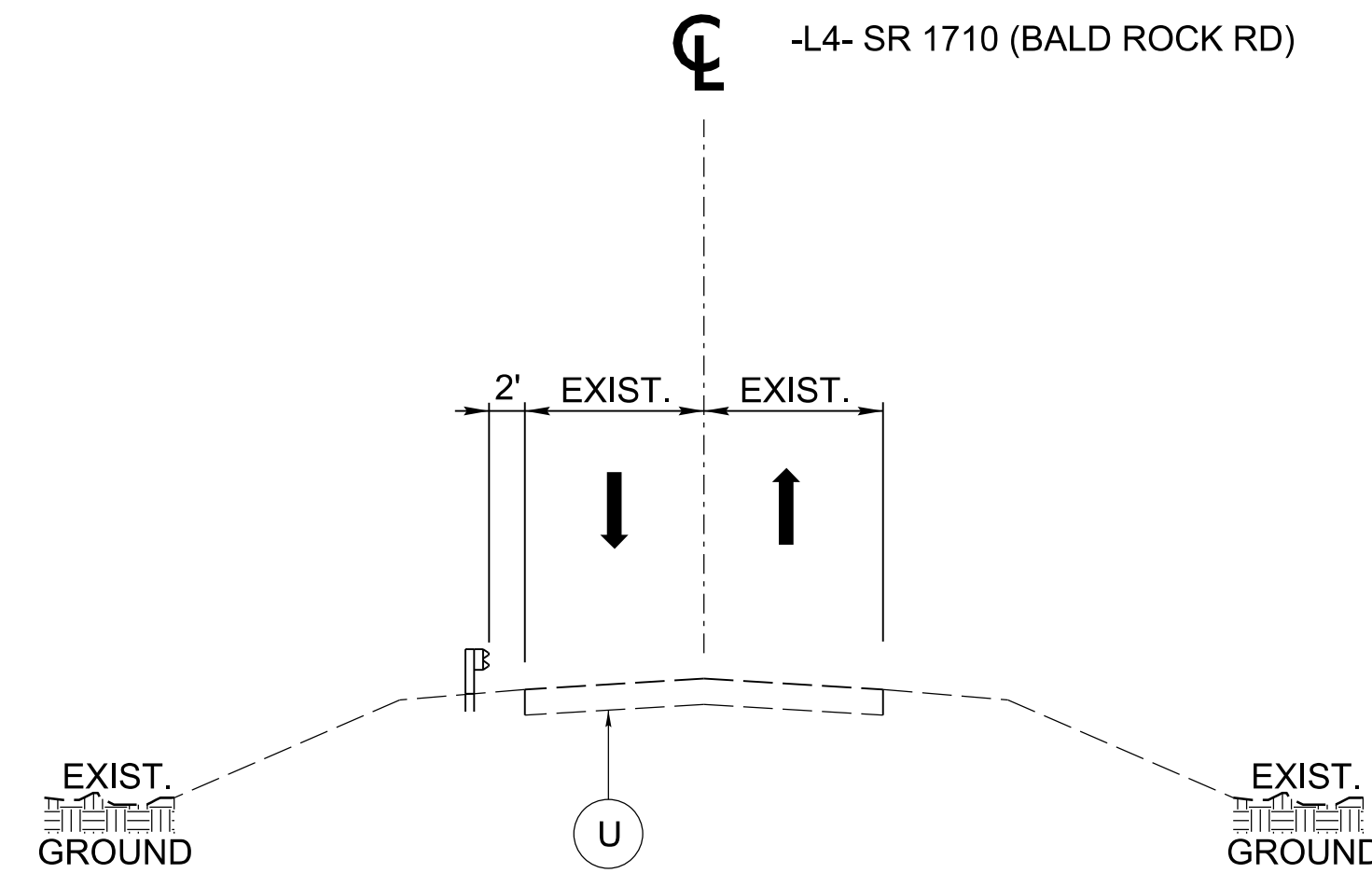
PREPARED BY

KCA
 KISINGER CAMPO
 & ASSOCIATES
 NC FIRM LICENSE No: C-1506
 301 Fayetteville St.,
 Suite 1500
 Raleigh, NC 27601
 (919)882-7839

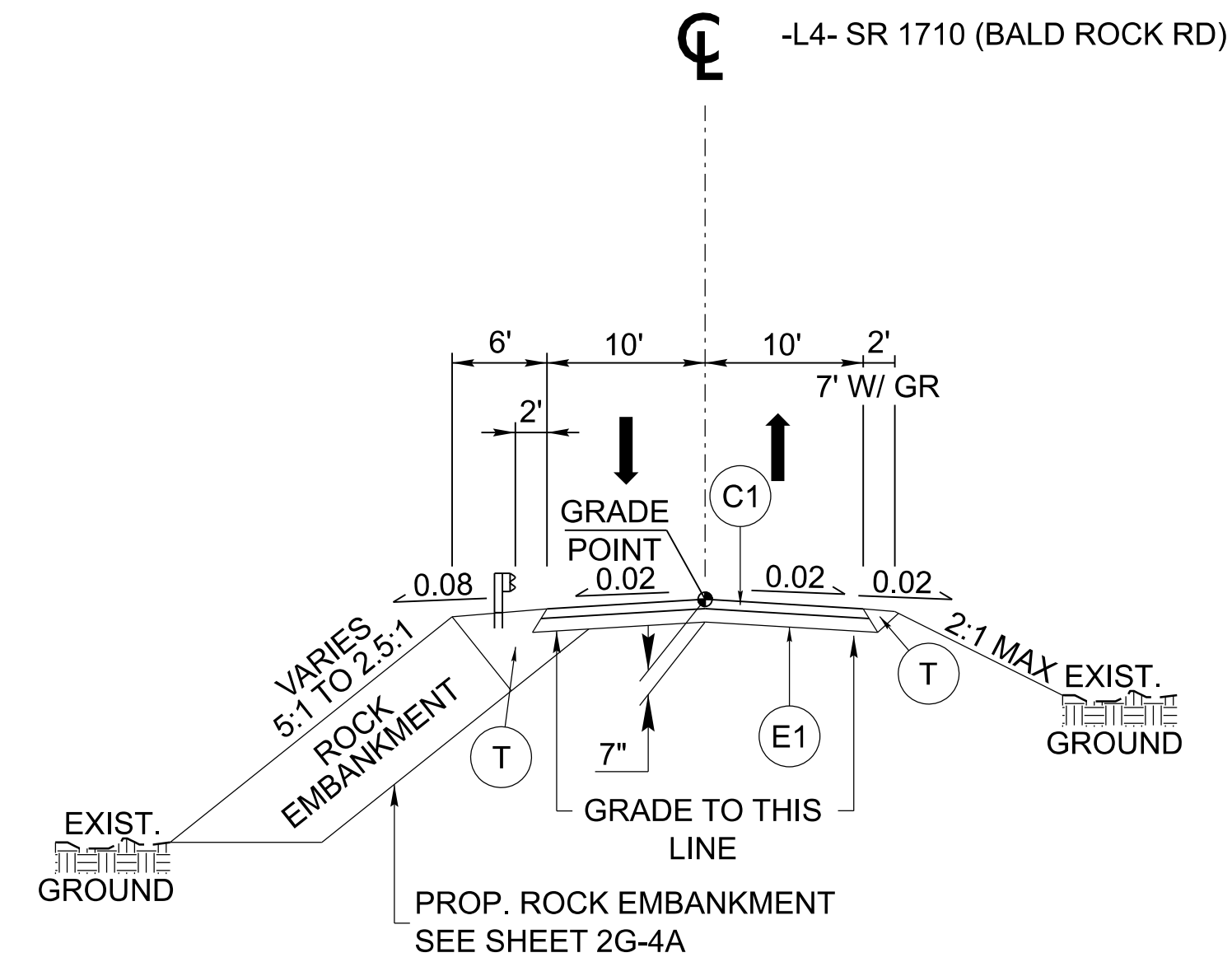
REVISIONS

PAVEMENT SCHEDULE (FINAL)	
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T	EARTH MATERIAL
U	EXISTING PAVEMENT

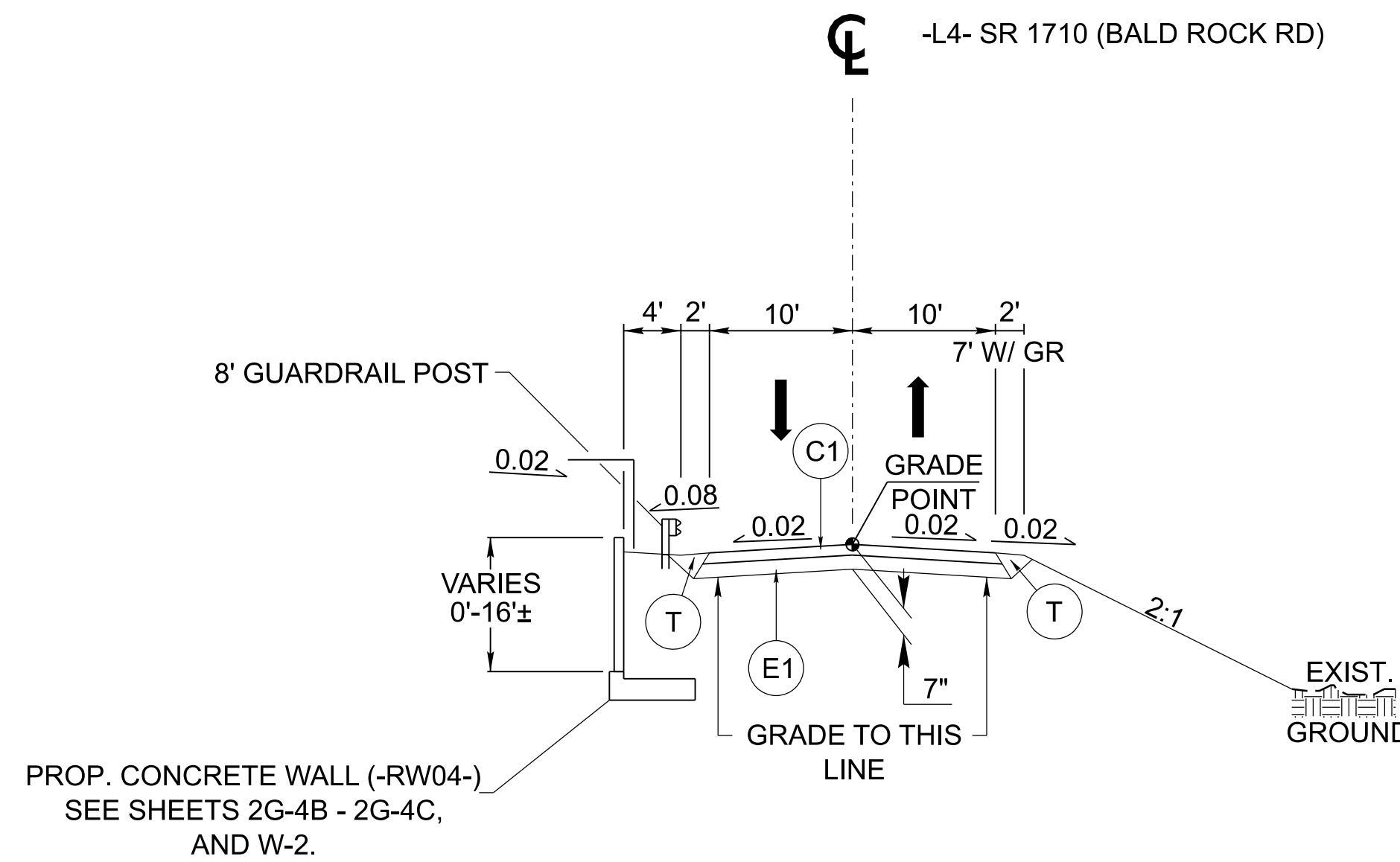
NOTE: PAVEMENT EDGE SLOPES AND TRENCH SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE



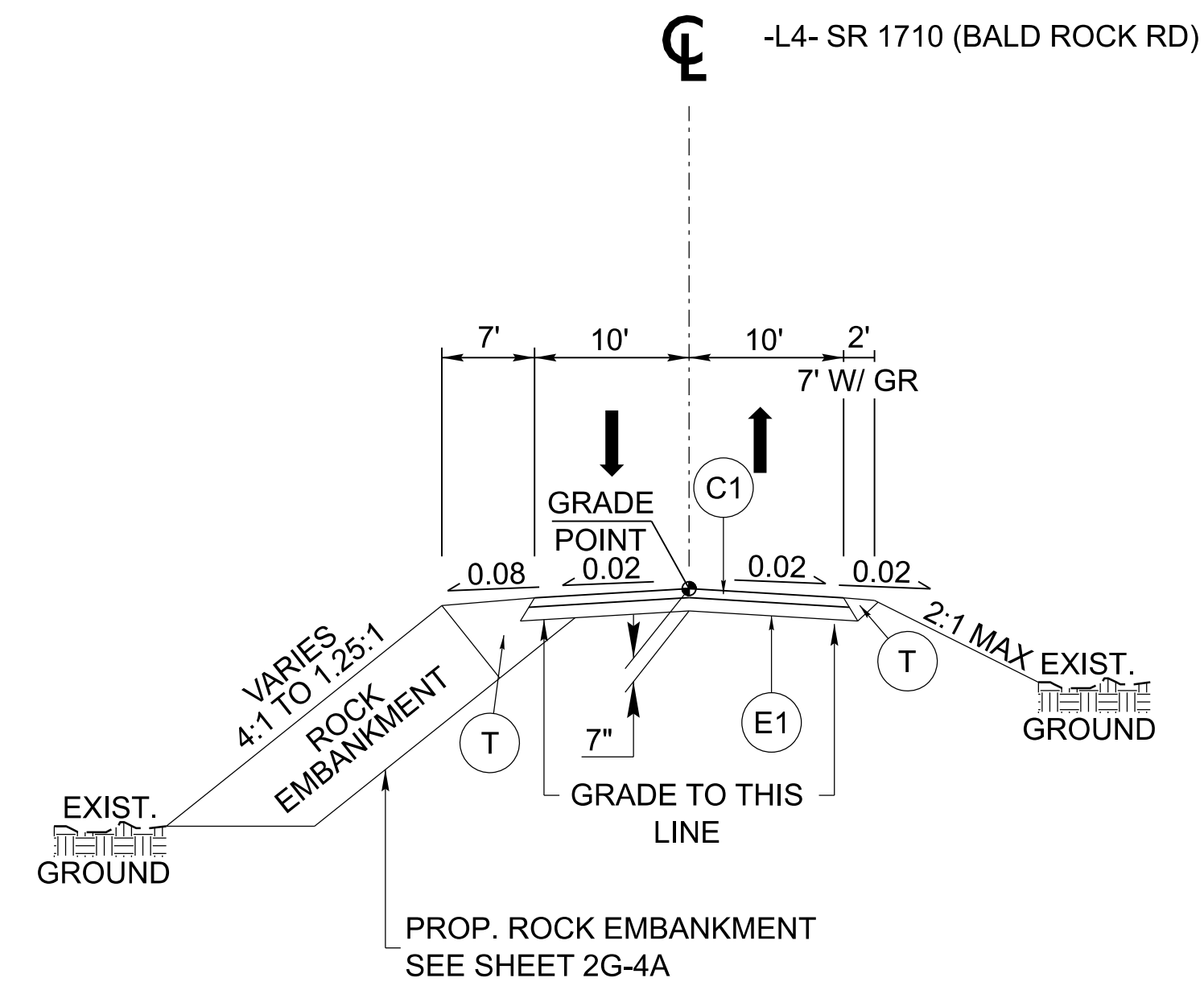
TYPICAL SECTION NO. 1
-L4- STA. 11+12.12 TO STA. 11+55.00



TYPICAL SECTION NO. 2
-L4- STA. 11+55.00 TO STA. 11+96.02
-L4- STA. 13+13.23 TO STA. 13+99.65



TYPICAL SECTION NO. 3
-L4- STA. 11+96.02 TO STA. 13+13.23

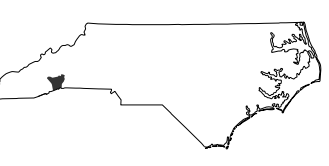


TYPICAL SECTION NO. 4
-L4- STA. 13+99.65 TO STA. 15+35.00

DF18314.
2045063

FINAL 2A-4

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
HENDERSON COUNTY



HIGHWAY DIVISION 14

ROADWAY DESIGN
ENGINEER

7/29/2025

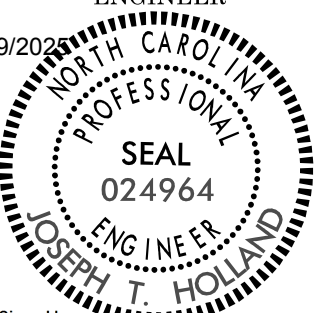


Signed by: *Nikki Honeycutt*

EQUIPMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

PAVEMENT DESIGN
ENGINEER

7/29/2025



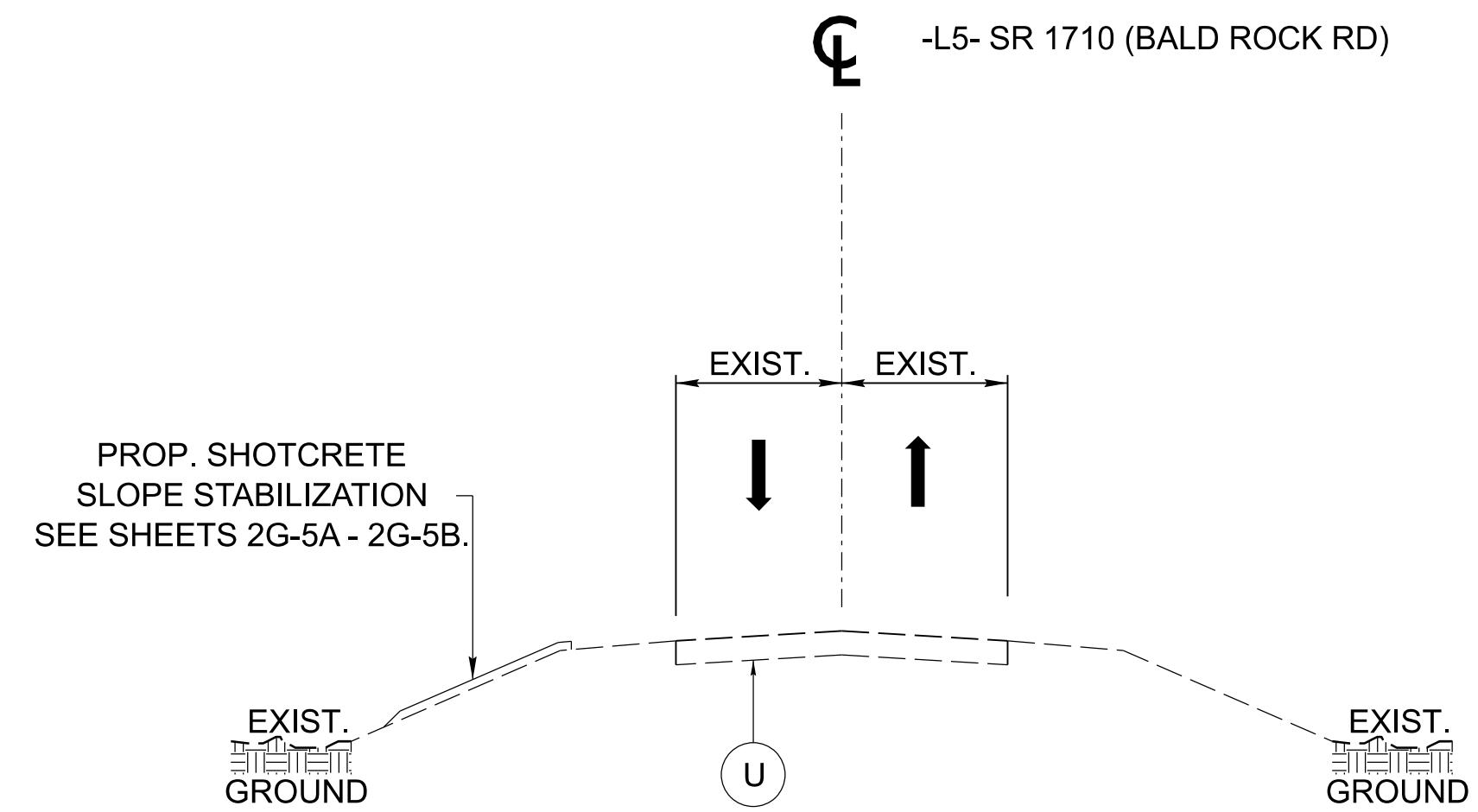
Signed by: *Joseph T. Holland*

PREPARED BY

KCA
KISINGER CAMPO
& ASSOCIATES
NC FIRM LICENSE No: C-1506
301 Fayetteville St.,
Suite 1500
Raleigh, NC 27601
(919)882-7839

REVISIONS

PAVEMENT SCHEDULE (FINAL)	
U	EXISTING PAVEMENT

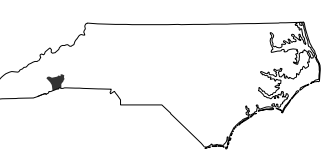


TYPICAL SECTION NO. 1
-L5- STA. 11+05.00 TO STA. 11+90.00

DF18314.
2045485

FINAL 2A-5

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
HENDERSON COUNTY



HIGHWAY DIVISION 14

ROADWAY DESIGN
ENGINEER

7/29/2025



Signed by:
Nikki Honecutt

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

PAVEMENT DESIGN
ENGINEER

7/29/2025



Signed by:
Joseph T. Holland

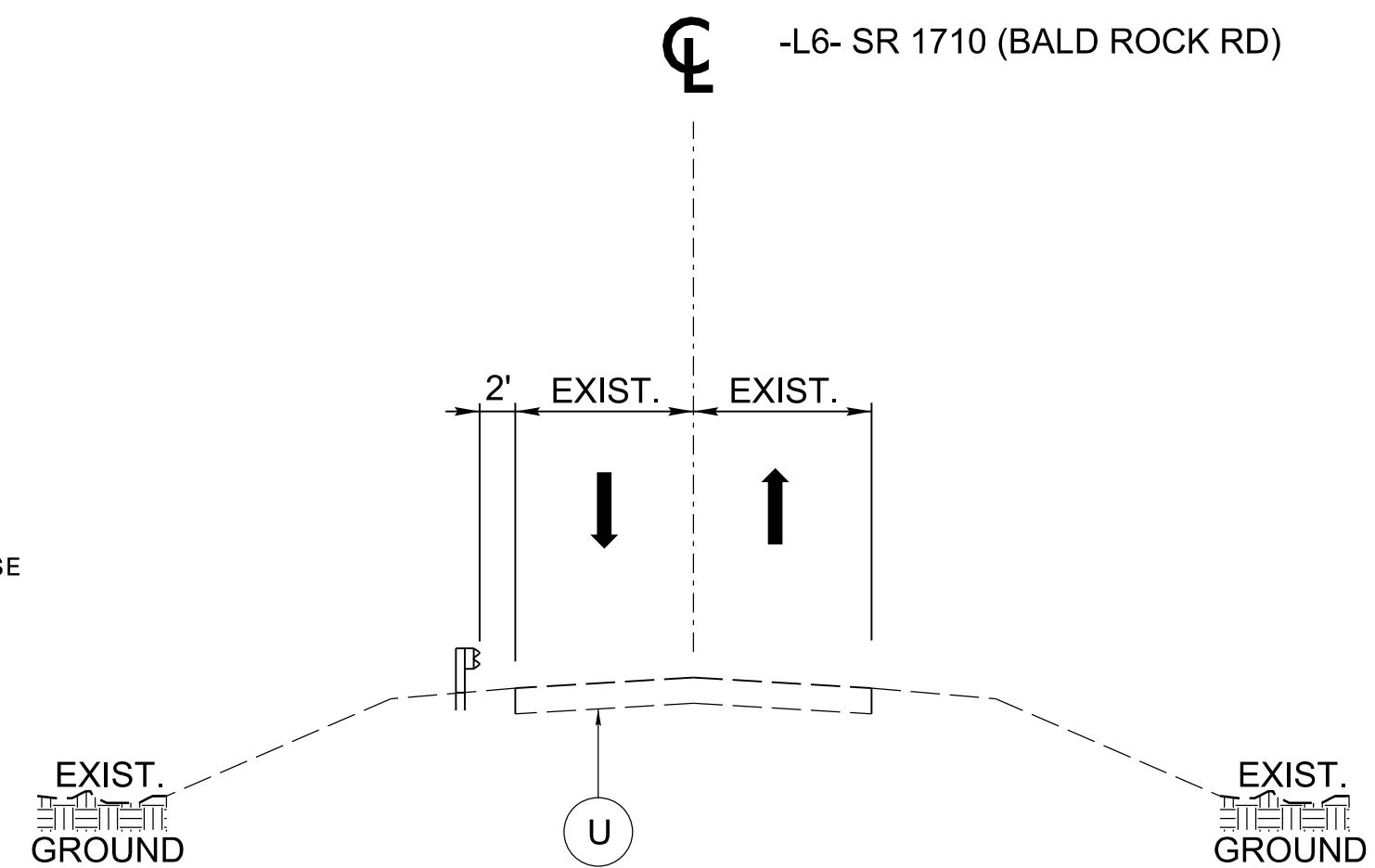
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KISINGER CAMPO
& ASSOCIATES
NC FIRM LICENSE No: C-1506
301 Fayetteville St.,
Suite 1500
Raleigh, NC 27601
(919)882-7839

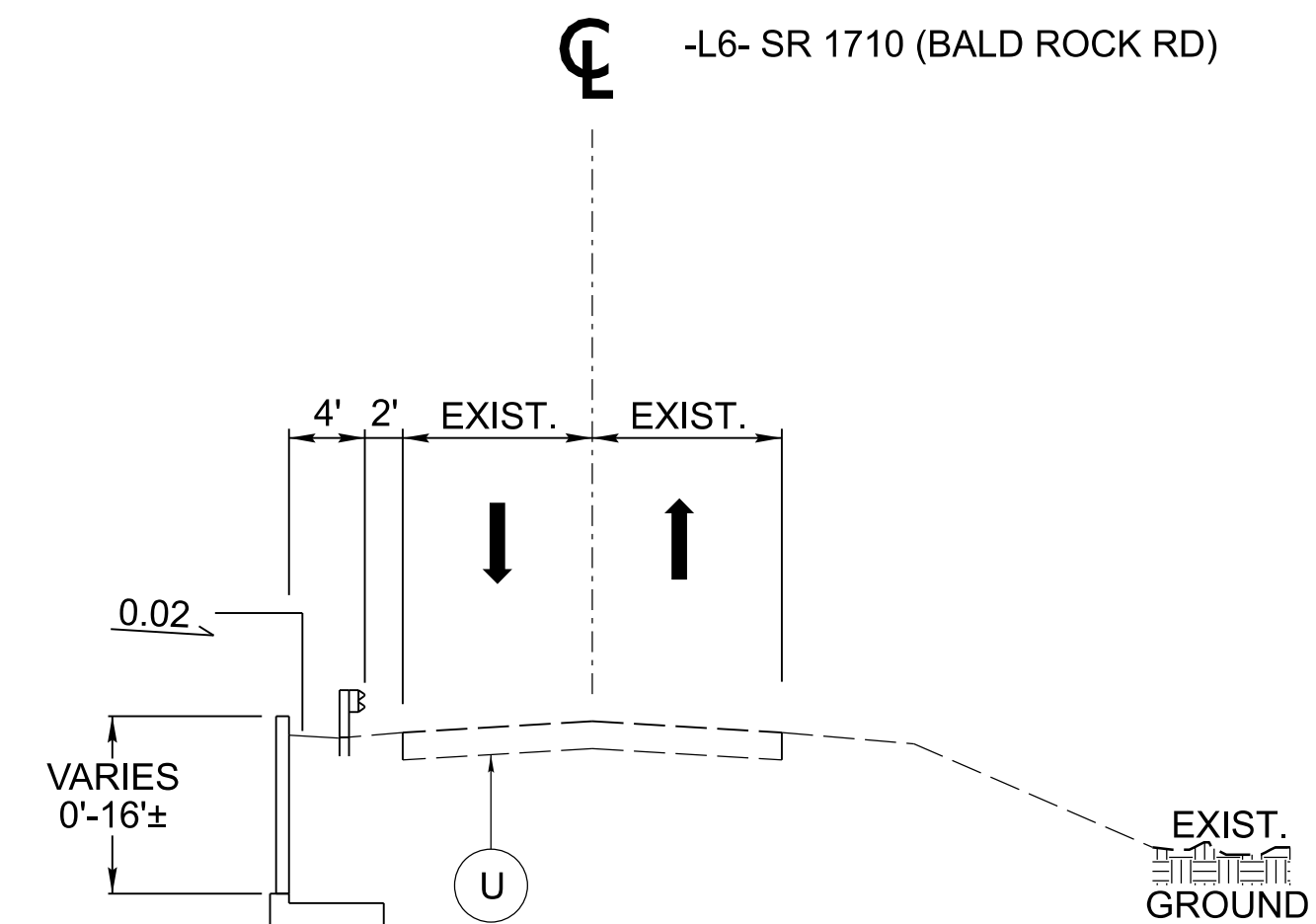
REVISIONS

PAVEMENT SCHEDULE (FINAL)	
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T	EARTH MATERIAL
U	EXISTING PAVEMENT

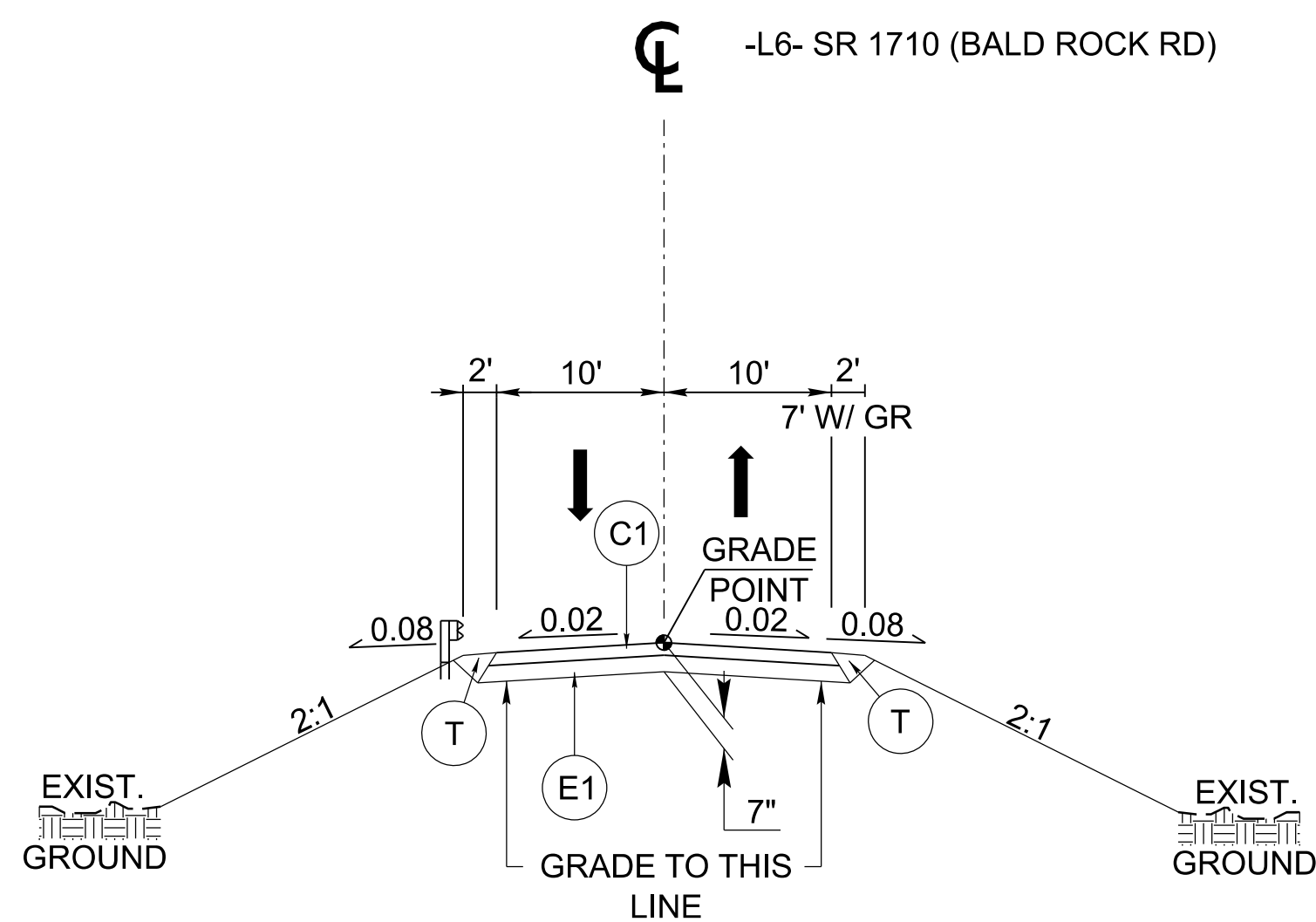
NOTE: PAVEMENT EDGE SLOPES AND TRENCH SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE



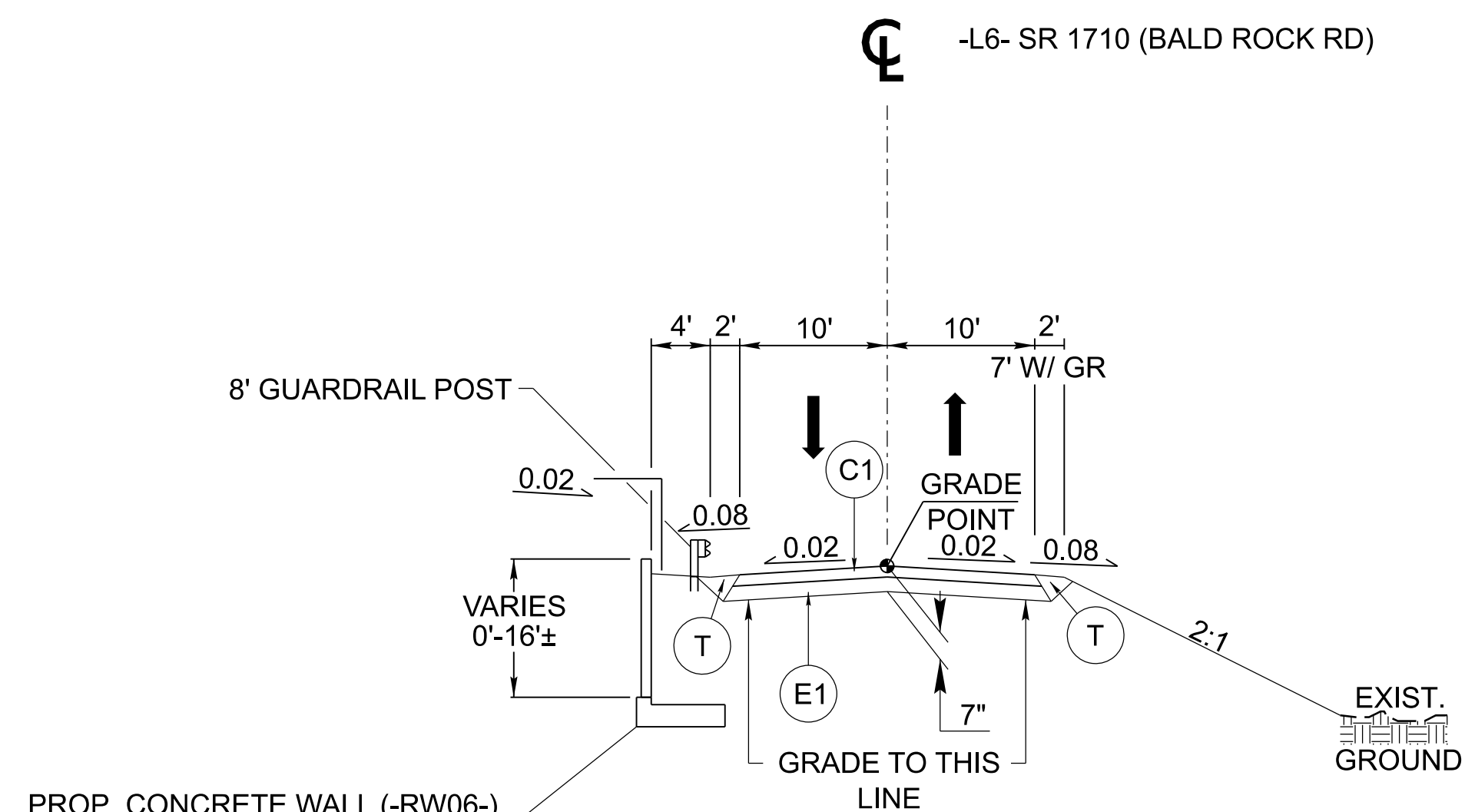
TYPICAL SECTION NO. 1
 -L6- STA. 10+00.00 TO STA. 10+84.78
 -L6- STA. 11+90.00 TO STA. 12+74.28



TYPICAL SECTION NO. 2
 -L6- STA. 10+84.78 TO STA. 10+90.00
 PROP. CONCRETE WALL (-RW06-)
 SEE SHEETS 2G-6A - 2G-6B,
 AND W-3.



TYPICAL SECTION NO. 3
 -L6- STA. 10+90.00 TO STA. 11+00.00
 -L6- STA. 11+86.47 TO STA. 11+90.00



TYPICAL SECTION NO. 4
 -L6- STA. 11+00.00 TO STA. 11+86.47
 PROP. CONCRETE WALL (-RW06-)
 SEE SHEETS 2G-6A - 2G-6B,
 AND W-3.

DF18314.
2045064

FINAL 2A-6

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
HENDERSON COUNTY



HIGHWAY DIVISION 14

ROADWAY DESIGN
ENGINEER

7/29/2025



Signed by: *Nikki Honecutt*

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

PAVEMENT DESIGN
ENGINEER

7/29/2025



Signed by: *Joseph T. Holland*

PREPARED BY

KCA

KISINGER CAMPO
& ASSOCIATES

NC FIRM LICENSE No: C-1506

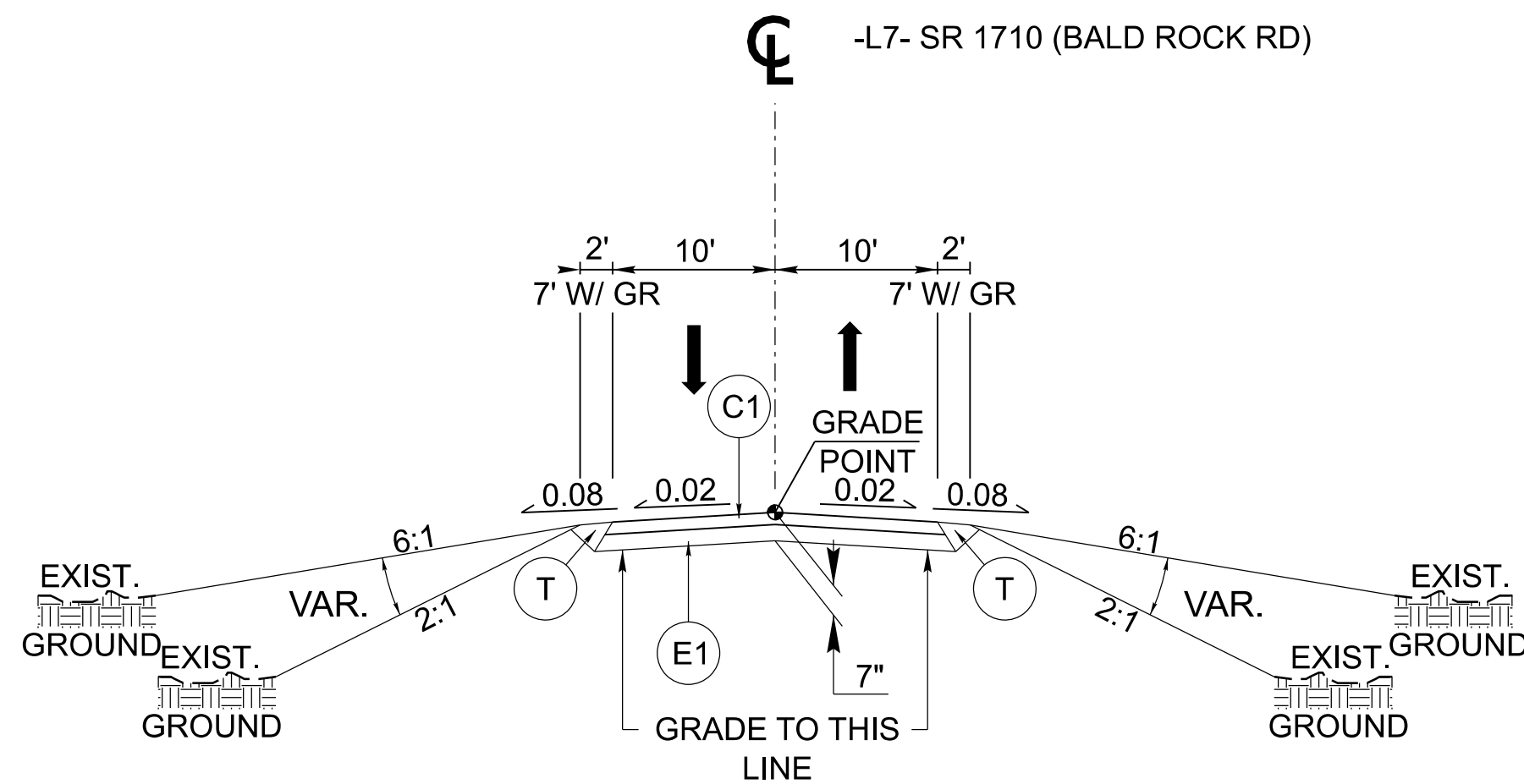
301 Fayetteville St.,
Suite 1500

Raleigh, NC 27601
(919)882-7839

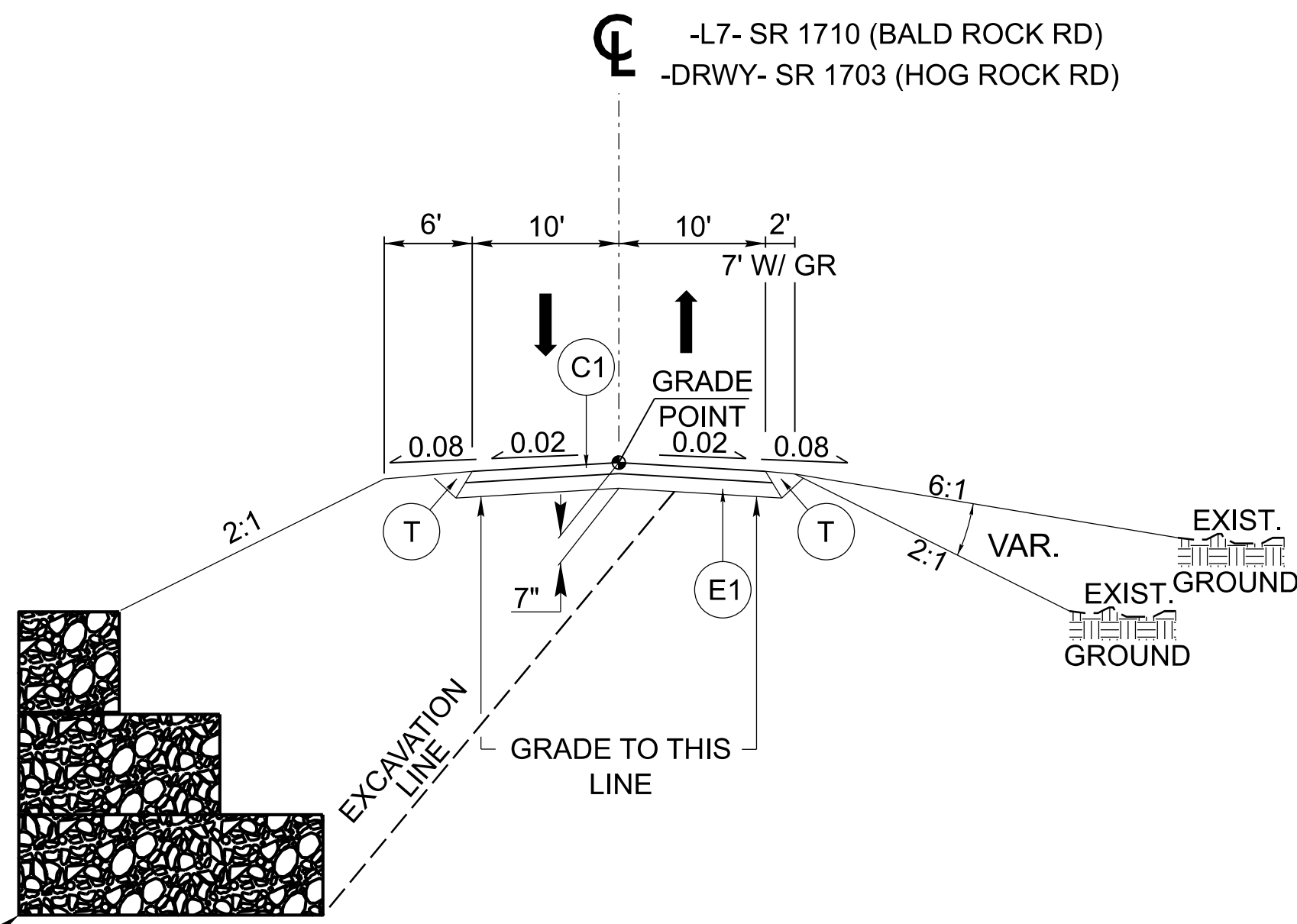
REVISIONS

PAVEMENT SCHEDULE (FINAL)	
C1	PROP. APPROX. 3.0" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 165.0 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
E1	PROP. APPROX. 4.0" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 456 LBS PER SQ. YD.
J1	PROP. 6" AGGREGATE BASE COURSE
T	EARTH MATERIAL

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

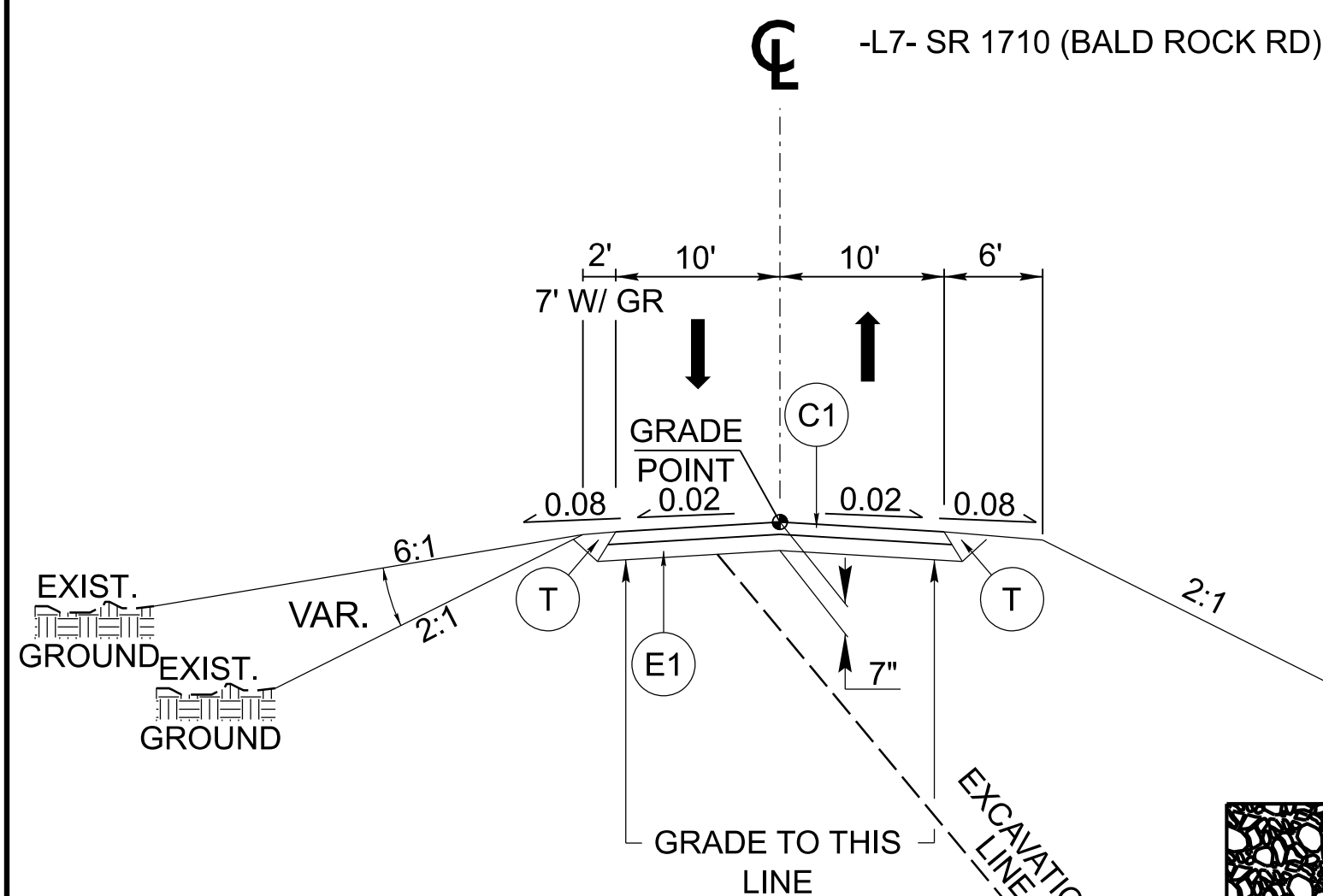


TYPICAL SECTION NO. 1
 -L7- STA. 10+40.00 TO STA. 11+07.95
 -L7- STA. 13+97.00 TO STA. 14+35.00



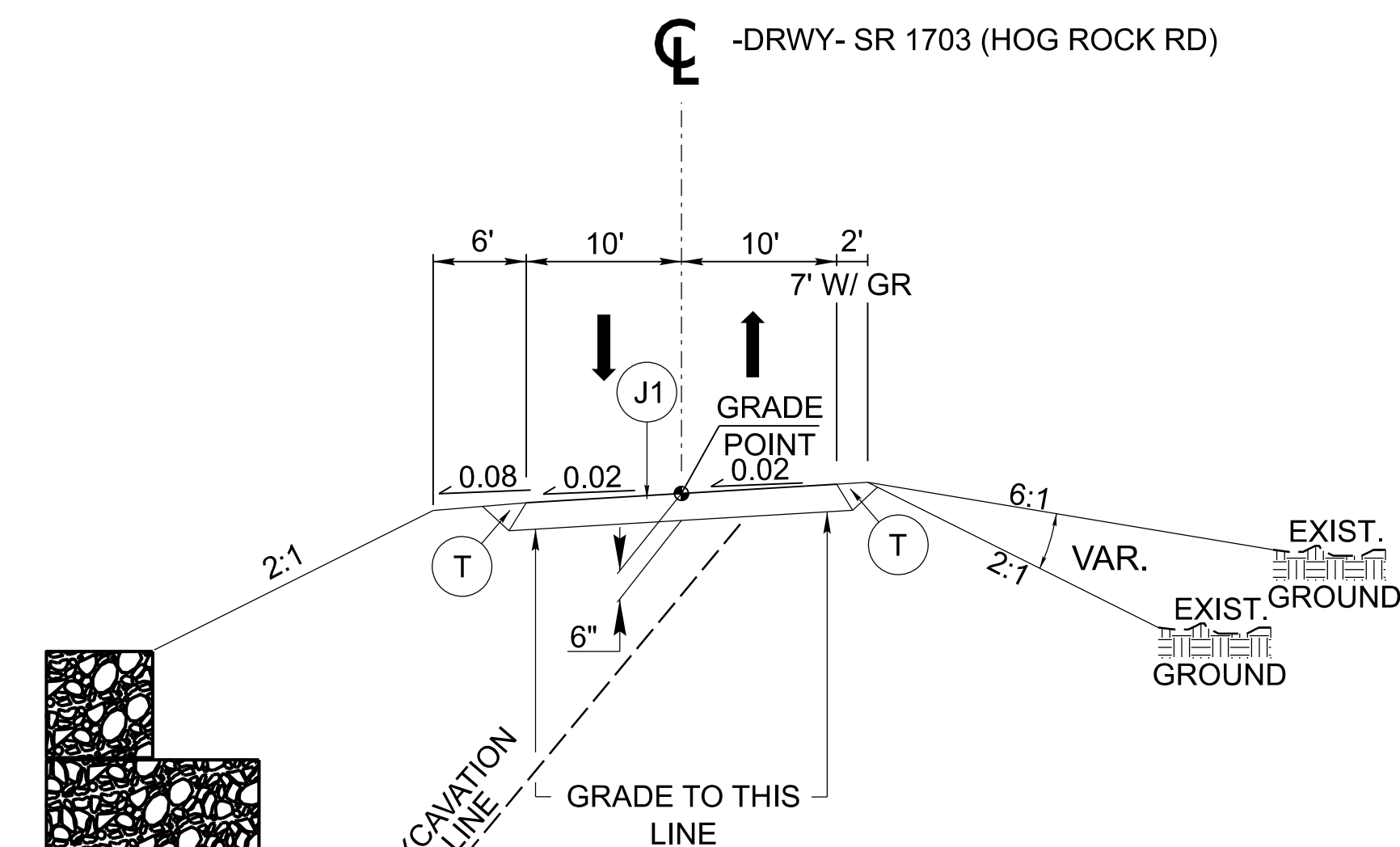
TYPICAL SECTION NO. 2
 -L7- STA. 11+07.95 TO STA. 13+15.00
 -DRWY- STA. 10+11.55 TO STA. 10+26.58 (MIRROR)

PROPOSED GABION WALL
 (-RW07_1-, -RW07_2-, -RW07_3-)
 SEE SHEETS 2G-7 AND W-4.

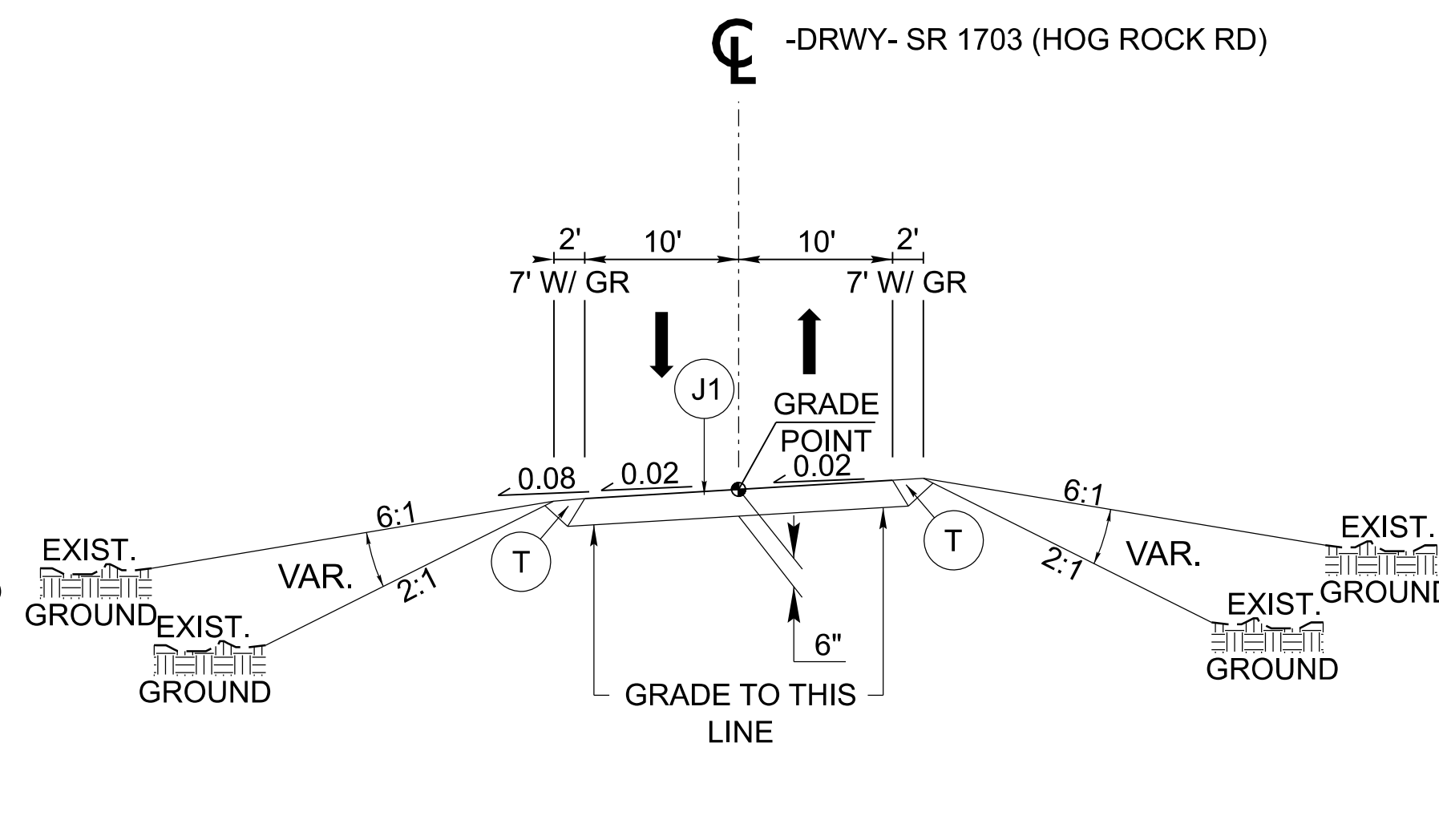


TYPICAL SECTION NO. 3
 -L7- STA. 13+64.00 TO STA. 13+97.00

PROPOSED GABION WALL
 (-RW07_1-, -RW07_2-, -RW07_3-)
 SEE SHEETS 2G-7 AND W-4.



TYPICAL SECTION NO. 4
 -DRWY- STA. 10+26.58 TO STA. 10+87.00



TYPICAL SECTION NO. 5
 -DRWY- STA. 10+87.00 TO STA. 10+92.00

DF18314.
2045066

FINAL 2A-7

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
HENDERSON COUNTY

ROADWAY DESIGN
ENGINEER

7/29/2025

PAVEMENT DESIGN
ENGINEER

7/29/2025

SEAL 039234
JOSEPH T. HOLLAND

SEAL 024964
JOSEPH T. HOLLAND

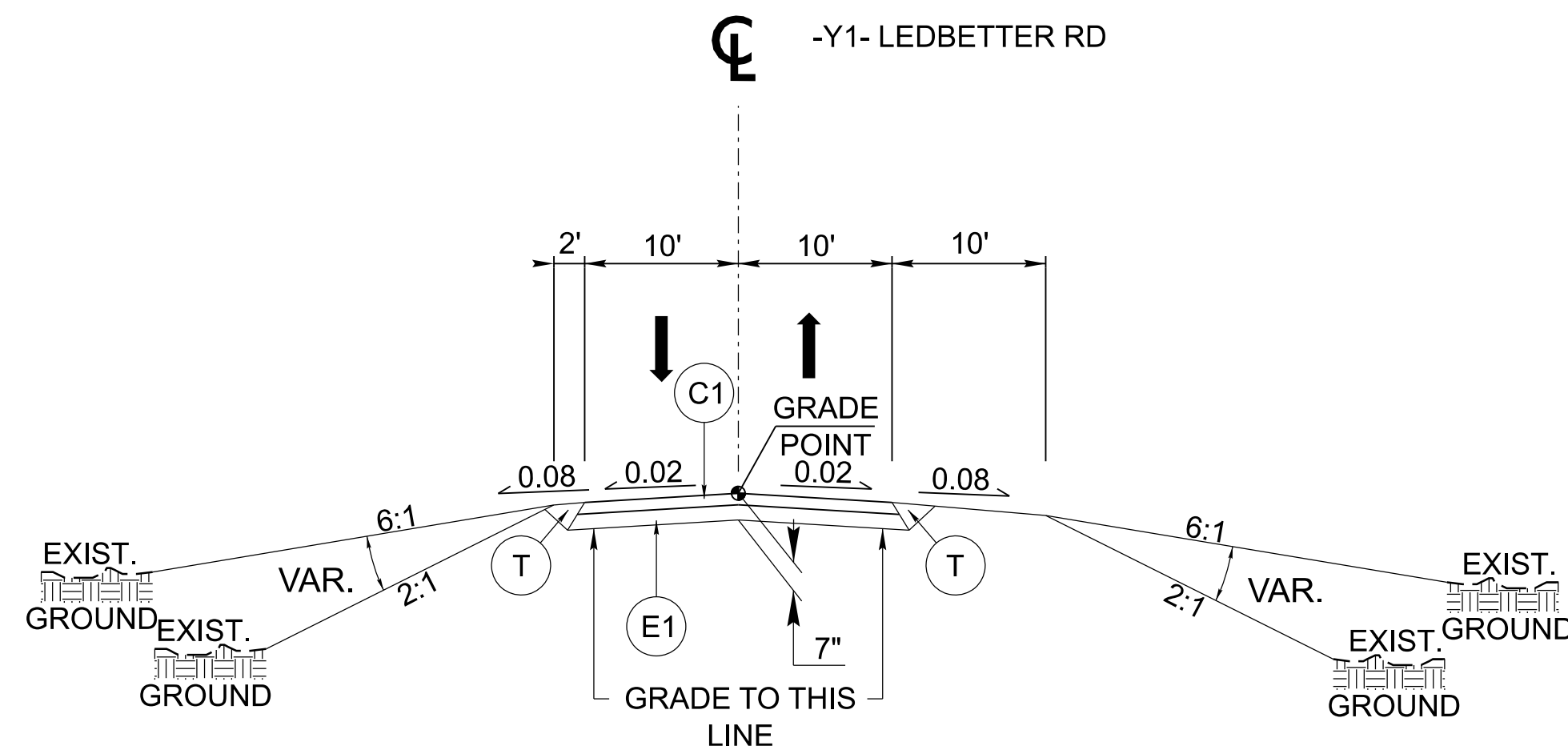
PREPARED BY
KCA
KISINGER CAMPO & ASSOCIATES

NC FIRM LICENSE No.: C-1506
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Suite 1500
Raleigh, NC 27601
(919)882-7839

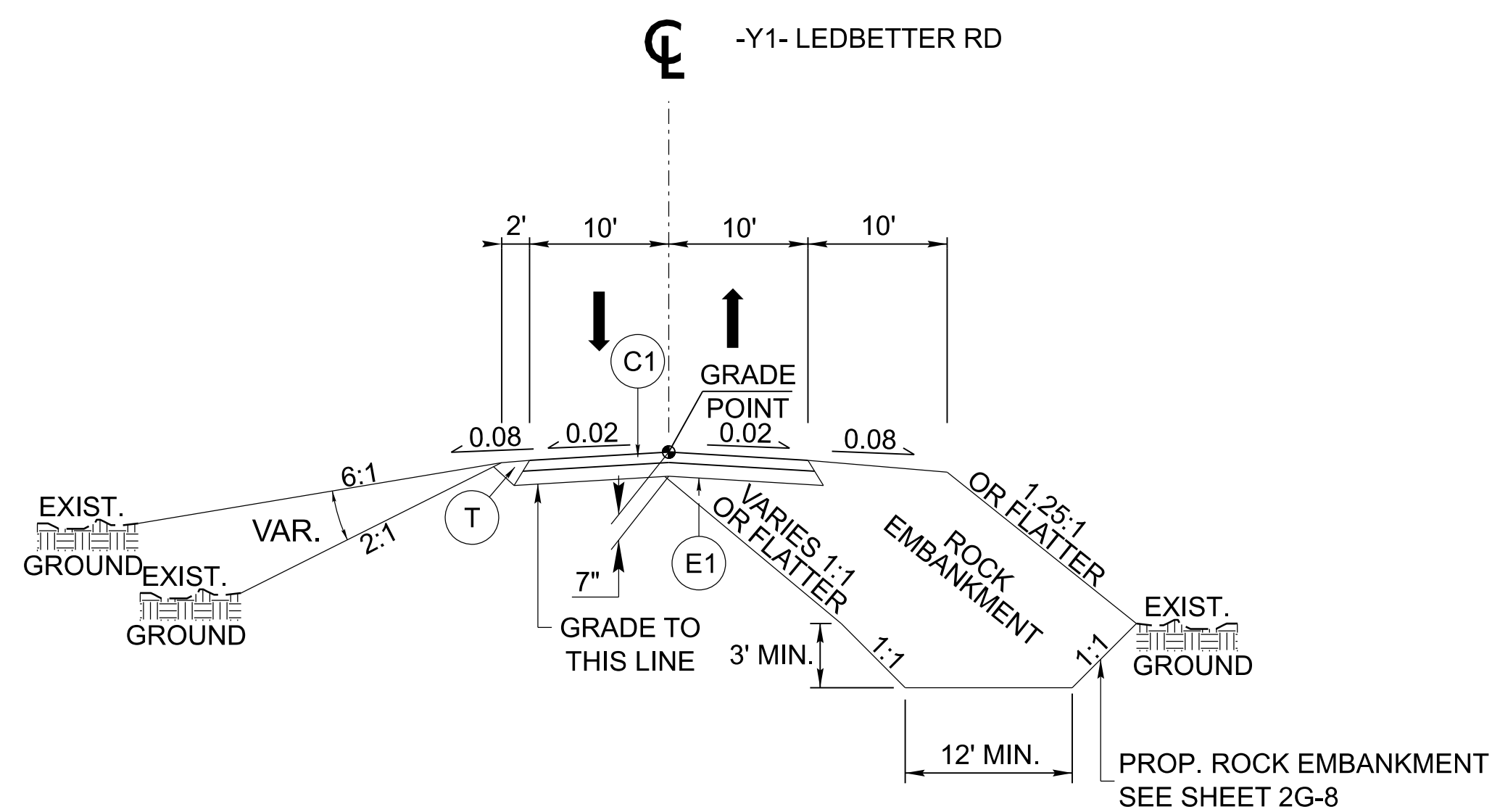
REVISIONS

PAVEMENT SCHEDULE (FINAL)	
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T	EARTH MATERIAL

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



TYPICAL SECTION NO. 1
 -Y1- STA. 10+20.00 TO STA. 10+30.00
 -Y1- STA. 11+00.00 TO STA. 11+15.00

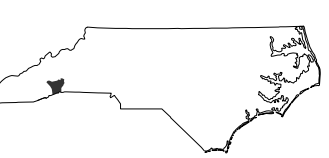


TYPICAL SECTION NO. 2
 -Y1- STA. 10+30.00 TO STA. 11+00.00

DF18314.
2045455

FINAL 2A-8

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
HENDERSON COUNTY



HIGHWAY DIVISION 14

ROADWAY DESIGN
ENGINEER

7/29/2025

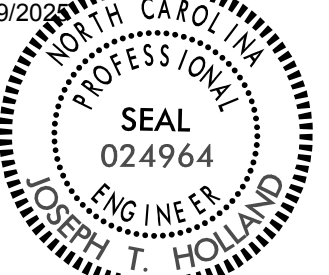


Signed by: *Nikki Honecutt*

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UNLESS ALL SIGNATURES COMPLETED

PAVEMENT DESIGN
ENGINEER

7/29/2025



Signed by: *Joseph T. Holland*

PREPARED BY



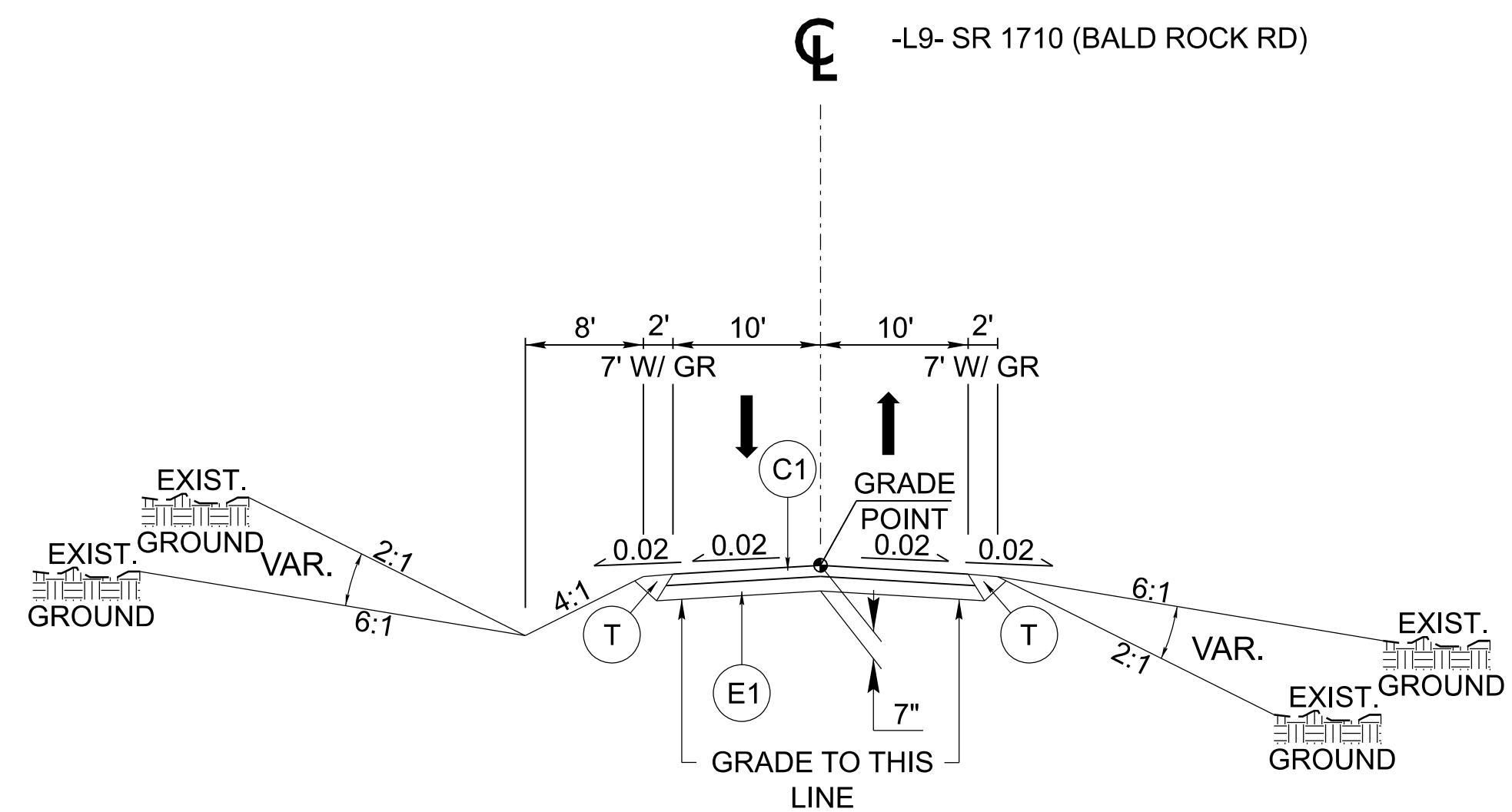
KISINGER CAMPO
& ASSOCIATES

NC FIRM LICENSE No: C-1506
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Suite 1500
Raleigh, NC 27601
(919)882-7839

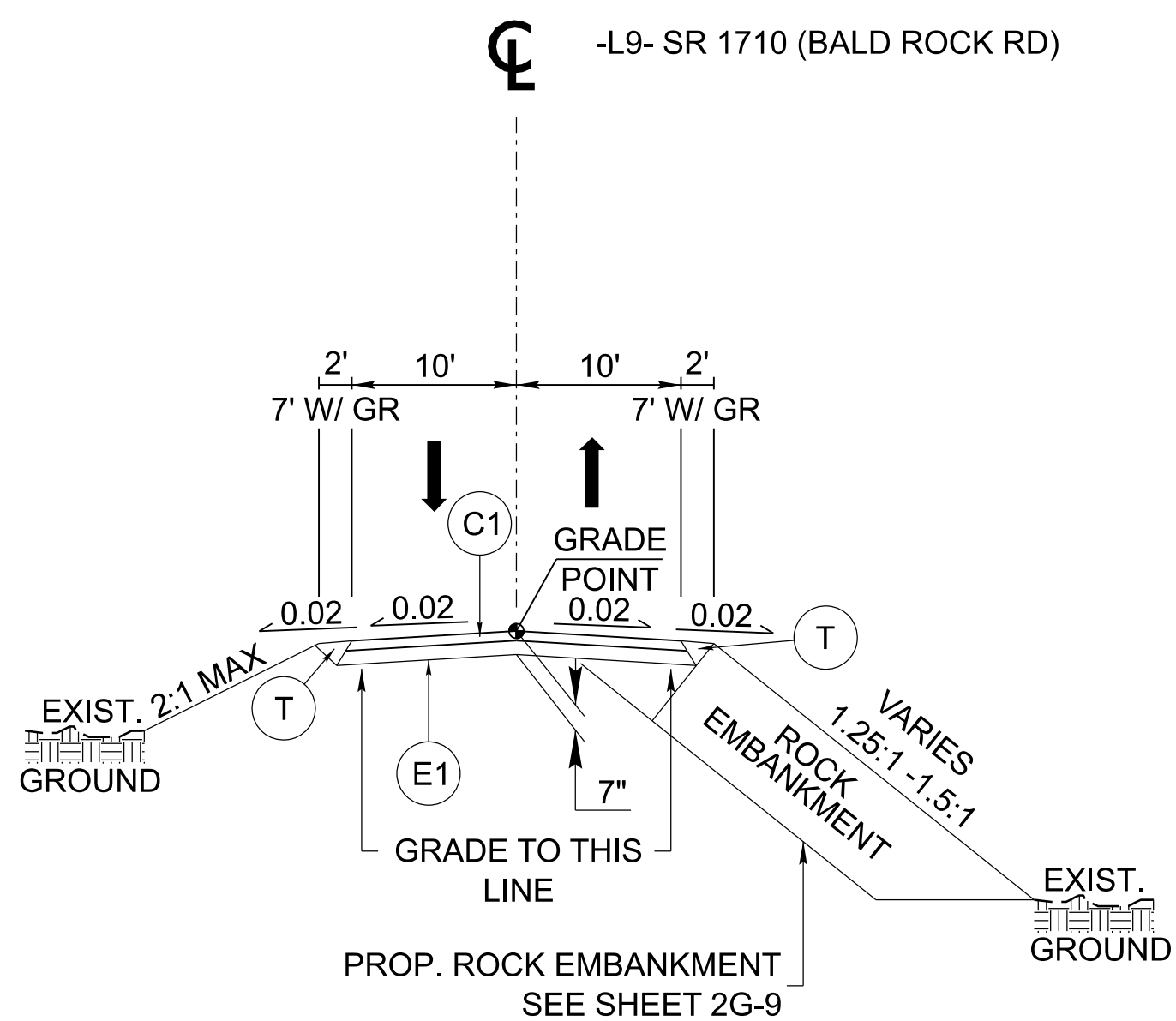
REVISIONS

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



TYPICAL SECTION NO. 1
 -L9- STA. 11+35.00 TO STA. 11+40.00
 -L9- STA. 12+10.00 TO STA. 12+65.00
 -L9- STA. 13+95.00 TO STA. 14+00.00

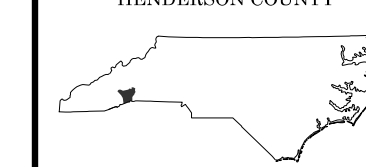


TYPICAL SECTION NO. 2
 -L9- STA. 11+40.00 TO STA. 12+10.00
 -L9- STA. 12+65.00 TO STA. 13+95.00

DF18314.
2045479

FINAL 2A-9

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
HENDERSON COUNTY



HIGHWAY DIVISION 14

ROADWAY DESIGN
ENGINEER

7/29/2025

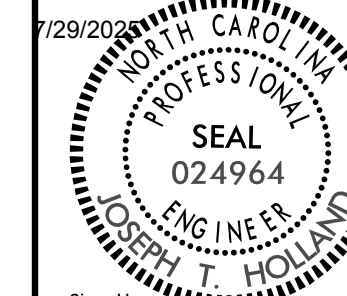


Signed by:
Nikki Honecutt

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PAVEMENT DESIGN
ENGINEER

7/29/2025



Signed by:
Joseph T. Holland

PREPARED BY



KISINGER CAMPO
& ASSOCIATES

NC FIRM LICENSE No: C-1506

301 Fayetteville St.,

Suite 1500

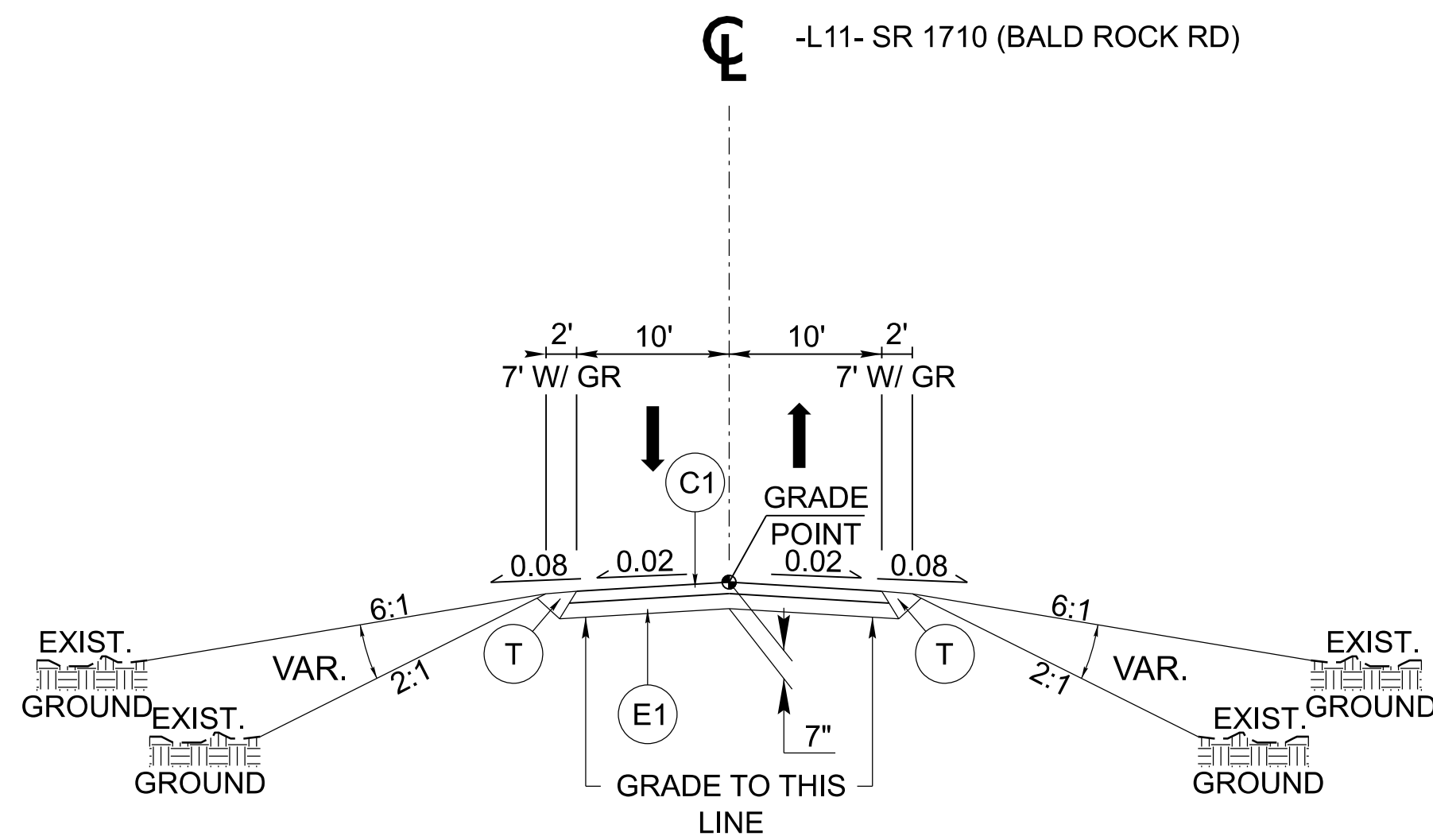
Raleigh, NC 27601

(919)882-7839

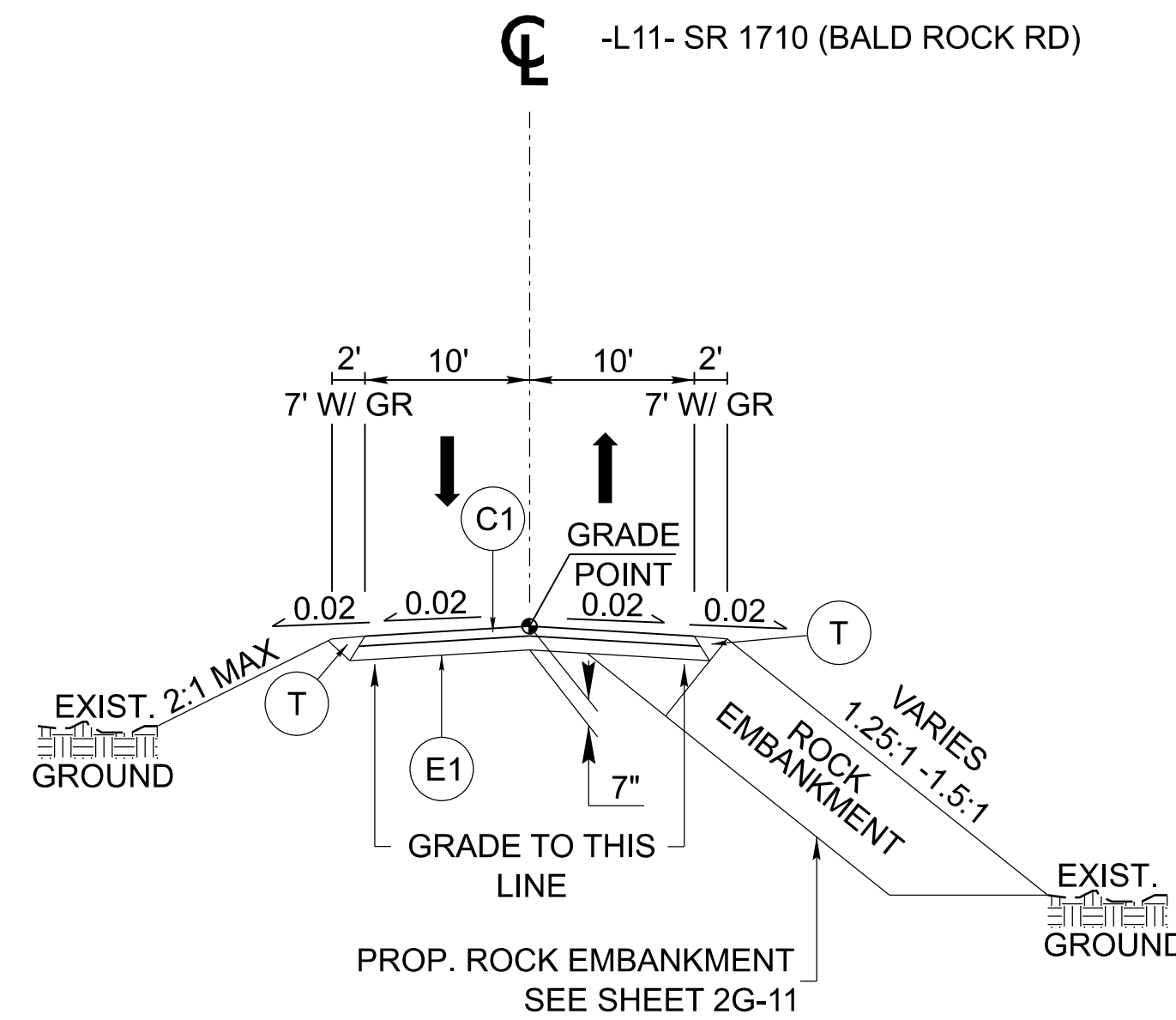
REVISIONS

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T	EARTH MATERIAL

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TYPICAL SECTION NO. 1
 -L11- STA. 11+70.00 TO STA. 11+85.00
 -L11- STA. 12+20.00 TO STA. 12+35.00

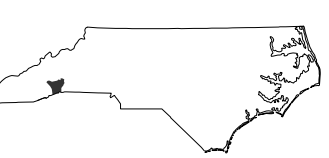


TYPICAL SECTION NO. 2
 -L11- STA. 11+85.00 TO STA. 12+20.00

DF18314.
2045478

FINAL 2A-II

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
HENDERSON COUNTY



HIGHWAY DIVISION 14

ROADWAY DESIGN
ENGINEER

7/29/2025



Signed by: *Nikki Honecutt*

DOCUMENT NOT CONSIDERED FINAL
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PAVEMENT DESIGN
ENGINEER

7/29/2025



Signed by: *Joseph T. Holland*

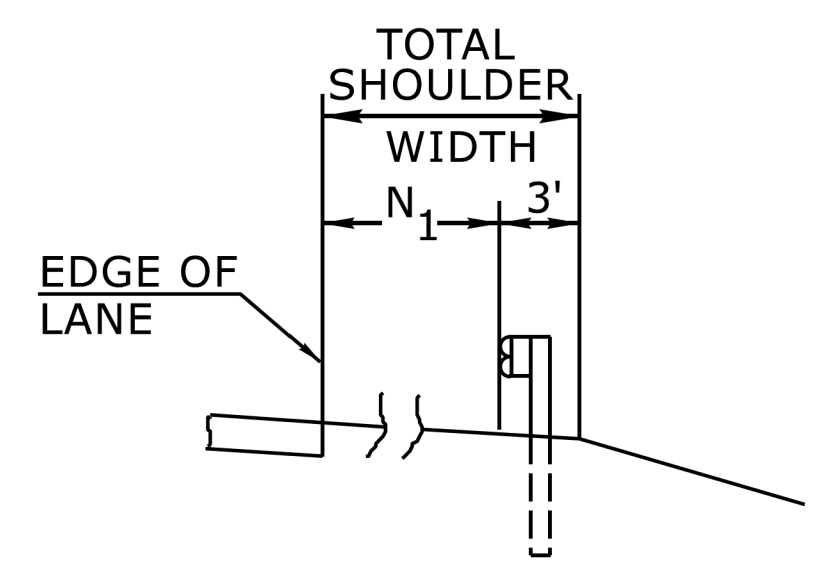
PREPARED BY

KCA
KISINGER CAMPO
& ASSOCIATES

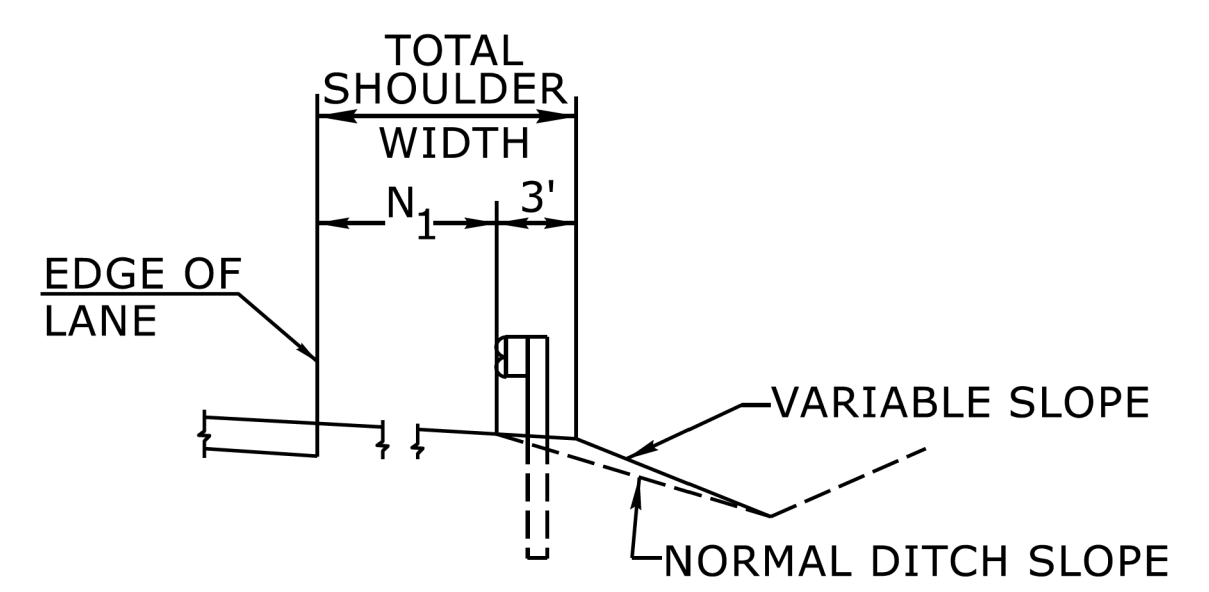
NC FIRM LICENSE No: C-1506
301 Fayetteville St.,
Suite 1500
Raleigh, NC 27601
(919)882-7839

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
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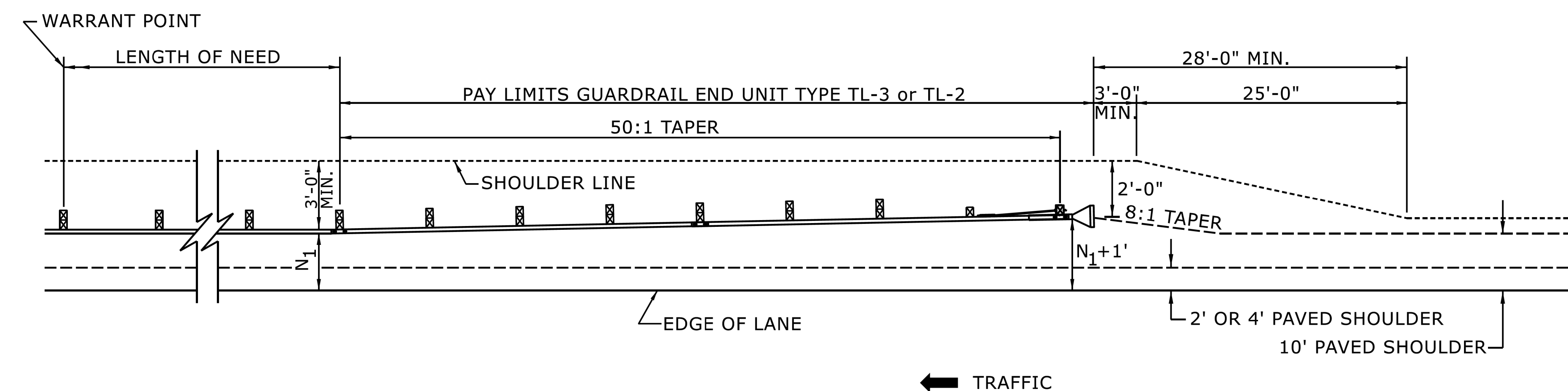


FILL SECTION



CUT SECTION

"N₁" = DISTANCE FROM EDGE OF LANE TO FACE OF GUARDRAIL WHERE GUARDRAIL IS PARALLEL TO LANE.



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

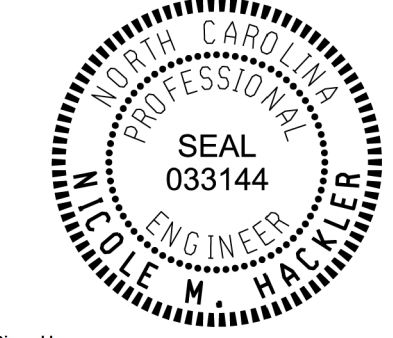
DETAIL OF BEGINNING OF GUARDRAIL IN CUT OR FILL SECTION

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

ROADWAY DETAIL DRAWING FOR
GUARDRAIL PLACEMENT

SHEET 6 OF 15
862D01

7/29/2025



Signed by:
Nicole M. Hacker
588432034164CS

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:	

DF18314.
2045060

FINAL 2G-1

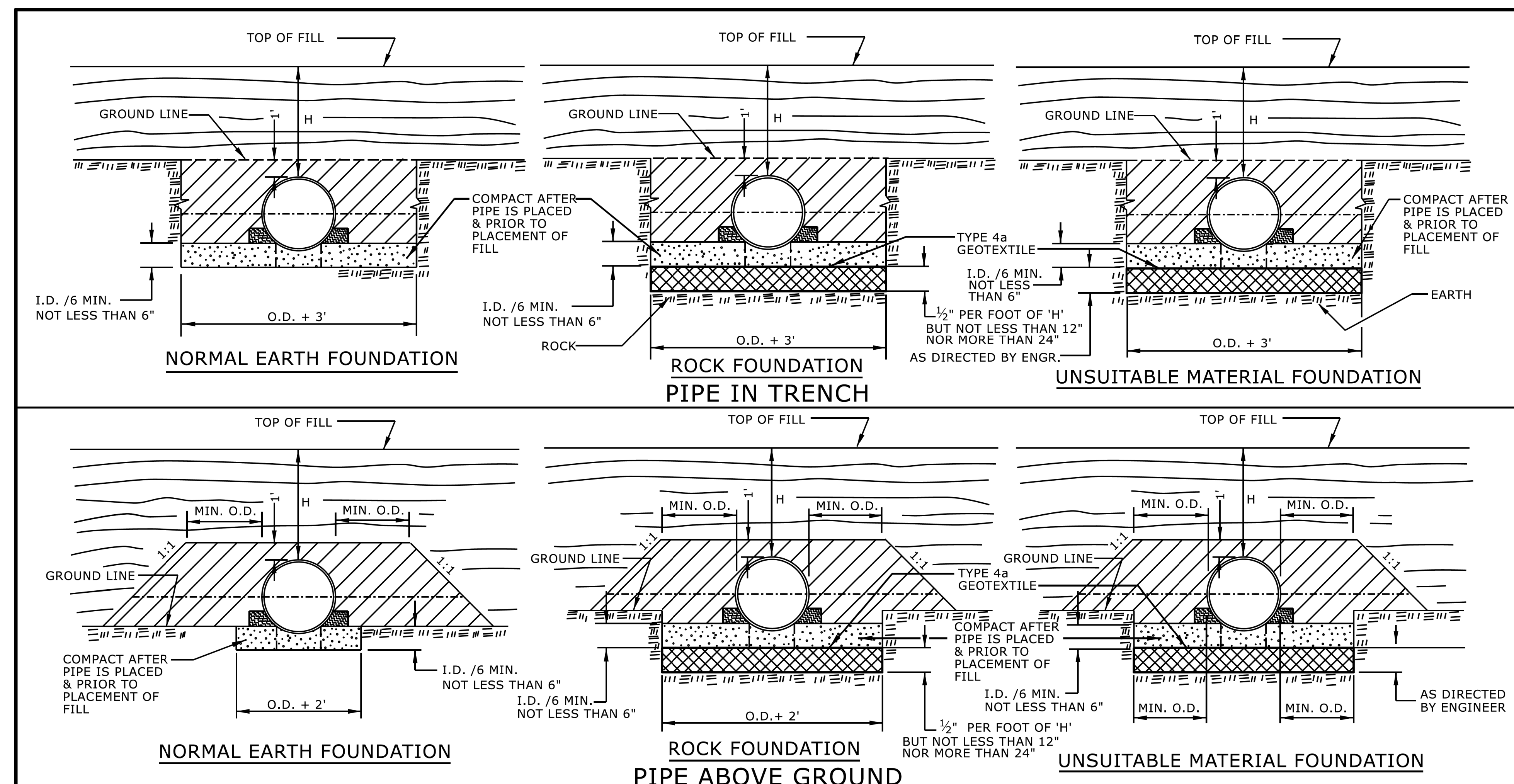
NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
HENDERSON COUNTY

HIGHWAY DIVISION 14

PREPARED BY
KCA
KISINGER CAMPO
& ASSOCIATES

NC FIRM LICENSE No: C-1506
301 Fayetteville St.,
Suite 1500
Raleigh, NC 27601
(919)882-7839

REVISIONS



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

ROADWAY DETAIL DRAWING FOR
METHOD OF PIPE INSTALLATION
FLEXIBLE PIPE

SHEET 1 OF 2
300.01

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, TYPE 1 ABOVE AND BELOW SPRINGLINE.
- UNDISTURBED EARTH MATERIAL
- SELECT MATERIAL CLASS V OR VI FOR FOUNDATION CONDITIONING. ENCAPSULATE WITH TYPE IV GEOTEXTILE AS DIRECTED BY THE ENGINEER.

7/29/2025



Signed by:
Nicole M. Hecker
088432034164C5

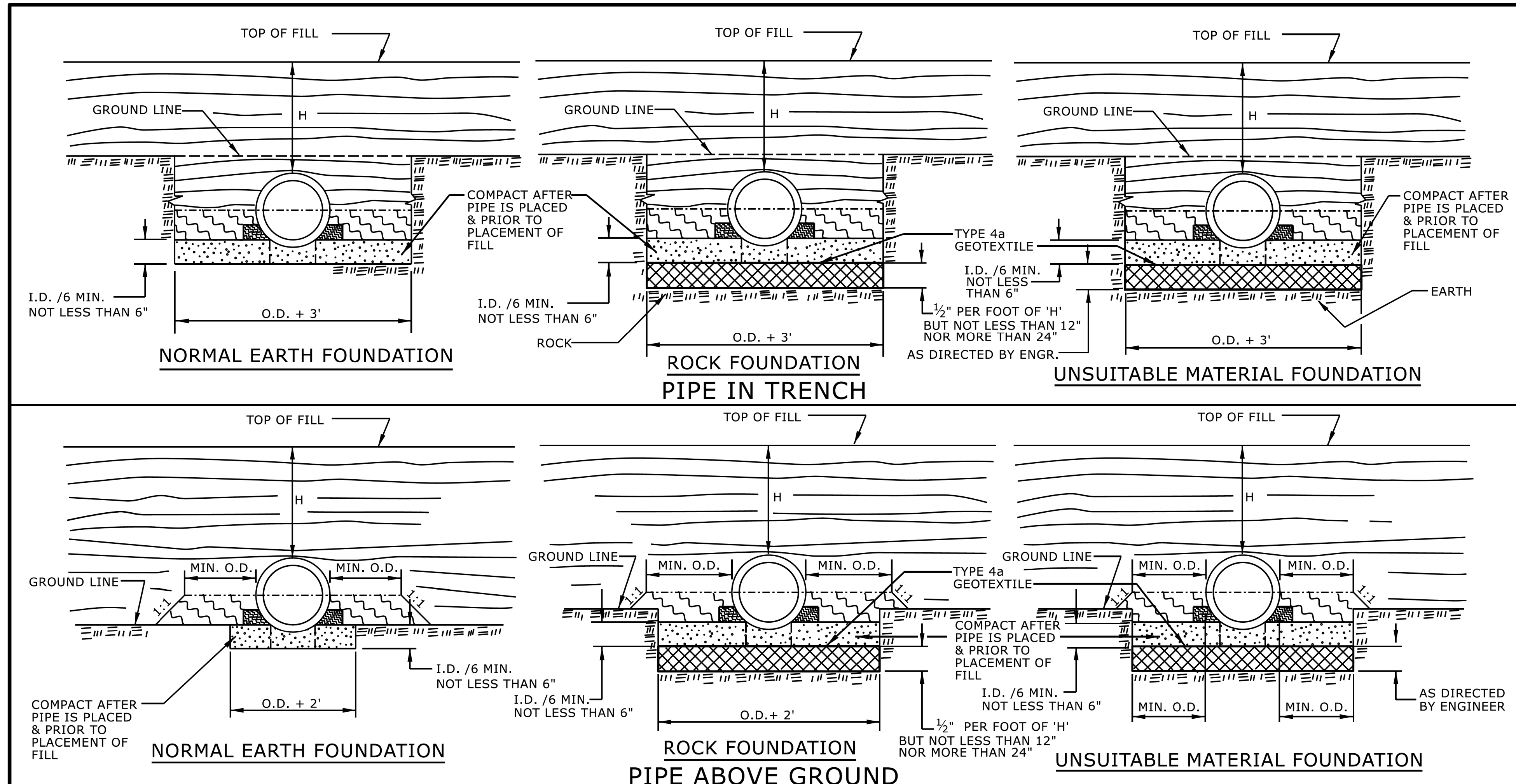
DOCUMENT NOT CONSIDERED FINAL
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CONTRACTS STANDARDS
AND DEVELOPMENT UNIT
Office 919-707-6950 FAX 919-250-4119

SEE TITLE BLOCK

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

REVISIONS



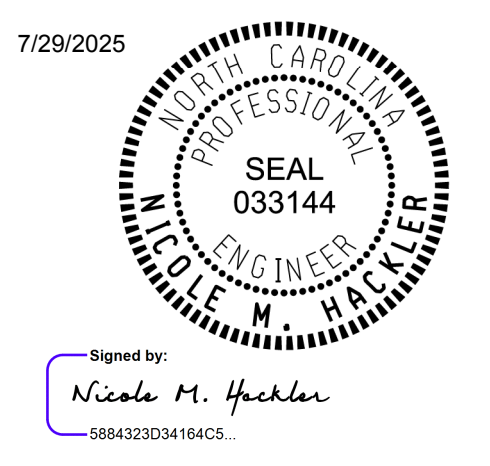
GENERAL NOTES:
 I.D. = THE MAXIMUM HORIZONTAL INSIDE DIAMETER DIMENSION.
 O.D. = THE MAXIMUM HORIZONTAL OUTSIDE DIAMETER DIMENSION.
 H = THE FILL HEIGHT MEASURED VERTICALLY AT ANY POINT ALONG THE PIPE FROM THE TOP OF THE PIPE TO THE TOP OF THE EMBANKMENT AT THAT POINT.

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.

STATE OF NORTH CAROLINA
 DEPT. OF TRANSPORTATION
 DIVISION OF HIGHWAYS
 RALEIGH, N.C.
 ROADWAY DETAIL DRAWING FOR
METHOD OF PIPE INSTALLATION
 RIGID PIPE
 SHEET 2 OF 2
300.01



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ORIGINAL BY: S.CALHOUN DATE: 7-25-2024
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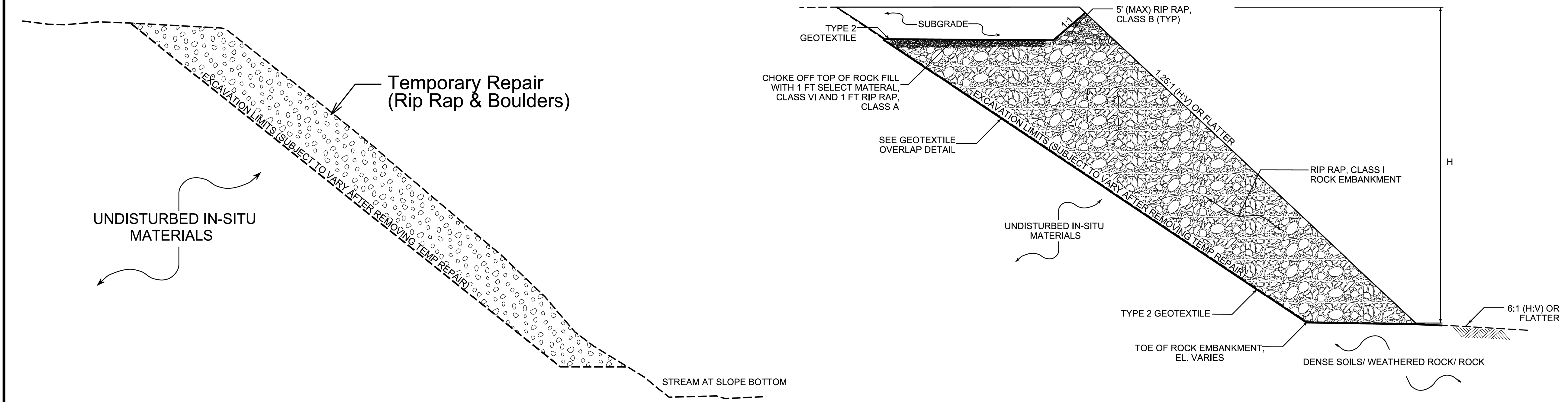
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NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 HENDERSON COUNTY

HIGHWAY DIVISION 14
 PREPARED BY
KCA
 KISINGER CAMPO & ASSOCIATES
 NC FIRM LICENSE No: C-1506
 301 Fayetteville St.,
 Suite 1500
 Raleigh, NC 27601
 (919)882-7839

REVISIONS

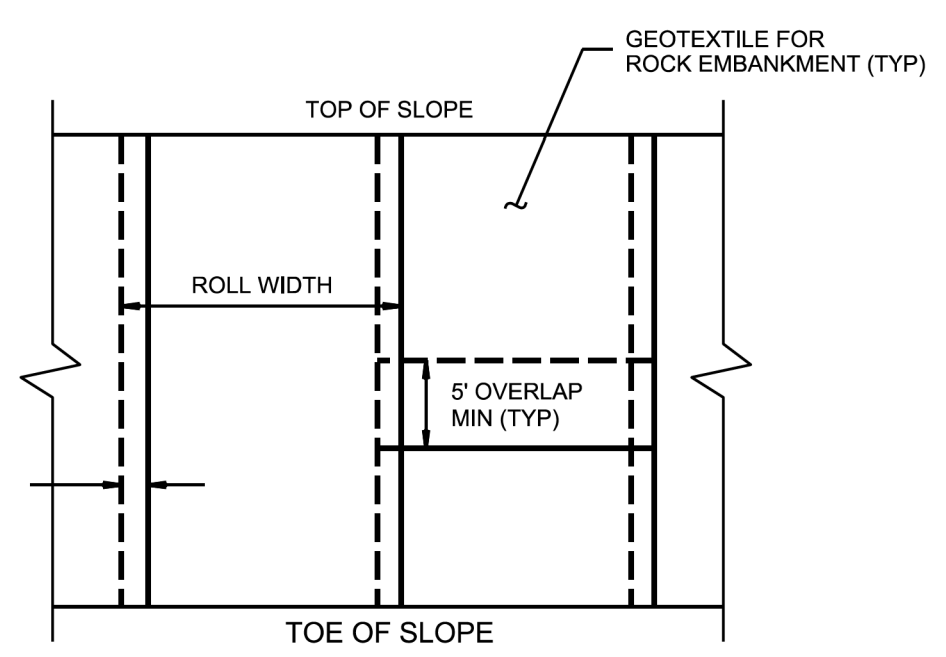
GEOTECHNICAL ENGINEER  Documented by: <i>Cheng Wang</i> 8/8/2025 SIGNATURE DATE	ENGINEER _____ SIGNATURE DATE
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



EXISTING CONDITIONS VARIES
N.T.S.

NOTES:

1. FOR ROCK EMBANKMENT, SEE ROCK EMBANKMENT PROVISION.
2. THE MAXIMUM ALLOWABLE HEIGHT FOR THE ROCK EMBANKMENT DETAIL IS 80'.
3. FOR ROCK EMBANKMENT, BENCH EXISTING SLOPE IN ACCORDANCE WITH SECTION 235 OF THE STANDARD SPECIFICATIONS, WHERE POSSIBLE.
4. REMOVE THE TEMPORARY REPAIR (RIP RAP AND BOULDERS) TO UNDISTURBED IN-SITU MATERIALS TO THE SATISFACTION OF THE ENGINEER BEFORE CONSTRUCTING ROCK EMBANKMENT.
5. IF SOFT/LOOSE MATERIALS EXIST AT THE TOE OF SLOPE, UNDERCUT THE MATERIALS TO THE SATISFACTION OF THE ENGINEER AND BACK FILL WITH SELECT MATERIAL APPROVED BY THE ENGINEER.
6. NO SUBSURFACE INFORMATION IS AVAILABLE IN THE VICINITY OF SITE 1. THE INFORMATION PROVIDED FOR DESIGN WAS BASED ON VISUAL OBSERVATIONS AND APPROXIMATIONS AND MAY NOT BE APPLICABLE TO THE ACTUAL SITE CONDITIONS ENCOUNTERED DURING CONSTRUCTION.



PROJECT NO.: DF18314.2045060
COUNTY: HENDERSON

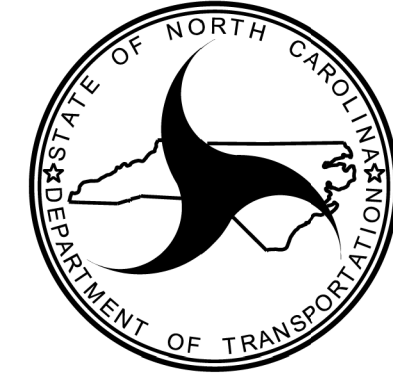
PREPARED BY: C. WANG, P.E.	DATE: 08/2025
REVIEWED BY: P. ALTON, P.E.	DATE: 08/2025

SINCE **F&R** 1881

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NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

GEOTECHNICAL ENGINEERING UNIT

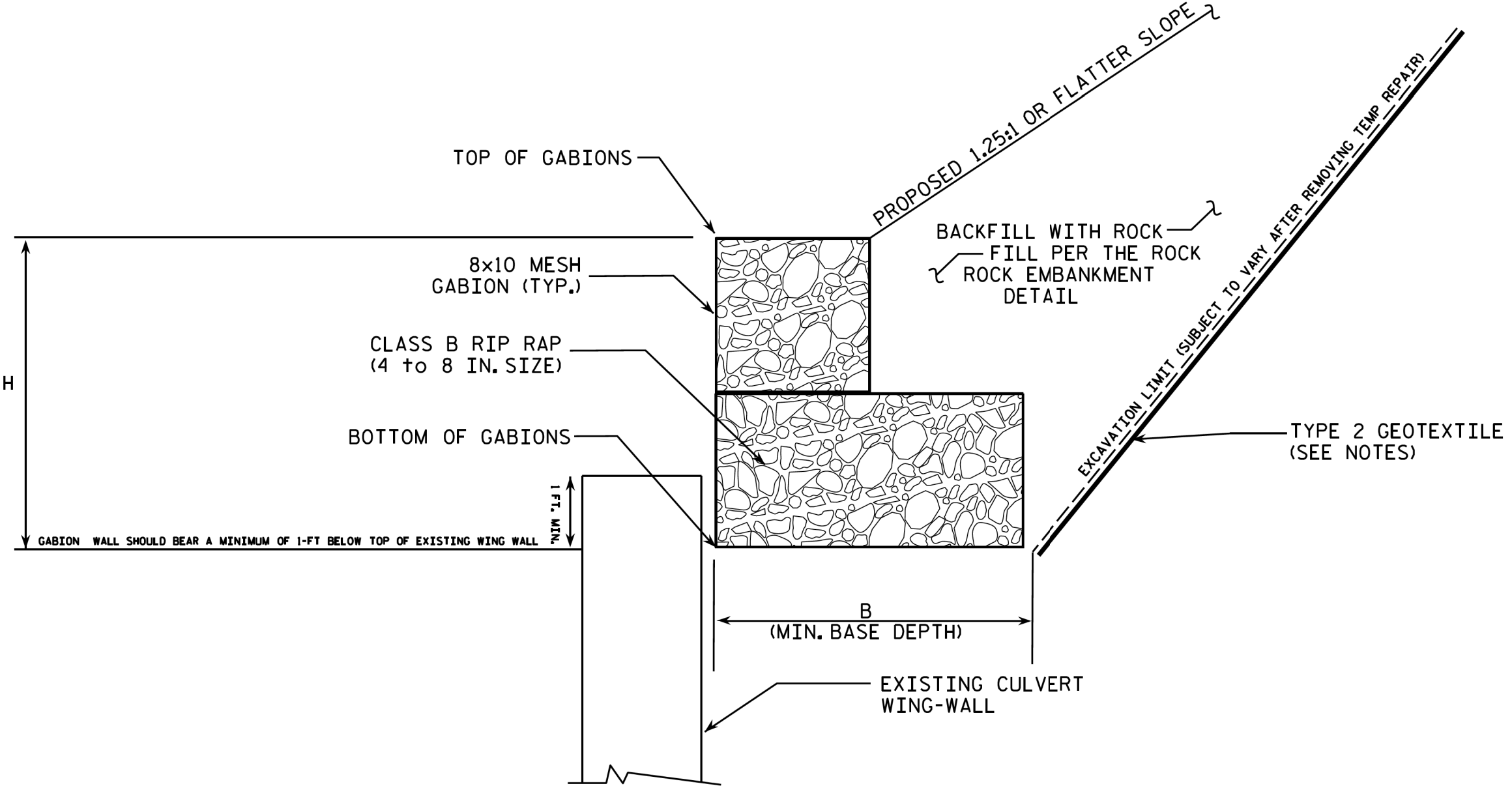


HURRICANE HELENE EMERGENCY REPAIRS
ROCK EMBANKMENT
SITE 1-BALD ROCK RD.

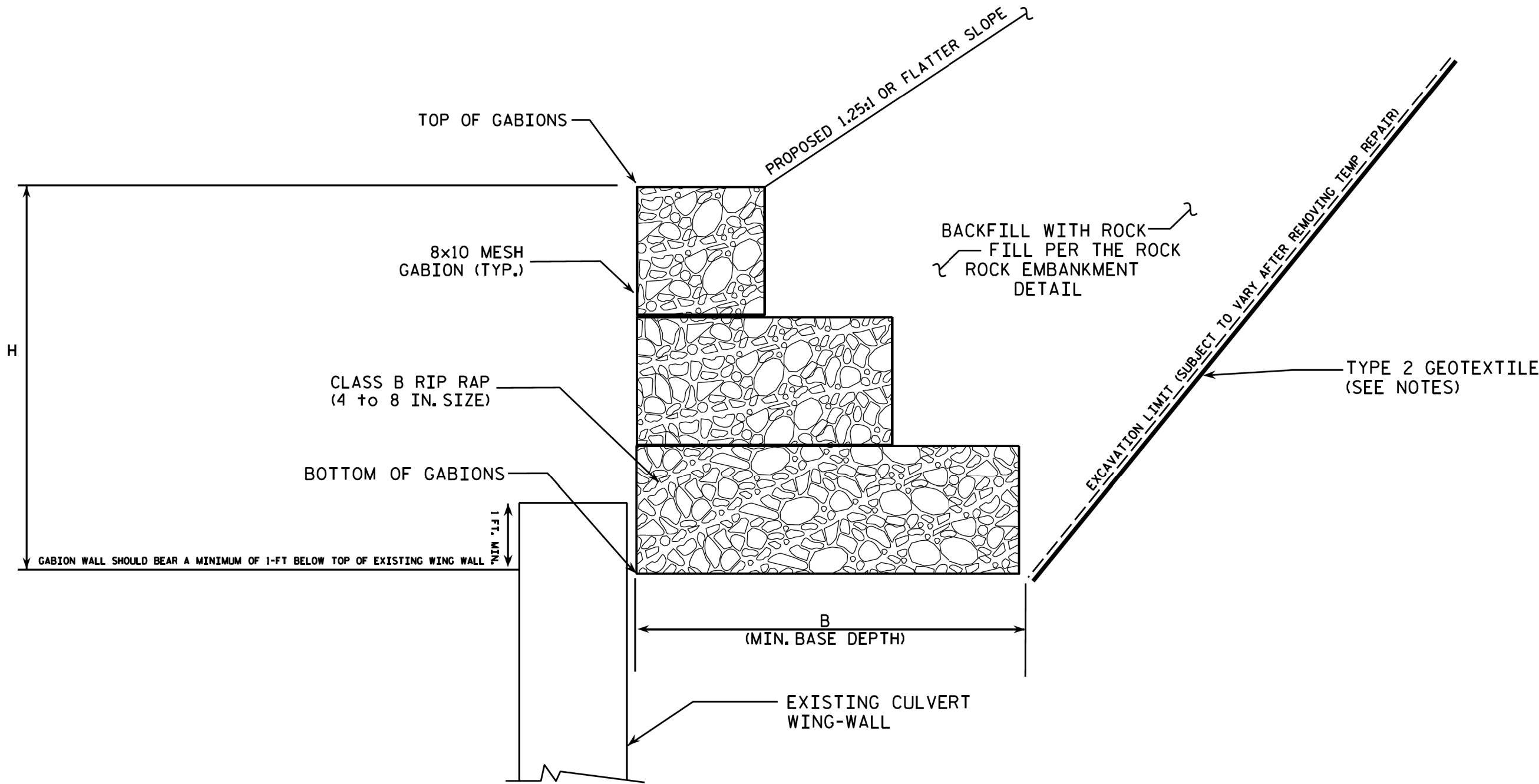
REVISIONS					
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1			3		
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SHEET NO. 2G-1a

REVISIONS



TYPICAL SECTION - B/H = 1.0 (MIN.)
N.T.S.



TYPICAL SECTION - B/H = 1.0 (MIN.)
N.T.S.

FOR GABION RETAINING WALL, SEE PROVISION.

ALL WORKMANSHIP TO BE IN ACCORDANCE WITH NCDOT AND GABION MANUFACTURER'S SPECIFICATIONS.

REMOVE THE TEMPORARY REPAIRS (RIP RAP AND BOULDERS) AND ANY LOOSE DEBRIS ON THE SURFACES OF THE SLOPES AND FROM BEHIND THE CULVERT WING-WALL TO UNDISTURBED IN-SITU MATERIALS TO THE SATISFACTION OF THE ENGINEER BEFORE CONSTRUCTING GABION WALLS.

BACKFILL THE RESULTING EXCAVATION BEHIND THE CULVERT WING-WALL AND BELOW THE GABIONS WITH CLASS VI SELECT MATERIALS. PRIOR TO BACKFILLING, COVER EXCAVATION LIMITS WITH TYPE 2 GEOTEXTILE.

IF LOOSE MATERIALS EXIST AT THE BOTTOM OF THE PROPOSED GABION WALL, UNDERCUT THE MATERIALS TO THE SATISFACTION OF THE ENGINEER BEFORE CONSTRUCTING GABION WALLS.

USE GALVANIZED & PVC COATED GABIONS WITH 8x10 MESH.

ARRANGE EMPTY GABIONS AS SHOWN. FASTEN ADJACENT UNITS AND HAND PLACE CLASS B RIP RAP (4 TO 8 IN. NOMINAL SIZE) IN GABIONS. PROVIDE GABION STIFFENERS WHERE REQUIRED. CLOSE LID AND FASTEN.

BACKFILL BEHIND GABIONS WITH ROCK FILL PER THE ROCK EMBANKMENT DETAIL. PRIOR TO BACKFILLING, COVER THE EXCAVATION LIMITS WITH TYPE 2 GEOTEXTILE.

PLACE NEXT COURSE OF EMPTY GABIONS, FASTEN ADJACENT UNITS TOGETHER, HAND PLACE RIP RAP IN GABIONS, PROVIDE GABION STIFFENERS WHERE REQUIRED, CLOSE AND FASTEN LID, INSTALL FABRIC ON GABION BACK, AND BACKFILL BEHIND GABIONS. GABIONS SHOULD BE BENCHED INTO EXISTING GROUND BEYOND FAILED AREA AT EACH END. REPEAT UNTIL TOP COURSE OF GABIONS IS INSTALLED.

GRADE ABOVE AND BEHIND GABIONS AT A SLOPE INCLINATION OF 2(H):1(V) OR FLATTER.

NO SUBSURFACE INFORMATION IS AVAILABLE IN THE VICINITY OF SITE 1. THE INFORMATION PROVIDED FOR DESIGN WAS BASED ON VISUAL OBSERVATIONS AND APPROXIMATIONS AND MAY NOT BE APPLICABLE TO THE ACTUAL SITE CONDITIONS ENCOUNTERED DURING CONSTRUCTION.

BEFORE BEGINNING GABION RETAINING WALL DESIGN AT SITE 1, SURVEY WALL LOCATION AND SUBMIT A WALL PROFILE VIEW (WALL ENVELOPE) FOR REVIEW. DO NOT START WALL DESIGN OR CONSTRUCTION UNTIL THE WALL ENVELOPE IS ACCEPTED.

DESIGN GABION RETAINING WALL FOR EXTERNAL AND GLOBAL STABILITY.

DESIGN GABION RETAINING WALL FOR A LIVE LOAD (TRAFFIC) SURCHARGE.

- DESIGN GABION RETAINING WALL AT SITE 1 FOR THE FOLLOWING:
- 1) DESIGN HEIGHT (H) = WALL HEIGHT + WALL EMBEDMENT
 - 2) DESIGN LIFE = 75 YEARS
 - 3) IN-SITU ASSUMED MATERIAL PARAMETERS (RESIDUAL & ROADWAY EMBANKMENT SOILS):
UNIT WEIGHT, $\gamma = 120$ PCF
FRICTION ANGLE, $\phi = 30$ DEGREES
COHESION, $c = 0$ PSF
 - 4) IN-SITU ASSUMED MATERIAL PARAMETERS (WEATHERED ROCK)
UNIT WEIGHT, $\gamma = 130$ PCF
FRICTION ANGLE, $\phi = 41$ DEGREES
COHESION, $c = 0$ PSF
 - 5) GABION BACKFILL ASSUMED MATERIAL PARAMETERS (ROCK FILL)
UNIT WEIGHT, $\gamma = 135$ PCF
FRICTION ANGLE, $\phi = 40$ DEGREES
COHESION, $c = 0$ PSF

TOTAL STRUCTURE QUANTITY = 108 SQ. FT.

TOTAL STRUCTURE QUANTITY INCLUDES EMBEDMENT BELOW GRADE

GEOTECHNICAL ENGINEER Cheng Wang 8/8/2025 DATE	ENGINEER _____ SIGNATURE _____ DATE
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

DF18314.
2045060

FINAL 2G-1B

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
HENDERSON COUNTY

HIGHWAY DIVISION 14

PREPARED BY: C. WANG, P.E.	DATE: 08/2025
REVIEWED BY: P. ALTON, P.E.	DATE: 08/2025

SINCE

1881

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NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

GEOTECHNICAL
ENGINEERING UNIT

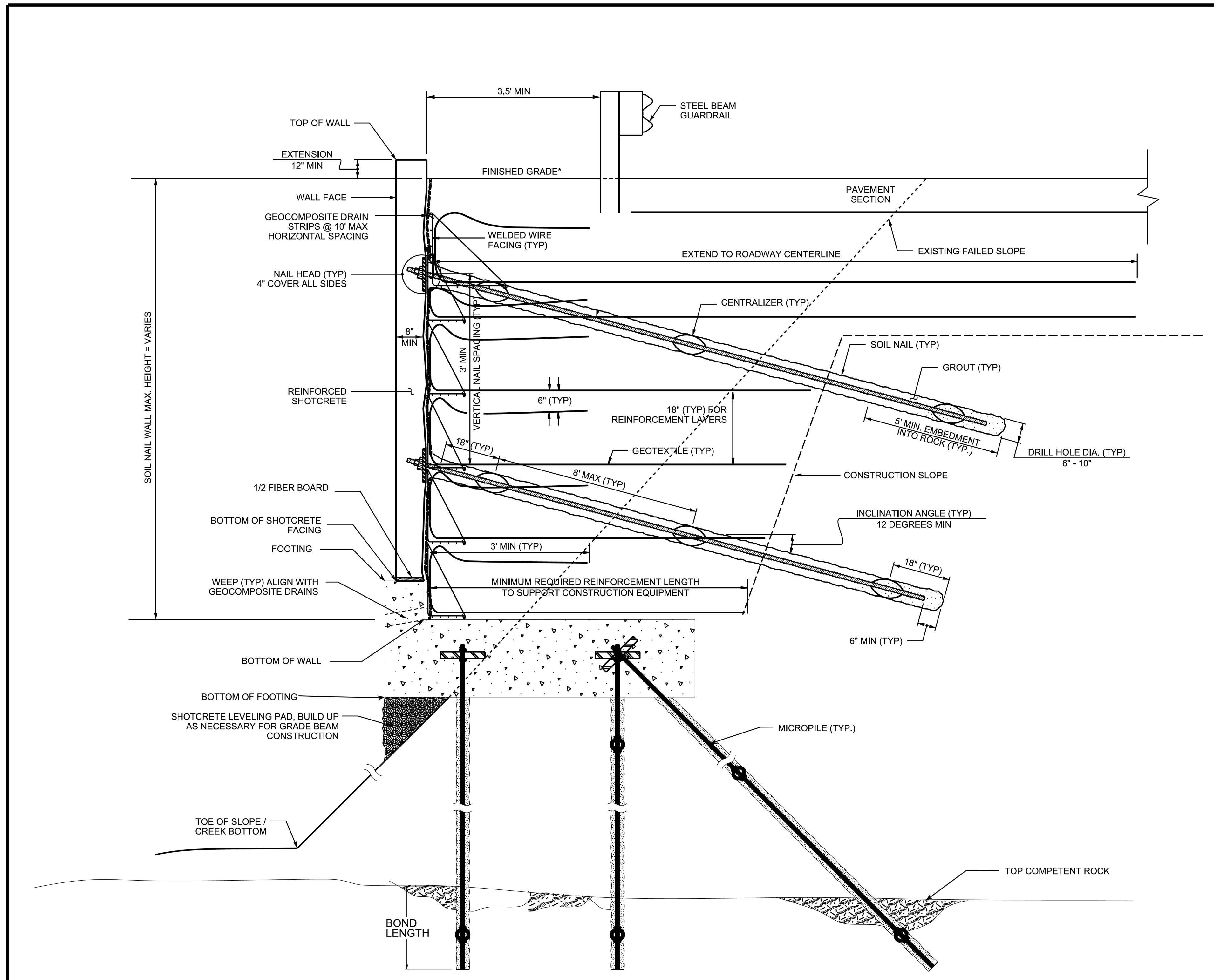
PROJECT NO.: DF18314.2045060
COUNTY: HENDERSON

GABION RETAINING WALL
SITE 1- BALD ROCK RD.

REVISIONS					
NO.	BY	DATE	NO.	BY	DATE
1			3		
2			4		

SHEET NO. 2G-1b

REVISIONS



GEOTECHNICAL ENGINEER SEAL 048123 CHENG WANG, P.E. DocuSigned by: Cheng Wang 8/8/2025	ENGINEER _____ SIGNATURE _____ DATE
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

DF18314.
2045062

FINAL 2G-3A

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
HENDERSON COUNTY

HIGHWAY DIVISION 14

TOTAL STRUCTURE QUANTITIES	
SOIL NAIL OF RETAINING WALL	1,900 SO. FT.
SOIL NAIL VERIFICATION TESTS	1 EA.
SOIL NAIL PROOF TESTS	3 EA.
MICROPILE SLOPE STABILIZATION	140 LIN. FT.
DEMONSTRATION MICROPILES	1 EA.
MICROPILE VERIFICATION TESTS	1 EA.
MICROPILE PROOF TESTS	2 EA.

SEE ROADWAY PLAN W-1 FOR WALL ENVELOPE

PROJECT NO.: DF18314.2045062
 COUNTY: HENDERSON

TYPICAL SECTION

PREPARED BY: C. WANG, P.E.	DATE: 08/25
REVIEWED BY: P. ALTON, P.E.	DATE: 08/25

SINCE

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NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

GEOTECHNICAL
ENGINEERING UNIT

HURRICANE HELENE EMERGENCY REPAIRS
 SOIL NAIL SHOULDER BUILD-OUT
 SITE 3- BALD ROCK RD.

REVISIONS					
NO.	BY	DATE	NO.	BY	DATE
1			3		
2			4		

SHEET NO. 2G-3a

REVISIONS

NOTES:

FOR SOIL NAIL RETAINING WALLS BUILD-OUT, SEE SOIL NAIL RETAINING WALLS PROVISION.

FOR STEEL BEAM GUARDRAIL, SEE ROADWAY PLANS AND SECTION 862 OF THE STANDARD SPECIFICATIONS

FOR MICROPILES AND MICROPILE FOOTING, SEE MICROPILE SLOPE STABILIZATION PROVISION.

AVOID SOIL NAILS WITH INSTALLING GUARDRAIL POSTS.

DESIGN SOIL NAIL RETAINING WALLS AND MICROPILE SLOPE STABILIZATION FOR INTERNAL, EXTERNAL, AND GLOBAL STABILITY.

PER THE TYPICAL SECTION, THE EXISTING GROUND IS LOCATED BEHIND THE FUTURE SOIL NAIL WALL FACE. AT THE CONTRACTOR'S OPTION, CONSTRUCT NEW GROUND PRIOR TO BEGINNING SOIL NAIL WALL CONSTRUCTION OR INSTALL SOIL NAILS INTO THE EXISTING GROUND AND EXTEND THE NAILS TO FACING FALSEWORK. BACKFILL BEHIND THE FALSEWORK AFTER CONSTRUCTING THE WALL FINAL FACING.

BEFORE BEGINNING SOIL NAIL WALL DESIGN FOR SOIL NAIL RETAINING WALL AT SITE 3, SURVEY WALL LOCATION AND SUBMIT A WALL PROFILE VIEW (WALL ENVELOPE) FOR REVIEW. DO NOT START WALL DESIGN OR CONSTRUCTION UNTIL THE WALL ENVELOPE IS ACCEPTED.

DESIGN SOIL NAIL RETAINING WALL AT SITE 3 FOR THE FOLLOWING:

- 1) H= DESIGN HEIGHT
- 2) DESIGN LIFE = 75 YEARS
- 3) IN-SITU ASSUMED MATERIAL PARAMETERS (RESIDUAL SOILS):
UNIT WEIGHT, $\gamma = 120$ PCF
FRICTION ANGLE, $\phi = 30$ DEGREES
COHESION, $c = 0$ PSF
- 4) IN-SITU ASSUMED MATERIAL PARAMETERS (WEATHERED ROCK):
UNIT WEIGHT, $\gamma = 130$ PCF
FRICTION ANGLE, $\phi = 41$ DEGREES
COHESION, $c = 0$ PSF
- 5) DESIGN FAILURE PLANE AT WALL AND FOOTING EQUAL TO AN INFERRED ROCK LINE AT A DEPTH OF 5 FT BELOW PROPOSED BOTTOM OF FOOTING.

DESIGN SOIL NAIL RETAINING WALL FOR A LIVE LOAD (TRAFFIC) SURCHARGE.

DESIGN SOIL NAIL RETAINING WALL FOR A 300 LB/FT HORIZONTAL TRAFFIC IMPACT LOAD.

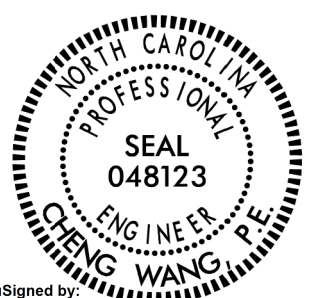
DESIGN SOIL NAIL RETAINING WALL FOR A PIPE EXTENDING THROUGH THE WALL AS SHOWN ON THE ROADWAY DRAWING. VERIFY PIPE LOCATION AND ELEVATION BEFORE BEGINNING SOIL NAIL WALL DESIGN OR CONSTRUCTION.

EXISTING AND FUTURE OBSTRUCTIONS SUCH AS GUARDRAIL, PIPES, INLETS OR UTILITIES WILL INTERFERE WITH SOIL NAILS FOR RETAINING WALL.

REMOVE THE LOOSE DEBRIS ON THE SURFACE OF THE SLOPE TO THE SATISFACTION OF THE ENGINEER BEFORE INSTALLING SOIL NAILS.

DO NOT DISTURB EXISTING VEGETATION BEYOND THE LIMITS OF THE SOIL NAILS INSTALLATION AREA.

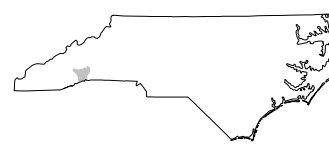
NO SUBSURFACE INFORMATION IS AVAILABLE IN THE VICINITY OF SITE 3. THE INFORMATION PROVIDED FOR DESIGN WAS BASED ON VISUAL OBSERVATIONS AND APPROXIMATIONS AND MAY NOT BE APPLICABLE TO THE ACTUAL SITE CONDITIONS ENCOUNTERED DURING CONSTRUCTION.

GEOTECHNICAL ENGINEER 	ENGINEER
DocuSigned by: <i>Cheng Wang</i> 8/8/2025 <small>DATE</small>	SIGNATURE <small>DATE</small>
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DF18314.
2045062

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NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
HENDERSON COUNTY




HIGHWAY DIVISION 14

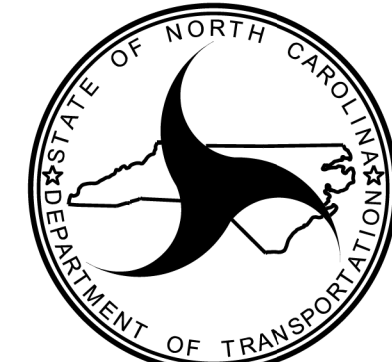
PROJECT NO.: DF18314.2045062

COUNTY: HENDERSON

PREPARED BY: C. WANG, P.E.	DATE: 08/2025
REVIEWED BY: P. ALTON, P.E.	DATE: 08/2025

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DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS


**GEOTECHNICAL
ENGINEERING UNIT**

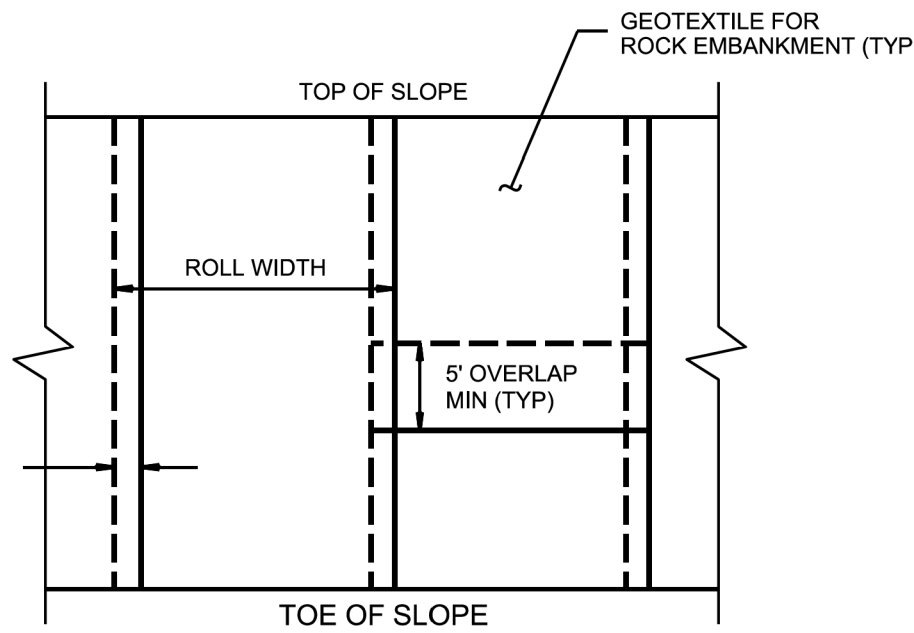
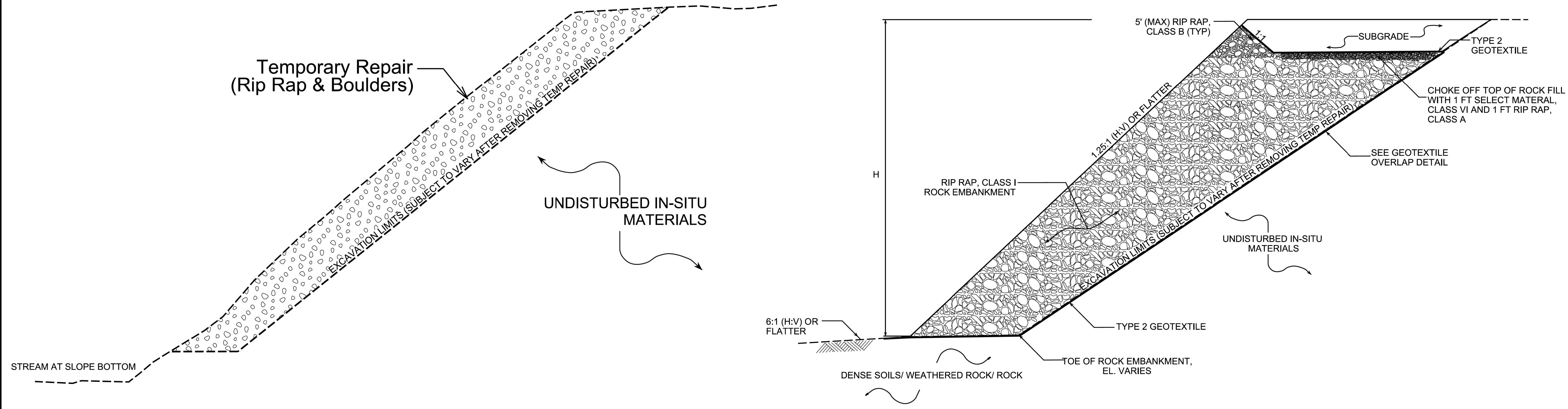
HURRICANE HELENE EMERGENCY REPAIRS
SOIL NAIL SHOULDER BUILD OUT
SITE 3- BALD ROCK RD.

REVISIONS					
NO.	BY	DATE	NO.	BY	DATE
1			3		
2			4		

SHEET NO.
2G-3b

REVISIONS

GEOTECHNICAL ENGINEER  SEAL 048123 CHENG WANG, P.E.	ENGINEER _____ SIGNATURE DATE
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



- NOTES:**
1. FOR ROCK EMBANKMENT, SEE ROCK EMBANKMENT PROVISION.
 2. THE MAXIMUM ALLOWABLE HEIGHT FOR THE ROCK EMBANKMENT DETAIL IS 80'.
 3. FOR ROCK EMBANKMENT, BENCH EXISTING SLOPE IN ACCORDANCE WITH SECTION 235 OF THE STANDARD SPECIFICATIONS, WHERE POSSIBLE.
 4. REMOVE THE TEMPORARY REPAIR (RIP RAP AND BOULDERS) TO UNDISTURBED IN-SITU MATERIALS TO THE SATISFACTION OF THE ENGINEER BEFORE CONSTRUCTING ROCK EMBANKMENT.
 5. IF SOFT/LOOSE MATERIALS EXIST AT THE TOE OF SLOPE, UNDERCUT THE MATERIALS TO THE SATISFACTION OF THE ENGINEER AND BACK FILL WITH SELECT MATERIAL APPROVED BY THE ENGINEER.
 6. NO SUBSURFACE INFORMATION IS AVAILABLE IN THE VICINITY OF SITE 4. THE INFORMATION PROVIDED FOR DESIGN WAS BASED ON VISUAL OBSERVATIONS AND APPROXIMATIONS AND MAY NOT BE APPLICABLE TO THE ACTUAL SITE CONDITIONS ENCOUNTERED DURING CONSTRUCTION.

PROJECT NO.: DF18314.2045063
 COUNTY: HENDERSON

PREPARED BY: C. WANG, P.E.	DATE: 08/25
REVIEWED BY: P. ALTON, P.E.	DATE: 08/25

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 DEPARTMENT OF TRANSPORTATION
 DIVISION OF HIGHWAYS

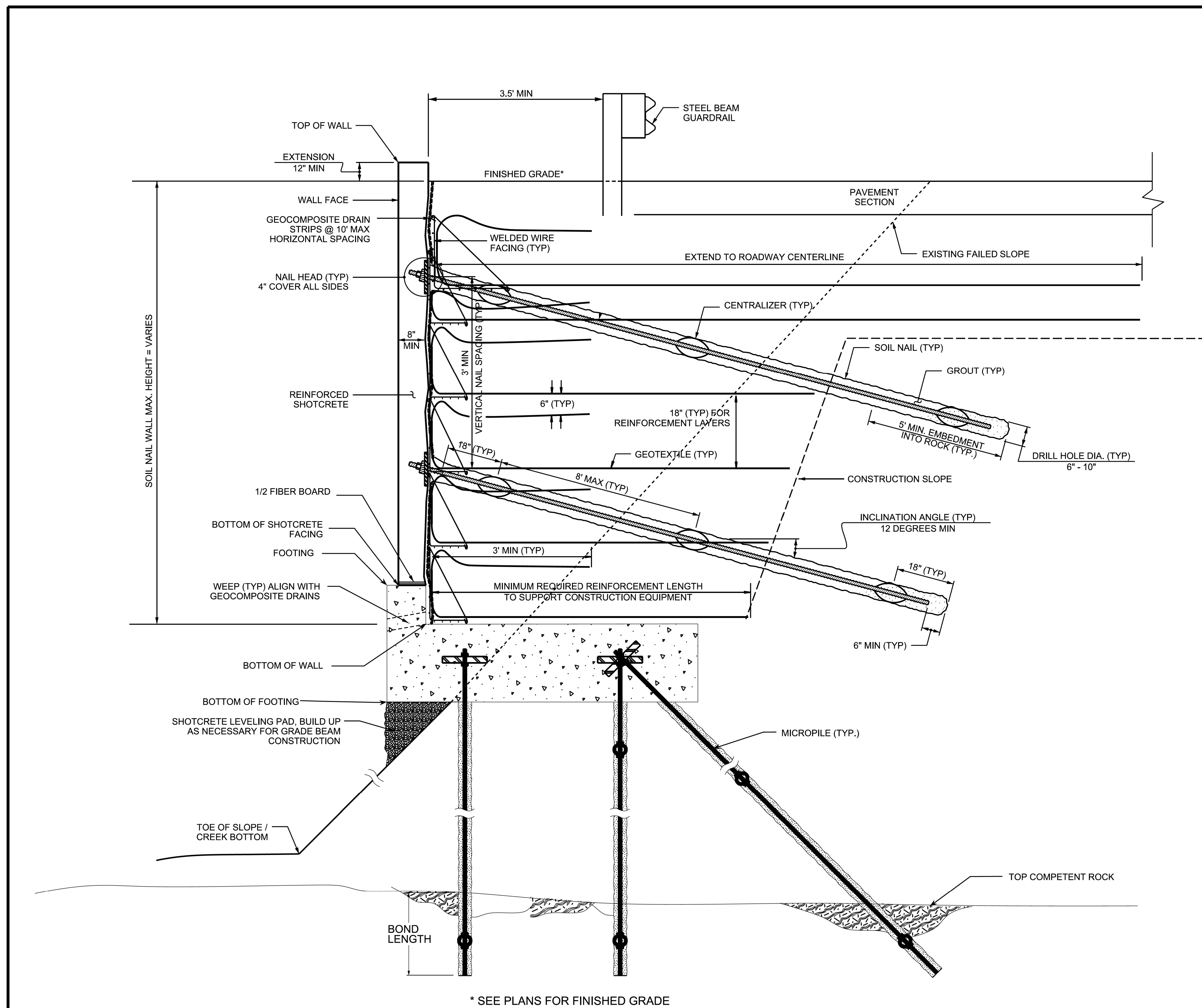
GEOTECHNICAL ENGINEERING UNIT

HURRICANE HELENE EMERGENCY REPAIRS
 ROCK EMBANKMENT
 SITE 4-BALD ROCK RD.

REVISIONS					
NO.	BY	DATE	NO.	BY	DATE
1			3		
2			4		

SHEET NO. 2G-4a

REVISIONS



GEOTECHNICAL ENGINEER DocuSigned by: Cheng Wang 17112246823468 SIGNATURE	ENGINEER DATE: 8/8/2025 SIGNATURE: _____ DATE: _____
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DF18314.
2045063

FINAL 2G-4B

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
HENDERSON COUNTY

HIGHWAY DIVISION 14

TOTAL STRUCTURE QUANTITIES	
SOIL NAIL OF RETAINING WALL	3,040 SQ. FT.
SOIL NAIL VERIFICATION TESTS	1 EA.
SOIL NAIL PROOF TESTS	2 EA.
MICROPILE SLOPE STABILIZATION	117 LIN. FT.
DEMONSTRATION MICROPILES	1 EA.
MICROPILE VERIFICATION TESTS	1 EA.
MICROPILE PROOF TESTS	2 EA.

SEE ROADWAY PLAN W-2 FOR WALL ENVELOPE

PROJECT NO.: DF18314.2045063
 COUNTY: HENDERSON

TYPICAL SECTION

PREPARED BY: C. WANG, P.E.	DATE: 08/25
REVIEWED BY: P. ALTON, P.E.	DATE: 08/25

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NORTH CAROLINA
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 DIVISION OF HIGHWAYS

**GEOTECHNICAL
 ENGINEERING UNIT**

REVISIONS						SHEET NO. 2G-4b
NO.	BY	DATE	NO.	BY	DATE	
1			3			
2			4			

REVISIONS

NOTES:

FOR SOIL NAIL RETAINING WALLS BUILD-OUT, SEE SOIL NAIL RETAINING WALLS PROVISION.

FOR STEEL BEAM GUARDRAIL, SEE ROADWAY PLANS AND SECTION 862 OF THE STANDARD SPECIFICATIONS

FOR MICROPILES AND MICROPILE FOOTING, SEE MICROPILE SLOPE STABILIZATION PROVISION.

AVOID SOIL NAILS WITH INSTALLING GUARDRAIL POSTS.

DESIGN SOIL NAIL RETAINING WALLS AND MICROPILE SLOPE STABILIZATION FOR INTERNAL, EXTERNAL, AND GLOBAL STABILITY.

PER THE TYPICAL SECTION, THE EXISTING GROUND IS LOCATED BEHIND THE FUTURE SOIL NAIL WALL FACE. AT THE CONTRACTOR'S OPTION, CONSTRUCT NEW GROUND PRIOR TO BEGINNING SOIL NAIL WALL CONSTRUCTION OR INSTALL SOIL NAILS INTO THE EXISTING GROUND AND EXTEND THE NAILS TO FACING FALSEWORK. BACKFILL BEHIND THE FALSEWORK AFTER CONSTRUCTING THE WALL FINAL FACING.

BEFORE BEGINNING SOIL NAIL WALL DESIGN FOR SOIL NAIL RETAINING WALL AT SITE 4, SURVEY WALL LOCATION AND SUBMIT A WALL PROFILE VIEW (WALL ENVELOPE) FOR REVIEW. DO NOT START WALL DESIGN OR CONSTRUCTION UNTIL THE WALL ENVELOPE IS ACCEPTED.

DESIGN SOIL NAIL RETAINING WALL AT SITE 4 FOR THE FOLLOWING:

- 1) H= DESIGN HEIGHT
- 2) DESIGN LIFE = 75 YEARS
- 3) IN-SITU ASSUMED MATERIAL PARAMETERS (RESIDUAL SOILS):
UNIT WEIGHT, $\gamma = 120$ PCF
FRICTION ANGLE, $\phi = 30$ DEGREES
COHESION, $c = 0$ PSF
- 4) IN-SITU ASSUMED MATERIAL PARAMETERS (WEATHERED ROCK):
UNIT WEIGHT, $\gamma = 130$ PCF
FRICTION ANGLE, $\phi = 41$ DEGREES
COHESION, $c = 0$ PSF
- 5) DESIGN FAILURE PLANE AT WALL AND FOOTING EQUAL TO AN INFERRED ROCK LINE AT A DEPTH OF 5 FT BELOW PROPOSED BOTTOM OF FOOTING.

DESIGN SOIL NAIL RETAINING WALL FOR A LIVE LOAD (TRAFFIC) SURCHARGE.

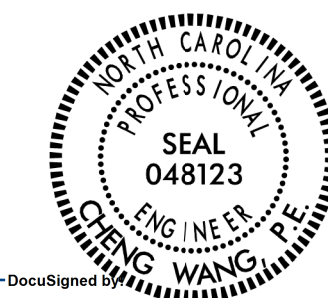
DESIGN SOIL NAIL RETAINING WALL FOR A 300 LB/FT HORIZONTAL TRAFFIC IMPACT LOAD.

EXISTING AND FUTURE OBSTRUCTIONS SUCH AS GUARDRAIL, PIPES, INLETS OR UTILITIES WILL INTERFERE WITH SOIL NAILS FOR RETAINING WALL.

REMOVE THE LOOSE DEBRIS ON THE SURFACE OF THE SLOPE TO THE SATISFACTION OF THE ENGINEER BEFORE INSTALLING SOIL NAILS.

DO NOT DISTURB EXISTING VEGETATION BEYOND THE LIMITS OF THE SOIL NAILS INSTALLATION AREA.

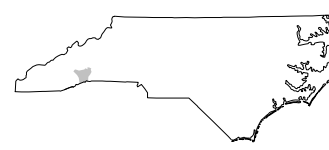
NO SUBSURFACE INFORMATION IS AVAILABLE IN THE VICINITY OF SITE 4. THE INFORMATION PROVIDED FOR DESIGN WAS BASED ON VISUAL OBSERVATIONS AND APPROXIMATIONS AND MAY NOT BE APPLICABLE TO THE ACTUAL SITE CONDITIONS ENCOUNTERED DURING CONSTRUCTION.

GEOTECHNICAL ENGINEER  SEAL 048123 CHENG WANG, P.E. DocuSigned by: Cheng Wang 1211224850000 SIGNATURE	ENGINEER DATE: 8/8/2025 SIGNATURE: _____ DATE: _____
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

DF18314.
2045063

FINAL 2G-4C

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
HENDERSON COUNTY




HIGHWAY DIVISION 14

PROJECT NO.: DF18314.2045063

COUNTY: HENDERSON

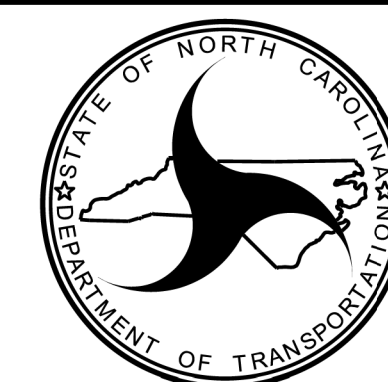
PREPARED BY: C. WANG, P.E.	DATE: 08/2025
REVIEWED BY: P. ALTON, P.E.	DATE: 08/2025

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DIVISION OF HIGHWAYS

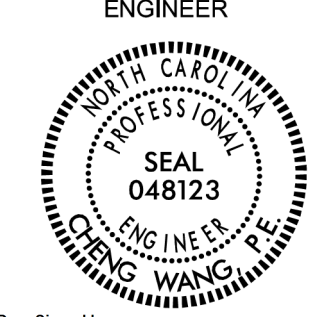
GEOTECHNICAL
ENGINEERING UNIT

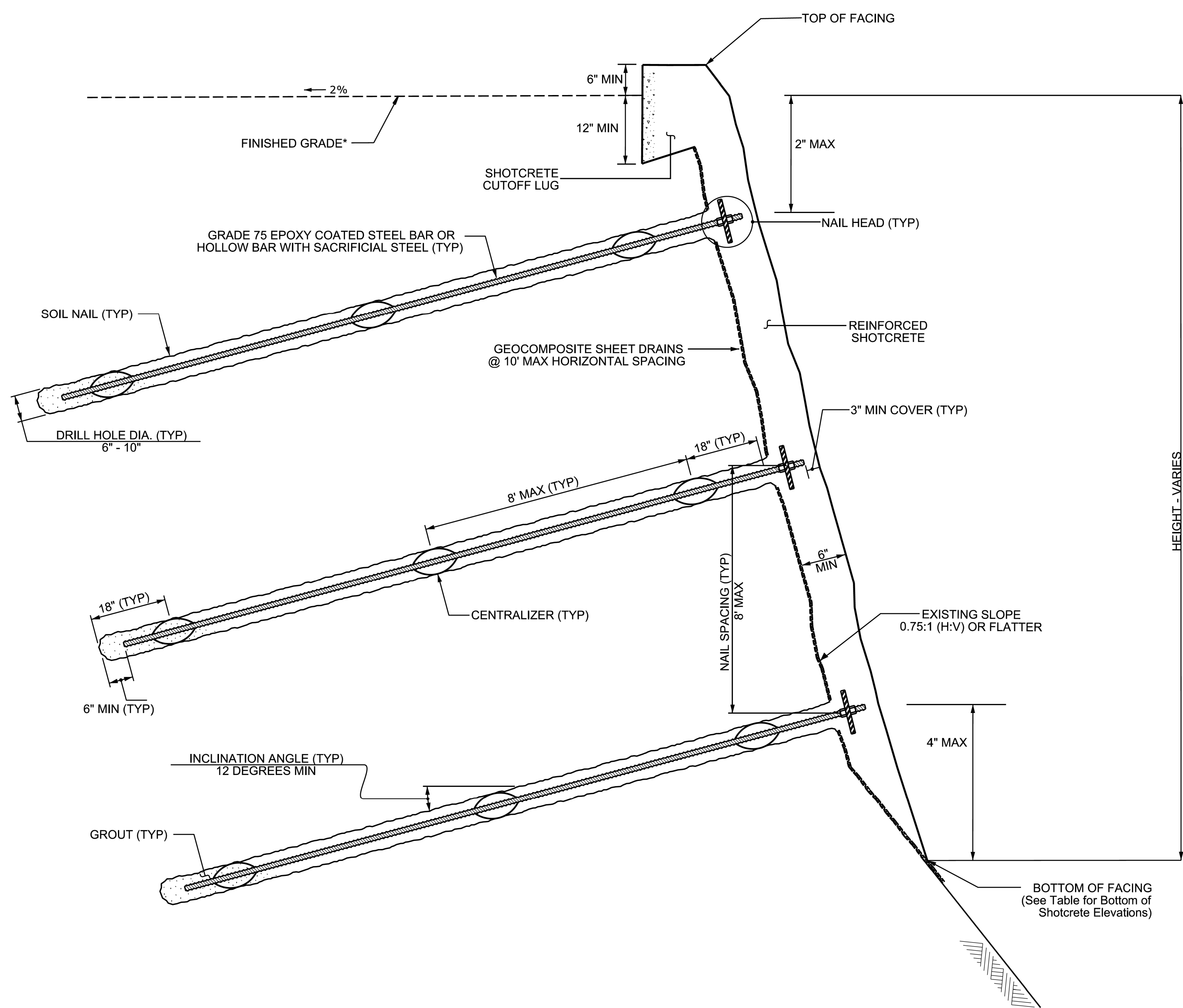
HURRICANE HELENE EMERGENCY REPAIRS
SOIL NAIL SHOULDER BUILD OUT
SITE 4- BALD ROCK RD.

REVISIONS					
NO.	BY	DATE	NO.	BY	DATE
1			3		
2			4		

SHEET
NO.
2G-4c

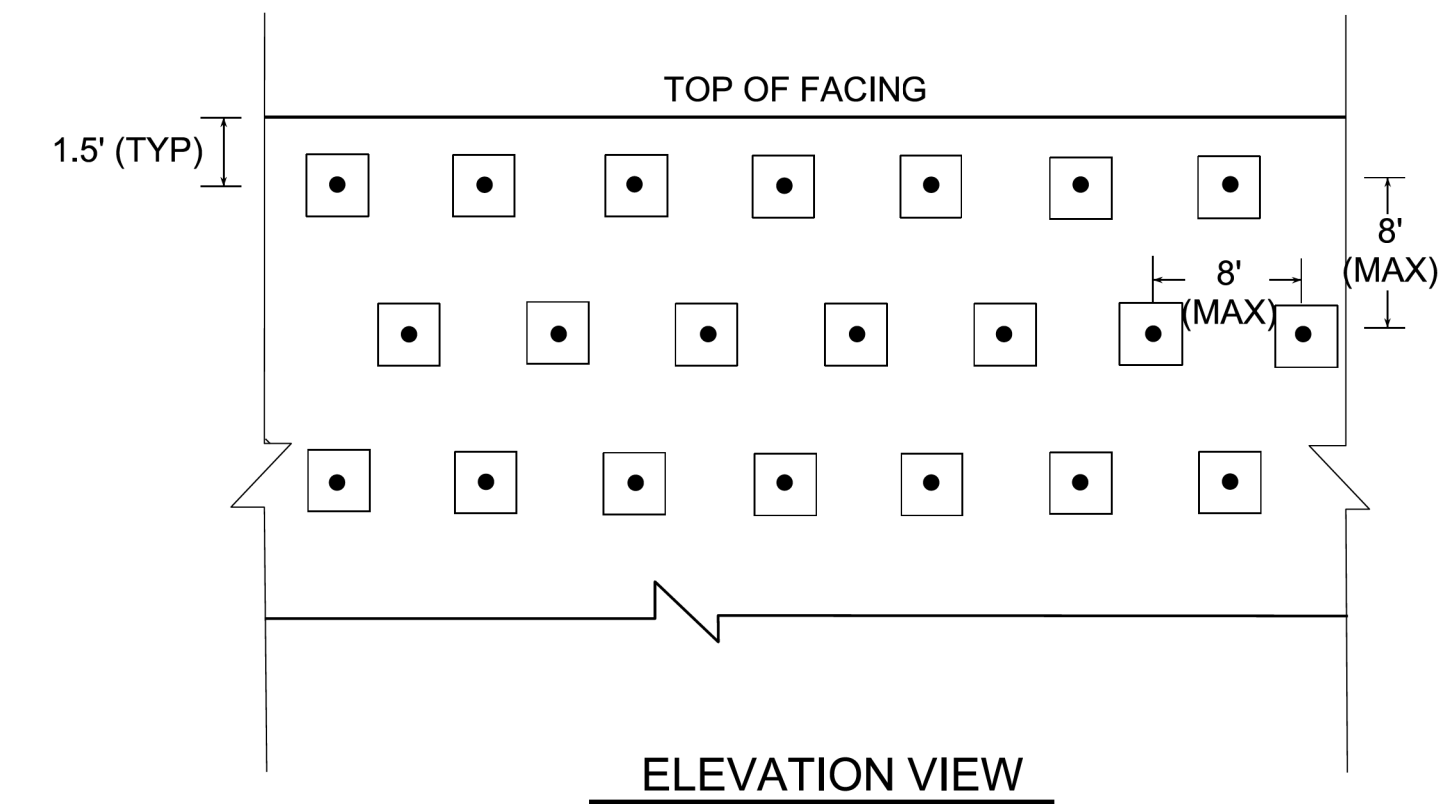
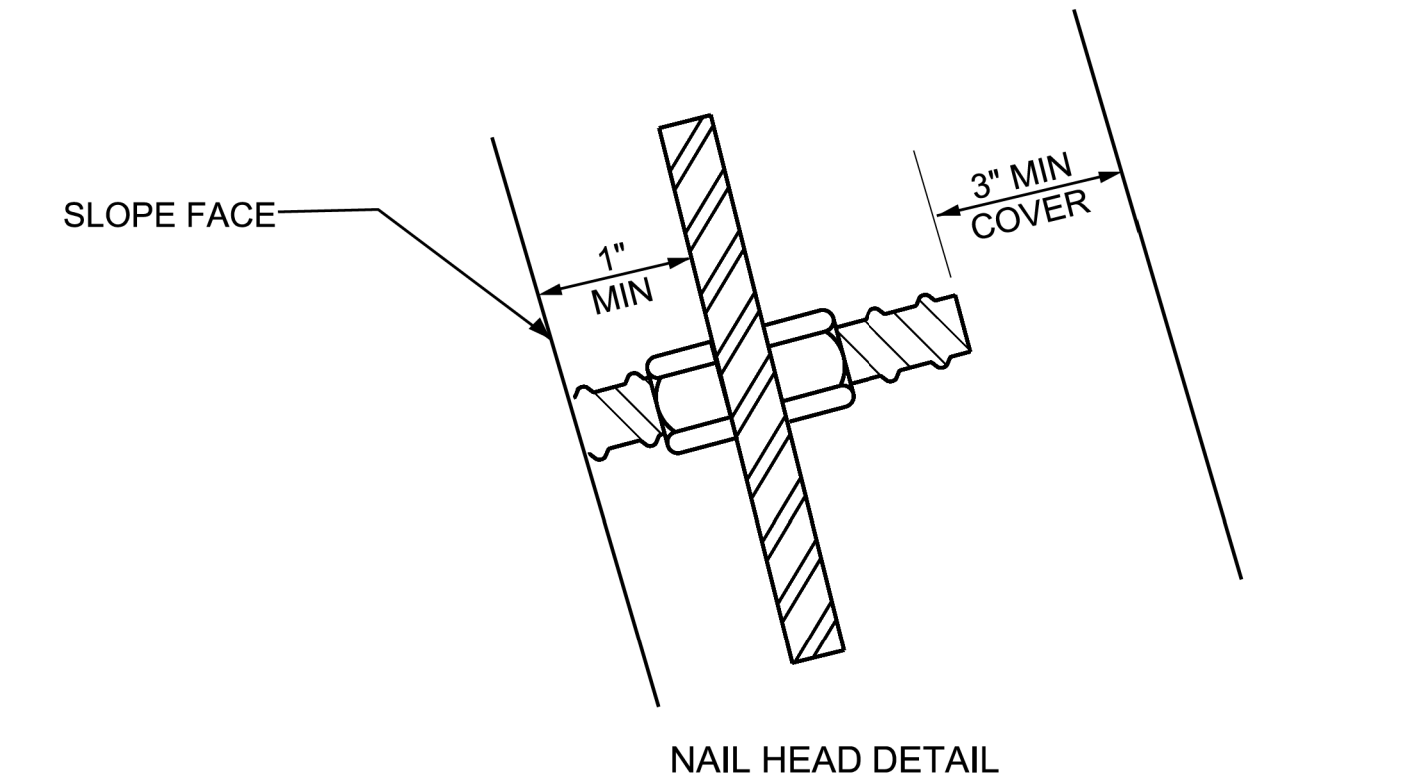
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SHOTCRETE SLOPE STABILIZATION - TYPICAL SECTION
*SEE PLANS FOR FINISHED GRADE.


BOTTOM OF SHOTCRETE ELEVATIONS	
STATION (-L5-)	ELEVATION (ft)
±11+05 to ±11+30	±2,470.0
±11+30 to ±11+60	±2,460.0
±11+60 to ±11+90	±2,470.0




PROJECT NO.: DF18314.2045465
COUNTY: HENDERSON

ESTIMATED QUANTITIES	
SOIL NAIL PROOF TESTS	2 EA.

PREPARED BY: C. WANG, P.E.	DATE: 08/25
REVIEWED BY: P. ALTON, P.E.	DATE: 08/25

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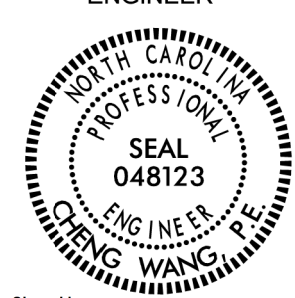
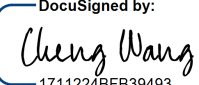
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 NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 DIVISION OF HIGHWAYS
**GEOTECHNICAL
 ENGINEERING UNIT**

HURRICANE HELENE EMERGENCY REPAIRS SHOTCRETE SLOPE STABILIZATION SITE 5- BALD ROCK RD.				
REVISIONS				
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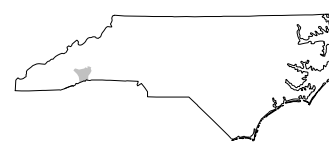
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DF18314.
2045465

FINAL 2G-5B

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
HENDERSON COUNTY



HIGHWAY DIVISION 14

NOTES:

FOR SHOTCRETE SLOPE STABILIZATION, SEE SHOTCRETE SLOPE STABILIZATION PROVISION.

BEFORE BEGINNING SOIL NAIL DESIGN FOR SHOTCRETE SLOPE STABILIZATION, SURVEY LOCATION AND SUBMIT A REVISED PROFILE VIEW FOR REVIEW. DO NOT START DESIGN OR CONSTRUCTION UNTIL THE REVISED PROFILE VIEW IS ACCEPTED.

DESIGN SOIL NAILS FOR THE FOLLOWING SUGGESTED SOIL PARAMETERS:

- 1) DESIGN LIFE= 75 YEARS
- 2) IN-SITU ASSUMED MATERIAL PARAMETERS (RESIDUAL SOILS):
 - UNIT WEIGHT, $\gamma = 120$ PCF
 - FRICTION ANGLE, $\phi = 30$ DEGREES
 - COHESION, $c = 0$ PSF
- 3) IN-SITU ASSUMED MATERIAL PARAMETERS (WEATHERED ROCK):
 - UNIT WEIGHT, $\gamma = 130$ PCF
 - FRICTION ANGLE, $\phi = 41$ DEGREES
 - COHESION, $c = 0$ PSF

DESIGN FOR A LIVE LOAD (TRAFFIC) SURCHARGE.

REMOVE THE LOOSE DEBRIS ON THE SURFACE OF THE SLOPE TO THE SATISFACTION OF THE ENGINEER BEFORE INSTALLING SOIL NAILS.

DO NOT DISTURB EXISTING VEGETATION BEYOND THE LIMITS OF THE SOIL NAILS INSTALLATION AREA.


ADDITIONAL SHOTCRETE SLOPE STABILIZATION MAY BE REQUIRED BASED ON EXISTING CONDITIONS ENCOUNTERED DURING CONSTRUCTION OR AS DIRECTED BY THE ENGINEER.

PROJECT NO.: DF18314.2045465

COUNTY: HENDERSON


PREPARED BY: C. WANG, P.E.	DATE: 08/25
REVIEWED BY: P. ALTON, P.E.	DATE: 08/25

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NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

**GEOTECHNICAL
ENGINEERING UNIT**

HURRICANE HELENE EMERGENCY REPAIRS
 SHOTCRETE SLOPE STABILIZATION
 SITE 5- BALD ROCK RD.

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SHEET NO. 2G-5b

REVISIONS



GEOTECHNICAL ENGINEER

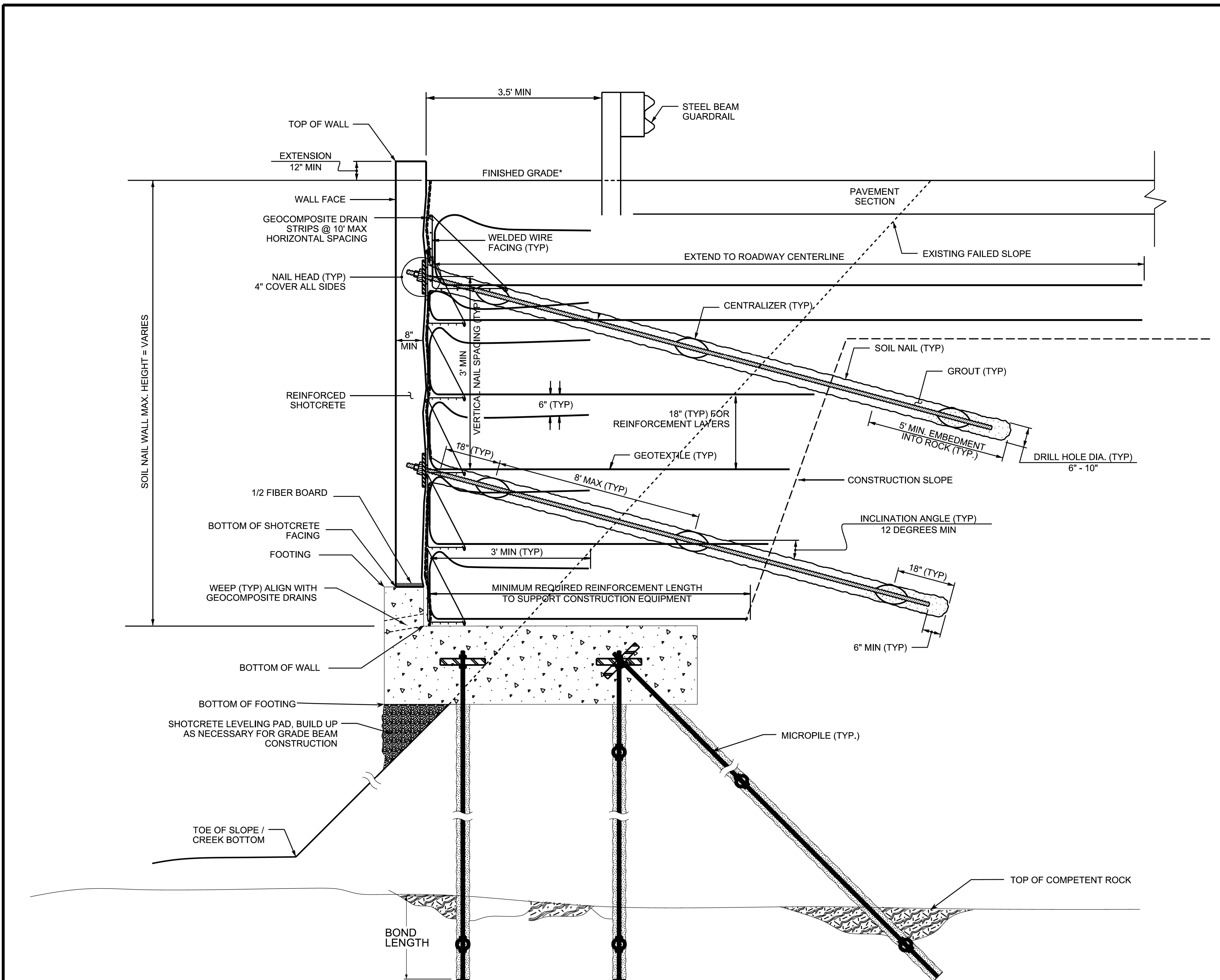
ENGINEER

DocuSigned by:
Cheng Wang
8/8/2025

DATE: 8/8/2025

SIGNATURE: _____ DATE: _____

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED



TOTAL STRUCTURE QUANTITIES	
SOIL NAIL RETAINING WALL	1,155 SO. FT.
SOIL NAIL VERIFICATION TESTS	1 EA.
SOIL NAIL PROOF TESTS	2 EA.
MICROPILE SLOPE STABILIZATION	101 LIN. FT.
DEMONSTRATION MICROPILES	1 EA.
MICROPILE VERIFICATION TESTS	1 EA.
MICROPILE PROOF TESTS	2 EA.

SEE ROADWAY PLAN W-3 FOR WALL ENVELOPE

PROJECT NO.: DF18314.2045064
COUNTY: HENDERSON

TYPICAL SECTION

* SEE PLANS FOR FINISHED GRADE

PREPARED BY: C. WANG, P.E.	DATE: 08/25
REVIEWED BY: P. ALTON, P.E.	DATE: 08/25

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DIVISION OF HIGHWAYS

GEOTECHNICAL
ENGINEERING UNIT

HURRICANE HELENE EMERGENCY REPAIRS
SOIL NAIL SHOULDER BUILD-OUT
SITE 6- BALD ROCK RD.

REVISIONS					
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1			3		
2			4		

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REVISIONS