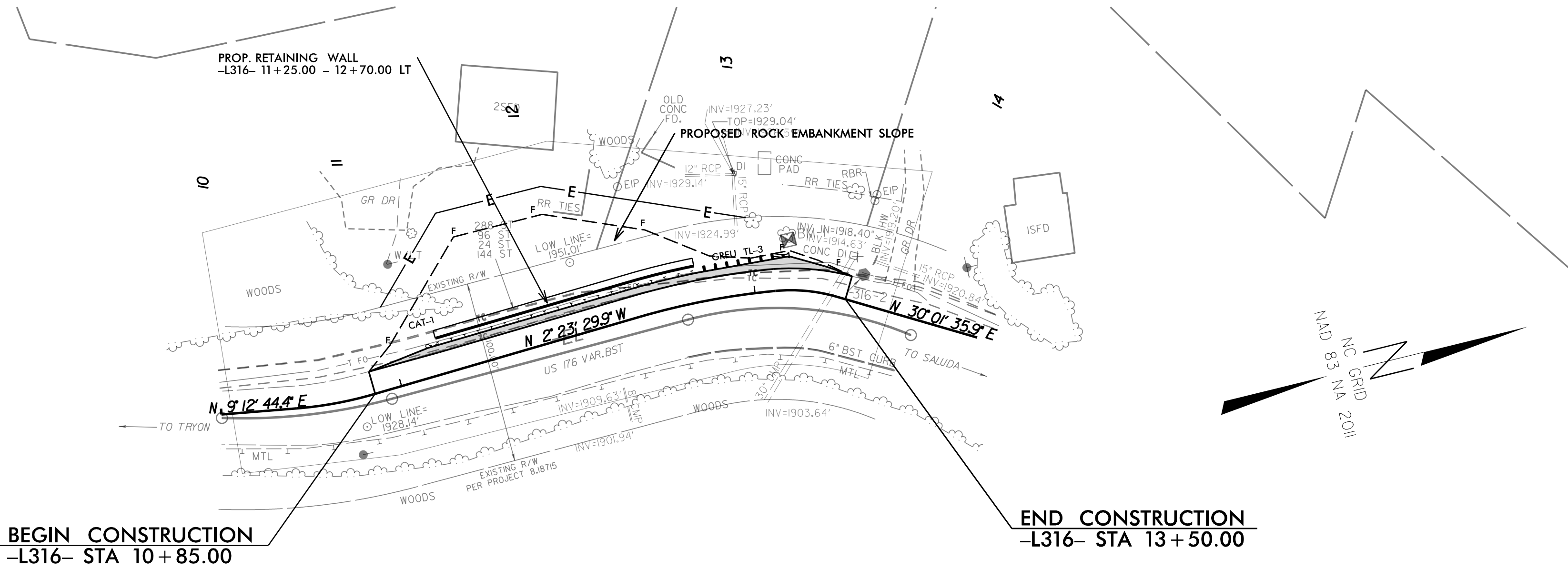
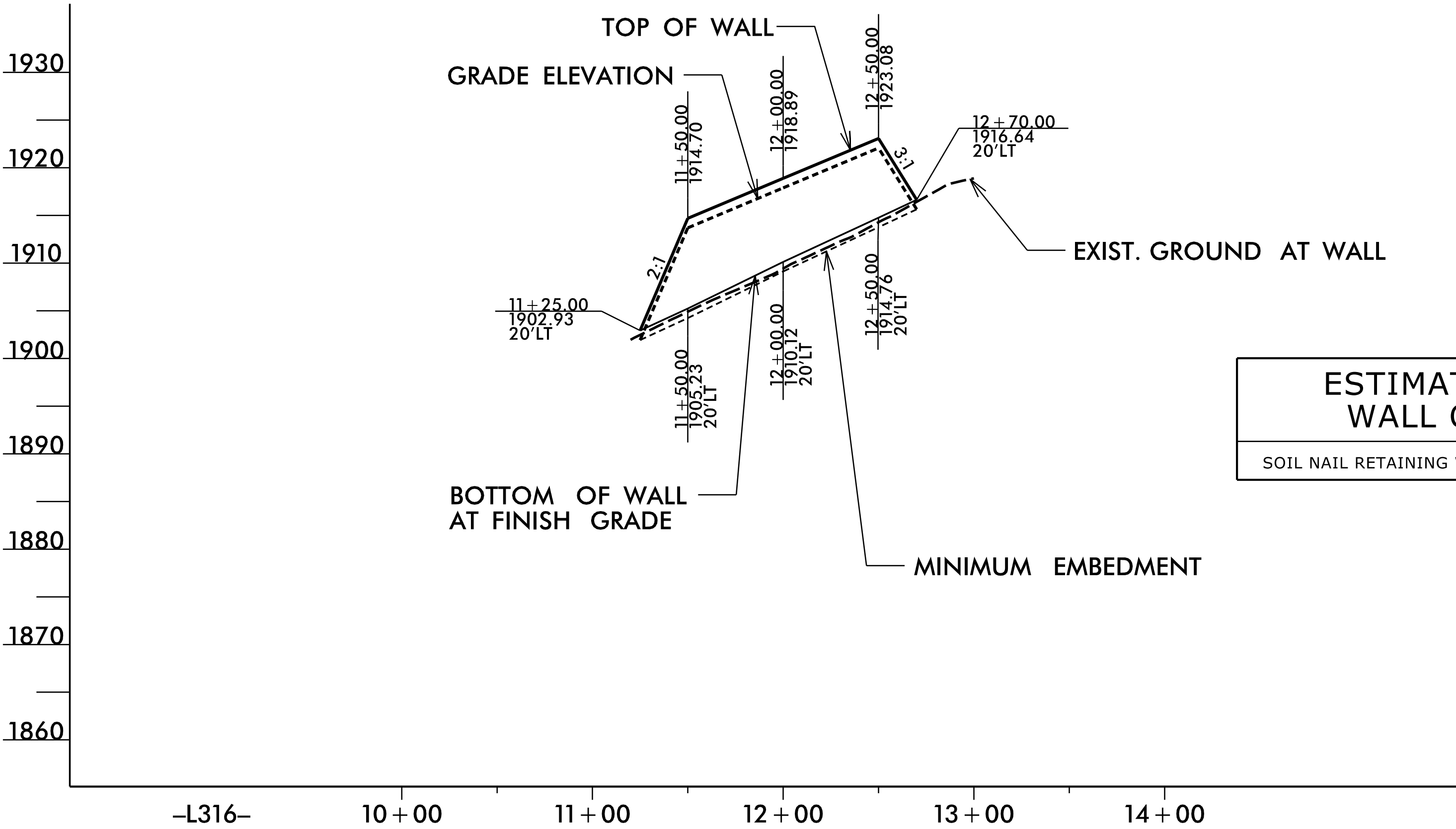


SITE 316 RETAINING WALL:



SITE 316 RETAINING WALL – PLAN
NOT TO SCALE



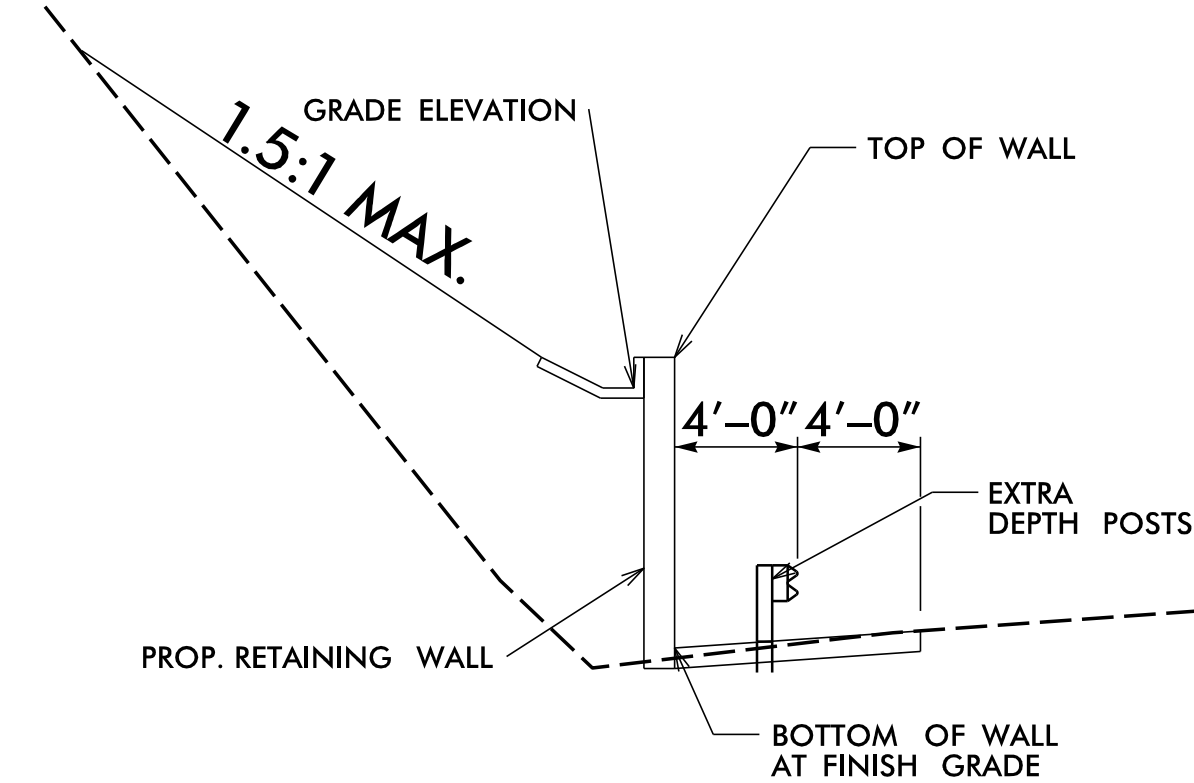
SITE 316 RETAINING WALL – ENVELOPE
NOT TO SCALE
(LOOKING AT FACE OF WALL)

GEOTECHNICAL
ENGINEER

Signed by:
Robert E. Kral
12/2/2025
DATE

ENGINEER

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED



SECTION THROUGH RETAINING WALL
-L316- STA. 11+25.00, LT TO STA. 12+70.00, LT

SITE 316 RETAINING WALL			
STA. -L316-	GRADE ELEVATION (FT)	BOTTOM OF WALL ELEVATION (FT)	WALL DESIGN HEIGHT "H" (FT)
11+25.00	1901.93	1901.93	0.00
11+50.00	1913.70	1905.23	8.47
12+00.00	1917.89	1910.12	7.77
12+50.00	1923.08	1914.76	8.32
12+70.00	1915.64	1915.64	0.00

ESTIMATED SITE 316 WALL QUANTITIES	
SOIL NAIL RETAINING WALL	1,090 SF

PREPARED BY: KND	DATE: 10/25
REVIEWED BY: REK	DATE: 10/25

RETAINING WALL ENVELOPE AND WALL LAYOUT PROVIDED TGS JULY 16, 2025.

Prepared in the Office of:
**CAROLINAS
GEOTECHNICAL
GROUP**
1805 SARDIS ROAD NORTH
SUITE 100
CHARLOTTE, NC 28270
(980) 339-8684

REVISIONS						SHEET NO. W-1
NO.	BY	DATE	NO.	BY	DATE	
1			3			
2			4			

SITE 316 RETAINING WALL
SOIL NAIL RETAINING WALL

PROJECT NO.: W03293
POLK COUNTY
RETAINING WALL: -L316- STA. 11+25.00 TO 17+70.00, LT
SHEET 1 OF 3

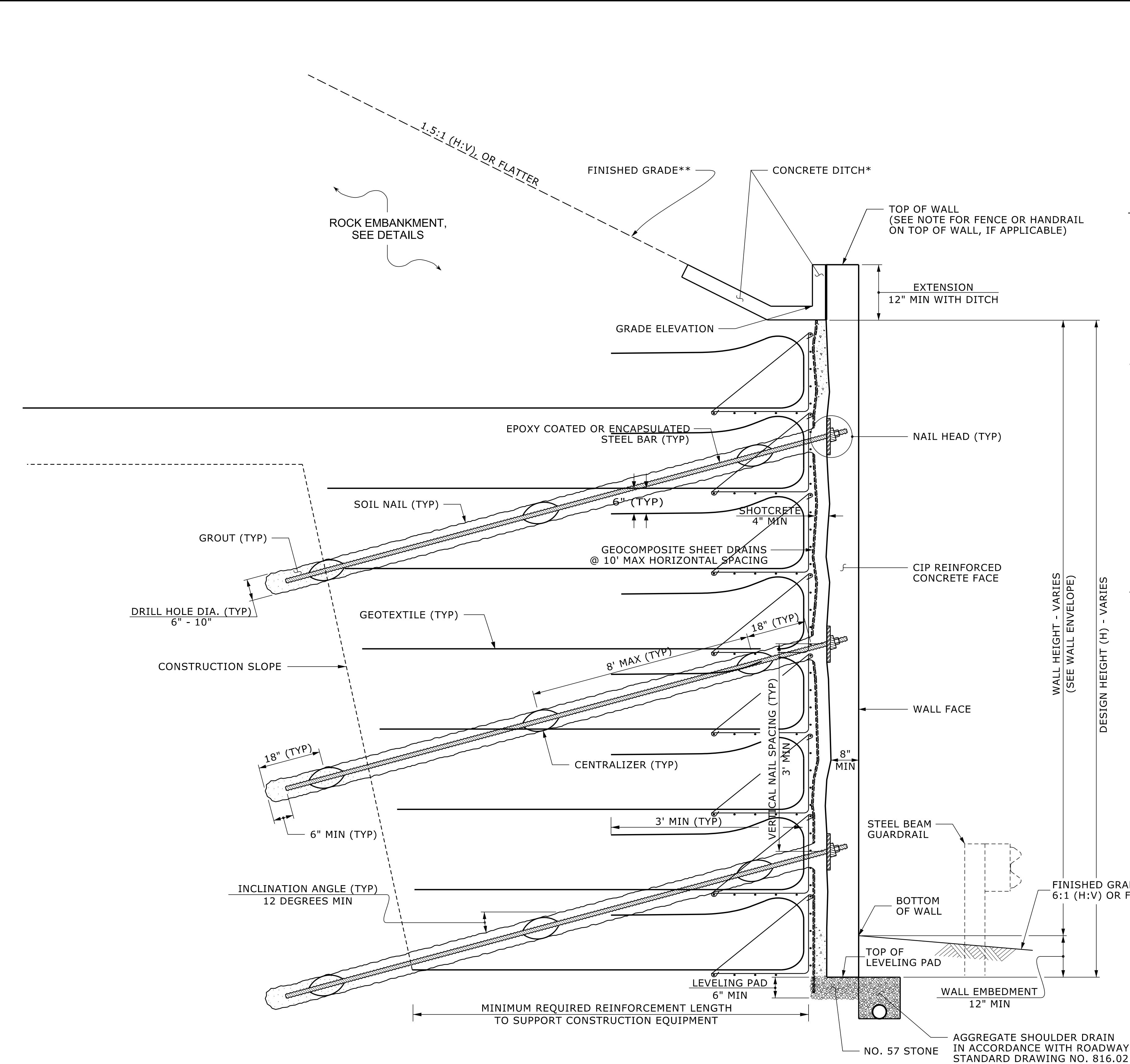
GEOTECHNICAL
ENGINEER



Signed by:
Robert E. Kral
12/2/2025
DATE

ENGINEER

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED



NOTES:

FOR SOIL NAIL RETAINING WALLS, SEE SOIL NAIL RETAINING WALLS SPECIAL PROVISION.

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

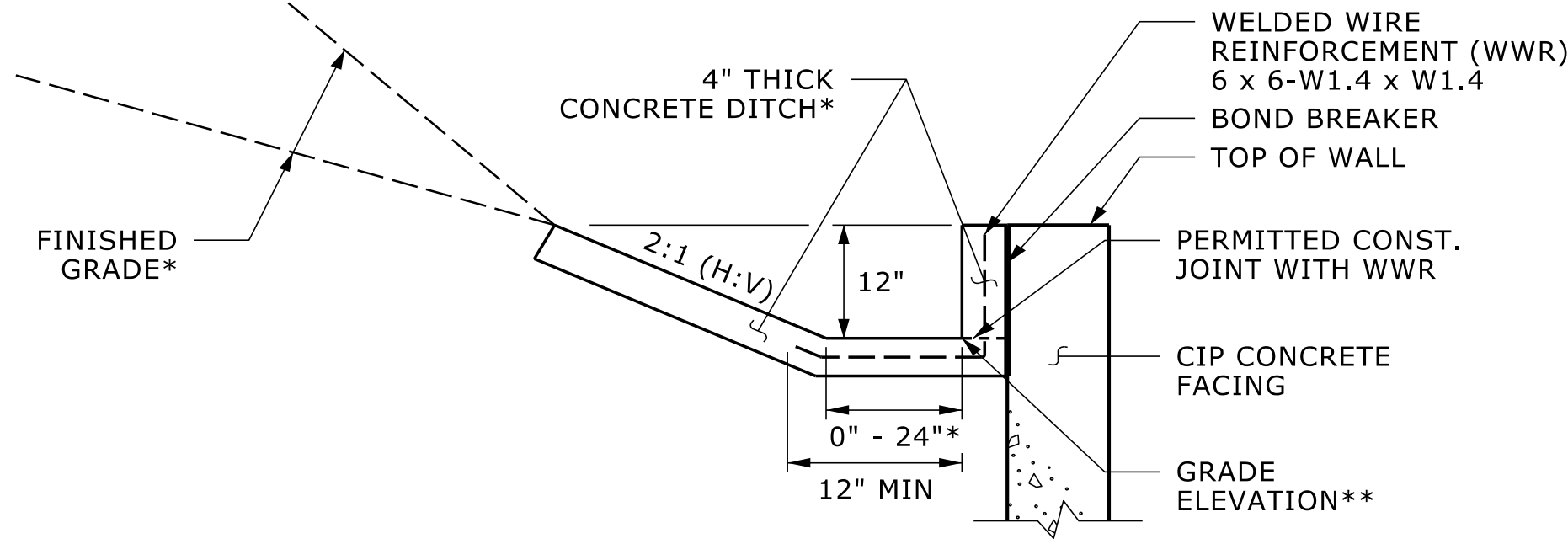
BEFORE BEGINNING SOIL NAIL WALL DESIGN FOR SITE 316 RETAINING WALL, SURVEY WALL LOCATION AND SUBMIT A REVISED WALL PROFILE VIEW (WALL ENVELOPE) FOR REVIEW. DO NOT START WALL DESIGN OR CONSTRUCTION UNTIL THE REVISED WALL ENVELOPE IS ACCEPTED.

DESIGN SITE 316 RETAINING WALL FOR THE FOLLOWING:

- 1) DESIGN HEIGHT (H) = WALL HEIGHT + WALL EMBEDMENT
- 2) DESIGN LIFE = 75 YEARS
- 3) MINIMUM WALL EMBEDMENT DEPTH = 1 FT
- 4) ROCK EMBANKMENT PARAMETERS, UNIT WEIGHT, $\gamma = 135$ PCF, FRICTION ANGLE, $\phi = 42$ DEGREES, COHESION, $c = 0$ PSF
- 5) ASSUMED BORROW MATERIAL PARAMETERS, SEE SECTION 1018 OF THE STANDARD SPECIFICATIONS, UNIT WEIGHT, $\gamma = 120$ PCF, FRICTION ANGLE, $\phi = 30$ DEGREES, COHESION, $c = 0$ PSF
- 6) IN-SITU ASSUMED MATERIAL PARAMETERS RESIDUAL SOIL: UNIT WEIGHT, $\gamma = 120$ PCF, FRICTION ANGLE, $\phi = 30$ DEGREES, COHESION, $c = 0$ PSF
- 7) IN-SITU ASSUMED MATERIAL PARAMETERS CRYSTALLINE ROCK: UNIT WEIGHT, $\gamma = 170$ PCF, FRICTION ANGLE, $\phi = 34$ DEGREES, COHESION, $c = 1,000$ PSF

EXISTING OR FUTURE OBSTRUCTIONS SUCH AS FOUNDATIONS, FENCE OR HANDRAIL POSTS, PAVEMENTS, PIPES, INLETS OR UTILITIES MAY INTERFERE WITH SOIL NAILS FOR SITE 316 RETAINING WALL.

"TEMPORARY SHORING" MAY BE REQUIRED FOR SITE 316 RETAINING WALL IN ACCORDANCE WITH THE TEMPORARY SHORING PROVISION. SEE ROADWAY OR TRAFFIC CONTROL PLANS.



CONCRETE DITCH BEHIND WALL WITH CONCRETE FACING

*SEE ROADWAY PLANS FOR CONCRETE DITCH AND FINISHED GRADE DETAILS.
**SEE WALL ENVELOPE FOR GRADE ELEVATIONS.

SOIL NAIL WALL - TYPICAL SECTION

*SEE CONCRETE DITCH BEHIND WALL DETAILS.
**SEE PLANS FOR FINISHED GRADE OR END BENT SLOPE DETAILS.

PREPARED BY: KND	DATE: 10/25
REVIEWED BY: REK	DATE: 10/25

Prepared in the Office of:



CAROLINAS
GEOTECHNICAL
GROUP

1805 SARDIS ROAD NORTH
SUITE 100
CHARLOTTE, NC 28270
(980) 339-8684

PROJECT NO.: W03293
POLK COUNTY
RETAINING WALL: -L316- STA. 11+25.00 TO 17+70.00, LT
SHEET 2 OF 3

REVISIONS						SHEET NO. W-2
NO.	BY	DATE	NO.	BY	DATE	
1			3			
2			4			

GEOTECHNICAL
ENGINEER



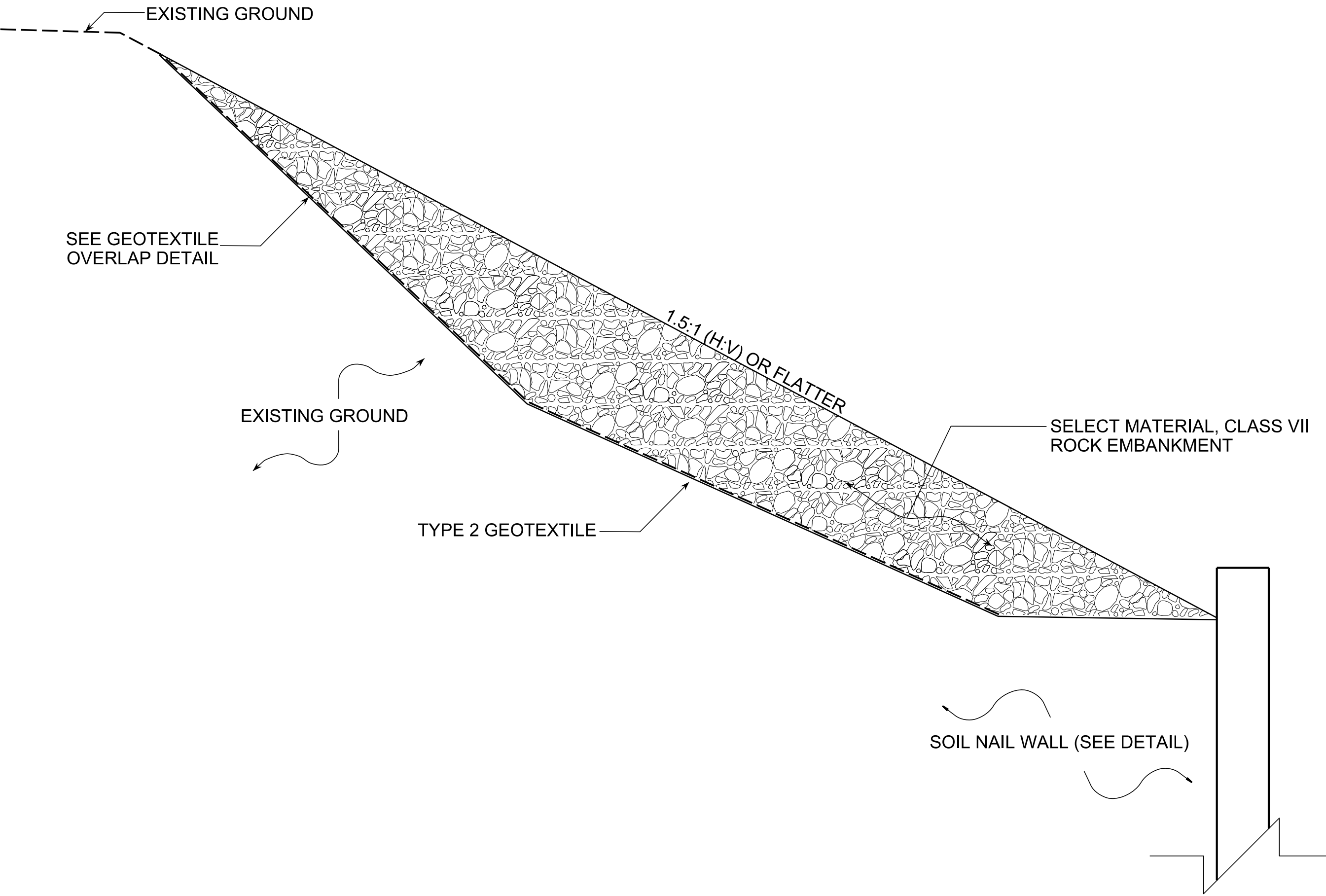
Signed by:
Robert E. Kral
12/2/2025

SIGNATUREDATE

ENGINEER

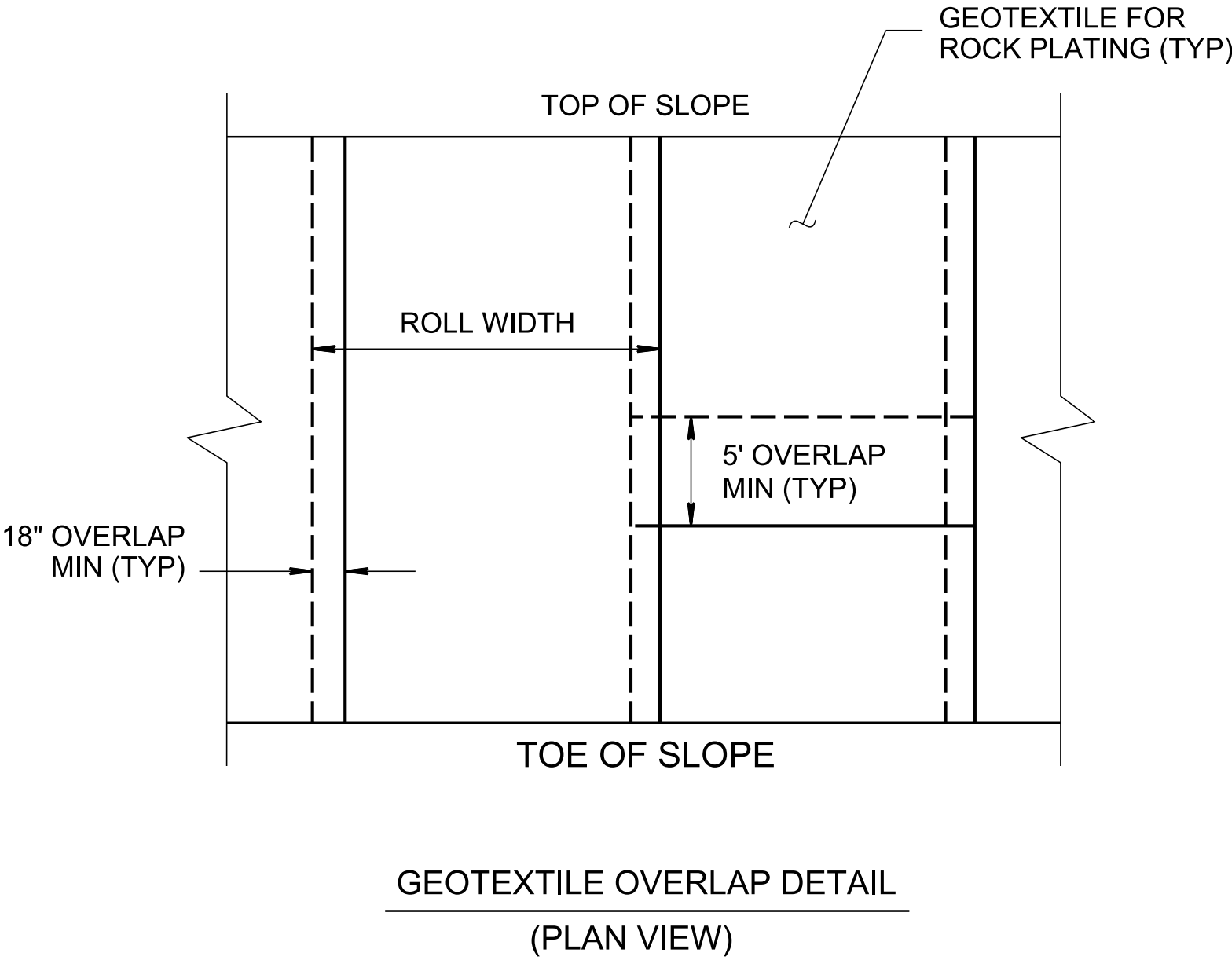
SIGNATUREDATE

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED



ROCK EMBANKMENT DETAIL
(NOT TO SCALE)

ROCK EMBANKMENTS



GEOTEXTILE OVERLAP DETAIL
(PLAN VIEW)

NOTES:

1. THE MAXIMUM ALLOWABLE HEIGHT FOR THE ROCK EMBANKMENT DETAIL IS 80'.
2. FOR ROCK EMBANKMENT, BENCH EXISTING SLOPE IN ACCORDANCE WITH SECTION 235 OF THE STANDARD SPECIFICATIONS, WHERE POSSIBLE.

PROJECT NO.: W03293

POLK COUNTY

RETAINING WALL: -L316- STA. 11+25.00 TO 17+70.00, LT

SHEET 3 OF 3

PREPARED BY: KND	DATE: 10/25
REVIEWED BY: REK	DATE: 10/25

Prepared in the Office of:



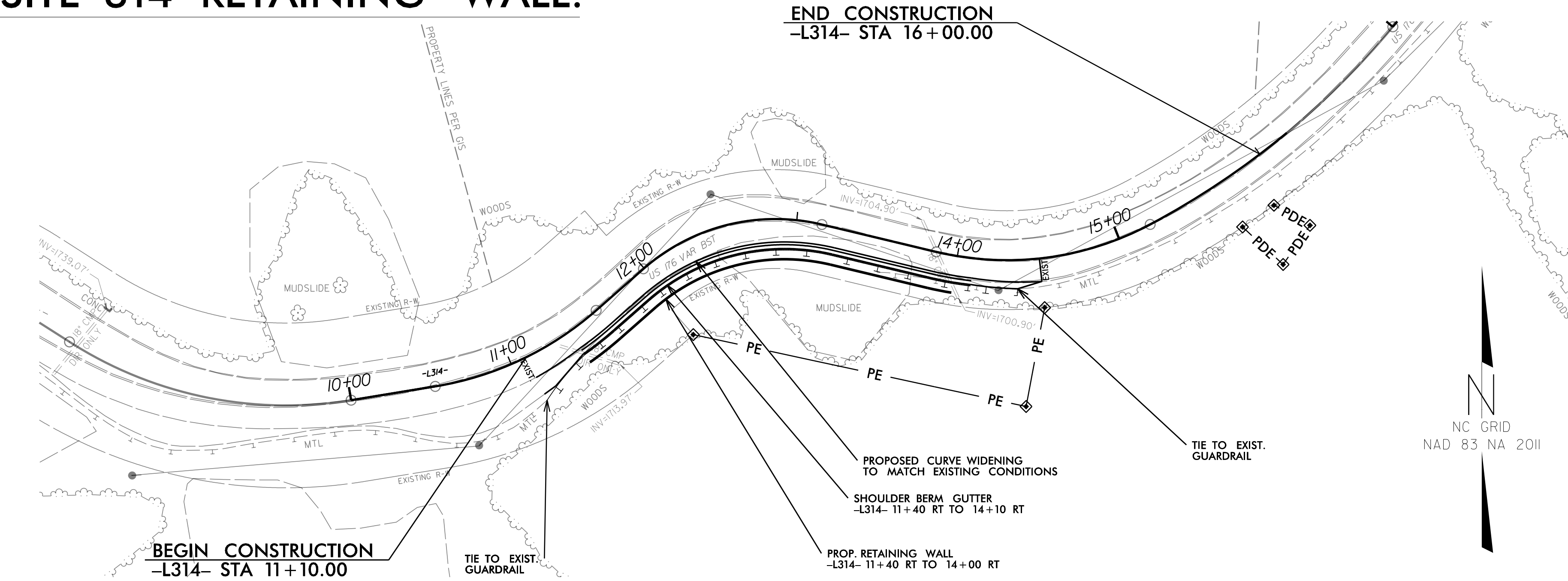
CARLINAS
GEOTECHNICAL
GROUP

1805 SARDIS ROAD NORTH
SUITE 100
CHARLOTTE, NC 28270
(980) 339-8684

SITE 316 RETAINING WALL
SOIL NAIL RETAINING WALL

REVISIONS						SHEET NO. W-3
NO.	BY	DATE	NO.	BY	DATE	
1			3			
2			4			

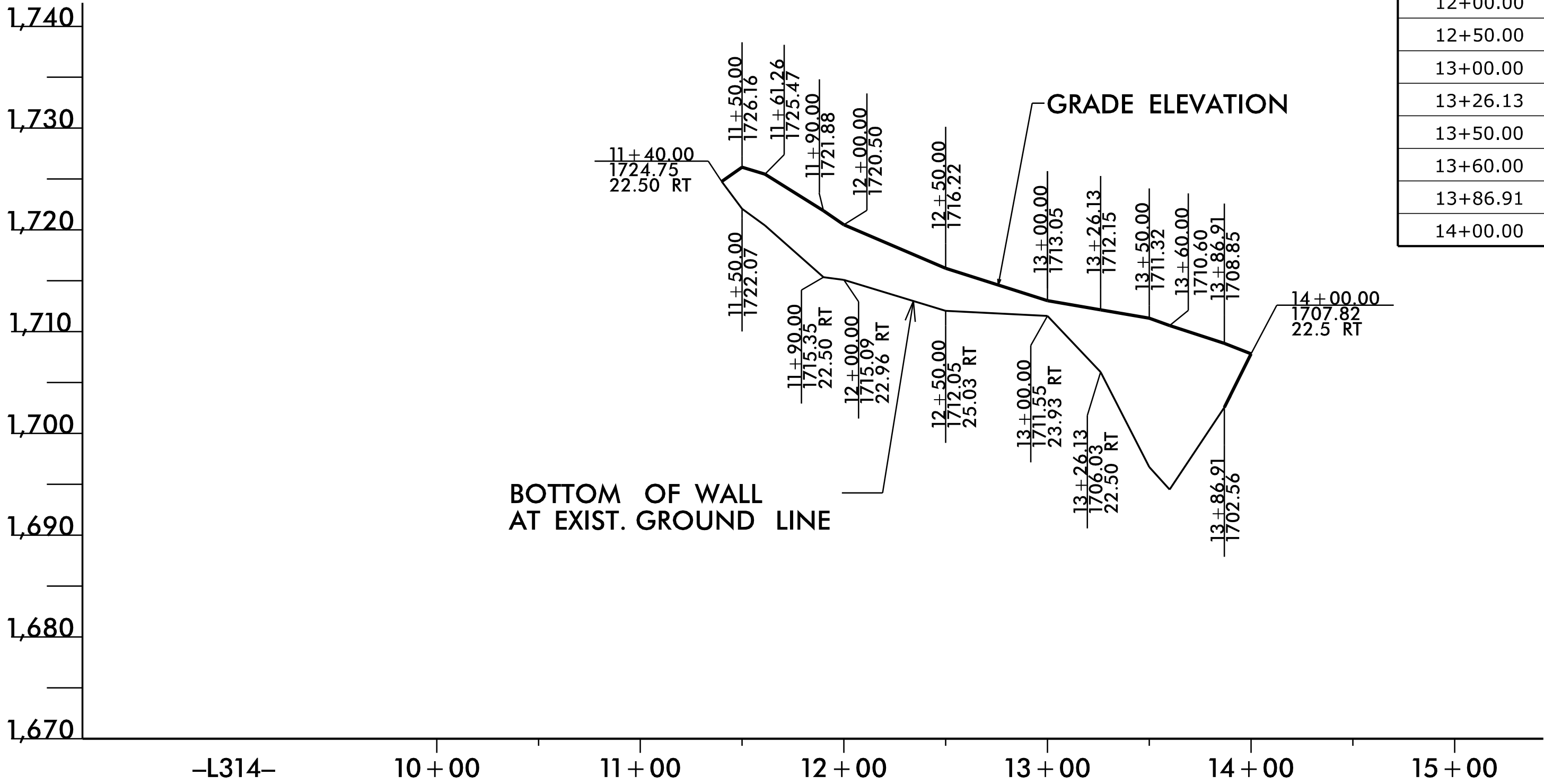
SITE 314 RETAINING WALL:



SITE 314 RETAINING WALL – PLAN
NOT TO SCALE

ESTIMATED SITE 314 WALL QUANTITIES	
SOIL NAIL RETAINING WALL	1,530 SF
MICROPILE GRADE BEAM	260 LF

SITE 314 RETAINING WALL			
STA. -L314-	GRADE ELEVATION (FT)	BOTTOM OF WALL ELEVATION (FT)	WALL DESIGN HEIGHT "H" (FT)
11+40.00	1,724.75	1,724.75	0.00
11+50.00	1,726.16	1,722.07	4.09
11+90.00	1,721.88	1,715.35	6.53
12+00.00	1,720.50	1,715.09	5.41
12+50.00	1,716.22	1,712.05	3.72
13+00.00	1,713.05	1,711.55	1.50
13+26.13	1,712.15	1,706.03	6.12
13+50.00	1,711.32	1,696.69	14.63
13+60.00	1,710.60	1,694.48	16.12
13+86.91	1,708.85	1,702.56	6.29
14+00.00	1,707.82	1,707.82	0.00



SITE 314 RETAINING WALL – ENVELOPE
NOT TO SCALE
(LOOKING AT FACE OF WALL)

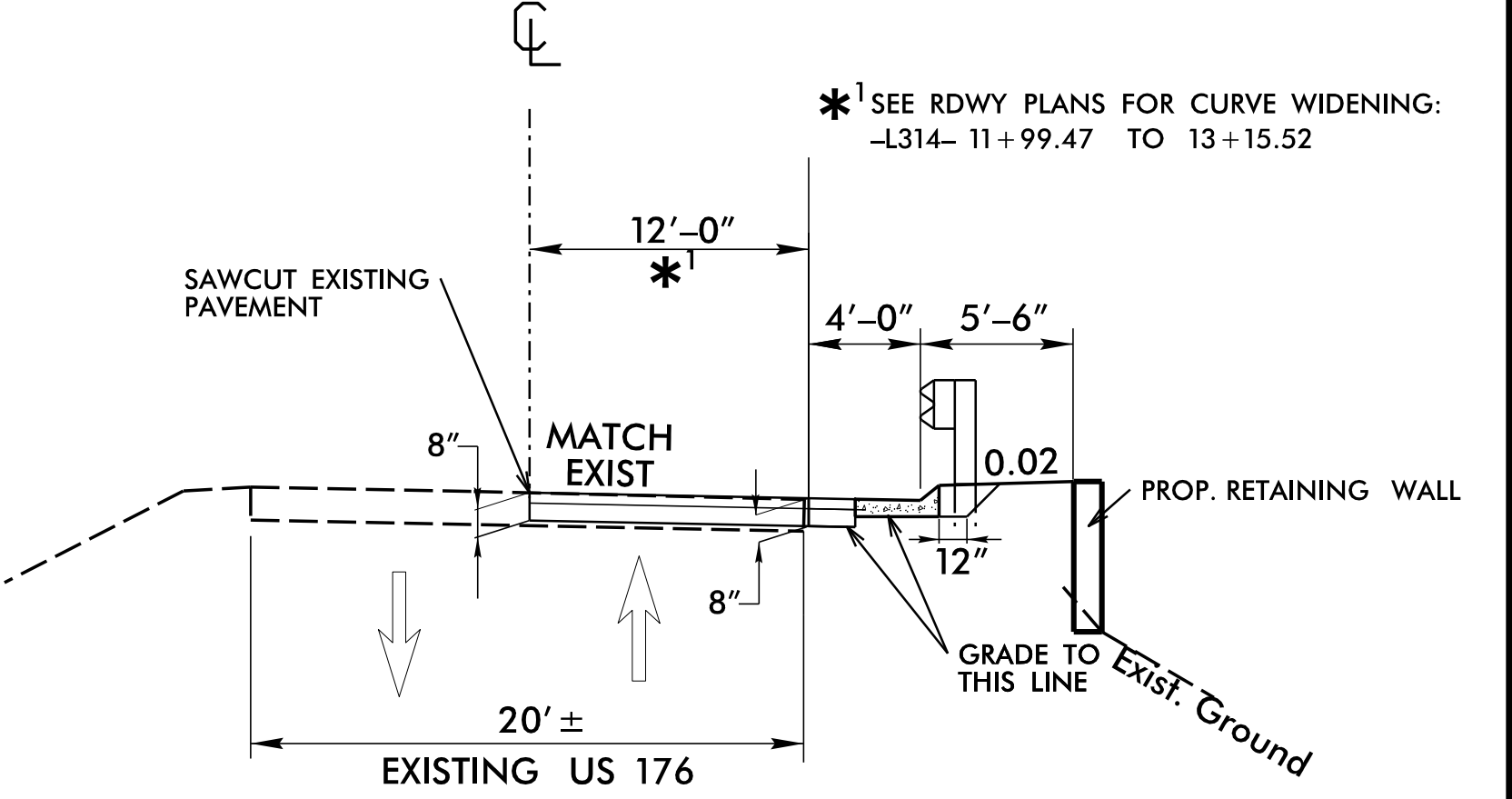
GEOTECHNICAL ENGINEER

Signed by: *Robert E. Kral* 12/2/2025
DATE

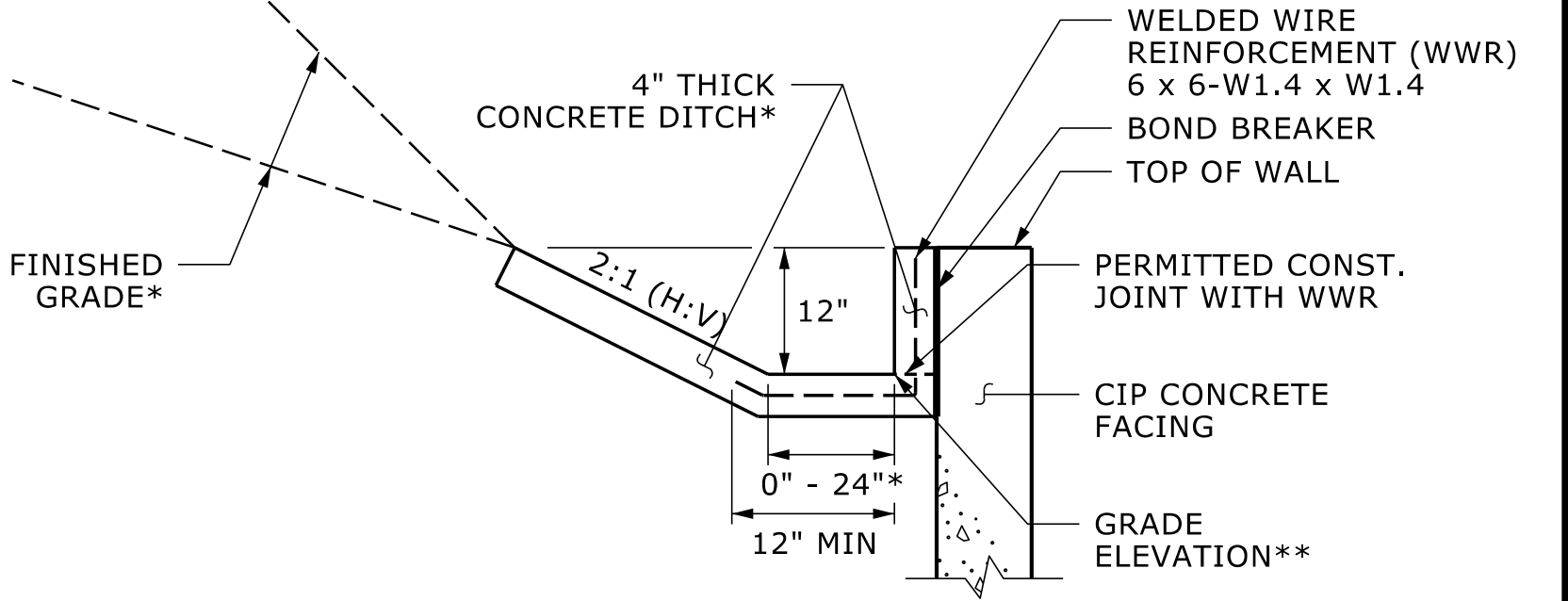
ENGINEER

SIGNATURE DATE

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED



SECTION THROUGH RETAINING WALL
-L314- STA. 11+40.00, RT TO STA. 14+00.00, RT



CONCRETE DITCH BEHIND WALL WITH CONCRETE FACING

*SEE ROADWAY PLANS FOR CONCRETE DITCH AND FINISHED GRADE DETAILS.
**SEE WALL ENVELOPE FOR GRADE ELEVATIONS.

PROJECT NO.: W03293

POLK COUNTY

RETAINING WALL: -L314- STA. 11+40.00 TO 14+00.00, RT

SHEET 1 OF 2

PREPARED BY: KND	DATE: 10/25
REVIEWED BY: REK	DATE: 10/25

RETAINING WALL ENVELOPE AND WALL LAYOUT PROVIDED TGS JUNE 18, 2025.

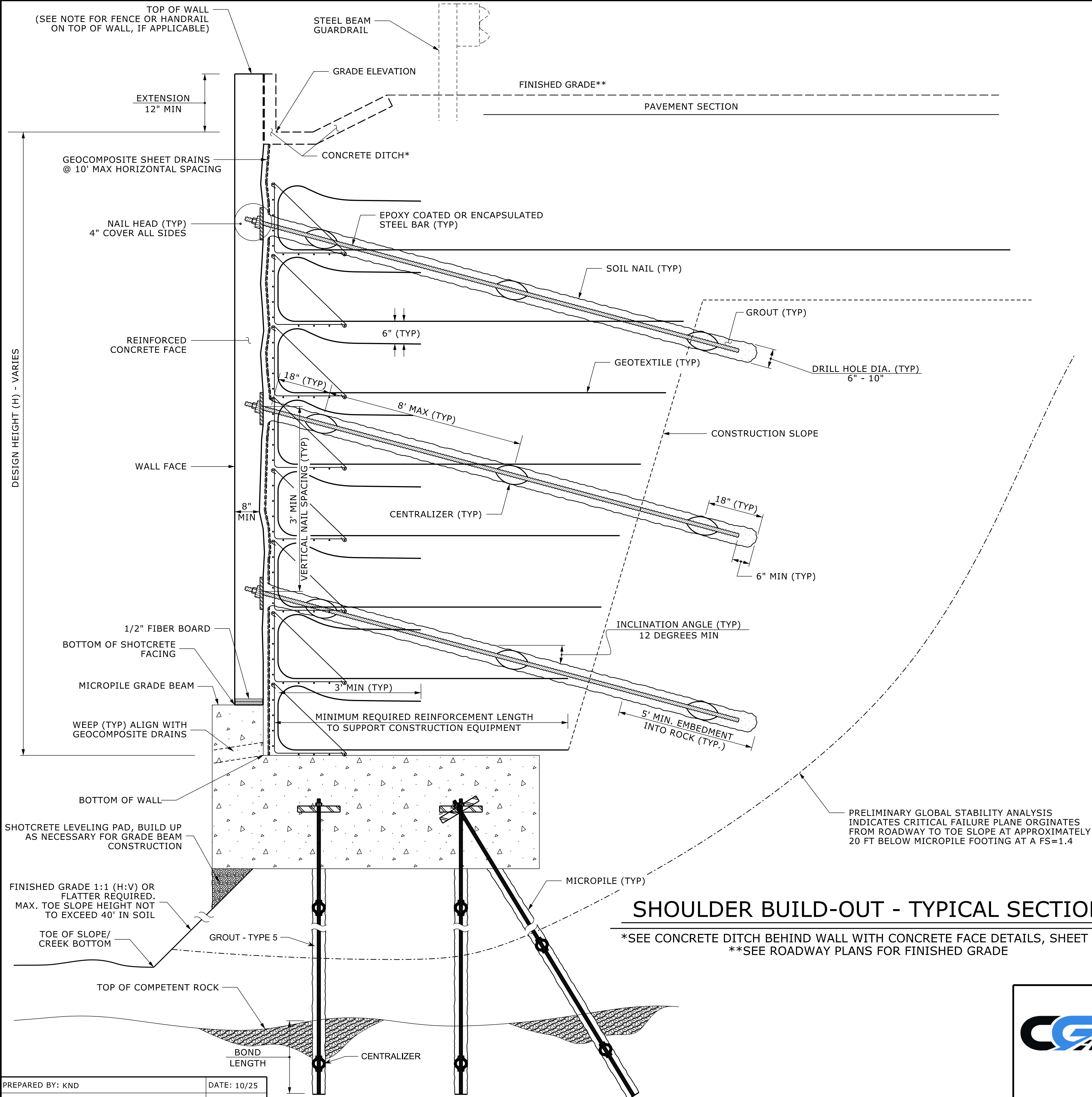
Prepared in the Office of:

CARLINAS
GEOTECHNICAL
GROUP

1805 SARDIS ROAD NORTH
SUITE 100
CHARLOTTE, NC 28270
(980) 339-8684

SITE 314 RETAINING WALL
SOIL NAIL SHOULDER BUILD-OUT

REVISIONS						SHEET NO. W-4
NO.	BY	DATE	NO.	BY	DATE	
1			3			
2			4			



NOTES:

- FOR SOIL NAIL SHOULDER BUILD-OUT, SEE SOIL NAIL RETAINING WALLS SPECIAL PROVISION.
- FOR MICROPILE GRADE BEAM, SEE MICROPILE GRADE BEAM SPECIAL PROVISION.
- FOR MICROPILES, SEE MICROPILE GRADE BEAM SPECIAL PROVISION.
- DESIGN MICROPILE GRADE BEAM FOR A MINIMUM OF 5 FEET OF GROUND LOSS BELOW GRADE BEAM.
- MICROPILE CASING MAY BE REQUIRED.
- ESTABLISH THE BACK OF SOIL NAIL WALL FACE AT A 3.5' OR GREATER OFFSET FROM THE BACK OF THE EXISTING OR PROPOSED GUARDRAIL POST.
- EXTEND THE TOP TWO LAYERS OF GEOTEXTILE TO CENTERLINE OF ROAD.
- FOR SOIL NAIL RETAINING WALLS, SEE SOIL NAIL RETAINING WALLS SPECIAL PROVISION.
- FOR STEEL BEAM GUARDRAIL, SEE ROADWAY PLANS AND SECTION 862 OF THE STANDARD SPECIFICATIONS.
- BEFORE BEGINNING SOIL NAIL WALL DESIGN FOR SITE 314 RETAINING WALL, SURVEY WALL LOCATION AND SUBMIT A REVISED WALL PROFILE VIEW (WALL ENVELOPE) FOR REVIEW. DO NOT START WALL DESIGN OR CONSTRUCTION UNTIL THE REVISED WALL ENVELOPE IS ACCEPTED.
- DESIGN SITE 314 RETAINING WALL FOR THE FOLLOWING:
- 1) DESIGN HEIGHT (H) = WALL HEIGHT + WALL EMBEDMENT
 - 2) DESIGN LIFE = 75 YEARS
 - 3) MINIMUM WALL EMBEDMENT DEPTH = 1 FT
 - 4) ASSUMED BORROW MATERIAL PARAMETERS, SEE SECTION 1018 OF THE STANDARD SPECIFICATIONS
 - UNIT WEIGHT, γ = 120 PCF
 - FRICTION ANGLE, ϕ = 30 DEGREES
 - COHESION, c = 0 PSF
 - 5) IN-SITU ASSUMED MATERIAL PARAMETERS RESIDUAL SOIL:
 - UNIT WEIGHT, γ = 120 PCF
 - FRICTION ANGLE, ϕ = 30 DEGREES
 - COHESION, c = 0 PSF
 - 6) IN-SITU ASSUMED MATERIAL PARAMETERS CRYSTALLINE ROCK:
 - UNIT WEIGHT, γ = 170 PCF
 - FRICTION ANGLE, ϕ = 34 DEGREES
 - COHESION, c = 1,000 PSF
- EXISTING OR FUTURE OBSTRUCTIONS SUCH AS FOUNDATIONS, FENCE OR HANDRAIL POSTS, PAVEMENTS, PIPES, INLETS OR UTILITIES MAY INTERFERE WITH SOIL NAILS FOR SITE 314 RETAINING WALL.
- "TEMPORARY SHORING" MAY BE REQUIRED FOR SITE 314 RETAINING WALL IN ACCORDANCE WITH THE TEMPORARY SHORING PROVISION. SEE ROADWAY OR TRAFFIC CONTROL PLANS.

SHOULDER BUILD-OUT - TYPICAL SECTION

*SEE CONCRETE DITCH BEHIND WALL WITH CONCRETE FACE DETAILS, SHEET W-1
**SEE ROADWAY PLANS FOR FINISHED GRADE

PROJECT NO.: W03293

POLK COUNTY

RETAINING WALL: -L314- STA. 11+40.00 TO 14+00.00, RT

SHEET 2 OF 2

Prepared in the Office of:

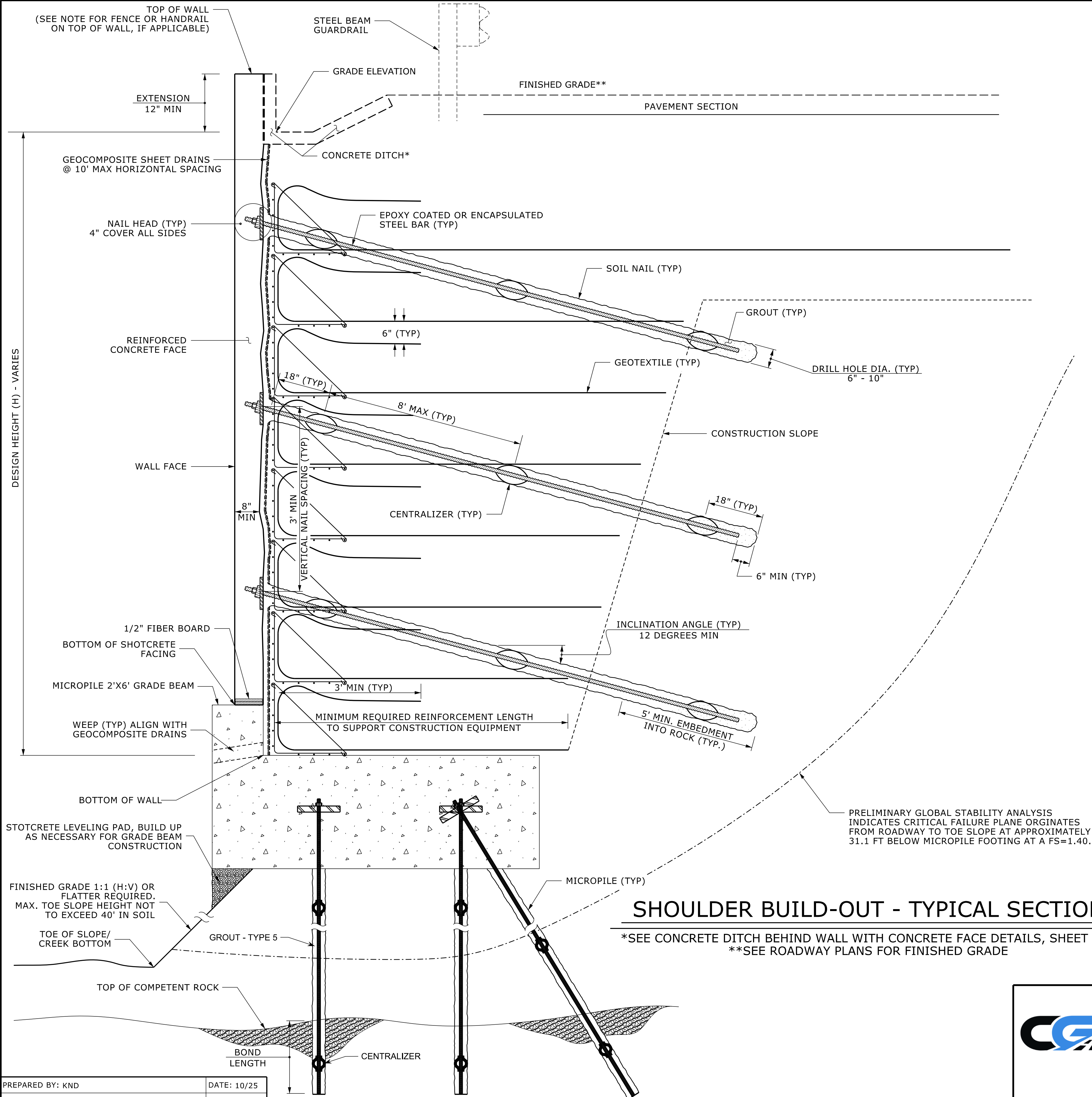
CGE | **CAROLINAS GEOTECHNICAL GROUP**

1805 SARDIS ROAD NORTH
SUITE 100
CHARLOTTE, NC 28270
(980) 339-8684

SITE 314 RETAINING WALL
SOIL NAIL SHOULDER BUILD-OUT

REVISIONS						SHEET NO. W-5
NO.	BY	DATE	NO.	BY	DATE	
1			3			
2			4			

PREPARED BY: KND	DATE: 10/25
REVIEWED BY: REK	DATE: 10/25



SHOULDER BUILD-OUT - TYPICAL SECTION

*SEE CONCRETE DITCH BEHIND WALL WITH CONCRETE FACE DETAILS, SHEET W-1
**SEE ROADWAY PLANS FOR FINISHED GRADE

GEOTECHNICAL
ENGINEER



ENGINEER

Signed by:
Robert E. Kral
—AFTER THE SIGNATURE—

12/2/2025
DATE

SIGNATURE

DATE

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

NOTES:

- FOR SOIL NAIL SHOULDER BUILD-OUT, SEE SOIL NAIL RETAINING WALLS SPECIAL PROVISION.
- FOR MICROPILE GRADE BEAM, SEE MICROPILE GRADE BEAM SPECIAL PROVISION.
- FOR MICROPILES, SEE MICROPILE GRADE BEAM SPECIAL PROVISION.
- DESIGN MICROPILE GRADE BEAM FOR A MINIMUM OF 5 FEET OF GROUND LOSS BELOW GRADE BEAM.
- MICROPILE CASING MAY BE REQUIRED.
- ESTABLISH THE BACK OF SOIL NAIL WALL FACE AT A 3.5' OR GREATER OFFSET FROM THE BACK OF THE EXISTING OR PROPOSED GUARDRAIL POST.
- EXTEND THE TOP TWO LAYERS OF GEOTEXTILE TO CENTERLINE OF ROAD.
- FOR SOIL NAIL RETAINING WALLS, SEE SOIL NAIL RETAINING WALLS SPECIAL PROVISION.
- FOR STEEL BEAM GUARDRAIL, SEE ROADWAY PLANS AND SECTION 862 OF THE STANDARD SPECIFICATIONS.
- BEFORE BEGINNING SOIL NAIL WALL DESIGN FOR SITE 319 RETAINING WALL, SURVEY WALL LOCATION AND SUBMIT A REVISED WALL PROFILE VIEW (WALL ENVELOPE) FOR REVIEW. DO NOT START WALL DESIGN OR CONSTRUCTION UNTIL THE REVISED WALL ENVELOPE IS ACCEPTED.
- DESIGN SITE 319 RETAINING WALL FOR THE FOLLOWING:
1) DESIGN HEIGHT (H) = WALL HEIGHT + WALL EMBEDMENT
2) DESIGN LIFE = 75 YEARS
3) MINIMUM WALL EMBEDMENT DEPTH = 1 FT
4) ASSUMED BORROW MATERIAL PARAMETERS, SEE SECTION 1018 OF THE STANDARD SPECIFICATIONS
UNIT WEIGHT, γ = 120 PCF
FRICTION ANGLE, ϕ = 30 DEGREES
COHESION, c = 0 PSF
5) IN-SITU ASSUMED MATERIAL PARAMETERS RESIDUAL SOIL:
UNIT WEIGHT, γ = 120 PCF
FRICTION ANGLE, ϕ = 30 DEGREES
COHESION, c = 0 PSF
6) IN-SITU ASSUMED MATERIAL PARAMETERS CRYSTALLINE ROCK:
UNIT WEIGHT, γ = 170 PCF
FRICTION ANGLE, ϕ = 34 DEGREES
COHESION, c = 1,000 PSF
- EXISTING OR FUTURE OBSTRUCTIONS SUCH AS FOUNDATIONS, FENCE OR HANDRAIL POSTS, PAVEMENTS, PIPES, INLETS OR UTILITIES MAY INTERFERE WITH SOIL NAILS FOR SITE 319 RETAINING WALL.
- "TEMPORARY SHORING" MAY BE REQUIRED FOR SITE 319 RETAINING WALL IN ACCORDANCE WITH THE TEMPORARY SHORING PROVISION. SEE ROADWAY OR TRAFFIC CONTROL PLANS.

PROJECT NO.: W03293

POLK COUNTY

RETAINING WALL: -L319- STA. 12+80.00 TO 14+67.25, RT

SHEET 2 OF 2

Prepared in the Office of:



CAROLINAS
GEOTECHNICAL
GROUP

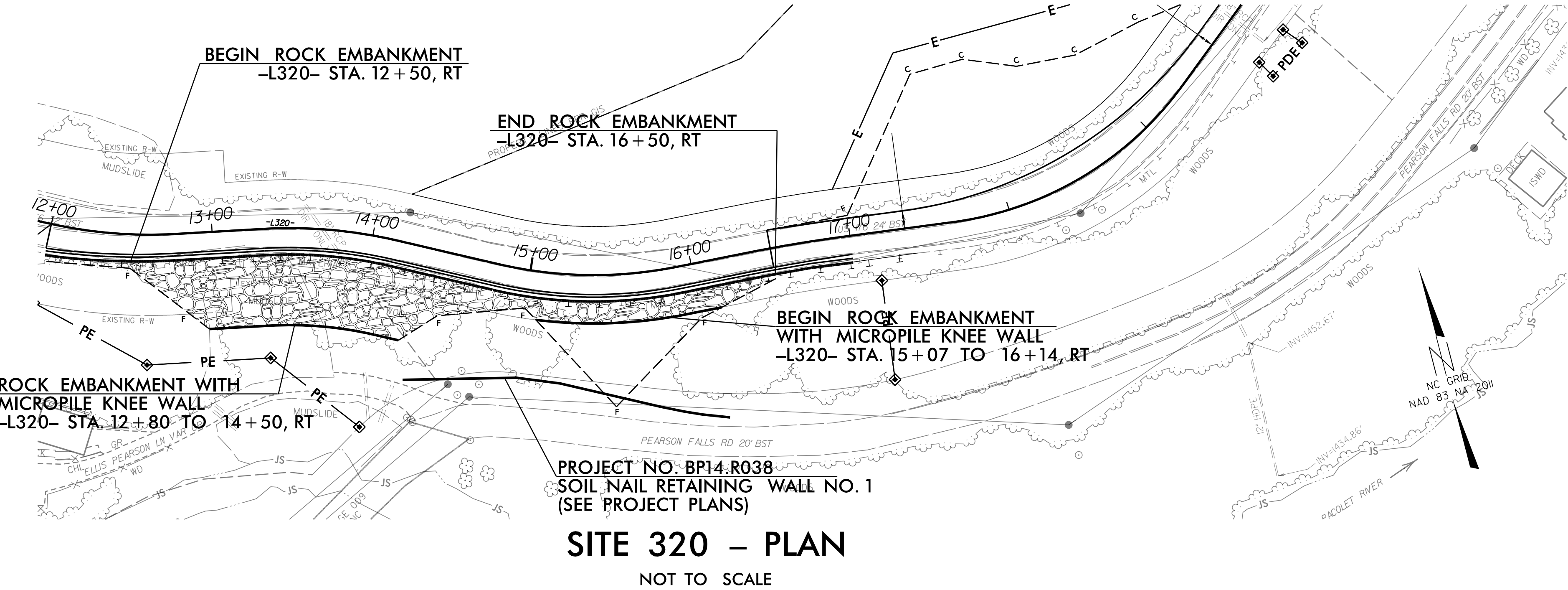
1805 SARDIS ROAD NORTH
SUITE 100
CHARLOTTE, NC 28270
(980) 339-8684

SITE 319 RETAINING WALL
SOIL NAIL SHOULDER BUILD-OUT

PREPARED BY: KND	DATE: 10/25
REVIEWED BY: REK	DATE: 10/25

REVISIONS						SHEET NO. W-7
NO.	BY	DATE	NO.	BY	DATE	
1			3			
2			4			

SITE 320 RETAINING WALL:

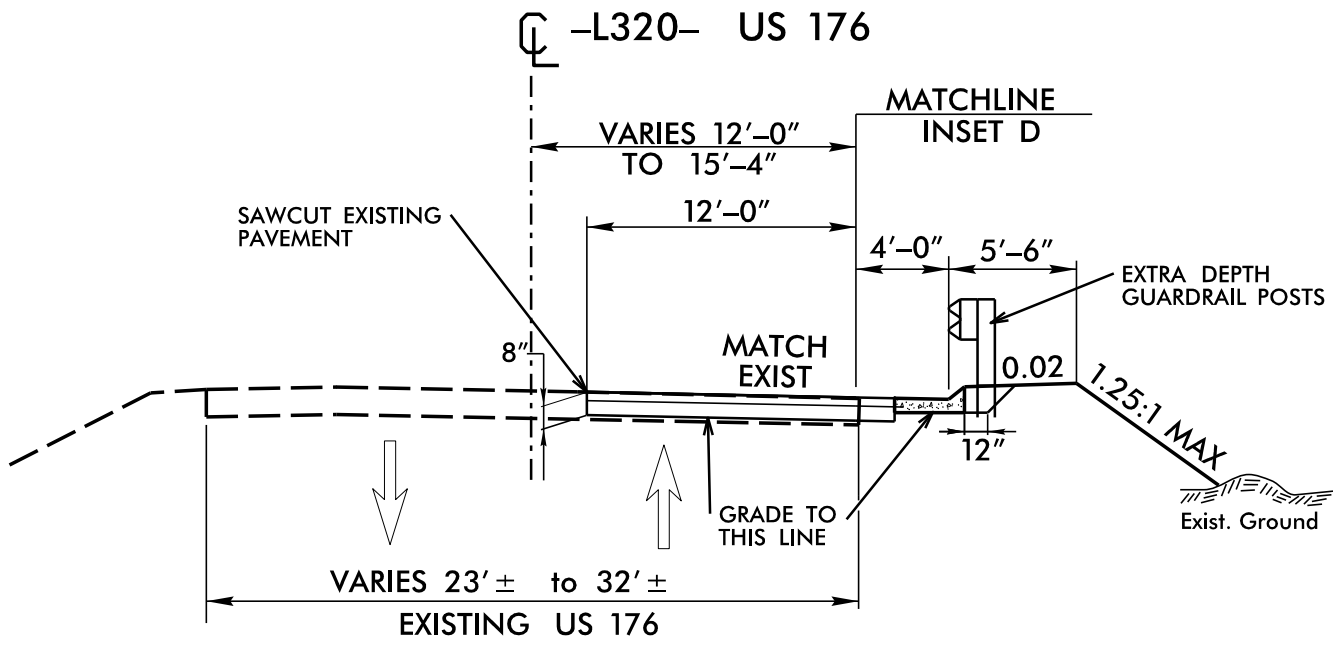


ESTIMATED QUANTITIES - SITE 320

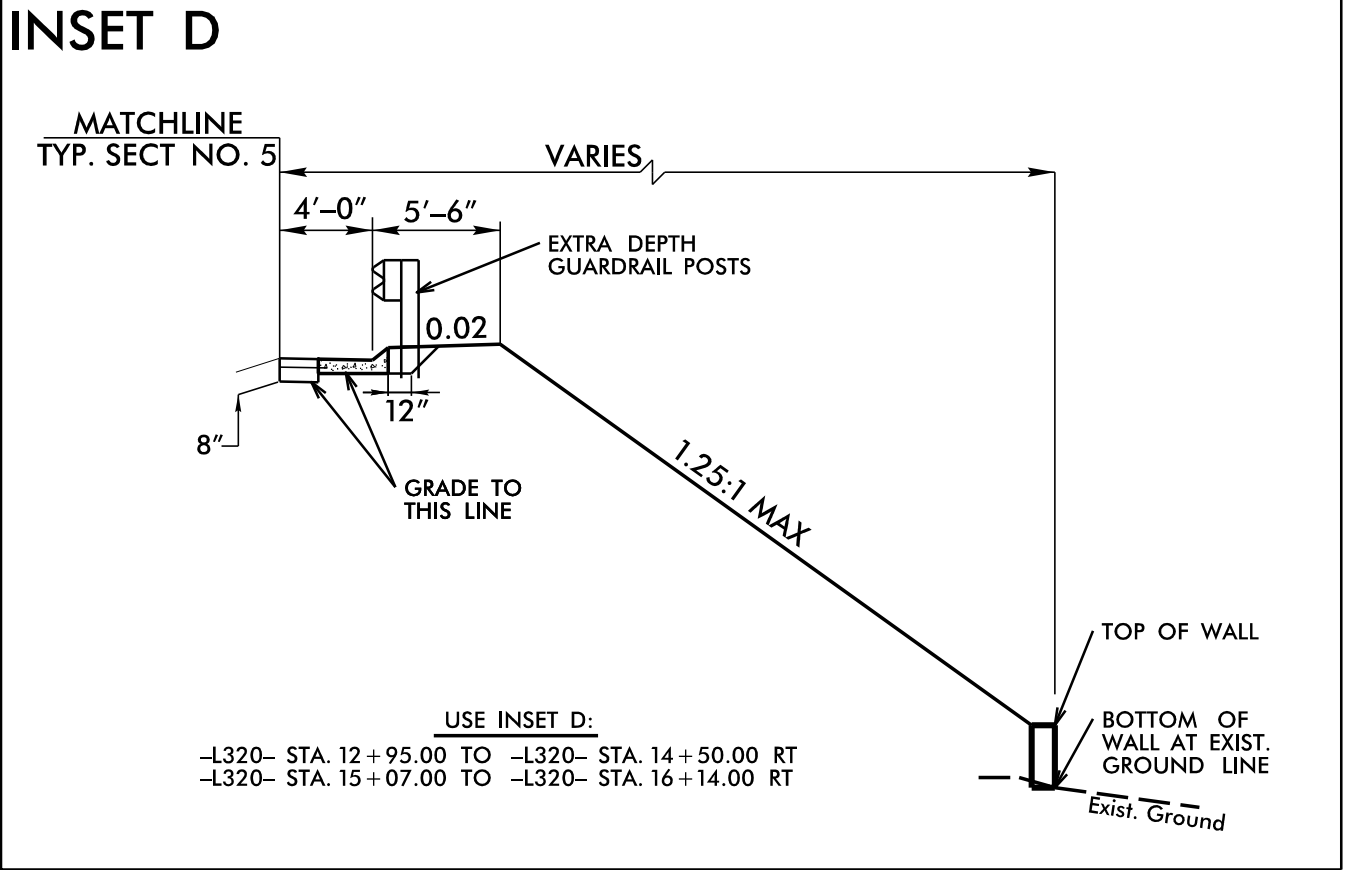
ROCK EMBANKMENTS	8,000 TON
GEOTEXTILE FOR ROCK EMBANKMENTS	2,600 SY
MICROPILE GRADE BEAM	280 LF

ROCK EMBANKMENT WITH MICROPILE KNEE WALL

STA. -L320-	TOP OF SLOPE OFFSET	TOP OF SLOPE ELEVATION (FT)	TOP OF WALL OFFSET	TOP OF WALL ELEVATION	BOTTOM OF WALL ELEVATION (FT)
12+80.00	17.3' RT	1541.3	42.6' RT	1521.1	1521.1
13+00.00	17.3' RT	1540.1	60.0' RT	1508.6	1504.4
13+50.00	17.3' RT	1536.5	60.0' RT	1504.8	1494.2
14+00.00	17.3' RT	1533.5	60.0' RT	1501.8	1490.2
14+50.00	17.3' RT	1530.8	39.8' RT	1512.9	1512.9
15+50.00	17.3' RT	1524.3	30.0' RT	1516.6	1512.1
16+00.00	17.3' RT	1520.5	30.0' RT	1513.5	1509.5



TYPICAL SECTION NO. 5
USE TYPICAL SECTION NO. 5
-L320- STA. 12+00.00 TO -L320- STA. 16+50.00



PROJECT NO.: W03293

POLK COUNTY

STATION: -L320- STA. 12+50 TO STA. 16+50, RT

SHEET 1 OF 3

SITE 320 RETAINING WALL
ROCK EMBANKMENT &
ROCK EMBANKMENT WITH
MICROPILE KNEE WALL

REVISIONS

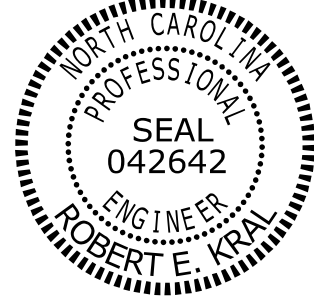
NO.	BY	DATE	NO.	BY	DATE	SHEET NO.
1			3			W-8
2			4			

Prepared in the Office of:
CGE | **CAROLINAS GEOTECHNICAL GROUP**
1805 SARDIS ROAD NORTH
SUITE 100
CHARLOTTE, NC 28270
(980) 339-8684

PREPARED BY: KND	DATE: 10/25
REVIEWED BY: REK	DATE: 10/25

RETAINING WALL ENVELOPE HAS BEEN ESTIMATED BASED ON ROADWAY TYPICAL SECTIONS, CROSS SECTIONS, AND DESIGN LAYOUT PROVIDED TGS JULY 16, 2025.

GEOTECHNICAL
ENGINEER



Signed by:
Robert E. Kral
AAE88FF73806 SIGNATURE

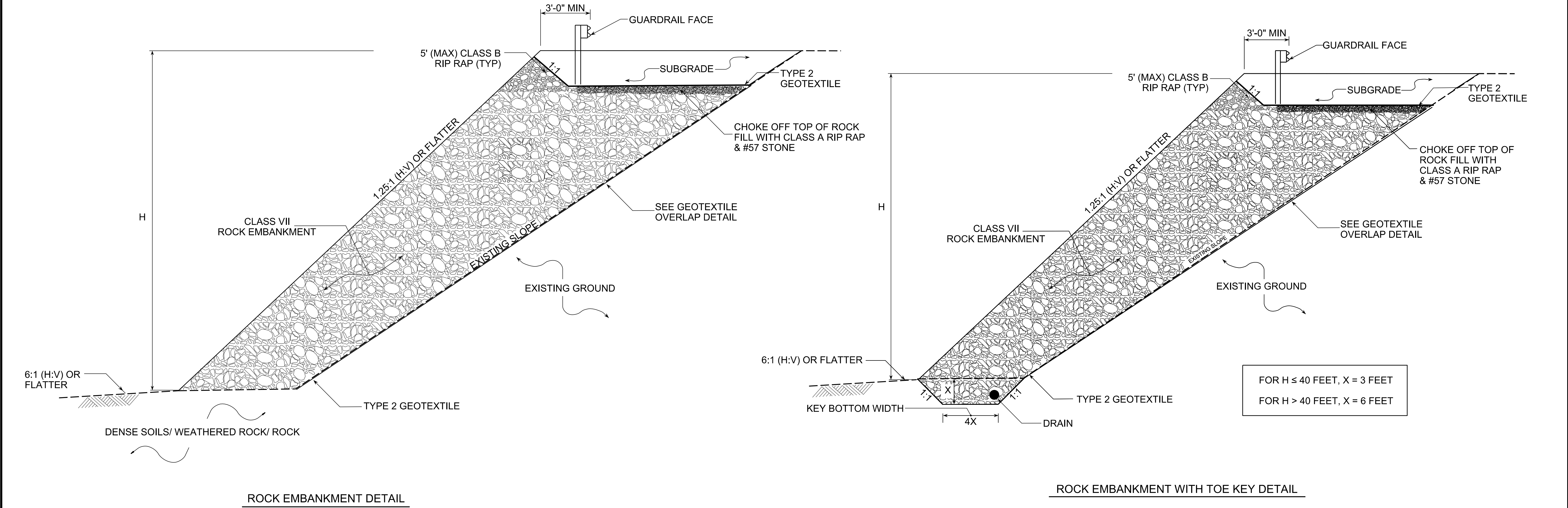
12/2/2025
DATE

ENGINEER

SIGNATURE

DATE

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED



NOTES:

1. THE MAXIMUM ALLOWABLE HEIGHT FOR THE ROCK EMBANKMENT DETAIL IS 80'.
2. FOR ROCK EMBANKMENT, BENCH EXISTING SLOPE IN ACCORDANCE WITH SECTION 235 OF THE STANDARD SPECIFICATIONS, WHERE POSSIBLE.
3. FOR MICROPILE KNEE WALL, SEE MICROPILE AND GRADE BEAM SPECIAL PROVISION.
4. FOR ROCK EMBANKMENTS, SEE ROCK EMBANKMENTS SPECIAL PROVISION.

ROCK EMBANKMENT							
BEGIN STA. -L320-	TOP OFFSET	BOT. OFFSET	INCLINATION (H:V)	END STA.	TOP OFFSET	BOT. OFFSET	INCLINATION (H:V)
12+50.00	17.3' RT	21.0' RT	1.25:1, OR FLATTER	12+80.00	17.3' RT	42.6' RT	1.25:1, OR FLATTER
16+14.00	17.3' RT	30.0' RT	1.25:1, OR FLATTER	16+50.00	17.3' RT	19.1' RT	1.25:1, OR FLATTER

PROJECT NO.: W03293

POLK COUNTY

STATION: -L320- STA. 12+50 TO STA. 16+50, RT

SHEET 2 OF 3

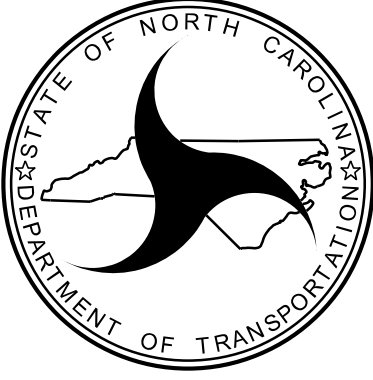
PREPARED BY: KND	DATE: 10/25
REVIEWED BY: REK	DATE: 10/25

Prepared in the Office of:



CAROLINAS
GEOTECHNICAL
GROUP

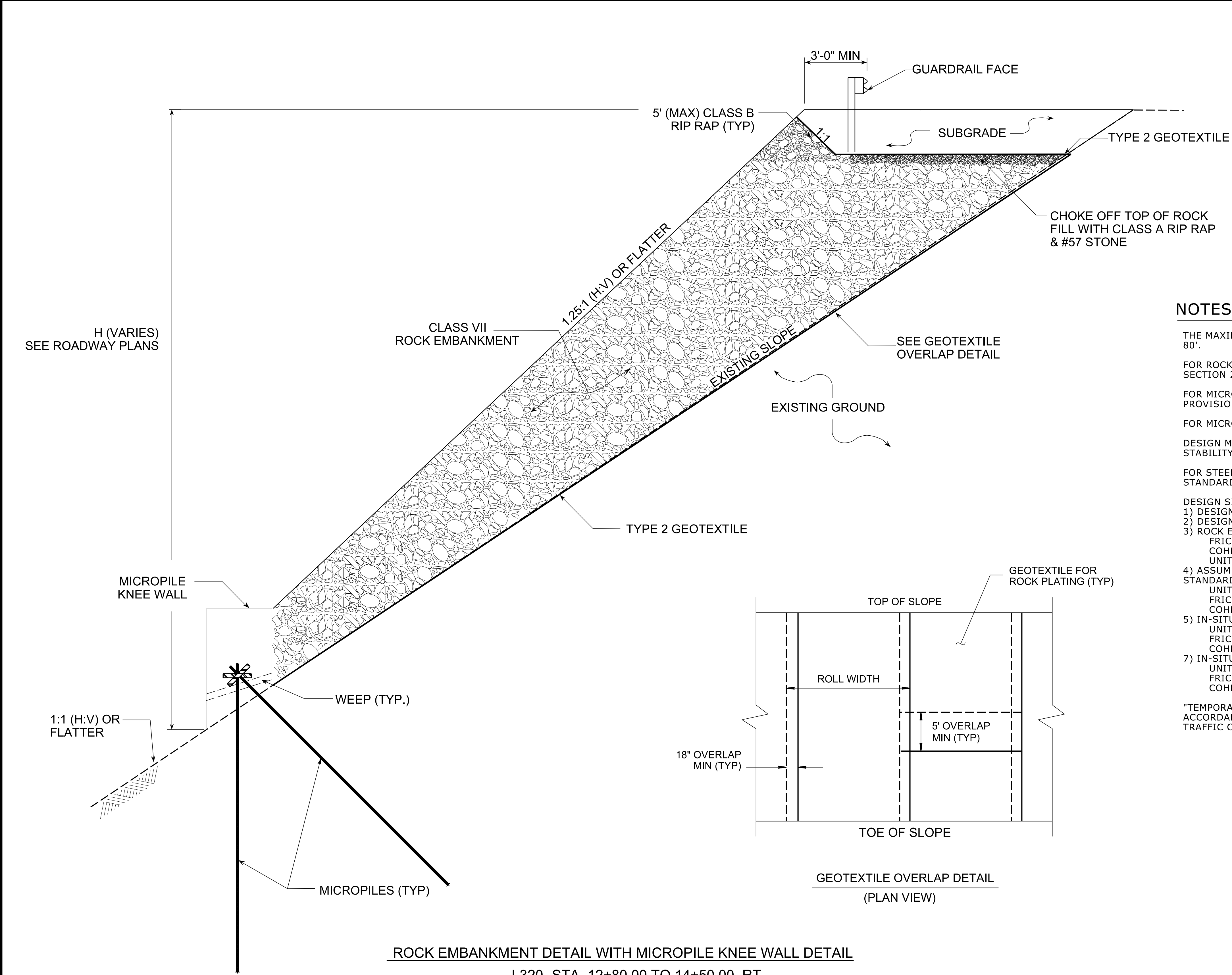
1805 SARDIS ROAD NORTH
SUITE 100
CHARLOTTE, NC 28270
(980) 339-8684



NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

GEOTECHNICAL
ENGINEERING UNIT

REVISIONS						SHEET NO. W-9
NO.	BY	DATE	NO.	BY	DATE	
1			3			
2			4			



ROCK EMBANKMENT DETAIL WITH MICROPILE KNEE WALL DETAIL

-L320- STA. 12+80.00 TO 14+50.00, RT

GEOTECHNICAL
ENGINEER

Signed by:
Robert E. Kral
Signature

12/2/2025
DATE

ENGINEER

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

NOTES:

THE MAXIMUM ALLOWABLE HEIGHT FOR THE ROCK EMBANKMENT DETAIL IS 80'.

FOR ROCK EMBANKMENT, BENCH EXISTING SLOPE IN ACCORDANCE WITH SECTION 235 OF THE STANDARD SPECIFICATIONS, WHERE POSSIBLE.

FOR MICROPILE KNEE WALL, SEE THE MICROPILE GRADE BEAM SPECIAL PROVISION.

FOR MICROPILES, SEE MICROPILE GRADE BEAM SPECIAL PROVISION.

DESIGN MICROPILE KNEE WALL FOR INTERNAL, EXTERNAL, AND GLOBAL STABILITY.

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

- DESIGN SITE 320 FOR THE FOLLOWING:
- 1) DESIGN HEIGHT (H) = WALL HEIGHT + HEIGHT OF ROCK EMBANKMENT
 - 2) DESIGN LIFE = 75 YEARS
 - 3) ROCK EMBANKMENT PARAMETERS:
FRICTION ANGLE, ϕ = 30 DEGREES
COHESION, c = 0 PSF
UNIT WEIGHT, γ = 120 PCF
 - 4) ASSUMED BORROW MATERIAL PARAMETERS, SEE SECTION 1018 OF THE STANDARD SPECIFICATIONS
UNIT WEIGHT, γ = 120 PCF
FRICTION ANGLE, ϕ = 30 DEGREES
COHESION, c = 0 PSF
 - 5) IN-SITU ASSUMED MATERIAL PARAMETERS RESIDUAL SOIL:
UNIT WEIGHT, γ = 120 PCF
FRICTION ANGLE, ϕ = 30 DEGREES
COHESION, c = 0 PSF
 - 7) IN-SITU ASSUMED MATERIAL PARAMETERS CRYSTALLINE ROCK:
UNIT WEIGHT, γ = 170 PCF
FRICTION ANGLE, ϕ = 34 DEGREES
COHESION, c = 1,000 PSF

"TEMPORARY SHORING" MAY BE REQUIRED FOR SITE 320 RETAINING WALL IN ACCORDANCE WITH THE TEMPORARY SHORING PROVISION. SEE ROADWAY OR TRAFFIC CONTROL PLANS.

PROJECT NO.: W03293

POLK COUNTY

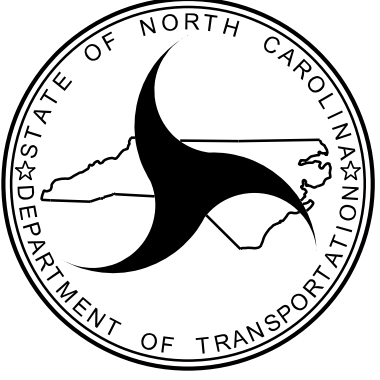
STATION: -L320- STA. 12+50 TO STA. 16+50, RT

SHEET 3 OF 3

PREPARED BY: KND	DATE: 10/25
REVIEWED BY: REK	DATE: 10/25

Prepared in the Office of:

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NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

GEOTECHNICAL
ENGINEERING UNIT

SITE 320 RETAINING WALL
ROCK EMBANKMENT &
ROCK EMBANKMENT WITH
MICROPILE KNEE WALL

REVISIONS						SHEET NO. W-10
NO.	BY	DATE	NO.	BY	DATE	
1			3			
2			4			