



STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION

JOSH STEIN  
GOVERNOR

DANIEL H. JOHNSON  
SECRETARY

March 17, 2026

**Addendum No. 2**

RE: Contract # C205165

WBS # 18314.1075015, etc.

FEDERAL-AID NO. HELENE

**Polk County**

SITES 936-940, 942-944, 314, 316-321, 941: US-176 FROM 0.1 M N OF THOMPSON RD TO 0.8 M EAST OF BEAR CREEK LN. W03293

**March 17, 2026 Letting**

To Whom It May Concern:

Reference is made to the plans furnished to you on this project.

The following revisions have been made to the Roadway plans.

Sheet No.	Revision
3D-1 (Part 1)	Updated Totals and Combined Project Totals – Quantities shown below.
3D-2 (Part 1)	Revised label for “Combined Project W03293 Totals”.
6 (Part 1)	Revised note for DS-600.
3D-2 (Part 2)	Revised quantities – shown below.
12 (Part 2)	Revised – removed “grade to drain” note.

Please void the above listed Sheets in your Plans and staple the revised Sheets thereto.

The following revisions have been made to the Wall plans.

Sheet No.	Revision
W-5 (Part 1), W-7 (Part 1), W-7 (Part 2), W-9 (Part 2), W-13 (Part 2), W-17 (Part 2)	Revised call-out to read “MICROPILE GRADE BEAM, CAST-IN-PLACE CONCRETE”

Please void the above listed Sheets in your Plans and staple the revised Sheets thereto.

The following revisions have been made to the proposal.

<b>Page No.</b>	<b>Revision</b>
Proposal Cover	Note added that reads “Includes Addendum No. 2 Dated 03-17-2026”.
G-2	The PROJECT SPECIAL PROVISION entitled <b><u>CONTRACT TIME AND LIQUIDATED DAMAGES</u></b> has been revised. The PROJECT SPECIAL PROVISION entitled <b><u>INTERMEDIATE CONTRACT TIME NUMBER 1 AND LIQUIDATED DAMAGES</u></b> has been revised.
G-5	The PROJECT SPECIAL PROVISION entitled <b><u>SPECIALTY ITEMS</u></b> has been revised.
G-18	The PROJECT SPECIAL PROVISION entitled <b><u>SCHEDULE OF ESTIMATED COMPLETION PROGRESS</u></b> has been revised.
GT-2.1 through GT-2.9	The UNIT PROJECT SPECIAL PROVISION entitled <b><u>MICROPILE GRADE BEAM</u></b> has been revised.
GT-3.1 through GT-3.2	The UNIT PROJECT SPECIAL PROVISION entitled <b><u>ROCK EMBANKMENTS</u></b> has been revised.

Please void the above listed pages in your proposal and staple the revised Sheets thereto.

On the item sheets the following pay item revisions have been made:

<b><u>Item</u></b>	<b><u>Description</u></b>	<b><u>Old Quantity</u></b>	<b><u>New Quantity</u></b>
0057- 2286000000-N 840	MASONRY DRAINAGE STRUCTURES	23 EA	21 EA
0058- 2297000000-E 840	MASONRY DRAINAGE STRUCTURES	NEW ITEM	12.1 CY
0059- 2308000000-E 840	MASONRY DRAINAGE STRUCTURES	12.8 LF	8.2 LF

\*PLEASE NOTE SOME PAY ITEMS HAVE BEEN RE-NUMBERED AS A RESULT OF A NEW PAY ITEM BEING ADDED IN THIS ADDENDUM\*

The Contractor’s bid must include these pay item revisions.

The electronic bidding file has been updated to reflect these revisions. Please download the Addendum File and follow the instructions for applying the addendum. Bid Express will not accept your bid unless the addendum has been applied.

The contract will be prepared accordingly.

Sincerely,

Signed by:  
  
5AE54B6DC24B4A9...

Ronald E. Davenport, Jr., PE  
State Contract Officer

RED/jcm  
Attachments

cc: Mr. Wiley W. Jones III, PE  
Mr. Wesley T. Grindstaff, PE  
Mr. Ken Kennedy, PE  
Mr. Malcolm Bell

Mr. Forrest Dungan, PE  
Ms. Jaci Kincaid  
Mr. Jon Weathersbee, PE  
Project File (2)

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH, N.C.

PROPOSAL

**INCLUDES ADDENDUM No. 2 DATED 03-17-2026**

DATE AND TIME OF BID OPENING: **Mar 24, 2026 AT 02:00 PM**

CONTRACT ID C205165

WBS 18314.1075015, 18314.1075016, 18314.1075017, 18314.1075018,  
18314.1075019, 18314.1075020, 18314.1075021, 18314.1075022,  
18314.1075023, 18314.1075025, 18314.1075026, 18314.1075027,  
18314.1075028, 18314.1075029, 18314.1075030, 18314.1075035

FEDERAL-AID NO. HELENE

COUNTY POLK

T.I.P NO.

MILES 1.221

ROUTE NO. US-176

LOCATION SITES 936-940, 942-944, 314, 316-321, 941: US-176 FROM 0.1 M N OF  
THOMPSON RD TO 0.8 M EAST OF BEAR CREEK LN. W03293

TYPE OF WORK GRADING, DRAINAGE, PAVING, AND RETAINING WALLS.

**NOTICE:**

ALL BIDDERS SHALL COMPLY WITH ALL APPLICABLE LAWS REGULATING THE PRACTICE OF GENERAL CONTRACTING AS CONTAINED IN CHAPTER 87 OF THE GENERAL STATUTES OF NORTH CAROLINA WHICH REQUIRES THE BIDDER TO BE LICENSED BY THE N.C. LICENSING BOARD FOR CONTRACTORS WHEN BIDDING ON ANY NON-FEDERAL AID PROJECT WHERE THE BID IS \$30,000 OR MORE, EXCEPT FOR CERTAIN SPECIALTY WORK AS DETERMINED BY THE LICENSING BOARD. BIDDERS SHALL ALSO COMPLY WITH ALL OTHER APPLICABLE LAWS REGULATING THE PRACTICES OF ELECTRICAL, PLUMBING, HEATING AND AIR CONDITIONING AND REFRIGERATION CONTRACTING AS CONTAINED IN CHAPTER 87 OF THE GENERAL STATUTES OF NORTH CAROLINA. NOTWITHSTANDING THESE LIMITATIONS ON BIDDING, THE BIDDER WHO IS AWARDED ANY FEDERAL - AID FUNDED PROJECT SHALL COMPLY WITH CHAPTER 87 OF THE GENERAL STATUTES OF NORTH CAROLINA FOR LICENSING REQUIREMENTS WITHIN 60 CALENDAR DAYS OF BID OPENING.

**BIDS WILL BE RECEIVED AS SHOWN BELOW:**

**THIS IS A ROADWAY & STRUCTURE PROPOSAL**

**5% BID BOND OR BID DEPOSIT REQUIRED**

---

manufacturer or supplier. The Engineer will retain documentation for audit or inspection purposes.

**CONTRACT TIME AND LIQUIDATED DAMAGES:**

(8-15-00) (Rev. 5-16-23)

108

SP1 G08 A

The date of availability for this contract is **May 4, 2026 for Sites 314, 318, 320, 938, and 943, except May 29, 2026 for the remainder of the project**, except that work in jurisdictional waters and wetlands shall not begin until a meeting between the DOT, Regulatory Agencies, and the Contractor is held as stipulated in the permits contained elsewhere in this proposal. This delay in availability has been considered in determining the contract time for this project.

The completion date for this contract is **December 27, 2029**.

Except where otherwise provided by the contract, observation periods required by the contract will not be a part of the work to be completed by the completion date and/or intermediate contract times stated in the contract. The acceptable completion of the observation periods that extend beyond the final completion date shall be a part of the work covered by the performance and payment bonds.

The liquidated damages for this contract are **Two Hundred Dollars (\$ 200.00)** per calendar day. These liquidated damages will not be cumulative with any liquidated damages which may become chargeable under Intermediate Contract Time Number 1.

**INTERMEDIATE CONTRACT TIME NUMBER 1 AND LIQUIDATED DAMAGES:**

(7-1-95) (Rev. 2-21-12)

108

SP1 G13 A

Except for that work required under the Project Special Provisions entitled *Planting, Reforestation* and/or *Permanent Vegetation Establishment*, included elsewhere in this proposal, the Contractor will be required to complete all work included in this contract and shall place and maintain traffic on same.

The date of availability for this intermediate contract time is **May 4, 2026 for Sites 314, 318, 320, 938, and 943, except May 29, 2026 for the remainder of the project**,

The completion date for this intermediate contract time is **June 30, 2029**.

The liquidated damages for this intermediate contract time are **Three Thousand Seven Hundred Dollars (\$ 3,700.00)** per calendar day.

Upon apparent completion of all the work required to be completed by this intermediate date, a final inspection will be held in accordance with Article 105-17 and upon acceptance, the Department will assume responsibility for the maintenance of all work except *Planting, Reforestation* and/or *Permanent Vegetation Establishment*. The Contractor will be responsible for and shall make corrections of all damages to the completed roadway caused by his planting operations, whether occurring prior to or after placing traffic through the project.

**SPECIALTY ITEMS:**

(7-1-95)(Rev. 1-16-24)

108-6

SP1 G37

Items listed below will be the specialty items for this contract (see Article 108-6 of the *Standard Specifications*).

<b>Line #</b>	<b>Description</b>
65-68	Guardrail
71-77	Signing
94	Long-Life Pavement Markings
95	Removable Tape
100	Permanent Pavement Markers
101	Utility Construction
102-130, 132-134	Erosion Control
131	Reforestation

**FUEL PRICE ADJUSTMENT:**

(11-15-05)(Rev. 1-16-24)

109-8

SP1 G43

**Page 1-82, Article 109-8, FUEL PRICE ADJUSTMENTS**, add the following:

The base index price for DIESEL #2 FUEL is \$ **2.4622** per gallon. Where any of the following are included as pay items in the contract, they will be eligible for fuel price adjustment.

**SCHEDULE OF ESTIMATED COMPLETION PROGRESS:**

(7-15-08)(Rev. 6-17-25)

108-2

SP1 G58

The Contractor's attention is directed to the Standard Special Provision entitled *Availability of Funds Termination of Contracts* included elsewhere in this proposal. The Department of Transportation's schedule of estimated completion progress for this project as required by that Standard Special Provision is as follows:

	<b><u>Fiscal Year</u></b>	<b><u>Progress (% of Dollar Value)</u></b>
2026	(7/01/25 - 6/30/26)	<b>10%</b> of Total Amount Bid
2027	(7/01/26 - 6/30/27)	<b>36%</b> of Total Amount Bid
2028	(7/01/27 - 6/30/28)	<b>33%</b> of Total Amount Bid
2029	(7/01/28 - 6/30/29)	<b>21%</b> of Total Amount Bid

The Contractor shall also furnish his own progress schedule in accordance with Article 108-2 of the *Standard Specifications*. Any acceleration of the progress as shown by the Contractor's progress schedule over the progress as shown above shall be subject to the approval of the Engineer.

**DISADVANTAGED BUSINESS ENTERPRISE:**

(10-16-07)(Rev. 10-21-25)

102-15(J)

SP1 G61

**Description**

The purpose of this Special Provision is to carry out the U.S. Department of Transportation's policy of ensuring nondiscrimination in the award and administration of contracts financed in whole or in part with Federal funds. This provision is guided by 49 CFR Part 26.

**Definitions**

*Additional DBE Subcontractors* - Any DBE submitted at the time of bid that will not be used to meet the DBE goal. No submittal of a Letter of Intent is required.

*Committed DBE Subcontractor* - Any DBE submitted at the time of bid that is being used to meet the DBE goal by submission of a Letter of Intent. Or any DBE used as a replacement for a previously committed DBE firm.

*Contract Goal Requirement* - The approved DBE participation at time of award, but not greater than the advertised contract goal.

*DBE Goal* - A portion of the total contract, expressed as a percentage, that is to be performed by committed DBE subcontractor(s).

*Disadvantaged Business Enterprise (DBE)* - A firm certified as a Disadvantaged Business Enterprise through the North Carolina Unified Certification Program.

*Goal Confirmation Letter* - Written documentation from the Department to the bidder confirming the Contractor's approved, committed DBE participation along with a listing of the committed DBE firms.

**MICROPILE GRADE BEAM****(SPECIAL)****1.0 GENERAL**

This project includes construction of an array of micropiles connected to a grade beam, knee wall, footing, or leveling course, which serve to stabilize existing or potential slope instability and support future wall construction or roadway widening. A micropile is a small diameter, drilled and grouted non-displacement pile. Micropiles are designed and constructed with reinforcing casing and typically a center reinforcing bar. Design and construct micropiles with the required capacity in accordance with the contract and accepted submittals. Use a prequalified Micropile Subcontractor for micropile work. Define “pile” as a micropile and “footing” as a micropile grade beam, knee wall, footing, or leveling course.

**2.0 MATERIALS**

Refer to the *Standard Specifications*.

<b>Item</b>	<b>Section</b>
Reinforcing Steel	1070
Portland Cement Concrete, Class A	1000

Steel casings may be new “Structural Grade” steel pipe free from dents, cracks, cuts or any other defects. All steel for micropiles shall meet the requirements of Article 106-1 of the *Standard Specifications*.

Provide a Type 1 material certification that meets Article 106-3 of the *Standard Specifications* for reinforcing casings and bars. Store steel reinforcement on blocking at least 12" above the ground and protect it at all times from damage; and when placing in the work make sure it is free from dirt, dust, loose mill scale, loose rust, paint, oil or other foreign materials.

For testing yield strength, define a “lot” as each truckload delivered and 2 samples and tests are required per lot. Use steel casings with the minimum wall thickness shown in the plans and outside diameters ranging from the minimum shown in the plans to 3" larger. Provide casings meeting the tensile requirements of ASTM A252, Grade 3, except with an elongation of at least 15% and yield strength of at least 50 ksi (343 MPa) unless noted otherwise in the plans.

Use deformed steel bars that meet AASHTO M 275 or M31, Grade 60 or 75. Splice reinforcing bars in accordance with Article 1070-9 of the *Standard Specifications*. Hollow self-drilling bars shall meet ASTM A519 or A513 with minimum yield strengths of 100 ksi and 87 ksi, respectively, and shall be oversized to account for up to 1/8-inch reduction in diameter due to corrosion. Locate reinforcing casing joints at least 2 ft from bar splices.

Fabricate bar centralizers from schedule 40 PVC plastic pipe or tube, steel or other material not detrimental to steel reinforcement (no wood). Size centralizers to position reinforcement within 1" of drill hole centers and allow tremies to be inserted to ends of holes. Use centralizers that do not interfere with grout placement or flow around reinforcement.

Use Class A concrete for cast-in-place concrete footing that meets Article 450-2 of the *Standard Specifications*.

Provide micropile head assemblies consisting of nuts, washers and bearing plates. Use steel bearing plates that meet ASTM A36 and steel washers and hex nuts recommended by the Bar Manufacturer.

### 3.0 PRECONSTRUCTION REQUIREMENTS

Two submittals are required. These submittals include (1) micropile design and (2) micropile installation and testing plan. Provide a PDF copy of each submittal. Submit the submittals at least 30 days before starting micropile construction. Do not begin micropile construction until the installation and testing plan is accepted.

A Design Engineer is required to design the micropiles. Submit documentation that the Design Engineer is licensed by the State of North Carolina and has at least 5 years of experience in designing micropiles for footing and in subsurface conditions similar to those for this project. Documentation should include resumes, references, certifications, project lists, experience descriptions and details, etc.

#### A. Micropile Footing Design Submittal

A conceptual micropile arrangement is shown in the plans. Review and verify existing site and subsurface conditions and survey information before designing micropiles.

Design the micropile footing in accordance with the *FHWA NHI-05-039 Micropile Design and Construction*, Chapter 6. Define “bond length” as the micropile center bar length below the reinforcing casing tip elevation, the reinforcing casing tip elevation if a center bar does not extend below the casing, or the micropile length in weathered rock or rock when only a bar is used for the micropile. Perform a slope stability analysis using the soil parameters and the assumed design failure plane shown in the plans. Determine the required bond length and micropile reinforcement to provide a global factor of safety equal to 1.35. A bond length of at least 10 ft into weathered rock or rock is required. Use a bond length factor of safety equal to 2.0 for axial compression and uplift resistance. Evaluate the shear and bending moment capacity of the cased and uncased sections in the unsupported length and casing joint portions of the micropiles.

Design micropile footings with the minimum dimensions shown on the plans. Reinforce micropile footings to resist the loading from the micropiles and slope instability.

When the micropile footing is utilized to provide bearing support of a retaining wall system, design the micropiles and micropile footing to resist the vertical and horizontal retaining wall loads.

When the micropile footing is used in conjunction with additional geotechnical systems such as anchored soldier pile walls, permanent soil nail walls, and permanent soil nail shoring in Shored MSE or GRS Retaining Walls, the benefit of all of the stabilization systems may be combined to provide a minimum factor of safety of 1.35. The global stability benefit of a

MSE or GRS retaining wall shall not be considered.

Submit working drawings, slope stability analyses, and design calculations including estimated unit ultimate capacities for acceptance in accordance with Article 105-2 of the *Standard Specifications*. Include all dimensions, quantities, elevations and cross-sections necessary to construct the micropile footing. Have piles designed, detailed and sealed by the Design Engineer. When design changes occur due to load test results, varying site conditions or other reasons, a revised design submittal is required.

#### B. Micropile Installation and Testing Plan Submittal

Provide detailed project specific information in the installation and testing plan that includes the following:

1. List and sizes of proposed equipment including micropile drilling rigs and tools, tremies and grouting equipment;
2. Sequence of micropile construction and step-by-step description of micropile installation including details of casing installation, drilling methods and flushing;
3. List of reinforcement and casings including grades or yield strength and sizes;
4. Methods for placing reinforcement with procedures for supporting and positioning the reinforcement including centralizers;
5. Procedures for placing grout including how the grout will be initially placed in drill holes and acceptable ranges for grout pressures and volumes;
6. Equipment and procedures for monitoring and recording grout levels, pressures and volumes with calibration certificates dated within 90 days of the submittal date;
7. Examples of construction records to be provided that meet Section 8.0 of this provision;
8. Procedures for containment and disposal of drilling spoils, drill flush and waste grout;
9. Approved packaged grout or grout mix design with acceptable ranges for flow and density that meets Section 1003 of the *Standard Specifications*;
10. If load testing is required, load testing details, procedures and plan sealed by the Design Engineer or Project Engineer for the Load Test Supplier with calibration certificates dated within 90 days of the submittal date;
11. Load Test Supplier, when applicable, including Project Engineer; and
12. Other information shown in the plans or requested by the Engineer.

If alternate installation and testing procedures are proposed or necessary, a revised installation and testing plan submittal may be required. If the work deviates from the accepted submittal without prior approval, the Engineer may suspend micropile construction until a revised plan is accepted.

#### C. Preconstruction Meeting

Before starting micropile construction, hold a preconstruction meeting to discuss the installation, monitoring and testing of the piles. Schedule this meeting after the Micropile Subcontractor mobilizes to the site. If this meeting occurs before all micropile submittals have been accepted, additional preconstruction meetings may be required before beginning construction of micropiles without accepted submittals. The Resident or Bridge Maintenance Engineer, Bridge Construction Engineer, Geotechnical Operations Engineer, Contractor and Micropile Subcontractor Superintendent and Project Manager will attend preconstruction meetings.

#### 4.0 CONSTRUCTION METHODS

Use equipment and methods accepted in the micropile installation and testing plan or approved by the Engineer. Inform the Engineer of any deviations from the accepted plan. Install production micropiles in the same way as satisfactory demonstration micropiles, if applicable.

Dispose of drilling spoils, drill flush and waste grout as directed and in accordance with Section 802 of the *Standard Specifications*. Drilling spoils consist of all excavated material and fluids removed from drill holes.

When constructing the micropile footing in cold weather, mix and place concrete in accordance with Article 420-7 of the *Standard Specifications*, except for the following. The concrete may be placed within an enclosure heated to within the air temperature range specified in Article 420-7. The enclosure must remain heated until the concrete has reached initial set.

Control drilling and grouting to prevent excessive ground movements, damaging structures and fracturing rock and soil formations. If ground heave or subsidence occurs, suspend micropile construction and take action to minimize movement. If structures are damaged, suspend micropile construction and repair structures with an approved method at no additional cost to the Department. The Engineer may require a revised micropile installation and testing plan when corrective action is necessary.

##### A. Drilling and Reinforcement

Use micropile drilling rigs capable of drilling through whatever materials are encountered to the dimensions and elevations required for the micropile design. Install piles with tip elevations no higher than shown in the accepted submittals or approved by the Engineer.

Do not install reinforcing casings or begin drilling within 6 pile diameters, center to center, or 5 ft (1.5 m), whichever is greater, of completed micropiles until grout in piles reaches initial set. More clearance may be necessary if micropile construction affects adjacent micropiles.

Install reinforcing casings to a tip elevation no higher than that noted in the plans. Construct reinforcing casing joints in accordance with the accepted submittals. Special welding procedures are required for steel with yield strength greater than 50 ksi (345 MPa).

Use drilling methods that result in the annulus between reinforcing casings and the ground filled with grout, as demonstrated by grout return to the ground surface.

Check for correct micropile location and plumbness or proper inclination before beginning drilling. Stabilize drill holes with casings from beginning of drilling through grouting if unstable material is anticipated or encountered. After drilling, flush drill holes with water or air to remove drill cuttings and other loose materials unless hollow bars are used.

With the exception of hollow bars, use centralizers to center reinforcement bars in drill holes. Securely attach bar centralizers at maximum 10 ft (3 m) intervals along reinforcing bars. Attach upper and lowermost centralizers 5 ft (1.5 m) from the top and bottom of micropiles.

Place conventional reinforcing bars before grouting or after while grout is still fluid. Do not vibrate or drive reinforcement. Reinforcing bars may be gently pushed into grout. If reinforcement can only be partially inserted, redrill or clean drill holes to permit complete insertion.

#### B. Grouting

Remove oil, rust inhibitors, residual drilling fluids and similar foreign materials from holding tanks/hoppers, stirring devices, pumps, lines, tremie pipes and all other equipment in contact with grout before use. Size grouting equipment to grout each micropile in one continuous operation. Field calibrate grout pumps at the beginning of construction.

Measure grout temperature, density and flow during grouting with at least the same frequency grout cubes are made for compressive strength. Perform density and flow field tests in the presence of the Engineer in accordance with American National Standards Institute/American Petroleum Institute Recommended Practice 13B-1 (Section 4, Mud Balance) and ASTM C939 (Flow Cone), respectively.

Grout micropiles the same day the bond length is drilled and do not leave drill holes open overnight. Place grout with a tremie in accordance with the contract and accepted submittals until uncontaminated grout flows from the top of the micropile. Extend tremie pipe into grout at least 5 ft (1.5 m) at all times except when grout is initially placed in drill holes. Provide grout free of segregation, intrusions, contamination, structural damage or inadequate consolidation (honeycombing). Do not extract temporary casings until the grout level reaches the ground surface.

Monitor and record grout levels, pressures and volumes during placement. To monitor grout pressure, use pumps equipped with a pressure gauge and locate a second pressure gauge at the point of injection into the drill hole. Use pressure gauges that can measure pressures of at least 150 psi (1.0 MPa) or twice the actual grout pressures, whichever is greater.

#### C. Micropile Footing

Construct reinforced cast-in-place concrete footing in accordance with Section 420 of the *Standard Specifications* and the accepted submittals. For footing surfaces exposed to weather, finish footing surfaces with a crown or slope to freely shed water.

#### D. Construction Records

Provide 2 copies of micropile construction records within 24 hours of completing each pile. Include the following in construction records:

1. Names of Micropile Subcontractor, Superintendent, Drill Rig Operator, Project Manager and Design Engineer;
2. Site description, county, Department's contract, TIP and WBS element number;
3. Micropile location and identifier and required resistance;
4. Micropile diameters, length and tip elevation and top of micropile and ground surface elevations;
5. Reinforcement and casing types, grades or yield strength, sizes and elevations;
6. Date and time drilling begins and ends, reinforcement is placed, grout is mixed and arrives on-site and grout placement begins and ends;
7. Grout level, pressure, volume, temperature, flow and density records;
8. Ground and surface water conditions and elevations;
9. Weather conditions including air temperature at time of grout placement; and
10. All other pertinent details related to micropile construction.

After completing micropiles for each structure or stage of a structure, provide a PDF copy of all corresponding construction records.

#### 5.0 LOAD TESTING

When noted in the plans, load test micropiles in accordance with the accepted submittals, this provision and the plans. The piles to be tested are shown in the plans or as directed. "Verification tests" are performed on demonstration micropiles and "proof tests" are performed on micropiles incorporated into the structure, i.e., production micropiles based on test piles acceptable in accordance with Section 10.0 of this provision.

When using a Load Test Supplier, use a prequalified Load Test Supplier for foundation testing work. Provide load test reports sealed by an engineer approved as a Project Engineer (key person) for the Load Test Supplier.

Do not load test micropiles until grout attains the required 28 day compressive strength. Do not begin construction of any production micropiles until verification tests are satisfactorily completed. For proof tests, install only the test piles and those micropiles needed to anchor the reaction frame, if applicable. Do not install the remaining micropiles until the corresponding test piles are satisfactory.

Design test piles so that applied loads do not exceed 80% of the pile's structural capacity including steel yielding or buckling or grout failing. It may be necessary to design test piles with additional reinforcement to allow for higher applied loads. Use a center reinforcing bar for tension load tests when the reinforcement design for production micropiles does not

include one. Any costs associated with additional test pile reinforcement will be considered incidental to the load test pay items.

If reinforcement design for production micropiles does not include a center reinforcing bar, tension load tests are required. Otherwise, test micropiles in either compression or tension at the Contractor's option. Perform static compression load tests in accordance with ASTM D1143 and static tension load tests in accordance with ASTM D3689 except as modified herein.

Set up test equipment and measuring devices so that resetting or repositioning the components before completing testing is not required. Do not apply loads with known weights; a reaction frame and a hydraulic jack are required. Use reaction piles or cribbing and a frame with sufficient strength to prevent excessive deformation, misalignment or racking under peak loading. Do not use existing structures as part of the reaction frame.

Incremental strain measurements are required for all load tests. Use at least one strain gauge at the tip of the test pile, the top of the bond length and, if permanent casing is used, the tip of the casing. Use a calibrated pressure gauge and load cell with the hydraulic jack for verification tests. Provided the same pressure gauge and hydraulic jack are used for proof tests, a load cell is not required for proof tests. Repump jack as needed to maintain the intended load during hold times.

Use the quick load test method in accordance with ASTM D1143 or D3689. For proof tests, load test micropiles to the test loads shown in the accepted submittals. For verification tests, load test piles to at least the test loads shown in the accepted submittals, hold the test loads for 60 minutes and record measurements at 1, 2, 3, 5, 6, 10, 20, 30, 50 and 60 minutes.

For demonstration micropiles, cut off piles 2 ft (0.6 m) below the ground surface when testing is complete.

Submit a PDF copy of each load test report within 7 days of completing load testing. Submit reports sealed by the same engineer that sealed the load testing details, procedures and plan in the accepted micropile installation and testing plan. Provide load test reports that meet ASTM D1143, D3689 or the Load Test Supplier's recommendations. Also, include load versus movement curves for the top of micropile and pile tip.

For static compression load tests, use Davisson's failure criteria in accordance with the *FHWA Design and Construction of Driven Pile Foundations, Vol. II* (Publication No. FHWA-NHI-05-043). For this method, define the failure load as the load corresponding to a movement which exceeds the elastic deformation of the micropile by 0.15" plus the micropile diameter divided by 120. For static tension load tests, use the failure criteria recommended in Section 18.8.3 of the *FHWA Design and Construction of Driven Pile Foundations, Vol. II*. For this method, define the failure load as the load at which the load-movement curve intersects the elastic lengthening of the micropile plus 0.15". For calculating elastic deformation, the micropile length is the total pile length minus half the bond length.

The Engineer will review the load test report and associated construction records to

determine if results are satisfactory within 7 days of receiving the report.

## 6.0 MICROPILE ACCEPTANCE

Micropile acceptance is based in part on the following criteria.

1. Grout pressures, volumes, flow and densities are within acceptable ranges. Grout is properly placed and does not have any evidence of segregation, intrusions, contamination, structural damage or inadequate consolidation (honeycombing).
2. The Engineer verifies grout flow return around the reinforcing casing. Micropile is within 3" of plan location and 2% of plumb or required inclination. Top of micropile is within 1" above and 3" below the top of micropile elevation shown in the plans.
3. Reinforcement is properly placed and inclination and top of reinforcement is within tolerances for the micropile. Center of reinforcement is within  $\frac{3}{4}$ " of the center of the micropile. Tip of reinforcing casing is no higher than that noted in the plans and casing penetrates rock at least 5 ft when noted in the plans.
4. Micropile is satisfactory based on results of load testing, when applicable.

If the Engineer determines a micropile is unacceptable or unsatisfactory, additional testing, remedial measures or replacement micropiles are required at no additional cost to the Department. Do not begin remediation work until remediation plans are approved. No compensation will be made for losses or damages for remedial work or investigation of unacceptable or unsatisfactory micropiles.

## 7.0 MEASUREMENT AND PAYMENT

*Micropile Grade Beam* will be measured and paid in linear feet of micropile footing as shown in the plans. The micropile footing length will be determined as the difference between the beginning and ending stations of the micropile footing shown on the plans. No payment will be made for additional micropile footing length unless authorized by the Engineer.

The contract unit prices for *Micropile Grade Beam* will be full compensation for all labor, materials, tools, equipment, and incidentals necessary to complete the work as shown on the plans and as specified in the contract documents. This includes, but is not limited to, submittals, design, monitoring and recording, micropile drilling through any material, furnishing and installing micropile casings and reinforcement, footing cast-in-place concrete and reinforcement, and all associated incidental work.

The contract unit prices for *Micropile Grade Beam* will also include all costs associated with demonstration micropiles, micropile verification tests, and micropile proof tests. No separate payment will be made for these items. Grout up to twice the theoretical drill hole volume is included in the retaining wall unit prices. Grout in excess of this volume will be paid as extra work in accordance with Article 104-7 of the *Standard Specifications*. No additional compensation will be made for unacceptable demonstration micropiles, repeated load tests, overexcavation, unstable excavations, additional concrete, or drilling through harder than anticipated materials. All such costs are considered incidental to the work and are fully

covered by the unit price for *Micropile Grade Beam*.

Payment will be made under:

**Pay Item**

Micropile Grade Beam

**Pay Unit**

Linear Feet



Signed by:  
*Robert E. Kral*  
AAF88FF73C5E4B1...

**ROCK EMBANKMENTS****(SPECIAL)****Description**

Construct rock embankments in accordance with the contract. Rock embankments are required to construct embankments in water at locations shown in the plans and as directed.

**Materials**

Refer to Division 10 of the *Standard Specifications*.

<b>Item</b>	<b>Section</b>
Geotextile for Rock Embankments, Type 2	1056
Rip Rap Materials	1042
Select Materials	1016

Provide Class VII select material for rock embankments. Use Class A and B rip rap and No. 57 stone to fill voids in rock embankments. Obtain aggregates from sources participating in the Department's Aggregate QC/QA Program in accordance with Section 1006 of the *Standard Specifications* or use similar size onsite material approved by the Engineer.

**Construction Methods**

Construct rock embankments in accordance with the slopes, dimensions and elevations shown in the plans and Section 235 of the *Standard Specifications*. Place Class VII so smaller rocks are uniformly distributed throughout rock embankments. Provide a uniform surface free of obstructions, debris and groups of large rocks that could cause voids in embankments. When placing Class VII in lifts, place Class A and B rip rap and No. 57 stone to top the current lift before placing the next lift of Class VII.

Before placing embankment fill material or geotextiles over rock embankments, fill voids in the top of rock embankments with rip rap and No. 57 stone. Place and compact Class B rip rap first followed by Class A rip rap. Then, fill any remaining voids with No. 57 stone so geotextiles are not torn, ripped or otherwise damaged when installed and covered. Compact rip rap and No. 57 stone with tracked equipment or other approved methods. Install geotextiles on top of Class VII, rip rap and No. 57 stone in accordance with Article 270-3 of the *Standard Specifications* before placing embankment fill material.

**Measurement and Payment**

*Rock Embankments* will be measured and paid in tons. Select material will be measured by weighing material in trucks in accordance with Article 106-7 of the *Standard Specifications*. Rip Rap, Class A and B will be measured and paid in accordance with Article 876-4 of the *Standard Specifications*. The contract unit price for *Rock Embankments* will be full compensation for providing, hauling, handling, placing, compacting and maintaining select material and rip rap.

*Geotextile for Rock Embankments* will be measured and paid in square yards. Geotextiles will be measured along the top of rock embankments as the square yards of exposed geotextiles before placing embankment fill material. No measurement will be made for overlapping geotextiles. The contract unit price for *Geotextile for Rock Embankments* will be full compensation for providing, transporting and installing geotextiles.

W03293

# GT-3.2

Polk County

Payment will be made under:

**Pay Item**

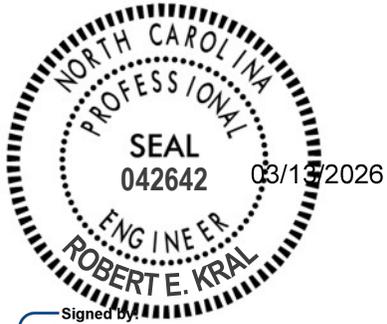
Rock Embankments

Geotextile for Rock Embankments

**Pay Unit**

Ton

Square Yard



Signed by  
*Robert E. Kral*  
AAF88FF73C5E4B1...

County: POLK

Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
<b>ROADWAY ITEMS</b>						
0001	0000100000-N	800	MOBILIZATION	Lump Sum	L.S.	
0002	0000400000-N	801	CONSTRUCTION SURVEYING	Lump Sum	L.S.	
0003	0043000000-N	226	GRADING	Lump Sum	L.S.	
0004	0050000000-E	226	SUPPLEMENTARY CLEARING & GRUBBING	2 ACR		
0005	0057000000-E	226	UNDERCUT EXCAVATION	3,200 CY		
0006	0134000000-E	240	DRAINAGE DITCH EXCAVATION	25 CY		
0007	0195000000-E	265	SELECT GRANULAR MATERIAL	3,200 CY		
0008	0196000000-E	270	GEOTEXTILE FOR SOIL STABILIZATION	3,200 SY		
0009	0199000000-E	SP	TEMPORARY SHORING	3,238 SF		
0010	0220000000-E	SP	ROCK EMBANKMENTS	97,390 TON		
0011	0222000000-E	SP	GEOTEXTILE FOR ROCK EMBANKMENTS	23,450 SY		
0012	0223000000-E	275	ROCK PLATING	3,675 SY		
0013	0234000000-E	SP	GENERIC GRADING ITEM BORROW FOR WIRE FORM EMBANKMENT	4,900 CY		
0014	0234000000-E	SP	GENERIC GRADING ITEM GROUT FOR ROCK FILL	3,925 CY		
0015	0241000000-E	SP	GENERIC GRADING ITEM GEOTEXTILE FOR WIRE FORM EMBANKMENT, TYPE 5A	19,200 SY		
0016	0255000000-E	SP	GENERIC GRADING ITEM SHOT ROCK PLATING	4,650 TON		
0017	0262000000-N	SP	GENERIC GRADING ITEM WIRE BASKET FORMS	400 EA		

County: POLK

Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0018	0318000000-E	300	FOUNDATION CONDITIONING MATERIAL, MINOR STRUCTURES	270.51 TON		
0019	0321000000-E	300	FOUNDATION CONDITIONING GEOTEXTILE	850.66 SY		
0020	0448000000-E	310	***** RC PIPE CULVERTS, CLASS IV (54")	48 LF		
0021	0448200000-E	310	15" RC PIPE CULVERTS, CLASS IV	140 LF		
0022	0448400000-E	310	24" RC PIPE CULVERTS, CLASS IV	272 LF		
0023	0448500000-E	310	30" RC PIPE CULVERTS, CLASS IV	844 LF		
0024	0448700000-E	310	42" RC PIPE CULVERTS, CLASS IV	372 LF		
0025	0576000000-E	310	*** CS PIPE CULVERTS, ***** THICK (42", 0.109")	236 LF		
0026	0576000000-E	310	*** CS PIPE CULVERTS, ***** THICK (48", 0.109")	44 LF		
0027	0576000000-E	310	*** CS PIPE CULVERTS, ***** THICK (54", 0.109")	56 LF		
0028	0582000000-E	310	15" CS PIPE CULVERTS, 0.064" THICK	48 LF		
0029	0588000000-E	310	18" CS PIPE CULVERTS, 0.064" THICK	132 LF		
0030	0594000000-E	310	24" CS PIPE CULVERTS, 0.064" THICK	308 LF		
0031	0600000000-E	310	30" CS PIPE CULVERTS, 0.079" THICK	52 LF		
0032	0636000000-E	310	*** CS PIPE ELBOWS, ***** THICK (15", 0.064")	2 EA		
0033	0636000000-E	310	*** CS PIPE ELBOWS, ***** THICK (24", 0.064")	8 EA		
0034	0636000000-E	310	*** CS PIPE ELBOWS, ***** THICK (30", 0.079")	2 EA		

County: POLK

Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0035	0636000000-E	310	*** CS PIPE ELBOWS, ***** THICK (54", 0.109")	2 EA		
0036	0995000000-E	340	PIPE REMOVAL	801 LF		
0037	1099500000-E	505	SHALLOW UNDERCUT	800 CY		
0038	1099700000-E	505	CLASS IV SUBGRADE STABILIZATION	1,600 TON		
0039	1112000000-E	505	GEOTEXTILE FOR SUBGRADE STABILIZATION	2,400 SY		
0040	1220000000-E	545	INCIDENTAL STONE BASE	800 TON		
0041	1245000000-E	SP	SHOULDER RECONSTRUCTION	0.1 SMI		
0042	1260000000-E	SP	AGGREGATE SHOULDER BORROW	10 TON		
0043	1297000000-E	607	MILLING ASPHALT PAVEMENT, **** DEPTH (1-1/2")	850 SY		
0044	1330000000-E	607	INCIDENTAL MILLING	1,600 SY		
0045	1491000000-E	610	ASPHALT CONC BASE COURSE, TYPE B25.0C	2,725 TON		
0046	1523000000-E	610	ASPHALT CONC SURFACE COURSE, TYPE S9.5C	1,705 TON		
0047	1575000000-E	620	ASPHALT BINDER FOR PLANT MIX	265 TON		
0048	1693000000-E	654	ASPHALT PLANT MIX, PAVEMENT REPAIR	180 TON		
0049	2022000000-E	815	SUBDRAIN EXCAVATION	358.4 CY		
0050	2026000000-E	815	GEOTEXTILE FOR SUBSURFACE DRAINS	1,600 SY		
0051	2036000000-E	815	SUBDRAIN COARSE AGGREGATE	268.8 CY		

County: POLK

Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0052	2044000000-E	815	6" PERFORATED SUBDRAIN PIPE	1,600 LF		
0053	2070000000-N	815	SUBDRAIN PIPE OUTLET	4 EA		
0054	2077000000-E	815	6" OUTLET PIPE	24 LF		
0055	2209000000-E	838	ENDWALLS	13.6 CY		
0056	2275000000-E	SP	FLOWABLE FILL	3 CY		
0057	2286000000-N	840	MASONRY DRAINAGE STRUCTURES	21 EA		
0058	2297000000-E	840	MASONRY DRAINAGE STRUCTURES	12.1 CY		
0059	2308000000-E	840	MASONRY DRAINAGE STRUCTURES	8.2 LF		
0060	2367000000-N	840	FRAME WITH TWO GRATES, STD 840.29	5 EA		
0061	2407000000-N	840	STEEL FRAME WITH TWO GRATES, STD 840.37	18 EA		
0062	2535000000-E	846	*** X *** CONCRETE CURB (8" X 12")	545 LF		
0063	2556000000-E	846	SHOULDER BERM GUTTER	3,180 LF		
0064	2619000000-E	850	4" CONCRETE PAVED DITCH	70 SY		
0065	3030000000-E	862	STEEL BEAM GUARDRAIL	4,675 LF		
0066	3150000000-N	862	ADDITIONAL GUARDRAIL POSTS	30 EA		
0067	3287000000-N	862	GUARDRAIL END UNITS, TYPE TL-3	7 EA		
0068	3360000000-E	863	REMOVE EXISTING GUARDRAIL	3,161 LF		

County: POLK

Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0069	3628000000-E	876	RIP RAP, CLASS I	134 TON		
0070	3656000000-E	876	GEOTEXTILE FOR DRAINAGE	1,859 SY		
0071	4072000000-E	903	SUPPORTS, 3-LB STEEL U-CHANNEL	227 LF		
0072	4102000000-N	904	SIGN ERECTION, TYPE E	16 EA		
0073	4108000000-N	904	SIGN ERECTION, TYPE F	1 EA		
0074	4116100000-N	904	SIGN ERECTION, RELOCATE TYPE **** (GROUND MOUNTED) (E)	2 EA		
0075	4155000000-N	907	DISPOSAL OF SIGN SYSTEM, U- CHANNEL	12 EA		
0076	4192000000-N	907	DISPOSAL OF SUPPORT, U-CHANNEL	2 EA		
0077	4238000000-N	907	DISPOSAL OF SIGN, D, E OR F	2 EA		
0078	4400000000-E	1110	WORK ZONE SIGNS (STATIONARY)	1,062 SF		
0079	4405000000-E	1110	WORK ZONE SIGNS (PORTABLE)	472 SF		
0080	4410000000-E	1110	WORK ZONE SIGNS (BARRICADE MOUNTED)	210 SF		
0081	4420000000-N	1120	PORTABLE CHANGEABLE MESSAGE SIGN	3 EA		
0082	4424500000-N	SP	TEMPORARY PORTABLE TRAFFIC SIGNAL SYSTEM	5 EA		
0083	4430000000-N	1130	DRUMS	203 EA		
0084	4435000000-N	1135	CONES	70 EA		
0085	4445000000-E	1145	BARRICADES (TYPE III)	216 LF		

County: POLK

Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0086	4455000000-N	1150	FLAGGER	84 DAY		
0087	4465000000-N	1160	TEMPORARY CRASH CUSHIONS	14 EA		
0088	4470000000-N	1160	REMOVE & RESET TEMPORARY CRASH CUSHION	6 EA		
0089	4485000000-E	1170	PORTABLE CONCRETE BARRIER	2,270 LF		
0090	4490000000-E	1170	PORTABLE CONCRETE BARRIER (ANCHORED)	400 LF		
0091	4500000000-E	1170	REMOVE AND RESET PORTABLE CONCRETE BARRIER	410 LF		
0092	4505000000-E	1170	REMOVE & RESET PORTABLE CONCRETE BARRIER (ANCHORED)	340 LF		
0093	4516000000-N	1180	SKINNY DRUM	35 EA		
0094	4685000000-E	1205	THERMOPLASTIC PAVEMENT MARKING LINES (4", 90 MILS)	20,782 LF		
0095	4770000000-E	1205	COLD APPLIED PLASTIC PAVEMENT MARKING LINES, TYPE ** (4") (IV)	820 LF		
0096	4810000000-E	1205	PAINT PAVEMENT MARKING LINES (4")	16,076 LF		
0097	4835000000-E	1205	PAINT PAVEMENT MARKING LINES (24")	132 LF		
0098	4850000000-E	1205	REMOVAL OF PAVEMENT MARKING LINES (4")	2,810 LF		
0099	4870000000-E	1205	REMOVAL OF PAVEMENT MARKING LINES (24")	132 LF		
0100	4895000000-N	SP	GENERIC PAVEMENT MARKING ITEM POLYCARBONATE H-SHAPED MARKERS	178 EA		
0101	5888000000-E	SP	GENERIC UTILITY ITEM INSTALL CONDUIT (6")	4,000 LF		
0102	6000000000-E	1605	TEMPORARY SILT FENCE	3,775 LF		

County: POLK

Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0103	6006000000-E	1610	STONE FOR EROSION CONTROL, CLASS A	835 TON		
0104	6009000000-E	1610	STONE FOR EROSION CONTROL, CLASS B	1,135 TON		
0105	6012000000-E	1610	SEDIMENT CONTROL STONE	645 TON		
0106	6015000000-E	1615	TEMPORARY MULCHING	8.5 ACR		
0107	6018000000-E	1620	SEED FOR TEMPORARY SEEDING	600 LB		
0108	6021000000-E	1620	FERTILIZER FOR TEMPORARY SEEDING	3 TON		
0109	6024000000-E	1622	TEMPORARY SLOPE DRAINS	400 LF		
0110	6029000000-E	SP	SAFETY FENCE	4,700 LF		
0111	6030000000-E	1630	SILT EXCAVATION	2,060 CY		
0112	6036000000-E	1631	MATTING FOR EROSION CONTROL	25,120 SY		
0113	6037000000-E	1629	COIR FIBER MAT	365 SY		
0114	6042000000-E	1632	1/4" HARDWARE CLOTH	1,090 LF		
0115	6070000000-N	1639	SPECIAL STILLING BASINS	24 EA		
0116	6071002000-E	1642	FLOCCULANT	160 LB		
0117	6071012000-E	1642	COIR FIBER WATTLE	60 LF		
0118	6071030000-E	1640	COIR FIBER BAFFLE	95 LF		
0119	6084000000-E	1660	SEEDING & MULCHING	8.5 ACR		

County: POLK

Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0120	6087000000-E	1660	MOWING	4.25 ACR		
0121	6090000000-E	1661	SEED FOR REPAIR SEEDING	150 LB		
0122	6093000000-E	1661	FERTILIZER FOR REPAIR SEEDING	0.5 TON		
0123	6096000000-E	1662	SEED FOR SUPPLEMENTAL SEEDING	225 LB		
0124	6108000000-E	1665	FERTILIZER TOPDRESSING	6.5 TON		
0125	6111000000-E	SP	IMPERVIOUS DIKE	730 LF		
0126	6114500000-N	1667	SPECIALIZED HAND MOWING	20 MHR		
0127	6114800000-N	SP	MANUAL LITTER REMOVAL	3 MHR		
0128	6114900000-E	SP	LITTER DISPOSAL	2 TON		
0129	6117000000-N	1675	RESPONSE FOR EROSION CONTROL	50 EA		
0130	6117500000-N	SP	CONCRETE WASHOUT STRUCTURE	5 EA		
0131	6123000000-E	1670	REFORESTATION	1 ACR		
0132	6132000000-N	SP	GENERIC EROSION CONTROL ITEM FABRIC INSERT INLET PROTECTION CLEANOUT	105 EA		
0133	6132000000-N	SP	GENERIC EROSION CONTROL ITEM FABRIC INSERT INLET PROTECTION, TYPE 1	35 EA		
0134	6132000000-N	SP	GENERIC EROSION CONTROL ITEM PREFABRICATED CONCRETE WASHOUT	23 EA		
<b>WALL ITEMS</b>						
0135	8802010000-E	SP	SOIL NAIL RETAINING WALLS	19,165 SF		

County: POLK

Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0136	8839000000-E	SP	GENERIC RETAINING WALL ITEM MICROPILE GRADE BEAM	4,230 LF		

1315/Mar16/Q322309.62/D443278854000/E136

Total Amount Of Bid For Entire Project :

6/2/2026

# FINAL PAVEMENT SCHEDULE

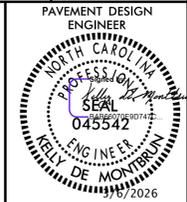
(Nov 11, 2025)

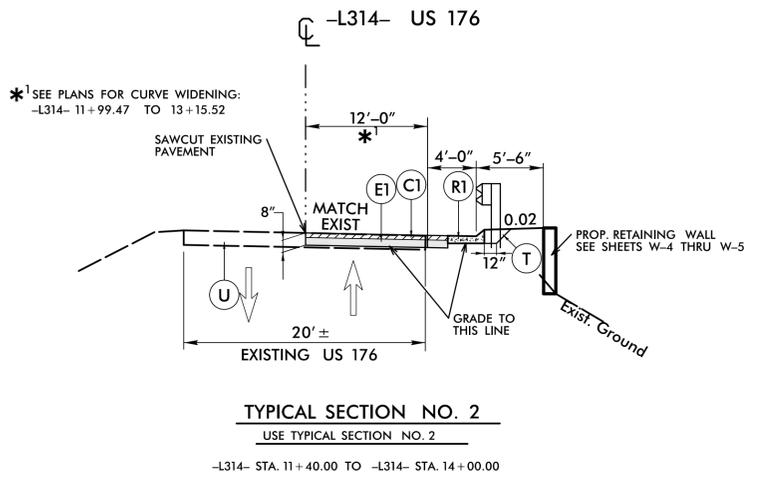
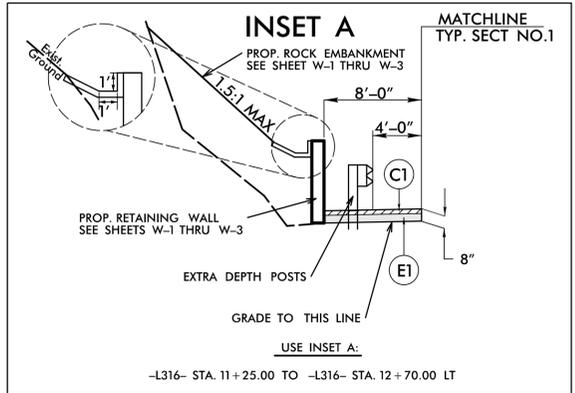
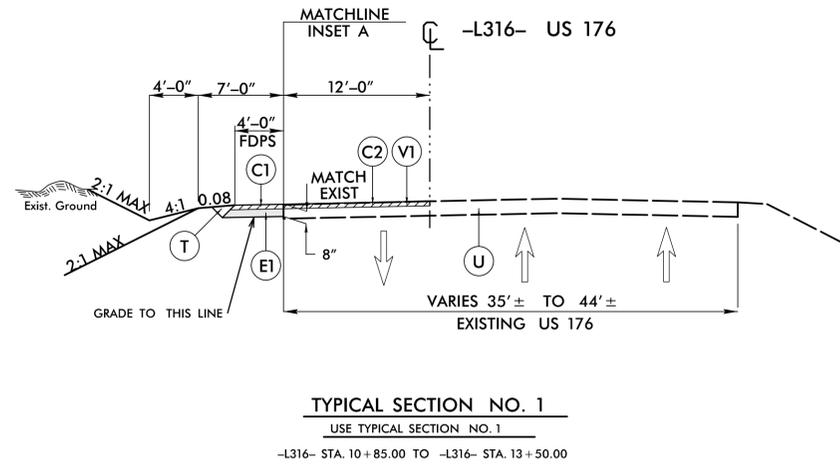
C1	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
C2	PROP. APPROX. 1 1/2" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
E1	PROP. APPROX. 5" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 570 LBS. PER SQ. YD.
R1	SHOULDER BERM GUTTER
T	EARTH MATERIAL.
U	EXISTING PAVEMENT
V1	MILLING BITUMINOUS PAVEMENT, 1 1/2" DEPTH

PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.

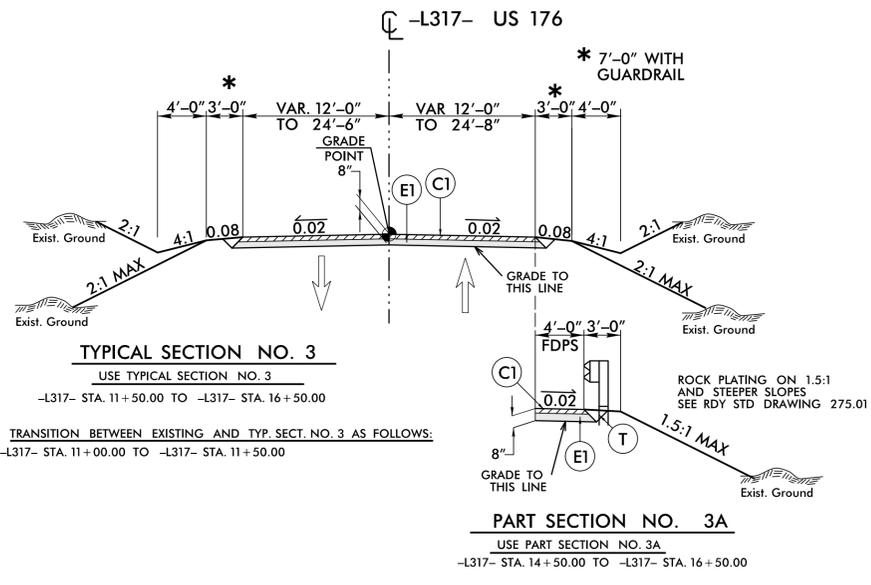
**NOTE:**

DUE TO UNKNOWN DAMAGE TO THE EXISTING PAVEMENT STRUCTURE FROM HELENE, FULL DEPTH PAVEMENT IS SHOWN TO EXTEND FOR THE FULL LENGTH OF AREAS COVERED BY TYPICAL SECTIONS NO. 2, 3 4 AND 5.  
 IF AGREED UPON BY THE RESIDENT ENGINEER AND CONTRACTOR DURING CONSTRUCTION TO OVERLAY EXISTING PAVEMENT ONLY, STANDARD NCDOT MILLING AND RESURFACING METHODS SHALL APPLY. THE ENGINEER OF RECORD SHALL BE NOTIFIED OF CHANGES, AND STANDARD DETAILS CAN BE PROVIDED UPON REQUEST.

PROJECT REFERENCE NO. <b>W03293</b>	SHEET NO. <b>2A-1</b>
ROADWAY DESIGN ENGINEER  JIMMY L. TERRY 12/31/2026	PAVEMENT DESIGN ENGINEER  KELLY DE MONTBRUN 12/31/2026
<b>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</b>	
 <b>TGS ENGINEERS</b> 201 W. MARION ST. STE 200 SHELBY, NC 28150 PH (704) 476-0003 CORP. LICENSE NO.: C-0275	

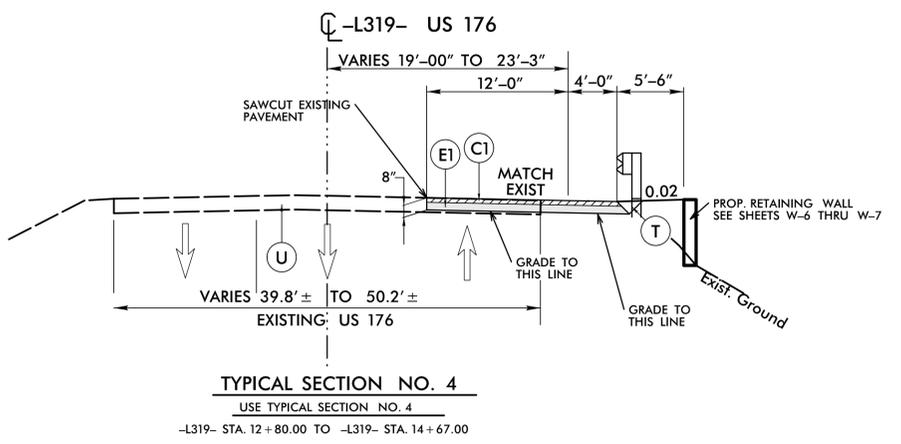
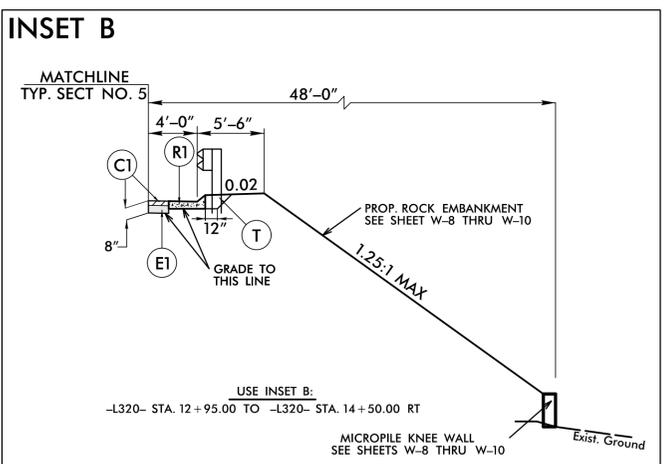


TRANSITION BETWEEN EXISTING AND TYP. SECT. NO. 2 AS FOLLOWS:  
 -L314- STA. 11+10.00 TO -L314- STA. 11+40.00  
 -L314- STA. 14+00.00 TO -L314- STA. 14+50.00

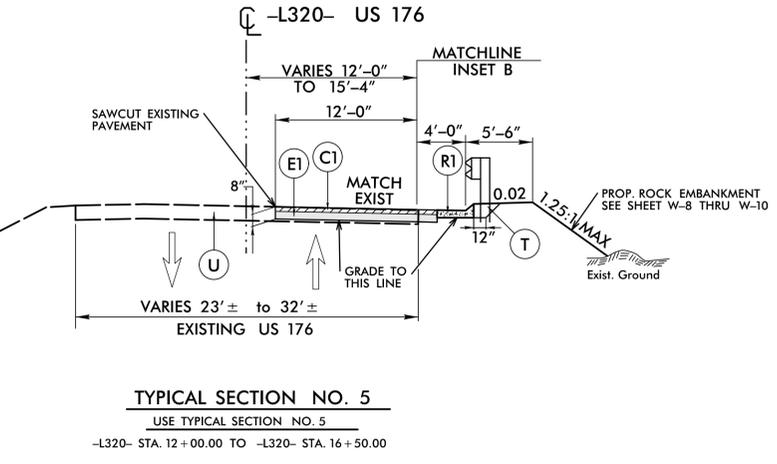


**PART SECTION NO. 3A**

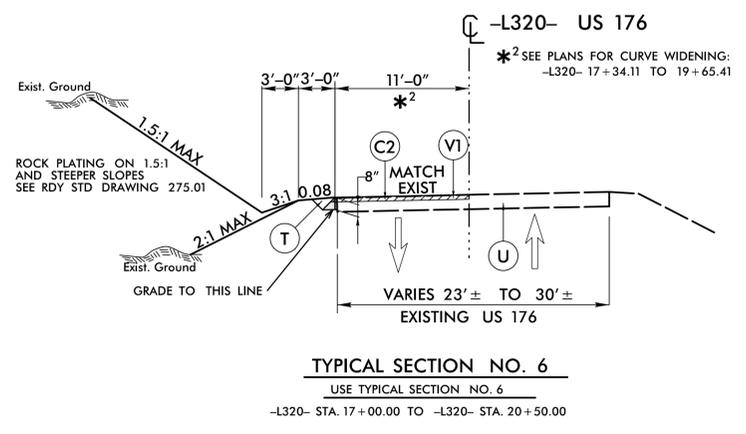
USE PART SECTION NO. 3A  
 -L317- STA. 14+50.00 TO -L317- STA. 16+50.00



TRANSITION BETWEEN EXISTING AND TYP. SECT. NO. 4 AS FOLLOWS:  
 -L319- STA. 12+50.00 TO -L319- STA. 12+80.00  
 -L319- STA. 14+67.00 TO -L319- STA. 15+00.00



TRANSITION BETWEEN TYP. SECT. NO. 5 AND TYP. SECT. NO. 6 AS FOLLOWS:  
 -L320- STA. 16+50.00 TO -L320- STA. 17+00.00



\*<sup>2</sup> SEE PLANS FOR CURVE WIDENING:  
 -L320- 17+34.11 TO 19+65.41

3/6/2026 Div 14 US 176 Repair Roadway Design Title Typicals Details Summaries US176\_Rdy\_3000\_tjpd.dgn  
 User: jtd  
 3/6/2026



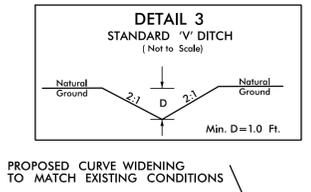
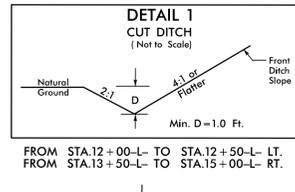
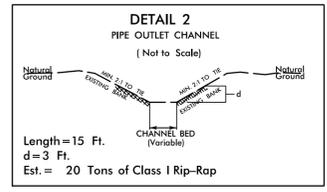




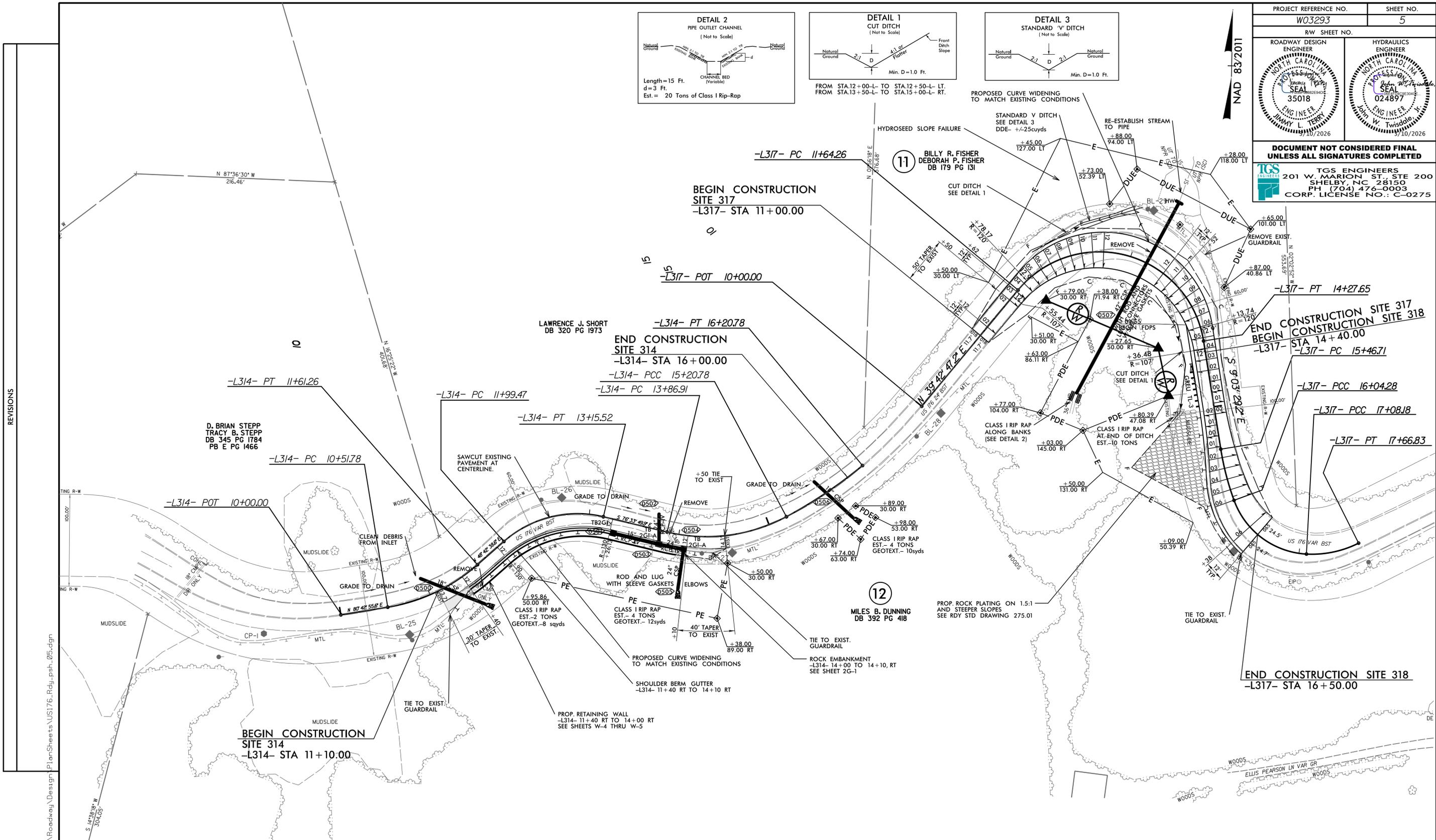
PROJECT REFERENCE NO. W03293	SHEET NO. 5
RW SHEET NO.	
ROADWAY DESIGN ENGINEER NORTH CAROLINA PROFESSIONAL SEAL 35018 JIMMY L. TERRY 7/10/2026	HYDRAULICS ENGINEER NORTH CAROLINA PROFESSIONAL SEAL 024897 John W. Wisdole, Jr. 7/10/2026

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

TGS ENGINEERS  
201 W. MARION ST., STE 200  
SHELBY, NC 28150  
PH (704) 476-0003  
CORP. LICENSE NO.: C-0275



NAD 83/2011



REVISIONS

**-L314- Curve Data**

PI Sta 11+07.99 Δ = 32° 00' 17.0" (LT) D = 29° 13' 57.1" L = 109.48' T = 56.21' R = 196.00' SE = EXIST.	PI Sta 12+62.35 Δ = 54° 43' 31.5" (RT) D = 47° 09' 25.3" L = 116.05' T = 62.88' R = 121.50' SE = EXIST.	PI Sta 14+56.93 Δ = 41° 27' 40.2" (LT) D = 30° 58' 14.5" L = 133.87' T = 70.02' R = 185.00' SE = EXIST.	PI Sta 15+70.96 Δ = 11° 38' 43.7" (LT) D = 11° 38' 43.7" L = 100.00' T = 50.17' R = 492.00' SE = EXIST.
---	---	---	---

**-L317- Curve Data**

PI Sta 14+17.95 Δ = 131° 13' 43.6" (RT) D = 49° 49' 20.7" L = 263.39' T = 253.69' R = 115.00' SE = 0.12 DS = 20 MPH	PI Sta 15+75.58 Δ = 10° 59' 48.1" (LT) D = 19° 05' 54.9" L = 57.58' T = 28.88' R = 300.00' SE = 0.06 DS = 30 MPH	PI Sta 16+63.07 Δ = 66° 53' 18.9" (LT) D = 64° 22' 38.2" L = 103.90' T = 58.78' R = 89.00' SE = EXIST.	PI Sta 17+38.18 Δ = 29° 44' 01.6" (LT) D = 50° 42' 14.9" L = 58.64' T = 30.00' R = 113.00' SE = EXIST.
--	---	--	--

FOR -L317 PROFILE, SEE SHEET NO. 8

3/10/2026 Div 14 US 176 Repair Roadway Design PlanSheets\US176\_Rdy\_psh\_05.dgn  
 3:10/2026 Div 14 US 176 Repair Roadway Design PlanSheets\US176\_Rdy\_psh\_05.dgn  
 3:10/2026 Div 14 US 176 Repair Roadway Design PlanSheets\US176\_Rdy\_psh\_05.dgn

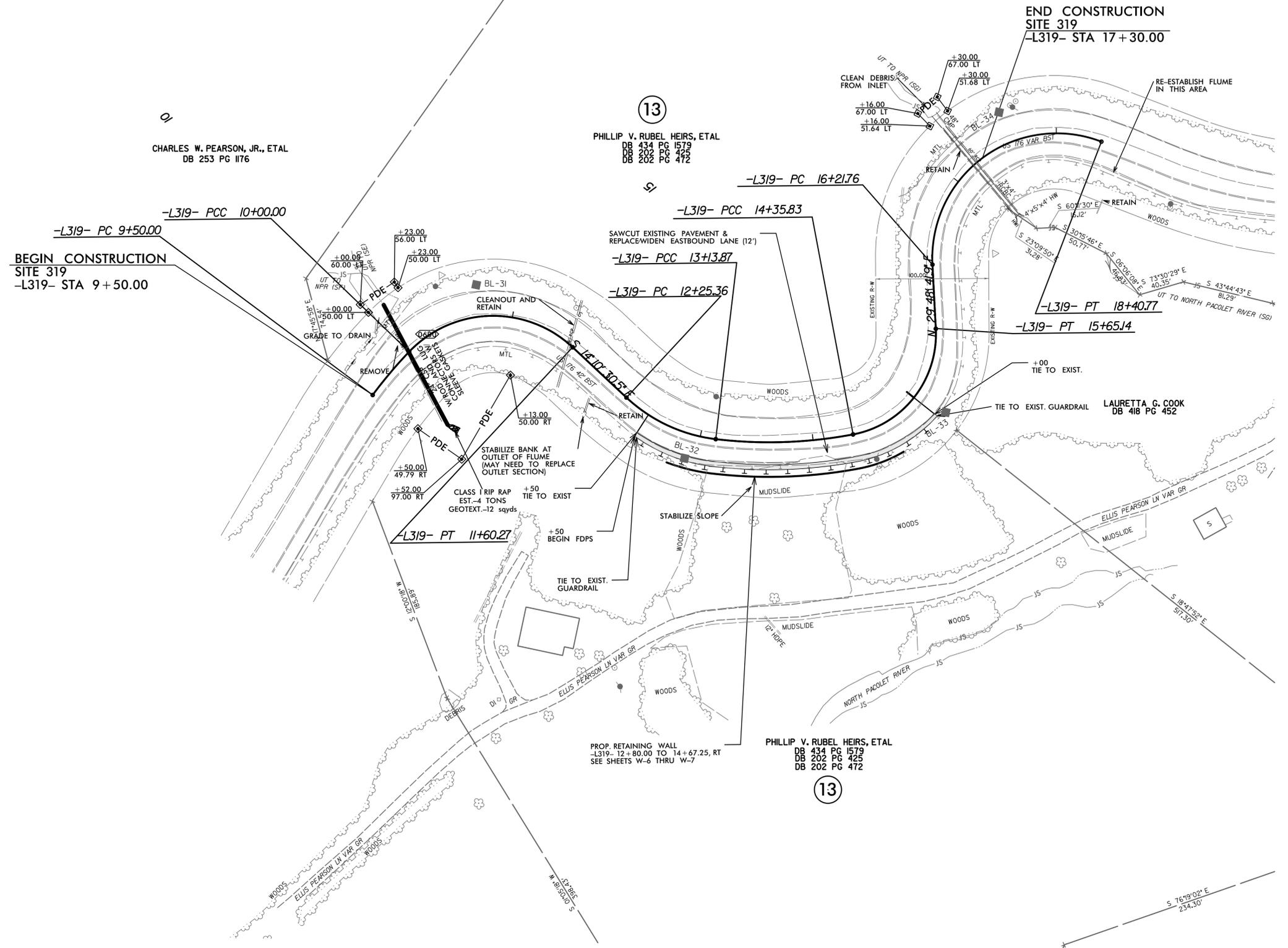
S 01051618 W

**-L319- CURVE DATA**

PI Sta 9+75.03 Δ = 7°14'03.5" (RT) D = 14'28'07.1" L = 50.00' T = 25.03' R = 396.00' SE = EXIST.	PI Sta 11+01.49 Δ = 89°09'07.3" (RT) D = 55'37'37.1" L = 160.27' T = 101.49' R = 103.00' SE = EXIST.	PI Sta 12+71.15 Δ = 36°13'20.5" (LT) D = 40'55'32.0" L = 88.51' T = 45.79' R = 140.00' SE = EXIST.	PI Sta 13+75.33 Δ = 17°28'10.4" (LT) D = 14'19'26.2" L = 121.96' T = 61.46' R = 400.00' SE = EXIST.	PI Sta 15+14.51 Δ = 82°19'16.6" (LT) D = 63'39'43.1" L = 129.31' T = 78.68' R = 90.00' SE = EXIST.	PI Sta 17+91.38 Δ = 114°04'17.2" (RT) D = 52'05'13.5" L = 219.00' T = 169.62' R = 110.00' SE = EXIST.
--	--	--	---	--	---



PROJECT REFERENCE NO. W03293	SHEET NO. 6
RW SHEET NO.	
ROADWAY DESIGN ENGINEER 	HYDRAULICS ENGINEER 
<b>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</b>	
<b>TGS ENGINEERS</b> 201 W. MARION ST., STE 200 SHELBY, NC 28150 PH: (704) 476-0003 CORP. LICENSE NO.: C-0275	



REVISIONS

3/10/2026  
X:\NCDOT\Div 14 US 176 Repair\Roadway\Design\PlanSheets\US176\_Rdy\_psh\_06.dgn  
LesterQuett

CHARLES W. PEARSON, JR., ETAL  
DB 253 PG 1176

PHILLIP V. RUBEL HEIRS, ETAL  
DB 434 PG 1579  
DB 202 PG 425  
DB 202 PG 472

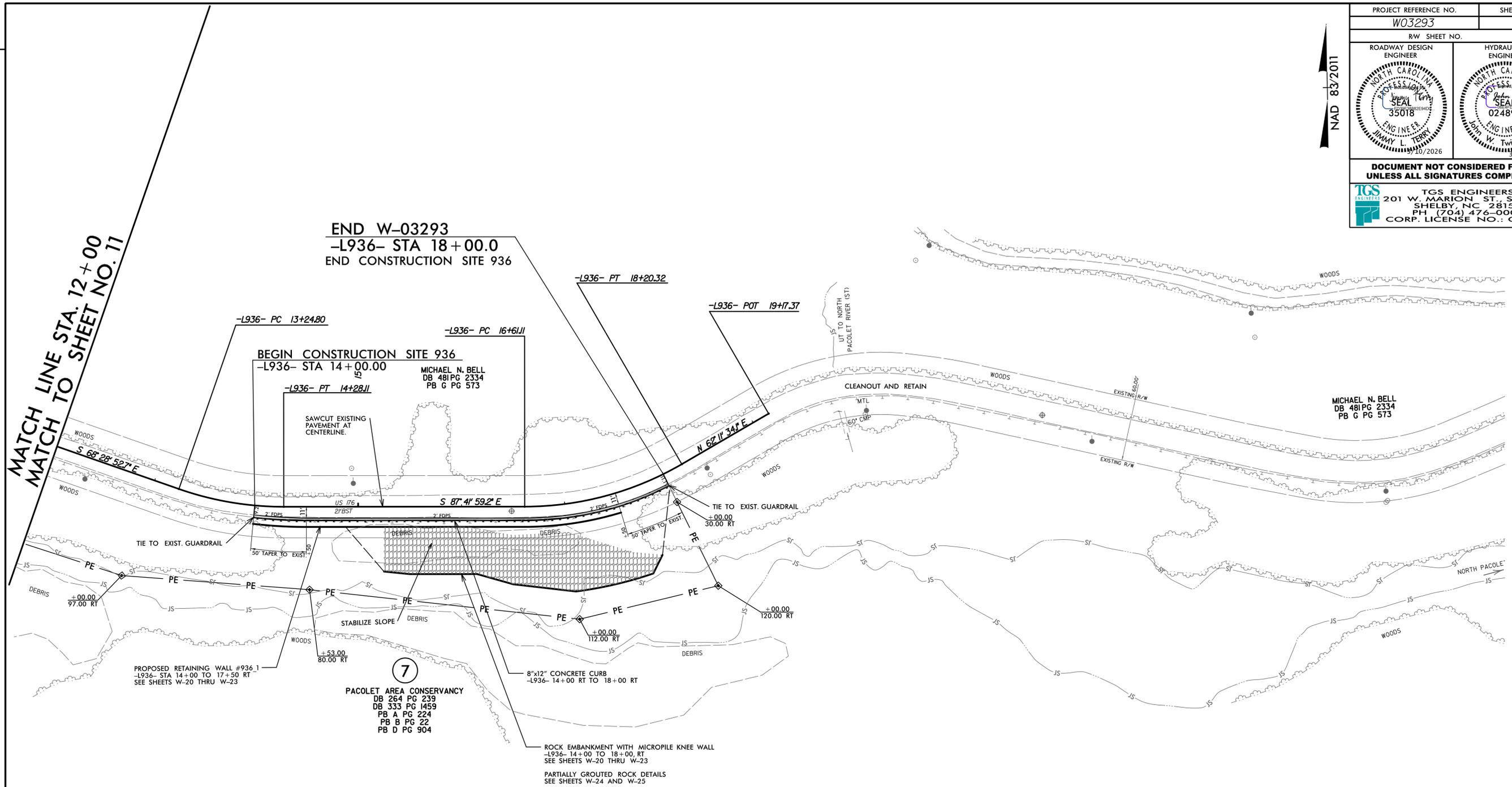
LAURETTA G. COOK  
DB 418 PG 452

PHILLIP V. RUBEL HEIRS, ETAL  
DB 434 PG 1579  
DB 202 PG 425  
DB 202 PG 472

PROP. RETAINING WALL  
-L319- 12+80.00 TO 14+67.25, RT  
SEE SHEETS W-6 THRU W-7

PROJECT REFERENCE NO. <b>W03293</b>	SHEET NO. <b>12</b>
RW SHEET NO.	
ROADWAY DESIGN ENGINEER 	HYDRAULICS ENGINEER 
<b>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</b>	
 <b>TGS ENGINEERS</b> 201 W. MARION ST., STE 200 SHELBY, NC 28150 PH: (704) 476-0003 CORP. LICENSE NO.: C-0275	

NAD 83/2011



MATCH LINE STA. 12+00  
MATCH TO SHEET NO. 11

END W-03293  
-L936- STA 18+00.0  
END CONSTRUCTION SITE 936

BEGIN CONSTRUCTION SITE 936  
-L936- STA 14+00.00

MICHAEL N. BELL  
DB 481 PG 2334  
PB G PG 573

MICHAEL N. BELL  
DB 481 PG 2334  
PB G PG 573

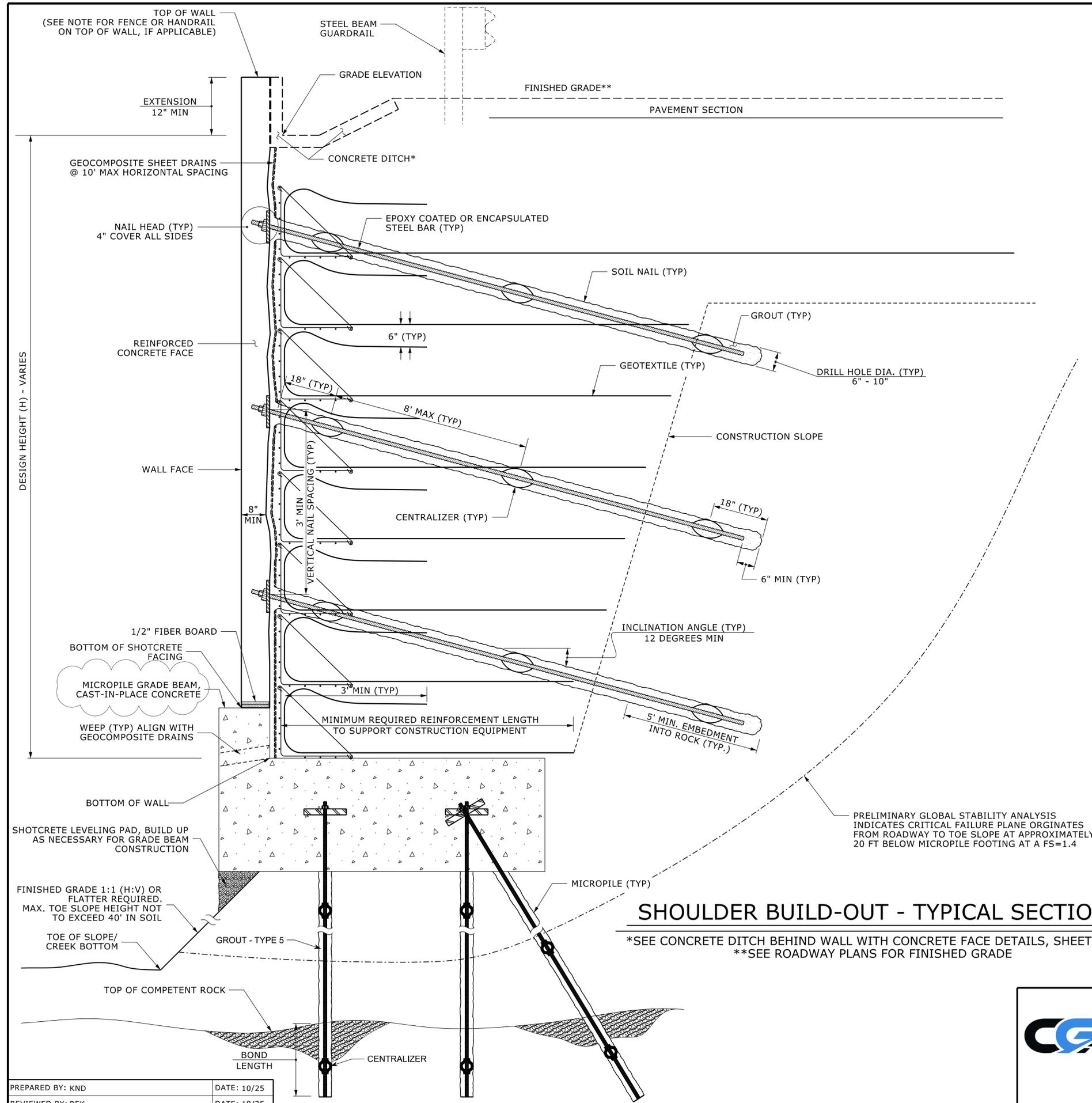
7  
PACOLET AREA CONSERVANCY  
DB 264 PG 239  
DB 333 PG 1459  
PB A PG 224  
PB B PG 22  
PB D PG 904

-L936- CURVE DATA

PI Sta 13+76.95	PI Sta 17+42.60
$\Delta = 19^{\circ}13'06.5''$ (LT)	$\Delta = 30^{\circ}06'26.7''$ (LT)
$D = 18^{\circ}36'09.4''$	$D = 18^{\circ}54'34.2''$
$L = 103.31'$	$L = 159.22'$
$T = 52.15'$	$T = 81.49'$
$R = 308.00'$	$R = 303.00'$
SE = EXIST.	SE = EXIST.

REVISIONS

X:\NCD001\Div 14 US 176 Repair\Roadway\Design\PlanSheets\US176\_Rdy\_psh\_12.dgn



### 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  Robert E. Kral SIGNATURE	ENGINEER DATE 03/13/2026
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 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,  $\gamma = 120$  PCF
      - FRICTION ANGLE,  $\phi = 30$  DEGREES
      - COHESION,  $c = 0$  PSF
    - 5) IN-SITU ASSUMED MATERIAL PARAMETERS RESIDUAL SOIL:
      - UNIT WEIGHT,  $\gamma = 120$  PCF
      - FRICTION ANGLE,  $\phi = 30$  DEGREES
      - COHESION,  $c = 0$  PSF
    - 6) 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 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.

PRELIMINARY GLOBAL STABILITY ANALYSIS INDICATES CRITICAL FAILURE PLANE ORIGINATES FROM ROADWAY TO TOE SLOPE AT APPROXIMATELY 20 FT BELOW MICROPILE FOOTING AT A FS=1.4

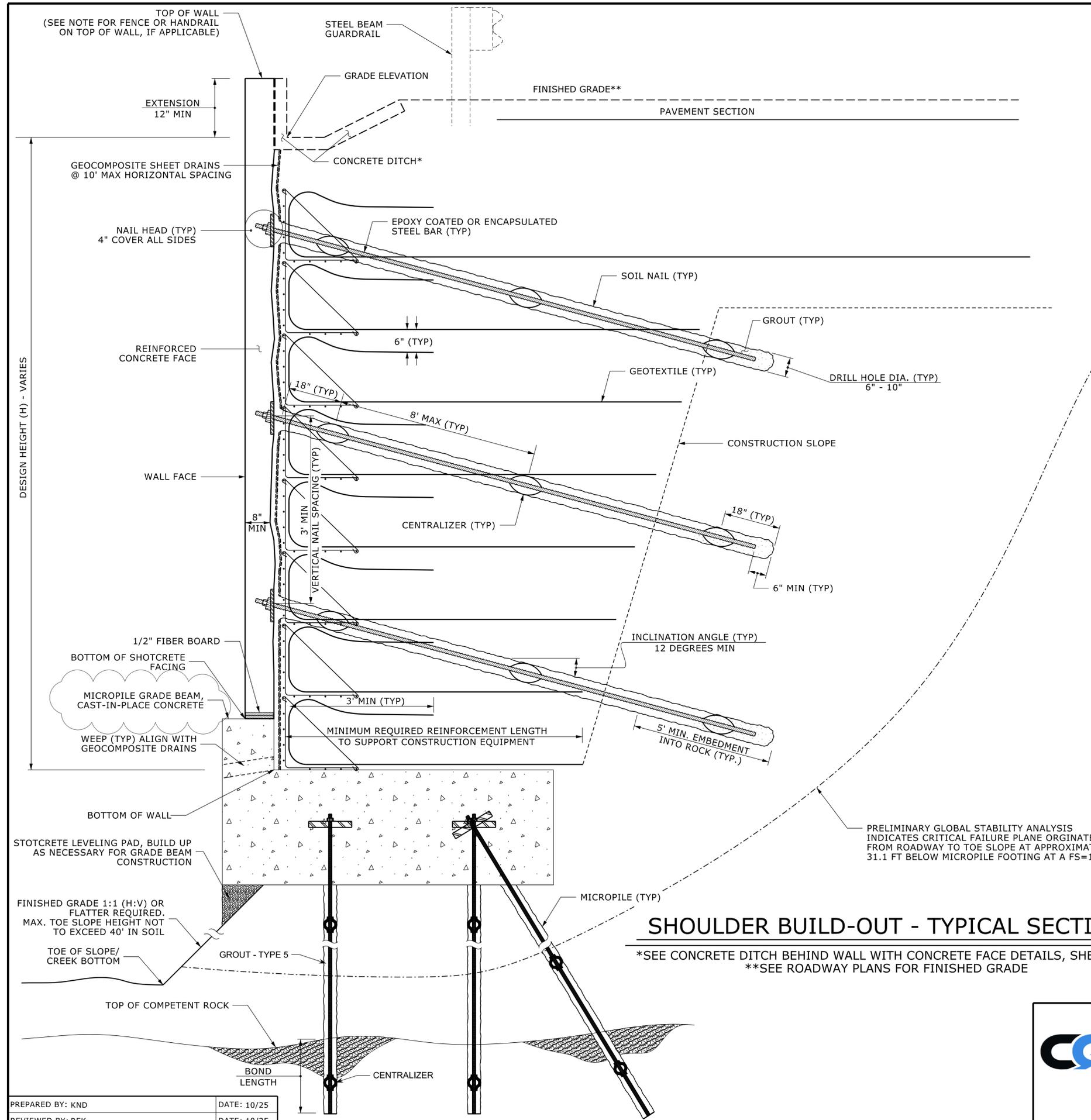
PROJECT NO.: W03293  
 POLK COUNTY  
 RETAINING WALL: -L314- STA. 11+40.00 TO 14+00.00, RT  
 SHEET 2 OF 2

Prepared in the Office of:

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

REVISIONS						SHEET NO. W-5
NO.	BY	DATE	NO.	BY	DATE	
1	KND	03/26	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  Robert E. Kral SIGNATURE	ENGINEER DATE 03/13/2026
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

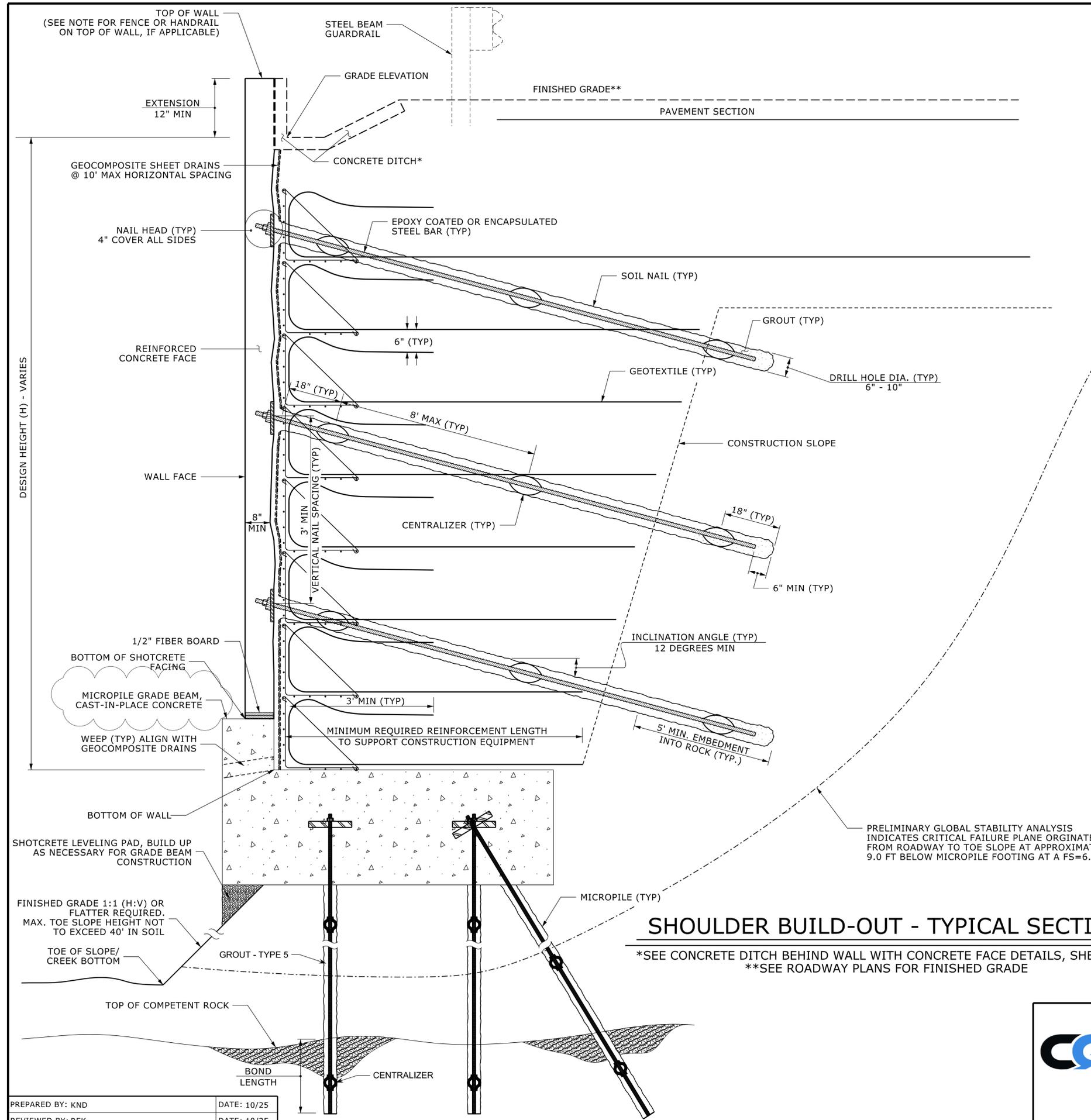
- NOTES:**
- FOR SOIL NAIL SHOULDER BUILD-OUT, SEE SOIL NAIL RETAINING WALLS SPECIAL PROVISION.
  - FOR MICROPILE GRADE BEAM, SEE MICROPILE GRADE BEAM SPECIAL PROVISION.
  - FOR MICROPILES, SEE MICROPILE GRADE BEAM SPECIAL PROVISION.
  - DESIGN MICROPILE GRADE BEAM FOR A MINIMUM OF 5 FEET OF GROUND LOSS 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,  $\gamma = 120$  PCF
      - FRICTION ANGLE,  $\phi = 30$  DEGREES
      - COHESION,  $c = 0$  PSF
    - 5) IN-SITU ASSUMED MATERIAL PARAMETERS RESIDUAL SOIL:
      - UNIT WEIGHT,  $\gamma = 120$  PCF
      - FRICTION ANGLE,  $\phi = 30$  DEGREES
      - COHESION,  $c = 0$  PSF
    - 6) 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 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

REVISIONS						SHEET NO. W-7
NO.	BY	DATE	NO.	BY	DATE	
1	KND	03/26	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  Robert E. Kral SIGNATURE	ENGINEER   SIGNATURE
03/13/2026 DATE	 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 943 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 943 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,  $\gamma = 120$  PCF
  - FRICTION ANGLE,  $\phi = 30$  DEGREES
  - COHESION,  $c = 0$  PSF
- 5) IN-SITU ASSUMED MATERIAL PARAMETERS RESIDUAL SOIL:
  - UNIT WEIGHT,  $\gamma = 120$  PCF
  - FRICTION ANGLE,  $\phi = 30$  DEGREES
  - COHESION,  $c = 0$  PSF
- 6) IN-SITU ASSUMED MATERIAL PARAMETERS WEATHERED ROCK:
  - UNIT WEIGHT,  $\gamma = 134$  PCF
  - FRICTION ANGLE,  $\phi = 32$  DEGREES
  - COHESION,  $c = 500$  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 943 RETAINING WALL.

"TEMPORARY SHORING" MAY BE REQUIRED FOR SITE 943 RETAINING WALL IN ACCORDANCE WITH THE TEMPORARY SHORING PROVISION. SEE ROADWAY OR TRAFFIC CONTROL PLANS.

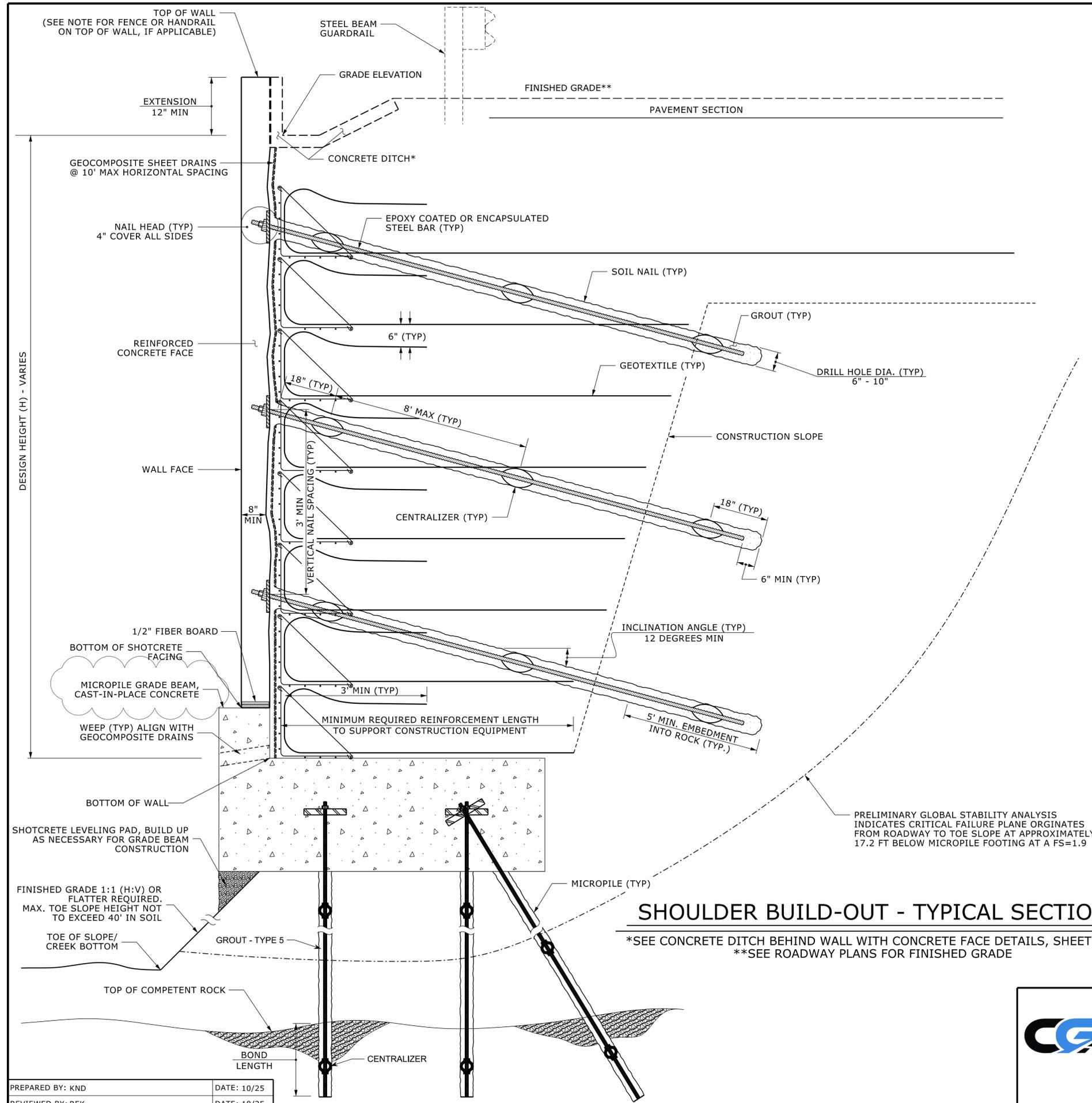
PROJECT NO.: W03293  
 POLK COUNTY  
 RETAINING WALL: -L943-942- STA. 13+75.00 TO 14+75.00, RT  
 SHEET 2 OF 2

Prepared in the Office of:

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

REVISIONS						SHEET NO. W-7
NO.	BY	DATE	NO.	BY	DATE	
1	KND	03/26	3			
2			4			

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



### SHOULDER BUILD-OUT - TYPICAL SECTION

\*SEE CONCRETE DITCH BEHIND WALL WITH CONCRETE FACE DETAILS, SHEET W-6  
 \*\*SEE ROADWAY PLANS FOR FINISHED GRADE

GEOTECHNICAL ENGINEER  Robert E. Kral Signature	ENGINEER   Signature
03/13/2026 Date	 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.
- DESIGN SOIL NAIL RETAINING WALL AND MICROPILE GRADE BEAM FOR INTERNAL, EXTERNAL, AND GLOBAL STABILITY.
- FOR STEEL BEAM GUARDRAIL, SEE ROADWAY PLANS AND SECTION 862 OF THE STANDARD SPECIFICATIONS.
- BEFORE BEGINNING SOIL NAIL WALL DESIGN FOR SITE 942 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 942 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 942 RETAINING WALL.
- "TEMPORARY SHORING" MAY BE REQUIRED FOR SITE 942 RETAINING WALL IN ACCORDANCE WITH THE TEMPORARY SHORING PROVISION. SEE ROADWAY OR TRAFFIC CONTROL PLANS.

PRELIMINARY GLOBAL STABILITY ANALYSIS INDICATES CRITICAL FAILURE PLANE ORIGINATES FROM ROADWAY TO TOE SLOPE AT APPROXIMATELY 17.2 FT BELOW MICROPILE FOOTING AT A FS=1.9

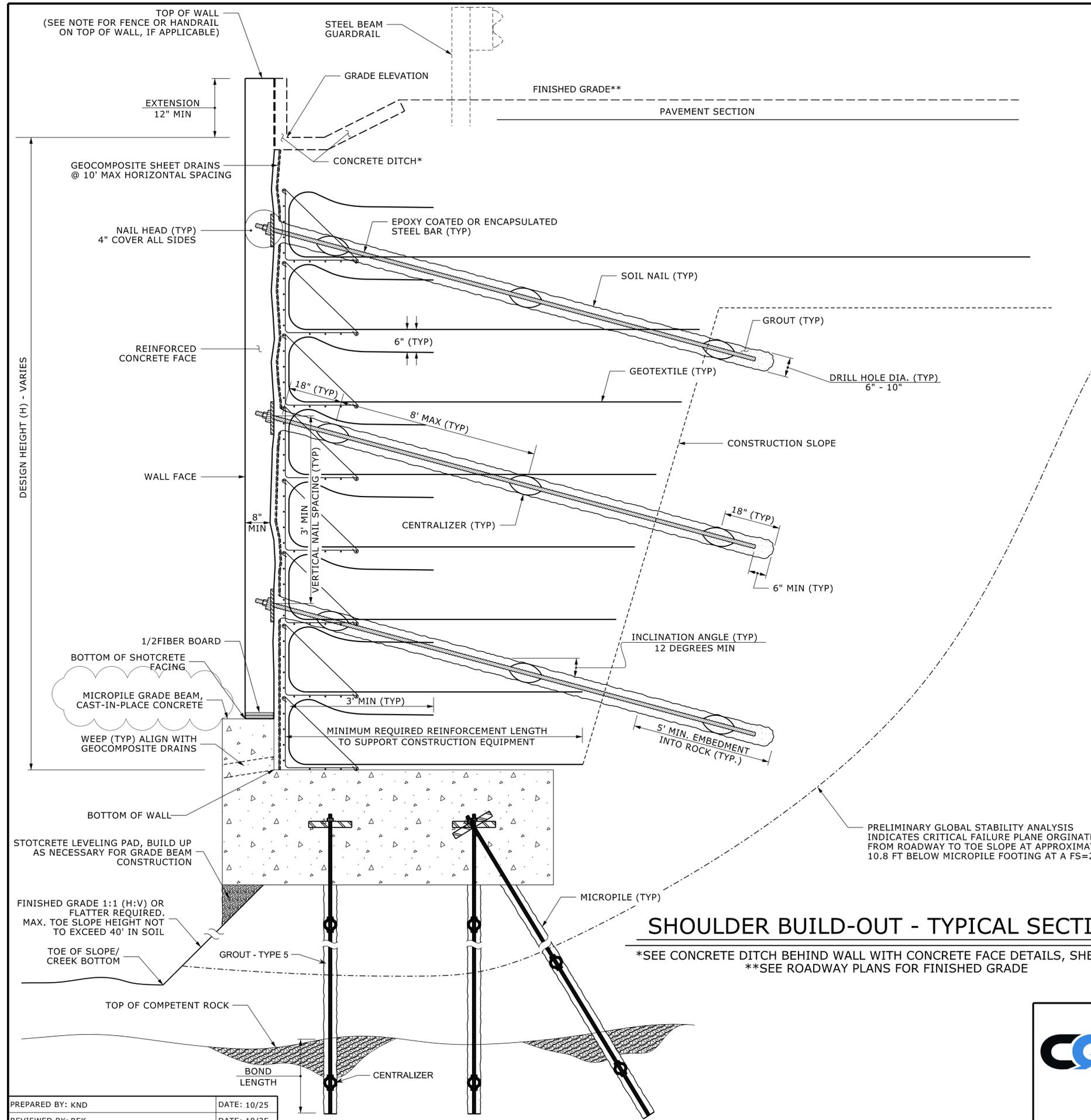
PROJECT NO.: W03293  
 POLK COUNTY  
 STATION: -L943-942- STA. 15+50.00 TO 23+62.00, RT  
 SHEET 2 OF 4

Prepared in the Office of:

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

REVISIONS						SHEET NO. W-9
NO.	BY	DATE	NO.	BY	DATE	
1	KND	03/26	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-6  
 \*\*SEE ROADWAY PLANS FOR FINISHED GRADE

GEOTECHNICAL ENGINEER  Robert E. Kral 03/13/2026 DATE	ENGINEER   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.
- DESIGN SOIL NAIL RETAINING WALL AND MICROPILE GRADE BEAM FOR INTERNAL, EXTERNAL, AND GLOBAL STABILITY.
- FOR STEEL BEAM GUARDRAIL, SEE ROADWAY PLANS AND SECTION 862 OF THE STANDARD SPECIFICATIONS.
- BEFORE BEGINNING SOIL NAIL WALL DESIGN FOR RETAINING WALL #938/939, 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 RETAINING WALL #938/939 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 RETAINING WALL #938/939.
- "TEMPORARY SHORING" MAY BE REQUIRED FOR RETAINING WALL #938/939 IN ACCORDANCE WITH THE TEMPORARY SHORING PROVISION. SEE ROADWAY OR TRAFFIC CONTROL PLANS.

PRELIMINARY GLOBAL STABILITY ANALYSIS INDICATES CRITICAL FAILURE PLANE ORIGINATES FROM ROADWAY TO TOE SLOPE AT APPROXIMATELY 10.8 FT BELOW MICROPILE FOOTING AT A FS=2.1

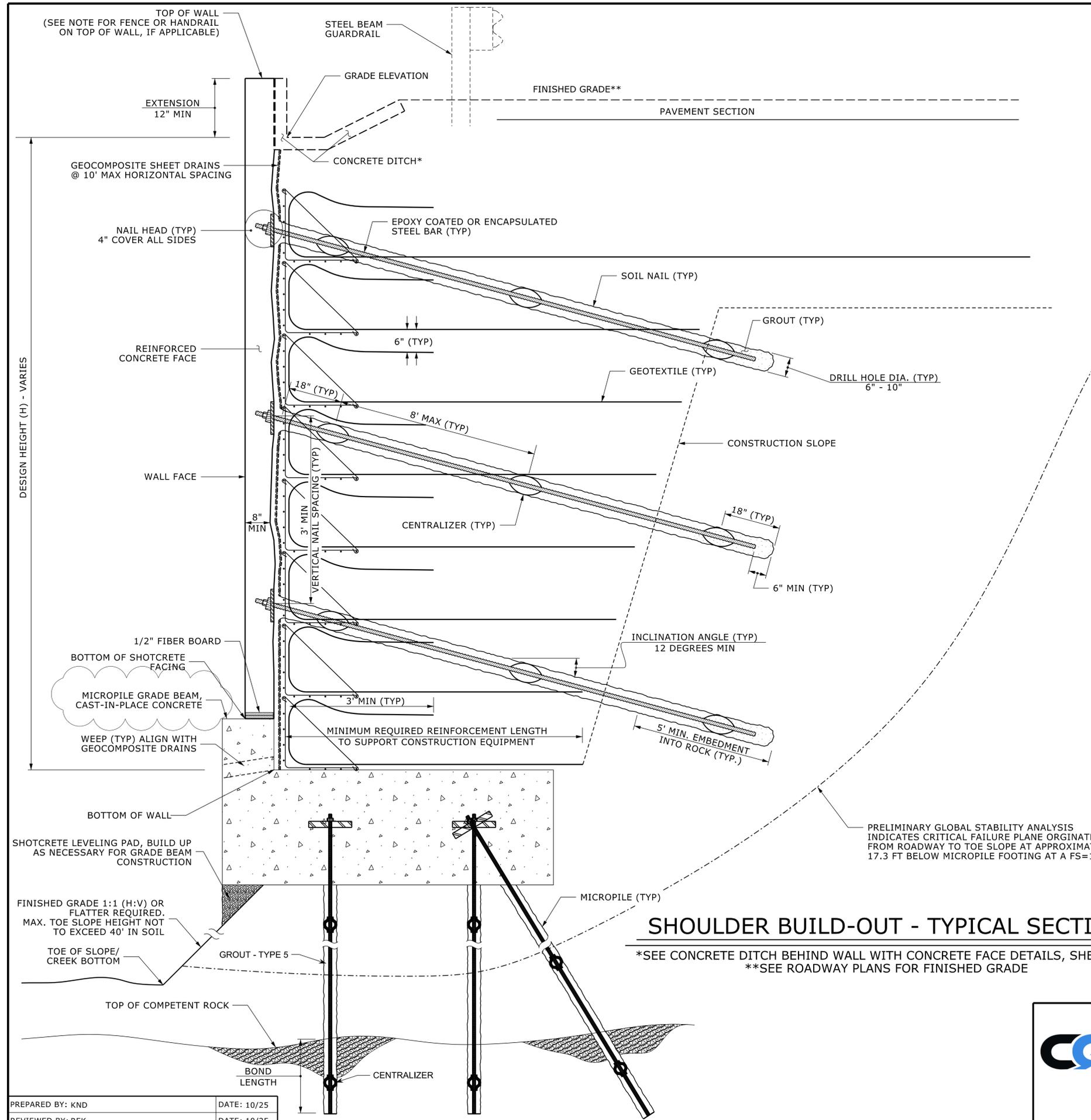
PROJECT NO.: W03293  
 POLK COUNTY  
 STATION: -L941-937- STA. 18+70.00 TO 23+50.00, RT  
 SHEET 2 OF 4

Prepared in the Office of:

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

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	
1	KND	03/26	3			W-13
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-6  
 \*\*SEE ROADWAY PLANS FOR FINISHED GRADE

GEOTECHNICAL ENGINEER  Robert E. Krul SIGNATURE	ENGINEER  DATE 03/13/2026
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.
- DESIGN SOIL NAIL RETAINING WALL AND MICROPILE GRADE BEAM FOR INTERNAL, EXTERNAL, AND GLOBAL STABILITY.
- FOR STEEL BEAM GUARDRAIL, SEE ROADWAY PLANS AND SECTION 862 OF THE STANDARD SPECIFICATIONS.
- BEFORE BEGINNING SOIL NAIL WALL DESIGN FOR SITE 937 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 937 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 937 RETAINING WALL.
- "TEMPORARY SHORING" MAY BE REQUIRED FOR SITE 937 RETAINING WALL IN ACCORDANCE WITH THE TEMPORARY SHORING PROVISION. SEE ROADWAY OR TRAFFIC CONTROL PLANS.

PRELIMINARY GLOBAL STABILITY ANALYSIS INDICATES CRITICAL FAILURE PLANE ORIGINATES FROM ROADWAY TO TOE SLOPE AT APPROXIMATELY 17.3 FT BELOW MICROPILE FOOTING AT A FS=1.9

PROJECT NO.: W03293  
 POLK COUNTY  
 STATION: -1941-937- STA. 23+50.00 TO 29+00.00, RT  
 SHEET 2 OF 4

Prepared in the Office of:



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

REVISIONS						SHEET NO. W-17
NO.	BY	DATE	NO.	BY	DATE	
1	KND	03/26	3			
2			4			

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