STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

JOSH STEIN
GOVERNOR

DANIEL H. JOHNSON
SECRETARY

November 10, 2026

Addendum No. 3
RE: Contract # C205222
WBS # 34165.3.8
STATE FUNDED
Buncombe County (I-2513AC)
I-26/I-240 FROM NORTH OF I-40 TO SR-3548 (HAYWOOD RD)

November 17, 2026 Letting

To Whom It May Concern:

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

The following revisions have been made to the Structure Plans (Walls).

Sheet No.	Revision
W-11, W-16, W-35, W-52 thru W-54, W-56 thru W-58	Notes and details have been revised to reflect Special Provision revision shown below.

Please void the above listed sheets in your plans and staple the revised sheets thereto.

The following revisions have been made to the proposal.

Page No.	Revision
Proposal Cover	Note added that reads "Includes Addendum No. 3 Dated 11-10-2026".
GT-2.1 thru GT-2.8	The Geotechnical Unit Project Special Provision entitled **CIP MECHANICALLY STABILIZED EARTH RETAINING WALLS** has been revised.

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

The contract will be prepared accordingly.

Mailing Address:
NC DEPARTMENT OF TRANSPORTATION
CONTRACT STANDARDS AND DEVELOPMENT
1591 MAIL SERVICE CENTER
RALEIGH, NC 27699-1591

Telephone: (919) 707-6900
Fax: (919) 250-4127
Customer Service: 1-877-368-4968

Location:
1020 BIRCH RIDGE DR.
RALEIGH, NC 27610

Website: www.ncdot.gov

Sincerely,

Signed by:
Jon Weathersbee
E45DA45396074A0...

Jon Weathersbee, PE
State Contract Officer

JHW/jjr
Attachments

cc: Mr. Troy B. Brooks, PE
Mr. Tim Anderson, PE
Mr. Ken Kennedy, PE
Mr. Malcolm Bell
Mr. Forrest Dungan, PE
Ms. Jaci Kincaid
Mr. Josh Sellers, PE
Project File (2)

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

PROPOSAL

INCLUDES ADDENDUM No.3 DATED 11-10-2026

DATE AND TIME OF BID OPENING: **Nov 17, 2026 AT 02:00 PM**

CONTRACT ID	C205222
WBS	34165.3.8

FEDERAL-AID NO.	STATE FUNDED
COUNTY	BUNCOMBE
T.I.P NO.	I-2513AC
MILES	1.742
ROUTE NO.	I-26/240
LOCATION	I-26/I-240 FROM NORTH OF I-40 TO SR-3548 (HAYWOOD RD).
TYPE OF WORK	GRADING, DRAINAGE, PAVING, SIGNALS, AND STRUCTURES.

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 $40,000 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

Docusign Envelope ID: 76C45D17-C32A-88B1-8251-8E1D98A4DF8E

CIP MECHANICALLY STABILIZED EARTH RETAINING WALLS (SPECIAL)

1.0 GENERAL

This special provision applies to mechanically stabilized earth retaining walls at walls 22, 23, 24, and 25 only.

Construct CIP mechanically stabilized earth (MSE) retaining walls consisting of steel reinforcement in the reinforced zone connected to a CIP reinforced concrete face. Use coarse aggregate in the reinforced zone of CIP MSE retaining walls. Provide pile sleeves as required. Complete MSE retaining wall construction with welded wire facing before constructing the CIP face. Design and construct CIP MSE retaining walls based on actual elevations and wall dimensions in accordance with the contract and accepted submittals. Use a prequalified MSE Wall Installer to construct CIP MSE retaining walls.

Define CIP MSE wall terms as follows:
Reinforcement – Steel reinforcement,
Aggregate – Coarse aggregate,
Concrete Facing – CIP reinforced concrete face,
MSE Wall – CIP mechanically stabilized earth retaining wall,
MSE Wall Vendor – Vendor supplying the chosen MSE wall system and
Abutment Wall – MSE wall with bridge foundations in any portion of the reinforced zone or an MSE wall connected to an abutment wall (Even if bridge foundations only penetrate a small part of the reinforced zone, the entire MSE wall is considered an abutment wall).

For bridge approach fills behind end bents with MSE abutment walls, design reinforcement connected to end bent caps in accordance with the plans and this provision. Construct Type 2 Bridge Approach Fills in accordance with the plans..

2.0 MATERIALS

Refer to the *Standard Specifications*.

Item	Section
Coarse Aggregate	1014-2
Corrugated Steel Pipe	1032-3
Geotextiles, Type 2	1056
Joint Materials	1028
Portland Cement Concrete, Class A	1000
Reinforcing Steel	1070
Shoulder Drain Materials	816-2
Welded Wire Reinforcement	1070-3

Use galvanized corrugated steel pipe with a zinc coating weight of 2 oz/sf (G200) for pile sleeves. Provide Type 2 geotextile for retention and separation geotextiles. Use Class A concrete for concrete facing and welded wire reinforcement for welded wire facing, struts and wires as required by the MSE Wall Vendor for the chosen MSE wall system. Provide steel strip connectors embedded in concrete facing fabricated from structural steel that meets

Docusign Envelope ID: 76C45D17-C32A-88B1-8251-8E1D98A4DF8E

the requirements for steel strip reinforcement.

Store steel materials 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. Handle and store geotextiles in accordance with Article 1056-2 of the *Standard Specifications*. Load, transport, unload and store MSE wall materials so materials are kept clean and free of damage. Bent, damaged or defective materials will be rejected.

A. Coarse Aggregate

Use standard size No. 57, 57M, 67 or 78M that meets Table 1005-1 of the *Standard Specifications* for coarse aggregate. Provide aggregate with electrochemical properties that meet the following requirements:

COARSE AGGREGATE pH & CHEMICAL REQUIREMENTS			
pH	**Resistivity**	**Chlorides**	**Sulfates**
5 – 10	≥ 5,000 Ω · cm	≤ 100 ppm	≤ 200 ppm

Use aggregate from sources participating in the Department's Aggregate QC/QA Program as described in Section 1006 of the *Standard Specifications*. Sample and test aggregate in accordance with the *Mechanically Stabilized Earth Wall Aggregate Sampling and Testing Procedures.*

For CIP Mechanically Stabilized Earth Retaining Walls, only coarse aggregate is permitted.

B. Steel Reinforcement

Provide steel reinforcement supplied by the MSE Wall Vendor or a manufacturer approved or licensed by the vendor. Provide Type 1 material certifications in accordance with Article 106-3 of the *Standard Specifications* for steel reinforcement. Use welded wire grid reinforcement ("mesh", "mats" and "ladders") that meet Article 1070-3 of the *Standard Specifications* and steel strip reinforcement ("straps") that meet ASTM A572, A1011 or A463. Use 10 gauge or heavier structural steel Grade 50 or higher for steel strip reinforcement. Galvanize steel reinforcement in accordance with Section 1076 of the *Standard Specifications* or provide aluminized steel strip reinforcement that meet ASTM A463, Type 2-100.

C. Miscellaneous Components

Miscellaneous components may include connectors (e.g., anchors, bars, clamps, plates, ties, etc.), fasteners (e.g., bolts, nuts, washers, etc.) and any other MSE wall components not included above. Galvanize steel components in accordance with Section 1076 of the *Standard Specifications*. Provide miscellaneous components required by the MSE Wall Vendor for the chosen MSE wall system.

3.0 PRECONSTRUCTION REQUIREMENTS

Docusign Envelope ID: 76C45D17-C32A-88B1-8251-8E1D98A4DF8E

A. MSE Wall System

Submit documentation that the chosen MSE wall system has been successfully used on at least 6 state Department of Transportation projects in the U.S. with design heights exceeding 20 ft within the last 5 years. Documentation should include the General Contractor and Owner's name and current contact information with descriptions of each past project including design heights and wall face areas.

A. MSE Wall Surveys

The Retaining Wall Plans show a plan view, typical sections, details, notes and an elevation or profile view (wall envelope) for each MSE wall. Before beginning MSE wall design, survey existing ground elevations shown in the plans and other elevations in the vicinity of MSE wall locations as needed. For proposed slopes above or below MSE walls, survey existing ground elevations to at least 10 ft beyond slope stake points. Based on these elevations, finished grades and actual MSE wall dimensions and details, submit revised wall envelopes for acceptance. Use accepted wall envelopes for design.

B. MSE Wall Designs

For MSE wall designs, submit PDF files of working drawings and design calculations at least 30 days before the preconstruction meeting. Do not begin MSE wall construction until a design submittal is accepted. Provide MSE wall designs sealed by a Design Engineer licensed in the state of North Carolina and employed or contracted by the MSE Wall Vendor.

Design MSE walls in accordance with the plans and *AASHTO LRFD Bridge Design Specifications* unless otherwise required. Design MSE walls for seismic if walls are located in seismic zone 2 based on Figure 2-1 of the *Structure Design Manual*. Use a uniform reinforcement length throughout the wall height of at least 0.7H with H as shown in the plans or 6 ft, whichever is longer, unless noted otherwise in the plans. Extend the reinforced zone at least 6" beyond end of reinforcement. Do not locate drains or the reinforced zone outside right-of-way or easement limits.

Use the simplified method for determining maximum reinforcement loads and default values for reinforcement in accordance with the AASHTO LRFD specifications. Design steel components including reinforcement and connectors for the design life noted in the plans and "loss of galvanizing" metal loss rates for nonaggressive backfill in accordance with the AASHTO LRFD specifications for galvanized and aluminized steel. After coating depletion, use "carbon steel" metal loss rates for nonaggressive backfill in accordance with the AASHTO LRFD specifications for galvanized and aluminized steel.

When noted in the plans, design MSE walls for a live load (traffic) surcharge of 250 psf in accordance with Figure C11.5.6-3(b) of the AASHTO LRFD specifications. For steel beam guardrail with 8 ft posts or concrete barrier rail above MSE walls, analyze top 2 reinforcement layers for traffic impact loads in accordance with Section 7.2 of the *FHWA Design and Construction of Mechanically Stabilized Earth Walls and Reinforced Soil Slopes – Volume I* (Publication No. FHWA-NHI-10-024).

Docusign Envelope ID: 76C45D17-C32A-88B1-8251-8E1D98A4DF8E

When shown in the plans for abutment walls, use pile sleeves to segregate piles from aggregate in the reinforced zone. If existing or future obstructions such as foundations, guardrail, fence or handrail posts, moment slabs, pavements, pipes, inlets or utilities will interfere with reinforcement, maintain a clearance of at least 3" between obstructions and reinforcement unless otherwise approved. Design reinforcement for obstructions and locate reinforcement layers so all of reinforcement length is within 3" of corresponding connection elevations.

Use coarse aggregate for aggregate leveling pads. Use 6" thick leveling pads beneath welded wire and concrete facing. Unless required otherwise in the plans, embed top of leveling pads in accordance with the following requirements:

EMBEDMENT REQUIREMENTS		
Front Slope[1] (H:V)	**Minimum Embedment Depth[2] (whichever is greater)**	
6:1 or flatter (except abutment walls)	H/20	1 ft for H ≤ 10 ft 2 ft for H > 10 ft
6:1 or flatter (abutment walls)	H/10	2 ft
> 6:1 to < 3:1	H/10	2 ft
3:1 to 2:1	H/7	2 ft

1. Front slope is as shown in the plans.

2. Define “H” as the maximum design height plus embedment per wall with the design height and embedment as shown in the plans.

Retain coarse aggregate at welded wire facing with retention geotextiles and extend geotextiles at least 3 ft back behind facing into aggregate. Separation geotextiles are required between the aggregate and overlying fill or pavement sections except when concrete pavement, full depth asphalt or cement treated base is placed directly on aggregate. When noted in the plans, separation geotextiles are also required at the back of the reinforced zone between the aggregate and backfill or natural ground.

Locate a continuous aggregate shoulder drain along the base of the concrete facing in front of the leveling pads. Provide wall drainage systems consisting of drains and outlet components in accordance with Standard Drawing No. 816.02 of the *Roadway Standard Drawings*.

Design concrete facing in accordance with the plans and Section 5 of the *AASHTO LRFD Bridge Design Specifications*. Provide reinforcing steel of sufficient density to satisfy Article 5.7.3.4 of the AASHTO LRFD specifications. Use concrete facing with the dimensions shown in the plans. When concrete barrier rail is required above MSE walls, use concrete barrier rail with moment slab as shown in the plans.

Submit working drawings and design calculations for acceptance in accordance with Article 105-2 of the *Standard Specifications*. Submit working drawings showing plan views, wall profiles with foundation pressures, typical sections with reinforcement and connection details, coarse aggregate and geotextile locations and details of leveling pads,

Docusign Envelope ID: 76C45D17-C32A-88B1-8251-8E1D98A4DF8E

welded wire and concrete facing, bin walls, pile sleeves, etc. If necessary, include details on working drawings for concrete barrier rail with moment slab, reinforcement connected to end bent caps and obstructions extending through walls or interfering with reinforcement, leveling pads, barriers or moment slabs. Submit design calculations for each wall section with different surcharge loads, geometry or material parameters. At least one analysis is required for each wall section with different reinforcement lengths. When designing MSE walls with computer software other than MSEW, use MSEW, version 3.0 with update 14.96 or later, manufactured by ADAMA Engineering, Inc. to verify the design. At least one MSEW analysis is required per 100 ft of wall length with at least one analysis for the wall section with the longest reinforcement. Submit electronic MSEW input files and PDF output files with design calculations.

C. Preconstruction Meeting

Before starting MSE wall construction, hold a preconstruction meeting to discuss the construction and inspection of the MSE walls. If this meeting occurs before all MSE wall submittals have been accepted, additional preconstruction meetings may be required before beginning construction of MSE walls without accepted submittals. The Resident or Bridge Maintenance Engineer, Area Construction Engineer, Geotechnical Operations Engineer, Contractor and MSE Wall Installer Superintendent will attend preconstruction meetings.

4.0 CORROSION MONITORING

Corrosion monitoring of steel reinforcement is required for MSE walls. The Engineer will determine the number of monitoring locations and where to install the instrumentation. Contact M&T before beginning wall construction. M&T will provide the corrosion monitoring instrumentation kits and if necessary, assistance with installation.

5.0 SITE ASSISTANCE

Unless otherwise approved, an MSE Wall Vendor representative is required to assist and guide the MSE Wall Installer on-site for at least 8 hours when the first welded wire facing and reinforcement layer are placed. If problems are encountered during construction, the Engineer may require the vendor representative to return to the site for a time period determined by the Engineer.

6.0 CONSTRUCTION METHODS

Control drainage during construction in the vicinity of MSE walls. Direct run off away from MSE walls, aggregate and backfill. Contain and maintain aggregate and backfill and protect material from erosion.

Excavate as necessary for MSE walls in accordance with the accepted submittals. If applicable and at the Contractor's option, use temporary shoring for wall construction instead of temporary slopes to construct MSE walls. Define "temporary shoring for wall construction" as temporary shoring not shown in the plans or required by the Engineer including shoring for OSHA reasons or the Contractor's convenience.

Docusign Envelope ID: 76C45D17-C32A-88B1-8251-8E1D98A4DF8E

Unless required otherwise in the plans, install foundations and if required, pile sleeves located in the reinforced zone before placing aggregate or reinforcement. Brace piles in the reinforced zone to maintain alignment when placing and compacting aggregate. Secure piles together with steel members near top of piles. Clamp members to piles instead of welding if bracing is at or below pile cut-off elevations.

Notify the Engineer when foundation excavation is complete. Do not place aggregate or reinforcement until excavation dimensions and foundation material are approved.

Construct aggregate leveling pads at elevations and with dimensions shown in the accepted submittals. Compact leveling pads with a vibratory compactor to the satisfaction of the Engineer.

Erect welded wire facing so the wall position is as shown in the accepted submittals. Set welded wire facing adjacent to each other in the horizontal and vertical direction to completely cover the wall face with facing. Stagger welded wire facing to create a running bond by centering facing over joints in the row below. Construct MSE walls with the following tolerances:

A. Wall face is within 3/4" of horizontal and vertical alignment shown in the accepted submittals when measured along a 10 ft straightedge and

B. Wall plumbness (batter) is not negative (wall face leaning forward) and within 0.5° of vertical.

Wrap retention geotextiles behind welded wire facing as shown in the accepted submittals and cover geotextiles with at least 3" of aggregate. Overlap adjacent retention geotextiles at least 18" with seams oriented perpendicular to the wall face. Hold retention geotextiles in place with wire staples or anchor pins as needed.

Place reinforcement at locations and elevations shown in the accepted submittals and within 3" of corresponding connection elevations. Locate reinforcement and connectors to allow for minimum required concrete cover for concrete facing. Do not splice reinforcement. Contact the Engineer when unanticipated existing or future obstructions such as foundations, guardrail, fence or handrail posts, pavements, pipes, inlets or utilities will interfere with reinforcement. To avoid obstructions, deflect, skew or modify reinforcement as shown in the accepted submittals.

Place aggregate in the reinforced zone in 8" to 10" thick lifts. Use only hand operated compaction equipment to compact coarse aggregate within 3 ft of welded wire facing. At a distance greater than 3 ft, compact coarse aggregate with at least 4 passes of an 8 ton to 10 ton vibratory roller in a direction parallel to the wall face. Smooth wheeled or rubber tired rollers are also acceptable for compacting aggregate. Do not use sheepsfoot, grid rollers or other types of compaction equipment with feet. Do not displace or damage reinforcement when placing and compacting aggregate. Do not operate heavy equipment on reinforcement until it is covered with at least 8" of aggregate. Replace any damaged reinforcement to the satisfaction of the Engineer.

Docusign Envelope ID: 76C45D17-C32A-88B1-8251-8E1D98A4DF8E

Backfill for MSE walls outside the reinforced zone in accordance with Article 410-8 of the *Standard Specifications*. Install wall drainage systems as shown in the accepted submittals and in accordance with Section 816 of the *Standard Specifications*. If pile sleeves are required, fill sleeves with loose uncompacted sand before constructing end bent caps.

Construct concrete facing in accordance with the accepted submittals and Section 420 of the *Standard Specifications*. Do not remove forms until concrete attains a compressive strength of at least 2,400 psi. Unless required otherwise in the plans, provide a Class 2 surface finish for concrete facing that meets Subarticle 420-17(F) of the *Standard Specifications*. Construct concrete facing joints at a spacing of 10 ft to 12 ft unless required otherwise in the plans. Make 1/2" thick expansion joints that meet Article 420-10 of the *Standard Specifications* for every third joint and 1/2" deep grooved contraction or sawed joints that meet Subarticle 825-10(B) or 825-10(E) respectively for the remaining joints. Stop reinforcing steel for concrete facing 2" on either side of expansion joints.

Install reinforcement connected to end bent caps in accordance with the accepted submittals. When separation geotextiles are required, overlap adjacent geotextiles at least 18" and hold separation geotextiles in place with wire staples or anchor pins as needed. Seal joints above and behind MSE walls between concrete facing and slope protection with silicone sealant.

7.0 MEASUREMENT AND PAYMENT

CIP MSE Retaining Wall No. __ will be measured and paid in square feet. MSE walls will be measured as the square feet of wall face area with the pay height equal to the difference between top of wall and top of leveling pad elevations. Define “top of wall” as top of concrete facing.

The contract unit price for *CIP MSE Retaining Wall No. __* will be full compensation for providing designs, submittals, labor, tools, equipment and MSE wall materials, excavating, backfilling, hauling and removing excavated materials and supplying site assistance, leveling pads, welded wire facing, reinforcement, coarse aggregate, wall drainage systems, geotextiles, concrete facing, miscellaneous components and any incidentals necessary to construct MSE walls. The contract unit price for *CIP MSE Retaining Wall No. __* will also be full compensation for reinforcement and connector design for reinforcement connected to end bent caps, wall modifications for obstructions, pile sleeves filled with sand and joints sealed with silicone sealant.

No separate payment will be made for temporary shoring for wall construction. Temporary shoring for wall construction will be incidental to the contract unit price for *CIP MSE Retaining Wall No. __*.

The contract unit price for *CIP MSE Retaining Wall No. __* does not include the cost for ditches, fences, handrails, barrier or guardrail associated with MSE walls as these items will be paid for elsewhere in the contract.

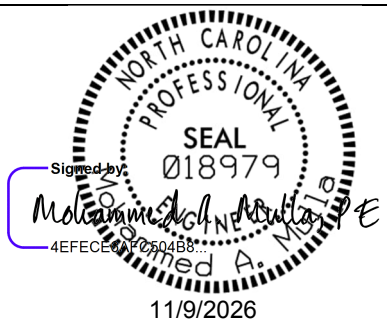
Where it is necessary to provide backfill material behind the reinforced zone from sources other than excavated areas or borrow sources used in connection with other work in the contract, payment for furnishing and hauling such backfill material will be paid as extra work

Docusign Envelope ID: 76C45D17-C32A-88B1-8251-8E1D98A4DF8E

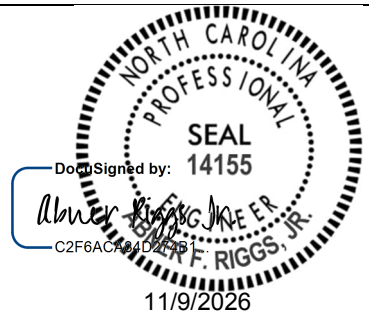
in accordance with Article 104-7 of the *Standard Specifications*. Placing and compacting such backfill material is not considered extra work but is incidental to the work being performed.

Payment will be made under:

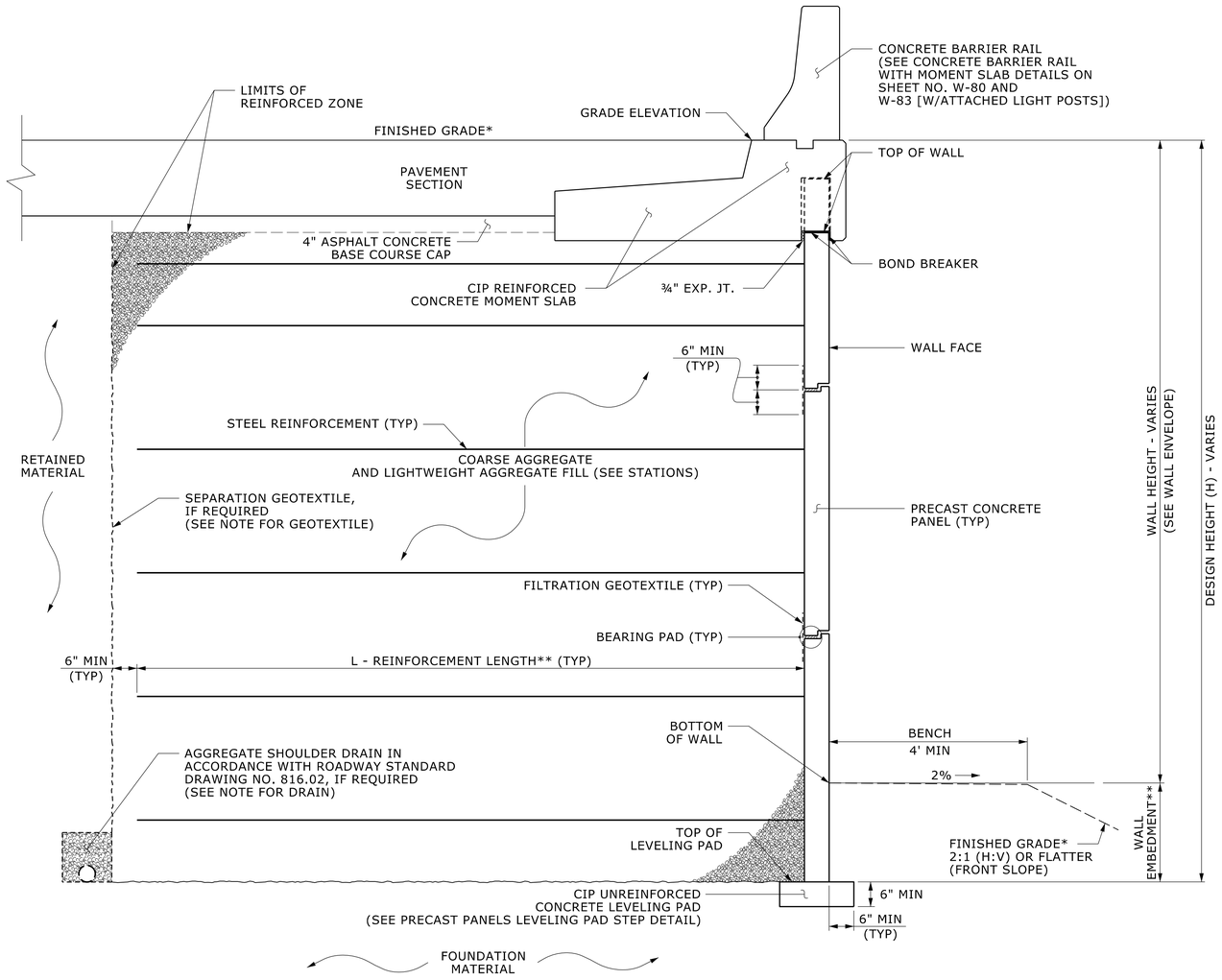
Pay Item	**Pay Unit**
CIP MSE Retaining Wall No. __	Square Foot



Seal Applies to:
CIP MSE Retaining Wall No. 22
CIP MSE Retaining Wall No. 23

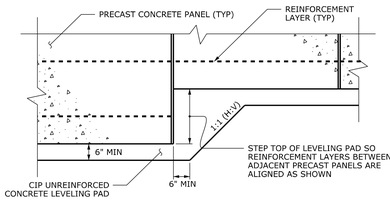


Seal Applies to:
CIP MSE Retaining Wall No. 24
CIP MSE Retaining Wall No. 25



MSE WALL WITH PRECAST PANELS - TYPICAL SECTION

*SEE ROADWAY PLANS FOR FINISHED GRADE DETAILS.
**SEE MSE RETAINING WALLS PROVISION AND IF APPLICABLE, MSE WALL NOTES FOR WALL EMBEDMENT AND REINFORCEMENT LENGTH REQUIREMENTS.



PRECAST PANELS LEVELING PAD STEP DETAIL

GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 018979 ENGINEER MUHAMMED A. MULLA

Mohammed A. Mulla 11/9/2026
SIGNATURE DATE

ENGINEER

SIGNATURE DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NOTES:

FOR MECHANICALLY STABILIZED EARTH (MSE) RETAINING WALLS, SEE MECHANICALLY STABILIZED EARTH RETAINING WALLS PROVISION.

A CONCRETE BARRIER RAIL WITH MOMENT SLAB IS REQUIRED ABOVE RETAINING WALL NO. 3. SEE PLANS FOR CONCRETE BARRIER RAIL WITH MOMENT SLAB DETAILS.

DO NOT USE FINE AGGREGATE IN REINFORCEMENT ZONE FOR MSE WALL NO. 3.

REINFORCEMENT FOR MSE WALL SHALL BE STEEL, OTHER REINFORCEMENT TYPES ARE NOT PERMITTED ON THIS WALL.

AN ARCHITECTURAL CONCRETE SURFACE TREATMENT IS REQUIRED FOR RETAINING WALL NO. 3. SEE "ARCHITECTURAL CONCRETE SURFACE TREATMENT" SPECIAL PROVISION.

A SEPARATION GEOTEXTILE IS REQUIRED AT THE BACK OF THE REINFORCED ZONE FOR RETAINING WALL NO. 3.

A DRAIN IS REQUIRED FOR RETAINING WALL NO. 3.

BEFORE BEGINNING MSE WALL DESIGN FOR RETAINING WALL NO. 3, 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 NO. 3 FOR THE FOLLOWING:
1) H = WALL HEIGHT + WALL EMBEDMENT
2) DESIGN LIFE = 100 YEARS
3) MAXIMUM FACTORED VERTICAL PRESSURE ON FOUNDATION MATERIAL = 4,500 PSF (2,650 PSF IN LIGHTWEIGHT AGGREGATE FILL FROM -WALL3- STA 28+57 TO 31+40 (-RP23- STA. 34+07.41 TO 36+90.48)
4) MINIMUM REINFORCEMENT LENGTH (L) = 1.2 H OR 6 FT., WHICHEVER IS LONGER
5) MINIMUM EMBEDMENT DEPTH = H/7 OR 3 FT., WHICHEVER IS LONGER
6) REINFORCED ZONE AGGREGATE PARAMETERS:

AGGREGATE TYPE*	UNIT WEIGHT (γ) PCF	FRICTION ANGLE (ϕ) DEGREES	COHESION (c) PSF
COARSE	110	38	0
LIGHTWEIGHT AGGREGATE FILL**	65	40	0

*SEE MSE RETAINING WALLS PROVISION FOR COARSE AGGREGATE MATERIAL REQUIREMENTS.

**FOR WALL NO. 3 STA. 28+57 TO 31+40 (-RP23- STA. 34+07.41 TO 36+90.48). SEE LIGHTWEIGHT AGGREGATE DETAILS AND SURCHARGE DETAILS FOR MORE INFORMATION.

7) IN-SITU ASSUMED MATERIAL PARAMETERS:

MATERIAL TYPE	UNIT WEIGHT (γ) PCF	FRICTION ANGLE (ϕ) DEGREES	COHESION (c) PSF
RETAINED	120	30	0
FOUNDATION	120	30	0

DESIGN RETAINING WALL NO. 3 FOR A LIVE LOAD (TRAFFIC) SURCHARGE.

DESIGN RETAINING WALL NO. 3 FOR A PIPE EXTENDING THROUGH AND BEHIND THE WALL AS SHOWN. VERIFY PIPE LOCATION AND ELEVATION BEFORE BEGINNING MSE WALL DESIGN OR CONSTRUCTION.

EXISTING OR FUTURE OBSTRUCTIONS SUCH AS FOUNDATIONS, GUARDRAIL, FENCE OR HANDRAIL POSTS, PAVEMENTS, PIPES, INLETS OR UTILITIES MAY INTERFERE WITH REINFORCEMENT FOR RETAINING WALL NO. 3.

DO NOT PLACE LEVELING PAD CONCRETE, AGGREGATE OR REINFORCEMENT FOR RETAINING WALL NO. 3 UNTIL EXCAVATION DIMENSIONS AND FOUNDATION MATERIAL ARE APPROVED.

-WALL3- STA. 28+57 TO 31+40 REQUIRES SURCHARGING PRIOR TO WALL CONSTRUCTION. SEE SURCHARGE DETAILS FOR MORE INFORMATION.

FOR WALL NO. 3 STA. 28+57 TO 31+40 (-RP23- STA. 34+07.41 TO 36+90.48), SEE LIGHTWEIGHT AGGREGATE DETAILS AND SURCHARGE DETAILS FOR MORE INFORMATION.

PROJECT NO.: I-2513AC
BUNCOMBE COUNTY
STATION: +/- -RP23- 18+65 TO -RP23- 37+74
SHEET 4 OF 4 WALL ID RW-3

PREPARED BY: E. A. MCINTOSH, P.E.	DATE: 11/26
REVIEWED BY: M. A. MULLA, P.E.	DATE: 11/26

Prepared in the Office of:

ECS SOUTHEAST, LLC
1812 CENTER PARK DRIVE, SUITE D
CHARLOTTE, NC 28217
(704) 525-5152 [PHONE]
(704) 357-0023 [FAX]
NC REGISTERED
ENGINEERING
FIRM # F-1519

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

GEOTECHNICAL
ENGINEERING UNIT

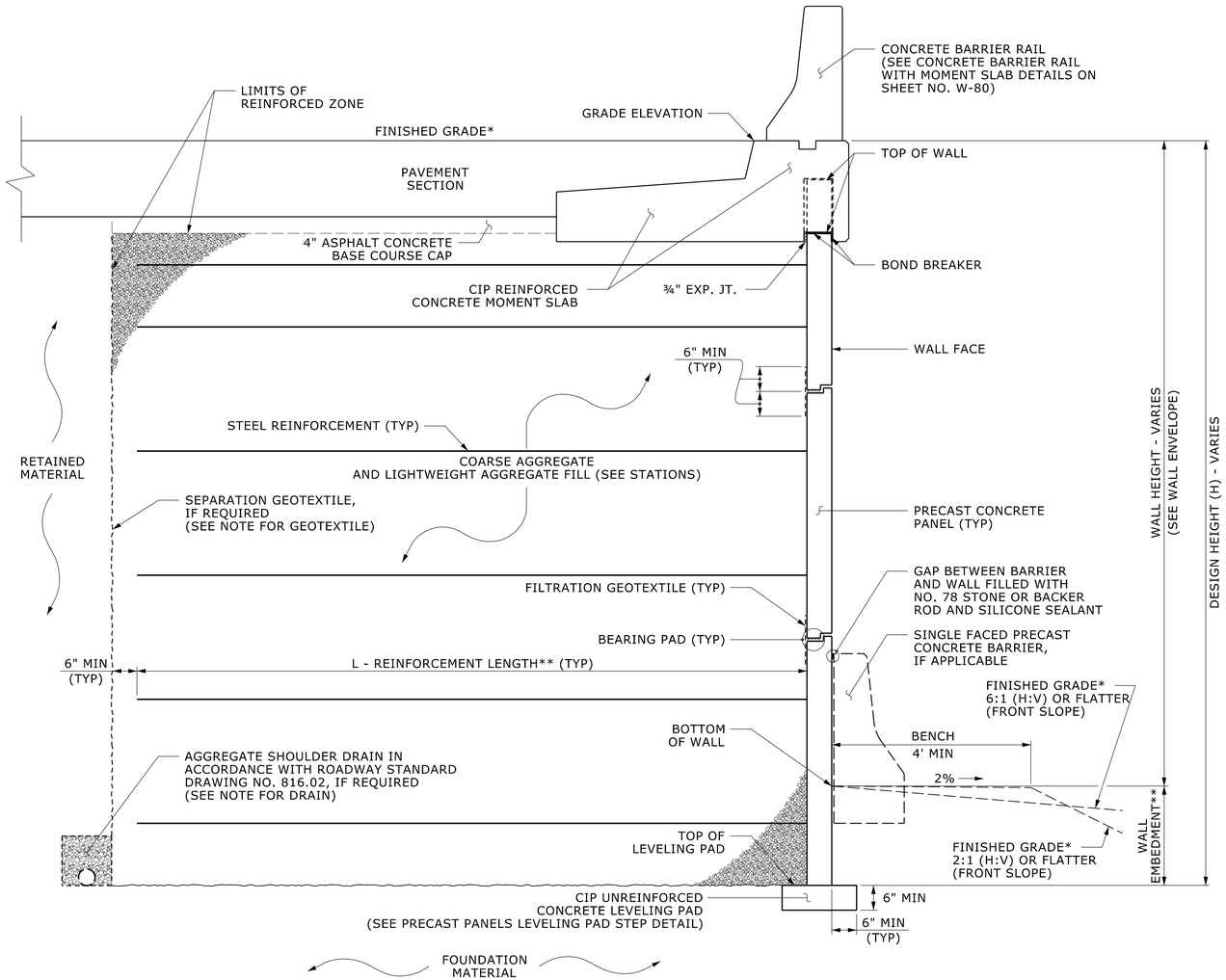
RETAINING WALL NO. 3
MSE WALL WITH PRECAST PANELS
TYPICAL SECTION AND NOTES

REVISIONS

NO.	BY	DATE	NO.	BY	DATE
			3		
			4		

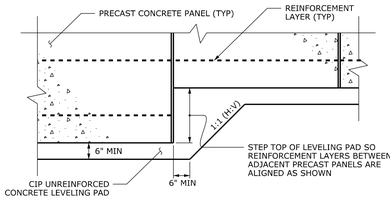
SHEET NO. W-11

03-NOV-2026 15:34
C:\Users\kmcintosh\OneDrive - ECS Corporate Services\31 Asheville - 31-4489 I-2513AC 1/2 Structures\CADD\GEOTECH\PlanProf\I2513AC_Typical sheets_EM.dgn
EMcIntosh at ECS_JOINT_VITA



MSE WALL WITH PRECAST PANELS - TYPICAL SECTION

*SEE ROADWAY PLANS FOR FINISHED GRADE DETAILS.
**SEE MSE RETAINING WALLS PROVISION AND IF APPLICABLE, MSE WALL NOTES FOR WALL EMBEDMENT AND REINFORCEMENT LENGTH REQUIREMENTS.



PRECAST PANELS LEVELING PAD STEP DETAIL

GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 018979 ENGINEER Mohammed A. Mulla

Mohammed A. Mulla 11/9/2026
SIGNATURE DATE

ENGINEER

SIGNATURE DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NOTES:

FOR MECHANICALLY STABILIZED EARTH (MSE) RETAINING WALLS, SEE MECHANICALLY STABILIZED EARTH RETAINING WALLS PROVISION.

FOR SINGLE FACED PRECAST CONCRETE BARRIER, -WALL5- STA. 10+89.95 TO 22+66.61 (-L- STA. 66+39.95 TO 78+11.06), SEE ROADWAY PLANS AND SECTION 857 OF THE STANDARD SPECIFICATIONS.

A CONCRETE BARRIER RAIL WITH MOMENT SLAB IS REQUIRED ABOVE RETAINING WALL NO. 5. SEE PLANS FOR CONCRETE BARRIER RAIL WITH MOMENT SLAB DETAILS.

DO NOT USE FINE AGGREGATE IN REINFORCEMENT ZONE FOR MSE WALL NO. 5.

REINFORCEMENT FOR MSE WALL SHALL BE STEEL, OTHER REINFORCEMENT TYPES ARE NOT PERMITTED ON THIS WALL.

AN ARCHITECTURAL CONCRETE SURFACE TREATMENT IS REQUIRED FOR RETAINING WALL NO. 5. SEE "ARCHITECTURAL CONCRETE SURFACE TREATMENT" SPECIAL PROVISION.

A SEPARATION GEOTEXTILE IS REQUIRED AT THE BACK OF THE REINFORCED ZONE FOR RETAINING WALL NO. 5.

A DRAIN IS REQUIRED FOR RETAINING WALL NO. 5.

BEFORE BEGINNING MSE WALL DESIGN FOR RETAINING WALL NO. 5, 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 NO. 5 FOR THE FOLLOWING:
1) H = WALL HEIGHT + WALL EMBEDMENT
2) DESIGN LIFE = 100 YEARS
3) MAXIMUM FACTORED VERTICAL PRESSURE ON FOUNDATION MATERIAL = 8,650 PSF (4,650 PSF IN LIGHTWEIGHT AGGREGATE FILL FROM -WALL5- STA. 22+03 TO 24+75)
4) MINIMUM REINFORCEMENT LENGTH (L) = 0.8 H OR 6 FT., WHICHEVER IS LONGER, UNLESS NOTED OTHERWISE (SEE #5 BELOW)
5) MINIMUM REINFORCEMENT LENGTH (L) = 1.2 H FOR -WALL5- STA. 22+03 TO 24+75
6) MINIMUM EMBEDMENT DEPTH = 2 FT OR H/20 FOR -WALL 5- STA. 10+89.95 TO 22+66.61 AND H/7 FOR -WALL 5- STA. 22+66.61 TO 26+39.23, WHICHEVER IS GREATER
7) REINFORCED ZONE AGGREGATE PARAMETERS:

AGGREGATE TYPE*	UNIT WEIGHT (γ) PCF	FRICTION ANGLE (ϕ) DEGREES	COHESION (c) PSF
COARSE	110	38	0
LIGHTWEIGHT AGGREGATE FILL**	65	40	0

*SEE MSE RETAINING WALLS PROVISION FOR COARSE AGGREGATE MATERIAL REQUIREMENTS.
**FOR WALL NO. 5 STA. 22+03 TO 24+75 (-L- STA. 77+50 TO 80+11). SEE LIGHTWEIGHT AGGREGATE DETAILS AND SURCHARGE DETAILS FOR MORE INFORMATION.

8) IN-SITU ASSUMED MATERIAL PARAMETERS:

MATERIAL TYPE	UNIT WEIGHT (γ) PCF	FRICTION ANGLE (ϕ) DEGREES	COHESION (c) PSF
RETAINED	120	30	0
FOUNDATION	120	30	0

DESIGN RETAINING WALL NO. 5 FOR A LIVE LOAD (TRAFFIC) SURCHARGE.

DESIGN RETAINING WALL NO. 5 FOR A PIPE EXTENDING THROUGH THE WALL AS SHOWN. VERIFY PIPE LOCATION AND ELEVATION BEFORE BEGINNING MSE WALL DESIGN OR CONSTRUCTION.

EXISTING OR FUTURE OBSTRUCTIONS SUCH AS FOUNDATIONS, GUARDRAIL, FENCE OR HANDRAIL POSTS, PAVEMENTS, PIPES, INLETS OR UTILITIES MAY INTERFERE WITH REINFORCEMENT FOR RETAINING WALL NO. 5.

DO NOT PLACE LEVELING PAD CONCRETE, AGGREGATE OR REINFORCEMENT FOR RETAINING WALL NO. 5 UNTIL EXCAVATION DIMENSIONS AND FOUNDATION MATERIAL ARE APPROVED.

-WALL5- STA. 22+03 TO 24+75 REQUIRES SURCHARGING PRIOR TO WALL CONSTRUCTION. SEE SURCHARGE DETAILS FOR MORE INFORMATION.

FOR WALL NO. 5 STA. 22+03 TO 24+75 (-L- STA. 77+50 TO 80+11), SEE LIGHTWEIGHT AGGREGATE DETAILS AND SURCHARGE DETAILS FOR MORE INFORMATION.

PROJECT NO.: I-2513AC
BUNCOMBE COUNTY
STATION: +/- -L- 65+90 TO -L- 81+68
SHEET 3 OF 3 WALL ID RW-5

PREPARED BY: E. A. MCINTOSH, P.E.	DATE: 11/26
REVIEWED BY: M. A. MULLA, P.E.	DATE: 11/26

Prepared in the Office of:

ECS SOUTHEAST, LLC
1812 CENTER PARK DRIVE, SUITE D
CHARLOTTE, NC 28217
(704) 525-5152 [PHONE]
(704) 357-0023 [FAX]
NC REGISTERED
ENGINEERING
FIRM # F-1519

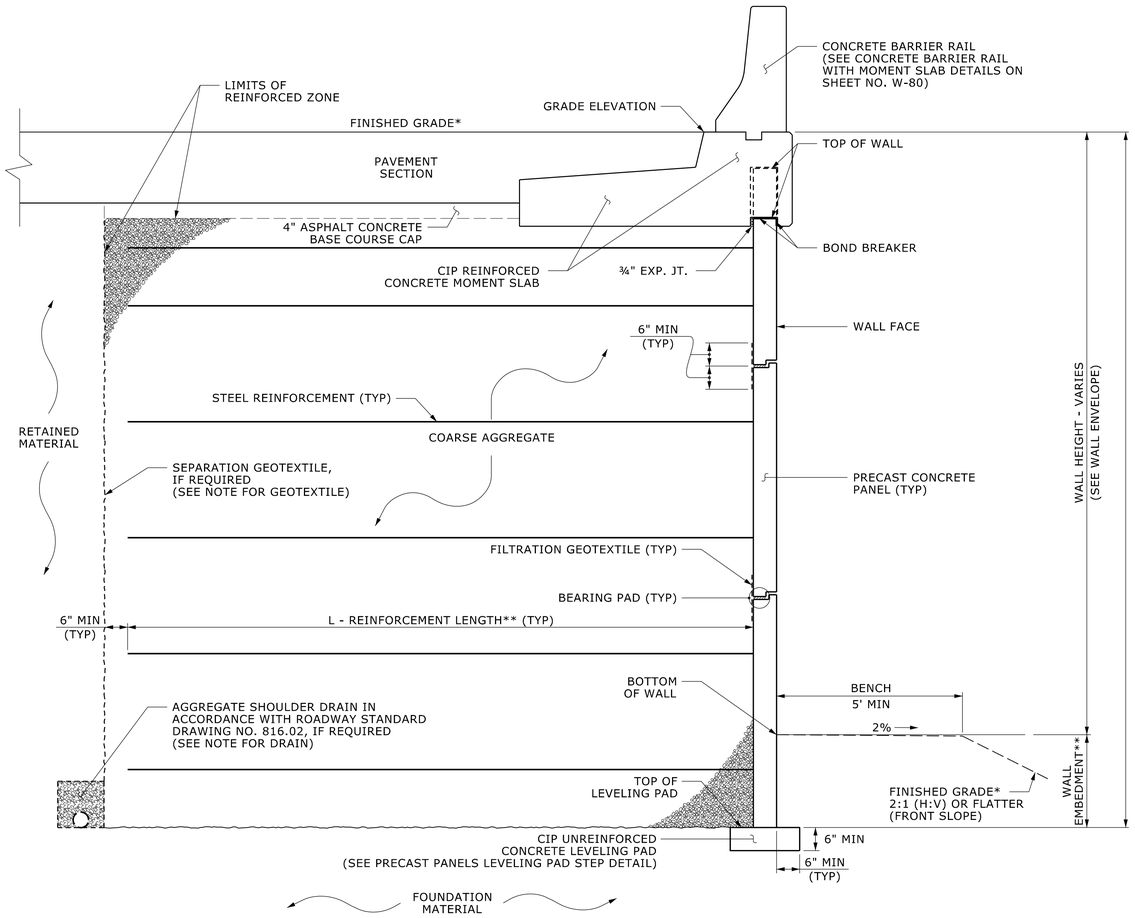
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

GEOTECHNICAL ENGINEERING UNIT

RETAINING WALL NO. 5
MSE WALL WITH PRECAST PANELS
TYPICAL SECTION AND NOTES

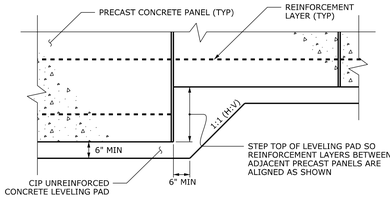
REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	
			3			W-16
			4			

09-NOV-2026 15:28
C:\Users\emcintosh\Desktop\New Drive - ECS Corporate Services\31 Asheville - 31-4489 I-2513AC 0%
Structures\CADD_GEOTECH\PlanProf\I2513AC_Typical_sheets_EM.dgn
ENGINEER: E. A. MCINTOSH, P.E.



MSE WALL WITH PRECAST PANELS - TYPICAL SECTION

*SEE ROADWAY PLANS FOR FINISHED GRADE DETAILS.
**SEE MSE RETAINING WALLS PROVISION AND IF APPLICABLE, MSE WALL NOTES FOR WALL EMBEDMENT AND REINFORCEMENT LENGTH REQUIREMENTS.



PRECAST PANELS
LEVELING PAD STEP DETAIL

GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 018979 ENGINEER Mohammed A. Mulla

Mohammed A. Mulla 11/9/2026
SIGNATURE DATE

ENGINEER

SIGNATURE DATE

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

NOTES:

FOR MECHANICALLY STABILIZED EARTH (MSE) RETAINING WALLS, SEE MECHANICALLY STABILIZED EARTH RETAINING WALLS PROVISION.

A CONCRETE BARRIER RAIL WITH MOMENT SLAB IS REQUIRED ABOVE RETAINING WALL NO. 12. SEE PLANS FOR CONCRETE BARRIER RAIL WITH MOMENT SLAB DETAILS.

DO NOT USE FINE AGGREGATE IN REINFORCEMENT ZONE FOR MSE WALL NO. 12.

REINFORCEMENT FOR MSE WALL SHALL BE STEEL, OTHER REINFORCEMENT TYPES ARE NOT PERMITTED ON THIS WALL.

AN ARCHITECTURAL CONCRETE SURFACE TREATMENT IS REQUIRED FOR RETAINING WALL NO. 12. SEE "ARCHITECTURAL CONCRETE SURFACE TREATMENT" SPECIAL PROVISION.

A SEPARATION GEOTEXTILE IS REQUIRED AT THE BACK OF THE REINFORCED ZONE FOR RETAINING WALL NO. 12.

A DRAIN IS REQUIRED FOR RETAINING WALL NO. 12.

DESIGN RETAINING WALL NO. 12 FOR THE FOLLOWING:
1) H = WALL HEIGHT + WALL EMBEDMENT
2) DESIGN LIFE = 100 YEARS
3) MAXIMUM FACTORED VERTICAL PRESSURE ON FOUNDATION MATERIAL = 12,850 PSF
4) MINIMUM REINFORCEMENT LENGTH (L) = 0.9 H OR 6 FT., WHICHEVER IS LONGER
5) MINIMUM EMBEDMENT DEPTH = H/5 FOR -WALL12- STA. 11+87.42 TO 13+49.92, OTHERWISE H/7 OR 2 FT., WHICHEVER IS GREATER.
6) REINFORCED ZONE AGGREGATE PARAMETERS:

AGGREGATE TYPE*	UNIT WEIGHT (γ) PCF	FRICTION ANGLE (ϕ) DEGREES	COHESION (c) PSF
COARSE	110	38	0
*SEE MSE RETAINING WALLS PROVISION FOR COARSE AGGREGATE MATERIAL REQUIREMENTS.			

7) IN-SITU ASSUMED MATERIAL PARAMETERS:

MATERIAL TYPE	UNIT WEIGHT (γ) PCF	FRICTION ANGLE (ϕ) DEGREES	COHESION (c) PSF
RETAINED	120	30	0
FOUNDATION	120	30	0

DESIGN RETAINING WALL NO. 12 FOR A LIVE LOAD (TRAFFIC) SURCHARGE.

EXISTING OR FUTURE OBSTRUCTIONS SUCH AS FOUNDATIONS, GUARDRAIL, FENCE OR HANDRAIL POSTS, PAVEMENTS, PIPES, INLETS OR UTILITIES MAY INTERFERE WITH REINFORCEMENT FOR RETAINING WALL NO. 12.

DO NOT PLACE LEVELING PAD CONCRETE, AGGREGATE OR REINFORCEMENT FOR RETAINING WALL NO. 12 UNTIL EXCAVATION DIMENSIONS AND FOUNDATION MATERIAL ARE APPROVED.

OBSERVE A ONE MONTH WAITING PERIOD AFTER CONSTRUCTING WALL NO. 12 BEFORE BEGINNING ROADWAY CONSTRUCTION. BEFORE BEGINNING THE WAITING PERIOD, INSTALL HUB IN THE SUBGRADE AT -WALL12- STA. 12+81.6. SURVEY THE HUB INITIALLY AND EVERY 3 TO 4 DAYS THEREAFTER FOR RELATIVE MOVEMENT AND SUBMIT THTE DATA TO THE ENGINEER WEEKLY. THE ENGINEER WILL DETERMINE WHEN THE WAITING PERIOD ENDS AND FINAL OVERLYING CONSTRUCTION CAN BEGIN.

"TEMPORARY SHORING" MAY BE REQUIRED FOR RETAINING WALL NO. 12 IN ACCORDANCE WITH THE TEMPORARY SHORING PROVISION. SEE TRAFFIC CONTROL PLANS.

PROJECT NO.: I-2513AC
BUNCOMBE COUNTY
STATION: +/- -Y2A- 17+25 TO -Y2A- 14+38.02
SHEET 2 OF 2 WALL ID RW-12

PREPARED BY: E. A. MCINTOSH, P.E.	DATE: 11/26
REVIEWED BY: M. A. MULLA, P.E.	DATE: 11/26

Prepared in the Office of:
ECS SOUTHEAST, LLC
1812 CENTER PARK DRIVE, SUITE D
CHARLOTTE, NC 28217
(704) 525-5152 [PHONE]
(704) 357-0023 [FAX]
NC REGISTERED
ENGINEERING
FIRM # F-1519

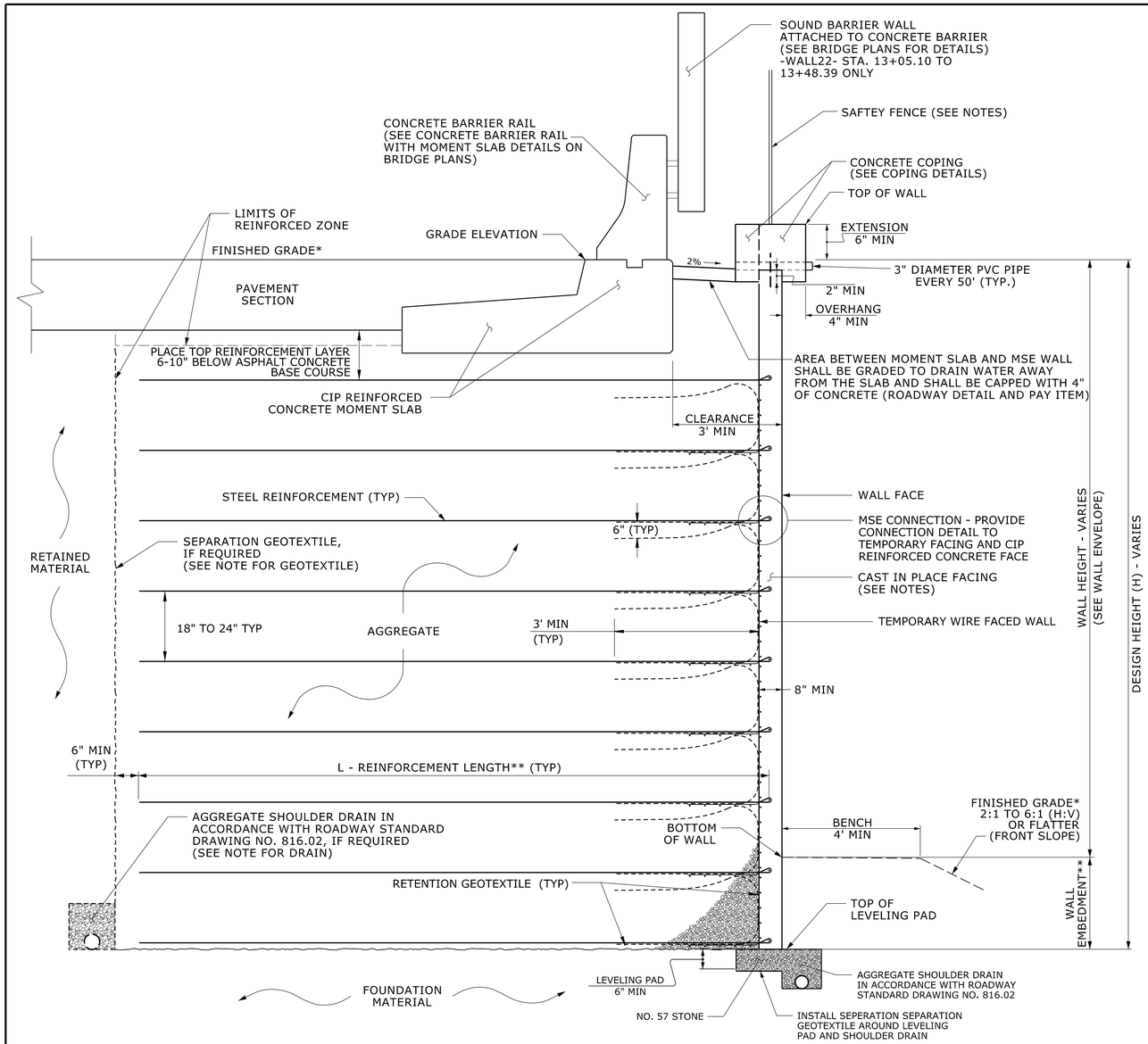
NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

GEOTECHNICAL
ENGINEERING UNIT

RETAINING WALL NO. 12
MSE WALL WITH PRECAST PANELS
TYPICAL SECTION AND NOTES

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	
1			3			W-35
2			4			

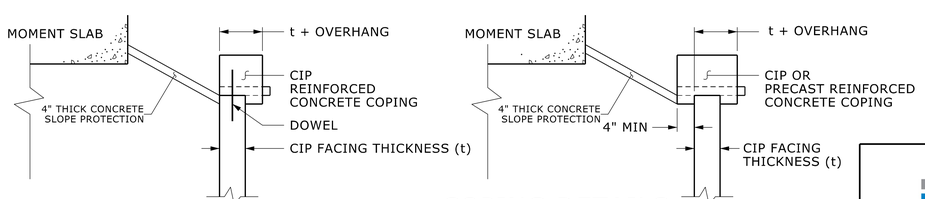
09-NOV-2026 15:14
C:\Users\emcintosh\Desktop\Drive_ECS Corporate Services\31 Asheville - 31-4489 I-2513AC 1/2 Structures\CADD_GEOTECH\Plan Prof\12513AC_Typical sheets_EM.dgn
ECS_Color.ctb dl ECS_DEVICE_VITA



CIP MSE WALL AND MOMENT SLAB

*SEE ROADWAY PLANS FOR FINISHED GRADE DETAILS.
**SEE MSE RETAINING WALLS PROVISION AND IF APPLICABLE, MSE WALL NOTES FOR WALL EMBEDMENT AND REINFORCEMENT LENGTH REQUIREMENTS.

-WALL22- STA. 10+49.50 TO STA. 10+60.08
-WALL22- STA. 13+05.10 TO STA. 13+48.39
W/ ATTACHED SOUND BARRIER WALL TO
CONCRETE BARRIER RAIL



COPING DETAILS

AT THE CONTRACTOR'S OPTION, CONNECT COPING TO FACING WITH DOWELS OR EXTEND COPING DOWN BACK OF CIP FACING.

NOTES:

FOR CAST-IN PLACE (CIP) MECHANICALLY STABILIZED EARTH (MSE) RETAINING WALLS, SEE CIP MSE RETAINING WALLS PROVISION.

FOR SINGLE FACED PRECAST CONCRETE BARRIER, SEE ROADWAY PLANS AND SECTION 857 OF THE STANDARD SPECIFICATIONS.

DO NOT USE FINE AGGREGATE IN REINFORCEMENT ZONE FOR MSE WALL NO. 22.

REINFORCEMENT FOR CIP MSE WALL SHALL BE STEEL, OTHER REINFORCEMENT TYPES ARE NOT PERMITTED ON THIS WALL.

A SAFETY FENCE IS REQUIRED FROM -WALL22- STA 10+49.50 TO 11+10.56 AND -WALL22- STA 12+80.15 TO 13+48.39. SEE ROADWAY STANDARD 866.06 (ROADWAY DETAIL AND PAY ITEM).

A CONCRETE BARRIER RAIL WITH MOMENT SLAB IS REQUIRED ABOVE RETAINING WALL NO. 22. SEE PLANS FOR CONCRETE BARRIER RAIL WITH MOMENT SLAB DETAILS.

CIP REINFORCED CONCRETE COPING IS REQUIRED FOR RETAINING WALL NO. 22.

A SEPARATION GEOTEXTILE IS REQUIRED AT THE BACK OF THE REINFORCED ZONE FOR RETAINING WALL NO. 22.

A DRAIN IS REQUIRED FOR RETAINING WALL NO. 22.

BEFORE BEGINNING MSE WALL DESIGN FOR RETAINING WALL NO. 22, 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 NO. 22 FOR THE FOLLOWING:
1) H = WALL HEIGHT + WALL EMBEDMENT
2) DESIGN LIFE = 100 YEARS
3) MAXIMUM FACTORED VERTICAL PRESSURE ON FOUNDATION MATERIAL = 10,300 PSF
4) MINIMUM REINFORCEMENT LENGTH (L) = 0.7 H OR 6 FT., WHICHEVER IS LONGER UNLESS NOTED OTHERWISE
5) MINIMUM REINFORCEMENT LENGTH (L) = 0.9 H FOR -WALL22- STA. 12+50.0 TO 13+48.39
6) MINIMUM EMBEDMENT DEPTH = H/7 OR 2 FT., WHICHEVER IS GREATER
7) REINFORCED ZONE AGGREGATE PARAMETERS:

AGGREGATE TYPE*	UNIT WEIGHT (γ) PCF	FRICTION ANGLE (ϕ) DEGREES	COHESION (c) PSF
COARSE	110	38	0
*SEE MSE RETAINING WALLS PROVISION FOR COARSE AGGREGATE MATERIAL REQUIREMENTS.			

8) IN-SITU ASSUMED MATERIAL PARAMETERS:

MATERIAL TYPE	UNIT WEIGHT (γ) PCF	FRICTION ANGLE (ϕ) DEGREES	COHESION (c) PSF
RETAINED	120	30	0
FOUNDATION	120	30	0

DESIGN RETAINING WALL NO. 22 FOR A LIVE LOAD (TRAFFIC) SURCHARGE.

DESIGN RETAINING WALL NO. 22 TO ACCOUNT FOR WIND EXPOSURE CATEGORY B (WIND PRESSURE = 27 PSF) WHERE SOUND BARRIER WALL IS ATTACHED TO THE CONCRETE BARRIER RAIL (-WALL22- STA. 12+50.0 TO 13+48.39).

FOUNDATIONS FOR SIGNS, LIGHTING or SIGNALS WILL BE LOCATED BEHIND RETAINING WALL NO. 22 AND MAY INTERFERE WITH REINFORCEMENT. BEFORE BEGINNING MSE WALL CONSTRUCTION, SUBMIT PROPOSED CONSTRUCTION METHODS FOR THESE FOUNDATIONS FOR APPROVAL.

EXISTING OR FUTURE OBSTRUCTIONS SUCH AS FOUNDATIONS, GUARDRAIL, FENCE OR HANDRAIL POSTS, PAVEMENTS, PIPES, INLETS OR UTILITIES MAY INTERFERE WITH REINFORCEMENT FOR RETAINING WALL NO. 22.

DO NOT PLACE LEVELING PAD CONCRETE, AGGREGATE OR REINFORCEMENT FOR RETAINING WALL NO. 22 UNTIL EXCAVATION DIMENSIONS AND FOUNDATION MATERIAL ARE APPROVED.

DESIGN RETAINING WALLS NO. 22 TO INCORPORATE DRAIN DROP INLET STRUCTURES AND PIPES WITHIN REINFORCED ZONE OF WALL 22. INCLUDE DETAILS IN MSE WALL DESIGN SUBMITTAL.

GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 018979 ENGINEER Mohammed A. Mulla

Mohammed A. Mulla 11/9/2026
SIGNATURE DATE

ENGINEER

SIGNATURE DATE

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

PROJECT NO.: I-2513AC
BUNCOMBE COUNTY
STATION: +/- -L- 82+64 TO -L- 81+96
SHEET 2 OF 4 WALL ID RW-22

PREPARED BY: E. A. MCINTOSH, P.E.	DATE: 11/26
REVIEWED BY: M. A. MULLA, P.E.	DATE: 11/26

Prepared in the Office of:
ECS SOUTHEAST, LLC
1812 CENTER PARK DRIVE, SUITE D
CHARLOTTE, NC 28217
(704) 525-5152 [PHONE]
(704) 357-0023 [FAX]
NC REGISTERED
ENGINEERING
FIRM # F-1519

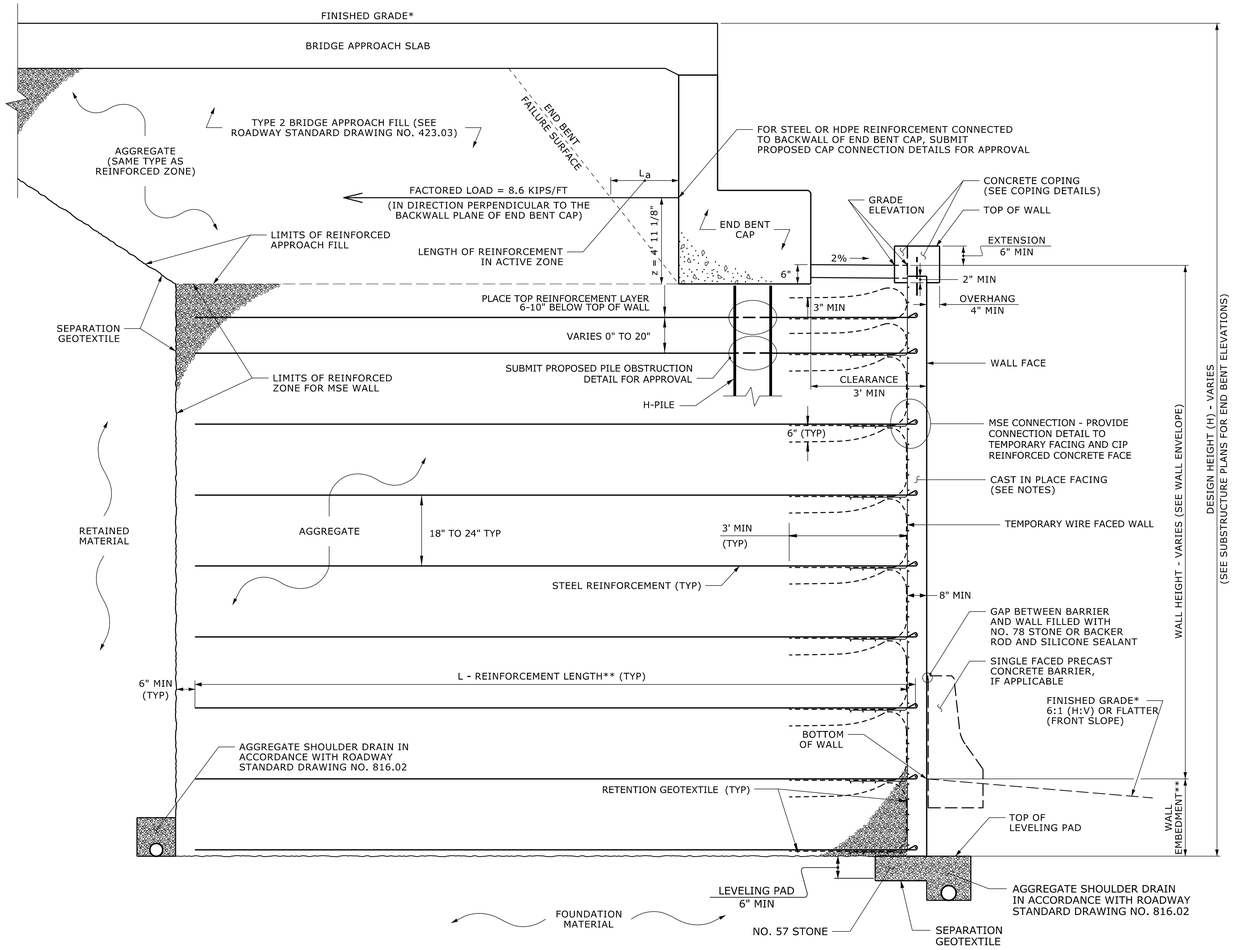
NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

GEOTECHNICAL
ENGINEERING UNIT

RETAINING WALL NO. 22
CIP MECHANICALLY STABILIZED EARTH WALL WITH MOMENT SLAB TYPICAL SECTION AND NOTES

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	
1			3			W-52
2			4			

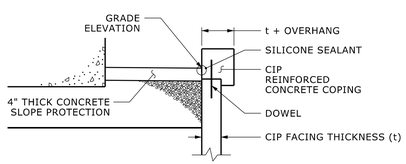
09-NOV-2026 15:01
C:\Users\emcintosh\OneDrive - ECS Corporate Services\31 Asheville - 31-4489 I-2513AC R/W\Structures\CADD_GEOTECH\PlanProf\I2513AC_Typical sheets_EM.dgn
EMcintosh
ALL ELEMENTS ON DEVICE VITA

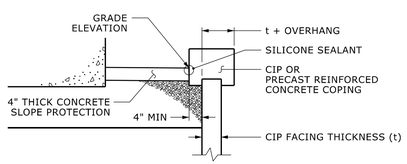


CIP MSE ABUTMENT WALL - TYPICAL SECTION

*SEE ROADWAY PLANS FOR FINISHED GRADE DETAILS.
**SEE MSE RETAINING WALLS PROVISION AND IF APPLICABLE, MSE WALL NOTES FOR WALL EMBEDMENT AND REINFORCEMENT LENGTH REQUIREMENTS.

-WALL22- STA. 11+18.81 TO STA. 12+74.16





COPING DETAILS FOR MSE ABUTMENT WALL

AT THE CONTRACTOR'S OPTION, CONNECT COPING TO FACING WITH DOWELS OR EXTEND COPING DOWN CIP FACING.

NOTES:

FOR TYPE 2 BRIDGE APPROACH FILL, SEE BRIDGE APPROACH FILLS PROVISION AND ROADWAY STANDARD DRAWING NO. 423.03.

DESIGN REINFORCEMENT CONNECTED TO END BENT CAPS FOR FACTORED LOAD AND LENGTH OR REINFORCEMENT IN ACTIVE ZONE (L) SHOWN. CAST REINFORCEMENT OR CONNECTORS INTO CAP BACKWALL FOR END BENT NO. 1. MAINTAIN A CLEARANCE OF AT LEAST 3 INCHES BETWEEN REINFORCEMENT OR CONNECTOR AND REINFORCING STEEL IN CAP.

FOUNDATION FOR END BENT NO. 1 WILL INTERFERE WITH REINFORCEMENT FOR RETAINING WALL NO. 22. SEE "FOUNDATION LAYOUT" SHEET FOR FOUNDATION LOCATIONS.

"TEMPORARY SHORING" IS BE REQUIRED FOR RETAINING WALL NO. 22 IN ACCORDANCE WITH THE TEMPORARY SHORING PROVISION. SEE TRAFFIC CONTROL PLANS.

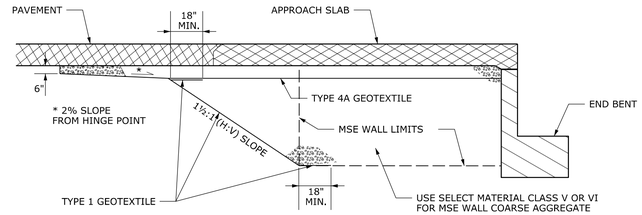
CLOSE COORDINATION WITH STRUCTURE PLANS IS REQUIRED. SEE BRIDGE PLANS FOR ADDITIONAL DETAILS FOR REQUIRED WALL AESTHETICS AND GEOMETRIC TIE-IN BETWEEN MSE WALL AND BRIDGE END BENT CAP. THE CONTRACTOR SHALL SUBMIT DETAILS FOR CONSTRUCTING THE MSE WALL, CAST IN PLACE FACING, AND PRECAST OR CAST IN PLACE COPING THAT ACHIEVE THE DESIRED AESTHETIC RESULT AS DEPICTED IN THE STRUCTURE PLAN DETAILS. THESE DETAILS SHALL BE APPROVED BY THE ENGINNER BEFORE BEGINNING CONSTRUCTION OF THE BRIDGE OR WALLS. THE COST FOR ACHIEVING THE PLAN INDICATED GEOMETRIC AESTHETIC RESULT, INCLUDING CUSTOM COPING, TOOLED JOINT LINES, AND ALL ASSOCIATED LABOR AND MATERIALS, SHALL BE INCIDENTAL TO THE COST OF "MSE RETAINING WALL NO. 22".

CAST IN PLACE FACING AND CORNER COPINGS AT THE BRIDGE END BENT CAPS SHALL NOT BE INSTALLED AFTER A MINIMUM PERIOD OF 30 DAYS SINCE PLACING THE LAST BRIDGE APPROACH FILL OR SETTLEMENT HAS REACHED 90% OF MAXIMUM ANTICIPATED LONG TERM SETTLEMENT.

THE BRIDGE END BENT SHALL BE BUILT IN ITS ENTIRETY BEFORE INSTALLING THE CAST IN PLACE FACING.

THE CIP FACING SHALL BE INSTALLED CONTINOUSLY BETWEEN LEFT AND RIGHT LANE BRIDGES WITH NO STAGED CONSTRUCTION JOINT.

THE REINFORCED ZONE OF RETAINING WALL NO. 22 WILL INTERFERE WITH BRIDGE APPROACH FILL FOR BRIDGE NO. 100898 AND 100899. SEE APPROACH FILL WITH ADJACENT MSE WALL DETAIL AND STRUCTURE PLANS.



APPROACH FILL WITH ADJACENT MSE WALL DETAIL

USE WHERE MSE WALL REINFORCED ZONE AND APPROACH FILL LIMITS OVERLAP. OUTSIDE OF MSE WALL REINFORCED ZONE LIMITS, SEE ROADWAY STANDARD DRAWING NO. 423.01.

GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 018979 ENGINEER Mohammed A. Mulla

Mohammed A. Mulla 11/9/2026
SIGNATURE DATE

ENGINEER

SIGNATURE DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PROJECT NO.: I-2513AC
BUNCOMBE COUNTY
STATION: +/- -L- 82+64 TO -L- 81+96
SHEET 3 OF 4 WALL ID RW-22

PREPARED BY: E. A. MCINTOSH, P.E.	DATE: 11/26
REVIEWED BY: M. A. MULLA, P.E.	DATE: 11/26

Prepared in the Office of:
ECS SOUTHEAST, LLC
1812 CENTER PARK DRIVE, SUITE D
CHARLOTTE, NC 28217
(704) 525-5152 [PHONE]
(704) 357-0023 [FAX]
NC REGISTERED ENGINEERING FIRM # F-1519

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

GEOTECHNICAL ENGINEERING UNIT

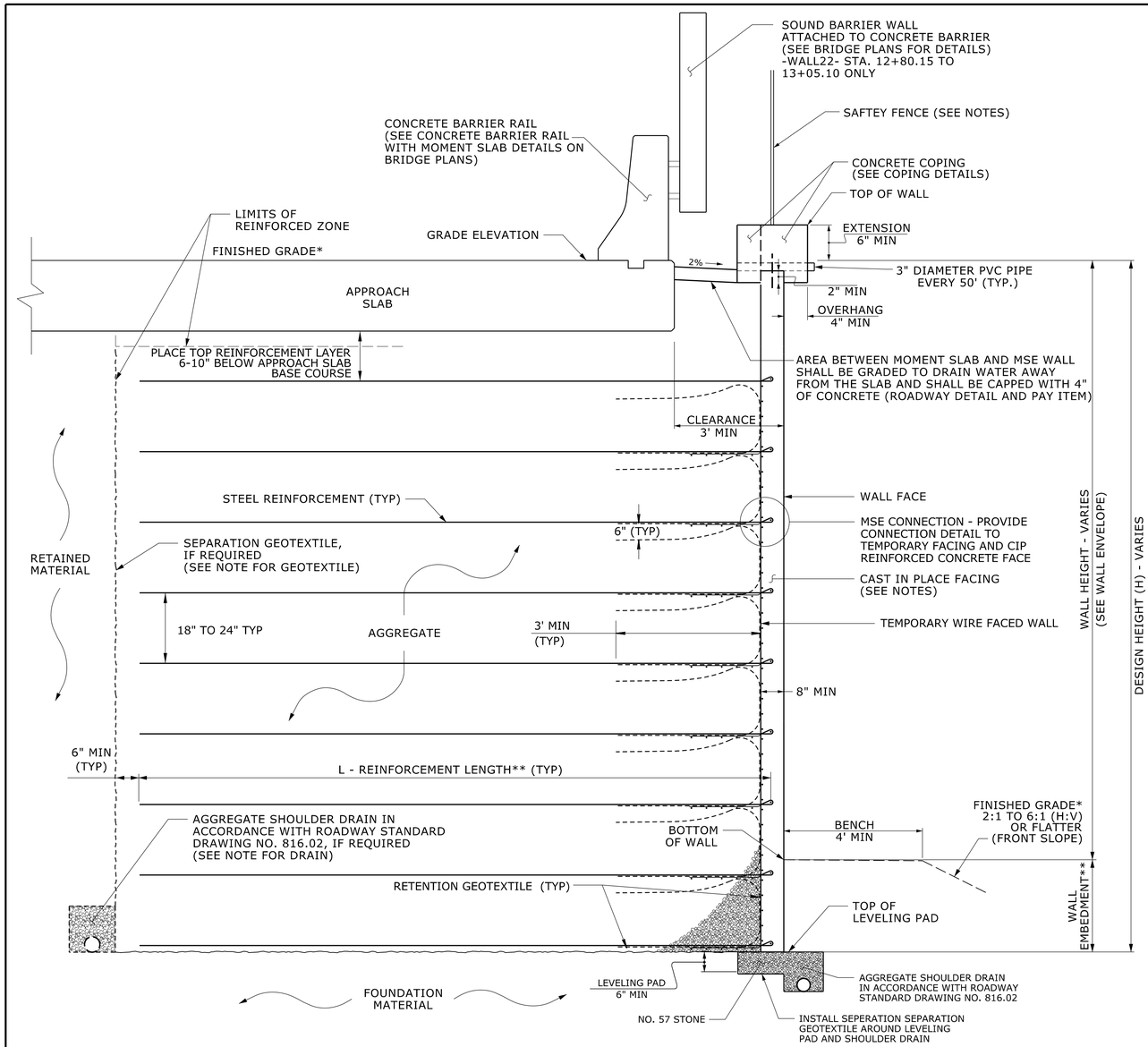
RETAINING WALL NO. 22 CIP MECHANICALLY STABILIZED EARTH WALL FOR BRIDGE ABUTMENT TYPICAL SECTION AND NOTES

REVISIONS

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

SHEET NO. W-53

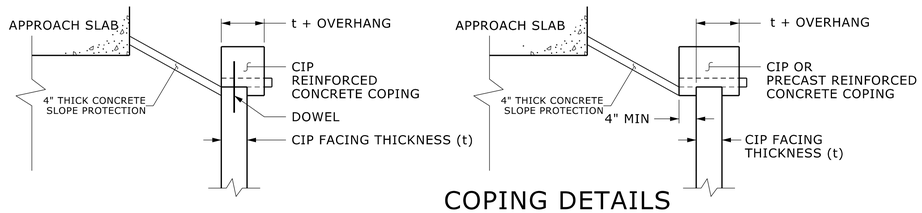
03-NOV-2026 15:04
C:\Users\emcintosh\ECS\ECS Southeast, LLP - Documents\Desktop\ECS Corporate Services\3I Ashevile - 3I-4489 I-2513AC 0%2 Structures\CADD_GEOTECH\Plan Prof\12513AC_Typical_sheets_EM.dgn
ECS\emcintosh



CIP MSE WALL AND APPROACH SLAB

*SEE ROADWAY PLANS FOR FINISHED GRADE DETAILS.
**SEE MSE RETAINING WALLS PROVISION AND IF APPLICABLE, MSE WALL NOTES FOR WALL EMBEDMENT AND REINFORCEMENT LENGTH REQUIREMENTS.

-WALL22- STA. 10+60.08 TO STA. 11+10.56
-WALL22- STA. 12+80.15 TO STA. 13+05.10
W/ ATTACHED SOUND BARRIER WALL TO
CONCRETE BARRIER RAIL



COPING DETAILS

AT THE CONTRACTOR'S OPTION, CONNECT COPING TO FACING
WITH DOWELS OR EXTEND COPING DOWN BACK OF CIP FACING.

GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 018979 ENGINEER Mohammed A. Mulla

Mohammed A. Mulla 11/9/2026
SIGNATURE DATE

ENGINEER

SIGNATURE DATE

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

PROJECT NO.: I-2513AC
BUNCOMBE COUNTY
STATION: +/- -L- 82+64 TO -L- 81+96
SHEET 4 OF 4 WALL ID RW-22

PREPARED BY: E. A. MCINTOSH, P.E.	DATE: 11/26
REVIEWED BY: M. A. MULLA, P.E.	DATE: 11/26

Prepared in the Office of:

ECS SOUTHEAST, LLC
1812 CENTER PARK DRIVE, SUITE D
CHARLOTTE, NC 28217
(704) 525-5152 [PHONE]
(704) 357-0023 [FAX]
NC REGISTERED
ENGINEERING
FIRM # F-1519

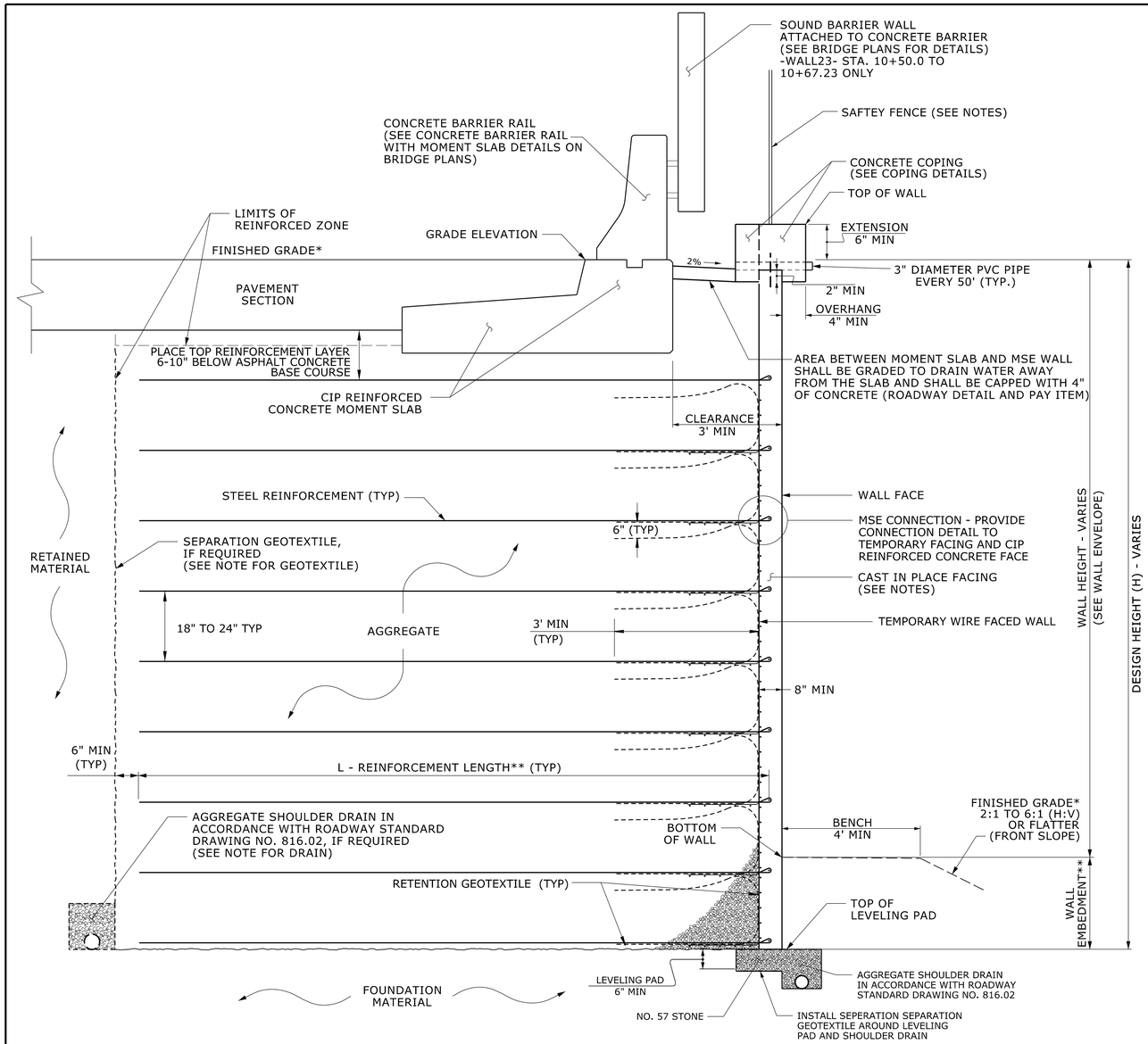
NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

GEOTECHNICAL
ENGINEERING UNIT

RETAINING WALL NO. 22
CIP MECHANICALLY STABILIZED EARTH WALL WITH APPROACH SLAB
TYPICAL SECTION

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	
1			3			W-54
2			4			

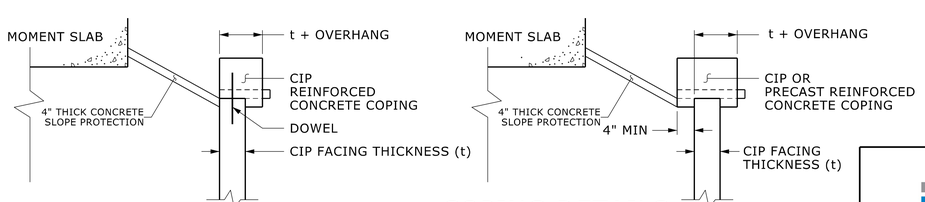
09-NOV-2026 15:07
C:\Users\emcintosh\OneDrive - ECS Corporate Services\31 Asheville - 31-4489 I-2513AC 1%
EMcintosh@ECSLIMITED.COM Structures\CADD\GEOTECH\PlanProf\I2513AC_Typical_sheets_EM.dgn



CIP MSE WALL AND MOMENT SLAB

*SEE ROADWAY PLANS FOR FINISHED GRADE DETAILS.
**SEE MSE RETAINING WALLS PROVISION AND IF APPLICABLE, MSE WALL NOTES FOR WALL EMBEDMENT AND REINFORCEMENT LENGTH REQUIREMENTS.

-WALL23- STA. 13+02.77 TO STA. 14+01.73
-WALL23- STA. 10+50.0 TO STA. 10+67.23
W/ ATTACHED SOUND BARRIER WALL TO
CONCRETE BARRIER RAIL



COPING DETAILS

AT THE CONTRACTOR'S OPTION, CONNECT COPING TO FACING WITH DOWELS OR EXTEND COPING DOWN BACK OF CIP FACING.

NOTES:

FOR CAST-IN PLACE (CIP) MECHANICALLY STABILIZED EARTH (MSE) RETAINING WALLS, SEE CIP MSE RETAINING WALLS PROVISION.

FOR SINGLE FACED PRECAST CONCRETE BARRIER, SEE ROADWAY PLANS AND SECTION 857 OF THE STANDARD SPECIFICATIONS.

DO NOT USE FINE AGGREGATE IN REINFORCEMENT ZONE FOR MSE WALL NO. 23.

REINFORCEMENT FOR CIP MSE WALL SHALL BE STEEL, OTHER REINFORCEMENT TYPES ARE NOT PERMITTED ON THIS WALL.

A SAFETY FENCE IS REQUIRED FROM -WALL23- STA 10+50.00 TO 11+11.07 AND -WALL23- STA 12+80.14 TO 14+01.73. SEE ROADWAY STANDARD 866.06 (ROADWAY DETAIL AND PAY ITEM).

A CONCRETE BARRIER RAIL WITH MOMENT SLAB IS REQUIRED ABOVE RETRAINING WALL NO. 23. SEE PLANS FOR CONCRETE BARRIER RAIL WITH MOMENT SLAB DETAILS.

CIP REINFORCED CONCRETE COPING IS REQUIRED FOR RETAINING WALL NO. 23.

A SEPARATION GEOTEXTILE IS REQUIRED AT THE BACK OF THE REINFORCED ZONE FOR RETAINING WALL NO. 23.

A DRAIN IS REQUIRED FOR RETAINING WALL NO. 23.

BEFORE BEGINNING MSE WALL DESIGN FOR RETAINING WALL NO. 23, 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 NO. 23 FOR THE FOLLOWING:
1) H = WALL HEIGHT + WALL EMBEDMENT
2) DESIGN LIFE = 100 YEARS
3) MAXIMUM FACTORED VERTICAL PRESSURE ON FOUNDATION MATERIAL = 10,900 PSF
4) MINIMUM REINFORCEMENT LENGTH (L) = 0.7 H OR 6 FT., WHICHEVER IS LONGER UNLESS NOTED OTHERWISE
5) MINIMUM REINFORCEMENT LENGTH (L) = 0.9 H FOR -WALL23- STA. 10+50.0 TO 11+45.0
6) MINIMUM EMBEDMENT DEPTH = H/7 OR 2 FT., WHICHEVER IS GREATER
7) REINFORCED ZONE AGGREGATE PARAMETERS:

AGGREGATE TYPE*	UNIT WEIGHT (γ) PCF	FRICTION ANGLE (ϕ) DEGREES	COHESION (c) PSF
COARSE	110	38	0
*SEE MSE RETAINING WALLS PROVISION FOR COARSE AGGREGATE MATERIAL REQUIREMENTS.			

8) IN-SITU ASSUMED MATERIAL PARAMETERS:

MATERIAL TYPE	UNIT WEIGHT (γ) PCF	FRICTION ANGLE (ϕ) DEGREES	COHESION (c) PSF
RETAINED	120	30	0
FOUNDATION	120	30	0

DESIGN RETAINING WALL NO. 23 FOR A LIVE LOAD (TRAFFIC) SURCHARGE.

DESIGN RETAINING WALL NO. 23 TO ACCOUNT FOR WIND EXPOSURE CATEGORY B (WIND PRESSURE = 27 PSF) WHERE SOUND BARRIER WALL IS ATTACHED TO THE CONCRETE BARRIER RAIL (-WALL23- STA. 10+50.0 TO 11+45.0).

FOUNDATIONS FOR SIGNS, LIGHTING or SIGNALS WILL BE LOCATED BEHIND RETAINING WALL NO. 23 AND MAY INTERFERE WITH REINFORCEMENT. BEFORE BEGINNING MSE WALL CONSTRUCTION, SUBMIT PROPOSED CONSTRUCTION METHODS FOR THESE FOUNDATIONS FOR APPROVAL.

EXISTING OR FUTURE OBSTRUCTIONS SUCH AS FOUNDATIONS, GUARDRAIL, FENCE OR HANDRAIL POSTS, PAVEMENTS, PIPES, INLETS OR UTILITIES MAY INTERFERE WITH REINFORCEMENT FOR RETAINING WALL NO. 23.

DO NOT PLACE LEVELING PAD CONCRETE, AGGREGATE OR REINFORCEMENT FOR RETAINING WALL NO. 23 UNTIL EXCAVATION DIMENSIONS AND FOUNDATION MATERIAL ARE APPROVED.

GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 018979 ENGINEER Mohammed A. Mulla

Mohammed A. Mulla 11/9/2026
SIGNATURE DATE

ENGINEER

SIGNATURE DATE

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

PROJECT NO.: I-2513AC
BUNCOMBE COUNTY
STATION: +/- -L- 84+54 TO -L- 85+50
SHEET 2 OF 4 WALL ID RW-23

PREPARED BY: E. A. MCINTOSH, P.E.	DATE: 11/26
REVIEWED BY: M. A. MULLA, P.E.	DATE: 11/26

Prepared in the Office of:
ECS SOUTHEAST, LLC
1812 CENTER PARK DRIVE, SUITE D
CHARLOTTE, NC 28217
(704) 525-5152 [PHONE]
(704) 357-0023 [FAX]
NC REGISTERED
ENGINEERING
FIRM # F-1519

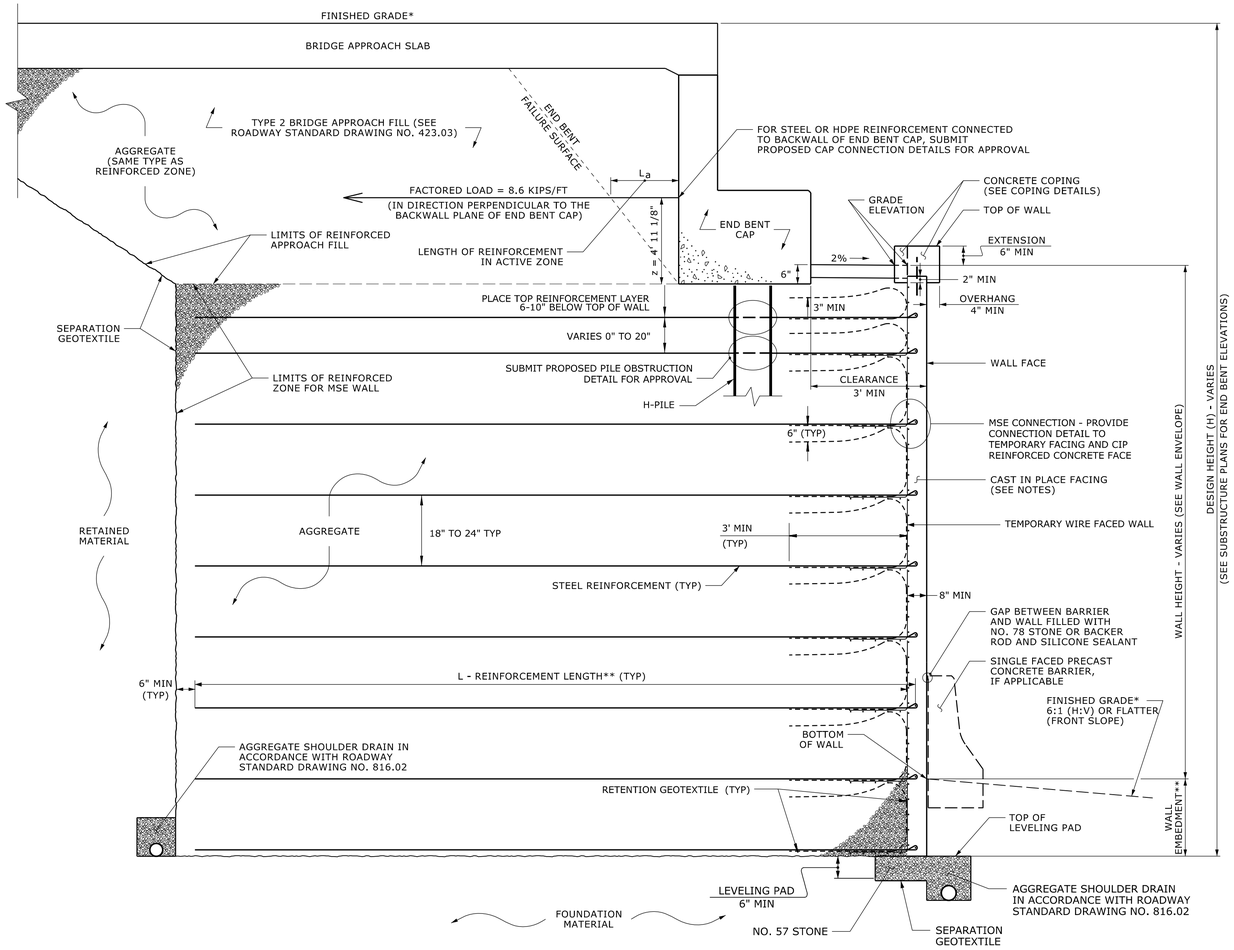
NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

GEOTECHNICAL
ENGINEERING UNIT

RETAINING WALL NO. 23
CIP MECHANICALLY STABILIZED EARTH WALL WITH MOMENT SLAB TYPICAL SECTION AND NOTES

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	
1			3			W-56
2			4			

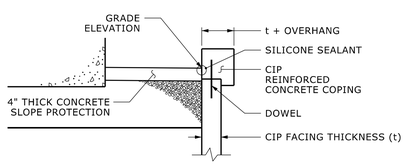
09-NOV-2026 14:42
C:\Users\emcintosh\OneDrive - ECS Corporate Services\31 Asheville - 31-4489 I-2513AC R\Structures\CADD_GEOTECH\PlanProf\I2513AC_Typical_sheets_EM.dgn
EMcintosh
ALL ELEMENTS ON THIS SHEET ARE IN METRIC UNITS

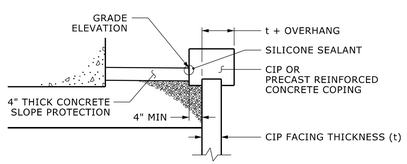


CIP MSE ABUTMENT WALL - TYPICAL SECTION

*SEE ROADWAY PLANS FOR FINISHED GRADE DETAILS.
**SEE MSE RETAINING WALLS PROVISION AND IF APPLICABLE, MSE WALL NOTES FOR WALL EMBEDMENT AND REINFORCEMENT LENGTH REQUIREMENTS.

-WALL23- STA. 11+19.71 TO STA. 12+71.57





COPING DETAILS FOR MSE ABUTMENT WALL

AT THE CONTRACTOR'S OPTION, CONNECT COPING TO FACING WITH DOWELS OR EXTEND COPING DOWN BACK OF CIP FACING.

NOTES:

FOR TYPE 2 BRIDGE APPROACH FILL, SEE BRIDGE APPROACH FILLS PROVISION AND ROADWAY STANDARD DRAWING NO. 423.03.

DESIGN REINFORCEMENT CONNECTED TO END BENT CAPS FOR FACTORED LOAD AND LENGTH OR REINFORCEMENT IN ACTIVE ZONE (L) SHOWN. CAST REINFORCEMENT OR CONNECTORS INTO CAP BACKWALL FOR END BENT NO. 2. MAINTAIN A CLEARANCE OF AT LEAST 3 INCHES BETWEEN REINFORCEMENT OR CONNECTOR AND REINFORCING STEEL IN CAP.

FOUNDATION FOR END BENT NO. 2 WILL INTERFERE WITH REINFORCEMENT FOR RETAINING WALL NO. 23. SEE "FOUNDATION LAYOUT" SHEET FOR FOUNDATION LOCATIONS.

"TEMPORARY SHORING" IS BE REQUIRED FOR RETAINING WALL NO. 23 IN ACCORDANCE WITH THE TEMPORARY SHORING PROVISION. SEE TRAFFIC CONTROL PLANS.

CLOSE COORDINATION WITH STRUCTURE PLANS IS REQUIRED. SEE BRIDGE PLANS FOR ADDITIONAL DETAILS FOR REQUIRED WALL AESTHETICS AND GEOMETRIC TIE-IN BETWEEN MSE WALL AND BRIDGE END BENT CAP. THE CONTRACTOR SHALL SUBMIT DETAILS FOR CONSTRUCTING THE MSE WALL, CAST IN PLACE FACING, AND PRECAST OR CAST IN PLACE COPING THAT ACHIEVE THE DESIRED AESTHETIC RESULT AS DEPICTED IN THE STRUCTURE PLAN DETAILS. THESE DETAILS SHALL BE APPROVED BY THE ENGINNER BEFORE BEGINNING CONSTRUCTION OF THE BRIDGE OR WALLS. THE COST FOR ACHIEVING THE PLAN INDICATED GEOMETRIC AESTHETIC RESULT, INCLUDING CUSTOM COPING, TOOLED JOINT LINES, AND ALL ASSOCIATED LABOR AND MATERIALS, SHALL BE INCIDENTAL TO THE COST OF "MSE RETAINING WALL NO. 23".

CAST IN PLACE FACING AND CORNER COPINGS AT THE BRIDGE END BENT CAPS SHALL NOT BE INSTALLED AFTER A MINIMUM PERIOD OF 30 DAYS SINCE PLACING THE LAST BRIDGE APPROACH FILL OR SETTLEMENT HAS REACHED 90% OF MAXIMUM ANTICIPATED LONG TERM SETTLEMENT.

THE BRIDGE END BENT SHALL BE BUILT IN ITS ENTIRETY BEFORE INSTALLING THE CAST IN PLACE FACING.

THE CIP FACING SHALL BE INSTALLED CONTINOUSLY BETWEEN LEFT AND RIGHT LANE BRIDGES WITH NO STAGED CONSTRUCTION JOINT.

THE REINFORCED ZONE OF RETAINING WALL NO. 23 WILL INTERFERE WITH BRIDGE APPROACH FILL FOR BRIDGE NO. 100898 AND 100899. SEE APPROACH FILL WITH ADJACENT MSE WALL DETAIL AND STRUCTURE PLANS.

APPROACH FILL WITH ADJACENT MSE WALL DETAIL

USE WHERE MSE WALL REINFORCED ZONE AND APPROACH FILL LIMITS OVERLAP. OUTSIDE OF MSE WALL REINFORCED ZONE LIMITS, SEE ROADWAY STANDARD DRAWING NO. 423.01.

GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 018979 ENGINEER Mohammed A. Mulla

Mohammed A. Mulla 11/9/2026
SIGNATURE DATE

ENGINEER

SIGNATURE DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PROJECT NO.: I-2513AC
BUNCOMBE COUNTY
STATION: +/- -L- 84+54 TO -L- 85+50
SHEET 3 OF 4 WALL ID RW-23

PREPARED BY: E. A. MCINTOSH, P.E.	DATE: 11/26
REVIEWED BY: M. A. MULLA, P.E.	DATE: 11/26

Prepared in the Office of:
ECS SOUTHEAST, LLC
1812 CENTER PARK DRIVE, SUITE D
CHARLOTTE, NC 28217
(704) 525-5152 [PHONE]
(704) 357-0023 [FAX]
NC REGISTERED ENGINEERING FIRM # F-1519

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

GEOTECHNICAL ENGINEERING UNIT

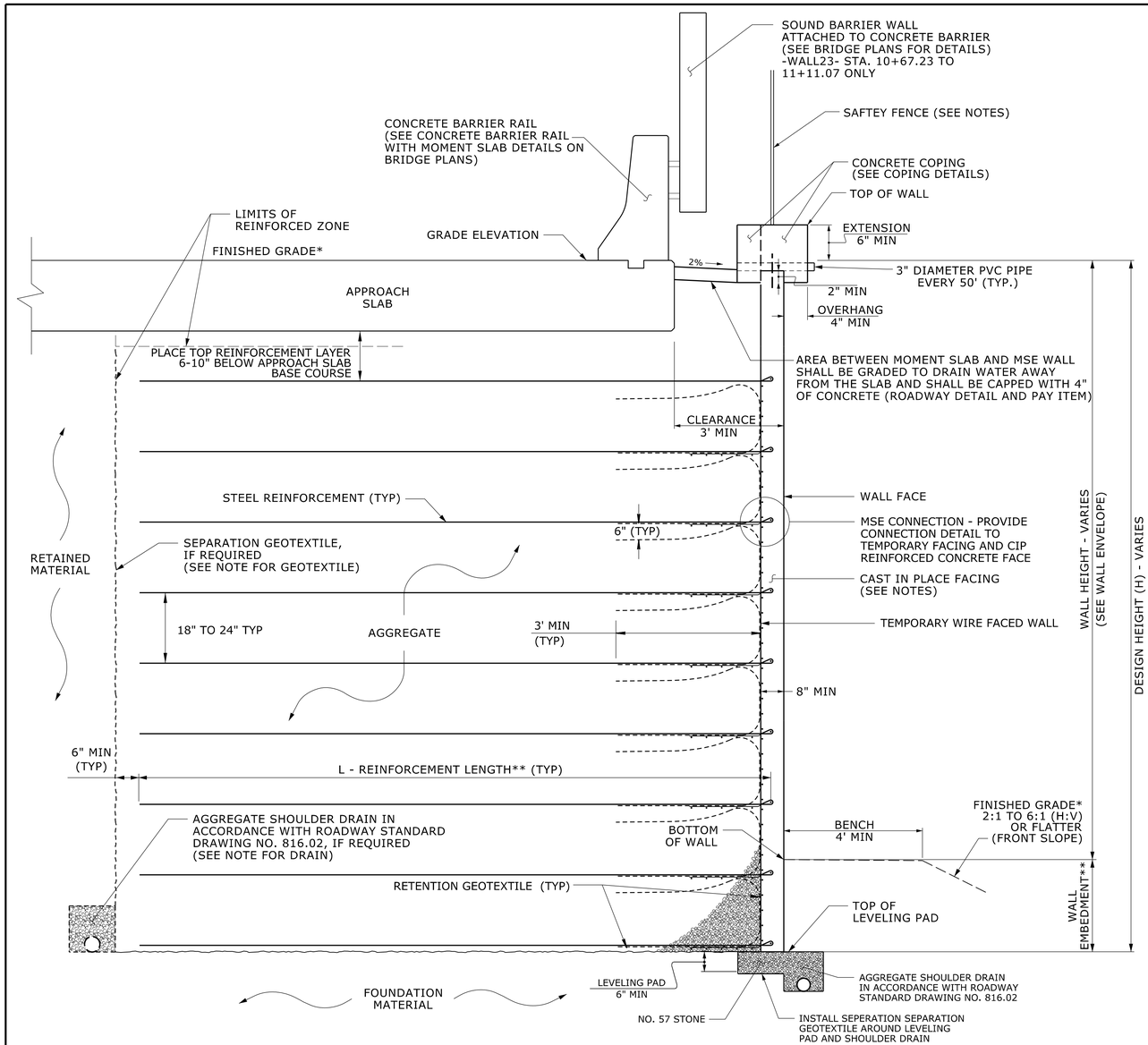
RETAINING WALL NO. 23 CIP MECHANICALLY STABILIZED EARTH WALL FOR BRIDGE ABUTMENT TYPICAL SECTION AND NOTES

REVISIONS

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

SHEET NO. W-57

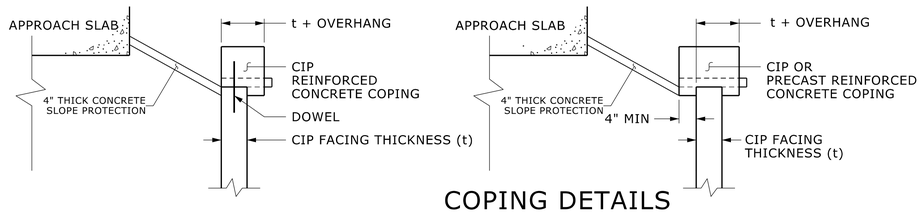
03-NOV-2026 14:44
C:\Users\emcintosh\Desktop\ECS Corporate Services\3I Ashevile - 3I-4489 I-2513AC 0%2 Structures\CADD_GEOTECH\Plan Prof\12513AC_Typical sheets_EM.dgn
ECS SOUTHEAST, LLP



CIP MSE WALL AND APPROACH SLAB

*SEE ROADWAY PLANS FOR FINISHED GRADE DETAILS.
**SEE MSE RETAINING WALLS PROVISION AND IF APPLICABLE, MSE WALL NOTES FOR WALL EMBEDMENT AND REINFORCEMENT LENGTH REQUIREMENTS.

-WALL23- STA. 12+80.14 TO STA. 13+02.77
-WALL23- STA. 10+67.23 TO STA. 11+11.07
W/ ATTACHED SOUND BARRIER WALL TO
CONCRETE BARRIER RAIL



COPING DETAILS

AT THE CONTRACTOR'S OPTION, CONNECT COPING TO FACING WITH DOWELS OR EXTEND COPING DOWN BACK OF CIP FACING.

GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 018979 ENGINEER Mohammed A. Mulla

Mohammed A. Mulla 11/9/2026
SIGNATURE DATE

ENGINEER

SIGNATURE DATE

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

PROJECT NO.: I-2513AC
BUNCOMBE COUNTY
STATION: +/- -L- 84+54 TO -L- 85+50
SHEET 4 OF 4 WALL ID RW-23

PREPARED BY: E. A. MCINTOSH, P.E.	DATE: 11/26
REVIEWED BY: M. A. MULLA, P.E.	DATE: 11/26

Prepared in the Office of:
ECS SOUTHEAST, LLC
1812 CENTER PARK DRIVE, SUITE D
CHARLOTTE, NC 28217
(704) 525-5152 [PHONE]
(704) 357-0023 [FAX]
NC REGISTERED
ENGINEERING
FIRM # F-1519

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

GEOTECHNICAL
ENGINEERING UNIT

RETAINING WALL NO. 23
CIP MECHANICALLY STABILIZED EARTH WALL WITH APPROACH SLAB
TYPICAL SECTION

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	
1			3			W-58
2			4			

09-NOV-2026 14:46
C:\Users\emcintosh\OneDrive - ECS Corporate Services\31 Asheville - 31-4489 I-2513AC R/W Structures\CADD_GEOTECH\PlanProf\I2513AC_Typical_sheets_EM.dgn
EMcintosh
ECS SOUTHEAST, LLP