STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

JOSH STEIN
GOVERNOR

DANIEL H. JOHNSON
SECRETARY

November 04, 2026

Addendum No. 2
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 Roadway plans.

Sheet No.	Revision
6	Revised size of pipe from structure 6006 to structure 6064 and to show the addition of PUE on Parcel 28
3B-2	Revised Summary of 4" Shoulder Drains
3D-10, 3D-11, 3D-15, 3D-27, 3D-29, 3D-30	Drainage summary revised to reflect quantity revisions 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 Transportation Management plans.

Sheet No.	Revision
TMP-6, TMP-7	Sealed drainage system notes have been added in the vicinity of -Y2-

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

The following revisions have been made to the Utility by Others plans.

Sheet No.	Revision
UO-4, UO-5	Revised to show addition of PUE and adjusted relocated powerline

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

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

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

Sheet No.	Revision
S06-4, S06-26, S06-27, S06-55	Notes and Bill of Material revised to remove references to Electrical Conduit System for Lighting in Structure pay items and Special Provisions and refer to the Lighting pay item and Special Provisions.
S8-01, S8-05	Incorrect references to the replaced Bridge No. have been revised to the correct Bridge No.

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

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

Sheet No.	Revision
W-51 thru W-68	Titles, details and callouts have been revised to show Cast In Place (CIP) wall face instead of Precast Panels

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. 2 Dated 11-04-2026".
G-17	The Project Special Provision entitled **SPECIALTY ITEMS** has been revised to reflect the quantity deletion shown below
GT-6.1 thru GT-6.2	The Geotechnical Unit Project Special Provision entitled **THERMAL PROFILE LOGGING** has been revised.
GT-11.1 thru GT-11.18	The Geotechnical Unit Project Special Provision entitled **DRILLED PIERS** has been revised
HYD-1	Table of Contents revised to reflect change shown below
HYD-5.1 thru HYD-5.9	The Hydraulics Unit Project Special Provision entitled **SEALED STORM DRAINAGE SYSTEM WITHIN WALLED ROADWAY SECTIONS** has been revised
HYD-6.1 thru HYD-6.2	The Hydraulics Unit Project Special Provision entitled **SPECIAL DRAINAGE STRUCTURES** has been deleted and The Hydraulics Unit Project Special Provision entitled **TRAFFIC BEARING CONTRACTOR DESIGNED MASONRY DRAINAGE STRUCTURES** has been added.
ST-1, ST-2, ST-71 thru ST-86, ST-87 thru ST-89 (deleted)	The Structure Unit Project Special Provision has been revised. **ELECTRICAL CONDUIT SYSTEM FOR LIGHTING** has been deleted.

Please void the above listed existing pages in your proposal and staple the revised pages thereto. Delete existing pages ST-87 thru ST-89 from your proposal.

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

Item	Description	Old Quantity	New Quantity
0006-0022000000-E 225	UNCLASSIFIED EXCAVATION	807,290 CY	794,779 CY
0073-0973100000-E 330	15" WELDED STEEL PIPE, 0.375" THICK, GRADE B IN SOIL	56 LF	DELETED
0075-0973100000-E 330	42" WELDED STEEL PIPE, 0.625" THICK, GRADE B IN SOIL	95 LF	190 LF
0080-0973300000-E 330	42" WELDED STEEL PIPE, 0.625" THICK, GRADE B NOT IN SOIL	95 LF	190 LF
0084-0986000000-E SP	15" SEALED POLYPROPYLENE PIPE	56 LF	388 LF
0101-1000000000-E 462	6” SLOPE PROTECTION	310 SY	DELETE
0127-2099000000-E 816	SHOULDER DRAIN	31,770 LF	24,040 LF
0128-2110000000-E 816	4" SHOULDER DRAIN PIPE	31,770 LF	24,040 LF
0136-2286000000-N 840	MASONRY DRAINAGE STRUCTURES	556 EA	557 EA
0167-2591000000-E 848	4" CONCRETE SIDEWALK	9,330 SY	1,610 SY
0582- 8892000000-E SP	SOUND ABSORPTIVE BARRIER WALL NO NW68	Item name revised only	N/A
0645-3575000000-E SP	ELECTRICAL CONDUIT SYSTEM FOR LIGHTING AT STA 22+70.15 -Y2-	LUMP SUM	DELETED
659- 0449000000-E 310	15" RC PIPE CULVERTS, CLASS V	NEW ITEM	108 LF
660- 0992000000-E SP	48” SEALED XP ELBOWS	NEW ITEM	2 EA

Item	Description	Old Quantity	New Quantity
661- 1924000000-N 725	FIELD LABORATORY RENTAL, PORT CEM CONC PAVEMENT	NEW ITEM	LUMP SUM

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.2 DATED 11-04-2026

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

THERMAL PROFILE LOGGING:

(11-17-26)

Description

Perform integrity testing using Thermal Profile Logging (TPL) by measuring the heat generated by curing cement (hydration energy) to evaluate the integrity of drilled piers in accordance with ASTM D7949, Method B. Use a prequalified Crosshole Sonic Logging (CSL) Consultant to perform TPL testing and provide TPL reports. Provide TPL reports sealed by an engineer licensed in the State of North Carolina approved as a Project Engineer (key person) for the same CSL Consultant.

Materials

Supply all materials and equipment required to perform TPL testing in accordance with the ASTM D7949, Method B. Attach embedded thermal sensors to the reinforcing cage before drilled pier construction in accordance with ASTM D7949, Method B.

Testing

Perform TPL testing in accordance with ASTM D7949, Method B. Begin recording temperature data to the nearest one-degree Fahrenheit immediately after completing concrete placement. Record temperatures using an hour or smaller interval of time. Record temperatures using an hour or smaller interval of time. Continue recording temperatures until at least 24 hours after the peak temperature has passed. If a temperature limit is exceeded, continue monitoring until all temperature values fall below the specified limit, even if the 24-hour requirement has been met.

Reports

Submit each TPL report within 7 working days of completing TPL testing to the Engineer for review and approval. If both TPL testing and CSL testing are conducted on the same drilled pier, provide one report for both tests with a comparison of the results. Include all items required for CSL reports in accordance with Subarticle 411-5(A)(2) of the *Standard Specification* that are applicable to TPL testing and the following TPL testing specific items in the TPL reports:

(A) TPL Results

(i) Graphical displays of all temperatures versus depth including date and time for all readings

(B) Summary/Conclusions

(i) The overall average temperature

(ii) Summary of observed effective radius reduction and local cover

(iii) List of suspected anomalies with corresponding locations (thermal sensor(s) and depth range)

(C) Attachments

(i) Embedded sensor locations, elevations, lengths and identifications

(ii) Description of the data recording unit and software version information

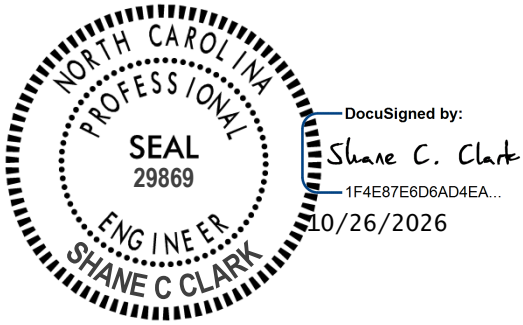
(iii) PDF copy of all TPL data

Measurement and Payment

TPL Testing will be measured and paid in units of each. *TPL Testing* will be measured as one per drilled pier. The contract unit price for *TPL Testing* will be full compensation for performing TPL testing and providing TPL reports. TPL thermal sensors and data loggers associated with TPL testing will be incidental to the contract unit price for *TPL Testing.*

Payment will be made under:

Pay Item	**Pay Unit**
TPL Testing	Each



DRILLED PIERS:

(11-17-26)

Revise the *Standard Specifications* as follows:

Replace Section 411 with the following:

SECTION 411
DRILLED PIERS

411-1 DESCRIPTION

Construct drilled piers consisting of CIP reinforced concrete cylindrical sections in excavated holes typically stabilized with casings or slurry. Provide permanent casings, standard penetration tests, integrity testing and assistance with the shaft inspection device as noted in the plans. Construct drilled piers with the required resistances and dimensions in accordance with the contract and accepted submittals. Use a prequalified Drilled Pier Contractor to construct drilled piers.

Define "excavation" and "hole" as a drilled pier excavation and "pier" as a drilled pier. Define "permanent casing" as a casing that remains in the excavation and acts as a form for Drilled Pier concrete and "temporary casing" as any casing that is not permanent. Define "rock" as a continuous intact natural material with a standard penetration resistance of 0.1 foot or less per 60 blows or a rock auger penetration rate of less than 2 inches per 5 minutes of drilling at full crowd force or as determined by the Engineer when rock is not encountered as expected based on these criteria. This definition excludes discontinuous loose natural materials such as boulders and man-made materials such as concrete, steel, timber, etc. and is not for measurement and payment purposes. See Article 411-7 for measurement and payment of drilled piers.

411-2 MATERIALS

Refer to Division 10.

Item	Section
Grout, Type 2	1003
Portland Cement Concrete, Class Drilled Pier	1000
Reinforcing Steel	1070

Provide Type 3 material certifications in accordance with Article 106-3 for permanent casings and roller, chair, steel pipe and cap materials. Store steel materials on blocking at least 12 inches 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. Load, transport, unload and store drilled pier materials so materials are kept clean and free of damage.

(A) Steel Casing

Define "casing" as a temporary or permanent casing. If permanent casing is required for an excavation, the largest diameter casing in the hole is the permanent casing. This does not apply to working casings around permanent casings as approved by the Engineer.

Use smooth non-corrugated clean watertight steel casings of ample strength to withstand handling and installation stresses and pressures imposed by concrete, earth, backfill and fluids.

(1) Temporary Casings

Provide temporary casings with a nominal wall thickness of at least 0.375 inch and an outside diameter equal to or larger than the design pier diameter for which temporary casing is used.

(2) Permanent Casings

Use permanent casings with a yield strength of at least 36 ksi and a nominal wall thickness that meets Table 411-1.

TABLE 411-1
MINIMUM PERMANENT CASING WALL THICKNESS

Casing Diameter	Nominal Wall Thickness
< 48"	0.375"
48" - 78"	0.500"
> 78"	0.625"

Provide permanent casings with an outside diameter equal to the design pier diameter for which permanent casing is used unless larger diameter permanent casings are approved by the Engineer.

(B) Slurry

Define "slurry" as bentonite or polymer slurry. Mix bentonite clay or synthetic polymer with water to make bentonite or polymer slurry.

(1) Bentonite Slurry

Provide bentonite slurry that meets Table 411-2.

TABLE 411-2
BENTONITE SLURRY REQUIREMENTS[A]

Property	ANSI/API RP[B] 13B-1	Requirement
Density[C] (Mud Weight)	Section 4 Mud Balance	64.3 - 72.0 pcf
Viscosity	Section 6.2 Marsh Funnel	28 - 50 sec/qt
Sand Content	Section 9	≤ 4 %[D]
		≤ 2 %[E]
pH	Section 11 Glass Electrode pH Meter[F]	8 - 11

A. Slurry temperature of at least 40°F required
B. American National Standards Institute/American Petroleum Institute Recommended Practice
C. Increase density requirements by 2 pcf in saltwater
D. In tanks before pumping slurry into excavations

E. In excavations immediately before placing concrete
F. pH paper is also acceptable for measuring pH

(2) Polymer Slurry

Use polymer slurry products qualified by the Department. Provide polymer slurry with density, viscosity, sand content and pH properties that meet the product requirements. The polymer slurry QPL with the property requirements for each qualified polymer slurry product is available on the Geotechnical Engineering Unit's website.

(C) Rollers and Chairs

Use rollers and chairs that are non-metallic and resistant to corrosion and degradation. Provide rollers with the necessary dimensions to maintain the minimum required concrete cover shown in the plans and center rebar cages within excavations. Use chairs of sufficient strength to support rebar cages in excavations and of the size necessary to raise cages off bottom of holes to maintain the minimum required distance shown in the plans.

(D) Steel Pipes and Caps

Use Schedule 40 black steel pipes for access tubes for crosshole sonic logging (CSL). Provide CSL tubes with an inside diameter of at least 1.5 inches. Use CSL tubes with a round, regular inside diameter free of defects and obstructions, including any pipe joints, in order to permit free, unobstructed passage of probes for CSL testing. Provide watertight CSL tubes free of corrosion with clean internal and external faces to ensure a good bond between concrete and tubes. Fit CSL tubes with watertight plastic caps on the bottom and removable caps on top.

(E) Drilled Pier Concrete

Use drilled pier concrete material meeting the requirements of Section 1000, except as modified below:

(1) Supplementary Cementitious Materials (SCMs)

Add SCMs to reduce peak concrete hydration temperature, improve thermal performance, and mitigate risk of thermal cracking in Drilled Pier Concrete in accordance with Table 411-3. Use any one or combination of the SCMs that satisfies the required minimum dosages below:

(a) ≥ 25% Class F fly ash that meets ASTM C618
(b) ≥ 35% Class C fly ash that meets ASTM C618
(c) ≥ 35% slag cement that meets ASTM C989/C989M
(d) ≥ 5% silica fume that meets ASTM C1240 with ≥ 25% slag cement
(e) ≥ 5% silica fume that meets ASTM C1240 with ≥ 20% Class F fly ash that meets ASTM C618

Use SCMs found on the Department's approved producer/supplier list. Concrete mixtures containing high alkali cements must also utilize the appropriate SCMs and minimum substitution rates provided in Article 1024-1.

(2) Equivalent Cement Content (ECC)

Determine the ECC on a per cubic yard basis with the following formula:

ECC= 1.0(PC) + 0.5(FAF) + 0.8(FAC) + 1.2(SF) + 1.0(SC)

Where:

PC = Portland cement
FAF = Class F fly ash
FAC = Class C fly ash
SF = Silica fume
SC = Slag cement

All units are in pounds per cubic yard.

ECC shall meet the requirements of Table 411-3 unless otherwise supported by a temperature prediction model in accordance with Subarticle 411-2(E)(3)(b).

(3) Thermal Control

(a) Use appropriate thermal control measures to reduce the peak concrete hydration temperature in Drilled Pier Concrete. Methods for controlling concrete temperature may include, but are not limited to, the following:

(i) Selecting constituent materials that minimize the heat generated by concrete hydration.

(ii) Cooling constituent materials to reduce the temperature of concrete in its plastic state.

(iii) Controlling the rate of concrete placement.

(iv) Other methods proposed by the Contractor and approved by the Engineer.

At a minimum, provide thermal control for Drilled Pier Concrete in accordance with Table 411-3.

TABLE 411-3
THERMAL CONTROL REQUIREMENTS FOR DRILLED PIER CONCRETE

D **Drilled Pier Diameter[A] (ft)**	**SCMs Required? (Yes/No)**	**Max ECC (lb/cy)**	**Max Temp with SCMs[C] (°F)**	**Max Temp without SCMs (°F)**	**Temp Prediction Required? (Yes/No)**	**Temp Monitoring Required? (Yes/No)**
$D \leq 5$	No	N/A	185	158	No	No
$5 < D < 6$	Yes	625		N/A	No	Yes
$D \geq 6$	Yes	B		N/A	Yes	Yes

A. Drilled pier diameter is the largest constructed diameter for any portion of a pier.

B. As determined by temperature prediction model

C. For a list of SCM's allowed see Subarticle 411-2(E)(1)

(b) Temperature Prediction

Use the Schmidt Method or numerical thermal modeling as described in *Concrete: Microstructure, Properties, and Materials* by Mehta and Monteiro (2014) or other method approved by the Engineer to predict concrete hydration temperature. Temperature predictions are required for each Drilled Pier Concrete mix design with a different drilled pier condition. Variations in constructed drilled pier diameter or drilled piers with permanent steel casing are considered different drilled pier conditions. Submit temperature prediction results and any planned thermal control measures at least 30 days before beginning Drilled Pier Concrete placement.

(c) Temperature Monitoring

Monitor concrete hydration temperature for the first drilled pier constructed with each Drilled Pier Concrete mix with a different drilled pier condition as described in Subarticle 411-2(E)(3)(b). Measure temperature at the center of the drilled pier diameter using two redundant thermal sensors inserted at least 1.5 × pier diameters below the top of pier and in accordance with ASTM D7949, Method B. Begin recording temperature data to the nearest one-degree Fahrenheit immediately after completing concrete placement. Record temperatures using an hour or smaller interval of time. Continue recording temperatures until at least 24 hours after the peak temperature has passed. If a temperature limit is exceeded, continue monitoring until all temperature values fall below the specified limit, even if the 24-hour requirement has been met. Submit temperature monitoring data within 24 hours after completing monitoring and before placing another drilled pier under the same conditions.

If temperature limits are exceeded during monitoring, submit a revised thermal control plan including but not limited to revised concrete mix designs, lower concrete placement temperature, or other modifications proposed by the contractor for review by the Engineer. Do not place additional drilled piers under the same conditions until the revised thermal control plan has been reviewed by the Engineer. Drilled piers that exceed the temperature limits established in Table 411-3 are considered unacceptable unless the Contractor demonstrates through an engineering analysis that the drilled pier is acceptable to the Engineer.

(d) Concrete Placement Temperature

For drilled piers with constructed diameters of greater than 5 feet, maintain concrete temperature at time of placement between 40°F and 75°F. Placement temperatures up to 85°F may be permitted when supported by temperature prediction or monitoring as specified in Subarticle 411-2(E)(3)(b) and (c). When placement temperatures above 75°F are permitted based on temperature monitoring, continue monitoring subsequent drilled piers until monitoring demonstrates that the maximum temperature specified in Table 411-3 will not be exceeded at the higher placement temperature.

(4) Concrete Slump Loss

Place concrete within the slump requirements listed in Table 1000-1 and maintain a minimum slump of 5 inches throughout the elapsed time. The elapsed time for placing drilled shaft concrete includes the concrete mixing and transit time, the concrete placement time, and the time required to remove any tremies, temporary casings, etc. Include the estimated elapsed time for concrete placement in the drilled shaft installation plan.

For drilled piers with a theoretical concrete volume of 75 cubic yards or more and an estimated elapsed time greater than 2 hours, perform a field slump loss test. Perform the slump loss test in accordance with the procedure posted on the NCDOT Materials and Tests Unit website and demonstrate to the Engineer, before drilled pier concrete placement, that the concrete will maintain a slump of 5 inches or greater for the estimated elapsed time. Place concrete if it's temperature at the time of placement into the drilled pier is no more than 10°F higher than the slump loss test temperature. Use ice or other concrete-cooling ingredients to lower concrete temperature or run additional slump loss tests at the higher temperatures.

411-3 PRECONSTRUCTION REQUIREMENTS

(A) Drilled Pier Construction Plan

Submit the proposed drilled pier construction plan for all drilled piers for acceptance by the Engineer. Provide an electronic copy of this plan at least 30 days before starting drilled pier construction. Do not begin drilled pier construction until a construction plan is accepted by the Engineer. Provide detailed project specific information in the drilled pier construction plan that includes the following:

(1) Overall description and sequence of drilled pier construction;

(2) List and sizes of equipment including cranes, drill rigs, vibratory and downhole hammers, Kelly bars, augers, core barrels, casings (diameters, thicknesses and lengths), cleanout buckets, air lifts, pumps, slurry equipment, tremies, pump pipes and other equipment;

(3) Procedures for casing installation and temporary casing removal including how telescoping temporary casings will be removed;

(4) If applicable, details of slurry testing and use including intended purpose, product information and additives, manufacturer's recommendations for use, name and contact information for slurry manufacturer's technical representative, mixing and handling procedures and how slurry level will be maintained above the highest piezometric head;

(5) Methods for drilling and cleaning holes including how cores will be removed and drilling spoils and slurry will be handled and disposed of;

(6) Details of CSL tubes, caps and joints including pipe size and how tubes will be attached to reinforcing steel;

(7) Procedures for lifting and setting reinforcing steel including how rebar cages will be supported and centralized;

(8) Procedures for placing concrete including how tremies and pump pipes will be controlled and contaminated concrete will be contained;

(9) Concrete mix design that meets Section 1000;

(10) Approved packaged grout or grout mix design that meets Section 1003;

(11) CSL Consultant including Field and Project Engineer; and

(12) Other information shown in the plans or requested by the Engineer.

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

(B) Preconstruction Meeting

Before starting drilled pier construction, hold a drilled pier preconstruction meeting to discuss the installation, monitoring and inspection of the drilled piers. Schedule this drilled pier preconstruction meeting with the Engineer after the Drilled Pier Contractor mobilizes to the site. If this meeting occurs before all drilled pier submittals have been accepted by the Engineer, additional drilled pier preconstruction meetings may be required before beginning construction of drilled piers without accepted submittals. The Prime Contractor and Drilled Pier Contractor Superintendent shall attend the drilled pier preconstruction meetings.

411-4 CONSTRUCTION METHODS

Do not excavate holes, install piles or allow equipment loads or vibrations within 20 feet of completed piers until 16 hours after drilled pier concrete reaches initial set.

When drilling from a barge, use a fixed template that maintains hole position and alignment during drilled pier construction. Do not use floating templates or templates attached to barges.

Check for correct drilled pier alignment and location before beginning drilling. Check plumbness of Kelly bars before beginning and frequently during drilling.

For drilled piers constructed with slurry or permanent casings, the pier diameter may be 2 inches less than the design pier diameter shown in the plans. For all other drilled piers, construct piers with the minimum required diameters shown in the plans except for portions of drilled piers in rock which may be 2 inches less than the design pier diameter.

Install drilled piers with tip elevations no higher than shown in the plans or approved by the Engineer. Provide piers with the minimum required tip resistance and, when noted in the plans, penetration into rock.

(A) Excavation

Excavate holes with equipment of the sizes required to construct drilled piers. Use equipment and methods accepted in the drilled pier construction plan or approved by the Engineer. Inform the Engineer of any deviations from the accepted plan.

Use drill rigs with sufficient capacity to drill through soil, rock, boulders, timbers, man-made objects and any other materials encountered and drill 20 feet deeper or 20% longer than the maximum drilled pier length shown in the plans, whichever is greater. Drilling below pier tip elevations shown in the plans may be required to attain sufficient resistance.

Do not use blasting to advance drilled pier excavations. Blasting for core removal is only permitted when approved by the Engineer. See Articles 107-11 and 107-12 for protection of public and private property and control of siltation, dust and air and water pollution from blasting, drilling and excavating with down-the-hole hammers. Contain and dispose of drilling spoils and waste concrete in accordance with Section 802 or as directed by the Engineer. Drilling spoils consist of all materials and fluids removed from excavations.

Stabilize excavations with only casings or slurry and casings except, as approved by the Engineer, portions of excavations in rock. Use casings or slurry in rock if unstable material is anticipated or encountered. Stabilize excavations from beginning of drilling through concrete placement. If excavations become unstable, the Engineer may suspend drilling and require a revised drilled pier construction plan. If it becomes necessary to replace a casing during drilling, backfill the excavation, insert a larger casing around the casing to be replaced or stabilize the excavation with slurry before removing the casing.

When noted in the plans, do not dewater drilled pier excavations. Otherwise, if excavations are in rock, dewater excavations to the satisfaction of the Engineer.

(B) Casings

Provide temporary casings to stabilize holes and protect personnel entering excavations. Permanent casings may be required as noted in the plans. Install permanent casings with tip elevations no deeper than shown in the plans or approved by the Engineer. Additional drilled pier length and reinforcing steel may be required if permanent casings are installed below elevations noted in the plans.

Install casings in continuous sections. Overlap telescoping casings at least 24 inches. Remove portions of permanent casings above the ground line or top of piers, whichever is higher, after placing concrete. Do not cut off permanent casings until Drilled Pier concrete attains a compressive strength of at least 3,000 psi.

When using slurry construction without permanent casings, temporary casings at least 10 feet long are required at top of excavations. Maintain top of casings at least 12 inches above the ground line.

(C) Slurry Construction

Unless noted otherwise in the plans, slurry construction or polymer slurry is at the Contractor's option.

Use slurry and additives to stabilize holes in accordance with the manufacturer's recommendations. Provide a technical representative employed by the slurry

manufacturer to assist and guide the Drilled Pier Contractor onsite during the construction of the first drilled pier. If problems are encountered during drilled pier construction, the Engineer may require the technical representative to return to the site.

Provide documentation that mixing water is suitable for slurry. Use slurry equipment that is sufficient for mixing, agitating, circulating and storing slurry. Thoroughly premix slurry with water in tanks before pumping into excavations. Allow bentonite slurry to hydrate at least 24 hours in tanks before use.

Pump slurry into excavations before encountering water. Maintain slurry level at least 5 feet or one pier diameter, whichever is greater, above the highest piezometric head along the drilled pier length. The highest piezometric head is anticipated to be the static water or groundwater elevation. However, the Drilled Pier Contractor is responsible for determining the highest piezometric head for each pier.

Maintain the required slurry properties at all times. Desand or replace slurry as needed to meet the required sand content in tanks before pumping slurry into excavations and in excavations immediately before placing concrete.

(1) Time

Agitate bentonite slurry in holes at least every 4 hours. If this 4-hour time limit is exceeded, the Engineer may require holes to be overreamed at least 1 inch and no more than 3 inches below casings. Overream holes with grooving tools, overreaming buckets or other approved methods.

Construct drilled piers so the maximum time slurry is in contact with uncased portions of holes from drilling through concrete placement does not exceed 36 hours. If this 36 hour time limit is exceeded, the Engineer may require the hole diameter to be enlarged at least 6 inches. If the enlarged hole diameter is greater than the permanent casing diameter, replace casing with a larger permanent casing with an outside diameter equal to the diameter of the enlarged hole.

(2) Slurry Testing

Define a “sample set” as slurry samples collected from mid-height and within 2 feet of the bottom of slurry tanks or holes. Take a sample set from slurry tanks to test slurry before beginning drilling. Do not pump slurry into excavations until both slurry samples from tanks meet the required slurry properties. Take sample sets from excavations to test slurry at least every 4 hours and immediately before placing concrete. Do not place Drilled Pier concrete until both slurry samples from an excavation meet the required slurry properties. If any slurry test results do not meet the requirements, the Engineer may suspend drilling until both samples from a sample set meet the required slurry properties.

Sign, date and submit slurry test reports upon completion of each pier. The Department reserves the right to perform comparison slurry tests at any time.

(3) Disposal

Comply with all Federal, State and local regulations, as well as the project permits and commitments, when disposing of slurry and drilling spoils mixed with slurry.

Contain slurry and drilling spoils and keep out of water at all times.

(D) Cleaning and Inspection

Provide clean holes with level bottoms so elevations within bottom of holes do not vary by more than 12 inches. Remove soft and loose material from bottom of holes using methods accepted in the drilled pier construction plan or approved by the Engineer. When bottom of holes are not hand cleaned, remove sediment from holes with cleanout buckets, air lifts or pumps.

After cleaning is complete, provide all equipment, personnel and assistance required for the Engineer to visually inspect holes from above or by entering excavations. Remove all cleaning and drilling equipment from holes during inspections and do not interfere with inspections.

(1) Tip Resistance

If the Engineer determines that the material below an excavation does not provide the minimum required tip resistance, increase the drilled pier length and lengthen reinforcing steel as directed by the Engineer. One of the following methods may be required to check the conditions and continuity of material below excavations.

(a) Test Hole

If excavations are in rock, drill a 1.5 inch diameter test hole at least 6 feet below bottom of holes to determine the continuity of rock below holes.

(b) Standard Penetration Test

Standard penetration tests (SPT) may be required as noted in the plans. When required, drive a split-barrel sampler 18 inches below bottom of holes or to refusal in accordance with ASTM D1586. Perform SPT in holes at least 12 inches away from casing walls and support drill rods so rods remain vertical and straight. Report the number of blows applied in each 6 inch increment and provide recovered samples to the Engineer. The Engineer will determine the standard penetration resistance required.

(2) Bottom Cleanliness

Holes are clean if at least 50% of bottom of holes has less than 0.5 inch of sediment and no portions of bottom of holes have more than 1.5 inches of sediment. If bottom of holes does not meet this cleanliness criteria, remove sediment from holes until the Engineer determines holes are clean. One or more of the following methods may be required to inspect the bottom cleanliness of holes.

(a) Steel Probe

If drilled pier excavations are not dewatered or as directed by the Engineer, provide a #10 rebar steel probe that is 24 inches long with a flat tip on one end and a non-stretch cable connected to the other end. Provide a cable long enough to lower the steel probe to the bottom of holes for the Engineer to determine the amount of sediment in holes.

(b) Shaft Inspection Device

The Engineer may use the shaft inspection device (SID) as noted in the plans. The Engineer provides the SID and personnel to operate it. Notify the Engineer at least 2 days before finishing holes that will be inspected with the SID.

Assist the Engineer in handling the SID and associated equipment and supporting the SID during inspections. Provide working areas large enough for the SID, associated equipment and SID personnel within reach of the SID cables and clear view of holes being inspected. If necessary, provide a secure location to store the SID and associated equipment onsite overnight.

Approximately one hour is required to inspect a hole with the SID after the SID and associated equipment are set up. The Engineer will use the SID to measure the amount of sediment at 5 locations around the bottom of holes.

(E) Reinforcing Steel and Concrete

Assemble rebar cages consisting of bar and spiral reinforcing steel shown in the plans. Securely cross tie reinforcing steel at each intersection with double wire. Attach a chair under each reinforcing bar and rollers near the top and bottom of rebar cages and every 10 feet along cages in between. The number of rollers required at each location along rebar cages is one roller per foot of design pier diameter with at least 4 rollers per location. Space rollers equally around rebar cages at each location. Attach rollers so rollers are supported across 2 adjacent reinforcing bars and will freely rotate when rebar cages are lowered into excavations.

If CSL tubes are required, securely attach CSL tubes to spiral reinforcing steel on the inside of rebar cages with at least 3 inches of clearance to vertical reinforcing bars. Extend CSL tubes from 6 inches above pier tip elevations to at least 2 feet above the ground line or top of permanent casings, whichever is greater. The number of CSL tubes required for each drilled pier is one tube per foot of design pier diameter with at least 4 tubes per pier. Space CSL tubes equally around rebar cages so distances between tubes measured around spiral reinforcing steel are uniform. Install CSL tubes as straight and parallel to each other as possible. Fit caps on top and bottom of CSL tubes.

After the Engineer determines that the material below excavations provides the minimum required tip resistance and holes are clean, place rebar cages and then concrete in excavations. Do not rack or distort rebar cages and CSL tubes when lifting and handling cages. Set rebar cages directly on bottom of holes or, as approved by the Engineer, hang cages from permanent casings. When hanging rebar cages, leave devices supporting cages in place until Drilled Pier concrete attains a compressive strength of at least 3,000 psi.

Do not delay placing cages or concrete unless excavations are cased to rock or otherwise approved. If delays occur, the Engineer may require removal of rebar cages to reinspect bottom cleanliness of holes. If bottom of holes does not meet the cleanliness criteria in

Subarticle 411-4(D)(2), remove sediment from holes until the Engineer determines holes are clean before resetting rebar cages.

After placing rebar cages with CSL tubes, remove top caps, fill tubes with clean water and reinstall caps before placing concrete. Check for correct cage position before placing concrete and keep rebar cages plumb during concrete placement. Maintain cage position so rebar cages do not move vertically more than 6 inches and columns or footings have the minimum required concrete cover shown in the plans.

Remove all temporary casings during concrete placement. Do not twist, move or otherwise disturb temporary casings until the concrete depth inside casings is at least 10 feet or half the head, whichever is greater, above the bottom of casing being disturbed. Define "head" as the difference between the highest piezometric head along the drilled pier length and the static water elevation inside the excavation.

When removing temporary casings, maintain the required concrete depth above the bottom of casing being removed except when the concrete level is at or above top of piers. Sustain sufficient concrete depths to overcome pressures imposed by earth, backfill and fluids. As temporary casings are withdrawn, ensure fluids trapped behind casings is displaced upward and discharged out of excavations without contaminating or displacing concrete.

Pour concrete in excavations to form uniform jointless monolithic drilled piers. Do not trap soil, air, fluids or other contaminants in concrete. Remove contaminated concrete from top of piers at time of concrete placement.

Inform the Engineer of the volume of concrete placed for each pier. For piers constructed with slurry or as directed by the Engineer, record a graphical plot of depth versus theoretical and actual concrete volumes.

Dry or wet placement of concrete is at the Contractor's option for piers constructed with only casings if the water inflow rate into excavations is less than 6 inches per half hour after removing any pumps from holes. Wet placement of concrete is required for all other drilled pier construction.

(1) Dry Placement

If holes are filling with water for dry placement of concrete, dewater excavations as much as possible before placing concrete. For drilled piers less than 80 feet long, pour concrete down the center of excavations so concrete does not hit reinforcing steel or excavation sidewalls. For piers longer than 80 feet, place concrete with a tremie or pump pipe down the center of excavations so length of free fall is less than 80 feet.

(2) Wet Placement

For wet placement of concrete, maintain static water or slurry levels in holes before placing concrete. Place concrete through steel tremies or pump pipes. Use tremies with watertight joints and a diameter of at least 10 inches. Pump concrete in accordance with Article 420-5. Use approved devices to prevent contaminating concrete when tremies or pump pipes are initially placed in excavations. Keep

tremies or pump pipes embedded into concrete at least 5 feet at all times except when the concrete is initially placed.

When the concrete level reaches the static water elevation inside the excavation, dry placement of concrete is permitted. Before changing to dry placement, pump water or slurry out of holes and remove contaminated concrete from the exposed concrete surface.

411-5 INTEGRITY TESTING

Define "integrity testing" as crosshole sonic logging (CSL) and thermal profile logging (TPL). Integrity testing shall be performed as noted in the plans or as required by the Engineer. Perform TPL testing if required in the contract. The Engineer will determine how many and which drilled piers require integrity testing. For CSL testing, do not test piers until Drilled Pier concrete cures for at least 7 days and attains a compressive strength of at least 3,000 psi.

(A) Crosshole Sonic Logging

If CSL testing is required, use a prequalified CSL Consultant to perform CSL testing and provide CSL reports. Use a CSL Operator approved as a Field Engineer (key person) for the CSL Consultant. Provide CSL reports sealed by an engineer licensed in the State of North Carolina approved as a Project Engineer (key person) for the same CSL Consultant.

(1) CSL Testing

Perform CSL testing in accordance with ASTM D6760. If probes for CSL testing will not pass through to the bottom of CSL tubes, the Engineer may require coring to replace inaccessible tubes. Do not begin coring until core hole size and locations are approved by the Engineer. Core at least 1.5 inches diameter holes the full length of piers. Upon completion of coring, fill holes with clean water and cover to keep out debris. Perform CSL testing in core holes instead of inaccessible tubes.

For piers with 4 or 5 CSL tubes, test all tube pairs. For piers with 6 or more CSL tubes, test all adjacent tube pairs around spiral reinforcing steel and at least 50% of remaining tube pairs selected by the Engineer. Record CSL data at depth intervals of 2.5 inches or less from the bottom of CSL tubes to top of piers.

(2) CSL Reports

Submit each CSL report within 7 days of completing CSL testing. Include the following in CSL reports:

(a) Title Sheet

(i) Department's TIP number and WBS element number

(ii) Project description

(iii) County

(iv) Bridge station number

(v) Pier location

(vi) Personnel

(vii) Report date

(b) Introduction

(c) Site and Subsurface Conditions (including water table elevation)

(d) Pier Details

(i) Pier and casing diameters, lengths and elevations

(ii) Drilled Pier concrete compressive strength

(iii) Installation methods including use of casings, slurry, pumps, tremies, dry or wet placement of concrete, etc.

(e) CSL Results

(i) Logs with plots of signal arrival times and energy vs. depth for all tube pairs tested

(f) Summary/Conclusions

(i) Table of first arrival time (FAT) increases greater than 30% of the local average FAT value with corresponding locations (tube pair(s) and depth ranges) for all tube pairs tested

(ii) Table of relative energy reductions 9 dB greater than the local average relative energy value with corresponding locations (tube pair(s) and depth ranges) for all tube pairs tested

(iii) List of suspected anomalies with corresponding locations (tube pair(s) and depth ranges)

(g) Attachments

(i) Boring log(s)

(ii) Field inspection forms and concrete curves (from Engineer)

(iii) CSL tube locations, elevations, lengths and identifications

(iv) CSL hardware model and software version information

(v) PDF copy of all CSL data

(B) Drilled Pier Evaluation

Define “drilled pier evaluation” as any additional testing, excavation or coring following integrity testing. Based on concrete placement and CSL results, the Engineer will determine if drilled piers require evaluation within 7 days of receiving CSL reports, in accordance with Table 411-4.

TABLE 411-4
DRILLED PIER EVALUATION CRITERIA

FAT Increase	Relative Energy Reduction	Evaluation Required?
≤ 30%	≤ 9 dB	No
> 30%	≤ 9 dB	Yes
≤ 30%	> 9 dB	Yes
> 30%	> 9 dB	Yes

If a drilled pier evaluation is necessary, use one or more of the following methods, or any other methods approved by the Engineer to investigate the pier.

(1) CSL Tomography

Use CSL testing as described in Subarticle 411-5(A) and perform testing with probes vertically offset in CSL tubes. CSL offset data will typically be required for all locations (tube pair and depth) where first arrival time increases are greater than 30% and relative energy reduction exceeds 9 dB. Record offset data at depths, intervals and angles needed to completely delineate anomalies.

Provide CSL reports that meet Subarticle 411-5(A)(2). When CSL offset data is recorded, perform tomographic analysis and provide 3 dimensional color coded tomographic images of piers showing locations and sizes of anomalies.

(2) Excavation

Excavate around piers and remove permanent casing as needed to expose Drilled Pier concrete. Do not damage piers when excavating or removing casings. The Engineer will determine the portions of piers to expose.

(3) Coring

Core piers and provide PQ size cores that meet ASTM D2113. The Engineer will determine the number, location and depth of core holes required based on CSL tomography. Handle, log and store concrete cores with methods acceptable to the Engineer. Use a consultant with an engineer licensed in the State of North Carolina to log cores and use a qualified NCDOT laboratory to test strength of the selected core specimens.

Submit to the Engineer the investigation results in a drilled pier evaluation report sealed by an engineer licensed in the State of North Carolina for review and approval.

(C) Drilled Pier Remediation

If the Engineer determines a drilled pier is unacceptable, remediation is required. Remediation may include, but is not limited to hydroblasting and pressure grouting, utilizing micropiles within the drilled pier to transfer load above and below a defect, removing part or all of unacceptable drilled piers, modifying drilled pier design or providing replacement or additional drilled piers, micropiles, and/or driven piles within a pier footing or bent cap.

Submit a drilled pier remediation report including the working drawings and design calculations for acceptance in accordance with Article 105-2. Ensure the drilled pier

remediation report is designed, detailed and sealed by an engineer licensed in the State of North Carolina. Do not begin remediation work until remediation plans are approved by the Engineer. When repairing unacceptable piers, perform post repair verification testing to gauge success of the repair.

411-6 DRILLED PIER ACCEPTANCE

Drilled pier acceptance is based in part on the following criteria:

(A) Temporary casings and drilling tools are removed from the drilled pier excavation or the Engineer determines that a temporary casing may remain in the excavation.

(B) Drilled Pier concrete is properly placed and does not have any evidence of segregation, intrusions, contamination, structural damage or inadequate consolidation (honeycombing) and meets compressive strength required in Table 1000-1.

(C) Center of pier is within 3 inches of plan location and 2% of plumb. Top of pier is within 1 inch above and 3 inches below the elevation shown in the plans or approved by the Engineer.

(D) Rebar cage is properly placed and top and center of cage is within tolerances for center of pier. Tip of permanent casing does not extend below the elevation noted in the plans or approved by the Engineer.

(E) CSL report meeting Subarticle 411-5(A)(2).

(F) Drilled pier evaluation report meeting Subarticle 411-5(B).

(G) Drilled pier remediation report meeting Subarticle 411-5(C).

Do not grout CSL tubes or core holes, backfill around a pier or perform any work on a drilled pier until the Engineer accepts the pier. If the drilled pier is accepted by the Engineer, dewater and grout CSL tubes and core holes, and backfill around the pier with approved material to finished grade. No extension of completion date or time will be allowed for remediation of unacceptable drilled piers or post repair testing.

411-7 MEASUREMENT AND PAYMENT

____ *Dia. Drilled Piers in Soil*, ____ *Dia. Drilled Piers Not in Soil* and ____ *Dia. Drill Piers* will be measured and paid in linear feet. Acceptable drilled piers will be measured as the difference between the specified top of pier and pier tip elevations or revised elevations approved by the Engineer.

For bents with a not in soil pay item shown in the plans, drilled piers will be paid as ____ *Dia. Drilled Piers in Soil* and ____ *Dia. Drilled Piers Not in Soil*. Define "not in soil" as material with a rock auger penetration rate of less than 2 inches per 5 minutes of drilling at full crowd force. When not in soil is encountered, seams, voids and weathered rock less than 3 feet thick with a rock auger penetration rate of greater than 2 inches per 5 minutes of drilling at full crowd force will be paid at the contract unit price for ____ *Dia. Drilled Piers Not in Soil*. Seams, voids and weathered rock greater than 3 feet thick will be paid at the contract unit price for ____ *Dia. Drilled Piers in Soil* where not in soil is no longer encountered. For bents with a not in soil pay item shown in the plans, drilled piers through air or water will be paid at the contract unit price for ____ *Dia. Drilled Piers in Soil*.

For bents without a not in soil pay item shown in the plans, drilled piers will be paid as ____ *Dia. Drill Piers*. The contract unit price for ____ *Dia. Drilled Piers* will be full compensation for drilling through any materials encountered.

The contract unit prices for ____ *Dia. Drilled Piers in Soil*, ____ *Dia. Drilled Piers Not in Soil* and ____ *Dia. Drill Piers* will also be full compensation for spoils and slurry containment and disposal, supplying and placing Drilled Pier concrete, material and testing requirements in Subarticle 411-2(E), temporary casing and slurry construction including a slurry manufacturer representative and overreaming and enlarging piers and any concrete removal, miscellaneous grading and excavation. No additional payment will be made for excess Drilled Pier concrete due to caving or sloughing holes or telescoping casings.

Reinforcing steel will be measured and paid in accordance with Article 425-6.

Permanent Steel Casing for ____ Dia. Drilled Pier will be measured and paid in linear feet. Permanent casings will only be paid for when required by the Engineer or shown in the plans. Permanent casings will be measured as the difference between the ground line or specified top of pier elevation, whichever is higher, and the specified permanent casing tip elevation or revised elevation approved by the Engineer. If a permanent casing cannot be installed to the casing tip elevation shown in the plans, up to 3 feet of casing cut-off will be paid at the contract unit price for *Permanent Steel Casing for ____ Dia. Drilled Pier*.

SID Inspections will be measured and paid in units of each. *SID Inspections* will be measured as one per pier. The contract unit price for *SID Inspections* will be full compensation for inspecting holes with the SID the first time. No additional payment will be made for subsequent inspections of the same hole.

The Contractor is responsible for any damage to the SID equipment due to the Contractor's fault or negligence. Replace any damaged equipment at no additional cost to the Department.

SPT Testing will be measured and paid in units of each. *SPT Testing* will be measured as the number of standard penetration tests performed except no payment will be made for *SPT Testing* to determine if temporary casing is necessary.

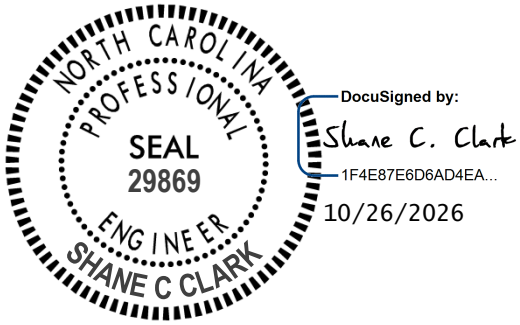
CSL Testing will be measured and paid in units of each. *CSL Testing* will be measured as one per pier. The contract unit price for *CSL Testing* will be full compensation for performing initial CSL testing and providing CSL reports. Subsequent CSL testing of and CSL reports for the same pier without tomography analysis will be incidental to the contract unit price for *CSL Testing*. No separate payment will be made for CSL tubes. CSL tubes including coring for inaccessible tubes and grouting will be incidental to the contract unit prices for drilled piers.

No payment will be made for stuck temporary casings that cannot be removed from drilled pier excavations or additional drilled pier length and reinforcing steel required due to temporary casings that remain in excavations. Drilled pier evaluations of piers that are acceptable based on drilled pier evaluation reports will be paid as extra work in accordance with Article 104-7. No

payment will be made for drilled pier evaluations of unacceptable drilled piers, drilled pier remediation or post repair testing.

Payment will be made under:

Pay Item	**Pay Unit**
____ Dia. Drilled Piers in Soil	Linear Foot
____ Dia. Drilled Piers Not in Soil	Linear Foot
____ Dia. Drilled Piers	Linear Foot
Permanent Steel Casing for ____ Dia. Drilled Piers	Linear Foot
SID Inspections	Each
SPT Testing	Each
CSL Testing	Each



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*).

Line #	**Description**
191-205, 215	Guardrail
206-214, 635	Fencing
220-280, 343, 344	Signing
323, 330, 332-340	Long-Life Pavement Markings
313-316	Removable Tape
341, 342	Permanent Pavement Markers
345-369, 371-384	Lighting
385-434	Utility Construction
435-476	Erosion Control
477	Planting
478-552, 642-644	Signals/ITS System
592-600, 657-658	Drilled Piers

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 **$ 4.4428** per gallon. Where any of the following are included as pay items in the contract, they will be eligible for fuel price adjustment.

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PROJECT SPECIAL PROVISIONS

HYDRAULICS

FILTRATION BASIN (SPECIAL)	HYD-1.1 - HYD-1.4
TRASH RACKS	HYD-2.1 - HYD-2.2
WELL GRADED CLASS II RIP RAP MIXED WITH CLASS B RIP RAP	HYD-3.1
PIPE REHABILITATION (SPECIAL)	HYD-4.1 - HYD-4.9
SEALED STORM DRAINAGE SYSTEM WITHIN WALLED ROADWAY SECTIONS	HYD-5.1 - HYD-5.9
TRAFFIC BEARING CONTRACTOR DESIGNED MASONRY DRAINAGE STRUCTURES	HYD-6.1 - HYD-6.2

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SEALED STORM DRAINAGE SYSTEM WITHIN WALLED ROADWAY SECTIONS **(SPECIAL)**
(04/27/2026)

Furnish and install sealed storm drainage network to include the following structures and pipes (Also, refer to the Drainage Summary Sheet provided in construction drawing):

- Structures:
  - 6005
  - 6006
  - 6007
  - 6008
  - 6009
  - 6013
  - 6014
  - 6022
  - 6023
  - 6025
  - 6031
  - 6032
  - 6033
  - 6046
  - 6052
  - 6053
  - 6061
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- 0843
- 0909
- 0910
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- 1002
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- 1004

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- 1005
- 1006
- 1010
- 1011
- 1014
- 1028
- 1029
- T121
- T122
- T123
- T124
- T125
- T126

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Pipes:

- 6005 to 6006
- 6006 to 6007
- 6006 to T124
- 6007 to 6008
- 6008 to 6009
- 6013 to 6014
- 6022 to 6023
- 6023 to 6025
- 6031 to 6032
- 6032 to 6033
- 6046 to 6102
- 6052 to 6053
- 6061 to 6062
- 6062 to 6153
- 6064 to 6006
- 6068 to 6070
- 6069 to 6068
- 6070 to 6124
- 6099 to 6200
- 6108 to 6109
- 6131 to 6132
- 6157 to 6156
- 6158 to 6099
- 6201 to 6202
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- 6203 to 6209
- 6206 to 6275
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- 6264 to 6265
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- 6275 to 6217
- 6401 to 6232
- 6402 to 6276
- 6403 to 6256

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- 6405 to 6264
- 6406 to 6262
- 7004 to 7008
- 7005 to 7019
- 7007 to 7097
- 7008 to 7106
- 7012 to 7098
- 7013 to 7012
- 7019 to 7106
- 7020 to 7105
- 7025 to 7115
- 7026 to 7130
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- 7050 to 7051
- 7052 to 7140
- 7053 to 7052
- 7055 to 7116
- 7056 to 7057
- 7057 to 7055
- 7062 to 7063
- 7063 to 7064
- 7066 to 7057
- 7098 to 7007
- 7105 to 7109
- 7106 to 7107
- 7109 to 7008
- 7110 to 7004
- 7111 to 7004
- 7115 to 7012
- 7140 to 7050
- 7141 to 6271
- 0819 to 0820
- 0820 to 0843
- 0822 to 0823
- 0823 to 0819
- 0826 to 0827
- 0827 to 0850
- 0830 to 0831
- 0831 to 0832
- 0832 to 0826
- 0835 to 0830
- 0836 to 0832
- 0909 to 0910
- 1001 to 1004
- 1002 to 1003
- 1003 to 1004
- 1005 to 1006
- 1006 to 1028
- 1010 to 1011
- 1011 to 1014
- 1028 to 1029
- 6157 to T121
- T121 to T122
- T122 to T123
- T123 to T125
- T124 to T125
- T125 to T126

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Description

A Special Sealed Drainage System within a walled roadway section has been designated on the plans as "SEALED XP" or "SEALED PP" and in the Drainage Summary Sheet as "Sealed Pipe System" or "Sealed Cross Pipe (Sealed XP)". The work includes construction of watertight joints and connections between pipe sections and between pipes and drainage structures; and shall meet the requirements of this special provision. The extents of the Special Sealed Drainage System shall be adhered to as shown on the plans and drainage summary sheets, or as directed by the Engineer.

"SEALED XP" are storm drainage pipes under all travel lanes and gore areas within wall zone. Welded Steel Pipe or Sealed Reinforced Concrete Pipe may be used. "Sealed PP" are storm drainage pipes parallel to retaining wall within wall or outside of volatile organic compound areas. Polypropylene Pipes may be used. Welded steel pipes or Sealed Reinforced Concrete Pipes may be used, if necessary, due to overriding conditions such as continuation of pipe partially located under travel lanes.

Materials

Refer to the *2024 Standard Specifications.*

Welded steel pipe shall be Grade B, meet the requirements of Section 1032-5 of the *Standard Specifications* and have a minimum wall thickness of 0.5". Welded steel pipe installed under this provision and in a trench shall be installed in accordance with Section 300 of the *Standard Specifications*. Welded steel pipe installed using trenchless methods shall be installed in accordance with Section 330 of the *Standard Specifications*.

Reinforced Concrete Pipe shall meet the requirements of Section 1032-6(B) of the *Standard Specifications*. Reinforced Concrete pipe installed under this provision and in a trench shall be installed in accordance with Section 300 of the *Standard Specifications*. Reinforced concrete pipe used as sealed RCP shall have joints conforming to ASTM C990 and joints wrapped according to ASTM C877.

High Density Polyethylene or Polypropylene pipe shall conform to Standard Specifications 1032-7 or 1032-4 and have watertight connections that comply with ASTM D3212.

Drainage Structures shall be precast concrete conforming to ASTM C913 for rectangular boxes and AASHTO M199 for round manholes. Joints between sections shall meet or exceed ASTM C443.

Connection of pipe to drainage structure shall be by a flexible, resilient connector meeting or exceeding ASTM C923; or utilize a reinforced concrete pipe-to-drainage structure collar, doweled into the drainage structure, as detailed in plans.

The Contractor shall submit to NCDOT Hydraulics Unit catalog cuts and/or shop drawings for materials proposed to be used on the project. Allow 40 days for the review of each submittal.

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Materials which have not been approved shall not be delivered to the project. Eight (8) copies of each catalog cut and/or drawing shall be submitted, and each shall show the material description, brand name, stock number, size, rating, manufacturing specification and the use for which it is intended.

The NCDOT Geotechnical Unit shall approve all backfill material.

Construction Methods

Installation of the sealed drainage system pipe and drainage structures shall meet the requirements of Section 300 and Section 1505 of the *Standard Specifications*.

At all pipe connections to drainage structures, pipes shall extend a minimum of six inches beyond the internal wall of the drainage structure.

All materials shall be carefully examined for defects before placing, and any defective materials shall be replaced. As the work progresses, the interior of the pipe shall be cleared of all foreign materials. Obtain approval by the Engineer prior to any cleaning or flushing activities. Any pipeline or drainage structure that contains silt, sedimentation, or other foreign material shall be flushed or otherwise cleaned out of the line and drainage structures.

Trenches shall be kept free from water until backfilled, and pipe shall not be laid when the condition of the trench or the weather is unsuitable for such work.

If significant settlement is expected, all proposed storm drainage pipe within the wall zone should be installed after predetermined settlement waiting period is achieved. This effort should be coordinated with the NCDOT Geotechnical Unit.

Sealed Drainage Inspection

An independent contractor not affiliated with the construction contractor shall perform a post-construction inspection of all pipes and storm drain networks governed by this section within 90 days of completion of installation. Inspections shall be performed by NASSCO certified personnel using a Closed-Circuit Television Video (CCTV) steerable pipe crawler/rover that is tethered to a cable reel. Other types of equipment should only be used with prior agreement of the Engineer. Equipment must be capable of capturing 360-degree views from within the pipe or storm drain system and all required data and measurements. Documentation of each inspection shall be provided to NCDOT for review and acceptance. At a minimum, the documentation shall include a video inspection and a corresponding report. The camera must be centered in the pipe during video inspections and must show the entire circumference of the pipe. Video inspections should provide accurate distance measurements of features in the pipe or network, and footage measurements shall be displayed and documented in the video. Video should be continuously metered. A maximum video size of 1.5GB is recommended. Acceptable file formats are .avi, .mkv, mp4, mpeg, .mpg, or .wmv with .mp4 being the preferred format.

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The inspection report shall identify the following:

- Structural integrity of each pipe joint connector, including welded steel pipe joints, and each pipe connection to a drainage structure including, but not limited to, joint or connector damage, failure, separation, and offsets.
- Length between the end of the pipe and the internal wall of the drainage structure at each pipe connection to a drainage structure
- Longitudinal, transverse, circumferential, and multidirectional cracking or deflection
- Seepage and infiltration into the pipe
- Pipe or connection failures including, but not limited to, differential settlement, material deformation, and puncture holes.
- The location of each item noted as measured from the outlet of the pipe.

Prior to inspection, pipes should be clean enough to ensure all defects, features and observations are seen and logged. Any pipe cleanout required prior to inspections governed by this guidance shall be considered incidental and will not be paid for as extra work. The contractor shall get approval from the Engineer prior to performing any necessary cleanout.

Measurement and Payment

Trenching, excavation, and backfilling for Special Sealed Drainage System will be considered as included in the contract price for the applicable pay item and no separate measurement will be made; Therefore, such work as shoring, sheeting, and dewatering of the excavation will also be considered as incidental to the contract price for the applicable pay item and no separate measurement will be made.

Welded Steel, High Density Polyethylene, Polypropylene and Reinforced Concrete Pipe for the sealed drainage system will be measured and paid at the contract unit price per linear foot. The quantity of sealed drainage system lines of the various sizes, which has been incorporated into the completed and accepted work, will be measured from end to end by the linear foot in place with no deduction for length through drainage structures. Where two different sizes enter or exit a drainage structure, each size will be measured to the center of the drainage structure. Unless otherwise shown on the plans, branch connections, elbows, or other fixtures will be included in the length measurement.

Foundation conditioning material will be paid for as stated in Section 300-9 of the Standard Specifications.

Concrete Collars to be constructed of Class B concrete will be paid for by the cubic yard.

Resilient Connector will be measured and paid for in units of each that has been incorporated into the completed work.

Installation documentation and video inspection conforming to the *Sealed Drainage Inspection* section above, shall be considered incidental.

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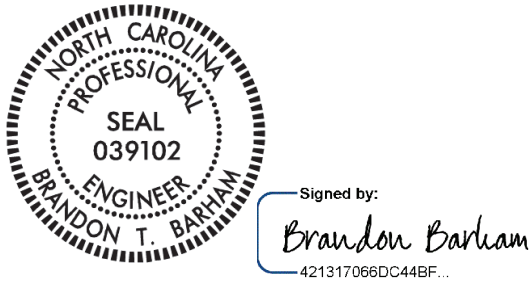
Such prices and payments will be full compensation for all work covered by these special provisions, including, but not limited to materials, labor, equipment, backfilling, compaction, testing, pumping, pipe connectors, gaskets, non-shrink cement grout, and incidentals necessary to complete the work as required. No separate measurement or payment will be made for sealed drainage system inspection as described in this special provision as the cost of such work shall be included in contract price bid per linear foot for the various pipe utilized in the sealed drainage system.

Payment will be made under:

Pay Items	**Pay Units**
Resilient Connector	Each
Concrete Collar	Cubic Yard
__" Sealed Polypropylene Pipe	Linear Foot
__" Sealed XP	Linear Foot
__" Sealed XP Elbows	Each





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TRAFFIC BEARING CONTRACTOR DESIGNED MASONRY DRAINAGE STRUCTURES (SPECIAL)

GENERAL

The work covered by this special provision applies to traffic bearing contractor-designed (non-standard) drainage structures as noted in the contract plans. Where noted in the plans that a masonry drainage structure is identified as traffic bearing and contractor designed, the special drainage structure detail provided in the plans is a schematic, and requires the Contractor to submit a working drawing.

SUBMITTALS

When a masonry drainage structure is identified to be Contractor Designed, the Contractor shall be responsible for the design of the Non-Standard Structures which are subject to review, comments, and approval. Designs shall conform to the AASHTO *LRFD Bridge Design Specifications*, latest edition. Submit two sets of detailed plans for review. Include all details in the submittal, including the size and spacing of the required reinforcement necessary, concrete strength and class, dimensions, bedding materials to build the Non-Standard Structure. Where required by the plans, use precast concrete. A North Carolina Registered Professional Engineer shall seal the submittal, which includes plans and design calculations. **The submittal must show the proposed openings (top and sides) and reinforcing for pipe connections, structure openings, and precast holes for steps, if necessary.**

Concrete for the structure shall be minimum Class AA for all traffic bearing contractor-designed masonry drainage structures, as per the Standard Specification Section 1000. Fill concrete indicated on the plans shall be class A or B as described in Section 1000 *Portland Cement Concrete Production and Delivery* of the NCDOT Standard Specifications.

Materials shall be as shown on the plans or described in Article 838-2 and 840-2 *Materials* of the NCDOT Standard Specifications.

All submittals shall be made a minimum of two weeks prior to construction or placing an order for materials for review by the Engineer.

Working drawings submittals shall conform to the “Submittal of Working Drawings” special provision or as directed by the Engineer.

For all Traffic Bearing Contractor Designed Masonry Drainage Structures, the Contractor shall submit the manufacturer’s certification and shop drawings for the Non-Standard Structures and those products to be used in the installation.

CONSTRUCTION METHODS AND MATERIALS

Construction of the contractor designed masonry drainage structures is not explicitly covered by this provision and shall be in accordance with Section 420 *Concrete Structures*, Section 425

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Fabricating and Placing Reinforcement, and Section 1040 *Masonry* of the NCDOT Standard Specifications.

Where foundation material is found to be of poor supporting value or rock, undercut and provide foundation conditioning material. Unless otherwise specified within the plans, Install 6" bedding #57 stone beneath all structures.

Use cast in place concrete or precast concrete construction as shown on the plans, except where required to be precast.

Methods shall be as described in Article 838-3 and 840-3 *Construction Methods* of the NCDOT Standard Specifications.

MEASUREMENT AND PAYMENT

TB Contractor Designed Masonry Drainage Structures shall be full payment for the contractor's design of each traffic bearing drainage structure, including preparation, submittal, and any resubmittals of the PE-sealed working drawings, identified in the plans. Such plans, upon acceptance, will become the basis of construction for such structures. No fabrication, materials, or construction will be paid under this pay item.

Payment for elements of work required to construct the contractor-designed TB masonry drainage structures in accordance with the contractor's working drawings shall be made separately in accordance with Article 840-4 of the *Standard Specifications* for *Masonry Drainage Structures (each*) and *Masonry Drainage Structures (linear foot)* pay items.

Frames and Grates shall be paid separately.

Payment will be made under:

TB Contractor Designed Masonry Drainage Structures.....Each



Signed by:
Gregory Cols
1B0CFCC2CF4946F...

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Project Special Provisions
Structure

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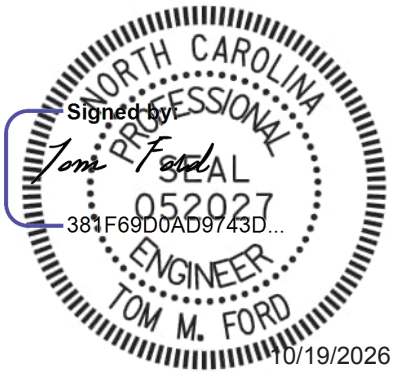

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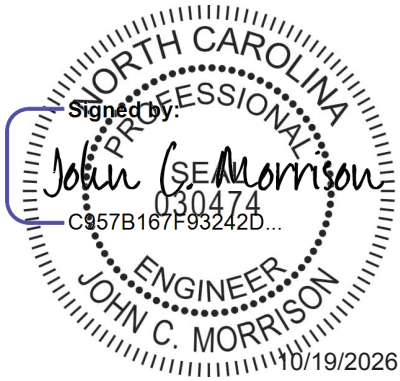

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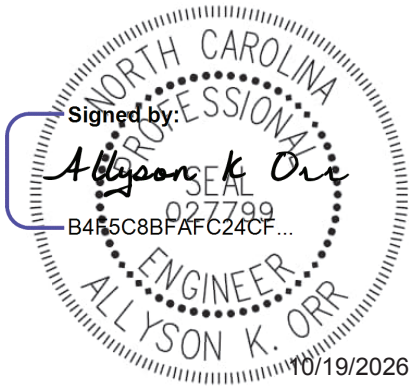

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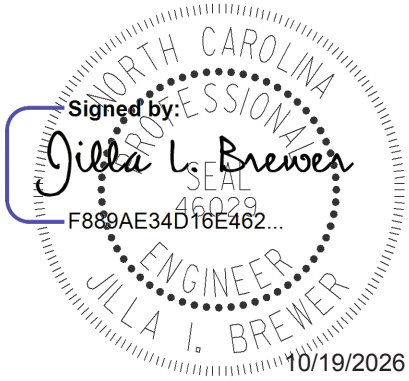

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CONCRETE BARRIER RAIL WITH MOMENT SLAB AT SOUND BARRIER WALL (SPECIAL)

DESCRIPTION

Construct Concrete Barrier Rail with Moment Slab at Sound Barrier Wall in accordance with the plans, accepted submittals and Sections 420 and 460 of the Standard Specifications. Do not remove slab falsework until concrete achieves a minimum compressive strength of 2400psi.

Concrete Barrier Rail with Moment Slab at Sound Barrier Wall shall use the standard 42" concrete barrier rail to allow for the connection of the Sound Barrier Wall in like manner to the Sound Barrier Wall attachment on the bridge and approach slab. The cost of the concrete barrier rail and sound barrier wall shall be included in the cost of the Concrete Barrier Rail with Moment Slab at Sound Barrier Wall.

Furnish planks, structural steel, and all other materials; handling, transporting, fabricating, galvanizing, and storing materials; furnishing erection drawings, erecting and installing the sound barrier wall members and all other materials as required by the plans, Standard Specifications and this Special Provision on the moment slab including the panels to the first ground supported posts at ends of moment slab.

The Moment Slab with Sound Barrier Wall plans allow for 11'-0" maximum post spacing for Sound Barrier Wall with heights of up to 10'-0" from top of moment slab, 10'-3" maximum for heights of up to 15'-0", and 6'-11" maximum for heights of up to 18'-6". Greater post spacing will not be permitted. Provide post spacing consistent with the plans. The weight of the sound barrier in its entirety shall not exceed the value provided in the contract documents.

A maximum one-foot drop or rise in elevation between wall sections is permitted. Elevation changes greater than one foot, if necessary, will be allowed only off the bridge. Top of wall elevation changes that result in a jagged appearance will not be allowed.

ALTERNATE POST SPACING

As an alternate, the Contractor may submit plans for post spacing other than shown for review and approval. A submittal reducing the post spacing shall include the plank material and design specifications. The submittal shall also include an elevation view depicting the revised post spacing and proposed top of wall elevations. The proposed top of wall elevations shall be equal to or greater than the plan dimensions.

Submit two sets of detailed plans for review. Include all details in the plans, including the size, spacing and materials of required piles. Have a North Carolina Registered Professional Engineer check, seal and date the plans. After the plans are reviewed and, if necessary, the corrections made, submit one set of reproducible tracings on 22" x 34" sheets to become part of the contract plans.

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WALL TYPE

Walls that have been assigned "Approved" or "Approved for Provisional Use" status by the Product Evaluation Program will be considered for use as the Concrete Barrier Rail with Moment Slab at Sound Barrier Wall planks. Wall plank design details and materials must meet the design and construction requirements of the project and the applicable loadings except that the wall is not required to meet the traffic loading requirements. Wall structural stability and connection details shall conform to the current edition of the AASHTO LRFD Bridge Design Specifications, except that traffic loading shall not be applied to the sound barrier wall.

The wall shall meet the following aesthetic requirements in addition to those noted within the contract plans. The traffic and non-traffic faces of the wall planks shall be configured such that only the post flanges extend beyond the face of the planks as shown in the plans such that a uniform surface is visible from the traffic and non-traffic sides of the wall. This uniform surface appearance is to extend from the top of wall to the bottom of the vertical post members as shown in the plans. The bottom of the wall shall be detailed for free and complete drainage of wall areas. Additionally, the plank configuration proposed shall allow for visual inspection of the post to concrete barrier rail bolts from the bottom of the wall without the need to remove any components.

Prior to submittal of Working Drawings, as described herein, submit a copy of the signed NCDOT Product Status Notification Letter and two sets of preliminary plans for review and approval. Include material specifications for all components. Once preliminary plans are approved, submit Working Drawings in accordance with all applicable portions of the requirements herein, including details necessary to fabricate and construct the proposed components.

Have a North Carolina Registered Professional Engineer check, seal and date the plans and, when requested, calculations. After the plans are reviewed and, if necessary, corrections made, submit one set of reproducible tracings on 22" x 34" sheets to become part of the contract plans.

MATERIALS AND FABRICATION

Provide materials and fabricate members in accordance with the requirements of Division 10 of the Standard Specifications for Roads and Structures. The structural planks for the Concrete Barrier Rail with Moment Slab at Sound Barrier Wall are to have the following properties:

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Flexural Strength	57,000 psi	ASTM D-790
Tensile Strength	60,000 psi	ASTM D-638
Compressive Strength	65,000 psi	ASTM D-695
Tensile Modulus	3,500,000 psi	ASTM D-638
Flexural Modulus	1,600,000 psi	ASTM D-790
Specific Gravity	1.88 (typ)	ASTM D-792

The structural planks are to be colored and shall be uniform throughout the pultruded composite. The color is to be approved by the Engineer before the planks are delivered to the jobsite.

The structural planks shall exhibit good workmanship and shall be free of burrs, cracks or other objectionable marks which would adversely affect the barrier's performance or serviceability. All cracked, discolored, burned or damaged structural planks will be rejected either at the fabrication shop or the construction site even after installation, but prior to acceptance of the project.

The structural steel is to meet the requirements of the Standard Specifications. The posts, backing angles, bolts, nuts and washers are to be painted to match the structural planks. The paint system as described in Section 442 of the Standard Specifications and the Structural Steel Shop Coatings shall by System 1, with the exception that the surfaces are not to be cleaned to an SSPC SP-10 finish after being galvanized and the top coat color is to be as noted on the contract plans and approved by the Engineer. After erection, the bolts, nuts, and washers are to be primed by brush, then the entire support system of posts, backing angles, bolts, nuts and washers are to be top-coated. The structural planks are to be masked so no overspray or spatters occur. The Contractor is to provide 3 samples of paint close to the color of the structural planks to the Engineer for his selection of the final color. The limits of the painting are from the top of the posts to the bottom of the lowest plank.

CONSTRUCTION METHODS

The erection of the sound barrier components shall not begin until the concrete in the bridge railing has reached a minimum compressive strength of 3,000 psi. Install posts as shown on the plans or in the accepted submittals with a tolerance of 1/2 inch per foot from vertical or as necessary to conform to the plank design if more restrictive.

WORKING DRAWINGS

Submit plank design calculations and specifications for approval prior to purchasing the plank materials. Submit metalwork fabrication drawings for approval prior to fabrication of steel wall components. This submittal shall clearly indicate access for visual inspection of the post

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attached bolts. Submit an erection plan and plank support components, for review and acceptance prior to fabrication of metalwork. Submit five sets of detail drawings.

METHOD OF MEASUREMENT

The approximate quantity of Concrete Barrier Rail with Moment Slab at Sound Barrier Wall shown in the plans is an estimate based on the limits of the moment slab. No measurement for payment will be made for this pay item.

BASIS OF PAYMENT

Concrete Barrier Rail with Moment Slab at Sound Barrier Wall will be paid for at the contract lump sum price for "Concrete Barrier Rail with Moment Slab at Sound Barrier Wall".

The price bid will be full compensation for all work covered by this Special Provision including, but not limited to, furnishing panels, structural steel, and all other materials; handling, transporting, fabricating, galvanizing, and storing materials; furnishing erection drawings, and erecting and installing the Concrete Barrier Rail with Moment Slab at Sound Barrier Wall components.

Payment will be made under:

Pay Item	Pay Unit
Concrete Barrier Rail with Moment Slab at Sound Barrier Wall	Linear Foot

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CONCRETE BARRIER RAIL WITH MOMENT SLAB AND LIGHT SUPPORT (SPECIAL)

DESCRIPTION

Construct concrete barrier rail connected to moment slabs and light support to resist traffic impact above retaining walls. Construct concrete barrier rail with moment slab in accordance with the contract and accepted submittals.

MATERIALS

Refer to Division 10 of the Standard Specifications

Item:	Section
Barrier Delineators	1088-2
Portland Cement Concrete	1000
Reinforcing Steel	1070

Concrete for the concrete barrier shall meet the requirements for Class AA concrete.

Class A concrete shall be used for moment slabs and light Support.

Provide epoxy coated reinforcing steel that meets Article 1070-7 of the Standard *Specifications* for vertical concrete barrier rail.

METHOD OF CONSTRUCTION

Construct concrete barrier rail with moment slab and light support in accordance with the plans and accepted submittals. Construct cast-in-place reinforced concrete moment slabs and Light Support in accordance with Section 420 of the Standard Specifications. Unless otherwise noted, construct concrete barrier rail and light support detailed in the plans using conventional forms or by slip-forming using an approved self-propelled extrusion machine. Do not remove forms until concrete attains a compressive strength of at least 2,400 psi.

All exposed surfaces of the concrete barrier rail and light support which are not satisfactory to the Engineer as to uniformity of color and texture or because of excessive patching shall be corrected as required by the Engineer. Give the exposed faces of the concrete barrier rail and light support constructed using forms a Class 2 surface finish in accordance with Section 420-17(F) of the Standard Specifications. Use a broom finish on exposed faces of slip-formed concrete barrier rail being performed. The light post installation shall not begin until the concrete in the light support has reached a minimum compressive strength of 3,000 psi.

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MEASUREMENT AND PAYMENT

Concrete Barrier Rail with Moment Slab and Light Support will be measured and paid in linear feet. Concrete Barrier Rail with Moment Slab and Light Support will be measured as the length of concrete barrier rail installed and accepted. The contract unit price for Concrete Barrier Rail with Moment Slab and Light Support will be full compensation for submittals, labor, tools, equipment and concrete barrier with moment slab and light support materials, excavating, backfilling, hauling and removing excavated materials and supplying any incidentals necessary to construct the concrete parapet with moment slab.

There will be no direct payment for barrier rail delineators as they are incidental to the work being performed.

Payment will be made under:

Pay Item	Pay Unit
Concrete Barrier Rail with Moment Slab and Light Support	Linear Foot

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SOUND BARRIER WALL **(SPECIAL)**

GENERAL

This work consists of furnishing precast panels with an architectural surface treatment, structural steel, concrete, handling, transporting, fabricating, galvanizing, storing materials, furnishing erection drawings, pile excavation, backfilling, erecting and installing the sound barrier wall members and all other materials as required by the plans, *Standard Specifications* and this Special Provision.

Precast panels with an architectural surface treatment shall be constructed using form lining materials and patterns to match the appearance (size, shape, color, texture, pattern, and relief) of the textured finish as specified on the plans and approved by the Engineer.

The contractor is required to use the same form liner and coloration contractor to construct the precast panels with an architectural surface treatment.

The Standard Plans allow pile spacing of 10, 15 or 20 feet. Pile spacing greater than 15 feet will not be allowed for the precast concrete panels detailed in the standard plans. Provide consistent pile spacing for the entire length of the wall. Use odd pile spacing, if necessary, only at the ends of the wall and at turning points as approved by the Engineer. Architectural surface treatment shall not be applied to piles. Piles shall have a smooth, non-textured finish, and remain unstained in their natural color.

A maximum one foot drop or rise in elevation between wall sections is permitted. Elevation changes greater than one foot, if necessary, will be allowed only at the end of the wall. Changes at the top of wall elevation that result in a jagged appearance will not be allowed.

QUALIFICATIONS

Prior to beginning work, the contractor shall submit the following qualifications to the Engineer for approval:

(A) Architectural Surface Treatment Construction

The Contractor shall have a minimum of three (3) years of experience in architectural concrete surface treatment construction on similar types of projects. The Contractor shall furnish to the Engineer three (3) references who were responsible for supervision of similar projects. Include name, address, telephone number, and specific type of application.

(B) Form Liners and Coloring System

The manufacturer of form liners for the standard textured finishes and coloring system shall have at least five (5) years of experience making molds and color stains to create formed concrete surfaces to match the specified textured finish and colors. The Contractor shall schedule a pre-installation conference with a form liner manufacturer representative and the Engineer to assure understanding of simulated textured finish form liner use, color

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application, requirements for construction of sample panel(s), and to coordinate the work. The Contractor shall be required to disclose their source of form liner manufacturer and final coloration contractor prior to the Preconstruction Conference.

ALTERNATE PILE SPACING FOR STANDARD PRECAST PANELS

As an alternate, the Contractor may submit plans for pile spacings greater than 10 feet and less than 15 feet for review and approval. The pile excavation diameter, excavation depth and reinforcing steel shall be equal to the amount shown on the existing plans for the 15 feet pile spacing. A variance in the reinforcing steel will be allowed for the length of horizontal and number of vertical reinforcement bars in the precast panel for the alternate pile spacing.

Submit two (2) sets of detailed plans for review. Include all details in the plans, including the size and spacing of required reinforcement necessary to fabricate the precast panels. Have a North Carolina registered Professional Engineer check, seal, and date the plans. After the plans are reviewed and, if necessary, corrections made, submit one set of reproducible tracings on 22" x 34" sheets to become part of the contract plans.

ALTERNATE WALL TYPE

Walls that have been assigned "Approved" or "Approved for Provisional Use" status by the Product Evaluation Program will be considered for substitution to the detailed Standard Sound Barrier Wall only when noted on the plans. Alternate wall types, piles, and pile spacing must meet the design and construction requirements of the project. Pile spacing greater than 20 feet will not be permitted. Alternate pile and wall structural stability and connection details shall conform to the current edition of the *AASHTO LRFD Bridge Design Specifications*.

Prior to submittal of Working Drawings, as described herein, submit a copy of the signed NCDOT Product Status Notification Letter and two (2) sets of preliminary plans for review and approval. Include material specifications for all components. Once preliminary plans are approved, submit Working Drawings in accordance with all applicable portions of the requirements herein, including details necessary to fabricate and construct the proposed alternate.

Have a North Carolina registered Professional Engineer check, seal, and date the plans and, when requested, provide calculations. After the plans are reviewed and, if necessary, corrections made, submit one set of reproducible tracings on 22" x 34" sheets to become part of the contract plans.

WORKING DRAWINGS

Submit precast panel casting drawings in accordance with Article 1077-2 of the *Standard Specifications* prior to casting. Show the inserts, method of handling, and support details used for transportation on the casting drawings. Submit fabrication drawings for approval prior to fabrication of wall components. Submit an erection plan and precast panel placing plan, including location of various heights of panels, for review and acceptance prior to fabrication of forms. Submit five (5) sets of detail drawings on 22" x 34" sheets.

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Submit for review and acceptance, wall plan and elevation views and details showing overall simulated textured pattern, joint locations, and end, edge or other special conditions. The drawings should include typical cross sections of precast panels, joints, corners, texture relief, texture size, pitch/working line, mortar joint and bed depths. If necessary, the Contractor shall revise the working drawings until the proposed form liner patterns and arrangement have been accepted by the Engineer. Working drawings should be of sufficient scale to show the detail of all textured finishes and joint patterns. Shop drawings shall be reviewed and approved prior to fabrication of form liners.

MATERIALS AND FABRICATION OF STANDARD PRECAST PANELS

Provide materials and fabricate members in accordance with the requirements of Division 10 of the *Standard Specifications*. Provide precast panels 4 inches ± ¼ inch thick, excluding relief for a textured finish. Architectural surface treatment shall consist of a standard textured finish and a single color of stain applied to both faces of the precast panels as specified on the plans and approved by the Engineer. Relief of any texture is not to exceed an average depth of 1 inch. No textured finish or stain shall be applied on the uppermost foot of each wall segment and along the vertical edges of the panels. These areas shall have a smooth, non-textured finish, and remain in their natural concrete color.

Furnish three (3) 12” x 12” samples for approval which establish the acceptable variations in color, texture, and uniformity. After the color, texture, and uniformity of the furnished samples are approved, produce a full scale panel unit meeting design requirements. This mock-up and the furnished samples establish the standard quality for determining acceptance of the panels. When producing the final installed panels, use fine and coarse aggregate, retarder, and cement from the same source as those used in the approved sample panels.

The standard textured finish shall be constructed using form lining materials. The form liner shall be a high quality, re-useable product manufactured of high strength urethane rubber or other approved material which attaches easily to the form work system and shall not compress more than ¼ inch when concrete is poured at a rate of 10 vertical feet per hour. The form liners shall be removable without causing deterioration of the surface or underlying concrete.

The form liner shall be patterned such that long continuous horizontal or vertical lines do not occur on the finished exposed surface. The line pattern shall be random in nature and shall conceal construction joint lines.

Prior to each concrete pour, the form liners shall be clean and free of build-up. Each liner shall be visually inspected for blemishes and tears. Repairs shall be made in accordance with the manufacturer’s recommendations. Repairs shall be accepted by the Engineer before being used. Form liner panels that do not perform as intended or are no longer repairable shall be replaced.

Form liners shall be securely attached to forms in accordance with the manufacturer’s recommendations, with less than a ¼ inch seam. Blend form liner butt joints into the textured surface pattern and finish off the final concrete surface. Create no visible vertical or horizontal

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seams or conspicuous form liner butt joint marks. At locations where the form liners are joined, carefully blend to match the balance of the textured finish.

Form liners shall be installed to withstand anticipated concrete placement pressures without leakage and without causing physical or visual defects.

When the approved textured finish requires simulated grout pattern joints, construct grout pattern joints to simulate the appearance of mortared joints produced in laid up masonry work. Grout pattern joints shall be produced in accordance with the form liner / concrete color system manufacturer.

The Contractor shall have a technical representative from the form liner manufacturer on site for technical supervision during the installation and removal of form liners. Unless directed by the Engineer, installation and removal of form liners shall not be permitted if the technical representative is not present.

Form release agent shall be a non-staining petroleum distillate free from water, asphaltic, and other insoluble residue, or an equivalent product and shall be applied in accordance with the manufacturer's recommendations. The form release agent shall be compatible with the form liner material, the concrete coloring system, any special surface finish and in accordance with this Special Provision. Form release agent should be worked into all areas, especially pattern recesses.

All form defects in finished uncolored surface shall be filled or repaired within 48 hours of form removal. Use patching materials and procedures in accordance with the manufacturer's recommendations.

Precast concrete shall be finished in accordance with the *Standard Specifications*, except that curing of concrete should been done to accommodate the application of coloring and surface finish treatment.

SURFACE COLORING

All surfaces that are to receive coloring agent application shall be free of all laitance, dirt, dust, grease, efflorescence, paint, or any other foreign material prior to the application of coloring agent. Cleaning of surfaces to be accomplished by pressure washing with water set at 3,000 psi to remove laitance. The fan nozzle shall be held perpendicular to the surface at a distance of 1 to 2 feet. Sandblasting will not be permitted.

Surface coloring shall be achieved using an approved stain suitable for the purpose intended and applied in a manner consistent with the design intent of the project. Color system shall be a single color of stain in brown or gray tones as specified on the plans and approved by the Engineer. The approved sample panel shall be the basis for determining the appropriate stain application.

The coloring agent shall be a penetrating stain mix or other approved coloring system designed for exterior application on old or new concrete with field evidence of resistance to moisture, acid

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or alkali, mildew, mold or fungus discoloration or degradation. The coloring agent shall be breathable, allowing moisture and vapor transmission. Final coloring system and color of stain are subject to approval by the Engineer.

Application of coloring/staining agent to finished precast concrete and patches shall occur at a minimum of 30 days after form liners are removed. Maintain the concrete temperature between 40°F and 85°F during color/stain application and for 48 hours after color/stain application. Consult the manufacturer's recommendations for preparation, application, curing, and storage of coloring agents/stains. The contractor shall provide a Color Application Artist who is experienced in producing realistic surface appearances. Treated surfaces located adjacent to exposed soil or pavement shall be temporarily covered to prevent dirt or soil splatter from rain.

Final surface shall be free of blemishes, discolorations, surface voids, and other irregularities. All patterns should be continuous without visual disruption. Linear butt joints shall be carefully blended into the approved pattern and finished off the final concrete surface. No visible vertical or horizontal seams or conspicuous form marks created by butt joining will be permitted.

Following the completion of all work, repairs of any damage made by other construction operations shall be made to the form lined and colored surfaces as directed by the Engineer.

CONSTRUCTION METHODS

Complete the final survey of existing ground profile after clearing the wall area but prior to submitting any working drawings. Submit the final groundline survey with the working drawings.

If the Department is responsible for the survey, the Engineer field verifies the existing ground profile along the sound barrier wall. Contact the Engineer to obtain the survey information. Otherwise, complete the existing ground survey prior to submittal of working drawings.

Excavate holes with the diameters shown on the plans. Perform pile excavation to the depths shown on the plans and install piles as shown on the plans or in the accepted submittals with a tolerance of ½ inch per foot from vertical. Backfill excavations with concrete after placing piles.

(A) Pile Excavation

Use equipment of adequate capacity and capable of drilling through soil and non-soil including rock, boulders, debris, man-made objects, and any other materials encountered. Blasting is not permitted to advance the excavation. Blasting for core removal is only permitted when approved by the Engineer. Dispose of drilling spoils in accordance with Section 802 of the *Standard Specifications* and as directed by the Engineer. Drilling spoils consist of all excavated material including water removed from the excavation either by pumping or drilling tools.

If unstable, caving, or sloughing soils are anticipated or encountered, stabilize excavations with either slurry or steel casing. When using slurry, submit slurry details including product information, manufacturer's recommendations for use, slurry equipment information and

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written approval from the slurry supplier that the mixing water is acceptable before beginning drilling. When using steel casing, use either the sectional type or one continuous corrugated or non-corrugated piece. Steel casings should consist of clean watertight steel of ample strength to withstand handling and driving stresses and the pressures imposed by concrete, earth or backfill. Use steel casings with an outside diameter equal to the hole size and a minimum wall thickness of ¼ inch.

(B) Concrete Placement

Before placing concrete, center and support the pile in the excavation and check the water inflow rate in the excavation after any pumps have been removed. If the inflow rate is less than 6 inches per half hour, remove any water and free fall the concrete into the excavation. Ensure that concrete flows completely around the pile. If the water inflow rate is greater than 6 inches per half hour, propose a concrete placement procedure to the Engineer. The Engineer shall approve the concrete placement procedure before placing concrete.

Fill the excavation with Class A concrete in accordance with Section 1000 of the *Standard Specifications* except as modified herein. Provide concrete with a slump of 6 to 8 inches. Use an approved high-range water reducer to achieve this slump. Place concrete in a continuous manner and remove all casings.

MEASUREMENT AND PAYMENT

Sound Barrier Wall will be paid for at the unit price bid per square foot. Payment will be full compensation for work covered by this Special Provision including, but not limited to, furnishing precast panels, steel or concrete piles, miscellaneous structural steel, concrete, and all other materials; handling, transporting, fabricating, galvanizing, and storing materials; furnishing erection drawings, backfilling, pile excavation including any casing or slurry, and erecting and installing the sound barrier wall members.

The quantity of sound barrier wall to be paid for will be the actual square feet of completed and accepted wall. In any individual section of sound barrier wall or in comparably dimensioned sections, the wall height is from the bottom of the bottom panel to the top of the top panel and the width is the distance between the centerline of the piles at the ends of the section. Include the full width of the piles at the ends of the wall.

Architectural Surface Treatment will be paid at the unit price bid per square foot and will be full compensation for the architectural treatment covered by this Special Provision including, but not limited to, furnishing architectural detail drawings, sample panels; the construction, finishing, and removal of all equipment, materials, labor, and incidentals necessary for furnishing and use of all form liners to produce approved textured finish and application of approved surface coloring.

The quantity of form liner textured finish and coloring stain to be paid for will be the actual square feet of architectural surface treatment that has been incorporated into the completed and accepted work. The area of architectural surface treatment will be measured by the area of treated panels. Do not include the uppermost foot of each wall segment, panel vertical edges

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without architectural surface treatment, or piles in the measurement. Area of sample panels shall not be included in the measurement of architectural surface treatment.

Payment will be made under:

Pay Item	Pay Unit
Sound Barrier Wall No. ____	Square Foot
Architectural Surface Treatment (Sound Barrier Wall)	Square Foot

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SOUND ABSORPTIVE BARRIER WALL (SPECIAL)

DESCRIPTION

Sound absorptive barrier wall surface shall be approved by NCDOT. Unless noted otherwise, sound absorptive noise wall panels and sound absorptive barrier wall construction shall be precast panels as described in "Sound Barrier Wall" construction drawings and special provisions. Sound absorptive wall panels shall have the minimum sound absorptive design parameters:

Noise Absorptive: Panels shall have a noise reduction coefficient of 0.85 according to ASTM Method C423-90a.

BASIS OF PAYMENT

The quantity of sound absorptive barrier wall, measured as provided above, will be paid for at the contract unit price bid per square foot.

The unit price bid per square foot for "Sound Absorptive Barrier Wall" will be full compensation for work covered by this Special Provision including, but not limited to, furnishing precast panels, steel or concrete piles, miscellaneous structural steel, concrete, and all other materials; handling, transporting, fabricating, galvanizing, and storing materials; furnishing erection drawings, backfilling, pile excavation including any casing or slurry, and erecting and installing the sound absorptive barrier wall members.

Payment will be made under:

Pay Item	Pay Unit
Sound Absorptive Barrier Wall No.___	Square Foot

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TEMPORARY DECK DRAINAGE (SPECIAL)

1.0 DESCRIPTION AND APPLICABILITY

This provision covers the requirement of the Contractor to maintain bridge deck drainage on the bridges as directed in the plans (including temporary detour bridge) during construction to limit hydraulic spread to shoulder areas. The Contractor shall submit a plan in writing to the engineer 30 days prior to beginning construction on the subject bridge that addresses how temporary deck drainage will be provided and maintained during construction. No work may begin on the bridge until the plan is approved.

2.0 HYDRAULIC SPREAD DESIGN REQUIREMENTS

At all times during construction, the contractor shall ensure that hydraulic spread is limited to shoulder areas and does not encroach into the travel lanes, except for times and locations as specifically permitted by the Engineer. For every stage of construction, the Contractor shall provide for means to contain hydraulic spread due to rainfall runoff to the shoulder, in accordance with the pertinent Roadway, Work Zone Traffic Control, and/or Structure plans. Any deviations from the plans shall not be permitted except as in writing by the Engineer, and deviations shall demonstrate full compliance with all requirements. If the Contractor elects to use alternate methods to contain spread, a submittal to the Engineer shall be made that includes Working Drawings and calculations, both signed by a professional engineer licensed in the State of North Carolina. Determination of spread shall be in accordance with the North Carolina Department of Transportation "Guidelines for Drainage Studies and Hydraulic Design", latest edition, and any applicable memos or revisions. No work may proceed until the plan is approved.

Hydraulic spread calculations may assume 0% blocked area in any drain, slot, or scupper when calculating spread for temporary conditions. See item 4.0 below for maintenance of drains.

3.0 HYDRAULIC SPREAD CONSTRUCTION LIMITATIONS

Hydraulic spread is typically controlled by permitting gutter flow to exit the gutterline via drains, scuppers, or horizontal slots in the barrier. Such means of exit are spaced as necessary to remove water from the gutter as engineering design indicates. The following measures shall be provided on the project:

1. Bridge on I240/I26 Right Lane over Hominy Creek, Stage 3 construction: The median-side Portable Concrete Barrier (anchored) shall provide drain slots in accordance with NCDOT Standard 1170.01 throughout the full length of the bridge and approach slab.
2. Bridge on I240/I26 Right Lane over Hominy Creek, Stage 3 construction (until traffic is placed in the final pattern): the left-side permanent barrier rail shall provide slots (8" wide x 4" tall) spaced at 4'-0" centers within the station ranges shown on the plans.

Any slots through the permanent barrier rails shall be closed at the completion of construction after traffic is placed into the final pattern. Utilize Type 3 grout material

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approved by the Materials and Tests Unit to close the slots. The Contractor shall include a method for closing the slots in the temporary deck drainage plan.

4.0 Maintenance of Existing Deck Drains, Proposed Deck Drains, Temporary Barrier Slots, or Other Means of Draining the Deck

During all phases of construction, the Contractor shall be responsible for maintaining the free passage of water through any and all elements intended to drain the deck. Drainage elements shall be kept free of debris at all times.

5.0 Washing of the Deck Following Application of De-Icing Salts and Adverse Weather

During construction, deck runoff is not carried to below the bottom of the girders. After winter storm events where de-icing salts were applied to the deck, the Contractor shall temporarily plug all drainage elements and shall wash the deck with clean water and simultaneously vacuum wash water from the gutterlines to prevent wash water from leaving the deck surface. The Contractor shall make every reasonable effort to complete washing of the deck prior to the next rainfall event.

Such washing operations shall be designed to commence under a rolling road block or under lane closure as permitted by the Contract Transportation Management Plans and the Engineer. Washing operations shall not commence until after the winter storm has completed and shall be coordinated with NCDOT maintenance personnel. Washing operations may not take place during rain. Only drains in gutterlines adjacent to washing operations may be blocked temporarily, and drains must be opened to traffic immediately following the vacuuming of wash water.

Prior to construction, the Contractor shall submit to the Engineer for review and approval the methods for washing the deck, containing, and removing wash water.

6.0 Measurement and Payment

Maintenance of temporary deck drainage and hydraulic spread, maintenance of deck drainage elements during construction, and washing of the deck and containment of wash water shall be considered incidental to the construction. The closing of slots in the barrier shall be considered incidental to the cost of “Concrete Barrier Rail”. The Contractor shall receive no separate payment for any of these items.

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Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
			ROADWAY ITEMS			
0001	0000100000-N	800	MOBILIZATION	Lump Sum	L.S.	
0002	0000400000-N	801	CONSTRUCTION SURVEYING	Lump Sum	L.S.	
0003	0001000000-E	200	CLEARING & GRUBBING .. ACRE(S)	Lump Sum	L.S.	
0004	0008000000-E	200	SUPPLEMENTARY CLEARING & GRUBBING	3 ACR		
0005	0015000000-N	205	SEALING ABANDONED WELLS	1 EA		
0006	0022000000-E	225	UNCLASSIFIED EXCAVATION	794,779 CY		
0007	0036000000-E	225	UNDERCUT EXCAVATION	53,055 CY		
0008	0106000000-E	230	BORROW EXCAVATION	217,300 CY		
0009	0127000000-N	235	EMBANKMENT SETTLEMENT GAUGES	16 EA		
0010	0134000000-E	240	DRAINAGE DITCH EXCAVATION	8,550 CY		
0011	0141000000-E	240	BERM DITCH CONSTRUCTION	2,125 LF		
0012	0156000000-E	250	REMOVAL OF EXISTING ASPHALT PAVEMENT	67,050 SY		
0013	0163000000-E	250	REMOVAL OF EXISTING CONCRETE PAVEMENT	76,460 SY		
0014	0177000000-E	250	BREAKING OF EXISTING ASPHALT PAVEMENT	10,020 SY		
0015	0185000000-E	250	BREAKING OF EXISTING CONCRETE PAVEMENT	26,520 SY		
0016	0192000000-N	260	PROOF ROLLING	60 HR		
0017	0194000000-E	265	SELECT GRANULAR MATERIAL, CLASS III	2,600 CY		

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Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0018	0196000000-E	270	GEOTEXTILE FOR SOIL STABILIZATION	3,350 SY		
0019	0199000000-E	SP	TEMPORARY SHORING	35,430 SF		
0020	0223000000-E	275	ROCK PLATING	640 SY		
0021	0234000000-E	SP	GENERIC GRADING ITEM LIGHTWEIGHT AGGREGATE	10,000 CY		
0022	0241000000-E	SP	GENERIC GRADING ITEM GEOTEXTILE FOR LIGHTWEIGHT AGGREGATE	2,000 SY		
0023	0248000000-N	SP	GENERIC GRADING ITEM TYPE 1 BRIDGE APPROACH FILL, STATION 19+17.50 -Y2RPB-	Lump Sum	L.S.	
0024	0248000000-N	SP	GENERIC GRADING ITEM TYPE 1 BRIDGE APPROACH FILL, STATION 28+46.00 -Y2RPC-	Lump Sum	L.S.	
0025	0248000000-N	SP	GENERIC GRADING ITEM TYPE 1 BRIDGE APPROACH FILL, STATION 45+44.00 -L- RT	Lump Sum	L.S.	
0026	0248000000-N	SP	GENERIC GRADING ITEM TYPE 1 BRIDGE APPROACH FILL, STATION 45+58.00 -L- LT	Lump Sum	L.S.	
0027	0248000000-N	SP	GENERIC GRADING ITEM TYPE 2 BRIDGE APPROACH FILL, STATION 105+49.43 -L- LT	Lump Sum	L.S.	
0028	0248000000-N	SP	GENERIC GRADING ITEM TYPE 2 BRIDGE APPROACH FILL, STATION 105+49.43 -L- RT	Lump Sum	L.S.	
0029	0248000000-N	SP	GENERIC GRADING ITEM TYPE 2 BRIDGE APPROACH FILL, STATION 19+17.50 -Y2RPB-	Lump Sum	L.S.	
0030	0248000000-N	SP	GENERIC GRADING ITEM TYPE 2 BRIDGE APPROACH FILL, STATION 22+70.15 -Y2-	Lump Sum	L.S.	
0031	0248000000-N	SP	GENERIC GRADING ITEM TYPE 2 BRIDGE APPROACH FILL, STATION 83+50.80 -L- LT	Lump Sum	L.S.	
0032	0248000000-N	SP	GENERIC GRADING ITEM TYPE 2 BRIDGE APPROACH FILL, STATION 83+50.80 -L- RT	Lump Sum	L.S.	

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Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0033	0318000000-E	300	FOUNDATION CONDITIONING MATERIAL, MINOR STRUCTURES	5,008 TON		
0034	0321000000-E	300	FOUNDATION CONDITIONING GEOTEXTILE	17,651 SY		
0035	0342000000-E	310	**" SIDE DRAIN PIPE (30")	208 LF		
0036	0342000000-E	310	**" SIDE DRAIN PIPE (36")	324 LF		
0037	0342000000-E	310	**" SIDE DRAIN PIPE (42")	528 LF		
0038	0342000000-E	310	**" SIDE DRAIN PIPE (48")	188 LF		
0039	0342000000-E	310	**" SIDE DRAIN PIPE (66")	36 LF		
0040	0343000000-E	310	15" SIDE DRAIN PIPE	2,740 LF		
0041	0344000000-E	310	18" SIDE DRAIN PIPE	1,936 LF		
0042	0345000000-E	310	24" SIDE DRAIN PIPE	596 LF		
0043	0348000000-E	310	**" SIDE DRAIN PIPE ELBOWS (15")	6 EA		
0044	0348000000-E	310	**" SIDE DRAIN PIPE ELBOWS (18")	6 EA		
0045	0348000000-E	310	**" SIDE DRAIN PIPE ELBOWS (24")	4 EA		
0046	0348000000-E	310	**" SIDE DRAIN PIPE ELBOWS (30")	2 EA		
0047	0348000000-E	310	**" SIDE DRAIN PIPE ELBOWS (36")	2 EA		
0048	0348000000-E	310	**" SIDE DRAIN PIPE ELBOWS (42")	6 EA		
0049	0348000000-E	310	**" SIDE DRAIN PIPE ELBOWS (48")	2 EA		

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Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0050	0348000000-E	310	**" SIDE DRAIN PIPE ELBOWS (66")	2 EA		
0051	0372000000-E	310	18" RC PIPE CULVERTS, CLASS III	96 LF		
0052	0396000000-E	310	42" RC PIPE CULVERTS, CLASS III	20 LF		
0053	0414000000-E	310	60" RC PIPE CULVERTS, CLASS III	336 LF		
0054	0420000000-E	310	66" RC PIPE CULVERTS, CLASS III	32 LF		
0055	0426000000-E	310	72" RC PIPE CULVERTS, CLASS III	160 LF		
0056	0448000000-E	310	****" RC PIPE CULVERTS, CLASS IV (48")	172 LF		
0057	0448000000-E	310	****" RC PIPE CULVERTS, CLASS IV (72")	228 LF		
0058	0448200000-E	310	15" RC PIPE CULVERTS, CLASS IV	9,256 LF		
0059	0448300000-E	310	18" RC PIPE CULVERTS, CLASS IV	8,364 LF		
0060	0448400000-E	310	24" RC PIPE CULVERTS, CLASS IV	2,056 LF		
0061	0448500000-E	310	30" RC PIPE CULVERTS, CLASS IV	1,580 LF		
0062	0448600000-E	310	36" RC PIPE CULVERTS, CLASS IV	1,124 LF		
0063	0448700000-E	310	42" RC PIPE CULVERTS, CLASS IV	436 LF		
0064	0449000000-E	310	**" RC PIPE CULVERTS, CLASS V (30")	92 LF		
0065	0449000000-E	310	**" RC PIPE CULVERTS, CLASS V (66")	32 LF		
0066	0576000000-E	310	**" CS PIPE CULVERTS, *****" THICK (48", 0.109")	72 LF		

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Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0067	0582000000-E	310	15" CS PIPE CULVERTS, 0.064" THICK	1,220 LF		
0068	0588000000-E	310	18" CS PIPE CULVERTS, 0.064" THICK	1,076 LF		
0069	0594000000-E	310	24" CS PIPE CULVERTS, 0.064" THICK	164 LF		
0070	0600000000-E	310	30" CS PIPE CULVERTS, 0.079" THICK	100 LF		
0071	0636000000-E	310	**" CS PIPE ELBOWS, *****" THICK (15", 0.064")	10 EA		
0072	0636000000-E	310	**" CS PIPE ELBOWS, *****" THICK (18", 0.064")	18 EA		
0074	0973100000-E	330	**" WELDED STEEL PIPE, ****" THICK, GRADE B IN SOIL (36", 0.532")	116 LF		
0075	0973100000-E	330	**" WELDED STEEL PIPE, ****" THICK, GRADE B IN SOIL (42", 0.625")	190 LF		
0076	0973100000-E	330	**" WELDED STEEL PIPE, ****" THICK, GRADE B IN SOIL (48", 0.625")	130 LF		
0077	0973100000-E	330	**" WELDED STEEL PIPE, ****" THICK, GRADE B IN SOIL (60", 0.844")	178 LF		
0078	0973100000-E	330	**" WELDED STEEL PIPE, ****" THICK, GRADE B IN SOIL (72", 1.000")	148 LF		
0079	0973300000-E	330	**" WELDED STEEL PIPE, ****" THICK, GRADE B NOT IN SOIL (36", 0.532")	116 LF		
0080	0973300000-E	330	**" WELDED STEEL PIPE, ****" THICK, GRADE B NOT IN SOIL (42", 0.625")	190 LF		
0081	0973300000-E	330	**" WELDED STEEL PIPE, ****" THICK, GRADE B NOT IN SOIL (48", 0.625")	130 LF		
0082	0973300000-E	330	**" WELDED STEEL PIPE, ****" THICK, GRADE B NOT IN SOIL (60", 0.844")	178 LF		

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Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0083	0973300000-E	330	**" WELDED STEEL PIPE, ****" THICK, GRADE B NOT IN SOIL (72", 1.000")	148 LF		
0084	0986000000-E	SP	GENERIC PIPE ITEM 15" SEALED POLYPROPYLENE PIPE	388 LF		
0085	0986000000-E	SP	GENERIC PIPE ITEM 18" SEALED POLYPROPYLENE PIPE	500 LF		
0086	0986000000-E	SP	GENERIC PIPE ITEM 18" SEALED XP	4,940 LF		
0087	0986000000-E	SP	GENERIC PIPE ITEM 24" SEALED XP	1,072 LF		
0088	0986000000-E	SP	GENERIC PIPE ITEM 30" SEALED XP	648 LF		
0089	0986000000-E	SP	GENERIC PIPE ITEM 36" SEALED XP	208 LF		
0090	0986000000-E	SP	GENERIC PIPE ITEM 42" SEALED XP	904 LF		
0091	0986000000-E	SP	GENERIC PIPE ITEM 48" PIPE REHABILITATION CIPP LINER	188 LF		
0092	0986000000-E	SP	GENERIC PIPE ITEM 48" SEALED XP	116 LF		
0093	0986000000-E	SP	GENERIC PIPE ITEM 6" HDPE NONPERFORATED	15 LF		
0094	0986000000-E	SP	GENERIC PIPE ITEM 6" HDPE PERFORATED	90 LF		
0095	0986000000-E	SP	GENERIC PIPE ITEM 72" PIPE REHABILITATION CIPP LINER	283 LF		
0096	0992000000-E	SP	GENERIC PIPE ITEM 6" CLEANOUT	4 EA		
0097	0992000000-E	SP	GENERIC PIPE ITEM 6" CLEANOUT CAP (THREADED)	4 EA		
0098	0992000000-E	SP	GENERIC PIPE ITEM 6" HDPE 45-DEGREE BEND	1 EA		
0099	0992000000-E	SP	GENERIC PIPE ITEM 6" X 6" X 6" HDPE TEE	1 EA		

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Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0100	0995000000-E	340	PIPE REMOVAL	14,951 LF		
0102	1011000000-N	500	FINE GRADING	Lump Sum	L.S.	
0103	1099500000-E	505	SHALLOW UNDERCUT	1,000 CY		
0104	1099700000-E	505	CLASS IV SUBGRADE STABILIZATION	102,500 TON		
0105	1110000000-E	510	STABILIZER AGGREGATE	500 TON		
0106	1112000000-E	505	GEOTEXTILE FOR SUBGRADE STABILIZATION	226,350 SY		
0107	1121000000-E	520	AGGREGATE BASE COURSE	35,100 TON		
0108	1220000000-E	545	INCIDENTAL STONE BASE	500 TON		
0109	1275000000-E	600	PRIME COAT	5,100 GAL		
0110	1330000000-E	607	INCIDENTAL MILLING	4,000 SY		
0111	1491000000-E	610	ASPHALT CONC BASE COURSE, TYPE B25.0C	37,800 TON		
0112	1503000000-E	610	ASPHALT CONC INTERMEDIATE COURSE, TYPE I19.0C	39,300 TON		
0113	1519000000-E	610	ASPHALT CONC SURFACE COURSE, TYPE S9.5B	16,700 TON		
0114	1523000000-E	610	ASPHALT CONC SURFACE COURSE, TYPE S9.5C	23,100 TON		
0115	1575000000-E	620	ASPHALT BINDER FOR PLANT MIX	5,920 TON		
0116	1693000000-E	654	ASPHALT PLANT MIX, PAVEMENT REPAIR	5,357 TON		
0117	1841000000-E	665	GENERIC PAVING ITEM MILLED RUMBLE STRIPS (ASPHALT CONCRETE), (16")	38,990 LF		

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Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0118	1847000000-E	710	*****" PORT CEM CONC PAVEMENT, THROUGH LANES (WITH DOWELS) (11")	79,310 SY		
0119	1891000000-E	SP	GENERIC PAVING ITEM NEXT GENERATION CONCRETE SURFACE (NGCS) GRINDING	79,310 SY		
0120	1920000000-E	724	NONWOVEN GEOTEXTILE INTERLAYER	79,310 SY		
0121	2022000000-E	815	SUBDRAIN EXCAVATION	558 CY		
0122	2026000000-E	815	GEOTEXTILE FOR SUBSURFACE DRAINS	1,660 SY		
0123	2036000000-E	815	SUBDRAIN COARSE AGGREGATE	279 CY		
0124	2044000000-E	815	6" PERFORATED SUBDRAIN PIPE	1,660 LF		
0125	2070000000-N	815	SUBDRAIN PIPE OUTLET	4 EA		
0126	2077000000-E	815	6" OUTLET PIPE	24 LF		
0127	2099000000-E	816	SHOULDER DRAIN	24,040 LF		
0128	2110000000-E	816	4" SHOULDER DRAIN PIPE	24,040 LF		
0129	2121000000-E	816	4" OUTLET PIPE FOR SHOULDER DRAINS	540 LF		
0130	2132000000-N	816	CONCRETE PAD FOR SHOULDER DRAIN PIPE OUTLET	10 EA		
0131	2190000000-N	828	TEMPORARY STEEL PLATE COVERS FOR MASONRY DRAINAGE STRUCTURE	21 EA		
0132	2209000000-E	838	ENDWALLS	26.8 CY		
0133	2220000000-E	838	REINFORCED ENDWALLS	27.2 CY		
0134	2253000000-E	840	PIPE COLLARS	3.716 CY		

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Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0135	2275000000-E	SP	FLOWABLE FILL	721 CY		
0136	2286000000-N	840	MASONRY DRAINAGE STRUCTURES	557 EA		
0137	2297000000-E	840	MASONRY DRAINAGE STRUCTURES	202.717 CY		
0138	2308000000-E	840	MASONRY DRAINAGE STRUCTURES	723 LF		
0139	2354000000-N	840	FRAME WITH GRATE, STD 840.22	2 EA		
0140	2364000000-N	840	FRAME WITH TWO GRATES, STD 840.16	10 EA		
0141	2364200000-N	840	FRAME WITH TWO GRATES, STD 840.20	13 EA		
0142	2365000000-N	840	FRAME WITH TWO GRATES, STD 840.22	86 EA		
0143	2366000000-N	840	FRAME WITH TWO GRATES, STD 840.24	9 EA		
0144	2367000000-N	840	FRAME WITH TWO GRATES, STD 840.29	5 EA		
0145	2374000000-N	840	FRAME WITH GRATE & HOOD, STD 840.03, TYPE ** (E)	10 EA		
0146	2374000000-N	840	FRAME WITH GRATE & HOOD, STD 840.03, TYPE ** (F)	52 EA		
0147	2374000000-N	840	FRAME WITH GRATE & HOOD, STD 840.03, TYPE ** (G)	58 EA		
0148	2396000000-N	840	FRAME WITH COVER, STD 840.54	50 EA		
0149	2407000000-N	840	STEEL FRAME WITH TWO GRATES, STD 840.37	255 EA		
0150	2440000000-N	852	CONCRETE TRANSITIONAL SECTION FOR CATCH BASIN	6 EA		
0151	2451000000-N	852	CONCRETE TRANSITIONAL SECTION FOR DROP INLET	8 EA		

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Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0152	2472000000-N	840	GENERIC DRAINAGE ITEM FRAME WITH COVER, STD 840.55	6 EA		
0153	2472000000-N	840	GENERIC DRAINAGE ITEM STEEL FRAME WITH FRAME AND TWO GRATES STD. 840.39	3 EA		
0154	2473000000-N	SP	GENERIC DRAINAGE ITEM DE-WATERING	2 EA		
0155	2473000000-N	SP	GENERIC DRAINAGE ITEM RESILIENT CONNECTOR	278 EA		
0156	2473000000-N	SP	GENERIC DRAINAGE ITEM TB CONTRACTOR DESIGNED MASONARY DRAINAGE STRUCTURES	46 EA		
0157	2473000000-N	SP	GENERIC DRAINAGE ITEM TRASH RACK (ORIFICE)	2 EA		
0158	2473000000-N	SP	GENERIC DRAINAGE ITEM TRASH RACK (RISER)	2 EA		
0159	2484000000-E	SP	GENERIC DRAINAGE ITEM PRE-INSTALLATION INSPECTION	471 LF		
0160	2492000000-E	SP	GENERIC DRAINAGE ITEM WASHED COARSE AGGREGATE (STD SIZE #57)	35 TON		
0161	2495000000-E	SP	GENERIC DRAINAGE ITEM ENGINEERED SOIL MEDIA	53 CY		
0162	2535000000-E	846	**" X **" CONCRETE CURB (8" X 18")	450 LF		
0163	2542000000-E	846	1'-6" CONCRETE CURB & GUTTER	2,740 LF		
0164	2549000000-E	846	2'-6" CONCRETE CURB & GUTTER	17,590 LF		
0165	2556000000-E	846	SHOULDER BERM GUTTER	3,880 LF		
0166	2577000000-E	846	CONCRETE EXPRESSWAY GUTTER	2,250 LF		
0167	2591000000-E	848	4" CONCRETE SIDEWALK	1,610 SY		
0168	2605000000-N	848	CONCRETE CURB RAMPS	33 EA		

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Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0169	2612000000-E	848	6" CONCRETE DRIVEWAY	170 SY		
0170	2619000000-E	850	4" CONCRETE PAVED DITCH	3,460 SY		
0171	2627000000-E	852	4" CONCRETE ISLAND COVER	2,740 SY		
0172	2647000000-E	852	5" MONOLITHIC CONCRETE ISLANDS (SURFACE MOUNTED)	2,020 SY		
0173	2703000000-E	854	CONCRETE BARRIER, TYPE ******* (I, SINGLE SLOPE)	1,560 LF		
0174	2703000000-E	854	CONCRETE BARRIER, TYPE ******* (T1)	1,180 LF		
0175	2703000000-E	854	CONCRETE BARRIER, TYPE ******* (T2)	1,040 LF		
0176	2710000000-N	854	CONCRETE BARRIER TRANSITION SECTION	12 EA		
0177	2717200000-E	854	MEDIAN HAZARD PROTECTION	3,190 LF		
0178	2724000000-E	857	PRECAST REINFORCED CONCRETE BARRIER, SINGLE FACED	14,370 LF		
0179	2738000000-E	SP	GENERIC PAVING ITEM 12" CONCRETE TRUCK APRON	1,250 SY		
0180	2738000000-E	SP	GENERIC PAVING ITEM STAMPED CONCRETE MEDIAN ISLAND	530 SY		
0181	2752000000-E	SP	GENERIC PAVING ITEM CONCRETE CAP FOR SINGLE FACED BARRIER FILL	480 LF		
0182	2753000000-E	846	GENERIC PAVING ITEM 3" ROLLED CONCRETE CURB	870 LF		
0183	2800000000-N	858	ADJUSTMENT OF CATCH BASINS	3 EA		
0184	2815000000-N	858	ADJUSTMENT OF DROP INLETS	12 EA		
0185	2830000000-N	858	ADJUSTMENT OF MANHOLES	1 EA		

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Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0186	2860000000-N	859	CONVERT EXISTING CATCH BASIN TO JUNCTION BOX	1 EA		
0187	2905000000-N	859	CONVERT EXISTING DROP INLET TO JUNCTION BOX	1 EA		
0188	2910000000-N	SP	CONVERT EXISTING TRAFFIC BEARING DROP INLET TO TRAFFIC BEARING JUNCTION BOX	7 EA		
0189	2950000000-N	859	CONVERT EXISTING JUNCTION BOX TO DROP INLET	2 EA		
0190	2995000000-N	SP	GENERIC DRAINAGE ITEM CONVERT EXISTING CATCH BASIN TO TRAFFIC BEARING JUNCTION BOX	9 EA		
0191	3345000000-E	864	REMOVE & RESET EXISTING GUARDRAIL	100 LF		
0192	3360000000-E	863	REMOVE EXISTING GUARDRAIL	25,810 LF		
0193	3387000000-N	862	TEMPORARY GUARDRAIL ANCHOR UNITS, TYPE ********* (THRIE-BEAM)	2 EA		
0194	3420000000-E	SP	GENERIC GUARDRAIL ITEM STEEL BEAM GUARDRAIL, SHOP CURVED, WEATHERING	600 LF		
0195	3420000000-E	SP	GENERIC GUARDRAIL ITEM STEEL BEAM GUARDRAIL, WEATHERING	8,775 LF		
0196	3420000000-E	SP	GENERIC GUARDRAIL ITEM WOOD RUB RAIL	625 LF		
0197	3435000000-N	SP	GENERIC GUARDRAIL ITEM ADDITIONAL GUARDRAIL POSTS, WEATHERING	10 EA		
0198	3435000000-N	SP	GENERIC GUARDRAIL ITEM GUARDRAIL ANCHOR UNITS, TYPE B-77, POWDER COATED GALVANIZED	41 EA		
0199	3435000000-N	SP	GENERIC GUARDRAIL ITEM GUARDRAIL ANCHOR UNITS, TYPE III, POWDER COATED GALVANIZED	2 EA		
0200	3435000000-N	SP	GENERIC GUARDRAIL ITEM GUARDRAIL END UNITS, TYPE AT-1, POWDER COATED GALVANIZED	1 EA		

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Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0201	3435000000-N	SP	GENERIC GUARDRAIL ITEM GUARDRAIL END UNITS, TYPE CAT-1, POWDER COATED GALVANIZED	14 EA		
0202	3435000000-N	SP	GENERIC GUARDRAIL ITEM GUARDRAIL END UNITS, TYPE TL-2, POWDER COATED GALVANIZED	8 EA		
0203	3435000000-N	SP	GENERIC GUARDRAIL ITEM GUARDRAIL END UNITS, TYPE TL-3, POWDER COATED GALVANIZED	8 EA		
0204	3435000000-N	SP	GENERIC GUARDRAIL ITEM IMPACT ATTENUATOR UNITS, TYPE TL-3, POWDER COATED GALVANIZED	2 EA		
0205	3435000000-N	SP	GENERIC GUARDRAIL ITEM STEEL BEAM GUARDRAIL TERMINAL SECTIONS, WEATHERING	4 EA		
0206	3503000000-E	866	WOVEN WIRE FENCE, 47" FABRIC	16,600 LF		
0207	3509000000-E	866	4" TIMBER FENCE POSTS, 7'-6" LONG	1,020 EA		
0208	3515000000-E	866	5" TIMBER FENCE POSTS, 8'-0" LONG	310 EA		
0209	3557000000-E	866	ADDITIONAL BARBED WIRE	400 LF		
0210	3575000000-E	SP	GENERIC FENCING ITEM 54" SHARED-USE PATH SAFETY RAIL	710 LF		
0211	3578000000-N	SP	GENERIC FENCING ITEM BOLLARDS	11 EA		
0212	3579000000-N	866	GENERIC FENCING ITEM BLACK VINYL COATED METAL LINE POSTS FOR 48" CHAIN LINK FENCE	570 EA		
0213	3579000000-N	866	GENERIC FENCING ITEM BLACK VINYL COATED METAL TERMINAL POSTS FOR 48" CHAIN LINK FENCE	50 EA		
0214	3580000000-E	866	GENERIC FENCING ITEM BLACK VINYL COATED CHAIN LINK FENCE, 48" FABRIC	6,730 LF		
0215	3595000000-E	869	RELAPPING GUARDRAIL	1,360 LF		

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Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0216	3628000000-E	876	RIP RAP, CLASS I	1,650 TON		
0217	3635000000-E	876	RIP RAP, CLASS II	1,020 TON		
0218	3649000000-E	876	RIP RAP, CLASS B	1,815 TON		
0219	3656000000-E	876	GEOTEXTILE FOR DRAINAGE	10,750 SY		
0220	4025000000-E	901	CONTRACTOR FURNISHED, TYPE *** SIGN (A)	815.1 SF		
0221	4025000000-E	901	CONTRACTOR FURNISHED, TYPE *** SIGN (B)	71.5 SF		
0222	4025000000-E	901	CONTRACTOR FURNISHED, TYPE *** SIGN (D)	57.75 SF		
0223	4025000000-E	901	CONTRACTOR FURNISHED, TYPE *** SIGN (F)	187.65 SF		
0224	4025000000-E	901	CONTRACTOR FURNISHED, TYPE *** SIGN (OVERLAY)	88.85 SF		
0225	4048000000-E	902	REINFORCED CONCRETE SIGN FOUNDATIONS	8 CY		
0226	4054000000-E	902	PLAIN CONCRETE SIGN FOUNDATIONS	2 CY		
0227	4057000000-E	SP	OVERHEAD FOOTING	216 CY		
0228	4060000000-E	903	SUPPORTS, BREAKAWAY STEEL BEAM	5,902 LB		
0229	4066000000-E	903	SUPPORTS, SIMPLE STEEL BEAM	3,541 LB		
0230	4072000000-E	903	SUPPORTS, 3-LB STEEL U-CHANNEL	5,032 LF		
0231	4079000000-N	903	SUPPORTS, BARRIER (SMALL)	7 EA		

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Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0232	4080000000-N	903	SUPPORTS, BARRIER (LARGE)	1 EA		
0233	4082000000-E	903	SUPPORTS, WOOD	1,705 LF		
0234	4096000000-N	904	SIGN ERECTION, TYPE D	15 EA		
0235	4102000000-N	904	SIGN ERECTION, TYPE E	150 EA		
0236	4108000000-N	904	SIGN ERECTION, TYPE F	46 EA		
0237	4110000000-N	904	SIGN ERECTION, TYPE *** (GROUND MOUNTED) (A)	22 EA		
0238	4110000000-N	904	SIGN ERECTION, TYPE *** (GROUND MOUNTED) (B)	9 EA		
0239	4114000000-N	904	SIGN ERECTION, MILEMARKERS	8 EA		
0240	4116000000-N	904	SIGN ERECTION, OVERLAY (GROUND MOUNTED)	9 EA		
0241	4116100000-N	904	SIGN ERECTION, RELOCATE TYPE **** (GROUND MOUNTED) (A)	52 EA		
0242	4116100000-N	904	SIGN ERECTION, RELOCATE TYPE **** (GROUND MOUNTED) (B)	4 EA		
0243	4116100000-N	904	SIGN ERECTION, RELOCATE TYPE **** (GROUND MOUNTED) (D)	8 EA		
0244	4116100000-N	904	SIGN ERECTION, RELOCATE TYPE **** (GROUND MOUNTED) (E)	8 EA		
0245	4116100000-N	904	SIGN ERECTION, RELOCATE TYPE **** (GROUND MOUNTED) (F)	50 EA		
0246	4116100000-N	904	SIGN ERECTION, RELOCATE TYPE **** (GROUND MOUNTED) (MILEMARKER)	6 EA		

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Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0247	4116200000-N	904	SIGN ERECTION, REPOSITION OVERHEAD	7 EA		
0248	4130000000-N	906	SUPPORTS, OVERHEAD SIGN STRUCTURE ***** (108+29 -L-)	Lump Sum	L.S.	
0249	4130000000-N	906	SUPPORTS, OVERHEAD SIGN STRUCTURE ***** (109+50 -L-)	Lump Sum	L.S.	
0250	4130000000-N	906	SUPPORTS, OVERHEAD SIGN STRUCTURE ***** (177' WEST OF EXISTING)	Lump Sum	L.S.	
0251	4130000000-N	906	SUPPORTS, OVERHEAD SIGN STRUCTURE ***** (18+00 -L-)	Lump Sum	L.S.	
0252	4130000000-N	906	SUPPORTS, OVERHEAD SIGN STRUCTURE ***** (31+00 -L-)	Lump Sum	L.S.	
0253	4130000000-N	906	SUPPORTS, OVERHEAD SIGN STRUCTURE ***** (34+00 -Y2RPBC-)	Lump Sum	L.S.	
0254	4130000000-N	906	SUPPORTS, OVERHEAD SIGN STRUCTURE ***** (34+50 -L-)	Lump Sum	L.S.	
0255	4130000000-N	906	SUPPORTS, OVERHEAD SIGN STRUCTURE ***** (96+00 -L-)	Lump Sum	L.S.	
0256	4130000000-N	906	SUPPORTS, OVERHEAD SIGN STRUCTURE ***** (99+00 -L-)	Lump Sum	L.S.	
0257	4138000000-N	907	DISPOSAL OF SUPPORT, STEEL BEAM	6 EA		
0258	4141000000-N	907	DISPOSAL OF SUPPORT, WOOD	62 EA		
0259	4149000000-N	907	DISPOSAL OF SIGN SYSTEM, OVERHEAD	5 EA		
0260	4151000000-N	907	STOCKPILE SIGN SYSTEM, STEEL BEAM	1 EA		
0261	4152000000-N	907	DISPOSAL OF SIGN SYSTEM, STEEL BEAM	20 EA		

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Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0262	4154000000-N	907	STOCKPILE SIGN SYSTEM, U-CHANNEL	8 EA		
0263	4155000000-N	907	DISPOSAL OF SIGN SYSTEM, U-CHANNEL	141 EA		
0264	4157000000-N	907	STOCKPILE SIGN SYSTEM, WOOD	2 EA		
0265	4158000000-N	907	DISPOSAL OF SIGN SYSTEM, WOOD	4 EA		
0266	4192000000-N	907	DISPOSAL OF SUPPORT, U-CHANNEL	111 EA		
0267	4236000000-N	907	DISPOSAL OF SIGN, A & B (GROUND MOUNTED)	1 EA		
0268	4237000000-N	907	STOCKPILE SIGN, D, E OR F	1 EA		
0269	4238000000-N	907	DISPOSAL OF SIGN, D, E OR F	12 EA		
0270	4242000000-N	907	DISPOSAL OF SIGN, OVERLAY (GROUND MOUNTED)	2 EA		
0271	4360000000-N	SP	GENERIC SIGNING ITEM DISPOSAL OF SIGN SYSTEM, TEMPORARY WOOD SKID SYSTEM	1 EA		
0272	4360000000-N	SP	GENERIC SIGNING ITEM DISPOSAL OF SUPPORT, PORTABLE SIGN SUPPORT	4 EA		
0273	4360000000-N	SP	GENERIC SIGNING ITEM DISPOSAL OF SUPPORT, TEMPORARY WOODEN SKID SYSTEM	14 EA		
0274	4360000000-N	SP	GENERIC SIGNING ITEM RELOCATE EXISTING WAY FINDING ASSEMBLY	3 EA		
0275	4360000000-N	SP	GENERIC SIGNING ITEM SIGNS, COVERING	7 EA		
0276	4360000000-N	SP	GENERIC SIGNING ITEM STOCKPILE EXISTING WAY FINDING ASSEMBLY	1 EA		
0277	4360000000-N	SP	GENERIC SIGNING ITEM STOCKPILE OF SIGN, LOGO BUSINESS PANEL	1 EA		

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Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0278	4360000000-N	SP	GENERIC SIGNING ITEM STOCKPILE SIGN SYSTEM, PORTABLE SIGN SUPPORT	1 EA		
0279	4360000000-N	SP	GENERIC SIGNING ITEM SUPPORTS, PORTABLE SIGN SUPPORT	4 EA		
0280	4360000000-N	SP	GENERIC SIGNING ITEM SUPPORTS, TEMPORARY WOODEN SKID SYSTEM	23 EA		
0281	4400000000-E	1110	WORK ZONE SIGNS (STATIONARY)	776 SF		
0282	4402000000-E	SP	HIGH VISIBILITY STATIONARY SIGNS	244 SF		
0283	4405000000-E	1110	WORK ZONE SIGNS (PORTABLE)	176 SF		
0284	4407000000-E	SP	HIGH VISIBILITY PORTABLE SIGNS	342 SF		
0285	4410000000-E	1110	WORK ZONE SIGNS (BARRICADE MOUNTED)	134 SF		
0286	4415000000-N	1115	FLASHING ARROW BOARD	8 EA		
0287	4420000000-N	1120	PORTABLE CHANGEABLE MESSAGE SIGN	8 EA		
0288	4422000000-N	1120	PORTABLE CHANGEABLE MESSAGE SIGN (SHORT TERM)	150 DAY		
0289	4424000000-N	SP	WORK ZONE PRESENCE LIGHTING	19 EA		
0290	4424500000-N	SP	TEMPORARY PORTABLE TRAFFIC SIGNAL SYSTEM	1 EA		
0291	4430000000-N	1130	DRUMS	75 EA		
0292	4432000000-N	SP	HIGH VISIBILITY DRUMS	250 EA		
0293	4434000000-N	1140	SEQUENTIAL FLASHING WARNING LIGHTS	24 EA		
0294	4435000000-N	1135	CONES	75 EA		

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Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0295	4445000000-E	1145	BARRICADES (TYPE III)	240 LF		
0296	4447000000-E	SP	PEDESTRIAN CHANNELIZING DEVICES	202 LF		
0297	4455000000-N	1150	FLAGGER	450 DAY		
0298	4465000000-N	1160	TEMPORARY CRASH CUSHIONS	14 EA		
0299	4470000000-N	1160	REMOVE & RESET TEMPORARY CRASH CUSHION	26 EA		
0300	4480000000-N	1165	TMA	2 EA		
0301	4485000000-E	1170	PORTABLE CONCRETE BARRIER	21,000 LF		
0302	4490000000-E	1170	PORTABLE CONCRETE BARRIER (ANCHORED)	370 LF		
0303	4500000000-E	1170	REMOVE AND RESET PORTABLE CONCRETE BARRIER	62,800 LF		
0304	4510000000-N	1190	LAW ENFORCEMENT	192 HR		
0305	4516000000-N	1180	SKINNY DRUM	50 EA		
0306	4570000000-E	SP	TEMPORARY GLARE SCREEN	5,796 LF		
0307	4589000000-N	SP	GENERIC TRAFFIC CONTROL ITEM DYNAMIC ZIPPER MERGE SYSTEM DEPLOYMENT	Lump Sum	L.S.	
0308	4600000000-N	SP	GENERIC TRAFFIC CONTROL ITEM CONNECTED LANE CLOSURE SYSTEM	2 EA		
0309	4600000000-N	SP	GENERIC TRAFFIC CONTROL ITEM DYNAMIC ZIPPER MERGE SYSTEM RELOCATION	1 EA		
0310	4600000000-N	SP	GENERIC TRAFFIC CONTROL ITEM HIGH VISIBILITY SKINNY DRUMS	50 EA		
0311	4609000000-N	SP	GENERIC TRAFFIC CONTROL ITEM DYNAMIC ZIPPER MERGE SYSTEM	84 DAY		

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Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0312	4650000000-N	1251	TEMPORARY RAISED PAVEMENT MARKERS	1,200 EA		
0313	4770000000-E	1205	COLD APPLIED PLASTIC PAVEMENT MARKING LINES, TYPE ** (4") (IV)	15,216 LF		
0314	4775000000-E	1205	COLD APPLIED PLASTIC PAVEMENT MARKING LINES, TYPE ** (6") (IV)	19,713 LF		
0315	4785000000-E	1205	COLD APPLIED PLASTIC PAVEMENT MARKING LINES, TYPE ** (12") (IV)	2,162 LF		
0316	4805000000-N	1205	COLD APPLIED PLASTIC PAVEMENT MARKING SYMBOL, TYPE ** (IV)	20 EA		
0317	4810000000-E	1205	PAINT PAVEMENT MARKING LINES (4")	151,248 LF		
0318	4820000000-E	1205	PAINT PAVEMENT MARKING LINES (8")	10,000 LF		
0319	4825000000-E	1205	PAINT PAVEMENT MARKING LINES (12")	10,000 LF		
0320	4835000000-E	1205	PAINT PAVEMENT MARKING LINES (24")	10,000 LF		
0321	4840000000-N	1205	PAINT PAVEMENT MARKING CHARACTER	200 EA		
0322	4845000000-N	1205	PAINT PAVEMENT MARKING SYMBOL	370 EA		
0323	4847500000-E	SP	WORK ZONE PERFORMANCE PAVEMENT MARKING LINES, 6"	568,752 LF		
0324	4850000000-E	1205	REMOVAL OF PAVEMENT MARKING LINES (4")	21,520 LF		
0325	4855000000-E	1205	REMOVAL OF PAVEMENT MARKING LINES (6")	22,460 LF		
0326	4860000000-E	1205	REMOVAL OF PAVEMENT MARKING LINES (8")	1,000 LF		
0327	4865000000-E	1205	REMOVAL OF PAVEMENT MARKING LINES (12")	1,000 LF		

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Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0328	4870000000-E	1205	REMOVAL OF PAVEMENT MARKING LINES (24")	1,130 LF		
0329	4875000000-N	1205	REMOVAL OF PAVEMENT MARKING SYMBOLS & CHARACTERS	107 EA		
0330	4890000000-E	SP	GENERIC PAVEMENT MARKING ITEM YIELD LINE INTEGRATED MULTIPOLYMER PAVEMENT MARKING (24", 90 MILS)	118 LF		
0331	4890000000-E	SP	GENERIC PAVEMENT MARKING ITEM YIELD LINE PAINT PAVEMENT MARKING, 24"	70 LF		
0332	4891000000-E	1205	GENERIC PAVEMENT MARKING ITEM INTEGRATED MULTIPOLYMER PAVEMENT MARKING LINES (12", 90 MILS)	7,491 LF		
0333	4891000000-E	1205	GENERIC PAVEMENT MARKING ITEM INTEGRATED MULTIPOLYMER PAVEMENT MARKING LINES (24", 90 MILS)	2,562 LF		
0334	4891000000-E	1205	GENERIC PAVEMENT MARKING ITEM INTEGRATED MULTIPOLYMER PAVEMENT MARKING LINES (4", 90 MILS)	16,549 LF		
0335	4891000000-E	1205	GENERIC PAVEMENT MARKING ITEM INTEGRATED MULTIPOLYMER PAVEMENT MARKING LINES (6", 90 MILS)	74,199 LF		
0336	4891000000-E	1205	GENERIC PAVEMENT MARKING ITEM INTEGRATED MULTIPOLYMER PAVEMENT MARKING LINES (8", 90 MILS)	1,863 LF		
0337	4892000000-N	1205	GENERIC PAVEMENT MARKING ITEM INTEGRATED MULTIPOLYMER PAVEMENT MARKING CHARACTERS (90 MILS)	36 EA		
0338	4892000000-N	1205	GENERIC PAVEMENT MARKING ITEM INTEGRATED MULTIPOLYMER PAVEMENT MARKING SYMBOLS (90 MILS)	124 EA		
0339	4894900000-E	SP	GENERIC PAVEMENT MARKING ITEM WORK ZONE PERFORMANCE PAVEMENT MARKING CHARACTERS	20 EA		
0340	4894900000-E	SP	GENERIC PAVEMENT MARKING ITEM WORK ZONE PERFORMANCE PAVEMENT MARKING SYMBOLS	20 EA		

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Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0341	4895000000-N	SP	GENERIC PAVEMENT MARKING ITEM INLAID CRADLE MARKERS	1,887 EA		
0342	4900000000-N	1251	PERMANENT RAISED PAVEMENT MARKERS	93 EA		
0343	4915000000-E	1264	7' U-CHANNEL POSTS	9 EA		
0344	4955000000-N	1264	OBJECT MARKERS (END OF ROAD)	9 EA		
0345	5070000000-N	SP	STANDARD FOUNDATION ********* (TYPE M1)	22 EA		
0346	5070000000-N	SP	STANDARD FOUNDATION ********* (TYPE M2)	4 EA		
0347	5070000000-N	SP	STANDARD FOUNDATION ********* (TYPE R1)	39 EA		
0348	5070000000-N	SP	STANDARD FOUNDATION ********* (TYPE R2)	4 EA		
0349	5080000000-N	SP	LIGHT STANDARD LUMINAIRES, TYPE ********** (RDW, 150W LED)	91 EA		
0350	5080000000-N	SP	LIGHT STANDARD LUMINAIRES, TYPE ********** (RDW, 195W LED)	24 EA		
0351	5120000000-N	1407	ELECTRIC SERVICE POLE ********** (30' CLASS 4)	2 EA		
0352	5125000000-E	1407	ELECTRIC SERVICE LATERAL ********** (3 #1/0 USE)	50 LF		
0353	5150000000-E	1409	ELECTRICAL DUCT, TYPE **, SIZE ***** (TL, 3")	985 LF		
0354	5150000000-E	1409	ELECTRICAL DUCT, TYPE **, SIZE ***** (TL, 4")	870 LF		
0355	5155000000-E	1409	ELECTRICAL DUCT, TYPE BD, SIZE ***** (2")	1,165 LF		
0356	5170000000-E	1410	** #8 W/G FEEDER CIRCUIT (2)	1,785 LF		

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Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0357	5175000000-E	1410	** #6 W/G FEEDER CIRCUIT (2)	940 LF		
0358	5185000000-E	1410	** #2 W/G FEEDER CIRCUIT (2)	585 LF		
0359	5205000000-E	1410	** #8 W/G FEEDER CIRCUIT IN *****" CONDUIT (2, 1-1/2")	10,850 LF		
0360	5210000000-E	1410	** #6 W/G FEEDER CIRCUIT IN *****" CONDUIT (2, 1-1/2")	9,380 LF		
0361	5220000000-E	1410	** #2 W/G FEEDER CIRCUIT IN *****" CONDUIT (2, 1-1/2")	4,350 LF		
0362	5240000000-N	1411	ELECTRICAL JUNCTION BOXES ********** (CS36)	2 EA		
0363	5240000000-N	1411	ELECTRICAL JUNCTION BOXES ********** (IG18)	15 EA		
0364	5240000000-N	1411	ELECTRICAL JUNCTION BOXES ********** (IG36)	6 EA		
0365	5240000000-N	1411	ELECTRICAL JUNCTION BOXES ********** (LS18)	32 EA		
0366	5240000000-N	1411	ELECTRICAL JUNCTION BOXES ********** (LS36)	6 EA		
0367	5252500000-N	1412	UNDERPASS LUMINARIES, TYPE ***** (WM)	6 EA		
0368	5253000000-N	1412	UNDERPASS CIRCUITRY AT ******* (UPL-F1)	Lump Sum	L.S.	
0369	5253000000-N	1412	UNDERPASS CIRCUITRY AT ******* (UPL-F2)	Lump Sum	L.S.	
0370	5255000000-N	1413	PORTABLE LIGHTING	Lump Sum	L.S.	
0371	5260000000-N	SP	GENERIC LIGHTING ITEM BREVARD RD BRIDGE ECS	Lump Sum	L.S.	
0372	5260000000-N	SP	GENERIC LIGHTING ITEM BRIDGES OVER HOMINY CREEK ECS	Lump Sum	L.S.	

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Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0373	5260000000-N	SP	GENERIC LIGHTING ITEM STATE ST BRIDGE ECS	Lump Sum	L.S.	
0374	5260000000-N	SP	GENERIC LIGHTING ITEM STEEL FRAME, CCTV DISCON, PANEL P1	Lump Sum	L.S.	
0375	5265000000-E	SP	GENERIC LIGHTING ITEM 2" MUP LIGHTING CONDUIT, TYPE BD	8,620 LF		
0376	5270000000-N	SP	GENERIC LIGHTING ITEM FORMED OPENING - FO18	30 EA		
0377	5270000000-N	SP	GENERIC LIGHTING ITEM LIGHT CONTROL EQUIPMENT, TYPE RW, 240/480V	1 EA		
0378	5270000000-N	SP	GENERIC LIGHTING ITEM PAINTED LIGHT STANDARD, 35' SA, 15' ARM	16 EA		
0379	5270000000-N	SP	GENERIC LIGHTING ITEM PAINTED LIGHT STANDARD, 35' TA, 15' ARM	4 EA		
0380	5270000000-N	SP	GENERIC LIGHTING ITEM PAINTED LIGHT STANDARD, 45' SA, 15' ARM	35 EA		
0381	5270000000-N	SP	GENERIC LIGHTING ITEM PAINTED LIGHT STANDARD, 45' TA, 15' ARM	28 EA		
0382	5270000000-N	SP	GENERIC LIGHTING ITEM REMOVE CONTROL SYSTEM	1 EA		
0383	5270000000-N	SP	GENERIC LIGHTING ITEM REMOVE LIGHT STANDARD FOUNDATION	61 EA		
0384	5270000000-N	SP	GENERIC LIGHTING ITEM REMOVE SINGLE ARM LIGHT STANDARD	61 EA		
0385	5325200000-E	1510	2" WATER LINE	484 LF		
0386	5325400000-E	1510	4" WATER LINE	7 LF		
0387	5325600000-E	1510	6" WATER LINE	464 LF		

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Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0388	5325800000-E	1510	8" WATER LINE	236 LF		
0389	5326200000-E	1510	12" WATER LINE	592 LF		
0390	5327400000-E	1510	24" WATER LINE	4,133 LF		
0391	5329000000-E	1510	DUCTILE IRON WATER PIPE FITTINGS	51,835 LB		
0392	5536000000-E	1515	2" VALVE	3 EA		
0393	5540000000-E	1515	6" VALVE	12 EA		
0394	5546000000-E	1515	8" VALVE	2 EA		
0395	5558000000-E	1515	12" VALVE	2 EA		
0396	5559400000-E	1515	24" VALVE	11 EA		
0397	5589200000-E	1515	2" AIR RELEASE VALVE	2 EA		
0398	5648000000-N	1515	RELOCATE WATER METER	12 EA		
0399	5649000000-N	1515	RECONNECT WATER METER	2 EA		
0400	5666000000-N	1515	FIRE HYDRANT	7 EA		
0401	5673000000-E	1515	FIRE HYDRANT LEG	125 LF		
0402	5686000000-E	1515	**" WATER SERVICE LINE (2")	285 LF		
0403	5686500000-E	1515	WATER SERVICE LINE	645 LF		
0404	5691200000-E	1520	6" SANITARY GRAVITY SEWER	112 LF		

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Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0405	5691300000-E	1520	8" SANITARY GRAVITY SEWER	3,639 LF		
0406	5691400000-E	1520	10" SANITARY GRAVITY SEWER	1,042 LF		
0407	5691500000-E	1520	12" SANITARY GRAVITY SEWER	535 LF		
0408	5692000000-E	1520	30" SANITARY GRAVITY SEWER	711 LF		
0409	5768000000-N	1520	SANITARY SEWER CLEAN-OUT	26 EA		
0410	5768500000-E	1520	SEWER SERVICE LINE	700 LF		
0411	5773000000-N	SP	UTILITY VAULT	1 EA		
0412	5775000000-E	1525	4' DIA UTILITY MANHOLE	44 EA		
0413	5776000000-E	1525	5' DIA UTILITY MANHOLE	4 EA		
0414	5777000000-E	1525	6' DIA UTILITY MANHOLE	1 EA		
0415	5781000000-E	1525	UTILITY MANHOLE WALL 4' DIA	332 LF		
0416	5782000000-E	1525	UTILITY MANHOLE WALL 5' DIA	1 LF		
0417	5798000000-E	1530	ABANDON **" UTILITY PIPE (27")	624 LF		
0418	5800000000-E	1530	ABANDON 6" UTILITY PIPE	3,539 LF		
0419	5801000000-E	1530	ABANDON 8" UTILITY PIPE	4,599 LF		
0420	5802000000-E	1530	ABANDON 10" UTILITY PIPE	849 LF		
0421	5804000000-E	1530	ABANDON 12" UTILITY PIPE	352 LF		

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Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0422	5813000000-E	1530	ABANDON 24" UTILITY PIPE	3,900 LF		
0423	5815000000-N	1530	REMOVE WATER METER	34 EA		
0424	5815500000-N	1530	REMOVE FIRE HYDRANT	4 EA		
0425	5816000000-N	1530	ABANDON UTILITY MANHOLE	40 EA		
0426	5828000000-N	1530	REMOVE UTILITY MANHOLE	3 EA		
0427	5835000000-E	1540	**" ENCASEMENT PIPE (48")	634 LF		
0428	5835000000-E	1540	**" ENCASEMENT PIPE (60")	344 LF		
0429	5836000000-E	1540	24" ENCASEMENT PIPE	1,707 LF		
0430	5872500000-E	1550	BORE AND JACK OF **" (24")	1,707 LF		
0431	5872500000-E	1550	BORE AND JACK OF **" (48")	634 LF		
0432	5872500000-E	1550	BORE AND JACK OF **" (60")	344 LF		
0433	5882000000-N	SP	GENERIC UTILITY ITEM 6" FLEXIBLE COUPLING	2 EA		
0434	5882000000-N	SP	GENERIC UTILITY ITEM ABANDON UTILITY VAULT	1 EA		
0435	6000000000-E	1605	TEMPORARY SILT FENCE	53,700 LF		
0436	6006000000-E	1610	STONE FOR EROSION CONTROL, CLASS A	2,450 TON		
0437	6009000000-E	1610	STONE FOR EROSION CONTROL, CLASS B	9,560 TON		
0438	6012000000-E	1610	SEDIMENT CONTROL STONE	9,050 TON		

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Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0439	6015000000-E	1615	TEMPORARY MULCHING	200 ACR		
0440	6018000000-E	1620	SEED FOR TEMPORARY SEEDING	9,700 LB		
0441	6021000000-E	1620	FERTILIZER FOR TEMPORARY SEEDING	50 TON		
0442	6024000000-E	1622	TEMPORARY SLOPE DRAINS	1,315 LF		
0443	6029000000-E	SP	SAFETY FENCE	450 LF		
0444	6030000000-E	1630	SILT EXCAVATION	24,310 CY		
0445	6036000000-E	1631	MATTING FOR EROSION CONTROL	137,650 SY		
0446	6037000000-E	1629	COIR FIBER MAT	100 SY		
0447	6042000000-E	1632	1/4" HARDWARE CLOTH	25,100 LF		
0448	6043000000-E	1644	LOW PERMEABILITY GEOTEXTILE	400 SY		
0449	6045000000-E	SP	**" TEMPORARY PIPE (24")	720 LF		
0450	6070000000-N	1639	SPECIAL STILLING BASINS	4 EA		
0451	6071002000-E	1642	FLOCCULANT	2,500 LB		
0452	6071010000-E	1642	WATTLE	900 LF		
0453	6071012000-E	1642	COIR FIBER WATTLE	2,000 LF		
0454	6071014000-E	1642	COIR FIBER WATTLE BARRIER	9,000 LF		
0455	6071030000-E	1640	COIR FIBER BAFFLE	1,950 LF		

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Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0456	6071050000-E	1644	**" SKIMMER (1-1/2")	12 EA		
0457	6071050000-E	1644	**" SKIMMER (2")	4 EA		
0458	6084000000-E	1660	SEEDING & MULCHING	135 ACR		
0459	6087000000-E	1660	MOWING	100 ACR		
0460	6090000000-E	1661	SEED FOR REPAIR SEEDING	2,000 LB		
0461	6093000000-E	1661	FERTILIZER FOR REPAIR SEEDING	5.5 TON		
0462	6096000000-E	1662	SEED FOR SUPPLEMENTAL SEEDING	3,300 LB		
0463	6108000000-E	1665	FERTILIZER TOPDRESSING	98.75 TON		
0464	6111000000-E	SP	IMPERVIOUS DIKE	210 LF		
0465	6114500000-N	1667	SPECIALIZED HAND MOWING	35 MHR		
0466	6114800000-N	SP	MANUAL LITTER REMOVAL	55 MHR		
0467	6114900000-E	SP	LITTER DISPOSAL	2.5 TON		
0468	6117000000-N	1675	RESPONSE FOR EROSION CONTROL	100 EA		
0469	6117500000-N	SP	CONCRETE WASHOUT STRUCTURE	4 EA		
0470	6132000000-N	SP	GENERIC EROSION CONTROL ITEM FABRIC INSERT INLET PROTECTION CLEANOUT	2,500 EA		
0471	6132000000-N	SP	GENERIC EROSION CONTROL ITEM FABRIC INSERT INLET PROTECTION, TYPE 1	850 EA		
0472	6132000000-N	SP	GENERIC EROSION CONTROL ITEM PREFABRICATED CONCRETE WASHOUT	23 EA		

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Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0473	6141000000-E	SP	GENERIC EROSION CONTROL ITEM PERMANENT SOIL REINFORCEMENT MAT, TYPE 1	715 SY		
0474	6141000000-E	SP	GENERIC EROSION CONTROL ITEM PERMANENT SOIL REINFORCEMENT MAT, TYPE 2	425 SY		
0475	6141000000-E	SP	GENERIC EROSION CONTROL ITEM PERMANENT SOIL REINFORCEMENT MAT, TYPE 3	650 SY		
0476	6141000000-E	SP	GENERIC EROSION CONTROL ITEM PERMANENT SOIL REINFORCEMENT MAT, TYPE 4	20 SY		
0477	6675000000-E	SP	GENERIC PLANTING ITEM FESCUE/BLUEGRASS BLEND SOD	260 SY		
0478	7048500000-E	1705	PEDESTRIAN SIGNAL HEAD (16", 1 SECTION W/COUNTDOWN)	15 EA		
0479	7060000000-E	1705	SIGNAL CABLE	11,000 LF		
0480	7120000000-E	1705	VEHICLE SIGNAL HEAD (12", 3 SECTION)	57 EA		
0481	7132000000-E	1705	VEHICLE SIGNAL HEAD (12", 4 SECTION)	5 EA		
0482	7144000000-E	1705	VEHICLE SIGNAL HEAD (12", 5 SECTION)	2 EA		
0483	7204000000-N	1705	LOUVER	3 EA		
0484	7252000000-E	1710	MESSENGER CABLE (1/4")	5,500 LF		
0485	7264000000-E	1710	MESSENGER CABLE (3/8")	1,500 LF		
0486	7279000000-E	1715	TRACER WIRE	12,770 LF		
0487	7300000000-E	1715	UNPAVED TRENCHING (**********) (1, 2")	1,100 LF		
0488	7300000000-E	1715	UNPAVED TRENCHING (**********) (2, 2")	260 LF		

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Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0489	7300000000-E	1715	UNPAVED TRENCHING (**********) (3, 1-1/2")	9,150 LF		
0490	7300000000-E	1715	UNPAVED TRENCHING (**********) (3, 2")	210 LF		
0491	7301000000-E	1715	DIRECTIONAL DRILL (**********) (1, 2")	620 LF		
0492	7301000000-E	1715	DIRECTIONAL DRILL (**********) (2, 2")	1,320 LF		
0493	7301000000-E	1715	DIRECTIONAL DRILL (**********) (3, 1-1/2")	1,600 LF		
0494	7324000000-N	1716	JUNCTION BOX (STANDARD SIZE)	12 EA		
0495	7348000000-N	1716	JUNCTION BOX (OVER-SIZED, HEAVY DUTY)	20 EA		
0496	7360000000-N	1720	WOOD POLE	11 EA		
0497	7372000000-N	1721	GUY ASSEMBLY	45 EA		
0498	7420000000-E	1722	2" RISER WITH WEATHERHEAD	9 EA		
0499	7430000000-N	1722	HEAT SHRINK TUBING RETROFIT KIT	2 EA		
0500	7444000000-E	1725	INDUCTIVE LOOP SAWCUT	2,100 LF		
0501	7456100000-E	1726	LEAD-IN CABLE (14-2)	2,650 LF		
0502	7481000000-N	SP	SITE SURVEY	8 EA		
0503	7481200000-N	SP	LUMINAIRE ARM FOR VIDEO SYSTEM	15 EA		
0504	7481240000-N	SP	CAMERA WITHOUT INTERNAL LOOP EMULATOR PROCESSING UNIT	13 EA		
0505	7481260000-N	SP	EXTERNAL LOOP EMULATOR PROCESSING UNIT	4 EA		

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Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0506	7481280000-N	SP	RELOCATE CAMERA SENSOR UNIT	3 EA		
0507	7516000000-E	1730	COMMUNICATIONS CABLE (** FIBER) (144)	13,400 LF		
0508	7516000000-E	1730	COMMUNICATIONS CABLE (** FIBER) (60)	4,200 LF		
0509	7516000000-E	1730	COMMUNICATIONS CABLE (** FIBER) (96)	13,250 LF		
0510	7528000000-E	1730	DROP CABLE	3,880 LF		
0511	7540000000-N	1731	SPLICE ENCLOSURE	11 EA		
0512	7541000000-N	1731	MODIFY SPLICE ENCLOSURE	4 EA		
0513	7552000000-N	1731	INTERCONNECT CENTER	7 EA		
0514	7566000000-N	1733	DELINEATOR MARKER	48 EA		
0515	7575160000-E	1734	REMOVE EXISTING COMMUNICATIONS CABLE	3,582 LF		
0516	7575170000-E	1738	BACK PULL FIBER OPTIC CABLE	1,150 LF		
0517	7575180000-N	1735	CABLE TRANSFER	5 EA		
0518	7588000000-N	SP	METAL POLE WITH SINGLE MAST ARM	6 EA		
0519	7590000000-N	SP	METAL POLE WITH DUAL MAST ARM	2 EA		
0520	7613000000-N	SP	SOIL TEST	8 EA		
0521	7614100000-E	SP	DRILLED PIER FOUNDATION	72 CY		
0522	7631000000-N	SP	MAST ARM WITH METAL POLE DESIGN	8 EA		

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Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0523	7636000000-N	1745	SIGN FOR SIGNALS	34 EA		
0524	7642100000-N	1743	TYPE I POST WITH FOUNDATION	5 EA		
0525	7642200000-N	1743	TYPE II PEDESTAL WITH FOUNDATION	9 EA		
0526	7684000000-N	1750	SIGNAL CABINET FOUNDATION	2 EA		
0527	7696000000-N	1751	CONTROLLERS WITH CABINET (**********) (2070LX, BASE MOUNTED)	1 EA		
0528	7744000000-N	1751	DETECTOR CARD (TYPE 170)	11 EA		
0529	7901000000-N	1753	CABINET BASE EXTENDER	1 EA		
0530	7980000000-N	SP	GENERIC SIGNAL ITEM CCTV CAMERA LOWERING SYSTEM	2 EA		
0531	7980000000-N	SP	GENERIC SIGNAL ITEM CCTV FIELD EQUIPMENT CABINET	1 EA		
0532	7980000000-N	SP	GENERIC SIGNAL ITEM CCTV METAL POLE	2 EA		
0533	7980000000-N	SP	GENERIC SIGNAL ITEM DIGITAL CCTV CAMERA ASSEMBLY	2 EA		
0534	7980000000-N	SP	GENERIC SIGNAL ITEM ELECTRONIC MARKER BALL	33 EA		
0535	7980000000-N	SP	GENERIC SIGNAL ITEM EQUIPMENT CABINET DISCONNECT	2 EA		
0536	7980000000-N	SP	GENERIC SIGNAL ITEM ETHERNET EDGE SWITCH	2 EA		
0537	7980000000-N	SP	GENERIC SIGNAL ITEM LIMITED ACCESS FACILITIES - JUNCTION BOX (OVERSIZED)	23 EA		
0538	7980000000-N	SP	GENERIC SIGNAL ITEM LIMITED ACCESS FACILITIES - JUNCTION BOX (SPECIAL OVERSIZED)	10 EA		

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Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0539	7980000000-N	SP	GENERIC SIGNAL ITEM LIMITED ACCESS FACILITIES - JUNCTION BOX (STANDARD SIZE)	1 EA		
0540	7980000000-N	SP	GENERIC SIGNAL ITEM METAL POLE FOUNDATION REMOVAL	1 EA		
0541	7980000000-N	SP	GENERIC SIGNAL ITEM METAL POLE REMOVAL	1 EA		
0542	7980000000-N	SP	GENERIC SIGNAL ITEM METER BASE/DISCONNECT COMBINATION PANEL	1 EA		
0543	7980000000-N	SP	GENERIC SIGNAL ITEM MICROWAVE VEHICLE DETECTOR - MULTIPLE ZONES (PRESENCE)	3 EA		
0544	7980000000-N	SP	GENERIC SIGNAL ITEM NON-INTRUSIVE DETECTION SYSTEM PROCESSOR	3 EA		
0545	7980000000-N	SP	GENERIC SIGNAL ITEM PROTECTIVE COATING FOR DUAL MAST ARM POLE (27038)	2 EA		
0546	7980000000-N	SP	GENERIC SIGNAL ITEM PROTECTIVE COATING FOR SINGLE MAST ARM POLE (27038)	6 EA		
0547	7980000000-N	SP	GENERIC SIGNAL ITEM PROTECTIVE COATING FOR TYPE I PUSHBUTTON POST (27038)	7 EA		
0548	7980000000-N	SP	GENERIC SIGNAL ITEM PROTECTIVE COATING FOR TYPE II SIGNAL PEDESTAL (27038)	9 EA		
0549	7980000000-N	SP	GENERIC SIGNAL ITEM RECTANGULAR RAPID FLASHING BEACON ASSEMBLY	6 EA		
0550	7980000000-N	SP	GENERIC SIGNAL ITEM VARIABLE SPEED DRILL	2 EA		
0551	7985000000-N	SP	GENERIC SIGNAL ITEM TRAINING FOR NON-INTRUSIVE DETECTION	Lump Sum	L.S.	
0552	7990000000-E	SP	GENERIC SIGNAL ITEM 3-WIRE COPPER FEEDER CONDUCTORS	1,350 LF		

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Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0553	8522000000-E	460	GENERIC STRUCTURE ITEM CONCRETE BARRIER RAIL WITH MOMENT SLAB (AT BEAR CREEK RD BRIDGE)	60 LF		
0659	8811000000-E	SP	GENERIC CULVERT ITEM 15" RC PIPE CULVERTS, CLASS V	108 LF		
0660	0988000000-E	310	GENERIC PIPE ITEM 48" SEALED XP ELBOWS	2 EA		
0661	1924000000-N	725	FIELD LABORATORY RENTAL, PORT CEM CONC PAVEMENT	Lump Sum	L.S.	
			WALL ITEMS			
0554	8504000000-E	460	CONCRETE BARRIER RAIL WITH MOMENT SLAB	7,253.18 LF		
0555	8801000000-E	SP	MSE RETAINING WALL NO **** (1)	4,845 SF		
0556	8801000000-E	SP	MSE RETAINING WALL NO **** (12)	11,180 SF		
0557	8801000000-E	SP	MSE RETAINING WALL NO **** (18)	15,415 SF		
0558	8801000000-E	SP	MSE RETAINING WALL NO **** (2)	12,140 SF		
0559	8801000000-E	SP	MSE RETAINING WALL NO **** (28)	370 SF		
0560	8801000000-E	SP	MSE RETAINING WALL NO **** (3)	17,495 SF		
0561	8801000000-E	SP	MSE RETAINING WALL NO **** (4)	2,175 SF		
0562	8801000000-E	SP	MSE RETAINING WALL NO **** (5)	44,945 SF		
0563	8801000000-E	SP	MSE RETAINING WALL NO **** (7)	1,500 SF		
0564	8801000000-E	SP	MSE RETAINING WALL NO **** (8)	1,410 SF		
0565	8801000000-E	SP	MSE RETAINING WALL NO **** (9)	5,755 SF		

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Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0566	8802010000-E	SP	SOIL NAIL RETAINING WALLS	73,975 SF		
0567	8802014000-E	SP	SOLDIER PILE RETAINING WALLS	3,905 SF		
0568	8802015100-N	SP	SOIL NAIL VERIFICATION TESTS	17 EA		
0569	8802015110-N	SP	SOIL NAIL PROOF TESTS	150 EA		
0570	8802040000-E	453	CIP GRAVITY RETAINING WALLS	17,385 SF		
0571	8839000000-E	SP	GENERIC RETAINING WALL ITEM CONCRETE BARRIER RAIL WITH MOMENT SLAB AND LIGHT SUPPORT	217 LF		
0572	8847000000-E	SP	GENERIC RETAINING WALL ITEM ARCHITECTURAL CONCRETE SURFACE TREATMENT	217,525 SF		
0573	8847000000-E	SP	GENERIC RETAINING WALL ITEM CIP MSE RETAINING WALL NO 22	5,600 SF		
0574	8847000000-E	SP	GENERIC RETAINING WALL ITEM CIP MSE RETAINING WALL NO 23	7,265 SF		
0575	8847000000-E	SP	GENERIC RETAINING WALL ITEM CIP MSE RETAINING WALL NO 24	6,250 SF		
0576	8847000000-E	SP	GENERIC RETAINING WALL ITEM CIP MSE RETAINING WALL NO 25	7,770 SF		
0577	8892000000-E	SP	GENERIC STRUCTURE ITEM ARCHITECTURAL SURFACE TREATMENT (SOUND BARRIER WALL)	266,158 SF		
0578	8892000000-E	SP	GENERIC STRUCTURE ITEM SOUND ABSORPTIVE BARRIER WALL NO NW7B	10,310 SF		
0579	8892000000-E	SP	GENERIC STRUCTURE ITEM SOUND ABSORPTIVE BARRIER WALL NO NW7C	26,523 SF		
0580	8892000000-E	SP	GENERIC STRUCTURE ITEM SOUND BARRIER WALL NO NW3	45,906 SF		
0581	8892000000-E	SP	GENERIC STRUCTURE ITEM SOUND BARRIER WALL NO NW5A	24,964 SF		

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Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0582	8892000000-E	SP	GENERIC STRUCTURE ITEM SOUND ABSORPTIVE BARRIER WALL NO NW68	26,683 SF		
0583	8892000000-E	SP	GENERIC STRUCTURE ITEM SOUND BARRIER WALL NO NW7A	11,099 SF		
0584	8892000000-E	SP	GENERIC STRUCTURE ITEM SOUND BARRIER WALL NO NW7B	13,552 SF		
			STRUCTURE ITEMS			
0585	8035000000-N	402	REMOVAL OF EXISTING STRUCTURE AT STATION ********** (105+49.43 -L- RT)	Lump Sum	L.S.	
0586	8035000000-N	402	REMOVAL OF EXISTING STRUCTURE AT STATION ********** (22+70.15 -Y2-)	Lump Sum	L.S.	
0587	8035000000-N	402	REMOVAL OF EXISTING STRUCTURE AT STATION ********** (45+58.00 -L-)	Lump Sum	L.S.	
0588	8035000000-N	402	REMOVAL OF EXISTING STRUCTURE AT STATION ********** (83+50.80 -L- RT)	Lump Sum	L.S.	
0589	8065000000-N	SP	ASBESTOS ASSESSMENT	Lump Sum	L.S.	
0590	8096000000-E	450	PILE EXCAVATION IN SOIL	90 LF		
0591	8097000000-E	450	PILE EXCAVATION NOT IN SOIL	47.4 LF		
0592	8105500000-E	411	**'-**" DIA DRILLED PIERS IN SOIL (4'-6")	215.4 LF		
0593	8105500000-E	411	**'-**" DIA DRILLED PIERS IN SOIL (8'-0")	49.3 LF		
0594	8105600000-E	411	**'-**" DIA DRILLED PIERS NOT IN SOIL (4'-6")	247.6 LF		
0595	8105600000-E	411	**'-**" DIA DRILLED PIERS NOT IN SOIL (8'-0")	74.2 LF		
0596	8108000000-E	411	**'-**" DIA DRILLED PIERS (3'-6")	243.5 LF		

County: BUNCOMBE

Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0597	8111000000-E	411	PERMANENT STEEL CASING FOR **'-**" DIA DRILLED PIER (4'-6")	215.4 LF		
0598	8111000000-E	411	PERMANENT STEEL CASING FOR **'-**" DIA DRILLED PIER (8'-0")	48.8 LF		
0599	8113000000-N	411	SID INSPECTIONS	5 EA		
0600	8115000000-N	411	CSL TESTING	7 EA		
0601	8121000000-N	412	UNCLASSIFIED STRUCTURE EXCAVATION AT STATION ******** (105+49.43 -L- LT)	Lump Sum	L.S.	
0602	8121000000-N	412	UNCLASSIFIED STRUCTURE EXCAVATION AT STATION ******** (105+49.43 -L- RT)	Lump Sum	L.S.	
0603	8121000000-N	412	UNCLASSIFIED STRUCTURE EXCAVATION AT STATION ******** (22+70.15 -Y2-)	Lump Sum	L.S.	
0604	8121000000-N	412	UNCLASSIFIED STRUCTURE EXCAVATION AT STATION ******** (28+46.00 -Y2RPC-)	Lump Sum	L.S.	
0605	8121000000-N	412	UNCLASSIFIED STRUCTURE EXCAVATION AT STATION ******** (45+58.00 -L-)	Lump Sum	L.S.	
0606	8121000000-N	412	UNCLASSIFIED STRUCTURE EXCAVATION AT STATION ******** (83+50.80 -L- LT)	Lump Sum	L.S.	
0607	8121000000-N	412	UNCLASSIFIED STRUCTURE EXCAVATION AT STATION ******** (83+50.80 -L- RT)	Lump Sum	L.S.	
0608	8147000000-E	420	REINFORCED CONCRETE DECK SLAB	130,849 SF		
0609	8161000000-E	420	GROOVING BRIDGE FLOORS	143,939 SF		
0610	8182000000-E	420	CLASS A CONCRETE (BRIDGE)	2,569.4 CY		
0611	8210000000-N	422	BRIDGE APPROACH SLABS, STATION ********** (105+49.43 -L- LT)	Lump Sum	L.S.	

County: BUNCOMBE

Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0612	8210000000-N	422	BRIDGE APPROACH SLABS, STATION ********** (105+49.43 -L- RT)	Lump Sum	L.S.	
0613	8210000000-N	422	BRIDGE APPROACH SLABS, STATION ********** (19+17.50 -Y2RPB-)	Lump Sum	L.S.	
0614	8210000000-N	422	BRIDGE APPROACH SLABS, STATION ********** (22+70.15 -Y2-)	Lump Sum	L.S.	
0615	8210000000-N	422	BRIDGE APPROACH SLABS, STATION ********** (28+46.00 -Y2RPC-)	Lump Sum	L.S.	
0616	8210000000-N	422	BRIDGE APPROACH SLABS, STATION ********** (45+44.00 -L-)	Lump Sum	L.S.	
0617	8210000000-N	422	BRIDGE APPROACH SLABS, STATION ********** (45+58.00 -L-)	Lump Sum	L.S.	
0618	8210000000-N	422	BRIDGE APPROACH SLABS, STATION ********** (83+50.80 -L- LT)	Lump Sum	L.S.	
0619	8210000000-N	422	BRIDGE APPROACH SLABS, STATION ********** (83+50.80 -L- RT)	Lump Sum	L.S.	
0620	8217000000-E	425	REINFORCING STEEL (BRIDGE)	417,362 LB		
0621	8238000000-E	425	SPIRAL COLUMN REINFORCING STEEL (BRIDGE)	44,214 LB		
0622	8265000000-E	430	54" PRESTRESSED CONCRETE GIRDERS	3,585.92 LF		
0623	8277000000-E	430	MODIFIED 72" PRESTRESSED CONC GIRDERS	1,471.8 LF		
0624	8280000000-E	440	APPROX ..... LBS STRUCTURAL STEEL	3,866,936 LS		
0625	8328200000-E	450	PILE DRIVING EQUIPMENT SETUP FOR *** STEEL PILES (HP 12 X 53)	267 EA		
0626	8328200000-E	450	PILE DRIVING EQUIPMENT SETUP FOR *** STEEL PILES (HP 14 X 73)	26 EA		

County: BUNCOMBE

Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0627	8364000000-E	450	HP 12 X 53 STEEL PILES	14,130 LF		
0628	8384000000-E	450	HP 14 X 73 STEEL PILES	690 LF		
0629	8391000000-N	450	STEEL PILE POINTS	122 EA		
0630	8392500000-E	450	PREDRILLING FOR PILES	166.4 LF		
0631	8394000000-N	450	DYNAMIC PILE TESTING	8 EA		
0632	8503000000-E	460	CONCRETE BARRIER RAIL	4,993.4 LF		
0633	8504000000-E	460	CONCRETE BARRIER RAIL WITH MOMENT SLAB	114 LF		
0634	8517000000-E	460	1'-**" X *****" CONCRETE PARAPET (1'-2" X 3'-3")	407.22 LF		
0635	8524000000-E	SP	**" CHAIN LINK FENCE (72")	1,178.5 LF		
0636	8531000000-E	462	4" SLOPE PROTECTION	3,345.8 SY		
0637	8608000000-E	876	RIP RAP CLASS II (2'-0" THICK)	882 TON		
0638	8622000000-E	876	GEOTEXTILE FOR DRAINAGE	980 SY		
0639	8654000000-N	SP	DISC BEARINGS	Lump Sum	L.S.	
0640	8657000000-N	430	ELASTOMERIC BEARINGS	Lump Sum	L.S.	
0641	8706000000-N	SP	EXPANSION JOINT SEALS	Lump Sum	L.S.	
0642	8727000000-N	SP	ELECTRICAL CONDUIT SYSTEM FOR SIGNALS AT STA ********** (105+49.43 -L- RT)	Lump Sum	L.S.	
0643	8727000000-N	SP	ELECTRICAL CONDUIT SYSTEM FOR SIGNALS AT STA ********** (19+17.50 -Y2RPB-)	Lump Sum	L.S.	

County: BUNCOMBE

Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0644	8727000000-N	SP	ELECTRICAL CONDUIT SYSTEM FOR SIGNALS AT STA ********** (22+70.15 -Y2-)	Lump Sum	L.S.	
0646	8860000000-N	SP	GENERIC STRUCTURE ITEM PRECAST CONCRETE FASCIA AT STATION 105+49.43 -L- LT	Lump Sum	L.S.	
0647	8860000000-N	SP	GENERIC STRUCTURE ITEM PRECAST CONCRETE FASCIA AT STATION 105+49.43 -L- RT	Lump Sum	L.S.	
0648	8860000000-N	SP	GENERIC STRUCTURE ITEM PRECAST CONCRETE FASCIA AT STATION 83+50.80 -L- LT	Lump Sum	L.S.	
0649	8860000000-N	SP	GENERIC STRUCTURE ITEM PRECAST CONCRETE FASCIA AT STATION 83+50.80 -L- RT	Lump Sum	L.S.	
0650	8860000000-N	SP	GENERIC STRUCTURE ITEM SOUND BARRIER WALL (BRIDGE MOUNTED)	Lump Sum	L.S.	
0651	8860000000-N	SP	GENERIC STRUCTURE ITEM STRIP SEAL EXPANSION JOINTS	Lump Sum	L.S.	
0652	8867000000-E	SP	GENERIC STRUCTURE ITEM ANODIZED TWO BAR METAL RAIL	374.44 LF		
0653	8867000000-E	SP	GENERIC STRUCTURE ITEM CONCRETE BARRIER RAIL WITH MOMENT SLAB AT SOUND BARRIER WALL (BRIDGE MOUNTED)	259.8 LF		
0654	8892000000-E	SP	GENERIC STRUCTURE ITEM APPLICATION OF BRIDGE COATING	17,428.9 SF		
0655	8892000000-E	SP	GENERIC STRUCTURE ITEM ARCHITECTURAL CONCRETE SURFACE TREATMENT (BRIDGE)	701 SF		
0656	8897000000-N	SP	GENERIC STRUCTURE ITEM CAP END AESTHETIC	2 EA		
0657	8897000000-N	SP	GENERIC STRUCTURE ITEM DRILLED PIER PILOT BORING	3 EA		
0658	8897000000-N	SP	GENERIC STRUCTURE ITEM TPL TESTING	3 EA		

12/06/07

COMPUTED BY: SR DATE: 10/22/25
CHECKED BY: MF DATE: 07/28/26

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PROJECT REFERENCE NO.	SHEET NO.
I-2513AC	3B-2

SUMMARY OF ASPHALT PAVEMENT REMOVAL

IN SQUARE YARDS

SURVEY LINE	STATION	STATION	LOCATION LT/RT/CL	YD²
Y2	15+21	16+04	RT	147.84
Y2	16+18	16+52	RT	120.60
Y2	18+92	19+57	LT	63.73
Y2	22+27	27+50	CL	4,148.79
Y2A	13+31	17+80	CL	800.08
Y2B	17+11	17+65	LT	357.12
Y2RPB	26+22	28+16	LT	498.21
Y2C	11+50	12+30	CL	281.33
RP32	15+44	19+03	CL	1,273.81
RP23	30+00	39+61	RT	1,576.67
Y3	25+19	26+89	RT	411.70
Y3	30+00	30+93	CL	258.65
Y3A	11+00	12+00	CL	223.54
Y3B	10+41	11+23	CL	205.96
MUP2	10+19	10+71	CL	113.22
L	81+96	88+17	LT	1,462.53
Y12	13+03	14+01	LT	398.71
TY6RPC	14+49	24+50	CL	539.80
DETOUR PAVEMENT REMOVAL				54,160
			TOTAL:	67,042
			SAY:	67,050

SUMMARY OF ASPHALT PAVEMENT BREAKING

IN SQUARE YARDS

SURVEY LINE	STATION	STATION	LOCATION LT/RT/CL	YD²
Y2	16+50	19+50	CL	2,675.92
Y2B	15+00	21+00	CL	1,659.02
Y2B	19+09	19+70	LT	949.50
Y2C	11+02	11+50	CL	197.42
RP32	10+42	13+46	CL	1,539.34
RP32	33+83	36+44	CL	607.26
Y3	26+47	30+00	RT	1,741.97
Y3A	12+00	14+74	CL	646.69
			TOTAL:	10,017
			SAY:	10,020

WOVEN WIRE FENCE SUMMARY

NOTE: WOVEN WIRE FENCE WITHOUT BARBED WIRE ON TOP

STATION	STATION	LOCATION LT/RT	FABRIC L.F.	4" POSTS	5" POSTS
–L–					
15+49.69	40+60.00	LT	2,682	166	46
43+28.72	43+34.01	LT	57	2	4
47+72.76	55+04.25	LT	725	48	7
66+18.36	77+02.81	LT	1,126	70	19
68+06.89	76+16.29	LT	809	51	13
80+55.78	93+00.00	LT	1,273	74	31
104+35.00	105+90.31	LT	237	11	10
106+69.20	117+23.93	LT	1,096	68	19
16+24.29	28+30.00	RT	1,284	76	28
29+18.00	29+57.80	RT	42	1	4
30+31.70	42+82.00	RT	1,299	84	16
47+58.66	52+05.25	RT	511	31	10
56+75.00	60+30.00	RT	375	23	7
67+94.00	72+87.40	RT	611	35	16
85+92.58	104+42.69	RT	2,405	150	40
105+11.86	113+78.43	RT	1,093	66	22
–Y3–					
18+88.00	24+37.50	RT	561	36	7
27+81.29	31+90.02	LT	409	25	7
		TOTAL:	16,593	1,019	306
		SAY:	16,600	1,020	310

SUMMARY OF CONCRETE PAVEMENT REMOVAL

IN SQUARE YARDS

SURVEY LINE	STATION	STATION	LOCATION LT/RT/CL	YD²
L	16+00	38+50	LT	10,098.10
L	16+00	38+50	RT	11,099.84
L	43+45	43+92	LT	128.13
L	43+45	44+28	RT	238.89
L	51+01	55+89	CL	1,012.09
L	52+00	104+84	CL	21,042.68
L	52+00	63+00	CL	4,453.65
L	53+50	56+00	LT	513.45
L	57+25	64+00	RT	1,394.69
L	59+03	63+13	LT	792.00
L	67+00	102+50	CL	14,035.48
L	79+61	83+04	CL	605.36
L	104+83	105+35	LT	132.65
L	106+11	110+00	RT	773.80
L	106+25	121+20	CL	6,280.68
L	106+65	107+04	LT	84.03
L	110+50	116+50	LT	2,686.43
Y3	16+71	19+50	CL	564.17
Y13	10+00	10+73	RT	206.66
Y15	21+41	22+49	LT	312.69
			TOTAL:	76,454
			SAY:	76,460

SUMMARY OF CONCRETE PAVEMENT BREAKING

IN SQUARE YARDS

SURVEY LINE	STATION	STATION	LOCATION LT/RT/CL	YD²
L	38+50	44+28	LT	4,827.67
L	47+32	53+50	LT	4,438.92
L	63+00	67+00	LT	2,045.26
L	64+00	89+00	RT	10,726.74
L	101+50	105+27	LT	2,551.71
L	110+00	112+50	LT	514.52
Y3	19+50	26+48	CL	1,408.17
			TOTAL:	26,513
			SAY:	26,520

SUMMARY OF 4" SHOULDER DRAINS

LINE	LOCATION	BEGIN STA.	END STA.	SHOULDER DRAIN PIPE (LF)	SHOULDER DRAINS (LF)	OUTLET PIPE (LF)	CONC PADS (EA)	OUTLET LOCATIONS
–Y2RPB–	LT Outside Shoulder (Westbound)	14+90.00	22+00.00	710	710	200	3	22+00 (2GI 0423), 24+50 (2GI 0426), 26+70 (2GI 0419), 29+00 (2GI 0522), 30+50 (PAD), Y2RPB 11+00 (PAD), Y2RPB 14+90 (PAD)
–L–	LT Outside Shoulder (Westbound)	41+40.00	43+40.00	200	200			42+12 (2GI 6130), 42+50 (2GI 6129)
–L–	LT Outside Shoulder (Westbound)	47+70.00	82+40.00	3,470	3,470			47+70 (2GI 6059), 48+10 (2GI 6060), 51+50 (2GI 6034), 57+00 (2GI 6201), 58+60 (2GI 6202), 60+40 (2GI 6212), 63+00 (2GI 6213), 65+90 (2GI 6238), 66+25 (2GI 6246), 66+75 (2GI, 6252), 70+00 (2GI 7097), 73+35 (2GI 7007), 75+00 (2GI 7098), 77+45 (2GI 7012), 81+00 (2GI 7025), 82+10 (7027), 82+40 (2GI 7028)
–L–	LT Outside Shoulder (Westbound)	84+75.00	93+17.00	842	842	108	1	84+75 (2GI 7062), 90+00 (PAD), 91+75 (2GI 7087)
–L–	LT Outside Shoulder (Westbound)	100+96.00	104+75.00	379	379	68	2	100+96 (PAD), 102+00 (PAD)
–L–	LT Outside Shoulder (Westbound)	107+15.00	108+00.00	85	85			107+15 (2GI 0830)
–L–	LT Median Shoulder (Westbound)	16+00.00	43+50.00	2,750	2,750			18+00 (2GI 0445), 18+88 (2GI 0446), 19+40 (2GI 0449), 22+00 (2GI 0422), 24+50 (2GI 0425), 29+00 (2GI 0521), 37+00 (2GI 0502), 39+75 (2GI 0504), 42+32 (2GI 6117), 43+50 (2GI 6116)
–L–	LT Median Shoulder (Westbound)	47+70.00	75+19.00	2,749	2,749			47+70 (2GI 6058), 51+50 (2GI 6033), 63+10 (2GI 6214), 63+60 (2GI 6220), 65+90 (2GI 6239), 66+28 (2GI 6247), 66+70 (2GI 6253), 68+35 (2GI 6261), 68+80 (2GI 6269)
–L–	LT Median Shoulder (Westbound)	91+75.00	101+42.00	967	967			91+75 (2GI 7098), 93+50 (2GI 7103), 95+80 (2GI 7093), 98+00 (2GI 7095)
–L–	RT Median Shoulder (Eastbound)	18+75.00	43+00.00	2,425	2,425			18+88 (2GI 0446), 19+40 (2GI 0448), 22+00 (2GI 0423), 24+50 (2GI 0424), 29+00 (2GI 0520), 37+00 (2GI 0503), 39+70 (2GI 0505), 42+35 (2GI 6119), 43+00 (2GI 6118)
–L–	RT Median Shoulder (Eastbound)	47+70.00	82+65.00	3,495	3,495			47+70 (2GI 6057), 51+50 (2GI 6032), 63+05 (2GI 6215), 63+50 (2GI 6221), 65+90 (2GI 6240), 66+35 (2GI 6248), 66+65 (2GI 6254), 68+80 (2GI 6270), 77+50 (2GI 7013), 82+65 (2GI 7031)
–L–	RT Median Shoulder (Eastbound)	84+75.00	93+17.00	842	842			84+75 (2GI 7063), 89+00 (2GI 7076), 89+73 (2GI 7072), 90+50 (2GI 7101)
–L–	RT Median Shoulder (Eastbound)	101+65.00	104+00.00	235	235			101+65 (2GI 0811)
–L–	RT Median Shoulder (Eastbound)	106+50.00	108+00.00	150	150			106+50 (2GI 0826), 107+15 (2GI 0832)
–Y2RPC–	RT Outside Shoulder (Eastbound)	16+00.00	24+13.00	813	813	148	2	17+00 (2GI 0437), 17+50 (2GI 0439), 18+88 (2GI 0431), 20+25 (2GI 0432), 22+00 (2GI 0429), 24+50 (2GI 0428), 27+50 (PAD), 30+50 (PAD), Y2RPC 18+60 (2GI 0509), Y2RPC 22+35 (2GI 0511)
–L–	RT Outside Shoulder (Eastbound)	41+00.00	43+00.00	200	200			43+00 (2GI 6121)
–L–	RT Outside Shoulder (Eastbound)	47+70.00	75+50.00	2,780	2,780			47+70 (2GI 6056), 51+50 (2GI 6031) 55+30 (2GI 6200), 59+50 (2GI 6204), 63+10 (2GI 6216), 65+50 (2GI 6234), 65+90 (2GI 6241), 66+25 (2GI 6249), 66+70 (2GI 6255), 68+70 (2GI 6271), NEED TO TIE IN WITH INLET 74+00 (2GI 7110)
–Y3RPD–	RT Outside Shoulder (Eastbound)	14+70.00	101+42.00	947	8,672	16	1	Y3RPD 14+70 (2GI 7089), Y3RPD 13+90 (2GI 7090), Y3RPD 11+50 (PAD), 98+00 (2GI 7096), 100+00 (2GI 0806)
			TOTAL:	24,039	24,039	540	9	
			SAY:	24,040	24,040	540	10	

BLACK VINYL COATED CHAIN LINK FENCE, 48" FABRIC

LOCATION	FABRIC L.F.	LINE POSTS	TERMINAL POSTS
MSE RETAINING WALL #1	686	57	4
MSE RETAINING WALL #2	990	83	4
MSE RETAINING WALL #4	320	26	2
MSE RETAINING WALL #7	275	23	2
MSE RETAINING WALL #9	205	17	6
SOIL NAIL RETAINING WALL #10	305	25	2
SOIL NAIL RETAINING WALL #11	580	48	4
SOIL NAIL RETAINING WALL #13	130	11	2
SOIL NAIL RETAINING WALL #14	378	31	2
SOIL NAIL RETAINING WALL #15	1,260	105	4
SOIL NAIL RETAINING WALL #16	1,042	87	4
CIP GRAVITY RETAINING WALL #27	20	1	2
SOLDIER PILE RETAINING WALL #6	427	36	4
SOLDIER PILE RETAINING WALL #21	106	9	2
TOTAL:	6,724	560	44
SAY:	6,730	570	50

11/3/2026
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COMPUTED BY: AECOM DATE: 08/05/2026

CHECKED BY: AECOM DATE: 0805/2026

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
I-2513AC	3D-10

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

SECTION 1 / AECOM

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

| LINE & STATION | OFFSET | | STRUCTURE NUMBER FROM | STRUCTURE NUMBER TO | TOP ELEVATION FT. | INVERT ELEVATION FT. | INVERT ELEVATION FT. | MINIMUM REQUIRED SLOPE % | Side Drain Pipe (RCP, CSP, CAAP, HDPE, PVC, or PP PIPE) SIZE: 15 | 18 | 24 | 30 | DO NOT USE RCP | DO NOT USE CSP | DO NOT USE CAAP | DO NOT USE HDPE | DO NOT USE PVC | DO NOT USE PP PIPE | C. S. PIPE THICKNESS OR GAUGE: 15 | 18 | 24 | 30 | 48 | R. C. PIPE CLASS IV 12 | 15 | 18 | 24 | 30 | 36 | Sealed Polypropylene Pipe (SEALED PP) 15 | 18 | Sealed Cross Pipe (SEALED XP) 15 | 18 | 24 | 15" WELDED STEEL PIPE 0.375" THICK, GRADE B IN SOIL | 48" WELDED STEEL PIPE 0.625" THICK, GRADE B IN SOIL | 48" WELDED STEEL PIPE 0.625" THICK, GRADE B NOT IN SOIL | 48" PIPE REHABILITATION CIPP LINER | ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CY | QUANTITIES FOR DRAINAGE STRUCTURES NOTE: TOTAL LIN. FT. FOR PAY QUANTITY SHALL BE A + (1.3 X B) A: 0' THRU 5' EACH | B: 5' THRU 10' LIN. FT. | B: 10' AND ABOVE LIN. FT. | C.B. STD. 840.01 OR STD. 840.02 | FRAME, GRATES, AND HOOD STD. 840.03 GRATE TYPE E | F | G | CONCRETE TRANSITIONAL SECTION D.I. STD. 852.04 OR STD. 852.06 | C.B. STD. 852.05 | OPEN THROAT C.B. STD. 840.04 OR STD. 840.05 | D.I. STD. 840.14 OR STD. 840.15 | D.I. FRAME AND GRATES STD. 840.16 | G.D.I. TYPE "A" STD. 840.17 OR STD. 840.26 | G.D.I. TYPE "B" STD. 840.18 OR STD. 840.27 | G.D.I. TYPE "D" STD. 840.19 OR STD. 840.28 | G.D.I. (W.S. FLAT) FRAME W/ 2 GRATES STD. 840.20 | G.D.I. (W.S. SAG) FRAME W/ GRATE STD. 840.22 | G.D.I. (W.S. SAG) FRAME W/ 2 GRATES STD. 840.22 | G.D.I. (N.S. SAG) FRAME W/ 2 GRATES STD. 840.24 | G.D.I. (N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29 | J.B. STD. 840.31 OR STD. 840.32 | T.B.J.B. STD. 840.34 | T.B.D.I. STD. 840.35 | T.B.D.I. FOR STEEL GRATES STD. 840.36 | STEEL FRAME WITH TWO GRATES STD. 840.37 | TEMP STEEL PLATE COVER MASONRY DRAINAGE | M.H. STD. 840.51, STD. 840.52, OR STD. 840.53 | M.H. FRAME AND COVER STD. 840.54 | M.H. FRAME AND COVER STD. 840.55 | PRE-INSTALLATION INSPECTION (FOR CIPP) | DE-WATERING (CIPP INSTALLATION) | TRASH RACK FOR ORIFICE | TRASH RACK FOR RISER | ADJUST D.I. | SPECIAL DRAINAGE STRUCTURE | 15" CSP ELBOWS, ROD & LUG CONNECTORS | 18" CSP ELBOWS, ROD & LUG CONNECTORS | CONVERT EX. CB. TO T.B.J.B. | CONVERT EX. D.I TO T.B.J.B. | CONVERT EX. J.B. TO 2GI | G.D.I. TYPE "A" MIN. DEPTH STD. 840D17 | BERM DITCH OUTLET STD. 860.10 (PER EACH) | RESILIENT CONNECTOR EA | FLOWABLE FILL CY | CONCRETE COLLARS CL. "B" STD. 840.72 CY | PIPE REMOVAL LIN. FT. | REMARKS |
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USR/ALL/5645/D44

COMPUTED BY: AECOM DATE: 08/05/2026

CHECKED BY: AECOM DATE: 0805/2026

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
I-2513AC	3D-11

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

SECTION 1 / AECOM

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

| LINE & STATION | OFFSET | STRUCTURE NUMBER FROM | STRUCTURE NUMBER TO | TOP ELEVATION FT. | INVERT ELEVATION FT. | INVERT ELEVATION FT. | MINIMUM REQUIRED SLOPE % | Side Drain Pipe (RCP, CSP, CAAP, HDPE, PVC, or PP PIPE) SIZE 15 | 18 | 24 | 30 | DO NOT USE RCP | DO NOT USE CSP | DO NOT USE CAAP | DO NOT USE HDPE | DO NOT USE PVC | DO NOT USE PP PIPE | C. S. PIPE THICKNESS OR GAUGE 15 | 18 | 24 | 30 | 48 | R. C. PIPE CLASS IV 12 | 15 | 18 | 24 | 30 | 36 | Sealed Polypropylene Pipe (SEALED PP) 15 | 18 | Sealed Cross Pipe (SEALED XP) 15 | 18 | 24 | 15" WELDED STEEL PIPE 0.375" THICK, GRADE B IN SOIL | 48" WELDED STEEL PIPE 0.625" THICK, GRADE B IN SOIL | 48" WELDED STEEL PIPE 0.625" THICK, GRADE B NOT IN SOIL | 48" PIPE REHABILITATION CIPP LINER | ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CY | QUANTITIES FOR DRAINAGE STRUCTURES NOTE: TOTAL LIN. FT. FOR PAY QUANTITY SHALL BE A + (1.3 X B) A: 0' THRU 5' EACH | B: 5' THRU 10' LIN. FT. | B: 10' AND ABOVE LIN. FT. | C.B. STD. 840.01 OR STD. 840.02 | FRAME, GRATES, AND HOOD STD. 840.03 GRATE TYPE E | F | G | CONCRETE TRANSITIONAL SECTION D.I. STD. 852.04 OR STD. 852.06 | C.B. STD. 852.05 | OPEN THROAT C.B. STD. 840.04 OR STD. 840.05 | D.I. STD. 840.14 OR STD. 840.15 | D.I. FRAME AND GRATES STD. 840.16 | G.D.I. TYPE "A" STD. 840.17 OR STD. 840.26 | G.D.I. TYPE "B" STD. 840.18 OR STD. 840.27 | G.D.I. TYPE "D" STD. 840.19 OR STD. 840.28 | G.D.I. (W.S. FLAT) FRAME W/ 2 GRATES STD. 840.20 | G.D.I. (W.S. SAG) FRAME W/ GRATE STD. 840.22 | G.D.I. (W.S. SAG) FRAME W/ 2 GRATES STD. 840.22 | G.D.I. (N.S. SAG) FRAME W/ 2 GRATES STD. 840.24 | G.D.I. (N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29 | J.B. STD. 840.31 OR STD. 840.32 | T.B.J.B. STD. 840.34 | T.B.D.I. STD. 840.35 | T.B.D.I. FOR STEEL GRATES STD. 840.36 | STEEL FRAME WITH TWO GRATES STD. 840.37 | TEMP STEEL PLATE COVER MASONRY DRAINAGE | M.H. STD. 840.51, STD. 840.52, OR STD. 840.53 | M.H. FRAME AND COVER STD. 840.54 | M.H. FRAME AND COVER STD. 840.55 | PRE-INSTALLATION INSPECTION (FOR CIPP) | DE-WATERING (CIPP INSTALLATION) | TRASH RACK FOR ORIFICE | TRASH RACK FOR RISER | ADJUST D.I. | SPECIAL DRAINAGE STRUCTURE | 15" CSP ELBOWS, ROD & LUG CONNECTORS | 18" CSP ELBOWS, ROD & LUG CONNECTORS | CONVERT EX. DI TO T.B.J.B. | CONVERT EX. CB. TO T.B.J.B. | CONVERT EX. J.B. TO 2GI | G.D.I. TYPE "A" MIN. DEPTH STD. 840D17 | BERM DITCH OUTLET STD. 860.10 (PER EACH) | RESILIENT CONNECTOR EA | FLOWABLE FILL CY | CONCRETE COLLARS CL. "B" STD. 840.72 CY | PIPE REMOVAL LIN. FT. | REMARKS |
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Z11255

COMPUTED BY: VHB DATE: 9/11/2026

CHECKED BY: VHB DATE: 9/11/2026

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
I-2513AC	3D-15

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

SECTION 2 / VHB

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

LINE & STATION	OFFSET		STRUCTURE NUMBER FROM	STRUCTURE NUMBER TO	TOP ELEVATION FT.	INVERT ELEVATION FT.	INVERT ELEVATION FT.	MINIMUM REQUIRED SLOPE %	Side Drain Pipe (RCP, CSP, CAAP, HDPE, PVC, or PP PIPE) SIZE: 15	18	24	30	36	42	48
THICKNESS OR GAUGE															
MUP1 10+38	35	RT	6401		2024.9										
			6401	6232		2018.7	2018.1								
MUP1 11+75	15	RT	6402		2031.2										
			6402	6276		2020.2	2020.1								
MUP1 12+83	49	RT	6403		2036.1										
			6403	6256		2026.8	2026.6								
RP23 24+80	20	LT	6405		2027.6										
			6405	6264		2020.8	2020.6								
RP32 16+30	24	RT	6406		2050.8										
			6406	6202		2047.3	2047.2								
L 70+00	207	LT	7001		2068.5										
			7001	7002		2066.2	2037.3	0.7	108						
RP32 24+39	14	LT	7002		2040.6										
			7002	6267		2037.3	2034.9	0.9							
RP32 25+47	14	LT	7003		2042.9										
			7003	7002		2039.6	2037.3								
RP23 31+33	20	LT	7004		2011.3										
			7004	7008		2006.6	2006.4								
RP23 28+95	18	RT	7005		2015.0										
			7005	7019		2008.7	2007.9								
RP32 26+52	14	LT	7006		2045.1										
			7006	7003		2041.8	2039.6								
L 73+36	67	LT	7007		2049.3										
			7007	7097		2044.1	2037.0								
RP23 31+33	18	RT	7008		2010.9										
			7008	7106		2006.1	2006.0								
RP32 30+49	77	LT	7009		2042.5										
			7009	7010		2041.2	2038.5	0.3	64						
RP32 30+47	14	LT	7010		2041.7										
			7010	7016		2038.5	2034.4	0.3							
L 77+11	226	LT	7011		2020.4										
			7011	7015		2016.9	2015.3								
L 77+50	67	LT	7012		2056.6										
			7012	7098		2049.2	2048.0								
L 77+50	5	RT	7013		2056.1										
			7013	7012		2051.8	2051.4								
L 77+15	216	LT	7015		2027.1										
			7015	7112		2015.3	1995.4								
RP32 32+53	14	LT	7016		2037.7										
			7016	7015		2029.0	2015.8	0.8					120		
RP32 33+06	14	LT	7018		2037.5										
			7018	7016		2029.9	2029.6								
RP23 30+50	18	RT	7019		2011.4										
			7019	7106		2006.4	2006.0								
RP23 34+55	17	RT	7020		2018.8										
			7020	7105		2009.9	2008.9								
Y10 12+61	32	RT	7021		2035.9										
			7021	7022		2030.9	2030.2	0.4					72		
RP32 33+66	15	LT	7022		2037.8										
			7022	7018		2030.2	2029.9								
SHEET TOTALS									172				192		

Side Drain Pipe (RCP, CSP, CAAP, HDPE, PVC, or PP PIPE)								Sealed Cross Pipe (Sealed)							R. C. PIPE CLASS III			R. C. PIPE CLASS IV							R. C. PIPE CLASS V						
DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE	DO NOT USE PVC	DO NOT USE PP PIPE			18	24	30	36	42	48		12	18	42	12	15	18	24	30	36	42	48	12	30				

AP-SCG43002VR

COMPUTED BY: VHB DATE: 9/11/2026

CHECKED BY: VHB DATE: 9/11/2026

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
I-2513AC	3D-27

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

SECTION 2 / VHB

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

| LINE & STATION | OFFSET | | STRUCTURE NUMBER FROM | STRUCTURE NUMBER TO | TOP ELEVATION FT. | INVERT ELEVATION FT. | INVERT ELEVATION FT. | MINIMUM REQUIRED SLOPE % | Side Drain Pipe (RCP, CSP, CAAP, HDPE, PVC, or PP PIPE) SIZE: 15 | 18 | 24 | 30 | 36 | 42 | 48 | Side Drain Pipe THICKNESS OR GAUGE: DO NOT USE RCP | DO NOT USE CSP | DO NOT USE CAAP | DO NOT USE HDPE | DO NOT USE PVC | DO NOT USE PP PIPE | Cross Pipe (Sealed X) SIZE: 18 | 24 | 30 | 36 | 42 | 48 | R. C. PIPE CLASS III SIZE: 12 | 18 | 42 | R. C. PIPE CLASS IV SIZE: 12 | 15 | 18 | 24 | 30 | 36 | 42 | 48 | R. C. PIPE CLASS V SIZE: 15 | 30 | 36" WELDED STEEL PIPE 0.532" THICK, GRADE B IN SOIL | 36" WELDED STEEL PIPE 0.532" THICK, GRADE B NOT IN SOIL | 42" WELDED STEEL PIPE 0.625" THICK, GRADE B IN SOIL | 42" WELDED STEEL PIPE 0.625" THICK, GRADE B NOT IN SOIL | ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CY | QUANTITIES FOR DRAINAGE STRUCTURES NOTE: TOTAL LIN. FT. FOR PAY QUANTITY SHALL BE A + (1.3 X B) A: 0' THRU 5' LIN. FT. | A: 5' THRU 10' LIN. FT. | B: 10' AND ABOVE LIN. FT. | C.B. STD. 840.01 OR STD. 840.02 | FRAME, GRATES, AND HOOD STD. 840.03 GRATE TYPE E | F | G | CONCRETE TRANSITIONAL SECTION D.I. STD. 852.06 OR STD. 852.06 | C.B. STD. 852.05 | OPEN THROAT C.B. STD. 840.04 OR STD. 840.05 | D.I. STD. 840.14 OR STD. 840.15 | D.I. FRAME AND GRATES STD. 840.16 | G.D.I. TYPE "A" STD. 840.17 OR STD. 840.26 | G.D.I. TYPE "B" STD. 840.18 OR STD. 840.27 | G.D.I. TYPE "D" STD. 840.19 OR STD. 840.28 | G.D.I. (W.S. FLAT) FRAME W/ 2 GRATES STD. 840.20 | G.D.I. (W.S. SAG) FRAME W/ 2 GRATES STD. 840.22 | G.D.I. (N.S. SAG) FRAME W/ 2 GRATES STD. 840.24 | G.D.I. (N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29 | J.B. STD. 840.31 OR STD. 840.32 | T.B.D.I. STD. 840.36 | T.B.J.B. STD. 840.34 | TB CONTRACTOR DESIGNED MASONRY DRAINAGE S | STEEL GRATE AND FRAME BICYCLE SAFE 840.39 | STEEL FRAME WITH TWO GRATES STD. 840.37 | TEMP STEEL PLATE COVER MASONRY DRAINAGE | M.H. FRAME AND COVER STD. 840.54 OR 840.55 | CONVERT EXISTING C.B. OR D.I. TO T.B.J.B. | CONVERT EXISTING C.B. OR D.I. TO J.B. | ADJUST C.B. | ADJUST D.I. | ADJUST MH | 15" SIDE DRAIN PIPE ELBOW | 18" SIDE DRAIN PIPE ELBOW | 24" SIDE DRAIN PIPE ELBOW | 30" SIDE DRAIN PIPE ELBOW | 36" SIDE DRAIN PIPE ELBOW | 42" SIDE DRAIN PIPE ELBOW | 48" SIDE DRAIN PIPE ELBOW | SPECIAL DRAINAGE STRUCTURE (SEE REMARKS) | BERM DITCH OUTLET STD. 860.10 (PER EACH) | RESILIENT CONNECTOR EA | FLOWABLE FILL CY | CONCRETE COLLARS CL. "B" STD. 840.72 CY | PIPE REMOVAL LIN. FT. | REMARKS |
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USRAL2WNPB54

COMPUTED BY: AECOM/VHB DATE: 9/3/2026

CHECKED BY: AECOM/VHB DATE: 9/3/2026

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
I-2513AC	3D-29

SUMMARY SECTION / PROJECT TOTALS

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

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

| LINE & STATION | OFFSET | STRUCTURE NUMBER FROM | STRUCTURE NUMBER TO | TOP ELEVATION FT. | INVERT ELEVATION FT. | INVERT ELEVATION FT. | MINIMUM REQUIRED SLOPE % | Side Drain Pipe (RCP, CSP, CAAP, HDPE, PVC, or PP PIPE) SIZE | | | | | | | Sealed Cross Pipe (Sealed XP) SIZE | | | | | | | R. C. PIPE CLASS IV SIZE | | | | | | | R. C. PIPE CLASS V SIZE | | 36" WELDED STEEL PIPE 0.532" THICK, GRADE B IN SOIL | 36" WELDED STEEL PIPE 0.532" THICK, GRADE B NOT IN SOIL | 42" WELDED STEEL PIPE 0.532" THICK, GRADE B IN SOIL | 42" WELDED STEEL PIPE 0.532" THICK, GRADE B NOT IN SOIL | 48" WELDED STEEL PIPE 0.625" THICK, GRADE B IN SOIL | 48" WELDED STEEL PIPE 0.625" THICK, GRADE B NOT IN SOIL | 48" PIPE REHABILITATION CIPP LINER | ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) | QUANTITIES FOR DRAINAGE STRUCTURES NOTE: TOTAL LIN. FT. FOR PAY QUANTITY SHALL BE A + (1.3 X B) A | B | C.B. STD. 840.01 OR STD. 840.02 | FRAME, GRATES, AND HOOD STD. 840.03 GRATE TYPE | | | OPEN THROAT C.B. STD. 840.04 OR STD. 840.05 | D.I. STD. 840.14 OR STD. 840.15 | D.I. FRAME AND GRATES STD. 840.16 | G.D.I. TYPE "A" STD. 840.17 OR STD. 840.26 | G.D.I. TYPE "B" STD. 840.18 OR STD. 840.27 | G.D.I. TYPE "D" STD. 840.19 OR STD. 840.28 | G.D.I. (W.S. FLAT) FRAME W/ 2 GRATES STD. 840.20 | G.D.I. (W.S. SAG) FRAME W/ GRATE STD. 840.22 | G.D.I. (W.S. SAG) FRAME W/ 2 GRATES STD. 840.22 | G.D.I. (N.S. SAG) FRAME W/ 2 GRATES STD. 840.24 | G.D.I. (N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29 | J.B. STD. 840.31 OR STD. 840.32 | T.B.J.B. STD. 840.34 | T.B.D.I. STD. 840.35 | T.B.D.I. FOR STEEL GRATES STD. 840.36 | T.B.D.I. STD. 840.37 | STEEL FRAME WITH TWO GRATES STD. 840.37 | STEEL GRATE AND FRAME BICYCLE SAFE 840.39 | TEMP STEEL PLATE COVER MASONRY DRAINAGE | M.H. STD. 840.51, STD. 840.52, OR STD. 840.53 | M.H. FRAME AND COVER STD. 840.54 | M.H. FRAME AND COVER STD. 840.55 | CONVERT EXISTING C.B. TO J.B. | CONVERT EXISTING D.I. TO J.B. | ADJUST C.B. | ADJUST D.I. | ADJUST MH | SPECIAL DRAINAGE STRUCTURE (SEE REMARKS) | 15" SIDE DRAIN ELBOW | 18" SIDE DRAIN ELBOW | 24" SIDE DRAIN ELBOW | 30" SIDE DRAIN ELBOW | 36" SIDE DRAIN ELBOW | 42" SIDE DRAIN ELBOW | 48" SIDE DRAIN ELBOW | BERM DITCH OUTLET STD. 850.10 | G.D.I. TYPE "A" MIN DEPTH STD 840D17 | RESILIENT CONNECTOR | FLOWABLE FILL | CONCRETE COLLARS CL. "B" STD. 840.72 | PIPE REMOVAL |
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USRALL5645D44

COMPUTED BY: AECOM/VHB DATE: 9/11/2026

CHECKED BY: AECOM/VHB DATE: 9/11/2026

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
I-2513AC	3D-30

SUMMARY SECTION / PROJECT TOTALS

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

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

| LINE & STATION | OFFSET | STRUCTURE NUMBER FROM | STRUCTURE NUMBER TO | TOP ELEVATION FT. | INVERT ELEVATION FT. | INVERT ELEVATION FT. | MINIMUM REQUIRED SLOPE % | Drainage Pipe (RCP, CSP, CAAP, HDPE, PVC, or PP PIPE) SIZE 15 | 18 | 24 | 30 | 36 | 42 | C. S. PIPE THICKNESS OR GAUGE .064 12 | .064 15 | .064 18 | .064 24 | .079 30 | .109 48 | R. C. PIPE CLASS III 12 | 15 | 18 | 24 | 30 | 36 | 42 | 48 | POLYPROPYLENE PIPE (SEALED PP) 12 | 15 | 18 | 24 | 30 | 36 | 42 | 48 | 15" WELDED STEEL PIPE 0.375" THICK, GRADE B IN SOIL | 2" DRAINAGE PIPE ELBOW | ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CY | REINFORCED ENDWALLS CY | DRAINAGE STRUCTURE MASONRY CY | QUANTITIES FOR DRAINAGE STRUCTURES NOTE: TOTAL LIN. FT. FOR PAY QUANTITY SHALL BE A + (1.3 X B) 0' THRU 5' EACH | A 5' THRU 10' LIN. FT. | B 10' AND ABOVE LIN. FT. | C.B. STD. 840.01 OR STD. 840.02 | FRAME, GRATES, AND HOOD STD. 840.03 GRATE TYPE E | F | G | CONCRETE TRANSITIONAL SECTION D.I. STD. 852.04 OR STD. 852.06 | C.B. STD. 852.05 | 15" CSP ELBOWS, ROD & CONNECTORS | 18" CSP ELBOWS, ROD & CONNECTORS | TRASH RACK FOR RISER | TRASH RACK FOR ORIFICE | PRE-INSTALLATION INSPECTION (FOR CIPP) | DE-WATERING (CIPP INSTALLATION) | CONVERT EX. DI TO T.B.J.B | CONVERT EX. C.B. TO T.B.J.B. | CONVERT EX. J.B. TO 2GI | T.B.D.I. STD. 840.36 | ADJUST MH | M.H. STD. 840.51, STD. 840.52, OR STD. 840.53 | M.H. FRAME AND COVER STD. 840.54 | T.B. CONTRACTOR DESIGNED MASONRY DRAINAGE | PIPE REMOVAL LIN. FT. | REMARKS |
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Docusign Envelope ID: AD4F104F-8910-83E8-80D5-AFC1020A8F63

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
I-2513C	6
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER — SEAL 042280 — STATE OF NORTH CAROLINA — Malcolm K. Fullalove — 10/30/2026

HYDRAULICS ENGINEER — SEAL 032102 — STATE OF NORTH CAROLINA — Brandon Dallas — 10/30/2026

Prepared for the Office of: NCDOT — Prepared by: AECOM — 1600 Perimeter Park Drive, Suite 200, Morrisville, NC 27560 — 919.239.7100

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

-Y7-

PI Sta 10+53.20	PI Sta 13+07.18
Δ = 66° 58' 40.4" (RT)	Δ = 25° 05' 40.2" (RT)
D = 143° 14' 22.0"	D = 5° 27' 24.5"
L = 46.76'	L = 459.88'
T = 26.46'	T = 233.09'
R = 40.00'	R = 1050.00'
PI Sta 18+02.84	PI Sta 18+78.17
Δ = 19° 14' 27.7" (LT)	Δ = 95° 53' 12.8" (RT)
D = 95° 59' 34.7"	D = 220° 28' 10.1"
L = 20.15'	L = 43.66'
T = 10.17'	T = 28.81'
R = 60.00'	R = 25.99'

-Y8-

PI Sta 13+85.49	PI Sta 18+62.53
Δ = 57° 52' 02.8" (LT)	Δ = 52° 12' 00.0" (RT)
D = 11° 15' 00.0"	D = 40° 00' 00.0"
L = 184.75'	L = 130.42'
T = 94.83'	T = 70.12'
R = 332.15'	R = 143.24'
PI Sta 15+24.31	PI Sta 21+15.41
Δ = 11° 47' 49.2" (LT)	Δ = 52° 42' 48.4" (LT)
D = 12° 00' 00.0"	D = 24° 00' 00.0"
L = 91.48'	L = 94.64'
T = 46.39'	T = 51.04'
R = 477.46'	R = 238.73'

TRAFFIC DIAGRAM

-Y2- BREVARD RD — 19-344 18,800 — ADT 2024 ADT 2040

-Y2RPA- 12,488 13,700 — -RP32- 11,788 13,700

-L- 9+20 (TO 1+40) — 88,400 90,400

-Y2RPC- 12,488 13,700 — -RP23- 11,788 13,700

-L- 1+26 (TO ASHEVILLE) — 63,232 73,200

17,216 20,800 — -Y2- BREVARD RD

TRAFFIC DIAGRAM

-Y2- BREVARD RD — 17,216 20,800 — ADT 2024 ADT 2040

408 600

-Y2A- HEALTHCARE COMPLEX DR 400 1,300

17,216 20,800 — -Y2- BREVARD RD

TRAFFIC DIAGRAM

ADT 2024 ADT 2040 — -Y2- BREVARD RD — 11,423 15,800

272 550

-RPB- SHELBURN RD — 4,232 5,200 — 2,108 2,300

19-344 18,800 — -Y2- BREVARD RD

1 KENNETH L & NANCY J BESTED DB 5014 PG 1782 PB 01 PG 11

2 REAL INVESTMENTS LLC DB 4647 PG 699 PB 30 PG 89

3 ELCO DYNAMICS LLC DB 3636 PG 21 PB 88 PG 157

4 BENJAMIN K ROBINSON DB 5270 PG 30 PB 1047 PG 1084

5 ELDRIDGE LEE COATES DB 4139 PG 32 PG 907 PG 89

6 BEVERLY P LEE DB 5057 PG 344 PB 30 PG 89

7 WILLIAM W & WILLIAM S HUNTER DB 3000 PG 1 PB 30 PG 89

8 MATTHEW & LESLIE TUTTLEFIELD DB 5732 PG 1 PB 30 PG 89

9 BRYANNA SANDERS GIBBS DB 5727 PG 666 PB 30 PG 89

10 WILLIAM RALPH POOLE JR DB 5509 PG 923 PB 30 PG 89

11 DONALD PAUL KEASLER DB 4562 PG 389 PB 30 PG 89

12 JEFFREY B & SAMANTA BROWN DB 5376 PG 567 PB 30 PG 89

13 BARRE P DAVIS DB 3085 PG 659 PB 30 PG 89

14 ADAM B & KASEY B JOHNSON DB 5393 PG 675 PB 30 PG 89

15 CYNTHIA LYNN RONEY DB 5178 PG 537 PB 30 PG 89

16 JOHN R & KRISTINA N HENRY DB 5217 PG 337 PB 30 PG 89

17 JACOB H DAVIS DB 5390 PG 1845 PB 30 PG 89

18 KATHLEEN MANCUSO DB 5390 PG 1 PB 30 PG 89

19 CITY OF ASHEVILLE DB 5390 PG 926 PB 98 PG 173

20 WILLIAM RALPH POOLE JR DB 5509 PG 923 PB 30 PG 89

21 MICHAEL CARPENTER DB 593 PG 998 PB 7 PG 93

22 PATRICK BOLAND DB 5735 PG 2001 PB 7 PG 93

23 MATTHEW & KATHLEEN LUTTLEFIELD DB 5612 PG 1 PB 30 PG 89

24 TINA G. WOOD DB 3098 PG 279 PB 7 PG 93

25 TONY & EILEEN DB 5116 PG 855 PB 116 PG 96

26 TOMMIE & CAROLYN TRANTHAM DB 4196 PG 242 PB 30 PG 89

27 DAVID LINDSAY SMITH DB 4210 PG 1060 PB 30 PG 89

28 JOHN & ROSEMARY EAST DB 5116 PG 855 PB 30 PG 89

29 MANDY SCEPANIAK DB 5661 PG 869 PB 30 PG 89

30 MARGARET SHUR DB 4196 PG 239 PB 30 PG 89

31 CHARLES L GEZENTANNER III DB 5788 PG 590

32 DEAN W. SALES DB 3049 PG 1782 PB 30 PG 77

33 KELLISEWISE TINSLEY DB 3094 PG 1782 PB 30 PG 77

34 HD CAPITAL MANAGEMENT LLC DB 5650 PG 1782 PB 30 PG 89

35 GABRIEL A & DANIEL SALAZAR DB 5788 PG 727 PB 30 PG 89

36 DAVID ZARITSKY DB 5098 PG 48 PB 30 PG 89

37 PRESSLEY CONSTRUCTION & DEVELOPMENT INC DB 5088 PG 1604 PB 30 PG 89

38 CITY OF ASHEVILLE DB 4927 PG 389

39 CITY OF ASHEVILLE DB 1887 PG 38 PB 30 PG 60

40 NORTH CAROLINA DEPARTMENT OF TRANSPORTATION DB 2574 PG 298 DB 2778 PG 298 (STATE HIGHWAY COMMISSION) DB 845 PG 443

2 ASHEVILLE HOMNY RIVERBLUE LLC PHASE II DB 5231 PG 225 PB 221 PG 9

2A RR 771 LLC DB 5533 PG 1723 PB 30 PG 89

28 ASTON PARK HEALTH CARE CENTER DB 0230 PG 508 DB 052 PG 572 DB 1863 PG 47 DB 1904 PG 356

BEGIN CONSTRUCTION -Y2B- STA.11+50.00

BEGIN CONSTRUCTION -Y8- STA.21+40.47

BEGIN CONSTRUCTION -Y8- STA.14+05.29

END CONSTRUCTION -Y2- STA.29+50.00

END CONSTRUCTION -Y2A- STA.19+07.00

END CONSTRUCTION -Y2C- STA.13+36.75

END CONSTRUCTION -Y9- STA.10+78.00

BEGIN CONSTRUCTION -Y9- STA.10+00.00

BEGIN CONSTRUCTION -Y2- STA.11+40.00

BEGIN CONSTRUCTION -Y2- POT STA.10+00.00

END CONSTRUCTION -Y2- POT STA.17+80.73

BEGIN CONSTRUCTION -Y2- POC STA.11+39.00

END CONSTRUCTION -Y2- POT STA.10+16.82

-Y2- POT STA.13+56.73

-Y2- POT STA.12+34.89

-Y2- POT STA.12+41.56

-Y9- POT STA.10+12.50 = -Y8- POT STA.10+00.00

-Y2- POT STA.22+47.05 = -L- STA.54+65.01

-Y2- POT STA.23+92.36 = -L- STA.55+10.00

-Y2- POT STA.22+52.28 = -Y2- POT STA.21+00.00

-Y2- POT STA.20+40.45

-Y2- POT STA.18+85.68

-Y2- POT STA.18+20.85

-Y2- POT STA.15+42.75

-Y2- POT STA.14+88.68

-Y2- POT STA.14+48.90

-Y2- POT STA.13+40.78

-Y2- POT STA.12+08.26

-Y2- POT STA.11+92.67

-Y2- POT STA.11+49.23

-Y2- POT STA.11+80.66

-Y2- POT STA.12+17.24

-Y2- POT STA.13+05.23

-Y2- POT STA.13+52.05

-Y2- POT STA.14+22.80 = -Y8- POT STA.22+05.32

-Y2- POT STA.14+85.29

-Y2- POT STA.15+57.78

-Y2- POT STA.16+28.37

-Y2- POT STA.16+65.44

-Y2- POT STA.17+92.67

-Y2- POT STA.18+49.37

-Y2- POT STA.18+76.78

-Y2- POT STA.19+57.65

-Y2- POT STA.20+38.36

-Y2- POT STA.20+65.37

-Y2- POT STA.21+92.41

-Y2- POT STA.22+87.78

-Y2- POT STA.23+75.03

-Y2- POT STA.24+85.23

-Y2- POT STA.25+35.00 = -Y2A- POT STA.10+00.00

-Y2- POT STA.25+85.37

-Y2- POT STA.26+65.71

-Y2- POT STA.27+46.05

-Y2- POT STA.28+26.39

-Y2- POT STA.29+06.73

-Y2- POT STA.29+87.07

-Y2- POT STA.30+67.41

-Y2- POT STA.31+47.75

-Y2- POT STA.32+28.09

-Y2- POT STA.33+08.43

-Y2- POT STA.33+88.77

-Y2- POT STA.34+69.11

-Y2- POT STA.35+49.45

-Y2- POT STA.36+29.79

-Y2- POT STA.37+10.13

-Y2- POT STA.37+90.47

-Y2- POT STA.38+70.81

-Y2- POT STA.39+51.15

-Y2- POT STA.40+31.49

-Y2- POT STA.41+11.83

-Y2- POT STA.41+92.17

-Y2- POT STA.42+72.51

-Y2- POT STA.43+52.85

-Y2- POT STA.44+33.19

-Y2- POT STA.45+13.53

-Y2- POT STA.45+93.87

-Y2- POT STA.46+74.21

-Y2- POT STA.47+54.55

-Y2- POT STA.48+34.89

-Y2- POT STA.49+15.23

-Y2- POT STA.49+95.57

-Y2- POT STA.50+75.91

-Y2- POT STA.51+56.25

-Y2- POT STA.52+36.59

-Y2- POT STA.53+16.93

-Y2- POT STA.53+97.27

-Y2- POT STA.54+77.61

-Y2- POT STA.55+57.95

-Y2- POT STA.56+38.29

-Y2- POT STA.57+18.63

-Y2- POT STA.57+98.97

-Y2- POT STA.58+79.31

-Y2- POC STA.59+59.65

-Y2- POT STA.60+39.99

-Y2- POT STA.61+20.33

-Y2- POT STA.62+00.67

-Y2- POT STA.62+81.01

-Y2- POT STA.63+61.35

-Y2- POT STA.64+41.69

-Y2- POT STA.65+22.03

-Y2- POT STA.66+02.37

-Y2- POT STA.66+82.71

-Y2- POT STA.67+63.05

-Y2- POT STA.68+43.39

-Y2- POT STA.69+23.73

-Y2- POT STA.70+04.07

-Y2- POT STA.70+84.41

-Y2- POT STA.71+64.75

-Y2- POT STA.72+45.09

-Y2- POT STA.73+25.43

-Y2- POT STA.74+05.77

-Y2- POT STA.74+86.11

-Y2- POT STA.75+66.45

-Y2- POT STA.76+46.79

-Y2- POT STA.77+27.13

-Y2- POT STA.78+07.47

-Y2- POT STA.78+87.81

-Y2- POT STA.79+68.15

-Y2- POT STA.80+48.49

-Y2- POT STA.81+28.83

-Y2- POT STA.82+09.17

-Y2- POT STA.82+89.51

-Y2- POT STA.83+69.85

-Y2- POT STA.84+50.19

-Y2- POT STA.85+30.53

-Y2- POT STA.86+10.87

-Y2- POT STA.86+91.21

-Y2- POT STA.87+71.55

-Y2- POT STA.88+51.89

-Y2- POT STA.89+32.23

-Y2- POT STA.90+12.57

-Y2- POT STA.90+92.91

-Y2- POT STA.91+73.25

-Y2- POT STA.92+53.59

-Y2- POT STA.93+33.93

-Y2- POT STA.94+14.27

-Y2- POT STA.94+94.61

-Y2- POT STA.95+74.95

-Y2- POT STA.96+55.29

-Y2- POT STA.97+35.63

-Y2- POT STA.98+15.97

-Y2- POT STA.98+96.31

-Y2- POT STA.99+76.65

-Y2- POT STA.100+56.99

-Y2- POT STA.101+37.33

-Y2- POT STA.102+17.67

-Y2- POT STA.102+98.01

-Y2- POT STA.103+78.35

-Y2- POT STA.104+58.69

-Y2- POT STA.105+39.03

-Y2- POT STA.106+19.37

-Y2- POT STA.106+99.71

-Y2- POT STA.107+80.05

-Y2- POT STA.108+60.39

-Y2- POT STA.109+40.73

-Y2- POT STA.110+21.07

-Y2- POT STA.111+01.41

-Y2- POT STA.111+81.75

-Y2- POT STA.112+62.09

-Y2- POT STA.113+42.43

-Y2- POT STA.114+22.77

-Y2- POT STA.115+03.11

-Y2- POT STA.115+83.45

-Y2- POT STA.116+63.79

-Y2- POT STA.117+44.13

-Y2- POT STA.118+24.47

-Y2- POT STA.119+04.81

-Y2- POT STA.119+85.15

-Y2- POT STA.120+65.49

-Y2- POT STA.121+45.83

-Y2- POT STA.122+26.17

-Y2- POT STA.123+06.51

-Y2- POT STA.123+86.85

-Y2- POT STA.124+67.19

-Y2- POT STA.125+47.53

-Y2- POT STA.126+27.87

-Y2- POT STA.127+08.21

-Y2- POT STA.127+88.55

-Y2- POT STA.128+68.89

-Y2- POT STA.129+49.23

-Y2- POT STA.130+29.57

-Y2- POT STA.131+09.91

-Y2- POT STA.131+90.25

-Y2- POT STA.132+70.59

-Y2- POT STA.133+50.93

-Y2- POT STA.134+31.27

-Y2- POT STA.135+11.61

-Y2- POT STA.135+91.95

-Y2- POT STA.136+72.29

-Y2- POT STA.137+52.63

-Y2- POT STA.138+32.97

-Y2- POT STA.139+13.31

-Y2- POT STA.139+93.65

-Y2- POT STA.140+73.99

-Y2- POT STA.141+54.33

-Y2- POT STA.142+34.67

-Y2- POT STA.143+15.01

-Y2- POT STA.143+95.35

-Y2- POT STA.144+75.69

-Y2- POT STA.145+56.03

-Y2- POT STA.146+36.37

-Y2- POT STA.147+16.71

-Y2- POT STA.147+97.05

-Y2- POT STA.148+77.39

-Y2- POT STA.149+57.73

-Y2- POT STA.150+38.07

-Y2- POT STA.151+18.41

-Y2- POT STA.151+98.75

-Y2- POT STA.152+79.09

-Y2- POT STA.153+59.43

-Y2- POT STA.154+39.77

-Y2- POT STA.155+20.11

-Y2- POT STA.156+00.45

-Y2- POT STA.156+80.79

-Y2- POT STA.157+61.13

-Y2- POT STA.158+41.47

-Y2- POT STA.159+21.81

-Y2- POT STA.160+02.15

-Y2- POT STA.160+82.49

-Y2- POT STA.161+62.83

-Y2- POT STA.162+43.17

-Y2- POT STA.163+23.51

-Y2- POT STA.164+03.85

-Y2- POT STA.164+84.19

-Y2- POT STA.165+64.53

-Y2- POT STA.166+44.87

-Y2- POT STA.167+25.21

-Y2- POT STA.168+05.55

-Y2- POT STA.168+85.89

-Y2- POT STA.169+66.23

-Y2- POT STA.170+46.57

-Y2- POT STA.171+26.91

-Y2- POT STA.172+07.25

-Y2- POT STA.172+87.59

-Y2- POT STA.173+67.93

-Y2- POT STA.174+48.27

-Y2- POT STA.175+28.61

-Y2- POT STA.176+08.95

-Y2- POT STA.176+89.29

-Y2- POT STA.177+69.63

-Y2- POT STA.178+49.97

-Y2- POT STA.179+30.31

-Y2- POT STA.180+10.65

-Y2- POT STA.180+90.99

-Y2- POT STA.181+71.33

-Y2- POT STA.182+51.67

-Y2- POT STA.183+32.01

-Y2- POT STA.184+12.35

-Y2- POT STA.184+92.69

-Y2- POT STA.185+73.03

-Y2- POT STA.186+53.37

-Y2- POT STA.187+33.71

-Y2- POT STA.188+14.05

-Y2- POT STA.188+94.39

-Y2- POT STA.189+74.73

-Y2- POT STA.190+55.07

-Y2- POT STA.191+35.41

-Y2- POT STA.192+15.75

-Y2- POT STA.192+96.09

-Y2- POT STA.193+76.43

-Y2- POT STA.194+56.77

-Y2- POT STA.195+37.11

-Y2- POT STA.196+17.45

-Y2- POT STA.196+97.79

-Y2- POT STA.197+78.13

-Y2- POT STA.198+58.47

-Y2- POT STA.199+38.81

-Y2- POT STA.200+19.15

-Y2- POT STA.200+99.49

-Y2- POT STA.201+79.83

-Y2- POT STA.202+60.17

-Y2- POT STA.203+40.51

-Y2- POT STA.204+20.85

-Y2- POT STA.205+01.19

-Y2- POT STA.205+81.53

-Y2- POT STA.206+61.87

-Y2- POT STA.207+42.21

-Y2- POT STA.208+22.55

-Y2- POT STA.209+02.89

-Y2- POT STA.209+83.23

-Y2- POT STA.210+63.57

-Y2- POT STA.211+43.91

-Y2- POT STA.212+24.25

-Y2- POT STA.213+04.59

-Y2- POT STA.213+84.93

-Y2- POT STA.214+65.27

-Y2- POT STA.215+45.61

-Y2- POT STA.216+25.95

-Y2- POT STA.217+06.29

-Y2- POT STA.217+86.63

-Y2- POT STA.218+66.97

-Y2- POT STA.219+47.31

-Y2- POT STA.220+27.65

-Y2- POT STA.221+07.99

-Y2- POT STA.221+88.33

-Y2- POT STA.222+68.67

-Y2- POT STA.223+49.01

-Y2- POT STA.224+29.35

-Y2- POT STA.225+09.69

-Y2- POT STA.225+90.03

-Y2- POT STA.226+70.37

-Y2- POT STA.227+50.71

-Y2- POT STA.228+31.05

-Y2- POT STA.229+11.39

-Y2- POT STA.229+91.73

-Y2- POT STA.230+72.07

-Y2- POT STA.231+52.41

-Y2- POT STA.232+32.75

-Y2- POT STA.233+13.09

-Y2- POT STA.233+93.43

-Y2- POT STA.234+73.77

-Y2- POT STA.235+54.11

-Y2- POT STA.236+34.45

-Y2- POT STA.237+14.79

-Y2- POT STA.237+95.13

-Y2- POT STA.238+75.47

-Y2- POT STA.239+55.81

-Y2- POT STA.240+36.15

-Y2- POT STA.241+16.49

-Y2- POT STA.241+96.83

-Y2- POT STA.242+77.17

-Y2- POT STA.243+57.51

-Y2- POT STA.244+37.85

-Y2- POT STA.245+18.19

-Y2- POT STA.245+98.53

-Y2- POT STA.246+78.87

-Y2- POT STA.247+59.21

-Y2- POT STA.248+39.55

-Y2- POT STA.249+19.89

-Y2- POT STA.250+00.23

-Y2- POT STA.250+80.57

-Y2- POT STA.251+60.91

-Y2- POT STA.252+41.25

-Y2- POT STA.253+21.59

-Y2- POT STA.254+01.93

-Y2- POT STA.254+82.27

-Y2- POT STA.255+62.61

-Y2- POT STA.256+42.95

-Y2- POT STA.257+23.29

-Y2- POT STA.258+03.63

-Y2- POT STA.258+83.97

-Y2- POT STA.259+64.31

-Y2- POT STA.260+44.65

-Y2- POT STA.261+24.99

-Y2- POT STA.262+05.33

-Y2- POT STA.262+85.67

-Y2- POT STA.263+66.01

-Y2- POT STA.264+46.35

-Y2- POT STA.265+26.69

-Y2- POT STA.266+07.03

-Y2- POT STA.266+87.37

-Y2- POT STA.267+67.71

-Y2- POT STA.268+48.05

-Y2- POT STA.269+28.39

-Y2- POT STA.270+08.73

-Y2- POT STA.270+89.07

-Y2- POT STA.271+69.41

-Y2- POT STA.272+49.75

-Y2- POT STA.273+30.09

-Y2- POT STA.274+10.43

-Y2- POT STA.274+90.77

-Y2- POT STA.275+71.11

-Y2- POT STA.276+51.45

-Y2- POT STA.277+31.79

-Y2- POT STA.278+12.13

-Y2- POT STA.278+92.47

-Y2- POT STA.279+72.81

-Y2- POT STA.280+53.15

-Y2- POT STA.281+33.49

-Y2- POT STA.282+13.83

-Y2- POT STA.282+94.17

-Y2- POT STA.283+74.51

-Y2- POT STA.284+54.85

-Y2- POT STA.285+35.19

-Y2- POT STA.286+15.53

-Y2- POT STA.286+95.87

-Y2- POT STA.287+76.21

-Y2- POT STA.288+56.55

-Y2- POT STA.289+36.89

-Y2- POT STA.290+17.23

-Y2- POT STA.290+97.57

-Y2- POT STA.291+77.91

-Y2- POT STA.292+58.25

-Y2- POT STA.293+38.59

-Y2- POT STA.294+18.93

-Y2- POT STA.294+99.27

-Y2- POT STA.295+79.61

-Y2- POT STA.296+59.95

-Y2- POT STA.297+40.29

-Y2- POT STA.298+20.63

-Y2- POT STA.299+00.97

-Y2- POT STA.299+81.31

-Y2- POT STA.300+61.65

-Y2- POT STA.301+41.99

-Y2- POT STA.302+22.33

-Y2- POT STA.303+02.67

-Y2- POT STA.303+83.01

-Y2- POT STA.304+63.35

-Y2- POT STA.305+43.69

-Y2- POT STA.306+24.03

-Y2- POT STA.307+04.37

-Y2- POT STA.307+84.71

-Y2- POT STA.308+65.05

-Y2- POT STA.309+45.39

-Y2- POT STA.310+25.73

-Y2- POT STA.311+06.07

-Y2- POT STA.311+86.41

-Y2- POT STA.312+66.75

-Y2- POT STA.313+47.09

-Y2- POT STA.314+27.43

-Y2- POT STA.315+07.77

-Y2- POT STA.315+88.11

-Y2- POT STA.316+68.45

-Y2- POT STA.317+48.79

-Y2- POT STA.318+29.13

-Y2- POT STA.319+09.47

-Y2- POT STA.319+89.81

-Y2- POT STA.320+70.15

-Y2- POT STA.321+50.49

-Y2- POT STA.322+30.83

-Y2- POT STA.323+11.17

-Y2- POT STA.323+91.51

-Y2- POT STA.324+71.85

-Y2- POT STA.325+52.19

-Y2- POT STA.326+32.53

-Y2- POT STA.327+12.87

-Y2- POT STA.327+93.21

-Y2- POT STA.328+73.55

-Y2- POT STA.329+53.89

-Y2- POT STA.330+34.23

-Y2- POT STA.331+14.57

-Y2- POT STA.331+94.91

-Y2- POT STA.332+75.25

-Y2- POT STA.333+55.59

-Y2- POT STA.334+35.93

-Y2- POT STA.335+16.27

-Y2- POT STA.335+96.61

-Y2- POT STA.336+76.95

-Y2- POT STA.337+57.29

-Y2- POT STA.338+37.63

-Y2- POT STA.339+17.97

-Y2- POT STA.339+98.31

-Y2- POT STA.340+78.65

-Y2- POT STA.341+58.99

-Y2- POT STA.342+39.33

-Y2- POT STA.343+19.67

-Y2- POT STA.343+99.99

-Y2- POT STA.344+80.33

-Y2- POT STA.345+60.67

-Y2- POT STA.346+41.01

-Y2- POT STA.347+21.35

-Y2- POT STA.348+01.69

-Y2- POT STA.348+82.03

-Y2- POT STA.349+62.37

-Y2- POT STA.350+42.71

-Y2- POT STA.351+23.05

-Y2- POT STA.352+03.39

-Y2- POT STA.352+83.73

-Y2- POT STA.353+64.07

-Y2- POT STA.354+44.41

-Y2- POT STA.355+24.75

-Y2- POT STA.356+05.09

-Y2- POT STA.356+85.43

-Y2- POT STA.357+65.77

-Y2- POT STA.358+46.11

-Y2- POT STA.359+26.45

-Y2- POT STA.360+06.79

-Y2- POT STA.360+87.13

-Y2- POT STA.361+67.47

-Y2- POT STA.362+47.81

-Y2- POT STA.363+28.15

-Y2- POT STA.364+08.49

-Y2- POT STA.364+88.83

-Y2- POT STA.365+69.17

-Y2- POT STA.366+49.51

-Y2- POT STA.367+29.85

-Y2- POT STA.368+10.19

-Y2- POT STA.368+90.53

-Y2- POT STA.369+70.87

-Y2- POT STA.370+51.21

-Y2- POT STA.371+31.55

-Y2- POT STA.372+11.89

-Y2- POT STA.372+92.23

-Y2- POT STA.373+72.57

-Y2- POT STA.374+52.91

-Y2- POT STA.375+33.25

-Y2- POT STA.376+13.59

-Y2- POT STA.376+93.93

-Y2- POT STA.377+74.27

-Y2- POT STA.378+54.61

-Y2- POT STA.379+34.95

-Y2- POT STA.380+15.29

-Y2- POT STA.380+95.63

-Y2- POT STA.381+75.97

-Y2- POT STA.382+56.31

-Y2- POT STA.383+36.65

-Y2- POT STA.384+16.99

-Y2- POT STA.384+97.33

-Y2- POT STA.385+77.67

-Y2- POT STA.386+58.01

-Y2- POT STA.387+38.35

-Y2- POT STA.388+18.69

-Y2- POT STA.388+99.03

-Y2- POT STA.389+79.37

-Y2- POT STA.390+59.71

-Y2- POT STA.391+40.05

-Y2- POT STA.392+20.39

-Y2- POT STA.393+00.73

-Y2- POT STA.393+81.07

-Y2- POT STA.394+61.41

-Y2- POT STA.395+41.75

-Y2- POT STA.396+22.09

-Y2- POT STA.397+02.43

-Y2- POT STA.397+82.77

-Y2- POT STA.398+63.11

-Y2- POT STA.399+43.45

-Y2- POT STA.400+23.79

-Y2- POT STA.401+04.13

-Y2- POT STA.401+84.47

-Y2- POT STA.402+64.81

-Y2- POT STA.403+45.15

-Y2- POT STA.404+25.49

-Y2- POT STA.405+05.83

-Y2- POT STA.405+86.17

-Y2- POT STA.406+66.51

-Y2- POT STA.407+46.85

-Y2- POT STA.408+27.19

-Y2- POT STA.409+07.53

-Y2- POT STA.409+87.87

-Y2- POT STA.410+68.21

-Y2- POT STA.411+48.55

-Y2- POT STA.412+28.89

-Y2- POT STA.413+09.23

-Y2- POT STA.413+89.57

-Y2- POT STA.414+69.91

-Y2- POT STA.415+50.25

-Y2- POT STA.416+30.59

-Y2- POT STA.417+10.93

-Y2- POT STA.417+91.27

-Y2- POT STA.418+71.61

-Y2- POT STA.419+51.95

-Y2- POT STA.420+32.29

-Y2- POT STA.421+12.63

-Y2- POT STA.421+92.97

-Y2- POT STA.422+73.31

-Y2- POT STA.423+53.65

-Y2- POT STA.424+33.99

-Y2- POT STA.425+14.33

-Y2- POT STA.425+94.67

-Y2- POT STA.426+75.01

-Y2- POT STA.427+55.35

-Y2- POT STA.428+35.69

-Y2- POT STA.429+16.03

-Y2- POT STA.429+96.37

-Y2- POT STA.430+76.71

-Y2- POT STA.431+57.05

-Y2- POT STA.432+37.39

-Y2- POT STA.433+17.73

-Y2- POT STA.433+98.07

-Y2- POT STA.434+78.41

-Y2- POT STA.435+58.75

-Y2- POT STA.436+39.09

-Y2- POT STA.437+19.43

-Y2- POT STA.437+99.77

-Y2- POT STA.438+80.11

-Y2- POT STA.439+60.45

-Y2- POT STA.440+40.79

-Y2- POT STA.441+21.13

-Y2- POT STA.442+01.47

-Y2- POT STA.442+81.81

-Y2- POT STA.443+62.15

-Y2- POT STA.444+42.49

-Y2- POT STA.445+22.83

-Y2- POT STA.446+03.17

-Y2- POT STA.446+83.51

-Y2- POT STA.447+63.85

-Y2- POT STA.448+44.19

-Y2- POT STA.449+24.53

-Y2- POT STA.450+04.87

-Y2- POT STA.450+85.21

-Y2- POT STA.451+65.55

-Y2- POT STA.452+45.89

-Y2- POT STA.453+26.23

-Y2- POT STA.454+06.57

-Y2- POT STA.454+86.91

-Y2- POT STA.455+67.25

-Y2- POT STA.456+47.59

-Y2- POT STA.457+27.93

-Y2- POT STA.458+08.27

-Y2- POT STA.458+88.61

-Y2- POT STA.459+68.95

-Y2- POT STA.460+49.29

-Y2- POT STA.461+29.63

-Y2- POT STA.462+09.97

-Y2- POT STA.462+90.31

-Y2- POT STA.463+70.65

-Y2- POT STA.464+50.99

-Y2- POT STA.465+31.33

-Y2- POT STA.466+11.67

-Y2- POT STA.466+92.01

-Y2- POT STA.467+72.35

-Y2- POT STA.468+52.69

-Y2- POT STA.469+33.03

-Y2- POT STA.470+13.37

-Y2- POT STA.470+93.71

-Y2- POT STA.471+74.05

-Y2- POT STA.472+54.39

-Y2- POT STA.473+34.73

-Y2- POT STA.474+15.07

-Y2- POT STA.474+95.41

-Y2- POT STA.475+75.75

-Y2- POT STA.476+56.09

-Y2- POT STA.477+36.43

-Y2- POT STA.478+16.77

-Y2- POT STA.478+97.11

-Y2- POT STA.479+77.45

-Y2- POT STA.480+57.79

-Y2- POT STA.481+38.13

-Y2- POT STA.482+18.47

-Y2- POT STA.482+98.81

-Y2- POT STA.483+79.15

-Y2- POT STA.484+59.49

-Y2- POT STA.485+39.83

-Y2- POT STA.486+20.17

-Y2- POT STA.487+00.51

-Y2- POT STA.487+80.85

-Y2- POT STA.488+61.19

-Y2- POT STA.489+41.53

-Y2- POT STA.490+21.87

-Y2- POT STA.491+02.21

-Y2- POT STA.491+82.55

-Y2- POT STA.492+62.89

-Y2- POT STA.493+43.23

-Y2- POT STA.494+23.57

-Y2- POT STA.495+03.91

-Y2- POT STA.495+84.25

-Y2- POT STA.496+64.59

-Y2- POT STA.497+44.93

-Y2- POT STA.498+25.27

-Y2- POT STA.499+05.61

-Y2- POT STA.499+85.95

-Y2- POT STA.500+66.29

-Y2- POT STA.501+46.63

-Y2- POT STA.502+26.97

-Y2- POT STA.503+07.31

-Y2- POT STA.503+87.65

-Y2- POT STA.504+67.99

-Y2- POT STA.505+48.33

-Y2- POT STA.506+28.67

-Y2- POT STA.507+09.01

-Y2- POT STA.507+89.35

-Y2- POT STA.508+69.69

-Y2- POT STA.509+50.03

-Y2- POT STA.510+30.37

-Y2- POT STA.511+10.71

-Y2- POT STA.511+91.05

-Y2- POT STA.512+71.39

-Y2- POT STA.513+51.73

-Y2- POT STA.514+32.07

-Y2- POT STA.515+12.41

-Y2- POT STA.515+92.75

-Y2- POT STA.516+73.09

-Y2- POT STA.517+53.43

-Y2- POT STA.518+33.77

-Y2- POT STA.519+14.11

-Y2- POT STA.519+94.45

-Y2- POT STA.520+74.79

-Y2- POT STA.521+55.13

-Y2- POT STA.522+35.47

-Y2- POT STA.523+15.81

-Y2- POT STA.523+96.15

-Y2- POT STA.524+76.49

-Y2- POT STA.525+56.83

-Y2- POT STA.526+37.17

-Y2- POT STA.527+17.51

-Y2- POT STA.527+97.85

-Y2- POT STA.528+78.19

-Y2- POT STA.529+58.53

-Y2- POT STA.530+38.87

-Y2- POT STA.531+19.21

-Y2- POT STA.531+99.55

-Y2- POT STA.532+79.89

-Y2- POT STA.533+60.23

-Y2- POT STA.534+40.57

-Y2- POT STA.535+20.91

-Y2- POT STA.536+01.25

-Y2- POT STA.536+81.59

-Y2- POT STA.537+61.93

-Y2- POT STA.538+42.27

-Y2- POT STA.539+22.61

-Y2- POT STA.540+02.95

-Y2- POT STA.540+83.29

-Y2- POT STA.541+63.63

-Y2- POT STA.542+43.97

-Y2- POT STA.543+24.31

-Y2- POT STA.544+04.65

-Y2- POT STA.544+84.99

-Y2- POT STA.545+65.33

-Y2- POT STA.546+45.67

-Y2- POT STA.547+26.01

-Y2- POT STA.548+06.35

-Y2- POT STA.548+86.69

-Y2- POT STA.549+67.03

-Y2- POT STA.550+47.37

-Y2- POT STA.551+27.71

-Y2- POT STA.552+08.05

-Y2- POT STA.552+88.39

-Y2- POT STA.553+68.73

-Y2- POT STA.554+49.07

-Y2- POT STA.555+29.41

-Y2- POT STA.556+09.75

-Y2- POT STA.556+90.09

-Y2- POT STA.557+70.43

-Y2- POT STA.558+50.77

-Y2- POT STA.559+31.11

-Y2- POT STA.560+11.45

-Y2- POT STA.560+91.79

-Y2- POT STA.561+72.13

-Y2- POT STA.562+52.47

-Y2- POT STA.563+32.81

-Y2- POT STA.564+13.15

-Y2- POT STA.564+93.49

-Y2- POT STA.565+73.83

-Y2- POT STA.566+54.17

-Y2- POT STA.567+34.51

-Y2- POT STA.568+14.85

-Y2- POT STA.568+95.19

-Y2- POT STA.569+75.53

-Y2- POT STA.570+55.87

-Y2- POT STA.571+36.21

-Y2- POT STA.572+16.55

-Y2- POT STA.572+96.89

-Y2- POT STA.573+77.23

-Y2- POT STA.574+57.57

-Y2- POT STA.575+37.91

-Y2- POT STA.576+18.25

-Y2- POT STA.576+98.59

-Y2- POT STA.577+78.93

-Y2- POT STA.578+59.27

-Y2- POT STA.579+39.61

-Y2- POT STA.580+19.95

-Y2- POT STA.580+80.29

-Y2- POT STA.581+60.63

-Y2- POT STA.582+40.97

-Y2- POT STA.583+21.31

-Y2- POT STA.584+01.65

-Y2- POT STA.584+81.99

-Y2- POT STA.585+62.33

-Y2- POT STA.586+42.67

-Y2- POT STA.587+23.01

-Y2- POT STA.588+03.35

-Y2- POT STA.588+83.69

-Y2- POT STA.589+64.03

-Y2- POT STA.590+44.37

-Y2- POT STA.591+24.71

-Y2- POT STA.592+05.05

-Y2- POT STA.592+85.39

-Y2- POT STA.593+65.73

-Y2- POT STA.594+46.07

-Y2- POT STA.595+26.41

-Y2- POT STA.596+06.75

-Y2- POT STA.596+87.09

-Y2- POT STA.597+67.43

-Y2- POT STA.598+47.77

-Y2- POT STA.599+28.11

-Y2- POT STA.600+08.45

-Y2- POT STA.600+88.79

-Y2- POT STA.601+69.13

-Y2- POT STA.602+49.47

-Y2- POT STA.603+29.81

-Y2- POT STA.604+10.15

-Y2- POT STA.604+90.49

-Y2- POT STA.605+70.83

-Y2- POT STA.606+51.17

-Y2- POT STA.607+31.51

-Y2- POT STA.608+11.85

-Y2- POT STA.608+92.19

-Y2- POT STA.609+72.53

-Y2- POT STA.610+52.87

-Y2- POT STA.611+33.21

-Y2- POT STA.612+13.55

-Y2- POT STA.612+93.89

-Y2- POT STA.613+74.23

-Y2- POT STA.614+54.57

-Y2- POT STA.615+34.91

-Y2- POT STA.616+15.25

-Y2- POT STA.616+95.59

-Y2- POT STA.617+75.93

-Y2- POT STA.618+56.27

-Y2- POT STA.619+36.61

-Y2- POT STA.620+16.

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PROJ. REFERENCE NO.	SHEET NO.
I-2513AC	TMP-6

SEE SHEET TMP-6A
FOR CROSS SECTION

-Y2B- SHELBURNE RD

CONSTRUCT RETAINING WALL

TEMPORARY SHORING
-DET01- STA 15+50, 6.6' RT
TO -DET01- STA. 18+23, 23.6' RT
02B

TEMPORARY SHORING
-Y8- STA 19+75, 25.1' LT
TO -Y8- STA. 20+45, 25.1' LT
02C

-DET01- STA. 18+26±

TEMPORARY SHORING
-Y2RPB- STA 16+60, 25.0' RT
TO -Y2RPB- STA. 17+20, 25.0' RT
02A

-Y2RPB- STA. 16+76±

-Y8- 20+95±

-DET14-

-DET14- STA. 11+50±
INSTALL DRAINAGE PIPES ONE LANE AT A TIME USING NIGHTLY LANE CLOSURES AND RSD 1101.02

-Y8- HOMINY CREEK RD

CONSTRUCT RETAINING WALL

P20

-L- STA. 41+11±

-L- 41+65±

CONNECT PCB TO EXIST BRIDGE RAIL
SEE SPECIAL DETAIL IN ROADWAY PLANS

-Y8- 19+25±

-L- STA. 43+66±

-DET01-

-Y2RPB-

-Y2RPB-

NON-GATED CC REQ'D
-L- STA. 51+00±

CUT DITCH
SEE DETAIL T-1

FS SEE DETAIL T-2

-L- I-26 EB

-Y7-

P30

MATCH LINE SHEET TMP-5
-L- STA. 41+00

-L- I-26 WB

REMOVE EXIST GR, CONSTRUCT TEMP PVMT AND PLACE PCB USING NIGHTLY LANE CLOSURES

-L- STA. 48+50±

CONSTRUCT RETAINING WALL 1

-L- STA 52+90±

MATCH LINE SHEET TMP-7
-L- STA. 53+00

-Y2RPC-

-Y2RPC- STA. 35+18±

-L- 43+50

TEMPORARY SHORING
-L- STA. 43+30, 5.0' LT
TO -L- STA. 43+70, 5.0' LT
02

-L- 48+00

-L- STA. 41+25±

NOTE
TEMPORARY SHORING LOC 2 THAT EXTENDS BEYOND THE BRIDGE END BENT MUST BE REMOVED PRIOR TO CONSTRUCTING WALL NO 28

WIDEN AND RESURFACING
-Y2- 25+19± TO 29+50±

-Y2- STA. 29+50±

TEMPORARY SHORING
-L- STA. 41+00, 2.0' LT
TO -L- STA. 43+30, 2.0' LT
01

-Y1-

-Y2- NC 191 (BREVARD RD)

-Y2- STA. 28+98±

CONSTRUCT RETAINING WALL 11

-Y2- STA. 26+02±

-Y2- STA. 25+86±

DRAINAGE SYSTEM IS A SEALED SYSTEM. SEE DRAINAGE SPECIAL PROVISIONS.

NOTE
ON -Y2-, ALL PROPOSED FINAL DRAINAGE STRUCTURES IN ROADWAY TO BE TRAFFIC BEARING AND PLATED UNTIL TRAFFIC IS SHIFTED IN PHASE I, STEP 3 AND 4. SEE TMP-14.

Stantec
Stantec Consulting Services Inc.
801 Jones Franklin Road
Suite 300
Raleigh, NC 27606
Tel. 919.851.6866
Fax. 919.851.7024
www.stantec.com
License No. F-0672

Signed by: J.W. Woolard, Jr.
BBC02F49E9E84EC...

NORTH CAROLINA PROFESSIONAL SEAL 19862 ENGINEER J.W. WOOLARD, JR.

11/3/2026

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

DIVISION OF HIGHWAYS · STATE OF NORTH CAROLINA · DEPARTMENT OF TRANSPORTATION · WORK ZONE TRAFFIC CONTROL

I-26 / I-240 -L-
PHASE I
STEP 2

11/3/2026
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PROJ. REFERENCE NO.	SHEET NO.
I-2513AC	TMP-7

-DW3- STA. 10+50±

-DW3-

-DW3- STA. 13+69±
-Y2- STA. 13+25±

-Y2- STA. 12+35±

-Y2- STA. 17+53±

-Y2- NC 191 (BREVARD RD)

P13
P61
P2
P70
P74

-Y2B- SHELBURNE RD

P1
P13

CONSTRUCT USING LANE CLOSURES AS NECESSARY

-Y2- STA. 18+24±
-Y2- STA. 18+35±

-Y2- STA. 17+98±
-Y2C- STA. 10+73±

P61

CONTRACTOR SHALL MAINTAIN ACCESS TO -Y2C- (FAIRFAX AVE) AT ALL TIMES DURING CONSTRUCTION

-Y2C- STA. 11+00±

P76
P72
P13

-Y2- STA. 19+12±
-DET14- STA. 18+05±

-Y2- NC 191

P5

-DET14-

SEE SHEET TMP-7A
FOR CROSS SECTIONS

-Y2C- STA. 13+15±

-DET02- STA. 10+97±
-DET02- STA. 11+43±

-Y2C- FAIRFAX AVE

-Y2- STA. 19+31±
-Y2RPB- STA. 28+00±

T146
T150
TB JB wSlab Lid

YIELD
R1-2
48" x 48" x 48"

-DET02-

CONSTRUCT RETAINING WALL

EQUALITY
-DET02- STA. 15+48.44
-DET09- STA. 11+50.00

-Y9- STA. 10+60±
-Y9- STA. 10+00±

-Y9- FAIRFAX AVE

P71
P1

-Y2- STA. 19+62±
P72
-Y2- STA. 19+77±
P13
P2

FS T152
SEE DETAIL T-2
2GI

P103

-Y2RPB- STA. 29+13±
-Y2- STA. 20+21±

P61
P5
P13

-L- STA. 55+00±
-L- I-26 EB

-Y2- STA. 20+85±

-Y2- STA. 20+49±
P5
P30

-DET02- STA. 14+49±

P30

-L- STA. 65+58±

-Y2- STA. 20+71±
P20

-DET09- STA. 14+17±
P20
P50

P23

-L- STA. 66+08±
P21

MATCH LINE SHEET TMP-6
-L- STA. 53+00

-L- I-26 WB

-DET09-

-DET02-

MATCH LINE SHEET TMP-8
-L- STA. 66+50

P30

Conv. DI To JB

Adj. DI

18" RCP-IV

42'

6097
15" RCP-IV
T127

RESILIENT CONNECTOR
15" SEALED PP T125
CB
RESILIENT CONNECTOR T124
JB wSlab Lid
6005
6006
T123
CB
15" SEALED PP
T122
T121
6157

-Y2- STA. 25+19±

-Y2- STA 25+51±

REMOVE EXIST GR, CONSTRUCT TEMP PVMT AND PLACE PCB USING NIGHTLY LANE CLOSURES

-L-
60+00

-L- STA. 61+28±
NON-GATED CC REQ'D

-L- STA. 63+35±
-L- STA. 62+50±

NON-GATED CC REQ'D

DRAINAGE SYSTEM IS A SEALED SYSTEM. SEE DRAINAGE SPECIAL PROVISIONS.

Stantec
Stantec Consulting Services Inc.
801 Jones Franklin Road
Suite 300
Raleigh, NC 27606
Tel. 919.851.6866
Fax. 919.851.7024
www.stantec.com
License No. F-0672

Signed by: J.W. Woolard Jr.
BBC02F49E9EC...

NORTH CAROLINA PROFESSIONAL SEAL 19862 ENGINEER J. W. WOOLARD, JR.

11/3/2026

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

DIVISION OF HIGHWAYS · STATE OF NORTH CAROLINA · DEPARTMENT OF TRANSPORTATION · WORK ZONE TRAFFIC CONTROL

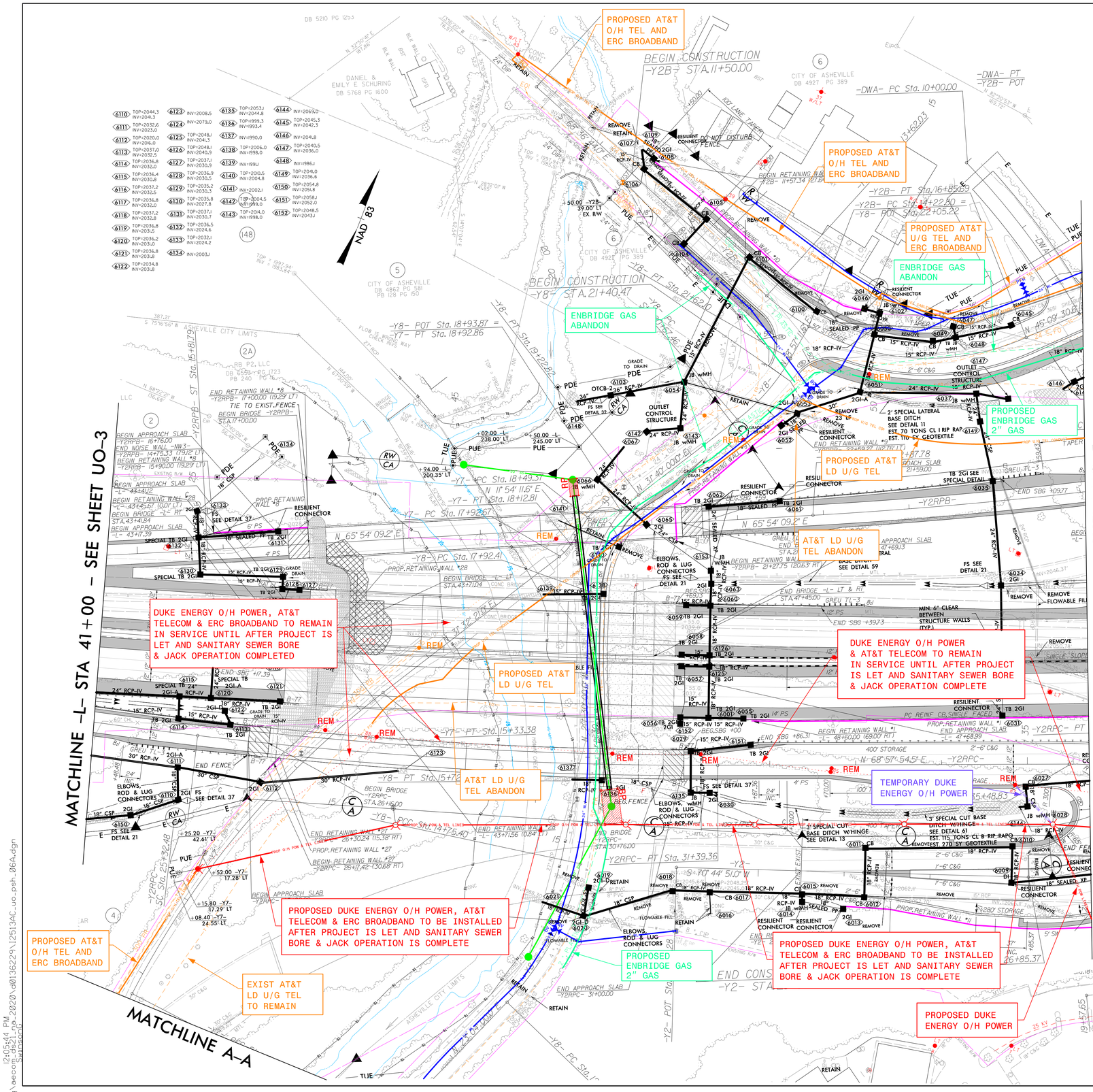
I-26 / I-240 -L-
PHASE I
STEP 2

11/3/2026
c:\pwworking\aecom_ds2_na_2020\d02378831\I-2513AC_TMP_07_PHASE_01_STEP_02.dgn
angood

PROJECT REFERENCE NO.	SHEET NO.
I-2513AC	UO-4
THIS SHEET CORRESPONDS TO RDY- 6	

UTILITIES BY OTHERS

ALL PROPOSED UTILITY WORK SHOWN ON THIS SHEET WILL BE DONE BY OTHERS. NO PAYMENT WILL BE MADE TO THE CONTRACTOR FOR PROPOSED UTILITY WORK SHOWN ON THIS SHEET.


PROPOSED AT&T O/H TEL AND ERC BROADBAND
PROPOSED AT&T O/H TEL AND ERC BROADBAND
PROPOSED AT&T U/G TEL AND ERC BROADBAND
ENBRIDGE GAS ABANDON
ENBRIDGE GAS ABANDON
PROPOSED ENBRIDGE GAS 2" GAS
PROPOSED AT&T LD U/G TEL
AT&T LD U/G TEL ABANDON
DUKE ENERGY O/H POWER, AT&T TELECOM & ERC BROADBAND TO REMAIN IN SERVICE UNTIL AFTER PROJECT IS LET AND SANITARY SEWER BORE & JACK OPERATION COMPLETED
DUKE ENERGY O/H POWER & AT&T TELECOM TO REMAIN IN SERVICE UNTIL AFTER PROJECT IS LET AND SANITARY SEWER BORE & JACK OPERATION COMPLETE
PROPOSED AT&T LD U/G TEL
AT&T LD U/G TEL ABANDON
TEMPORARY DUKE ENERGY O/H POWER
PROPOSED DUKE ENERGY O/H POWER, AT&T TELECOM & ERC BROADBAND TO BE INSTALLED AFTER PROJECT IS LET AND SANITARY SEWER BORE & JACK OPERATION IS COMPLETE
PROPOSED ENBRIDGE GAS 2" GAS
PROPOSED DUKE ENERGY O/H POWER, AT&T TELECOM & ERC BROADBAND TO BE INSTALLED AFTER PROJECT IS LET AND SANITARY SEWER BORE & JACK OPERATION IS COMPLETE
PROPOSED DUKE ENERGY O/H POWER
PROPOSED AT&T O/H TEL AND ERC BROADBAND
EXIST AT&T LD U/G TEL TO REMAIN
MATCHLINE –L– STA 41+00 – SEE SHEET UO-3
MATCHLINE –L– STA 52+50 – SEE SHEET UO-5
MATCHLINE A–A
MATCHLINE A–A
NAD 83
BEGIN CONSTRUCTION -Y2B- STA.11+50.00
BEGIN CONSTRUCTION -Y8- STA.21+40.47
-DWA- PT -Y2B- POT
-DWA- PC Sta. 10+00.00
-Y2B- PT Sta.16+85.39
-Y2B- PC Sta.14+22.50 = -Y8- POT Sta.22+05.22
-Y8- POT Sta.18+93.87 = -Y7- PT Sta.18+92.86
-Y8- PT Sta.19+22.86
-Y8- PC Sta.17+92.41
-Y7- PC Sta.18+49.31
-Y7- PC Sta.17+92.61
-Y7- PT Sta.18+12.81
-Y7- PT Sta.15+33.38
-Y8- PT Sta.15+12.46
-Y8- PC Sta.14+76.40
-Y2RPC- PT Sta. 31+39.36
-Y2RPB- 21+27.5 (20.83' RT)
-Y2RPC- PT
-Y2RPB-
-Y2RPC- ST Sta.15+18.79
-Y2RPB- ST Sta.11+76.00
-Y2RPB- 11+00.00 (19.29' LT)
-Y2RPB- 14+17.33 (79.12' LT)
-Y2RPB- 15+90.00 (119.29' LT)
-Y2RPB- 16+76.00
-Y2RPC- 26+13.24 (15.38' RT)
-Y2RPC- 26+17.42 (30.88' RT)
-Y2RPC- SC Sta. 25+32.48
-Y2RPC- 31+00.00
-Y2- POT Sta.
-Y2- PC Sta.
-Y2- STA
-Y2RPC- PT
-Y2RPC-
-Y2RPB-
-Y2RPB- 31+00

PROJECT REFERENCE NO.	SHEET NO.
I-2513AC	UO-5
THIS SHEET CORRESPONDS TO RDY- 6	

UTILITIES BY OTHERS

ALL PROPOSED UTILITY WORK SHOWN ON THIS SHEET WILL BE DONE BY OTHERS. NO PAYMENT WILL BE MADE TO THE CONTRACTOR FOR PROPOSED UTILITY WORK SHOWN ON THIS SHEET.

MATCHLINE –L– STA 52+50 – SEE SHEET UO-4

MATCHLINE –L– STA 69+00 – SEE SHEET UO-6

PROPOSED AT&T U/G TEL AND ERC BROADBAND

PROPOSED ENBRIDGE GAS 2" GAS

ENBRIDGE GAS TO REMAIN

PROPOSED DUKE ENERGY O/H POWER, CHARTER CATV & AT&T TELECOM

8" DI RJ SLEEVE

PROPOSED AT&T U/G TEL

AT&T LD U/G TEL ABANDON

PROPOSED ENBRIDGE GAS 2" GAS

PROPOSED AT&T U/G TEL AND ERC BROADBAND

PROPOSED ENBRIDGE GAS 2" GAS

PROPOSED AT&T O/H TEL AND ERC BROADBAND

PROPOSED AT&T LD U/G TEL

PROPOSED AT&T LD U/G TEL

PROPOSED AT&T O/H TEL AND ERC BROADBAND

DUKE ENERGY O/H POWER & AT&T TELECOM TO REMAIN IN SERVICE UNTIL AFTER PROJECT IS LET AND SANITARY SEWER BORE & JACK OPERATION ON SHT UO-4 COMPLETED

PROPOSED DUKE ENERGY U/G POWER

DUKE TO SET TALLER POLE

PROPOSED DUKE ENERGY O/H POWER, AT&T TELECOM & ERC BROADBAND TO BE INSTALLED AFTER PROJECT IS LET AND UO-4 SANITARY SEWER BORE & JACK OPERATION COMPLETED

PROPOSED DUKE ENERGY O/H AND U/G POWER AND AT&T U/G TELECOM RELOCATIONS HAVE BEEN ELIMINATED FROM THIS AREA. THESE DUKE RELOCATIONS HAVE BEEN ADDED IN A DIFFERENT LOCATION.

PROPOSED DUKE ENERGY O/H POWER

SEWER LINE 36"

NAD 83

Prepared In the Office of:

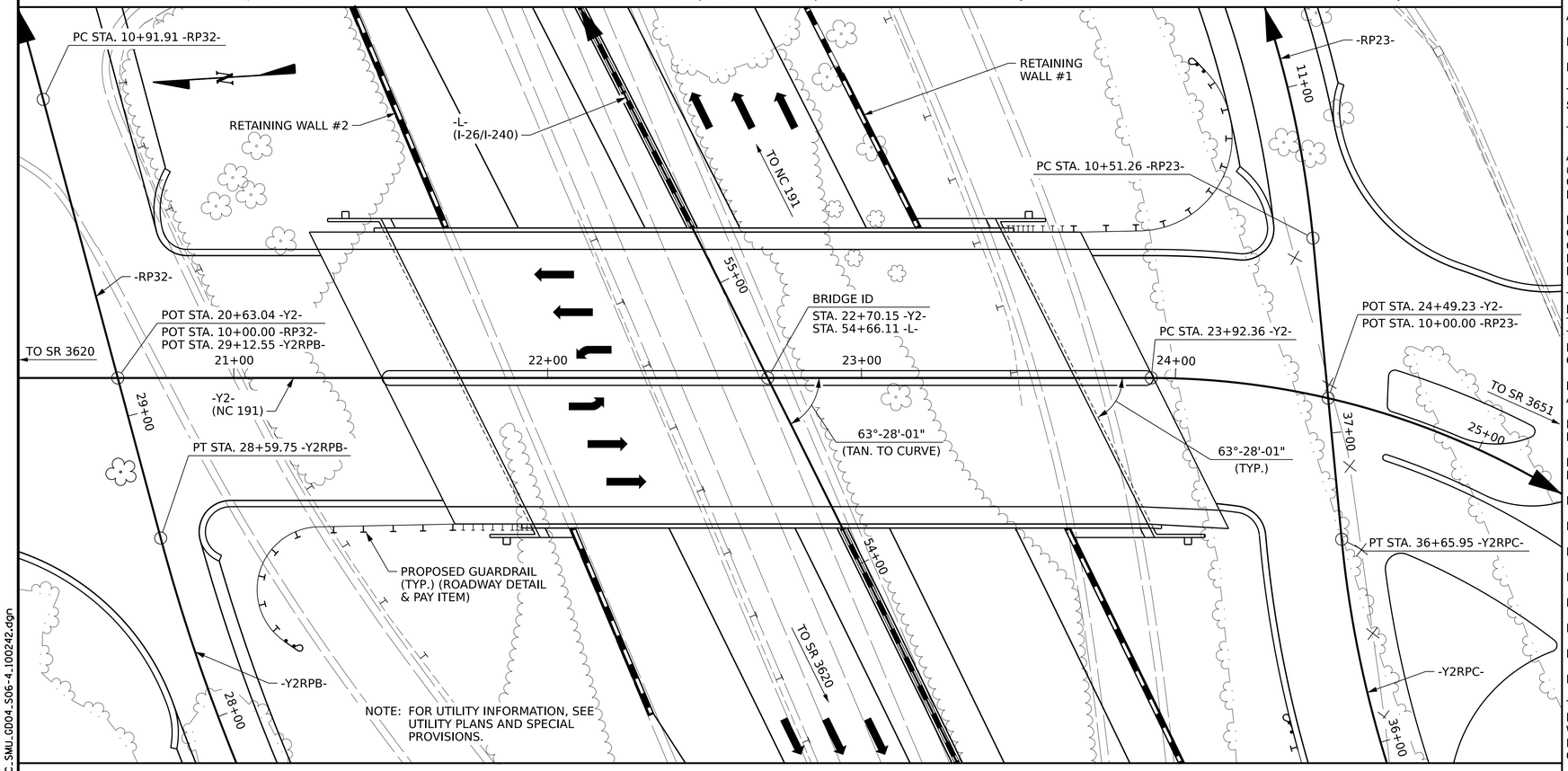
AECOM

AECOM TECHNICAL SERVICES OF NORTH CAROLINA, INC.
5438 WADE PARK BLVD, SUITE 200, RALEIGH, NC 27607
919-461-1100
F - 0342

GRAPHIC SCALE
30 15 0 30 60
PLANS

3:05:5 PM
\\ncdot.org\data\ecs\Projects\Working\ecosign\Roadway\Design\2020\d0136229\125I3AC_uo_psh_06B.dgn

B.M. #8: CHISELED SQUARE IN CONCRETE ON SE CORNER OF EXIT 1B (BREVARD RD) SIGN AT RAMP EXIT; 28.53' RIGHT OF STA. 51+74.57 -L-, EL. 2058.72



LOCATION SKETCH

TOTAL BILL OF MATERIAL

	REMOVAL OF EXISTING STRUCTURE AT STA. 22+70.15 -Y2-	ASBESTOS ASSESSMENT	3'-6" ∅ DRILLED PIER	SID INSPECTIONS	CSL TESTING	UNCLASSIFIED STRUCTURE EXCAVATION	REINFORCED CONCRETE DECK SLAB	GROOVING BRIDGE FLOORS	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	SPIRAL COLUMN REINFORCING STEEL	54" PRESTRESSED CONCRETE GIRDERS
	LUMP SUM	LUMP SUM	LIN. FT.	EACH	EACH	LUMP SUM	SQ. FEET	SQ. FEET	CU. YDS.	LUMP SUM	LBS.	LBS.	LIN. FT.
SUPERSTRUCTURE	LUMP SUM						18,690	19,397		LUMP SUM			1936.82
END BENT 1						LUMP SUM			108.2		12,833		
BENT 1			243.5						101.1		31,135	7,114	
END BENT 2						LUMP SUM			109.8		12,853		
TOTAL	LUMP SUM	LUMP SUM	243.5	1	1	LUMP SUM	18,690	19,397	319.1	LUMP SUM	56,821	7,114	1936.82

TOTAL BILL OF MATERIAL

	PILE DRIVING EQUIPMENT SETUP FOR HP 12 X 53 STEEL PILES	HP 12 X 53 STEEL PILES		ANODIZED 2-BAR METAL RAIL	1'-2" X 3'-3" CONCRETE PARAPET	4" SLOPE PROTECTION	ELASTOMERIC BEARINGS	STRIP SEAL EXPANSION JOINT	ELECTRICAL CONDUIT SYSTEM FOR SIGNALS AT STA. 22+70.15 -Y2-	CAP END AESTHETIC	APPLICATION OF BRIDGE COATING
	EACH	NO.	LIN. FT.	LIN. FT.	LIN. FT.	SQ. YDS.	LUMP SUM	LUMP SUM	LUMP SUM	EACH	SF
SUPERSTRUCTURE				374.44	407.22		LUMP SUM	LUMP SUM	LUMP SUM		11,500
END BENT 1	15	15	855			125					865
BENT 1										2	2,390
END BENT 2	15	15	555			258					865
TOTAL	30	30	1,410	374.44	407.22	383	LUMP SUM	LUMP SUM	LUMP SUM	2	15,620

1 REMOVED "ELECTRICAL CONDUIT SYSTEM FOR LIGHTING AT STA. 22+70.15 -Y2-" PAY ITEM.

NOTES:

ASSUMED LIVE LOAD = HL 93 OR ALTERNATE LOADING.

FOR OTHER DESIGN DATA AND GENERAL NOTES, SEE SHEET SN.

FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.

THIS BRIDGE HAS BEEN DESIGNED IN ACCORDANCE WITH THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS.

THIS BRIDGE IS LOCATED IN SEISMIC ZONE 1.

AFTER SERVING AS A TEMPORARY STRUCTURE, THE EXISTING STRUCTURE CONSISTING OF 4 SPANS (1 @ 29'-9", 2 @ 46'-1", AND 1 @ 27'-6" WITH REINFORCED CONCRETE DECK ON STEEL I-BEAMS WITH A CLEAR ROADWAY WIDTH OF 28'-0" ON REINFORCED CONCRETE CAPS AT END BENTS AND INTERIOR BENTS AND LOCATED NEAR THE PROPOSED STRUCTURE SHALL BE REMOVED.

INASMUCH AS THE PAINT SYSTEM ON THE EXISTING STRUCTURAL STEEL CONTAINS LEAD, THE CONTRACTOR'S ATTENTION IS DIRECTED TO ARTICLE 107-1 OF THE STANDARD SPECIFICATIONS. ANY COSTS RESULTING FROM COMPLIANCE WITH THE APPLICABLE STATE OR FEDERAL REGULATIONS PERTAINING TO HANDLING OF MATERIALS CONTAINING LEAD BASED PAINT SHALL BE INCLUDED IN THE BID PRICE FOR "REMOVAL OF EXISTING STRUCTURE AT STA. 22+70.15 -Y2-."

THE SUBSTRUCTURE OF THE EXISTING BRIDGE INDICATED ON THE PLANS IS FROM THE BEST INFORMATION AVAILABLE. THIS INFORMATION IS SHOWN FOR THE CONVENIENCE OF THE CONTRACTOR. THE CONTRACTOR SHALL HAVE NO CLAIM WHATSOEVER AGAINST THE DEPARTMENT OF TRANSPORTATION FOR ANY DELAYS OR ADDITIONAL COST INCURRED BASED ON DIFFERENCES BETWEEN THE EXISTING BRIDGE SUBSTRUCTURE SHOWN ON THE PLANS AND THE ACTUAL CONDITIONS ON THE PROJECT SITE.

REMOVABLE FORMS MAY BE USED IN LIEU OF METAL STAY-IN-PLACE FORMS IN ACCORDANCE WITH ARTICLE 420-3 OF THE STANDARD SPECIFICATIONS.

FOR MAINTENANCE AND PROTECTION OF TRAFFIC BENEATH PROPOSED STRUCTURE, SEE SPECIAL PROVISIONS.

NEEDLE BEAMS WILL NOT BE ALLOWED UNLESS OTHERWISE CALLED FOR ON THE PLANS OR APPROVED BY THE ENGINEER.

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

FOR ASBESTOS ASSESSMENT, SEE SPECIAL PROVISIONS.

FOR MSE WALLS, SEE GEOTECHNICAL SPECIAL PROVISIONS.

FOR STRIP SEAL EXPANSION JOINT SEALS, SEE SPECIAL PROVISIONS.

FOR CAP END AESTHETIC, SEE SPECIAL PROVISIONS.

THE CLASS AA CONCRETE IN THE BRIDGE DECK SHALL CONTAIN FLY ASH OR GROUND GRANULATED BLAST FURNACE SLAG AT THE SUBSTITUTION RATE SPECIFIED IN ARTICLE 1024-1 AND IN ACCORDANCE WITH ARTICLES 1024-5 AND 1024-6 OF THE STANDARD SPECIFICATIONS. NO PAYMENT WILL BE MADE FOR THIS SUBSTITUTION AS IT IS CONSIDERED INCIDENTAL TO THE COST OF THE REINFORCED CONCRETE DECK SLAB.

THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA SHALL BE EXCAVATED FOR A DISTANCE OF 37 FT. EACH SIDE OF THE CENTERLINE ROADWAY AS DIRECTED BY THE ENGINEER. THIS WORK WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE FOR THE UNCLASSIFIED STRUCTURE EXCAVATION. SEE SECTION 412 OF THE STANDARD SPECIFICATIONS.

WORK SHALL NOT BE STARTED ON THIS BRIDGE (OR SPECIFIC PARTS OF THE BRIDGE) UNTIL ROADWAY SECTION HAS BEEN EXCAVATED.

THE ELEVATIONS AND CLEARANCES SHOWN ON THE PLANS AT THE POINTS OV MINIMUM VERTICAL CLEARANCE ARE FROM THE BEST INFORMATION AVAILABLE. PRIOR TO BEGINNING BRIDGE CONSTRUCTION, VERIFY THE ELEVATIONS ON THE EXISTING PAVEMENT AND CHECK THE CLEARANCE, REPORT ANY VARIATIONS TO ENGINEER. ANY PLAN REVISIONS NECESSARY TO ACHIEVE THE REQUIRED MINIMUM VERTICAL CLEARANCE WILL BE PROVIDED BY THE DEPARTMENT.

FOR LIMITS OF TEMPORARY SHORING FOR MAINTENANCE OF TRAFFIC, SEE TRAFFIC CONTROL PLANS.

FOR LIGHTING DETAILS, SEE LIGHTING PLANS AND SPECIAL PROVISIONS.

PROJECT NO. I-2513 AC

BUNCOMBE COUNTY

STATION: 22+70.15 -Y2-

SHEET 4 OF 4

NORTH CAROLINA PROFESSIONAL SEAL 46029 ENGINEER JILLA I. BREWER
PROFESSIONAL ENGINEER
10/20/2026

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

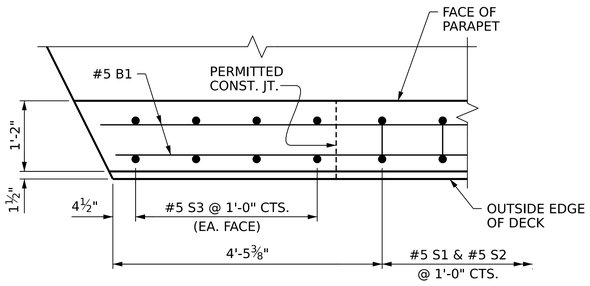
GENERAL DRAWING

FOR BRIDGE ON NC 191
(BREVARD ROAD)
OVER I-26/I-240 BETWEEN
SR 3620 & SR 3651

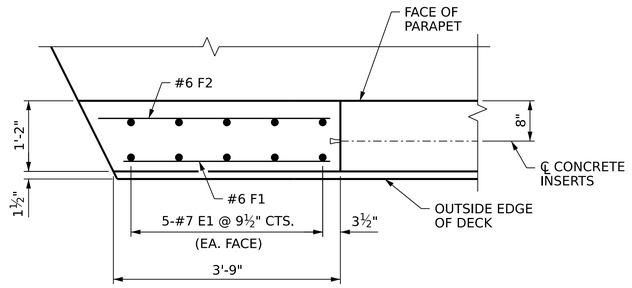
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S06-4
1	JIB	10/19/26	3			TOTAL SHEETS
2			4			60

DRAWN BY : B.E. LANNING DATE : 03/2024
CHECKED BY : J.I. BREWER DATE : 03/2024
DESIGN ENGINEER OF RECORD : J.I. BREWER DATE : 01/2026

10/20/2026 10:08:25 AM
$USERNAME$
Filename: N:\NC Bridges\M210O2_I-2513A I-26 (AECOM)\I-2513AC\Structures\SITE6\406_007_I2513AC_SMU_GD04_S06-4_100242.dgn

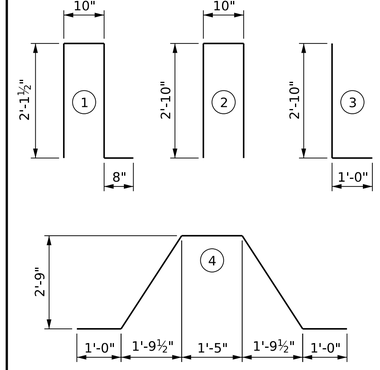


PLAN OF PARAPET



PLAN OF END BLOCK

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL

STAGE I
RIGHT PARAPET
FOUR LIGHT POSTS
AND TWO END BLOCKS

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	40	#5	STR	11'-3"	469
B2	60	#5	STR	25'-7"	1601
C1	36	#5	3	3'-10"	144
C2	28	#4	4	9'-11"	185
C3	72	#6	STR	6'-1"	658
E1	20	#7	STR	5'-1"	208
F1	6	#6	STR	3'-5"	31
F2	6	#6	STR	3'-10"	35
S1	187	#5	1	5'-9"	1121
S2	187	#5	2	6'-6"	1268
S3	16	#5	STR	3'-9"	63

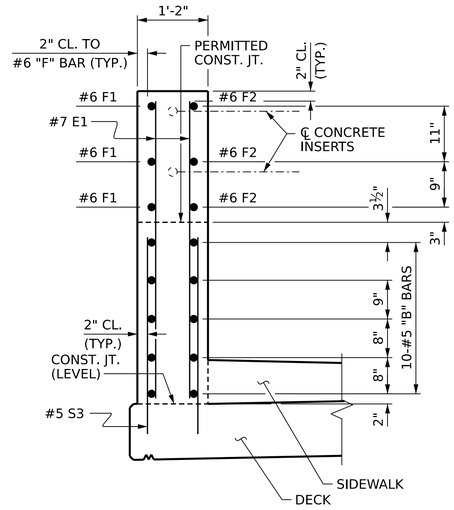
EPOXY COATED REINFORCING STEEL	5,783	LBS.
CLASS AA CONCRETE	32.0	C. Y.
1'-2" X 3'-3" CONCRETE PARAPET	195.53	LIN. FT.

BILL OF MATERIAL

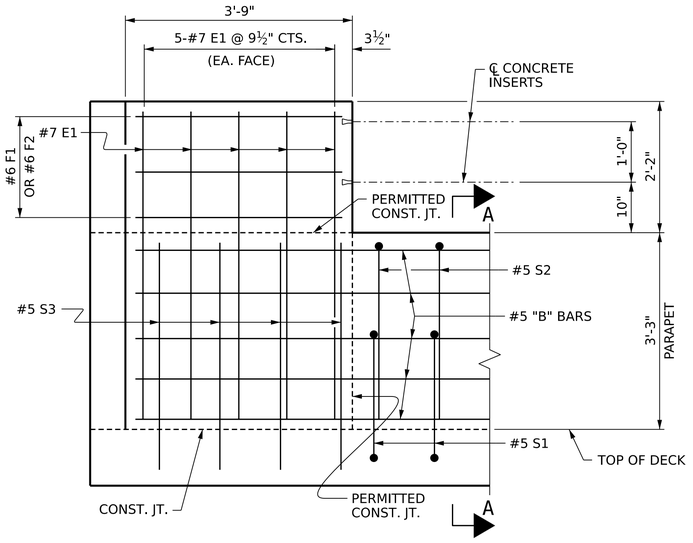
STAGE II
LEFT PARAPET
FOUR LIGHT POSTS
AND TWO END BLOCKS

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	40	#5	STR	11'-3"	469
B2	60	#5	STR	25'-7"	1601
C1	36	#5	3	3'-10"	144
C2	28	#4	4	9'-11"	185
C3	72	#6	STR	6'-1"	658
E1	20	#7	STR	5'-1"	208
F1	6	#6	STR	3'-5"	31
F2	6	#6	STR	3'-10"	35
S1	187	#5	1	5'-9"	1121
S2	187	#5	2	6'-6"	1268
S3	16	#5	STR	3'-9"	63

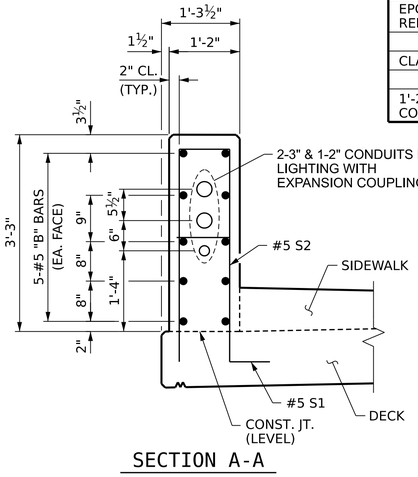
EPOXY COATED REINFORCING STEEL	5,783	LBS.
CLASS AA CONCRETE	32.0	C. Y.
1'-2" X 3'-3" CONCRETE PARAPET	195.53	LIN. FT.



END VIEW



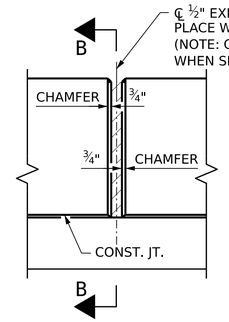
ELEVATION



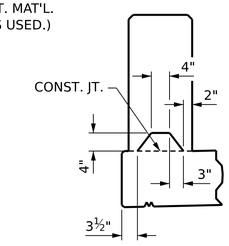
SECTION A-A

PARAPET AND END BLOCK FOR TWO BAR METAL RAIL

(RIGHT SIDE END BENT 1 SHOWN, RIGHT SIDE END BENT 2 SIMILAR)



ELEVATION AT EXPANSION JOINTS



SECTION B-B

AT DAM IN OPEN JOINT
(THIS IS TO BE USED ONLY WHEN SLIP FORM IS USED.)

PARAPET DETAILS

NOTES:

CONCRETE PARAPET, LIGHT PEDESTAL AND END BLOCKS SHALL NOT BE CAST UNTIL ALL SLAB CONCRETE IN THAT UNIT HAS BEEN CAST AND HAS REACHED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI.

ALL REINFORCING STEEL IN PARAPETS LIGHT PEDESTAL AND END BLOCKS SHALL BE EPOXY COATED.

FOR DETAILS OF CONCRETE INSERTS IN END BLOCKS AND LIGHT PEDESTAL, SEE "RAIL POST SPACINGS AND END OF RAIL DETAILS" SHEET.

GROOVED CONTRACTION JOINTS ½" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE PARAPET AND IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. THE CONTRACTION JOINT SHALL BE LOCATED AT EACH THIRD POINT BETWEEN PARAPET EXPANSION JOINTS. ONLY ONE CONTRACTION JOINT IS REQUIRED AT MIDPOINT OF PARAPET SEGMENTS LESS THAN 20 FEET IN LENGTH AND NO CONTRACTION JOINTS ARE REQUIRED FOR THOSE SEGMENTS LESS THAN 10 FEET IN LENGTH.

LOCATION OF ANCHOR BOLTS AND PVC CONDUITS FOR LIGHT POLES SHALL BE COORDINATED WITH DUKE ENERGY COMPANY PRIOR TO PLACEMENT OF THE LIGHT PEDESTAL CONCRETE. DUKE ENERGY SHALL SUPPLY THE CONTRACTOR WITH ANCHOR BOLTS FOR THE LIGHT POLES. ANCHOR BOLTS SHALL BE CAST IN PLACE.

DUKE ENERGY COMPANY WILL SUPPLY AND INSTALL THE WIRING, POLES AND LIGHTS.

FOR DETAILS ON CONDUIT LOCATION, SEE SHEET "CONDUIT AND JUNCTION BOX DETAILS"

CONCRETE FOR THE LIGHT PEDESTAL SHALL BE CLASS AA CONCRETE.

1 CONCRETE AND LABOR REQUIRED TO CONSTRUCT THE LIGHT PEDESTAL SHALL BE INCLUDED IN THE UNIT BID PRICE FOR "1'-2" X 3'-3" CONCRETE PARAPET".

ELECTRICAL DETAILS SHALL BE SUBMITTED TO THE ENGINEER AT LEAST 60 DAYS PRIOR TO POURING THE DECK CONCRETE.

CONTRACTOR SHALL INSTALL NON-DETERIORATING "STRINGS" IN ALL CONDUITS PRIOR TO POURING CONCRETE FOR THE PARAPET AND LIGHT PEDESTALS. THESE "STRINGS" WILL FACILITATE THE WIRING INSTALLATION FOR THE OVERHEAD LIGHTS AND FUTURE UTILITIES. THE "STRINGS" SHALL BE DIFFERENT COLORS FOR EACH INDIVIDUAL CONDUIT.

CONTRACTOR MAY SHIFT REINFORCING STEEL SLIGHTLY TO AVOID INTERFERENCE WITH CONDUIT, ANCHOR BOLTS, AND OR/ METAL RAIL ANCHORS.

CONTRACTOR SHALL COORDINATE WITH DUKE ENERGY TO HAVE DUKE ENERGY INSTALL AND WIRE THE LIGHTS PRIOR TO INSTALLING THE 2-BAR METAL RAIL.

1 FOR CONDUIT, JUNCTION BOXES, AND ALL ELECTRICAL ITEMS, REFER TO LIGHTING PLANS AND SPECIAL PROVISIONS.

1 REVISED NOTES REGARDING LIGHTING DETAILS

PROJECT NO. I-2513 AC
BUNCOMBE COUNTY
STATION: 22+70.15 -Y2-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE

CONCRETE PARAPET DETAILS

NORTH CAROLINA PROFESSIONAL SEAL 46029 ENGINEER JILLA I. BREWER
10/19/2026

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S06-26
1	JIB	10/19/26	3			TOTAL SHEETS
2			4			60

DRAWN BY :	B.E. LANNING	DATE :	10/2023
CHECKED BY :	J.I. BREWER	DATE :	11/2023
DESIGN ENGINEER OF RECORD :	J.I. BREWER	DATE :	01/2026

10/19/2026
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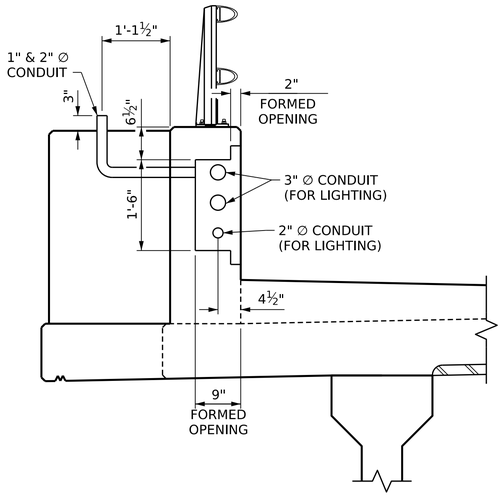
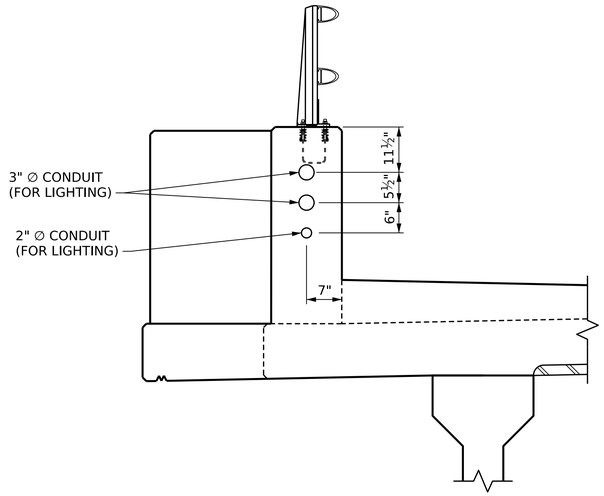
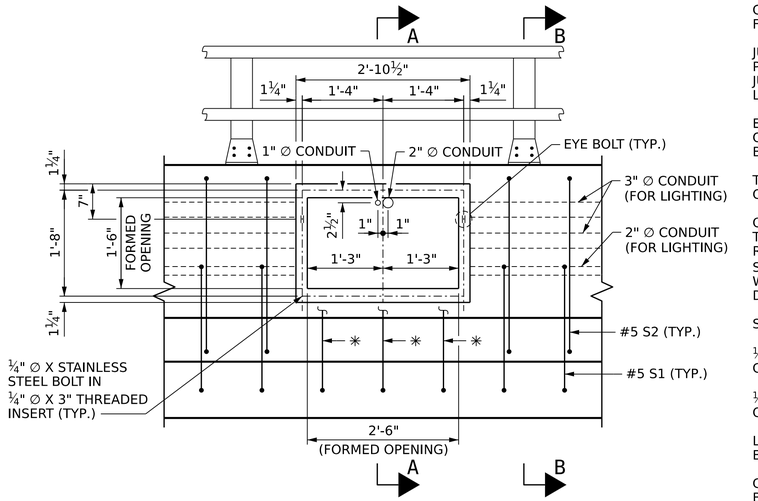


SECTION A-A

(COVER PLATE NOT SHOWN FOR CLARITY. SEE DETAIL "A" FOR COVER PLATE MOUNTING DETAILS)
(ADJUST LOCATION OF CONDUITS AT JUNCTION BOXES AS NECESSARY.)



SECTION B-B



ELEVATION AT CONDUIT BOX

(COVER PLATE NOT SHOWN FOR CLARITY)

✳ FIELD CUT #5 S1 BARS AS NECESSARY. REPAIR COATING PER SECTION 1070-7 OF THE STANDARD SPECIFICATIONS.

NOTES:

CONDUITS IN CONCRETE PARAPET SHALL BE 2" ∅ & 2-3" ∅ CONDUITS FOR LIGHTING.

JUNCTION BOXES SHALL BE FORMED IN THE CONCRETE BRIDGE PARAPET AT EACH LIGHT POLE LOCATION. THE CENTERLINE OF THE JUNCTION BOX SHALL BE IN LINE WITH THE CENTERLINE OF THE LIGHT POLE.

EXTEND CONDUITS 1'-0" BEYOND APPROACH SLABS AT EACH END OF THE BRIDGE. SEE ROADWAY PLANS FOR CONDUIT OFF OF THE BRIDGE.

THE CONTRACTOR SHALL CLEARLY MARK THE CONDUIT FOR OVERHEAD LIGHTS.

OUTER COVER PLATE SHALL BE STAINLESS STEEL DIAMOND PATTERN THREADPLATE WITH A NON-MORRORED FINISH IN ORDER TO REDUCE BRIGHT REFLECTIONS. INNER COVER PLATE SHALL BE PLAIN STAINLESS STEEL. ¾" ∅ PIPES SHALL BE STAINLESS STEEL AND FILLET WELDED TO THE INNER COVER PLATE. WELD SIZE SHALL BE DETERMINED BE FABRICATOR. WELDS SHALL BE GROUND SMOOTH.

SHARP EDGES ON COVER PLATES SHALL BE SMOOTHED.

¼" ∅ X 4½" LONG HEX BOLTS AND WASHERS FOR MOUNTING THE COVER PLATE SHALL BE STAINLESS STEEL.

¼" EYE BOLTS SHALL BE EMBEDDED IN THE CONCRETE A MINIMUM OF 3". EYE BOLT AND NUTS SHALL BE STAINLESS STEEL.

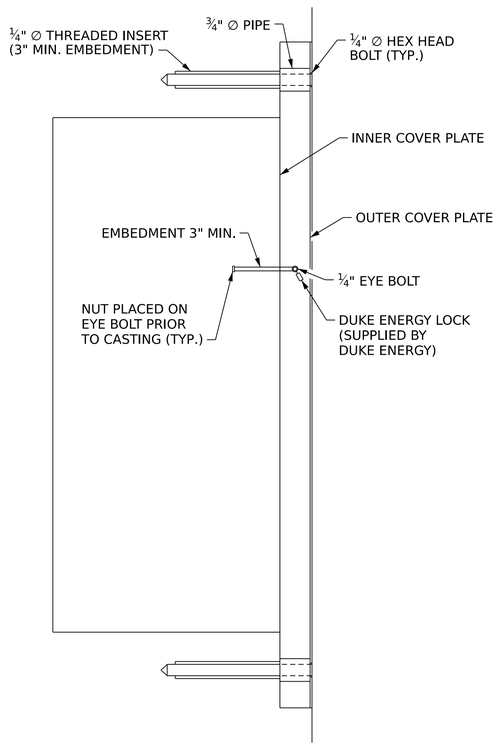
LOCKS FOR THE CONDUIT BOX COVER PLATE WILL BE PROVIDED BY DUKE ENERGY.

CONTRACTOR SHALL COORDINATE WITH DUKE ENERGY TO GROUND BOTH COVER PLATES. THE GROUND WIRE SHALL BE LONG ENOUGH SO THAT THE COVER PLATES MAY BE LAID ON THE SIDEWALK WHILE PERFORMING MAINTENANCE INSIDE THE BOX. GROUND WIRE SHALL BE #6 COPPER WIRE.

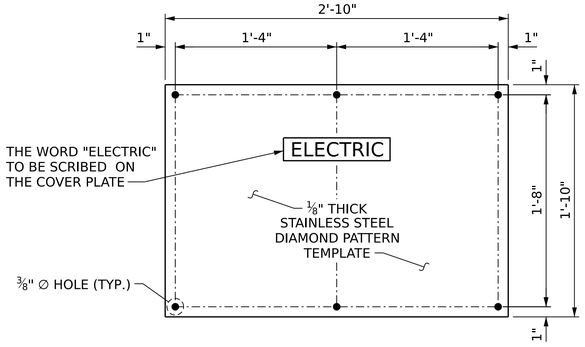
CONTRACTOR SHALL "DRY FIT" THE CONNECTIONS PRIOR TO CASTING TO ENSURE PROPER ALIGNMENT. THE CONTRACTOR SHALL ALSO BE RESPONSIBLE FOR MAINTAINING CORRECT ALIGNMENT DURING CASTING. ALL COSTS ASSOCIATED WITH FIT-UP SHALL BE CONSIDERED INCIDENTAL. SHOULD ALIGNMENT NOT BE SUFFICIENT AFTER THE CONCRETE PARAPET HAD CURED, CONTRACTOR SHALL PROPOSE A SOLUTION TO THE SATISFACTION OF THE ENGINEER AT NO ADDITIONAL COST TO THE DEPARTMENT.

THE CONTRACTOR SHALL COORDINATE WITH DUKE ENERGY TO PROVIDE CONDUIT TIE-IN FROM BRIDGE LIGHTING CONDUIT TO STREET LIGHTING CONDUIT.

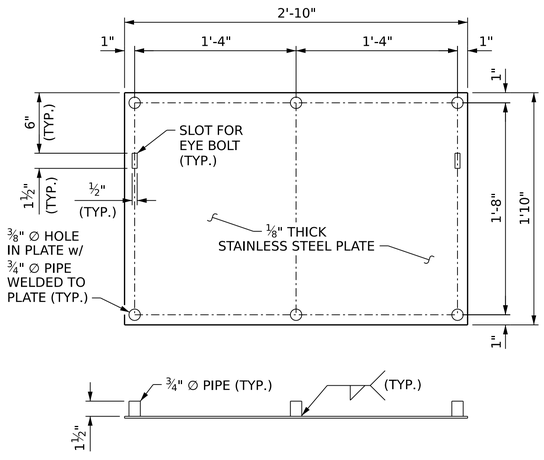
1 FOR CONDUIT, JUNCTION BOXES, AND ALL ELECTRICAL ITEMS, REFER TO LIGHTING PLANS AND SPECIAL PROVISIONS.



DETAIL "A"



OUTER COVER PLATE



INNER COVER PLATE

PROJECT NO. I-2513 AC
BUNCOMBE COUNTY
STATION: 22+70.15 -Y2-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

CONDUIT AND JUNCTION BOX DETAILS

NORTH CAROLINA PROFESSIONAL SEAL 46029 ENGINEER JILLA I. BREWER
10/19/2026

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S06-27
1	JIB	10/19/26	3			TOTAL SHEETS
2			4			60

1 REVISED NOTES FOR LIGHTING DETAILS

DRAWN BY :	B.E. LANNING	DATE : 10/2025
CHECKED BY :	J.I. BREWER	DATE : 11/2025
DESIGN ENGINEER OF RECORD :	J.I. BREWER	DATE : 01/2026

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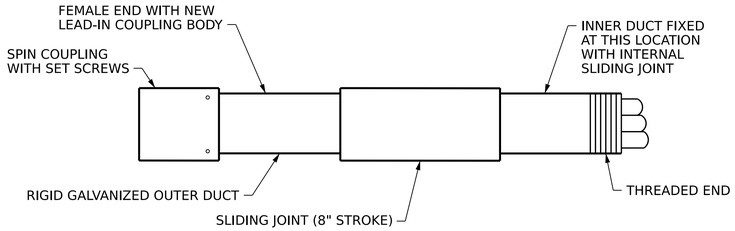
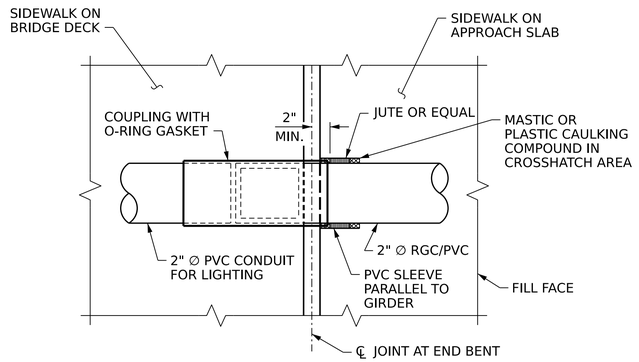


EXPANSION JOINT FITTING
DETAIL "A"



VIEW A-A
PVC SLEEVE INSTALLATION & RGC/PVC
ADAPTOR AT EXPANSION JOINT

1 NOTES:

THE CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING THE TOTAL QUANTITY OF CONDUIT NEEDED TO COMPLETE THE WORK AND THAT THE CONDUIT(S) ARE PLACED AT THE NOTED DIMENSION AND ABOVE THE BOTTOM OF THE GIRDER.

THE CONTRACTOR SHALL FIELD VERIFY THAT THE CONDUIT SYSTEM IS NOT IN CONFLICT WITH THE GUARDRAIL POSTS.

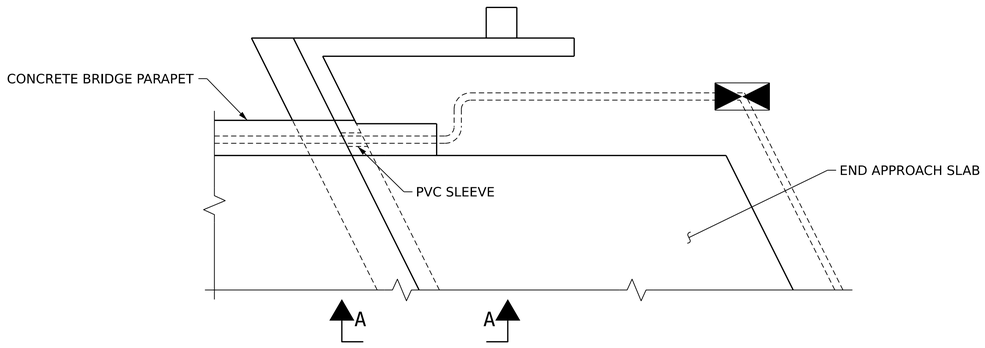
INSTALL SLEEVES PARALLEL TO GIRDERS. SEE DETAIL "B" FOR SLEEVE INSTALLATION.

PROVIDE TRANSITION ADAPTOR (AND EXPANSION JOINT) FOR CONDUIT AT END BENT 1 AND END BENT 2.

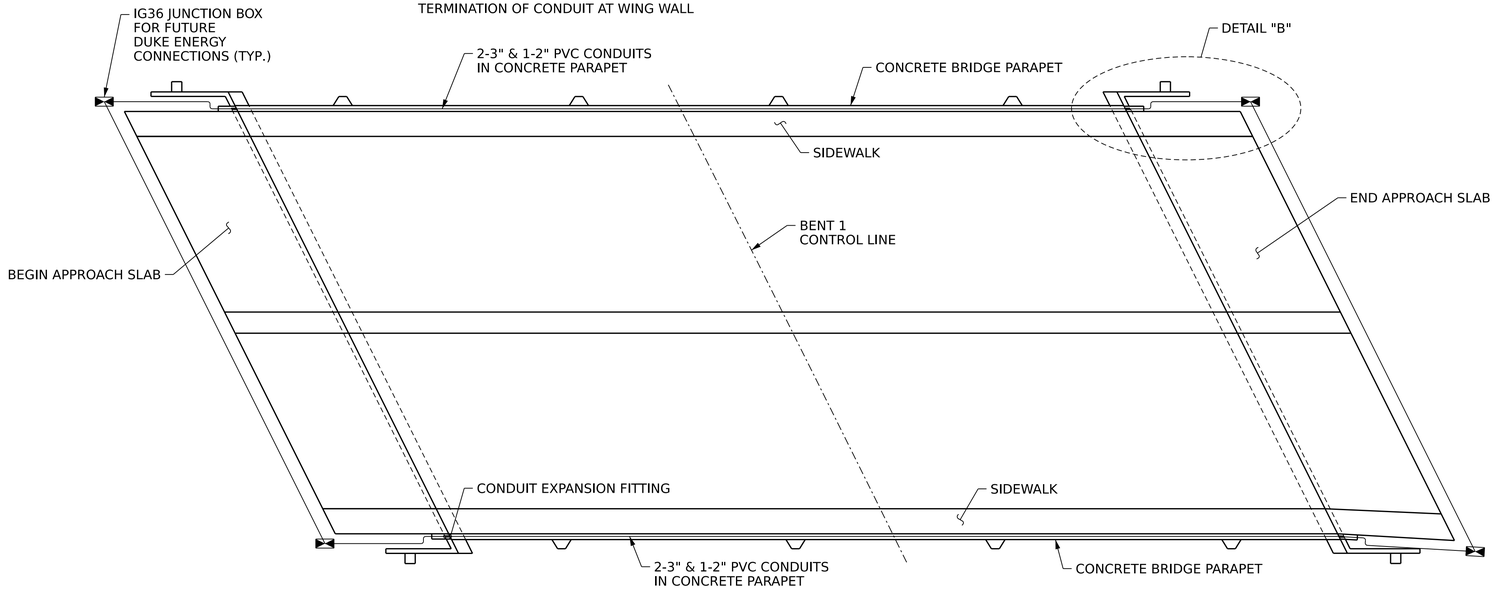
INSTALL EXPANSION JOINTS AT END BENT 1 AND END BENT 2.

THE CONCRETE SCREW INSERT SHALL HAVE A ROD SIZE OF $\frac{5}{8}$" AND A PULL FORCE OF 1260 LBS.

FOR CONDUIT, JUNCTION BOXES, AND ALL ELECTRICAL ITEMS, REFER TO LIGHTING PLANS AND SPECIAL PROVISIONS.



DETAIL "B"
TERMINATION OF CONDUIT AT WING WALL



CONDUIT LAYOUT

ELECTRICAL CONDUIT DETAILS

1 MODIFIED NOTES FOR LIGHTING DETAILS

PROJECT NO. I-2513 AC
BUNCOMBE COUNTY
STATION: 22+70.15 -Y2-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

ELECTRICAL CONDUIT SYSTEM FOR LIGHTING

NORTH CAROLINA PROFESSIONAL SEAL 46029 ENGINEER JILLA I. BREWER
10/20/2026

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S06-55
1	JIB	10/19/26	3			TOTAL SHEETS
2			4			60

DRAWN BY :	B.E. LANNING	DATE : 11/2025
CHECKED BY :	J.I. BREWER	DATE : 11/2025
DESIGN ENGINEER OF RECORD :	J.I. BREWER	DATE : 01/2026

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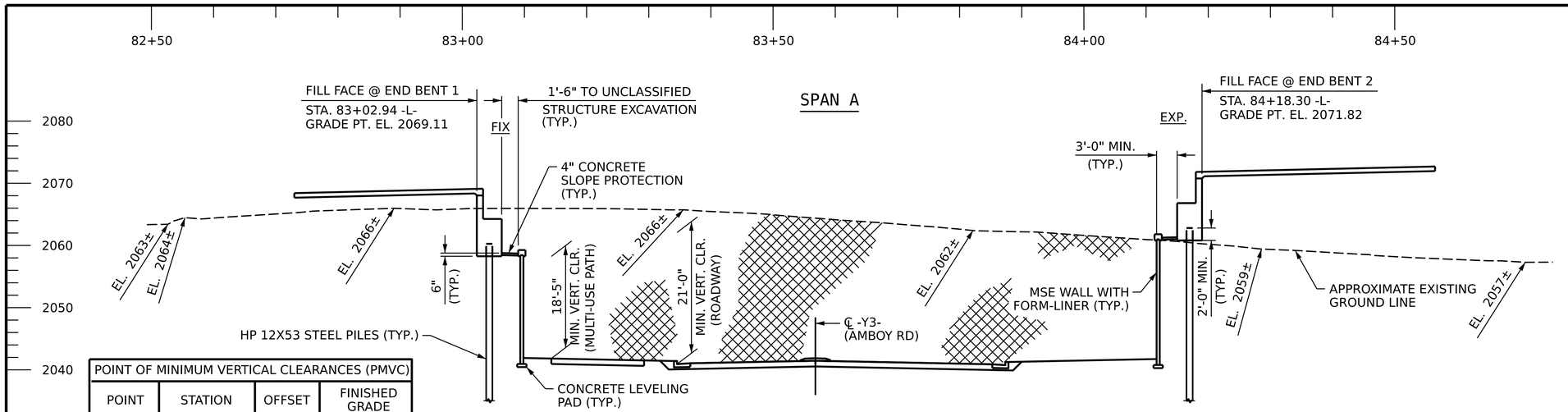


POINT OF MINIMUM VERTICAL CLEARANCES (PMVC)			
POINT	STATION	OFFSET	FINISHED GRADE
*PMVC #1	15+53.30 -Y3-	40.00' RT	2042.21
PMVC #2	14+95.42 -Y3-	21.00' RT	2040.86

* MINIMUM VERTICAL CLEARANCE AT PMVC # 1 IS CONTROLLED BY ARCH FACADE. SEE PRECAST FASCIA SHEETS.

SECTION ALONG RIGHT WORKLINE

(SECTION AT END BENTS ARE AT RIGHT ANGLES)

GRADE DATA -L_RT2-

(+)2.3500% — (-)0.6002%

PI = 86+50.00
EL = 2077.27'
VC = 450'

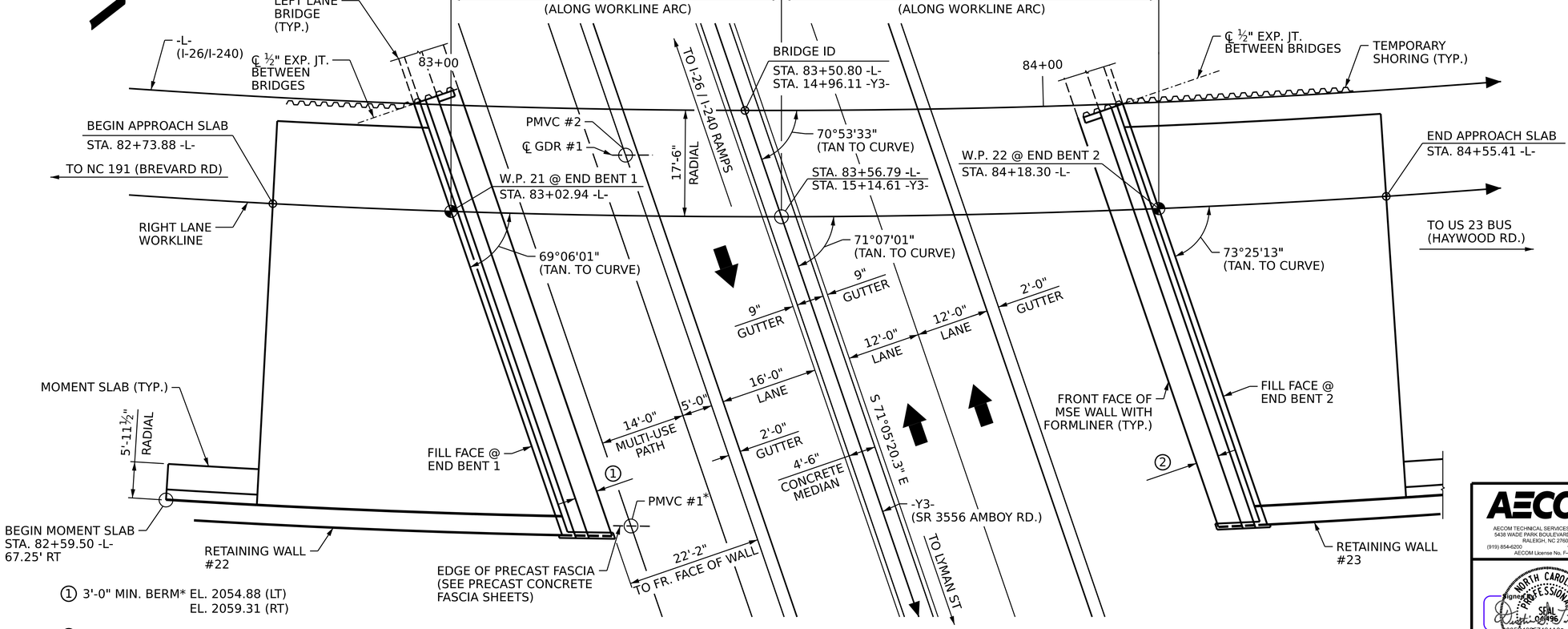
GRADE DATA -Y3-

(+)0.8920% — (+)2.0030%

PI = 16+30.00
EL = 2042.48'
VC = 100'

HORIZONTAL CURVE DATA -L-

PI STA.= 83+63.77
Δ = 35°57'32.0" (LT)
D = 3°44'41.4"
L = 960.23'
T = 496.52'
R = 1530.00'



* BERM MEASURED FROM FRONT FACE OF END BENT CAP TO FRONT FACE OF MSE WALL

PLAN

(PILES NOT SHOWN FOR CLARITY)

DRAWN BY :	T. NEAL	DATE :	02/2024
CHECKED BY :	D. TUTTLE	DATE :	03/2026
DESIGN ENGINEER OF RECORD:	D. TUTTLE	DATE :	03/2026

10/14/2026
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5438 WADE PARK BOULEVARD, SUITE 200
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(919) 854-6200 www.aecom.com
AECOM License No. F-0342

NORTH CAROLINA PROFESSIONAL SEAL 039886 ENGINEER JUSTIN S. TUTTLE
Signed
10/14/2026

PROJECT NO. I-2513 AC
BUNCOMBE COUNTY
STATION: 83+50.80 -L-
14+96.11 -Y3-
SHEET 1 OF 5
BRIDGE NO. 100899
REPLACES BRIDGE NO. 100248

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

FOR BRIDGE ON I-26/I-240 OVER SR 3556 (AMBOY RD) BETWEEN NC 191 (BREVARD RD) AND US 23 BUS (HAYWOOD RD)

(RIGHT LANE)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S8-01
1			3			TOTAL SHEETS
2			4			39

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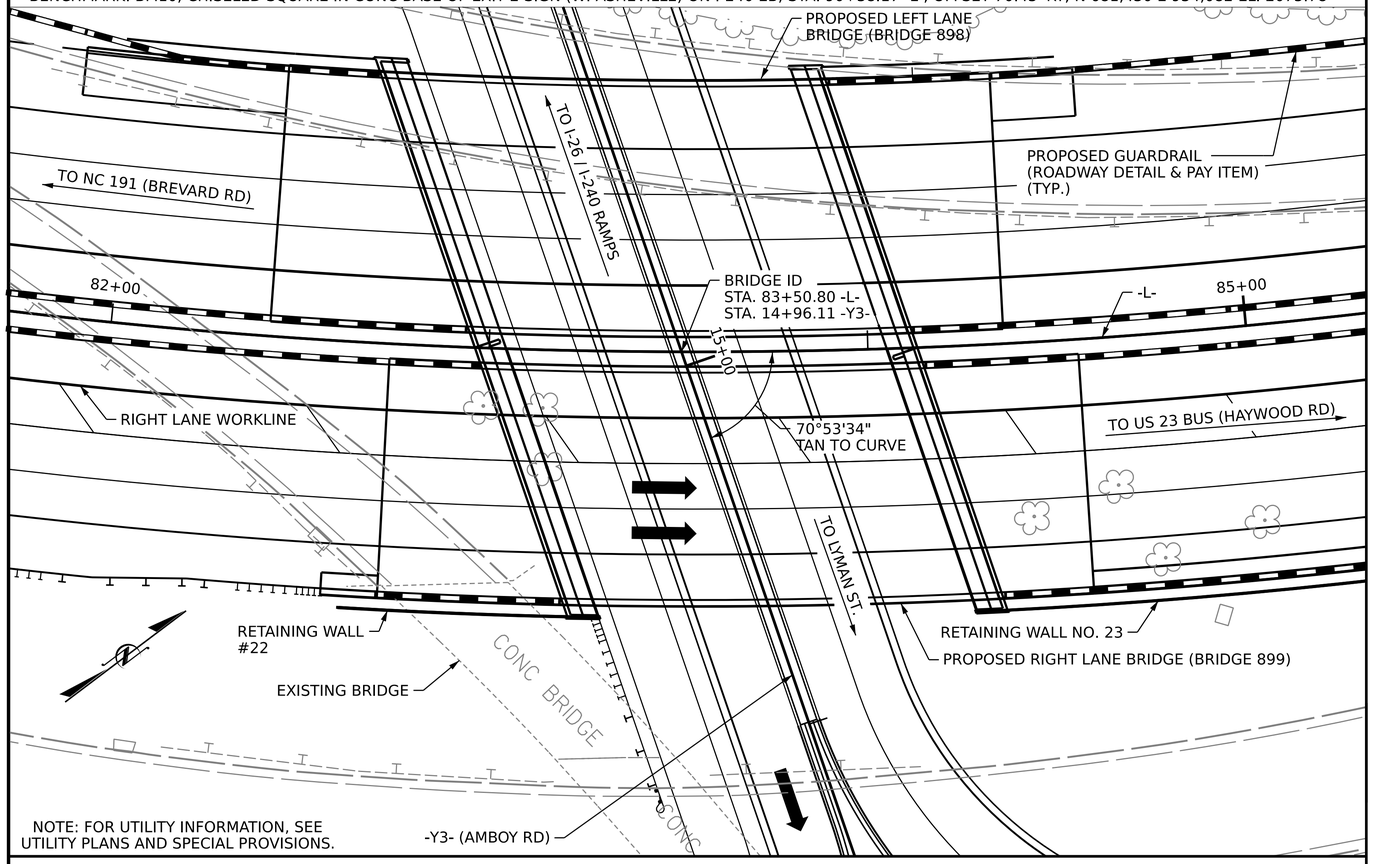

NOTE: FOR UTILITY INFORMATION, SEE UTILITY PLANS AND SPECIAL PROVISIONS.

LOCATION SKETCH

GENERAL NOTES:

ASSUMED LIVE LOAD = HL-93 OR ALTERNATE LOADING.

THIS BRIDGE HAS BEEN DESIGNED IN ACCORDANCE WITH THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS.

THIS BRIDGE IS LOCATED IN SEISMIC ZONE 1.

FOR OTHER DESIGN DATA AND GENERAL NOTES, SEE SHEET SN.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

REMOVABLE FORMS MAY BE USED IN LIEU OF METAL STAY-IN-PLACE FORMS IN ACCORDANCE WITH ARTICLE 420-3 OF THE STANDARD SPECIFICATIONS.

NEEDLE BEAMS WILL NOT BE ALLOWED UNLESS OTHERWISE CALLED FOR ON THE PLANS OR APPROVED BY THE ENGINEER.

FOR LIMITS OF TEMPORARY SHORING FOR MAINTENANCE OF TRAFFIC, SEE TRAFFIC CONTROL PLANS. FOR PAY ITEM FOR TEMPORARY SHORING FOR MAINTENANCE OF TRAFFIC, SEE ROADWAY PLANS.

FOR ASBESTOS ASSESSMENT FOR BRIDGE DEMOLITION & RENOVATION ACTIVITIES, SEE SPECIAL PROVISIONS.

FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.

FOR MSE WALLS, SEE GEOTECHNICAL SPECIAL PROVISIONS.

FOR PRECAST CONCRETE FASCIA, SEE SPECIAL PROVISIONS.

FOR INTEGRATION OF ABUTMENT MSE WALLS' AESTHETIC SCHEME WITH BRIDGE, SEE WALL PLANS.

THE ELEVATIONS AND CLEARANCES SHOWN ON THE PLANS AT THE POINTS OF MINIMUM VERTICAL CLEARANCE ARE FROM THE BEST INFORMATION AVAILABLE. PRIOR TO BEGINNING BRIDGE CONSTRUCTION, VERIFY THE ELEVATIONS ON THE EXISTING PAVEMENT AND CHECK THE CLEARANCE. REPORT ANY VARIATIONS TO THE ENGINEER. ANY PLAN REVISIONS NECESSARY TO ACHIEVE THE REQUIRED MINIMUM VERTICAL CLEARANCE WILL BE PROVIDED BY THE DEPARTMENT.

THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA SHALL BE EXCAVATED FOR A DISTANCE OF 17'-6" LEFT AND 49'-9" RIGHT OF THE WORKLINE AS DIRECTED BY THE ENGINEER. THIS WORK WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE FOR UNCLASSIFIED STRUCTURE EXCAVATION. SEE SECTION 412 OF THE STANDARD SPECIFICATIONS.

WORK SHALL NOT BE STARTED ON THIS BRIDGE (OR SPECIFIC PARTS OF BRIDGE) UNTIL ROADWAY SECTION HAS BEEN EXCAVATED.

INASMUCH AS THE PAINT SYSTEM ON THE EXISTING STRUCTURAL STEEL CONTAINS LEAD FOR THE EXISTING STRUCTURE, THE CONTRACTOR'S ATTENTION IS DIRECTED TO ARTICLE 107-1 OF THE STANDARD SPECIFICATIONS. ANY COSTS RESULTING FROM COMPLIANCE WITH APPLICABLE STATE OR FEDERAL REGULATIONS PERTAINING TO HANDLING OF MATERIALS CONTAINING LEAD BASED PAINT SHALL BE INCLUDED IN THE BID PRICE FOR "REMOVAL OF EXISTING STRUCTURE AT STATION 83+50.80 -L- (RT)".

THE CLASS AA CONCRETE IN THE BRIDGE DECK SHALL CONTAIN FLY ASH OR GROUND GRANULATED BLAST FURNACE SLAG AT THE SUBSTITUTION RATE SPECIFIED IN ARTICLE 1024-1 AND IN ACCORDANCE WITH ARTICLES 1024-5 AND 1024-6 OF THE STANDARD SPECIFICATIONS. NO PAYMENT WILL BE MADE FOR THIS SUBSTITUTION AS IT IS CONSIDERED INCIDENTAL TO THE COST OF THE REINFORCED CONCRETE DECK SLAB.

AFTER SERVING AS A TEMPORARY STRUCTURE, THE EXISTING STRUCTURES CONSISTING OF A 3 SPAN (27.00' - 64.00' - 65.00') CONCRETE DECK ON ROLLED STEEL W-SHAPE GIRDERS, WITH 24.0 FT CLEAR ROADWAY WIDTH, SUPPORTED BY PILE BENT CONCRETE END BENTS AND CONCRETE POST AND BEAM BENTS ON ISOLATED PILE FOOTINGS SHALL BE REMOVED. THE EXISTING BRIDGE IS PRESENTLY NOT POSTED FOR LOAD LIMIT. SHOULD THE STRUCTURAL INTEGRITY OF THE BRIDGES DETERIORATE DURING CONSTRUCTION OF THE PROPOSED BRIDGE, A LOAD LIMIT MAY BE POSTED AND MAY BE REDUCED AS FOUND NECESSARY DURING THE LIFE OF THE PROJECT.

THE SUBSTRUCTURE OF THE EXISTING BRIDGE INDICATED ON THE PLANS IS FROM THE BEST INFORMATION AVAILABLE. THIS INFORMATION IS SHOWN FOR THE CONVENIENCE OF THE CONTRACTOR. THE CONTRACTOR SHALL HAVE NO CLAIM WHATSOEVER AGAINST THE DEPARTMENT OF TRANSPORTATION FOR ANY DELAYS OR ADDITIONAL COST INCURRED BASED ON DIFFERENCES BETWEEN THE EXISTING BRIDGE SUBSTRUCTURE SHOWN ON THE PLANS AND THE ACTUAL CONDITIONS AT THE PROJECT SITE.

PAY ITEM FOR REMOVAL OF EXISTING STRUCTURES AT STA. 83+50.80 -L- (RT) INCLUDES REMOVAL OF EXISTING BRIDGE 100248 AT STA. 83+50.80 -L- AND EXISTING PEDESTRIAN BRIDGE STRUCTURE AT STA. 97+60.50 -L-.

FOR REMOVAL OF EXISTING PEDESTRIAN BRIDGE STRUCTURE AT STA. 97+60.50 -L-, SEE DEMOLITION PLAN FOR PEDESTRIAN BRIDGE REMOVAL SPECIAL PROVISION.

FOR APPLICATION OF BRIDGE COATING, SEE SPECIAL PROVISIONS.

TOTAL BILL OF MATERIAL

	ASBESTOS ASSESSMENT	REMOVAL OF EXISTING STRUCTURES AT STA. 83+50.80 -L- (RT)	UNCLASSIFIED STRUCTURE EXCAVATION AT STA. 83+50.80 -L- (RT)	REINFORCED CONCRETE DECK SLAB	GROOVING BRIDGE FLOORS	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	MODIFIED 72" PRESTRESSED CONC GIRDERS	
	LUMP SUM	LUMP SUM	LUMP SUM	SQ. FT.	SQ. FT.	CU. YDS.	LUMP SUM	LBS.	NO.	LIN. FT.
SUPERSTRUCTURE				7,233	10,548				6	678.3
END BENT 1						93.2		11,066		
END BENT 2						91.2		10,655		
TOTAL	LUMP SUM	LUMP SUM	LUMP SUM	7,233	10,548	184.4	LUMP SUM	21,721	6	678.3

TOTAL BILL OF MATERIAL

	PILE DRIVING EQUIPMENT SETUP FOR HP 12X53 STEEL PILES	HP 12X53 STEEL PILES		DYNAMIC PILE TESTING	CONCRETE BARRIER RAIL	CONCRETE BARRIER RAIL W/ MOMENT SLAB	72" CHAIN LINK FENCE	4" SLOPE PROTECTION	ELASTOMERIC BEARINGS	EXPANSION JOINT SEALS	PRECAST CONCRETE FASCIA AT STA. 83+50.80 -L- (RT)	APPLICATION OF BRIDGE COATING	ARCHITECTURAL CONCRETE SURFACE TREATMENT
	EACH	NO.	LIN. FT.	EACH	LIN. FT.	LIN. FT	LIN. FT	SQ. YDS.	LUMP SUM		LUMP SUM	SQ. FT.	SQ. FT.
SUPERSTRUCTURE					371.4	114.0	113.0					361.0	701
END BENT 1	15	15	900	1				31.7				159.4	
END BENT 2	15	15	675					29.7				150.8	
TOTAL	30	30	1575	1	371.4	114.0	113.0	61.4	LUMP SUM	LUMP SUM	LUMP SUM	671.2	701

PROJECT NO. I-2513 AC

BUNCOMBE COUNTY

STATION: 83+50.80 -L-

SHEET 5 OF 5

AECOM
AECOM TECHNICAL SERVICES OF NC, INC.
5438 WADE PARK BOULEVARD, SUITE 200
RALEIGH, NC 27607
(919) 854-6200 www.aecom.com
AECOM License No. F-0342

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 049496 DUSTIN S. TUTTLE
Signed
10/14/2026

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

FOR BRIDGE ON I-26/I-240 OVER SR 3556 (AMBOY RD) BETWEEN NC 191 (BREVARD RD) AND US 23 BUS (HAYWOOD RD)

(RIGHT LANE)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S8-05
1			3			TOTAL SHEETS
2			4			39

DRAWN BY : M. CATER DATE : 03/2026
CHECKED BY : D. TUTTLE DATE : 03/2026
DESIGN ENGINEER OF RECORD: D. TUTTLE DATE : 03/2026

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

10/14/2026
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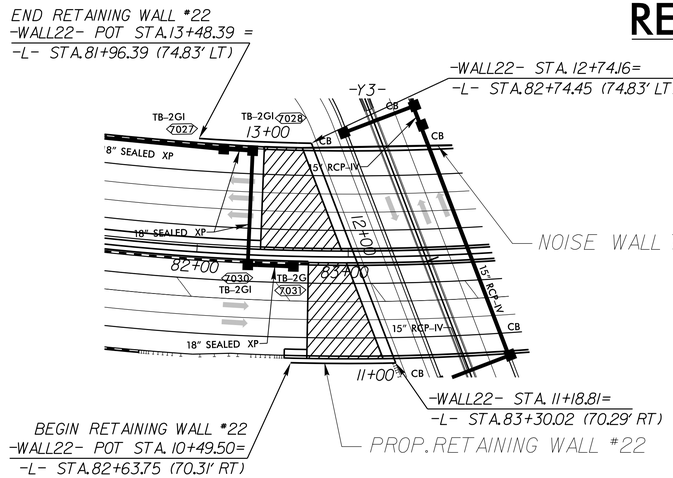
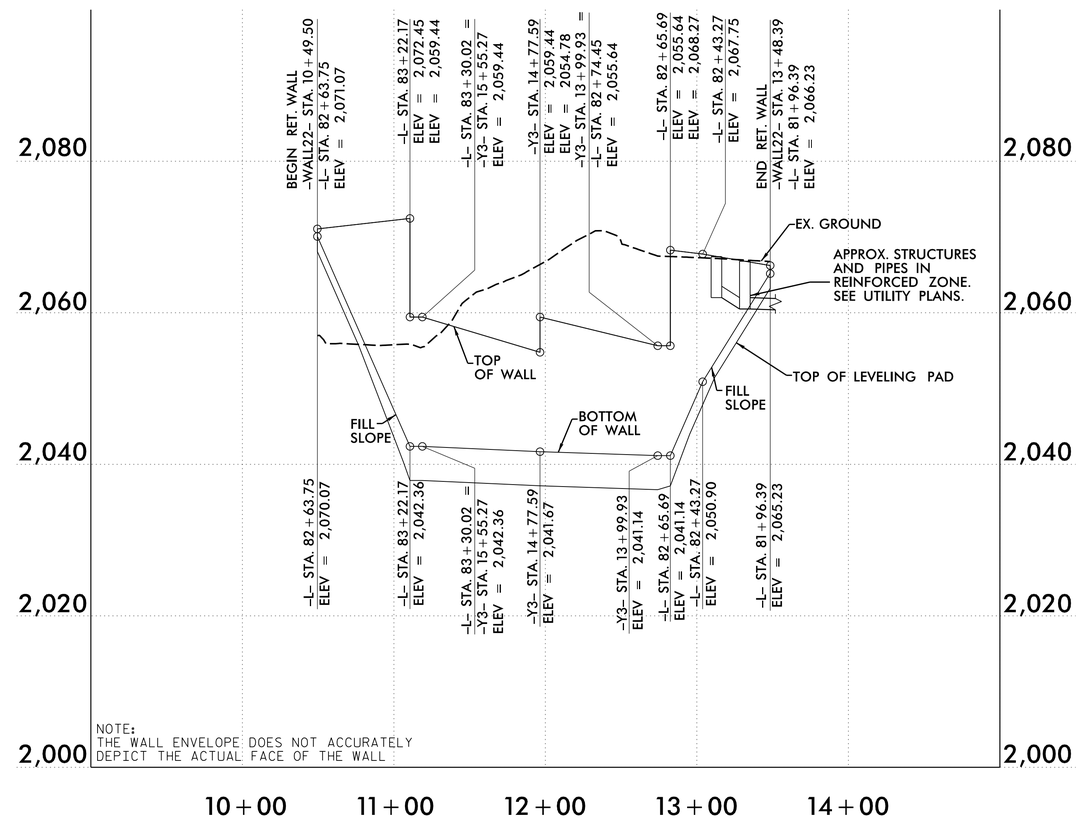
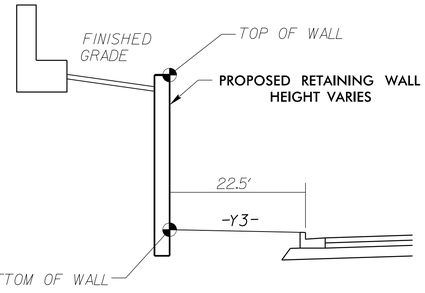
RETAINING WALL #22 DETAIL SHEET



RETAINING WALL NO. 22 – PLAN VIEW

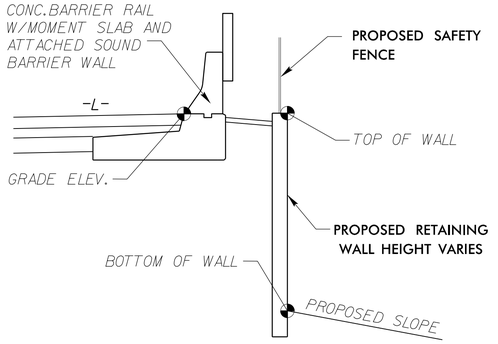


RETAINING WALL NO. 22 – ENVELOPE VIEW



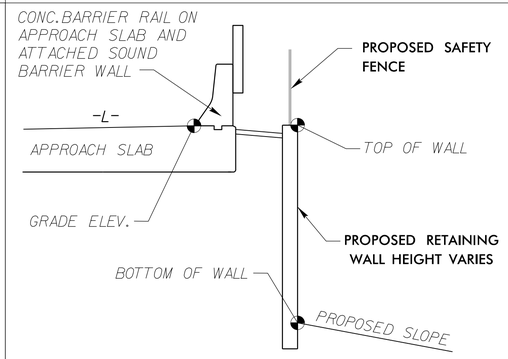
RETAINING WALL TYPICAL SECTION

–WALL22– STA. 11+18.81 TO 12+74.16



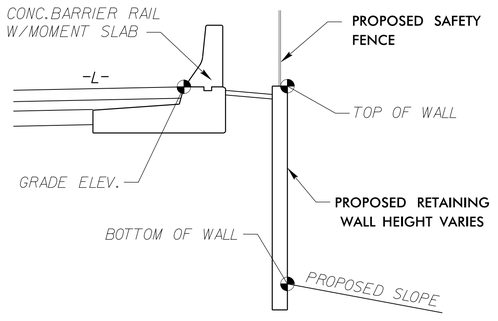
RETAINING WALL TYPICAL SECTION

–WALL22– STA. 13+05.10 TO 13+48.39



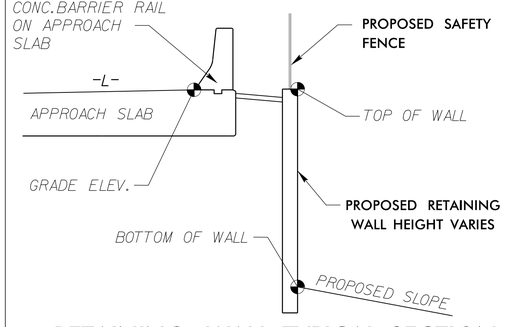
RETAINING WALL TYPICAL SECTION

–WALL22– STA. 12+80.15 TO 13+05.10



RETAINING WALL TYPICAL SECTION

–WALL22– STA. 10+49.50 TO 10+60.08



RETAINING WALL TYPICAL SECTION

–WALL22– STA. 10+60.08 TO 11+10.56

GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 018979 ENGINEER Mohammed A. Mulla

Mohammed A. Mulla 10/13/2026

SIGNATURE DATE

ENGINEER

SIGNATURE DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

ESTIMATED MSE WALL QUANTITIES*

(SQUARE FEET)

MSE RETAINING WALL NO. 22	5,600
ARCHITECTURAL CONCRETE SURFACE TREATMENT	5,600

* = ESTIMATED WALL QUANTITIES INCLUDE ESTIMATED WALL EMBEDMENT AREA

PROJECT NO.: I-2513AC

BUNCOMBE COUNTY

STATION: +/- -L- 82+63.75 TO -L- 81+96.39

SHEET 1 OF 4 WALL ID RW-22

PREPARED BY: E. A. MCINTOSH, P.E.	DATE: 06/26
REVIEWED BY: M. A. MULLA, P.E.	DATE: 06/26

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
PLAN AND ENVELOPE

REVISIONS

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

SHEET NO. W-51

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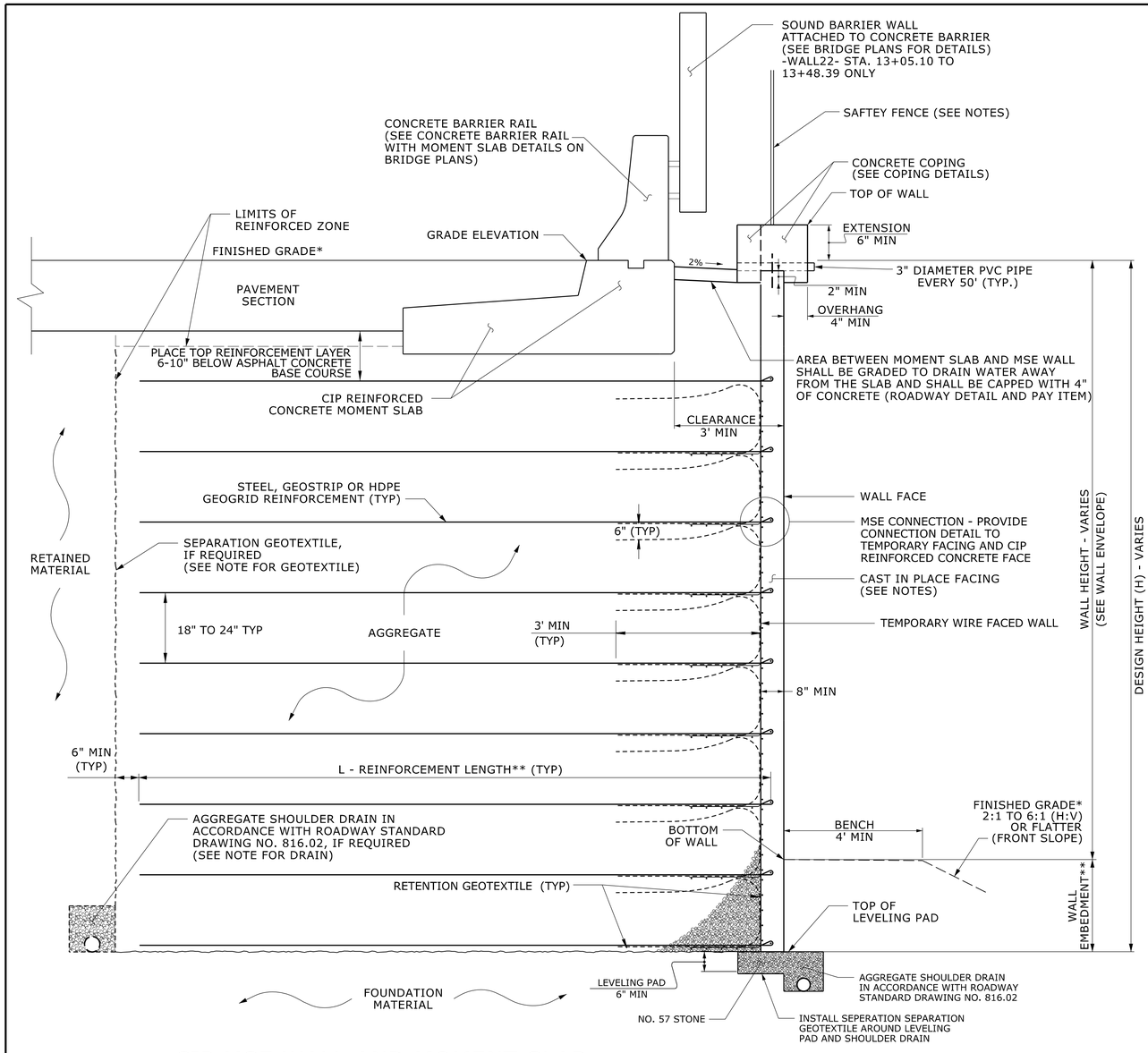
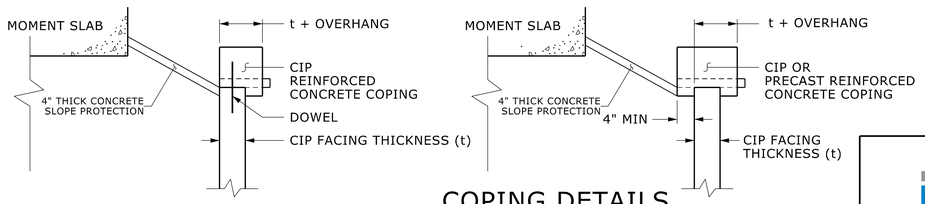
Structures\CADD_GEOTECH\
DESIGN_DEVICE_VITA



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.

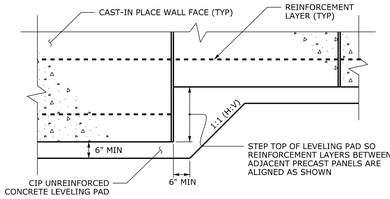
-WALL22- STA. 10+49.50 TO STA. 10+60.08
-WALL22- STA. 13+05.10 TO STA. 13+48.39
W/ ATTACHED SOUND BARRIER WALL TO
CONCRETE BARRIER RAIL



COPING DETAILS

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

PREPARED BY: E. A. MCINTOSH, P.E.	DATE: 06/26
REVIEWED BY: M. A. MULLA, P.E.	DATE: 06/26



CAST-IN PLACE CONCRETE FACING
LEVELING PAD STEP DETAIL

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.

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	ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 018979 ENGINEER Mohammed A. Mulla	
Mohammed A. Mulla 10/13/2026	
SIGNATURE DATE	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 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	
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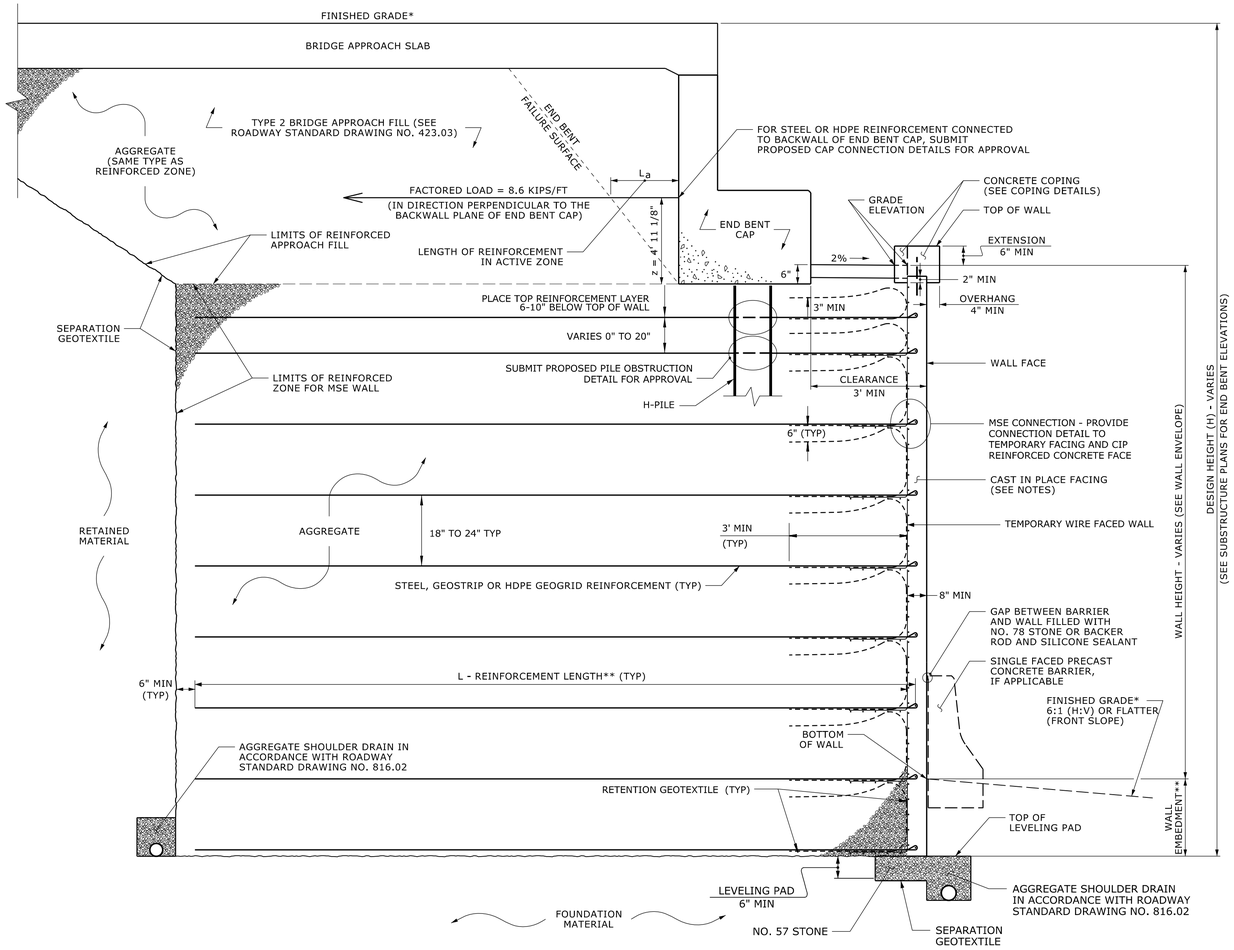
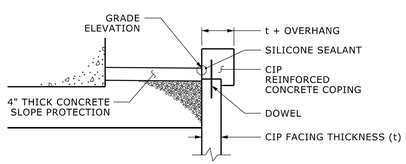
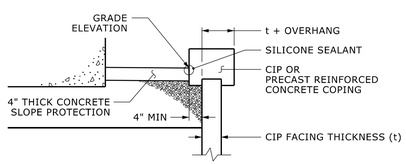


CIP MSE ABUTMENT WALL - TYPICAL SECTION

*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.

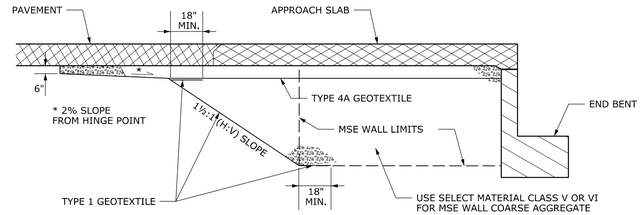
CLOSE COORDINATION WITH STRUCTURE PLANS IS REQUIRED. SEE BRIDGE PLANS FOR ADDITIONAL DETAILS FOR REQUIRED WALL AESTHETICS AND GEOMETRIC TIE-IN BETWEEN MSE WALL AND BRIDGE END BENT CAP. THE CONTRACTOR SHALL SUBMIT DETAILS FOR CONSTRUCTING THE MSE WALL, CAST IN PLACE FACING, AND PRECAST OR CAST IN PLACE 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 10/13/2026
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: 06/26
REVIEWED BY: M. A. MULLA, P.E.	DATE: 06/26

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						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	
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GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 018979 ENGINEER Mohammed A. Mulla

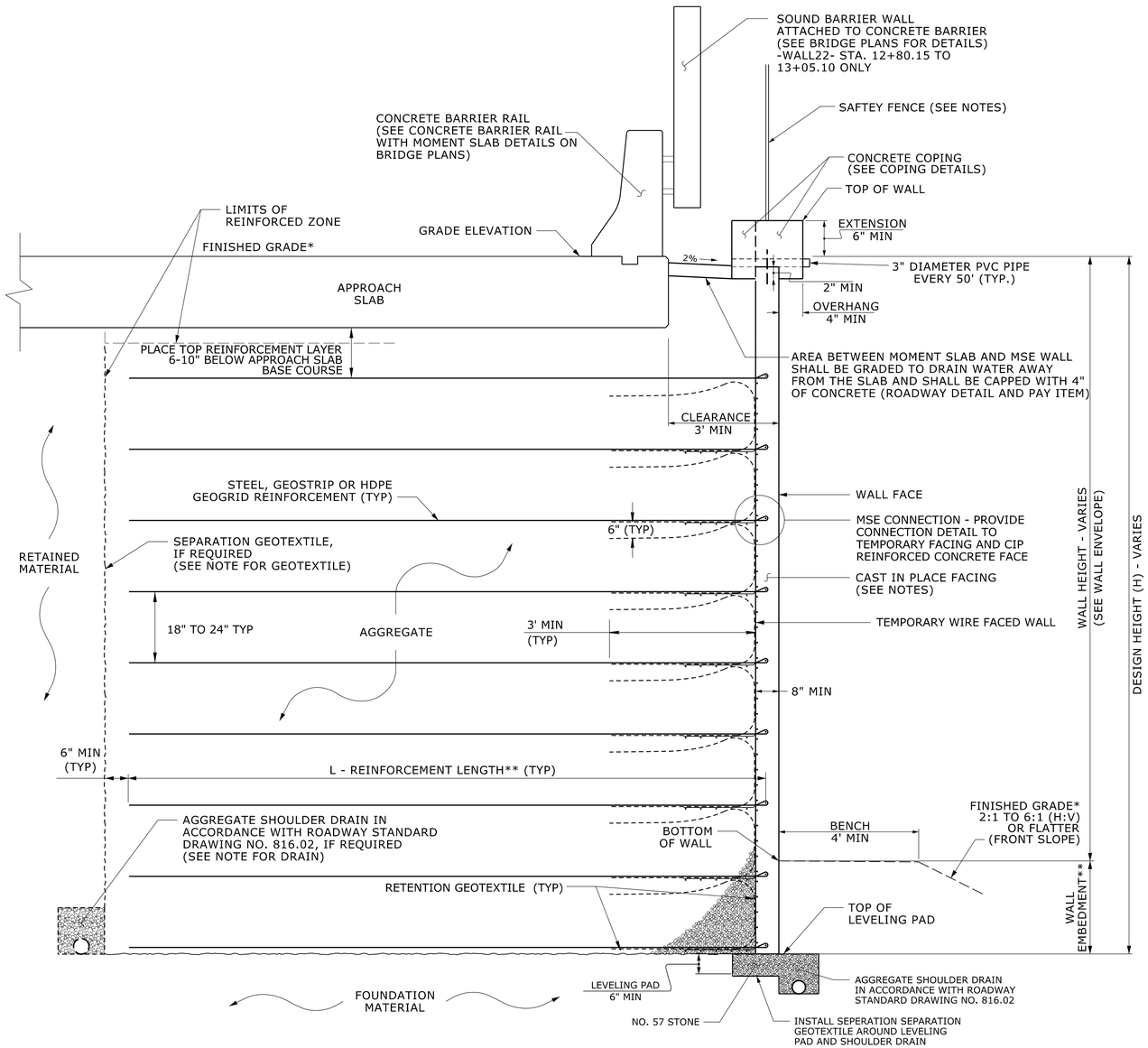
Mohammed A. Mulla 10/13/2026

SIGNATURE DATE

ENGINEER

SIGNATURE DATE

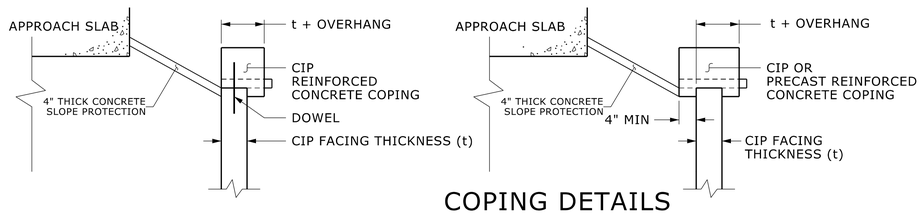
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



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.

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: 06/26
REVIEWED BY: M. A. MULLA, P.E.	DATE: 06/26

Prepared in the Office of:

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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.
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2			4			

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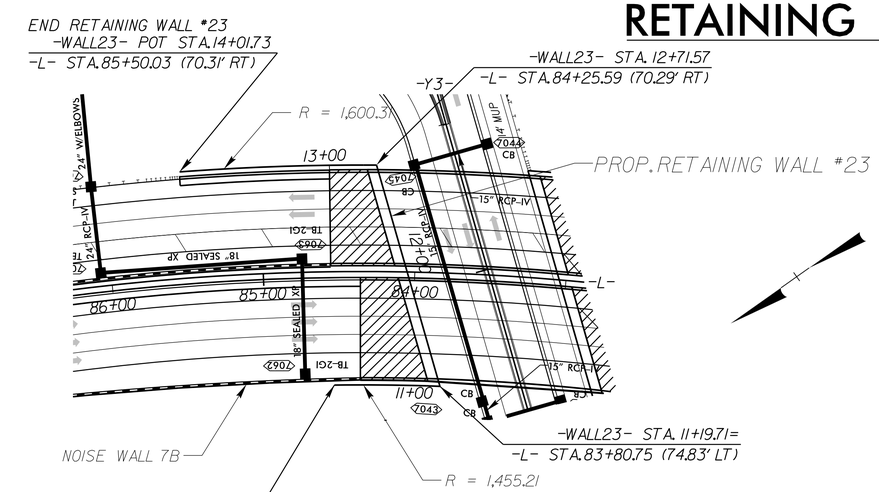
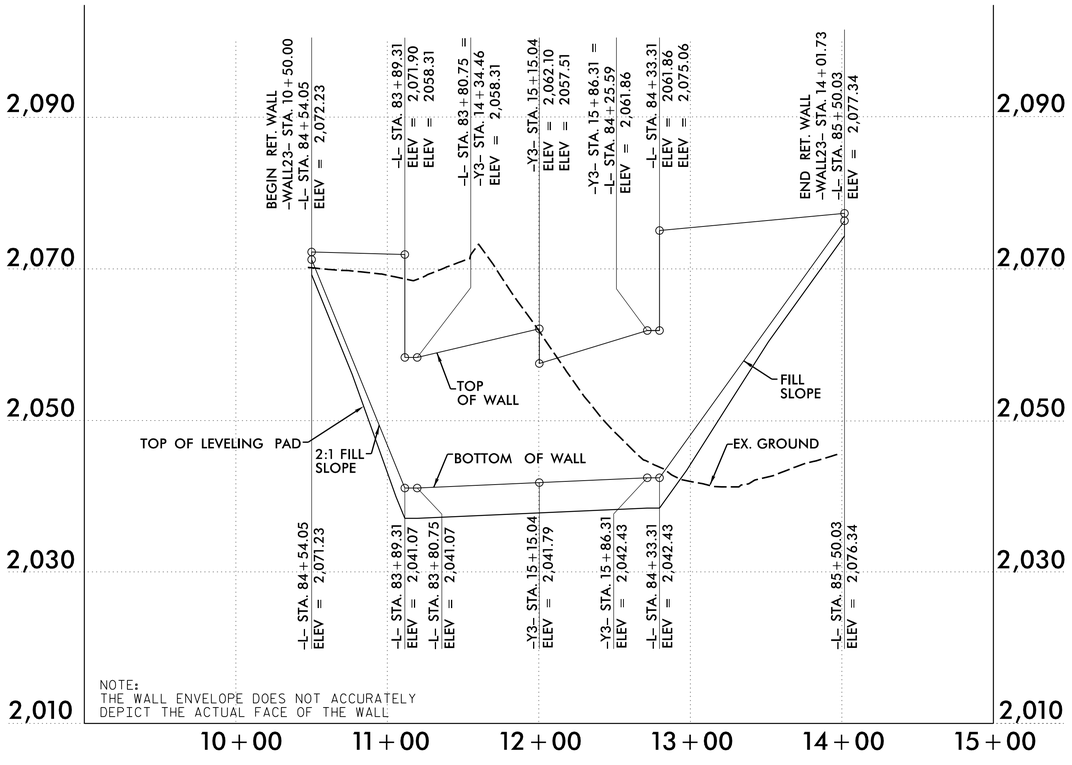
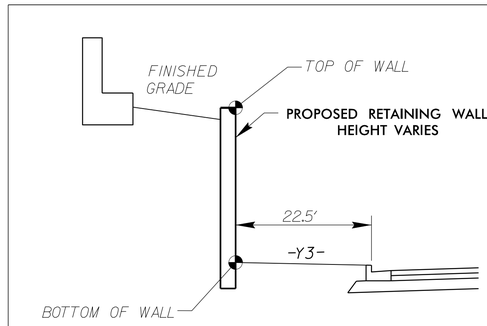
RETAINING WALL #23 DETAIL SHEET



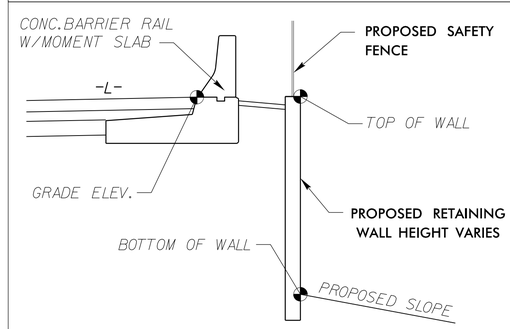
RETAINING WALL NO. 23 – PLAN VIEW



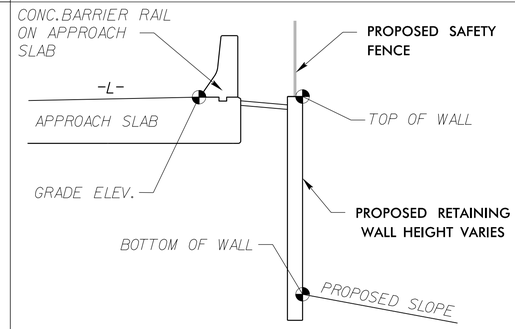
RETAINING WALL NO. 23 – ENVELOPE VIEW



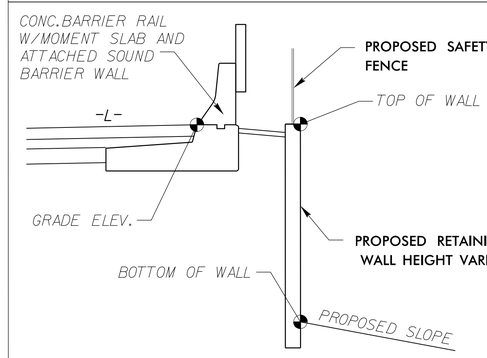
RETAINING WALL TYPICAL SECTION
–WALL23– STA. 11+19.71 TO 12+71.57



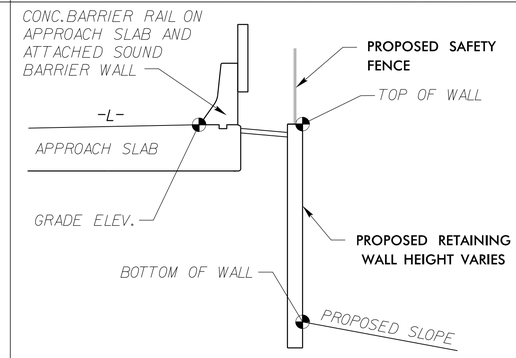
RETAINING WALL TYPICAL SECTION
–WALL23– STA. 13+02.77 TO 14+01.73



RETAINING WALL TYPICAL SECTION
–WALL23– STA. 12+80.14 TO 13+02.77



RETAINING WALL TYPICAL SECTION
–WALL23– STA. 10+50.0 TO 10+67.23



RETAINING WALL TYPICAL SECTION
–WALL23– STA. 10+67.23 TO 11+11.07

GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 018979 ENGINEER Mohammed A. Mulla

Mohammed A. Mulla 10/13/2026
SIGNATURE DATE

ENGINEER

SIGNATURE DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

ESTIMATED MSE WALL QUANTITIES*
(SQUARE FEET)

MSE RETAINING WALL NO. 23	7,265
ARCHITECTURAL CONCRETE SURFACE TREATMENT	7,265

** = ESTIMATED WALL QUANTITIES INCLUDE ESTIMATED WALL EMBEDMENT AREA*

PROJECT NO.: I-2513AC
BUNCOMBE COUNTY
STATION: +/- -L- 84+54.05 TO -L- 85+50.03
SHEET 1 OF 4 WALL ID RW-23

PREPARED BY: E. A. MCINTOSH, P.E.	DATE: 06/26
REVIEWED BY: M. A. MULLA, P.E.	DATE: 06/26

Prepared in the Office of:

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NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

GEOTECHNICAL ENGINEERING UNIT

RETAINING WALL NO. 23
CIP MECHANICALLY STABILIZED EARTH WALL
PLAN AND ENVELOPE

REVISIONS

NO.	BY	DATE	NO.	BY	DATE
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SHEET NO. W-55

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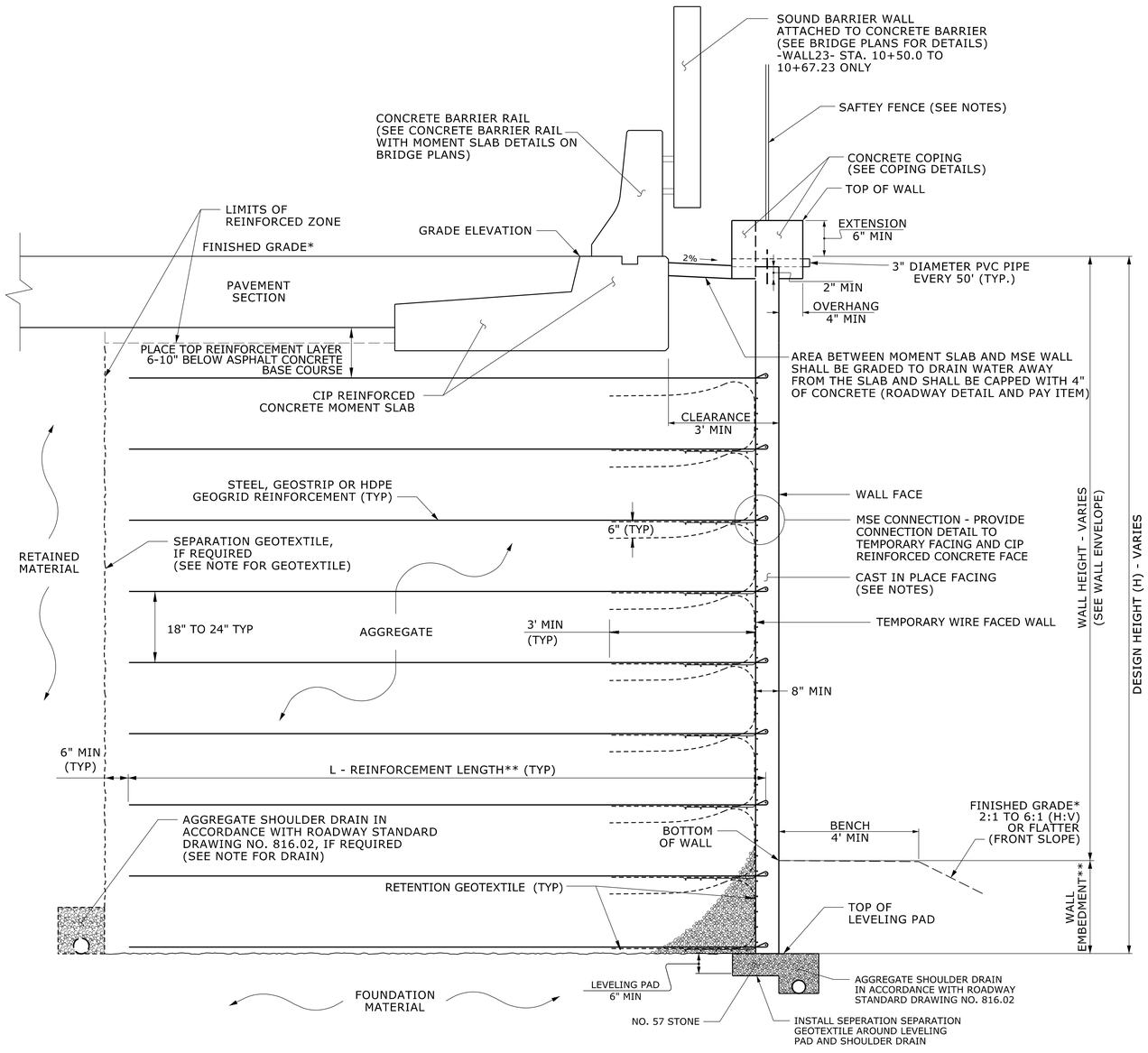
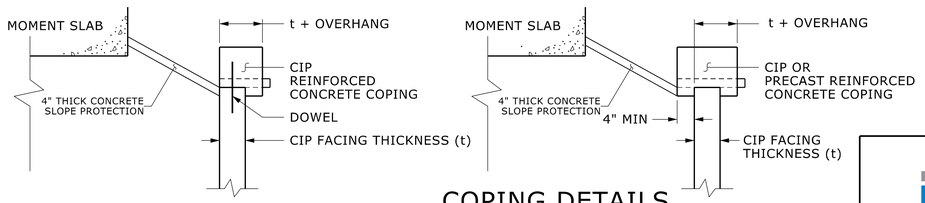


CIP MSE WALL AND MOMENT SLAB

*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.

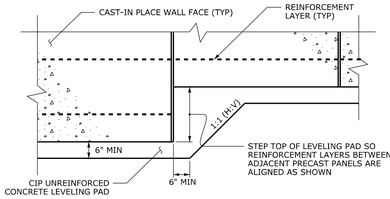
-WALL23- STA. 13+02.77 TO STA. 14+01.73
-WALL23- STA. 10+50.0 TO STA. 10+67.23
W/ ATTACHED SOUND BARRIER WALL TO
CONCRETE BARRIER RAIL



COPING DETAILS

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

PREPARED BY: E. A. MCINTOSH, P.E.	DATE: 06/26
REVIEWED BY: M. A. MULLA, P.E.	DATE: 06/26



CAST-IN PLACE CONCRETE FACING
LEVELING PAD STEP DETAIL

GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 018979 ENGINEER Mohammed A. Mulla

Mohammed A. Mulla 10/13/2026
SIGNATURE DATE

ENGINEER
SIGNATURE DATE

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

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.

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.

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

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

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

SHEET NO. W-56

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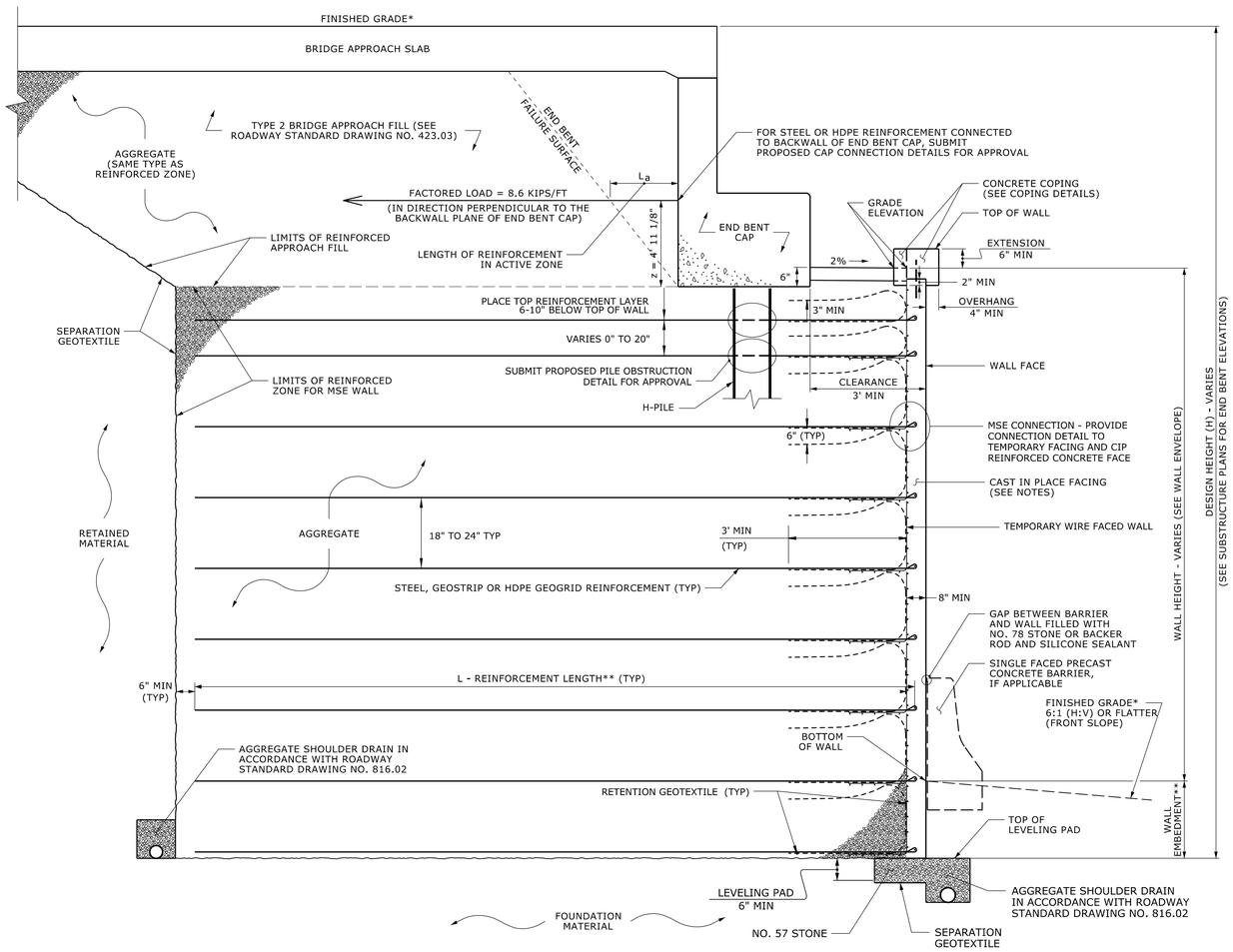
EMcIntosh, ECS SOUTHEAST, LLP

GEOTECHNICAL ENGINEER	ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 018979 ENGINEER Mohammed A. Mulla	
Mohammed A. Mulla 10/13/2026	
SIGNATURE DATE	SIGNATURE DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



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

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.

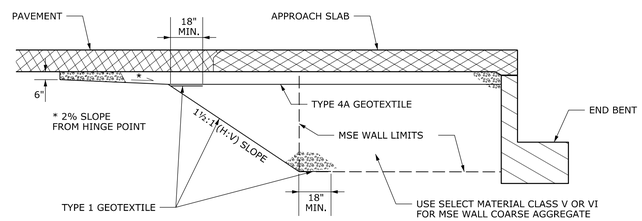
CLOSE COORDINATION WITH STRUCTURE PLANS IS REQUIRED. SEE BRIDGE PLANS FOR ADDITIONAL DETAILS FOR REQUIRED WALL AESTHETICS AND GEOMETRIC TIE-IN BETWEEN MSE WALL AND BRIDGE END BENT CAP. THE CONTRACTOR SHALL SUBMIT DETAILS FOR CONSTRUCTING THE MSE WALL, CAST IN PLACE FACING, AND PRECAST OR CAST IN PLACE 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.

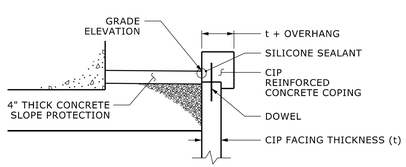
THE CIP FACING SHALL BE INSTALLED CONTINOUSLY BETWEEN LEFT AND RIGHT LANE BRIDGES WITH NO STAGED CONSTRUCTION JOINT.

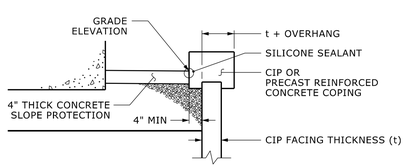
THE REINFORCED ZONE OF RETAINING WALL NO. 23 WILL INTERFERE WITH BRIDGE APPROACH FILL FOR BRIDGE NO. 100898 AND 100899. SEE APPROACH FILL WITH ADJACENT MSE WALL DETAIL AND STRUCTURE PLANS.



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.





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.

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: 06/26
REVIEWED BY: M. A. MULLA, P.E.	DATE: 06/26

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						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	
1			3			W-57
2			4			

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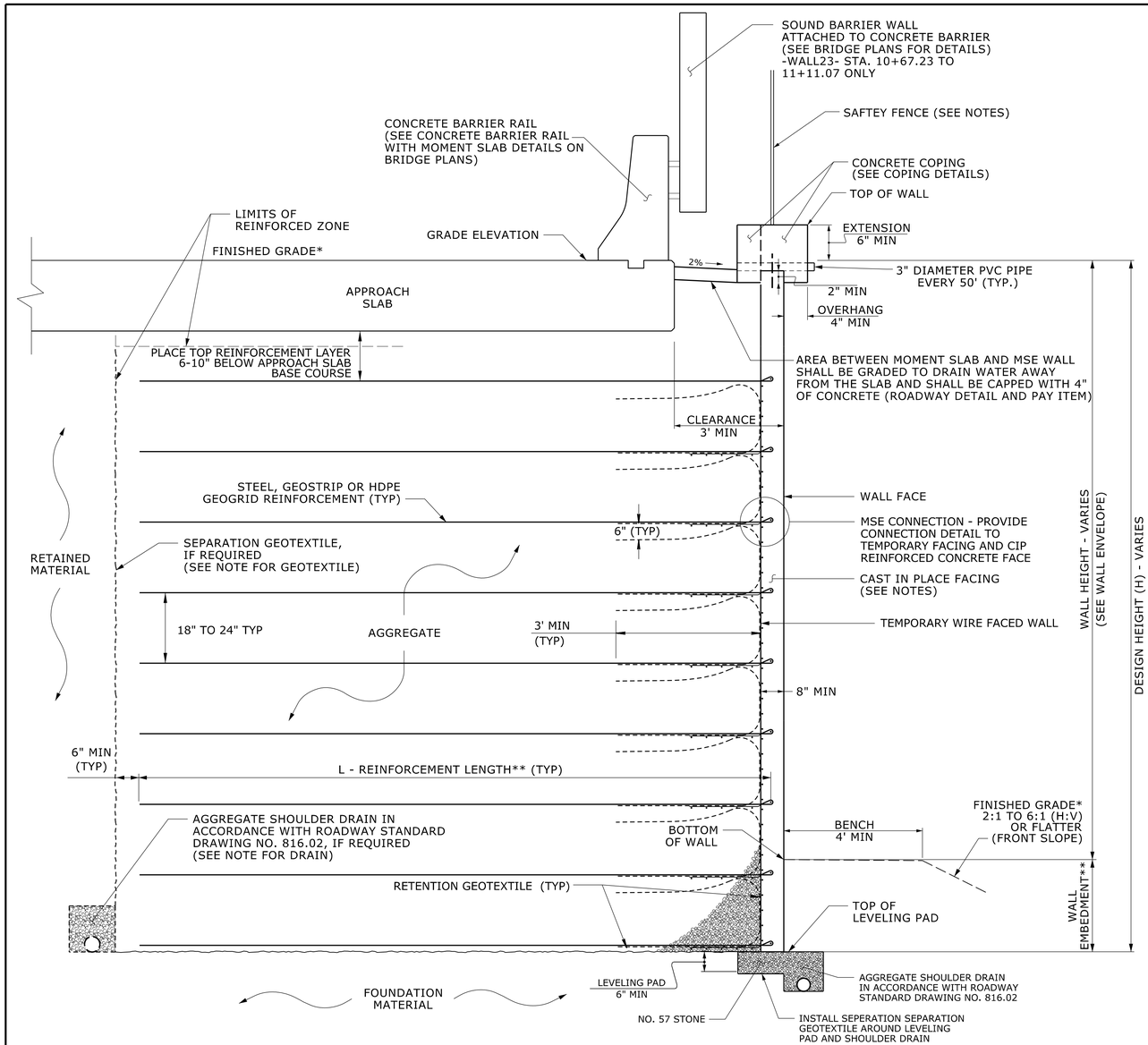
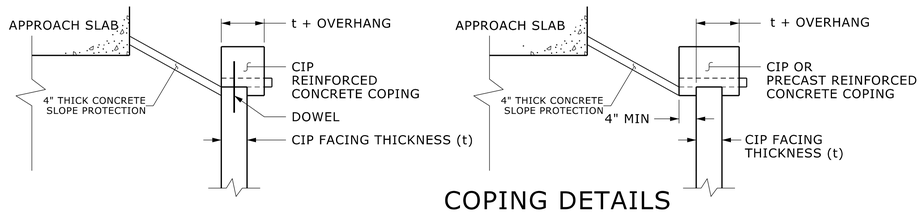
ECS Corporate Services\3| Asheville - 3|-4489 I-2513AC Structures\CADD_GEOTECH\Plan



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 10/13/2026
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: 06/26
REVIEWED BY: M. A. MULLA, P.E.	DATE: 06/26

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			

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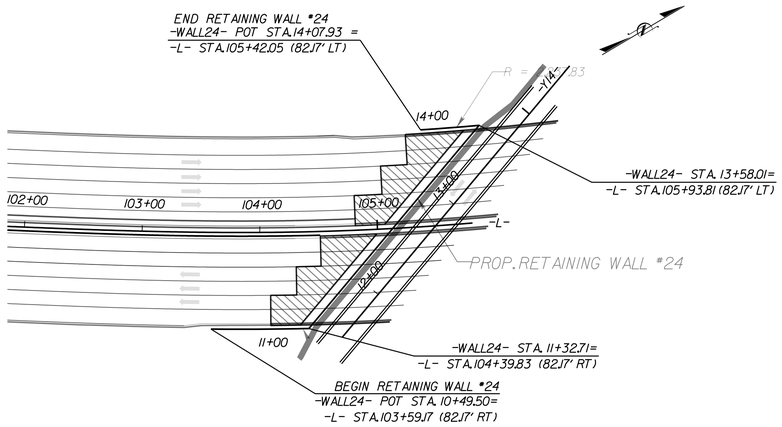
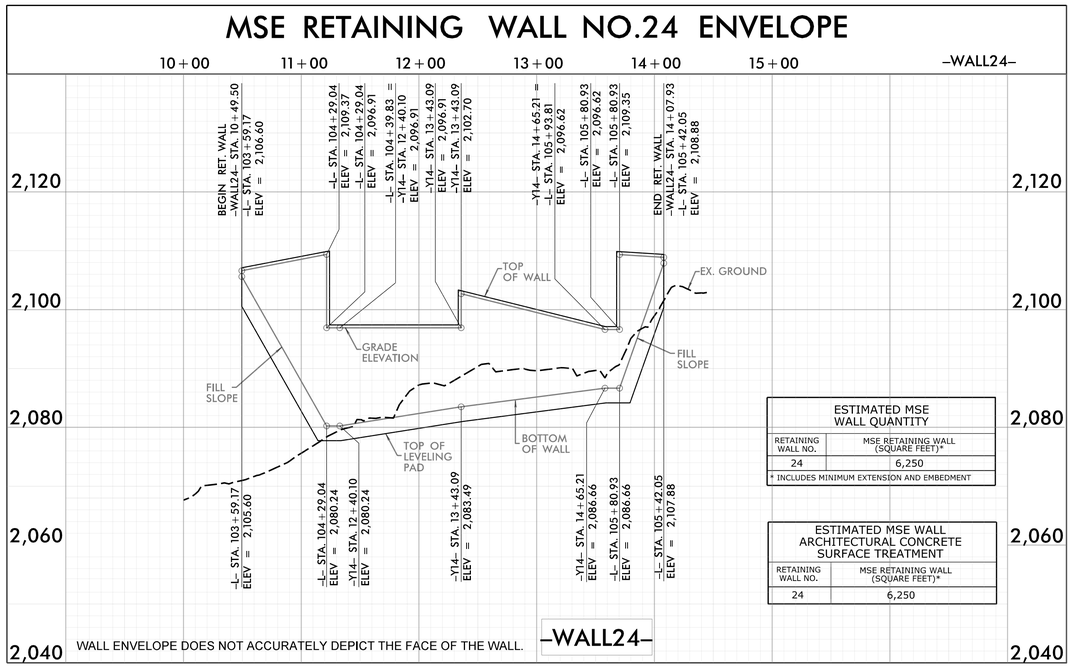
MSE RETAINING WALL NO.24 PLAN



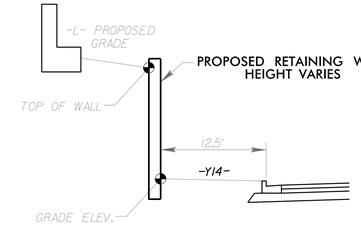
MSE RETAINING WALL NO.24 ENVELOPE



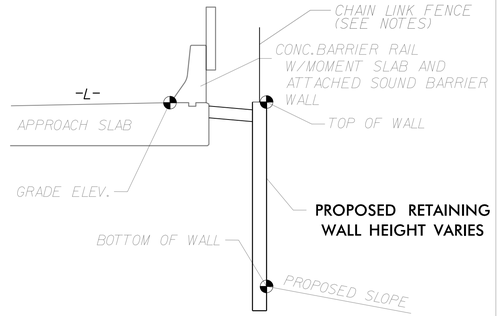
ESTIMATED MSE WALL QUANTITY	
RETAINING WALL NO.	MSE RETAINING WALL (SQUARE FEET)*
24	6,250

* INCLUDES MINIMUM EXTENSION AND EMBEDMENT

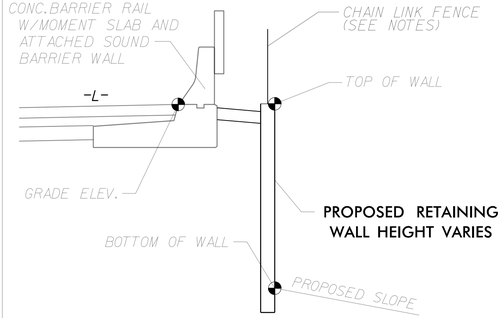
ESTIMATED MSE WALL ARCHITECTURAL CONCRETE SURFACE TREATMENT	
RETAINING WALL NO.	MSE RETAINING WALL (SQUARE FEET)*
24	6,250



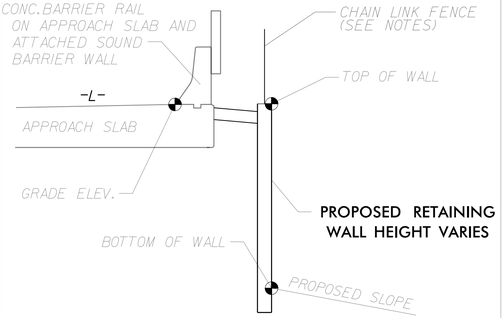
RETAINING WALL TYPICAL SECTION
-WALL24- STA. 11+32.71 TO STA. 13+58.01



RETAINING WALL TYPICAL SECTION
-WALL24- STA. 13+70.60 TO 14+07.93



RETAINING WALL TYPICAL SECTION
-WALL24- STA. 10+49.50 TO 11+00.00



RETAINING WALL TYPICAL SECTION
-WALL24- STA. 11+00.00 TO 11+24.93

PROJECT REFERENCE NO.	SHEET NO.
I-2513AC	W-59

GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 014155 ENGINEER ELMER F. RIGGS, JR.

DocuSigned by: Elmer Riggs Jr. C2F0ACA8AD7D4B1... 10/21/2026
SIGNATURE DATE

ENGINEER

DATE

SIGNATURE DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PROJECT NO.: 34165.1.6 (I-2513AC)

BUNCOMBE COUNTY

STATION: STA. 10+49.50 TO 14+07.93 -WALL24-

SHEET 1 OF 5 WALL ID RW-24

PREPARED BY: ALMULLA, H.	DATE: 04/14/2026
REVIEWED BY: RIGGS, JR., A. F.	DATE: 04/14/2026

Prepared in the Office of:

Terracon

3150 SPRING FOREST ROAD, SUITE 100
RALEIGH, NORTH CAROLINA 27616
NC REGISTERED ENGINEERING FIRM: P-0869
NC REGISTERED GEOLOGIC FIRM: C-367

RETAINING WALL NO. 24
CIP MECHANICALLY STABILIZED EARTH WALL
PLAN AND ENVELOPE

REVISIONS

NO.	BY	DATE	NO.	BY	DATE
1	FIELDS, W. D.	5/4/26	3	FIELDS, W. D.	6/8/26
2	FIELDS, W. D.	5/26/26	4	FIELDS, W. D.	6/15/26

SHEET NO.

Docusign Envelope ID: F6762AD1-0ED8-8FA6-80B6-4D219BCF965C

PROJECT REFERENCE NO.	SHEET NO.
I-2513AC	W-60

ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 014155 ENGINEER ELMER F. RIGGS, JR.

DocuSigned by: Elmer Riggs Jr. 10/21/2026
SIGNATURE DATE

ENGINEER

SIGNATURE DATE

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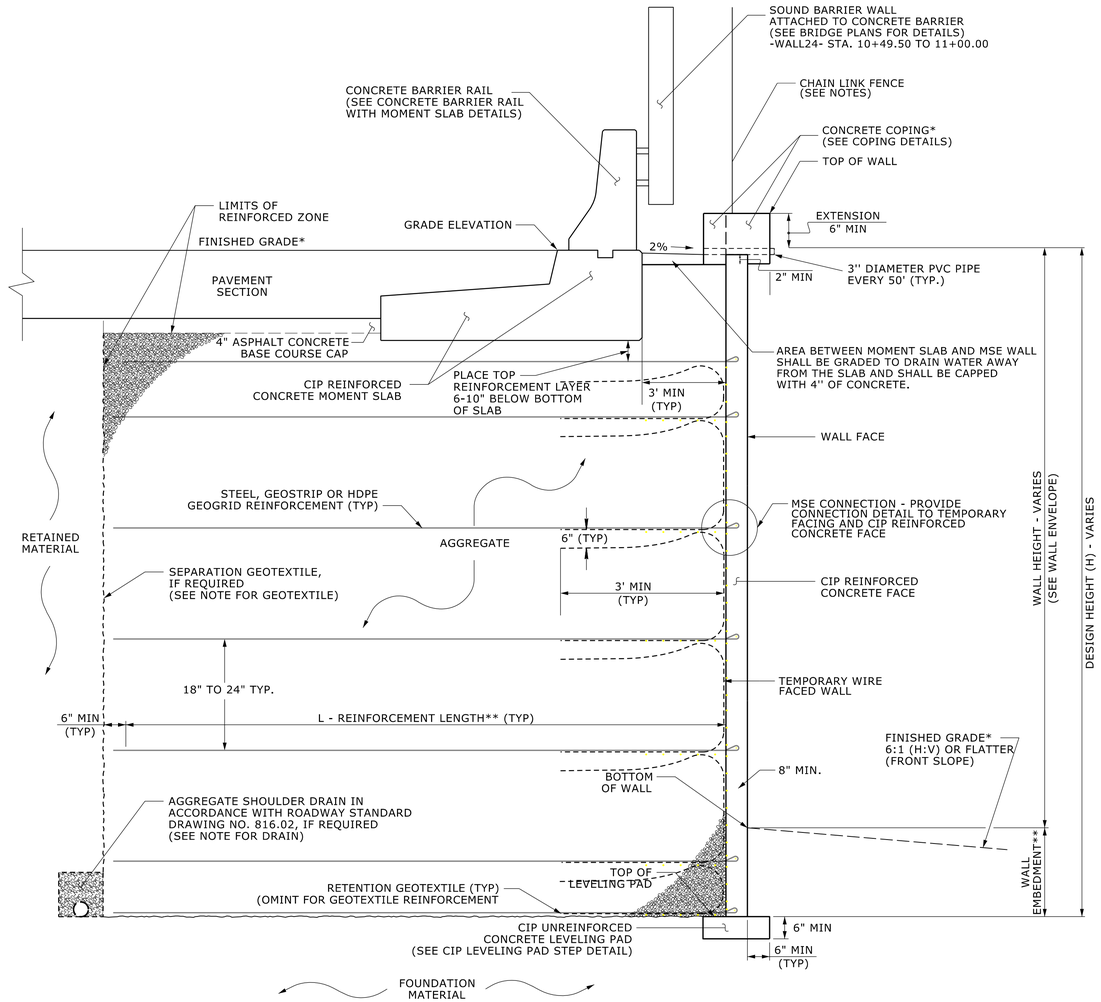
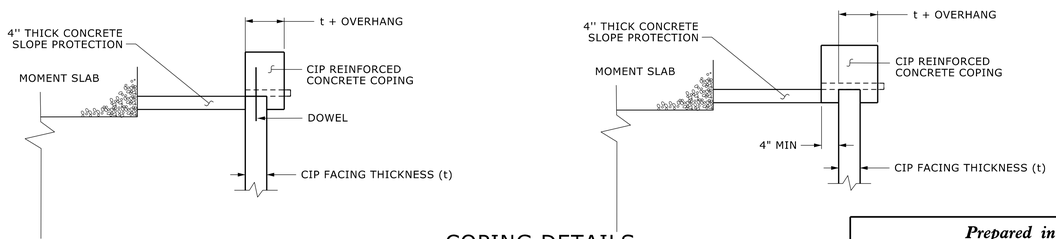


CIP MSE WALL - TYPICAL SECTION

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



COPING DETAILS

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

PREPARED BY: ALMULLA, H.	DATE: 04/14/2026
REVIEWED BY: RIGGS, JR., A. F.	DATE: 04/14/2026

Prepared in the Office of:

Terracon

3150 SPRING FOREST ROAD, SUITE 100
RALEIGH, NORTH CAROLINA 27616
NC REGISTERED ENGINEERING FIRM: F-0869
NC REGISTERED GEOLOGIC FIRM: C-367

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

GEOTECHNICAL ENGINEERING UNIT

PROJECT NO.: 34165.1.6 (I-2513AC)
BUNCOMBE COUNTY
STATION: STA. 10+49.50 TO 14+07.93 -WALL24-
SHEET 2 OF 5 WALL ID RW-24

RETAINING WALL NO. 24
CIP MECHANICALLY STABILIZED
EARTH WALL
TYPICAL SECTION AND NOTES

REVISIONS

NO.	BY	DATE	NO.	BY	DATE
1	FIELDS, W. D.	5/4/26	4	FIELDS, W. D.	6/8/26
2	FIELDS, W. D.	5/12/26	5	FIELDS, W. D.	5/26/26
3	FIELDS, W. D.	5/26/26	6	FIELDS, W. D.	6/17/26

SHEET NO.

Docusign Envelope ID: EF18CD18-6AEC-83D9-8039-EBE8600AB616

PROJECT REFERENCE NO.	SHEET NO.
I-2513AC	W-61

GEOTECHNICAL ENGINEER

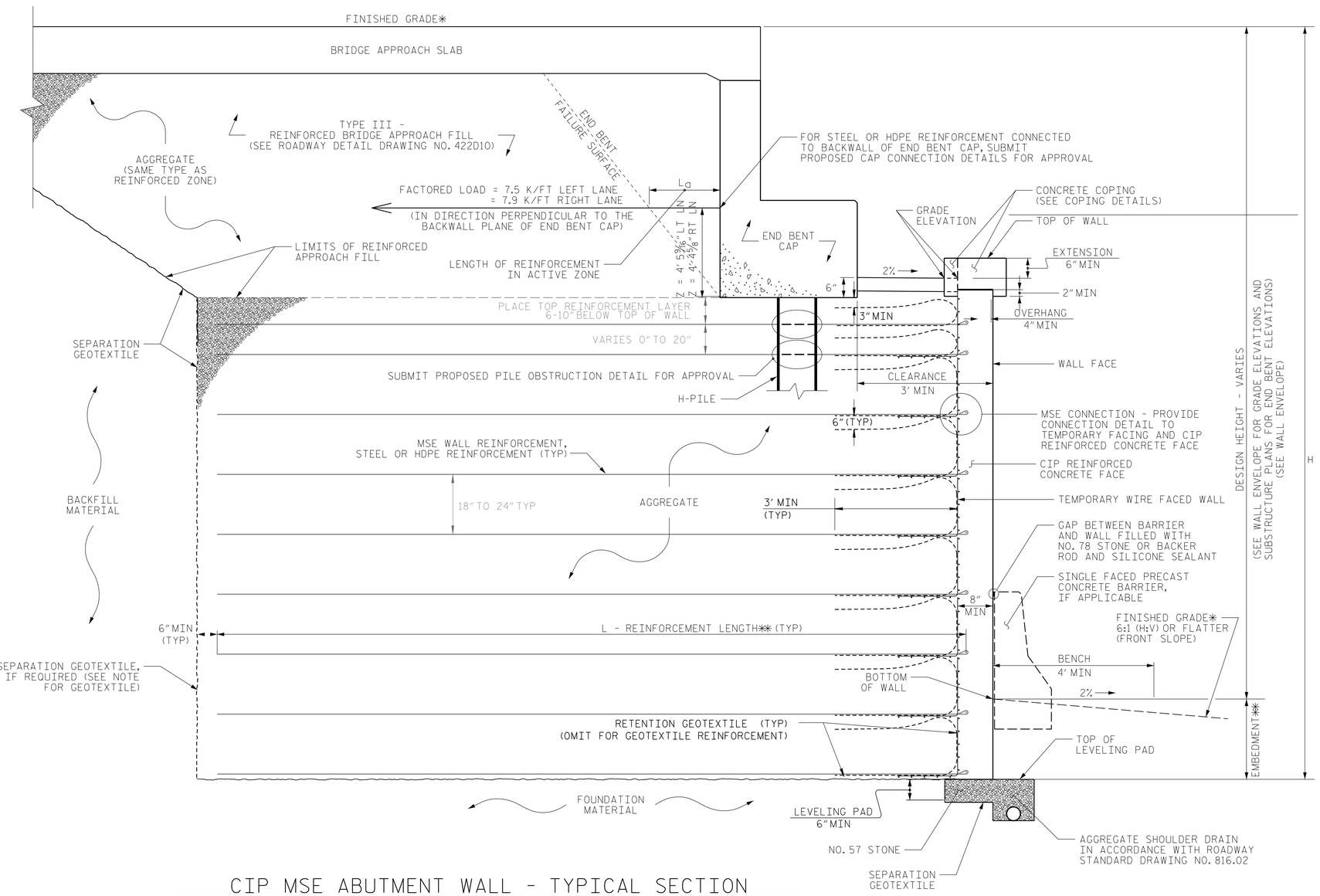
NORTH CAROLINA PROFESSIONAL SEAL 014155 ENGINEER ELMER F. RIGGS JR.

DocuSigned by: Elmer Riggs Jr. C2F6ACA84D374B1... SIGNATURE 10/21/2026 DATE

ENGINEER

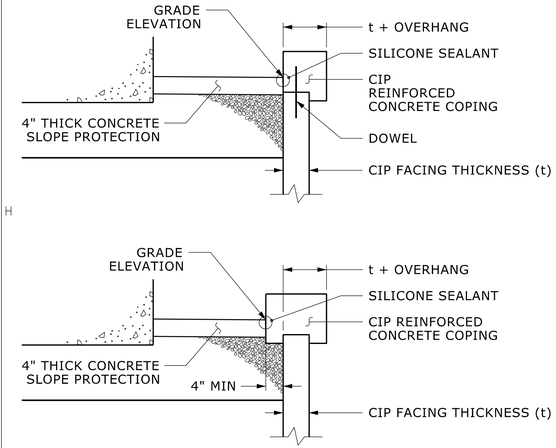
SIGNATURE DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



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 EMBEDMENT AND REINFORCEMENT LENGTH REQUIREMENTS.



COPING DETAILS

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

PROJECT NO.: 34165.1.6 (I-2513AC)

BUNCOMBE COUNTY

STATION: STA. 10+49.50 TO 14+07.93 -WALL24-

SHEET 3 OF 5 WALL ID RW-24

PREPARED BY: ALMULLA, H.	DATE: 04/14/2026
REVIEWED BY: RIGGS, Jr., A. F.	DATE: 04/14/2026

Prepared in the Office of:

Terracon

3150 SPRING FOREST ROAD, SUITE 100
RALEIGH, NORTH CAROLINA 27616
NC REGISTERED ENGINEERING FIRM: F-0869
NC REGISTERED GEOLOGIC FIRM: C-367

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS

GEOTECHNICAL ENGINEERING UNIT

RETAINING WALL NO.24
CIP MECHANICALLY STABILIZED EARTH WALL
TYPICAL AND COPING DETAILS

REVISIONS

NO.	BY	DATE	NO.	BY	DATE
1	FIELDS, W. D.	5/4/26	4	FIELDS, W. D.	6/8/26
2	FIELDS, W. D.	5/12/26	5	FIELDS, W. D.	5/26/26
3	FIELDS, W. D.	5/26/26	6	FIELDS, W. D.	6/17/26

SHEET NO.

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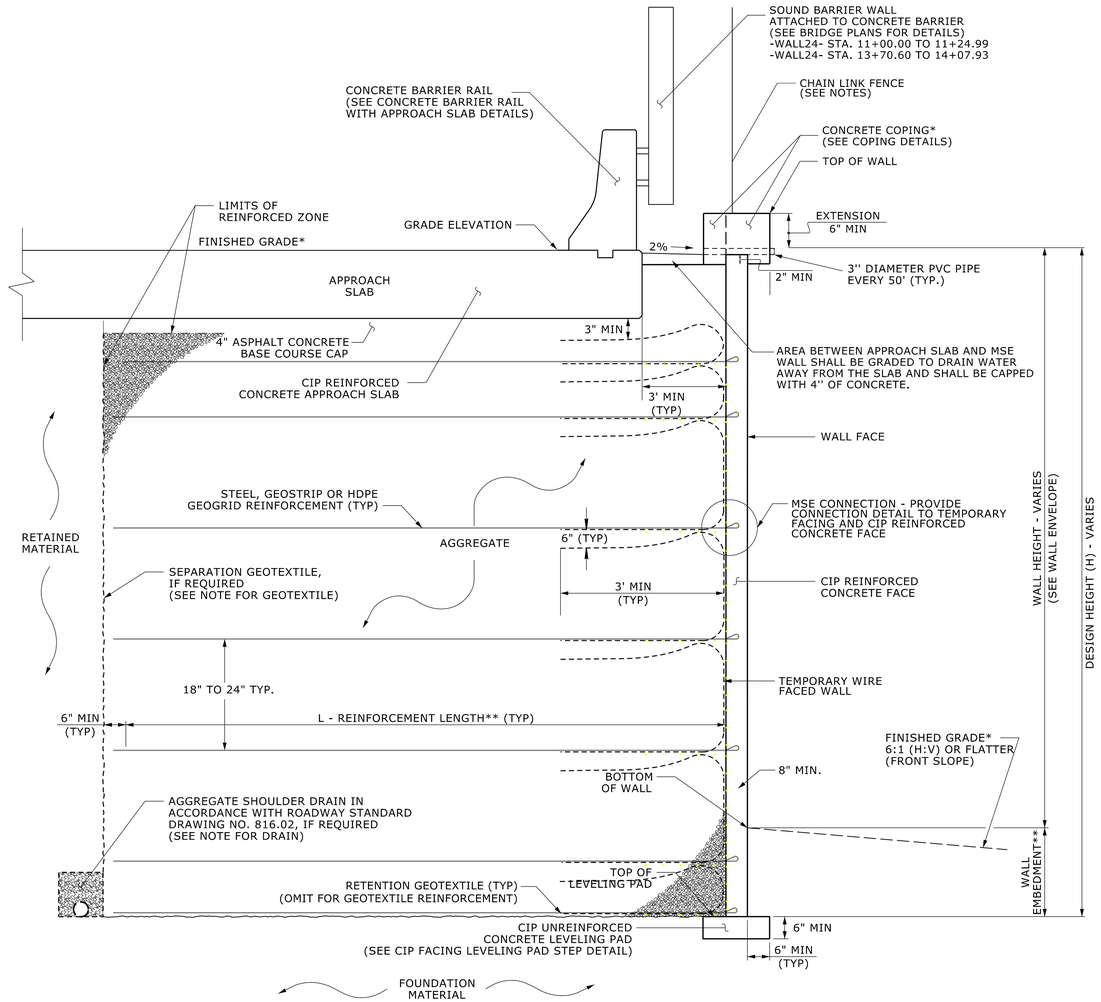
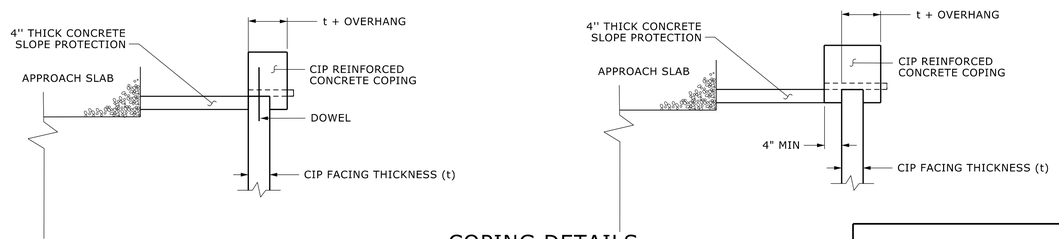


CIP MSE WALL - TYPICAL SECTION

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



COPING DETAILS

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

PREPARED BY: ALMULLA, H.	DATE: 04/14/2026
REVIEWED BY: RIGGS, JR., A. F.	DATE: 04/14/2026

Prepared in the Office of:

Terracon
3150 SPRING FOREST ROAD, SUITE 100
RALEIGH, NORTH CAROLINA 27616
NC REGISTERED ENGINEERING FIRM: P-0869
NC REGISTERED GEOLOGIC FIRM: C-367

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

GEOTECHNICAL
ENGINEERING UNIT

PROJECT REFERENCE NO.	SHEET NO.
I-2513AC	W-62

ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 014155 ENGINEER ALBERT F. RIGGS, JR.

DocuSigned by: Albert Riggs Jr. C2F6ACA84D274B1...

10/21/2026

SIGNATURE DATE

ENGINEER

SIGNATURE DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PROJECT NO.: 34165.1.6 (I-2513AC)

BUNCOMBE COUNTY

STATION: STA. 10+49.50 TO 14+07.93 -WALL24-

SHEET 4 OF 5 WALL ID RW-24

RETAINING WALL NO. 24
CIP MECHANICALLY STABILIZED
EARTH WALL
TYPICAL SECTION AND NOTES

REVISIONS

NO.	BY	DATE	NO.	BY	DATE
1	FIELDS, W. D.	5/4/26	5	FIELDS, W. D.	5/26/26
2	FIELDS, W. D.	5/12/26	4	FIELDS, W. D.	6/8/26
3	FIELDS, W. D.	5/26/26	6	FIELDS, W. D.	6/17/26

SHEET NO.

Docusign Envelope ID: 7012E7F6-4C95-8442-8086-3B93AA93A8AE

PROJECT REFERENCE NO.	SHEET NO.
I-2513AC	W-63

GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 014155 ENGINEER JENNIFER F. RIGGS

DocuSigned by: Jennifer Riggs Jr. C2F8ACA8B0374B1...

SIGNATURE 10/21/2026 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 TYPE 2 BRIDGE APPROACH FILL, SEE BRIDGE APPROACH FILLS PROVISION AND ROADWAY STANDARD DRAWING NO. 423.03.

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

A CONCRETE BARRIER RAIL WITH MOMENT SLAB IS REQUIRED ABOVE RETAINING WALL NO. 24. SEE PLANS FOR CONCRETE BARRIER RAIL WITH MOMENT SLAB DETAILS.

AT THE CONTRACTOR'S OPTION, USE FINE AGGREGATE IN THE REINFORCED ZONE OF RETAINING WALL NO. 24.

CIP REINFORCED CONCRETE COPING AND FACING IS REQUIRED FOR RETAINING WALL NO 24.

AN ARCHITECTURAL CONCRETE SURFACE TREATMENT IS REQUIRED FOR RETAINING WALL NO. 24. SEE "ARCHITECTURAL CONCRETE SURFACE TREATMENT" SPECIAL PROVISION

CLOSE COORDINATION WITH STRUCTURAL PLANS IS REQUIRED. SEE BRIDGE PLANS FOR ADDITIONAL DETAILS FOR REQUIRED WALL AESTHETICS AND GEOMETRIC TIE-IN BETWEEN MSE WALL, CAST-IN-PLACE FACING, AND CAST-IN-PLACE COPINGS THAT ACHIEVE THE DESIRED AESTHETIC RESULT AS DEPICTED IN THE STRUCTURAL PLAN DETAILS. THESE DETAILS SHALL BE APPROVED BY THE ENGINEER BEFORE BEGINNING CONSTRUCTION OF THE BRIDGE 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. 24".

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

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

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

A SEPARATION GEOTEXTILE IS REQUIRED AT THE BACK OF THE REINFORCED ZONE FOR RETAINING WALL NO. 24.

A DRAIN IS REQUIRED FOR RETAINING WALL NO. 24.

BEFORE BEGINNING MSE WALL DESIGN FOR RETAINING WALL NO. 24, 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. 24 FOR THE FOLLOWING:
1) DESIGN HEIGHT (H) = WALL HEIGHT + WALL EMBEDMENT
2) DESIGN LIFE = 100 YEARS
3) MAXIMUM FACTORED VERTICAL PRESSURE ON FOUNDATION MATERIAL = 4,340PSF
4) MINIMUM REINFORCEMENT LENGTH (L) = 0.7(H) OR 6.0 FT, WHICHEVER IS LONGER
5) MINIMUM EMBEDMENT ELEVATION = 2.5 FT
6) REINFORCED ZONE AGGREGATE PARAMETERS:

AGGREGATE TYPE*	UNIT WEIGHT (γ) PCF	FRICTION ANGLE (φ)	COHESION (c)
COARSE	110	DEGREES	PSF
FINE	115	38	0
*SEE MSE RETAINING WALLS PROVISION FOR COARSE AND FINE AGGREGATE MATERIAL REQUIREMENTS.			

7) IN-SITU ASSUMED MATERIAL PARAMETERS:

MATERIAL TYPE	UNIT WEIGHT (γ) PCF	FRICTION ANGLE (φ)	COHESION (c)
RETAINED	120	DEGREES	PSF
FOUNDATION	115	30	0

THE WALL SITE FOR RETAINING WALL NO. 24 LOCATED AT END BENT NO. 1 IS CLASSIFIED AS AASHTO SITE CLASS D.

DESIGN RETAINING WALL NO. 24 FOR A LIVE LOAD (TRAFFIC) SURCHARGE.

DESIGN RETAINING WALL NO. 24 TO ACCOUNT FOR WIND EXPOSURE CATAGORY B (WIND PRESSURE = 27 PSF) WHERE SOUND BARRIER WALL IS ATTACHED TO THE CONCRETE BARRIER WALL (-WALL24- STA. 10+49.50 TO 11+00.00).

DESIGN REINFORCEMENT CONNECTED TO END BENT CAPS FOR FACTORED LOAD AND LENGTH OF REINFORCEMENT IN ACTIVE ZONE (L) SHOWN. CAST REINFORCEMENT OR CONNECTORS INTO CAP BACKWALL FOR END BENT NO. 1 LOCATED AT STATION 105+03 -L-. MAINTAIN A CLEARANCE OF AT LEAST 3" BETWEEN REINFORCEMENT OR CONNECTORS AND REINFORCING STEEL IN CAP.

FOUNDATIONS FOR SIGNS, LIGHTING or SIGNALS WILL BE LOCATED BEHIND RETAINING WALL NO. 24 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. 24.

FOUNDATIONS FOR END BENT NO. 1 LOCATED AT STATION 105+03 -L- MAY INTERFERE WITH REINFORCEMENT FOR RETAINING WALL NO. 24. SEE "FOUNDATION LAYOUT" SHEET FOR FOUNDATION LOCATIONS.

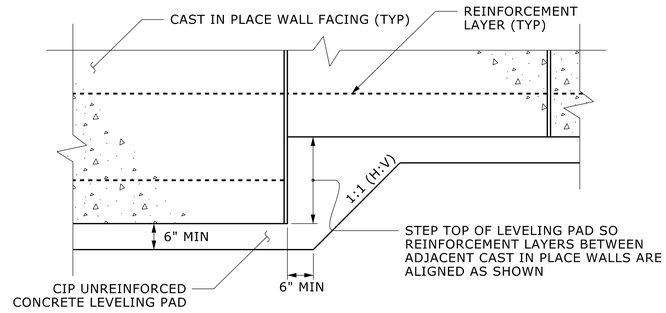
DO NOT PLACE LEVELING PAD CONCRETE, AGGREGATE OR REINFORCEMENT FOR RETAINING WALL NO. 24 UNTIL EXCAVATION DIMENSIONS AND FOUNDATION MATERIAL ARE APPROVED.

DESIGN RETAINING WALL NO. 24 TO INCORPORATE DRAIN DROP INLET STRUCTURES AND PIPES WITHIN REINFORCED ZONE OF WALL NO. 24 INCLUDE DETAILS IN MSE DESIGN SUBMITTAL.

"TEMPORARY SHORING" IS REQUIRED FOR RETAINING WALL NO. 24 IN ACCORDANCE WITH THE TEMPORARY SHORING PROVISION. SEE ROADWAY, STRUCTURE or TRAFFIC CONTROL PLANS.

48" BLACK VINYL COATED CHAIN LINK FENCE IS REQUIRED FULL LENGTH OF WALL, WHERE NOT UNDER BRIDGE. SEE ROADWAY STANDARD 866.06 (ROADWAY DETAIL AND PAY ITEM).

CONDUIT EMBEDDED IN CIP WALL FACE, SEE LIGHTING PLANS



CAST IN PLACE
LEVELING PAD STEP DETAIL

PROJECT NO.: 34165.1.6 (I-2513AC)

BUNCOMBE COUNTY

STATION: STA. 10+49.50 TO 14+07.93 -WALL24-

SHEET 5 OF 5 WALL ID RW-24

PREPARED BY: ALMULLA, H.	DATE: 04/14/2026
REVIEWED BY: RIGGS, Jr., A. F.	DATE: 04/14/2026

Prepared in the Office of:

Terracon

3150 SPRING FOREST ROAD, SUITE 100
RALEIGH, NORTH CAROLINA 27616
NC REGISTERED ENGINEERING FIRM: F-0869
NC REGISTERED GEOLOGIC FIRM: C-367

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS

GEOTECHNICAL ENGINEERING UNIT

RETAINING WALL NO. 24
CIP MECHANICALLY STABILIZED EARTH WALL
LEVELING PAD STEP DETAIL AND NOTES

REVISIONS

NO.	BY	DATE	NO.	BY	DATE
1	FIELDS, W. D.	5/4/26	4	FIELDS, W. D.	6/8/26
2	FIELDS, W. D.	5/12/26	5	FIELDS, W. D.	5/26/26
3	FIELDS, W. D.	5/26/26	6	FIELDS, W. D.	6/17/26

SHEET NO.

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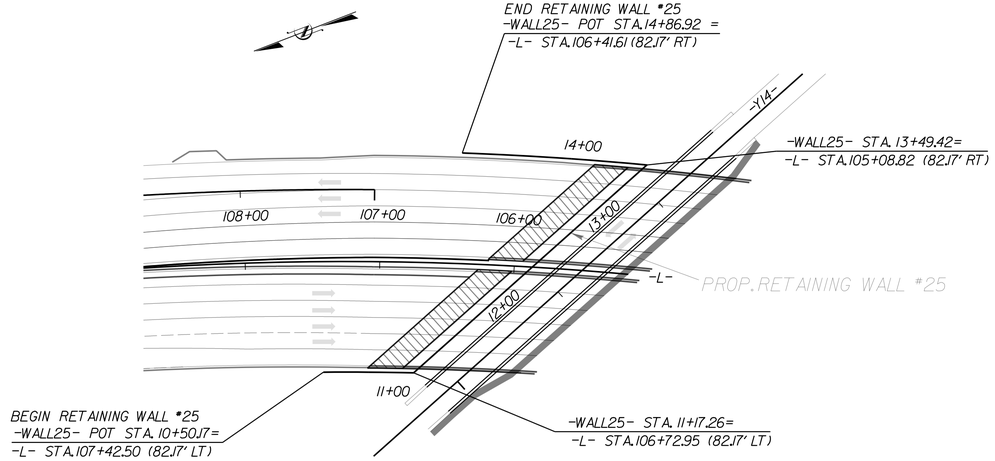
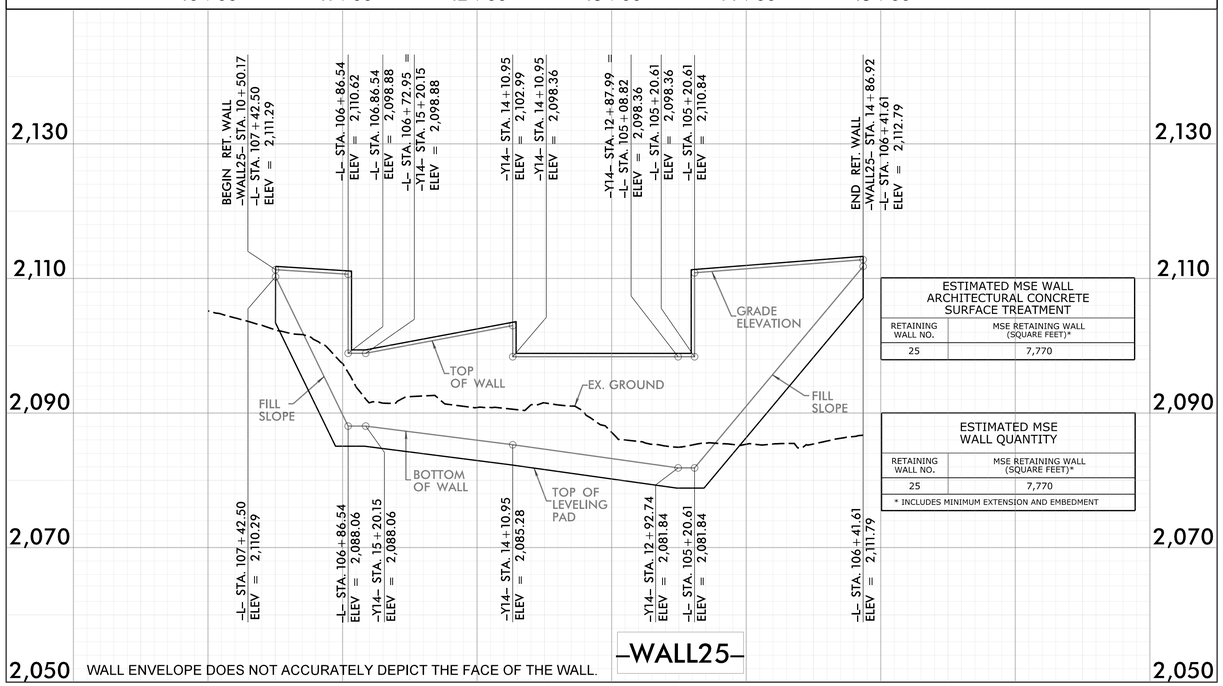
MSE RETAINING WALL NO.25 PLAN



MSE RETAINING WALL NO.25 ENVELOPE



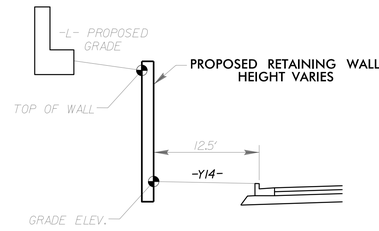
ESTIMATED MSE WALL ARCHITECTURAL CONCRETE SURFACE TREATMENT

RETAINING WALL NO.	MSE RETAINING WALL (SQUARE FEET)*
25	7,770

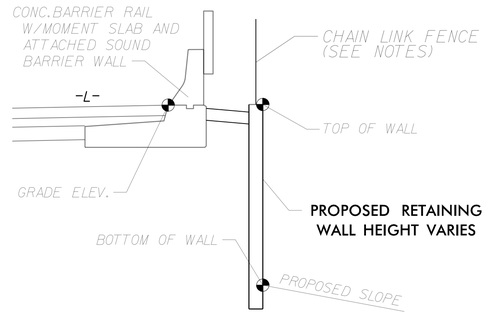
ESTIMATED MSE WALL QUANTITY

RETAINING WALL NO.	MSE RETAINING WALL (SQUARE FEET)*
25	7,770

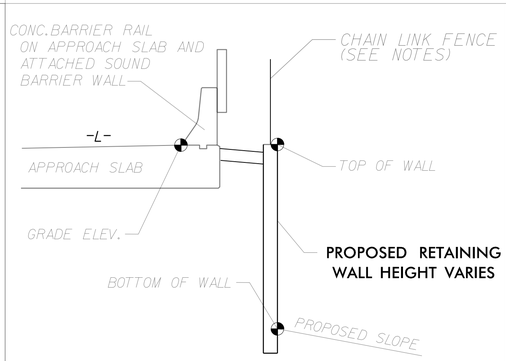
* INCLUDES MINIMUM EXTENSION AND EMBEDMENT



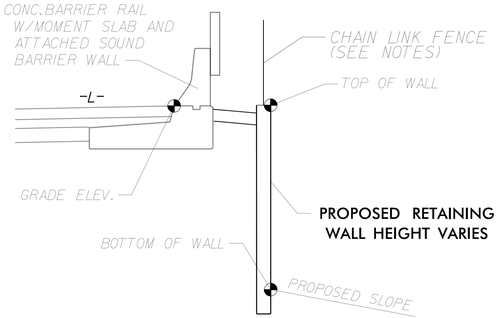
RETAINING WALL TYPICAL SECTION
–WALL25– STA. 11+17.26 TO STA. 13+49.42



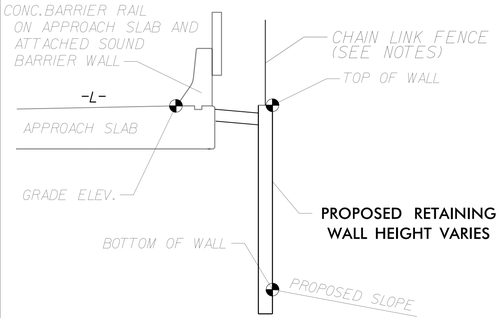
RETAINING WALL TYPICAL SECTION
–WALL25– STA. 13+87.41 TO 14+86.92



RETAINING WALL TYPICAL SECTION
–WALL25– STA. 13+62.42 TO 13+87.41



RETAINING WALL TYPICAL SECTION
–WALL25– STA. 10+50.17 TO 10+83.77



RETAINING WALL TYPICAL SECTION
–WALL25– STA. 10+83.77 TO 11+08.43

PROJECT REFERENCE NO.	SHEET NO.
I-2513AC	W-64

GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 014155 ENGINEER ELMER F. RIGGS, JR.

DocuSigned by: Elmer Riggs Jr. C2F6ACA84D274B1... 10/21/2026

SIGNATURE DATE

ENGINEER

DATE

SIGNATURE DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PROJECT NO.: 34165.1.6 (I-2513AC)

BUNCOMBE COUNTY

STATION: STA. 10+50.17 TO 14+86.92 -WALL25-

SHEET 1 OF 5 WALL ID RW-25

PREPARED BY: ALMULLA, H.	DATE: 04/14/2026
REVIEWED BY: RIGGS, JR., A. F.	DATE: 04/14/2026

Prepared in the Office of:

Terracon

3150 SPRING FOREST ROAD, SUITE 100
RALEIGH, NORTH CAROLINA 27616
NC REGISTERED ENGINEERING FIRM: F-0869
NC REGISTERED GEOLOGIC FIRM: C-367

RETAINING WALL NO. 25
CIP MECHANICALLY STABILIZED EARTH WALL
PLAN AND ENVELOPE

REVISIONS

NO.	BY	DATE	NO.	BY	DATE
1	FIELDS, W. D.	6/8/26	3		
2			4		

SHEET NO.

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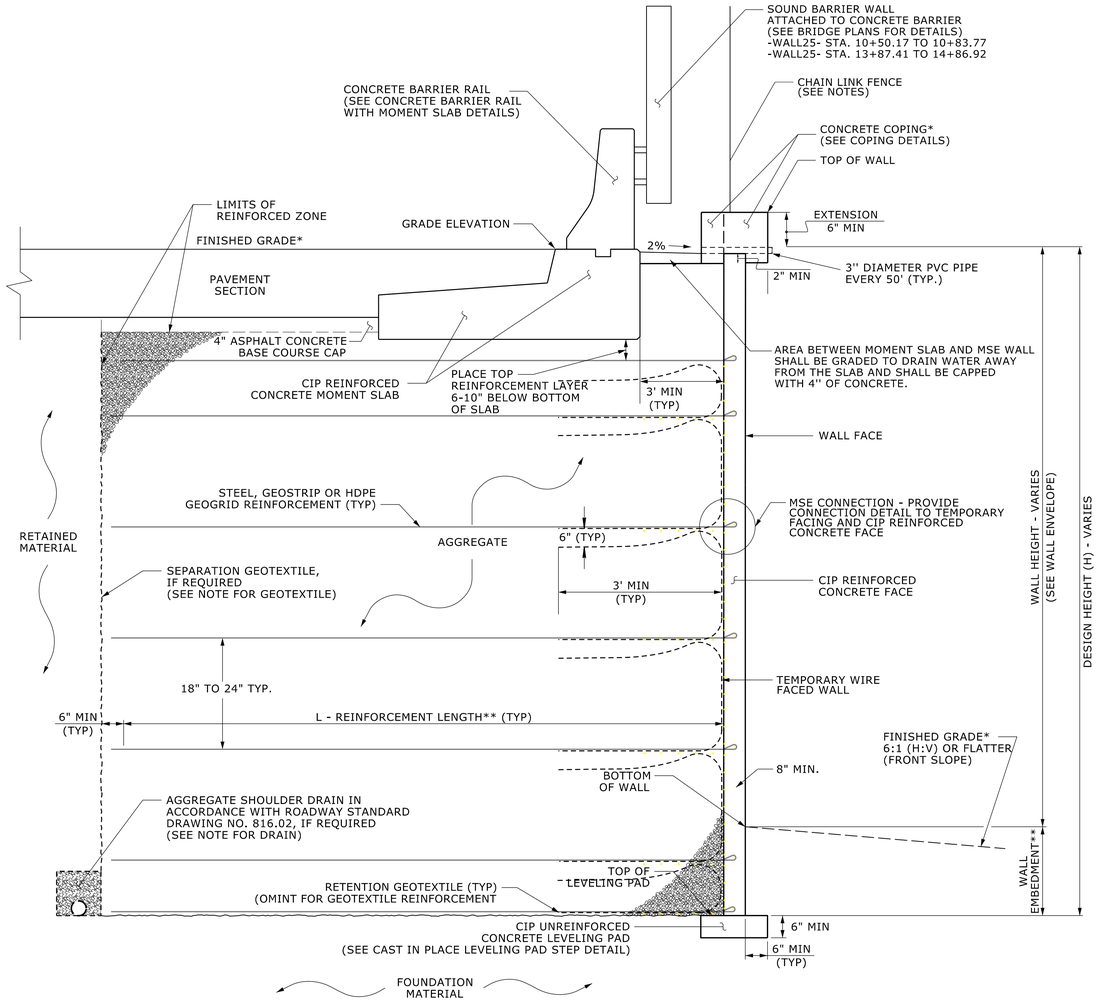
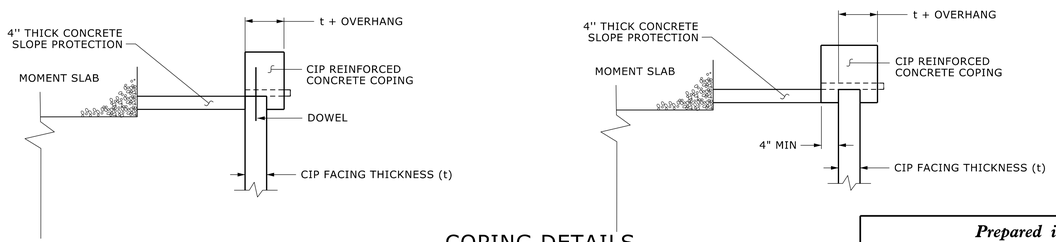


CIP MSE WALL - TYPICAL SECTION

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



COPING DETAILS

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

PREPARED BY: ALMULLA, H.	DATE: 04/14/2026
REVIEWED BY: RIGGS, JR., A. F.	DATE: 04/14/2026

PROJECT REFERENCE NO.	SHEET NO.
I-2513AC	W-65

ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 014155 ENGINEER ALMER F. RIGGS, JR.

DocuSigned by: Almer Riggs Jr. C2F6ACA84D274B1... 10/21/2026

SIGNATURE DATE

ENGINEER

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PROJECT NO.: 34165.1.6 (I-2513AC)

BUNCOMBE COUNTY

STATION: STA. 10+50.17 TO 14+86.92 -WALL25-

SHEET 2 OF 5 WALL ID RW-25

Prepared in the Office of:

Terracon

3150 SPRING FOREST ROAD, SUITE 100
RALEIGH, NORTH CAROLINA 27616
NC REGISTERED ENGINEERING FIRM: P-0869
NC REGISTERED GEOLOGIC FIRM: C-367

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

GEOTECHNICAL ENGINEERING UNIT

RETAINING WALL NO. 25
CIP MECHANICALLY STABILIZED
EARTH WALL
TYPICAL SECTION AND NOTES

REVISIONS

NO.	BY	DATE	NO.	BY	DATE
1	FIELDS, W. D.	5/4/26	4	FIELDS, W. D.	6/8/26
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SHEET NO.

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PROJECT REFERENCE NO.	SHEET NO.
I-2513AC	W-66

GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 014155 ENGINEER ALMER F. RIGGS JR.

DocuSigned by: Almer Riggs Jr. C2F6AC4A62D14B1...

SIGNATURE 10/21/2026 DATE

ENGINEER

SIGNATURE DATE

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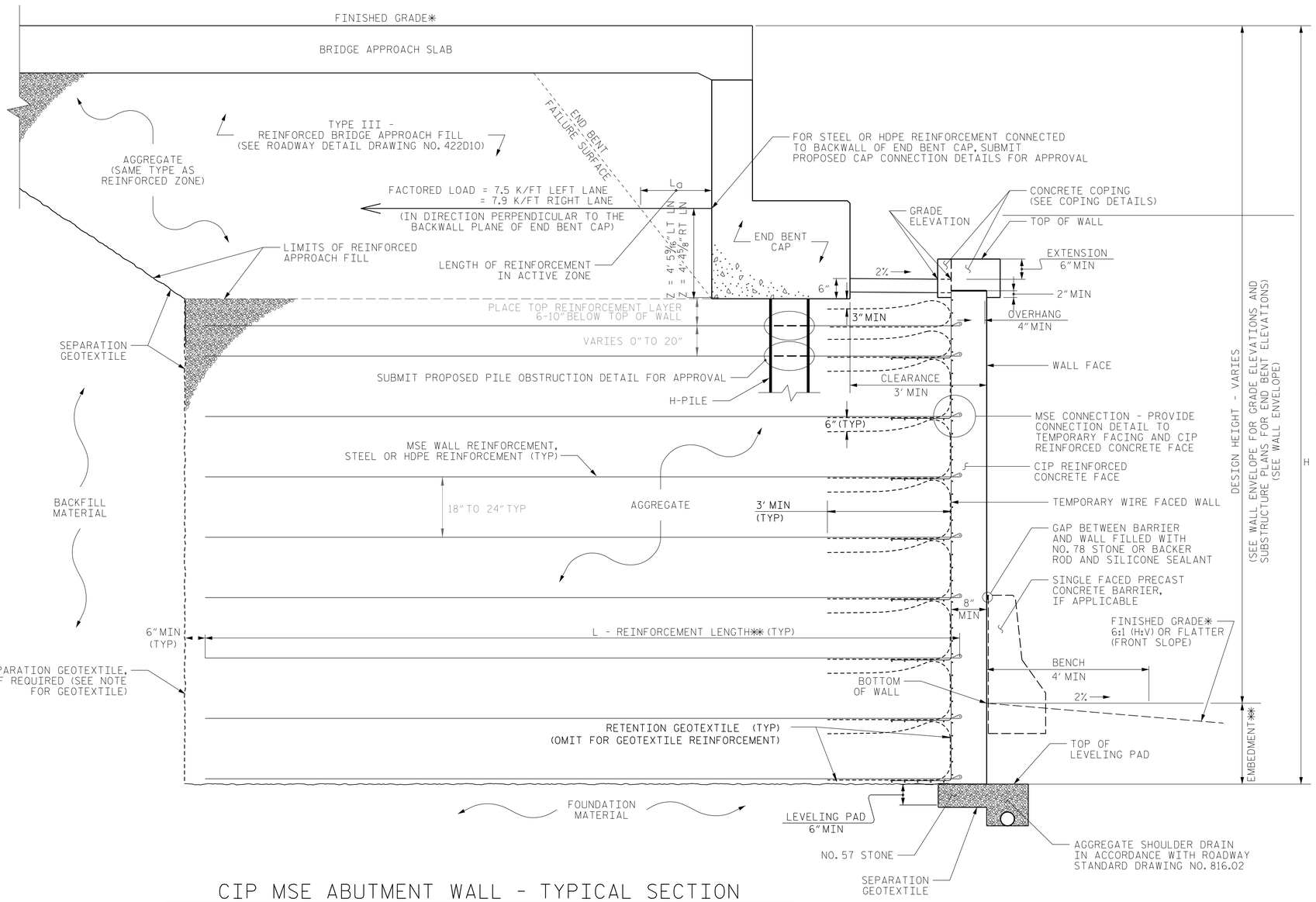
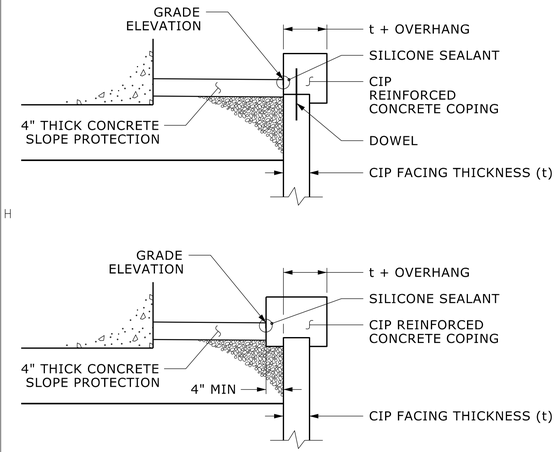


CIP MSE ABUTMENT WALL - TYPICAL SECTION

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



COPING DETAILS

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

PROJECT NO.: 34165.1.6 (I-2513AC)

BUNCOMBE COUNTY

STATION: STA. 10+50.17 TO 14+86.92 -WALL25-

SHEET 3 OF 5 WALL ID RW-25

PREPARED BY: ALMULLA, H.	DATE: 04/14/2026
REVIEWED BY: RIGGS, Jr., A. F.	DATE: 04/14/2026

Prepared in the Office of:

Terracon

3150 SPRING FOREST ROAD, SUITE 100
RALEIGH, NORTH CAROLINA 27616
NC REGISTERED ENGINEERING FIRM: F-0869
NC REGISTERED GEOLOGIC FIRM: C-367

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS

GEOTECHNICAL ENGINEERING UNIT

RETAINING WALL NO.25
CIP MECHANICALLY STABILIZED EARTH WALL
TYPICAL AND COPING DETAILS

REVISIONS

NO.	BY	DATE	NO.	BY	DATE
1	FIELDS, W. D.	5/4/26	4	FIELDS, W. D.	6/8/26
2	FIELDS, W. D.	5/12/26	5	FIELDS, W. D.	5/26/26
3	FIELDS, W. D.	5/26/26	6	FIELDS, W. D.	6/17/26

SHEET NO.

Docusign Envelope ID: 0A511B8B-5FBF-8DF2-80E2-308EB48BD99A

PROJECT REFERENCE NO.	SHEET NO.
I-2513AC	W-67

ENGINEER

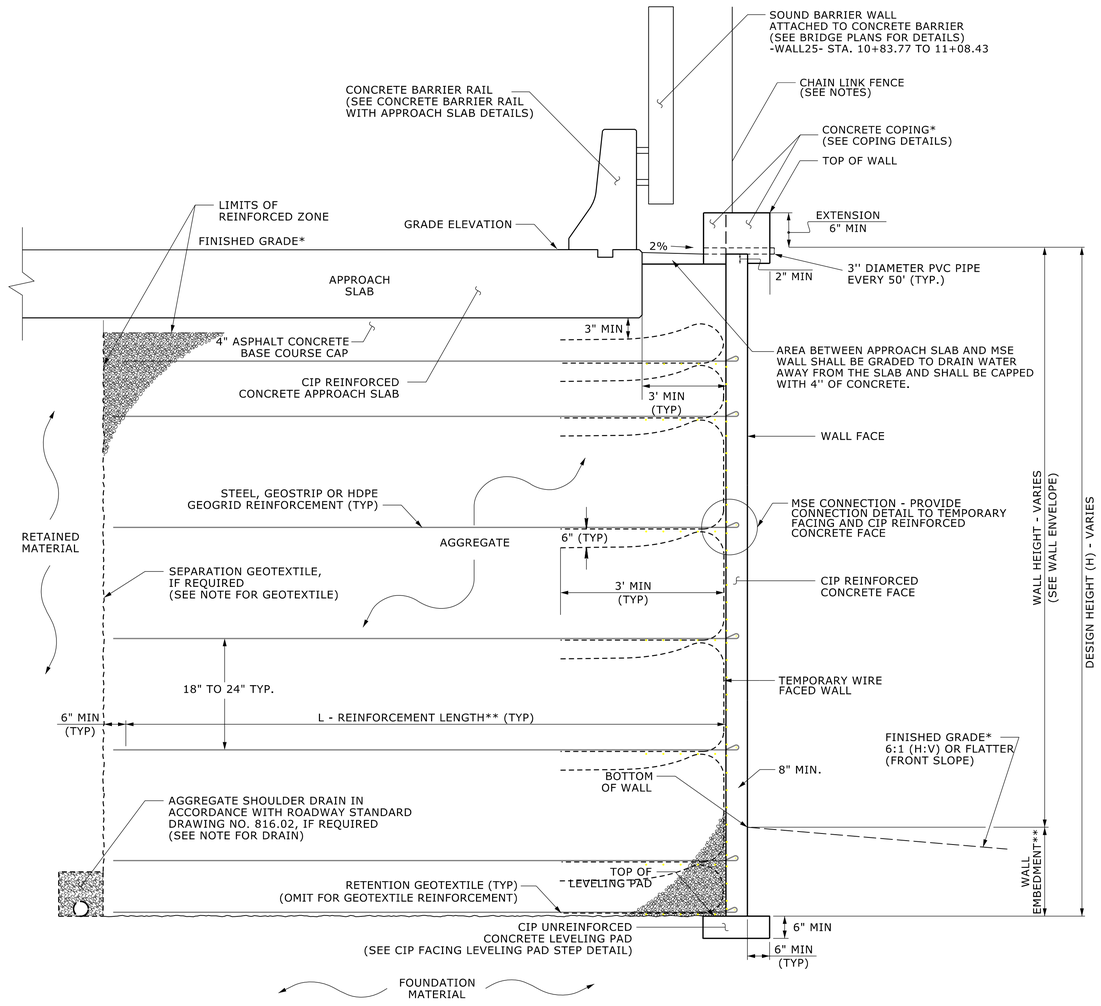
NORTH CAROLINA PROFESSIONAL SEAL 014155 ENGINEER WENER F RIGGS, JR.

DocuSigned by: Wener Riggs Jr. 10/21/2026
C2F6ACA84D274B1...
SIGNATURE DATE

ENGINEER

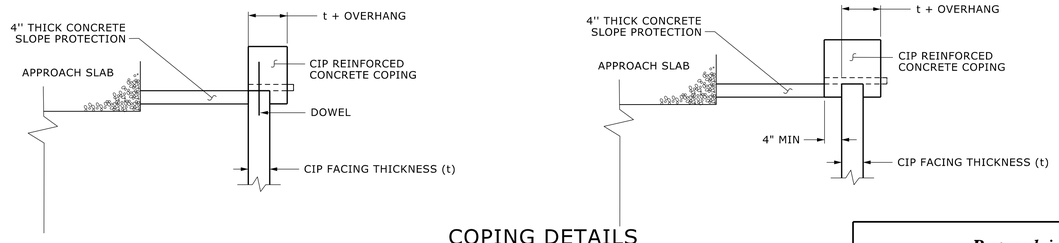
SIGNATURE DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



CIP MSE WALL - TYPICAL SECTION

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



COPING DETAILS

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

PROJECT NO.: 34165.1.6 (I-2513AC)
BUNCOMBE COUNTY
STATION: STA. 10+50.17 TO 14+86.92 -WALL25-
SHEET 4 OF 5 WALL ID RW-25

PREPARED BY: ALMULLA, H.	DATE: 04/14/2026
REVIEWED BY: RIGGS, JR., A. F.	DATE: 04/14/2026

Prepared in the Office of:

Terracon
3150 SPRING FOREST ROAD, SUITE 100
RALEIGH, NORTH CAROLINA 27616
NC REGISTERED ENGINEERING FIRM: F-0869
NC REGISTERED GEOLOGIC FIRM: C-367

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS

GEOTECHNICAL ENGINEERING UNIT

RETAINING WALL NO. 25
CIP MECHANICALLY STABILIZED EARTH WALL
TYPICAL SECTION AND NOTES

REVISIONS

NO.	BY	DATE	NO.	BY	DATE
1	FIELDS, W. D.	5/4/26	5	FIELDS, W. D.	5/26/26
2	FIELDS, W. D.	5/12/26	4	FIELDS, W. D.	6/8/26
3	FIELDS, W. D.	5/26/26	6	FIELDS, W. D.	6/17/26

SHEET NO.

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PROJECT REFERENCE NO.	SHEET NO.
I-2513AC	W-68

GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 014155 ENGINEER ALMER F. RIGGS JR.

DocuSigned by: Almer Riggs Jr. 10/21/2026
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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 TYPE 2 BRIDGE APPROACH FILL, SEE BRIDGE APPROACH FILLS PROVISION AND ROADWAY STANDARD DRAWING NO. 423.03.

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

A CONCRETE BARRIER RAIL WITH MOMENT SLAB IS REQUIRED ABOVE RETAINING WALL NO. 25. SEE PLANS FOR CONCRETE BARRIER RAIL WITH MOMENT SLAB DETAILS.

AT THE CONTRACTOR'S OPTION, USE FINE AGGREGATE IN THE REINFORCED ZONE OF RETAINING WALL NO. 25.

CIP REINFORCED CONCRETE COPING AND FACING IS REQUIRED FOR RETAINING WALL NO 25.

AN ARCHITECTURAL CONCRETE SURFACE TREATMENT IS REQUIRED FOR RETAINING WALL NO. 25. SEE "ARCHITECTURAL CONCRETE SURFACE TREATMENT" SPECIAL PROVISION

CLOSE COORDINATION WITH STRUCTURAL PLANS IS REQUIRED. SEE BRIDGE PLANS FOR ADDITIONAL DETAILS FOR REQUIRED WALL AESTHETICS AND GEOMETRIC TIE-IN BETWEEN MSE WALL, CAST-IN-PLACE FACING, AND CAST-IN-PLACE COPINGS THAT ACHIEVE THE DESIRED AESTHETIC RESULT AS DEPICTED IN THE STRUCTURAL PLAN DETAILS. THESE DETAILS SHALL BE APPROVED BY THE ENGINEER BEFORE BEGINNING CONSTRUCTION OF THE BRIDGE 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. 25".

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

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

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

A SEPARATION GEOTEXTILE IS REQUIRED AT THE BACK OF THE REINFORCED ZONE FOR RETAINING WALL NO. 25.

A DRAIN IS REQUIRED FOR RETAINING WALL NO. 25.

BEFORE BEGINNING MSE WALL DESIGN FOR RETAINING WALL NO. 25, 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. 25 FOR THE FOLLOWING:
1) DESIGN HEIGHT (H) = WALL HEIGHT + WALL EMBEDMENT
2) DESIGN LIFE = 100 YEARS
3) MAXIMUM FACTORED VERTICAL PRESSURE ON FOUNDATION MATERIAL = 5,820 PSF
4) MINIMUM REINFORCEMENT LENGTH (L) = 0.7(H) OR 6.0 FT, WHICHEVER IS LONGER
5) MINIMUM EMBEDMENT ELEVATION = 3.0 FT
6) REINFORCED ZONE AGGREGATE PARAMETERS:

AGGREGATE TYPE*	UNIT WEIGHT (γ) PCF	FRICTION ANGLE (φ)	COHESION (c)
COARSE	110	DEGREES	PSF
FINE	115	38	0
*SEE MSE RETAINING WALLS PROVISION FOR COARSE AND FINE AGGREGATE MATERIAL REQUIREMENTS.			

7) IN-SITU ASSUMED MATERIAL PARAMETERS:

MATERIAL TYPE	UNIT WEIGHT (γ) PCF	FRICTION ANGLE (φ)	COHESION (c)
RETAINED	120	DEGREES	PSF
FOUNDATION	115	30	0

THE WALL SITE FOR RETAINING WALL NO. 25 LOCATED AT END BENT NO. 1 IS CLASSIFIED AS AASHTO SITE CLASS D.

DESIGN RETAINING WALL NO. 25 FOR A LIVE LOAD (TRAFFIC) SURCHARGE.

DESIGN RETAINING WALL NO. 25 TO ACCOUNT FOR WIND EXPOSURE CATAGORY B (WIND PRESSURE = 27 PSF) WHERE SOUND BARRIER WALL IS ATTACHED TO THE CONCRETE BARRIER WALL (-WALL25- STA. 10+50.17 TO 110+83.77 AND -WALL25- STA. 13+87.41 TO 14+86.92).

DESIGN REINFORCEMENT CONNECTED TO END BENT CAPS FOR FACTORED LOAD AND LENGTH OF REINFORCEMENT IN ACTIVE ZONE (L) SHOWN. CAST REINFORCEMENT OR CONNECTORS INTO CAP BACKWALL FOR END BENT NO. 1 LOCATED AT STATION 105+97 -L-. MAINTAIN A CLEARANCE OF AT LEAST 3" BETWEEN REINFORCEMENT OR CONNECTORS AND REINFORCING STEEL IN CAP.

FOUNDATIONS FOR SIGNS, LIGHTING or SIGNALS WILL BE LOCATED BEHIND RETAINING WALL NO. 25 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. 25.

FOUNDATIONS FOR END BENT NO. 1 LOCATED AT STATION 105+97 -L- MAY INTERFERE WITH REINFORCEMENT FOR RETAINING WALL NO. 25. SEE "FOUNDATION LAYOUT" SHEET FOR FOUNDATION LOCATIONS.

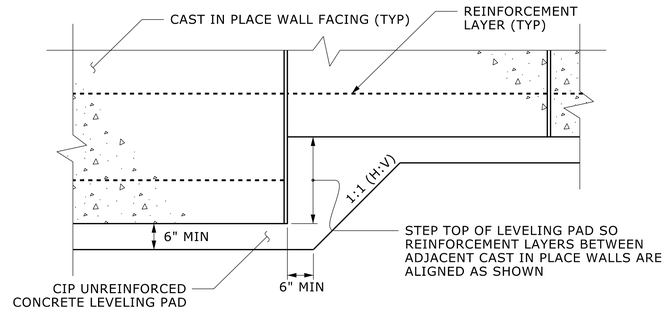
DO NOT PLACE LEVELING PAD CONCRETE, AGGREGATE OR REINFORCEMENT FOR RETAINING WALL NO. 25 UNTIL EXCAVATION DIMENSIONS AND FOUNDATION MATERIAL ARE APPROVED.

DESIGN RETAINING WALL NO. 25 TO INCORPORATE DRAIN DROP INLET STRUCTURES AND PIPES WITHIN REINFORCED ZONE OF WALL NO. 25 INCLUDE DETAILS IN MSE DESIGN SUBMITTAL.

"TEMPORARY SHORING" IS REQUIRED FOR RETAINING WALL NO. 25 IN ACCORDANCE WITH THE TEMPORARY SHORING PROVISION. SEE ROADWAY, STRUCTURE or TRAFFIC CONTROL PLANS.

48" BLACK VINYL COATED CHAIN LINK FENCE IS REQUIRED FULL LENGTH OF WALL, WHERE NOT UNDER BRIDGE. SEE ROADWAY STANDARD 866.06 (ROADWAY DETAIL AND PAY ITEM).

CONDUIT EMBEDDED IN CIP WALL FACE, SEE LIGHTING PLANS



CAST IN PLACE
LEVELING PAD STEP DETAIL

PROJECT NO.: 34165.1.6 (I-2513AC)

BUNCOMBE COUNTY

STATION: STA. 10+50.17 TO 14+86.92 -WALL25-

SHEET 5 OF 5 WALL ID RW-25

PREPARED BY: ALMULLA, H.	DATE: 04/14/2026
REVIEWED BY: RIGGS, Jr., A. F.	DATE: 04/14/2026

Prepared in the Office of:

Terracon

3150 SPRING FOREST ROAD, SUITE 100
RALEIGH, NORTH CAROLINA 27616
NC REGISTERED ENGINEERING FIRM: F-0869
NC REGISTERED GEOLOGIC FIRM: C-367

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

GEOTECHNICAL ENGINEERING UNIT

RETAINING WALL NO. 25
CIP MECHANICALLY STABILIZED EARTH WALL
LEVELING PAD STEP DETAIL AND NOTES

REVISIONS

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