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

### **CONTRACT** AND

# **CONTRACT BONDS**

FOR CONTRACT NO. C204887

WBS <u>47427.3.1 4742701</u>

T.I.P NO. <u>R-5861</u>

COUNTY OF CHEROKEE

THIS IS THE ROADWAY & CULVERT CONTRACT

ROUTE NUMBER <u>US-19</u> LENGTH <u>3.773</u> MILES

LOCATION <u>US-19/129 FROM GEORGIA STATE LINE TO US-64.</u>

CONTRACTOR WRIGHT BROTHERS CONSTRUCTION COMPANY INC

ADDRESS P.O. BOX 437

CHARLESTON, TN 37310

BIDS OPENED DECEMBER 19, 2023

CONTRACT EXECUTION 01/19/2024

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

### **PROPOSAL**

# INCLUDES ADDENDUM No.2 DATED 12-14-2023

DATE AND TIME OF BID OPENING: Dec 19, 2023 AT 02:00 PM

CONTRACT ID C204887

47427.3.1

FEDERAL-AID NO. 4742701

COUNTY CHEROKEE

T.I.P NO. R-5861

MILES 3.773

ROUTE NO. US-19

LOCATION US-19/129 FROM GEORGIA STATE LINE TO US-64.

TYPE OF WORK GRADING, DRAINAGE, PAVING, SIGNALS, CULVERTS AND WALLS.

#### NOTICE:

**WBS** 

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

BIDS WILL BE RECEIVED AS SHOWN BELOW:

THIS IS A ROADWAY & CULVERT PROPOSAL

5% BID BOND OR BID DEPOSIT REQUIRED

### PROPOSAL FOR THE CONSTRUCTION OF CONTRACT No. C204887 IN CHEROKEE COUNTY, NORTH CAROLINA DEPARTMENT OF TRANSPORTATION, RALEIGH, NORTH CAROLINA

The Bidder has carefully examined the location of the proposed work to be known as Contract No. C204887 has carefully examined the plans and specifications, which are acknowledged to be part of the proposal, the special provisions, the proposal, the form of contract, and the forms of contract payment bond and contract performance bond; and thoroughly understands the stipulations, requirements and provisions. The undersigned bidder agrees to be bound upon his execution of the bid and subsequent award to him by the Board of Transportation in accordance with this proposal to provide the necessary contract payment bond and contract performance bond within fourteen days after the written notice of award is received by him. The undersigned Bidder further agrees to provide all necessary machinery, tools, labor, and other means of construction; and to do all the work and to furnish all materials, except as otherwise noted, necessary to perform and complete the said contract in accordance with the 2018 Standard Specifications for Roads and Structures by the dates(s) specified in the Project Special Provisions and in accordance with the requirements of the Engineer, and at the unit or lump sum prices, as the case may be, for the various items given on the sheets contained herein.

The Bidder shall provide and furnish all the materials, machinery, implements, appliances and tools, and perform the work and required labor to construct and complete State Highway Contract No. C204887 in Cherokee County, for the unit or lump sum prices, as the case may be, bid by the Bidder in his bid and according to the proposal, plans, and specifications prepared by said Department, which proposal, plans, and specifications show the details covering this project, and hereby become a part of this contract.

The published volume entitled North Carolina Department of Transportation, Raleigh, Standard Specifications for Roads and Structures. January 2018 with all amendments and supplements thereto, is by reference incorporated into and made a part of this contract; that, except as herein modified, all the construction and work included in this contract is to be done in accordance with the specifications contained in said volume, and amendments and supplements thereto, under the direction of the Engineer.

If the proposal is accepted and the award is made, the contract is valid only when signed either by the Contract Officer or such other person as may be designated by the Secretary to sign for the Department of Transportation. The conditions and provisions herein cannot be changed except over the signature of the said Contract Officer.

The quantities shown in the itemized proposal for the project are considered to be approximate only and are given as the basis for comparison of bids. The Department of Transportation may increase or decrease the quantity of any item or portion of the work as may be deemed necessary or expedient.

An increase or decrease in the quantity of an item will not be regarded as sufficient ground for an increase or decrease in the unit prices, nor in the time allowed for the completion of the work, except as provided for the contract.

Accompanying this bid is a bid bond secured by a corporate surety, or certified check payable to the order of the Department of Transportation, for five percent of the total bid price, which deposit is to be forfeited as liquidated damages in case this bid is accepted and the Bidder shall fail to provide the required payment and performance bonds with the Department of Transportation, under the condition of this proposal, within 14 calendar days after the written notice of award is received by him, as provided in the Standard Specifications; otherwise said deposit will be returned to the Bidder.



State Contract Officer

Ronald Elton Davenport, Jr.

C204887 R-5861 Cherokee County

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C204887 R-5861 Cherokee County

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#### PROJECT SPECIAL PROVISIONS

#### **GENERAL**

#### **CONTRACTOR PREQUALIFICATION:**

(10-18-22)(Rev. 7-18-23) 102 SP1 G01

Revise the 2018 Standard Specifications as follows:

Page 1-9, Subarticle 102-2(A)(1) Bidder Prequalification, lines 34-36, delete and replace the first sentence with the following:

Applicant shall submit a completed Department Prequalification Application and *Bidder Experience Questionnaire*, along with any additional supporting information requested by the Department, as noted in the application and experience questionnaire package.

Page 1-10, Subarticle 102-2(A) Bidder Prequalification, lines 30-31, delete and replace the first sentence with the following:

Prospective bidders shall obtain prequalification approval at least two business days prior to any letting in which they intend to submit a bid. It is recommended that the prospective bidder file all required statements and documents with the State Prequalifications Engineer no less than 4 weeks before a given letting.

Page 1-10, Subarticle 102-2(B) Purchase Order Bidder Prequalification, lines 34-39, delete and replace the title and first paragraph with the following:

#### (B) Purchase Order (PO) Prime Contractor Prequalification

Contractors who have been approved to be placed on the Prequalified Bidders' List as noted above may perform work for the Department as a Purchase Order (PO) Prime Contractor and need not apply further. However, Purchase Order (PO) Prime Contractors will not be placed on the Prequalified Bidders' List unless they submit through the prequalification process described above.

Page 1-9, Subarticle 102-2(B)(1) Purchase Order Bidder Prequalification, lines 40-42, delete and replace the first sentence with the following:

Applicant shall submit a completed Department Prequalification Application along with any additional supporting information requested by the Department, as noted in the application.

Page 1-11, Subarticle 102-2(B) Purchase Order Bidder Prequalification, lines 16-18, delete and replace the first sentence with the following:

Prospective bidders shall obtain prequalification approval at least two business days prior to any letting in which they intend to submit a bid. It is recommended that the applicant file all required statements and documents with the State Prequalifications Engineer no less than 4 weeks before a given bid opening for their bid to be considered.

Page 1-11, Subarticle 102-2(C) Subcontractor Prequalification, lines 22-26, delete and replace the first paragraph with the following:

Contractors who have been approved to be placed on the Prequalified Bidders' List or the Purchase Order (PO) Prime Contractor's List as noted above may perform work for the Department as a subcontractor and need not apply further. However, subcontractors will not be placed on the Prequalified List or the Purchase Order (PO) Prime Contractor's List unless they submit through the prequalification process described above.

Page 1-11, Subarticle 102-2(C)(1) Subcontractor Prequalification, lines 27-28, delete and replace the first sentence with the following:

Applicant shall submit a completed Department Prequalification Application along with any additional supporting information requested by the Department, as noted in the application.

Page 1-11, Subarticle 102-2(C) Subcontractor Prequalification, lines 44-45, delete and replace the first sentence with the following:

The subcontractor shall file all required statements and documents with the State Prequalifications Engineer no less than 4 weeks before beginning work.

Page 1-12, Subarticle 102-2(E) Renewal and Requalification, lines 38-40, delete and replace the first sentence with the following:

It is recommended that the renewing or requalifying firm file all required statements and documents with the State Prequalifications Engineer no less than 4 weeks before a given letting for their bid to be considered.

#### **INTERESTED PARTIES LIST:**

(6-21-22)(Rev. 7-19-22) 102 SPI G02

Revise the 2018 Standard Specifications as follows:

**Page 1-12, Article 102-3 PROPOSALS AND PLAN HOLDER LISTS,** lines 45-49, delete and replace with the following:

#### 102-3 PROPOSALS AND INTERESTED PARTIES LIST

On Department projects advertised, the prospective bidder shall sign up on the *Interested Parties List* no later than one business day prior to the Letting day of that project, for which he intends to submit a bid. There is no cost for signing up on the *Interested Parties List* that can be found on the Department's website at connect.ncdot.gov/letting.

Page 1-12, Article 102-3 PROPOSALS AND PLAN HOLDER LISTS, lines 1-3, delete and replace the first sentence of the second paragraph with the following:

The proposal will state the location of the contemplated construction and show a schedule of contract items with the approximate quantity of each of these items for which bid prices are invited.

# Page 1-14, Article 102-8 PREPARATION AND SUBMISSION OF BIDS, lines 30-31, delete and replace the first paragraph with the following:

Prior to submitting a bid on a project, the bidder shall sign up on the *Interested Parties List* in conformance with Article 102-3. The bidder shall submit a unit or lump sum price for every item in the proposal other than items that are authorized alternates to those items for which a bid price has been submitted.

#### **BUILD AMERICA, BUY AMERICA (BABA):**

(11-15-22)

SP1 G04

Revise the 2018 Standard Specifications as follows:

#### Page 1-53, Article 106-1 GENERAL REQUIREMENTS, add the following after line 27:

#### (C) Build America, Buy America (BABA)

All manufactured products and construction materials permanently incorporated into any project must meet requirements of the Build America, Buy America (BABA) Act of the Infrastructure Investment and Jobs Act (IIJA). Before any material or product shown on the Department's Build America, Buy America (BABA) List is included for payment on a monthly estimate, the Contractor shall furnish the Engineer with a notarized certification certifying that the items conform to the BABA Act. The Department's Build America Buy America (BABA) List can be found on the Department's website.

#### https://connect.ncdot.gov/letting/LetCentral/NCDOT%20BABA%20Materials%20List.pdf

Each purchase order issued by the Contractor or a subcontractor for items on the BABA List to be permanently incorporated into any project shall contain in bold print a statement advising the supplier that the manufactured products and construction materials must be produced in the United States of America. The Contractor and all affected subcontractors shall maintain a separate file for BABA List items so that verification of the Contractor's efforts to purchase items produced in the United States can readily be verified by an authorized representative of the Department or the Federal Highway Administration (FHWA).

#### **LIABILITY INSURANCE:**

(5-16-23) 107 SPI G05

Revise the 2018 Standard Specifications as follows:

# Page 1-64, Article 107-15 LIABILITY INSURANCE, replace the first sentence with the following:

The Contractor shall at its sole cost and expense obtain and furnish to the Department an original standard Association for Cooperative Operations Research and Development (ACORD) certificate of liability insurance evidencing commercial general liability with a limit for bodily injury and property damage in the amount of \$5,000,000 per occurrence and \$5,000,000 general aggregate, covering the Contractor from claims or damages for bodily injury, personal injury, or

for property damages that may arise from operating under the contract by the employees and agents of the Contractor.

#### **CONTRACT TIME AND LIQUIDATED DAMAGES:**

(8-15-00) (Rev. 5-16-23) 108 SP1 G08 A

The date of availability for this contract is February 1, 2024 (for tree clearing operations only), except April 15, 2024 (from the beginning of the project to -L- Sta. 107+50±), except October 1, 2024 (for the remainder of the project), except that work in jurisdictional waters and wetlands shall not begin until a meeting between the DOT, Regulatory Agencies, and the Contractor is held as stipulated in the permits contained elsewhere in this proposal. This delay in availability has been considered in determining the contract time for this project.

The completion date for this contract is **June 1, 2029**.

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

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

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

(7-1-95) (Rev. 2-21-12) 108 SP1 G13 A

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

The date of availability for this intermediate contract time is February 1, 2024 (for tree clearing operations only), except April 15, 2024 (from the beginning of the project to -L- Sta. 107+50±), except October 1, 2024 (for the remainder of the project).

The completion date for this intermediate contract time is **September 15, 2028**.

The liquidated damages for this intermediate contract time are **Six Thousand Dollars** (\$ 6,000.00) per calendar day.

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

#### INTERMEDIATE CONTRACT TIME NUMBER 2 AND LIQUIDATED DAMAGES:

2-20-07) 108 SP1 G14

The Contractor shall complete the required work of installing, maintaining, and removing the traffic control devices for lane closures and restoring traffic to the existing traffic pattern. The Contractor shall not close or narrow a lane of traffic on US 19/129 and/or US 64/74 during the following time restrictions:

#### **DAY AND TIME RESTRICTIONS**

#### Monday thru Friday, 6:00 AM to 8:00 AM and 4:00 PM to 6:00 PM

In addition, the Contractor shall not close or narrow a lane of traffic on **Any Road**, detain and/or alter the traffic flow on or during holidays, holiday weekends, special events, or any other time when traffic is unusually heavy, including the following schedules:

#### HOLIDAY AND HOLIDAY WEEKEND LANE CLOSURE RESTRICTIONS

- 1. For **unexpected occurrence** that creates unusually high traffic volumes, as directed by the Engineer.
- 2. For **New Year's Day**, between the hours of **6:00 AM** December 31<sup>st</sup> and **6:00 PM** January 2<sup>nd</sup>. If New Year's Day is on a Friday, Saturday, Sunday or Monday, then until **6:00 PM** the following Tuesday.
- 3. For **Easter**, between the hours of **6:00 AM** Thursday and **6:00 PM** Monday.
- 4. For **Memorial Day**, between the hours of **6:00 AM** Friday and **6:00 PM** Tuesday.
- 5. For **Independence Day**, between the hours of **6:00 AM** the day before Independence Day and **6:00 PM** the day after Independence Day.
  - If **Independence Day** is on a Friday, Saturday, Sunday or Monday, then between the hours of **6:00 AM** the Thursday before Independence Day and **6:00 PM** the Tuesday after Independence Day.
- 6. For **Labor Day**, between the hours of **6:00 AM** Friday and **6:00 PM** Tuesday.
- 7. For **Thanksgiving**, between the hours of **6:00 AM** Tuesday and **6:00 PM** Monday.
- 8. For **Christmas**, between the hours of **6:00 AM** the Friday before the week of Christmas Day and **6:00 PM** the following Tuesday after the week of Christmas Day.

Holidays and holiday weekends shall include New Year's, Easter, Memorial Day, Independence Day, Labor Day, Thanksgiving, and Christmas. The Contractor shall schedule his work so that lane closures will not be required during these periods, unless otherwise directed by the Engineer.

The time of availability for this intermediate contract work shall be the time the Contractor

begins to install all traffic control devices for lane closures according to the time restrictions listed herein.

The completion time for this intermediate contract work shall be the time the Contractor is required to complete the removal of all traffic control devices for lane closures according to the time restrictions stated above and place traffic in the existing traffic pattern.

The liquidated damages are Two Hundred Fifty Dollars (\$ 250.00) per hour.

#### INTERMEDIATE CONTRACT TIME NUMBER 3 AND LIQUIDATED DAMAGES:

(2-20-07) (Rev. 6-18-13)

108

SP1 G14

The Contractor shall complete the work required of Phase I, Step #2 as shown on Sheet TMP-3

and shall place and maintain traffic on same.

The date of availability for this intermediate contract time is the date the Contractor elects to begin the work.

The completion date for this intermediate contract time is the date which is **ninety** (90) consecutive calendar days after and including the date the Contractor begins this work.

The liquidated damages are **Two Thousand Dollars** (\$ 2,000.00) per calendar day.

#### INTERMEDIATE CONTRACT TIME NUMBER 4 AND LIQUIDATED DAMAGES:

(2-20-07) (Rev. 6-18-13)

108

SP1 G1

The Contractor shall complete the work required of **Phase I**, **Steps #3 thru #5** as shown on Sheet **TMP-3** and shall place and maintain traffic on same.

The date of availability for this intermediate contract time is the date the Contractor elects to begin the work.

The completion date for this intermediate contract time is the date which is **two hundred** seventy (270) consecutive calendar days after and including the date the Contractor begins this work.

The liquidated damages are **Two Hundred Fifty Dollars** (\$ 250.00) per calendar day.

#### INTERMEDIATE CONTRACT TIME NUMBER 5 AND LIQUIDATED DAMAGES:

(2-20-07) (Rev. 6-18-13)

108

SP1 G14

The Contractor shall complete the work required of **Phase III**, **Step #1** as shown on Sheet **TMP-3A** and shall place and maintain traffic on same.

The date of availability for this intermediate contract time is the date the Contractor elects to begin the work.

The completion date for this intermediate contract time is the date which is seventy-five (75)

consecutive calendar days after and including the date the Contractor begins this work.

The liquidated damages are **Five Hundred Dollars (\$ 500.00)** per calendar day.

#### INTERMEDIATE CONTRACT TIME NUMBER 6 AND LIQUIDATED DAMAGES:

(2-20-07) (Rev. 6-18-13) 108 SP1 G14

The Contractor shall complete the work required of **Phase III**, **Steps #2 & #3** as shown on Sheet **TMP-3A** and shall place and maintain traffic on same.

The date of availability for this intermediate contract time is the date the Contractor elects to begin the work.

The completion date for this intermediate contract time is the date which is **two hundred ten** (210) consecutive calendar days after and including the date the Contractor begins this work.

The liquidated damages are **One Thousand Dollars** (\$ 1,000.00) per calendar day.

# PERMANENT VEGETATION ESTABLISHMENT:

(2-16-12) (Rev. 10-15-13) 104 SPI G16

Establish a permanent stand of the vegetation mixture shown in the contract. During the period between initial vegetation planting and final project acceptance, perform all work necessary to establish permanent vegetation on all erodible areas within the project limits, as well as, in borrow and waste pits. This work shall include erosion control device maintenance and installation, repair seeding and mulching, supplemental seeding and mulching, mowing, and fertilizer topdressing, as directed. All work shall be performed in accordance with the applicable section of the 2018 Standard Specifications. All work required for initial vegetation planting shall be performed as a part of the work necessary for the completion and acceptance of the Intermediate Contract Time (ICT). Between the time of ICT and Final Project acceptance, or otherwise referred to as the vegetation establishment period, the Department will be responsible for preparing the required National Pollutant Discharge Elimination System (NPDES) inspection records.

Once the Engineer has determined that the permanent vegetation establishment requirement has been achieved at an 80% vegetation density (the amount of established vegetation per given area to stabilize the soil) and no erodible areas exist within the project limits, the Contractor will be notified to remove the remaining erosion control devices that are no longer needed. The Contractor will be responsible for, and shall correct any areas disturbed by operations performed in permanent vegetation establishment and the removal of temporary erosion control measures, whether occurring prior to or after placing traffic on the project.

Payment for Response for Erosion Control, Seeding and Mulching, Repair Seeding, Supplemental Seeding, Mowing, Fertilizer Topdressing, Silt Excavation, and Stone for Erosion Control will be made at contract unit prices for the affected items. Work required that is not represented by contract line items will be paid in accordance with Articles 104-7 or 104-3 of the 2018 Standard Specifications. No additional compensation will be made for maintenance and removal of temporary erosion control items.

#### **CONSTRUCTION MORATORIUM:**

(7-15-14) SP1 G18A

No tree cutting will be allowed from **April 1** through **October 15** of any year.

#### **DELAY IN RIGHT OF ENTRY:**

(7-1-95) (Rev. 7-15-14) 108 SPI G22

The Contractor will not be allowed right of entry to the following parcel(s) prior to the listed date(s) unless otherwise permitted by the Engineer.

Parcel No.	Property Owner	<u>Date</u>
009	Jason and Christina Hobby Living Trust	3-1-2024
021	Bellview Volunteer Fire Department, Inc.	3-1-2024

#### **MAJOR CONTRACT ITEMS:**

(2-19-02) 104 SPI G28

The following listed items are the major contract items for this contract (see Article 104-5 of the 2018 Standard Specifications):

#### Line # Description

7 Unclassified Excavation

#### **SPECIALTY ITEMS:**

(7-1-95)(Rev. 7-20-21) 108-6 SPI G37

Items listed below will be the specialty items for this contract (see Article 108-6 of the 2018 Standard Specifications).

Line #	Description
121-135	Guardrail
136-138	Fencing
143-152	Signing
171-175	Long-Life Pavement Markings
187	Permanent Pavement Markers
189-210	Utility Construction
211-251	Erosion Control
252-278	Signals/ITS System

#### SPECIAL REQUIREMENTS FOR WORK IN NATIONAL FOREST:

(7-1-95) 107-13 SP1 G40

In addition to other requirements in this proposal with respect to clearing, erosion control, protection of environment, etc., comply with the following requirements:

- (A) Comply with the portions of these Special Requirements, entitled "Fire Plan," "Clearing Plan," and "Landscape and Erosion Control Plan." Note the fact that merchantable timber within Forest Service Property will become the property of the Contractor.
- (B) Comply with the following recommendations of the State Fish and Game Department and Forest Service for wildlife and fish management:

- (1) Take all necessary precautions to avoid damage to fish habitat and exercise every reasonable precaution to prevent muddying or silting live streams.
- (2) Do not deposit material removed from the roadway or channel changes in live streams or into the streams or stream channel where it would be washed away by high stream flows.
- (3) Do not haul materials, including logs, brush, and debris, by fording live streams. Instead, provide temporary bridges or other structures for this purpose.
- (C) Dispose of waste material resulting from slides during construction and surplus material at locations approved by the Forest Supervisor. Submit a plan showing the proposed method of disposal at the time approval is requested.
- (D) Treat sections of existing road to be abandoned as a result of the proposed new construction, as designated by the Forest Supervisor, to restore them to their natural state. The necessary treatment will be determined during a joint review between the Forest Service and the State and may include ripping of roadbed, removal of drainage structure, and opening drainage channels. Plans and specifications as mutually deemed appropriate to accomplish the objective will become a part of this stipulation.
- (E) Permanently monument the right of way prior to completion of construction in accordance with State requirements for such right of way, but in any event the minimum requirements will be to place permanent monuments at the intersection of right of way with all property lines, section lines, and at intervals of not more than 1,000 feet along the right-of-way limits.
- (F) Re-establish or restore public land monuments disturbed or destroyed by construction, reconstruction, or maintenance according to instructions of the Bureau of Land Management, Department of the Interior. Do not damage, destroy, or obliterate other land monuments and property corners or witness markers without the prior permission of the Regional Forester. Relocate or re-establish these land monuments, property corners, and witness markers in accordance with standards satisfactory to the Regional Forester.

#### **Fire Protection Plan**

During the period of construction, perform both independently and in cooperation with the Forest Service everything that is reasonable and practical to prevent and suppress forest fires on the easement area and in its immediate vicinity. Include provisions in all subcontracts for the construction of the road requiring subcontractors and their respective employees to do likewise. The contractors and subcontractors, shall conform to, but not be limited to, the following Fire Plan:

- (A) Take immediate independent or cooperative action to control and extinguish any fire, regardless of cause, within the easement area and its vicinity.
- (B) Maintain at readily available sites one or more boxes of firefighting tools to be furnished by the Forest Service for forest fire fighting purposes only.

- (C) Perform debris burning only in the center of the right of way, and only after a strip 20 feet wide around each pile is cleared to mineral soil.
- (D) Keep fires compact by throwing in the larger material as it burns. If piles are too close together or burn hot, light every second or third pile; allow these to cool down before firing the others. On slopes start burning at the top and work down. Confine fires to piles at all times.
- (E) Do not leave fires unattended.
- (F) Discontinue burning upon notification by the District Forest Ranger or his representative that fire danger is such that there is abnormal risk.
- (G) Whenever a fire escapes, notify the District Ranger immediately even if the fire is suppressed without Forest Service assistance.
- (H) The contractor or subcontractor responsible will bear the costs, including Forest Service direct costs and value of resources damages, incurred by the Forest Service in controlling and extinguishing any fire on or threatening National Forest lands which they or their employees caused with or without negligence in connection with construction operations.
- (I) Contact the District Ranger 24 hours in advance of burning.

#### **Clearing Plan**

Conform to the following clearing plan:

- (A) Dispose of unmerchantable materials including tops, branches, etc., by piling and burning as directed by the Forest Service or used in brush barriers. Alternate methods of disposal, including any of the following methods or combinations of methods (lop and scatter, chip, remove, pile only), shall be approved in advance by the Forest Service.
- (B) The maximum clearing and grubbing limits are to be as shown on the plans except that cutting of hazard trees outside these limits may be done with approval. Confine construction machinery within the clearing limits.

#### **Landscape and Erosion Control Plan**

The erosion control plan will be designed and implemented to prevent visible sediment, as defined by NC DEQ regulations, from reaching any defined stream channel.

Conform to, but not be limited to, the following Landscape and Erosion Control Plan.

- (A) Prevent visible sediment from entering any stream channel. If an erosion control practice must be sited in a channel, it shall stop further down-channel transport of visible sediment.
- (B) Bear responsibility for the prevention and control of soil erosion and gullying on the right of way and lands adjacent thereto resulting from the construction of maintenance of the road. Revegetate with grass (not Love Grass) or herbaceous plants all ground where the

soil has been exposed. Accomplish revegetation within 20 working days following final grading.

- (C) Round the ends of cut sections and the tops of back slopes.
- (D) Vegetate all front and back slopes by liming, fertilizing, mulching and seeding; including any waste area. Mulch critical areas if they are to be exposed greater than 5 working days of probable inclement weather during seasons when seeding is impracticable. Critical areas include all bare soils within 100 feet (slope distance) of perennial and intermittent streams. Mulch these as soon as practical and after final seeding.
- (E) Maintain all erosion control practices in a timely manner to prevent visible sediment from entering any stream channel, until such time that the final revegetation stabilizes the site and prevents erosion and off-site movement of sediment.

#### **FUEL PRICE ADJUSTMENT:**

(11-15-05) (Rev. 11-15-22) 109-8 SP1 G43

Revise the 2018 Standard Specifications as follows:

#### Page 1-87, Article 109-8, Fuel Price Adjustments, add the following:

The base index price for DIESEL #2 FUEL is \$ 3.1046 per gallon. Where any of the following are included as pay items in the contract, they will be eligible for fuel price adjustment.

The pay items and the fuel factor used in calculating adjustments to be made will be as follows:

Description	Units	Fuel Usage Factor Diesel
Unclassified Excavation	Gal/CY	0.29
Borrow Excavation	Gal/CY	0.29
Class IV Subgrade Stabilization	Gal/Ton	0.55
Aggregate Base Course	Gal/Ton	0.55
Sub-Ballast	Gal/Ton	0.55
Erosion Control Stone	Gal/Ton	0.55
Rip Rap, Class	Gal/Ton	0.55
Asphalt Concrete Base Course, Type	Gal/Ton	0.90 or 2.90
Asphalt Concrete Intermediate Course, Type	Gal/Ton	0.90 or 2.90
Asphalt Concrete Surface Course, Type	Gal/Ton	0.90 or 2.90
Open-Graded Asphalt Friction Course	Gal/Ton	0.90 or 2.90
Permeable Asphalt Drainage Course, Type	Gal/Ton	0.90 or 2.90
Sand Asphalt Surface Course, Type	Gal/Ton	0.90 or 2.90
Ultra-thin Bonded Wearing Course	Gal/Ton	0.90 or 2.90
Aggregate for Cement Treated Base Course	Gal/Ton	0.55
Portland Cement for Cement Treated Base Course	Gal/Ton	0.55
> 11" Portland Cement Concrete Pavement	Gal/SY	0.327
Concrete Shoulders Adjacent to > 11" Pavement	Gal/SY	0.327
9" to 11" Portland Cement Concrete Pavement	Gal/SY	0.272
Concrete Shoulders Adjacent to 9" to 11" Pavement	Gal/SY	0.272
< 9" Portland Cement Concrete Pavement	Gal/SY	0.245

Concrete Shoulders Adjacent to < 9" Pavement	Gal/SY	0.245
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For the asphalt items noted in the chart as eligible for fuel adjustments, the bidder may include the *Fuel Usage Factor Adjustment Form* with their bid submission if they elect to use the fuel usage factor. The *Fuel Usage Factor Adjustment Form* is found at the following link:

https://connect.ncdot.gov/letting/LetCentral/Fuel%20Usage%20Factor%20Adjustment%20Form%20-%20%20Starting%20Nov%202022%20Lettings.pdf

Select either 2.90 Gal/Ton fuel factor or 0.90 Gal/Ton fuel factor for each asphalt line item on the *Fuel Usage Factor Adjustment Form*. The selected fuel factor for each asphalt item will remain in effect for the duration of the contract.

Failure to complete the *Fuel Usage Factor Adjustment Form* will result in using 2.90 gallons per ton as the Fuel Usage Factor for Diesel for the asphalt items noted above. The contractor will not be permitted to change the Fuel Usage Factor after the bids are submitted.

#### **STEEL PRICE ADJUSTMENT:**

(4-19-22)(Rev. 12-19-23)

SP1 G47

#### **Description and Purpose**

Steel price adjustments will be made to the payments due the Contractor for items as defined herein that are permanently incorporated into the work, when the price of raw steel mill products utilized on the contract have fluctuated. The Department will adjust monthly progress payments up or down as appropriate for cost changes in steel according to this provision.

#### **Eligible Items**

The list of eligible bid items for steel price adjustment can be found on the Departments website at the following address:

 $\frac{https://connect.ncdot.gov/letting/LetCentral/Eligible\%20Bid\%20Items\%20for\%20Steel\%20Price \underline{\%20Adjustment.xlsx}$ 

Nuts, bolts, anchor bolts, rebar chairs, connecting bands and other miscellaneous hardware associated with these items shall not be included in the price adjustment.

Adjustments will only be made for fluctuations in the material cost of the steel used in the above products as specified in the Product Relationship Table below. The producing mill is defined as the source of steel product before any fabrication has occurred (e.g., coil, plate, rebar, hot rolled shapes, etc.). No adjustment will be made for changes in the cost of fabrication, coating, shipping, storage, etc.

No steel price adjustments will be made for any products manufactured from steel having an adjustment date, as defined by the Product Relationship Table below, prior to the letting date.

#### **Bid Submittal Requirements**

The successful bidder, within 14 calendar days after the notice of award is received by him, shall provide the completed Form SPA-1 to the Department (State Contract Officer or Division Contract Engineer) along with the payment bonds, performance bonds and contract execution signature sheets in a single submittal. If Form SPA-1 is not included in the same submittal as the payment bonds, performance bonds and contract execution signature sheets, the Contractor will not be eligible for any steel price adjustment for any item in the contract for the life of the contract. Form SPA-1 can be found on the Department's website at the following address:

#### https://connect.ncdot.gov/letting/LetCentral/Form%20SPA-1.xlsm

The Contractor shall provide Form SPA-1 listing the Contract Line Number, (with corresponding Item Number, Item Description, and Category) for the steel products they wish to have an adjustment calculated. Only the contract items corresponding to the list of eligible item numbers for steel price adjustment may be entered on Form SPA-1. The Contractor may choose to have steel price adjustment applied to any, all, or none of the eligible items. However, the Contractor's selection of items for steel price adjustment or non-selection (non-participation) may not be changed once Form SPA-1 has been received by the Department. Items the Bidder chooses for steel price adjustment must be designated by writing the word "Yes" in the column titled "Option" by each Pay Item chosen for adjustment. Should the bidder elect an eligible steel price item, the entire quantity of the line item will be subject to the price adjustment for the duration of the Contract. The Bidder's designations on Form SPA-1 must be written in ink or typed and signed by the Bidder (Prime Contractor) to be considered complete. Items not properly designated, designated with "No", or left blank on the Bidder's Form SPA-1 will automatically be removed from consideration for adjustment. No steel items will be eligible for steel price adjustment on this Project if the Bidder fails to return Form SPA-1 in accordance with this provision.

#### **Establishing the Base Price**

The Department will use a blend of monthly average prices as reported from the Fastmarkets platform to calculate the monthly adjustment indices (BI and MI). This data is typically available on the first day of the month for the preceding month. The indices will be calculated by the Department for the different categories found on the Product Relationship Table below. For item numbers that include multiple types of steel products, the category listed for that item number will be used for adjusting each steel component.

```
The bidding index for Category 1 Steel items is $ 41.63 per hundredweight.

The bidding index for Category 2 Steel items is $ 68.87 per hundredweight.

The bidding index for Category 3 Steel items is $ 62.44 per hundredweight.

The bidding index for Category 4 Steel items is $ 40.07 per hundredweight.

The bidding index for Category 5 Steel items is $ 53.69 per hundredweight.

The bidding index for Category 6 Steel items is $ 62.82 per hundredweight.

The bidding index for Category 7 Steel items is $ 42.94 per hundredweight.

The bidding index represents a selling price of steel based on Fastmarkets data for the month of October 2023.
```

MI = Monthly Index. – in Dollars (\$) per hundredweight (CWT). Use the adjustment indices from the month the steel was shipped from the

producing mill, received on the project, or member cast as defined in the Product Relationship Table.

BI = Bidding Index. - in Dollars (\$) per hundredweight (CWT). Use the adjustment indices as listed in the proposal.

Steel Product (Title)	BI, MI*	Adjustment Date for MI	Category
Reinforcing Steel, Bridge Deck, and SIP Forms	Based on one or more Fastmarkets indices	Delivery Date from Producing Mill	1
Structural Steel and	Based on one or more	Delivery Date from	2
Encasement Pipe Steel H-Piles, Soldier Pile	Fastmarkets indices Based on one or more	Producing Mill Delivery Date from	3
Walls	Fastmarkets indices	Producing Mill	
Guardrail Items and Pipe Piles	Based on one or more Fastmarkets indices	Material Received Date**	4
Fence Items	Based on one or more Fastmarkets indices	Material Received Date**	5
Overhead Sign Assembly, Signal Poles, High Mount Standards	Based on one or more Fastmarkets indices	Material Received Date**	6
Prestressed Concrete Members	Based on one or more Fastmarkets indices	Cast Date of Member	7

Submit documentation to the Engineer for all items listed in the Contract for which the Contractor is requesting a steel price adjustment.

#### **Submittal Requirements**

The items in categories 1,2, and 3, shall be specifically stored, labeled, or tagged, recognizable by color marking, and identifiable by Project for inspection and audit verification immediately upon arrival at the fabricator.

Furnish the following documentation for all steel products to be incorporated into the work and documented on Form SPA-2, found on the Departments website at the following address:

https://connect.ncdot.gov/projects/construction/Construction%20Forms/Form%20SPA-2.xlsx

Submit all documentation to the Engineer prior to incorporation of the steel into the completed work. The Department will withhold progress payments for the affected contract line item if the documentation is not provided and at the discretion of the Engineer the work is allowed to proceed. Progress payments will be made upon receipt of the delinquent documentation.

Step 1 (Form SPA -2)

Utilizing Form SPA-2, submit separate documentation packages for each line item from Form SPA-1 for which the Contractor opted for a steel price adjustment. For line items with multiple components of steel, each component should be listed separately. Label each SPA-2 documentation package with a unique number as described below.

a. Documentation package number: (Insert the contract line-item) - (Insert sequential package number beginning with "1").

Example: 412 - 1,

412 - 2, 424 - 1,

424 - 2,

424 - 3, etc.

- b. The steel product quantity in pounds
  - i. The following sources should be used, in declining order of precedence, to determine the weight of steel/iron, based on the Engineers decision:
    - 1. Department established weights of steel/iron by contract pay item per pay unit;
    - 2. Approved Shop Drawings;
    - 3. Verified Shipping Documents;
    - 4. Contract Plans;
    - 5. Standard Drawing Sheets;
    - 6. Industry Standards (i.e., AISC Manual of Steel Construction, AWWA Standards, etc.); and
    - 7. Manufacture's data.
  - ii. Any item requiring approved shop drawings shall have the weights of steel calculated and shown on the shop drawings or submitted and certified separately by the fabricator.
- c. The date the steel product, subject to adjustment, was shipped from the producing mill (Categories 1-3), received on the project (Categories 4-6), or casting date (Category 7).

Step 2 (Monthly Calculator Spreadsheet)

For each month, upon the incorporation of the steel product into the work, provide the Engineer the following:

- 1) Completed NCDOT Steel Price Adjustment Calculator Spreadsheet, summarizing all the steel submittal packages (Form SPA-2) actually incorporated into the completed work in the given month.
  - a. Contract Number
  - b. Bidding Index Reference Month
  - c. Contract Completion Date or Revised Completion Date
  - d. County, Route, and Project TIP information
  - e. Item Number
  - f. Line-Item Description
  - g. Submittal Number from Form SPA-2
  - h. Adjustment date
  - i. Pounds of Steel
- 2) An affidavit signed by the Contractor stating the documentation provided in the NCDOT Steel Price Adjustment Calculator Spreadsheet is true and accurate.

#### **Price Adjustment Conditions**

Download the Monthly Steel Adjustment Spreadsheet with the most current reference data from the Department's website each month at the following address:

 $\frac{https://connect.ncdot.gov/projects/construction/Construction\%20Forms/Form\%20SPA-3\%20NCDOT\%20Steel\%20Price\%20Adjustment\%20Calculator.xlsx$ 

If the monthly Fastmarkets data is not available, the data for the most recent immediately preceding month will be used as the basis for adjustment.

#### **Price Adjustment Calculations**

The price adjustment will be determined by comparing the percentage of change in index value listed in the proposal (BI) to the monthly index value (MI). (See included sample examples). Weights and date of shipment must be documented as required herein. The final price adjustment dollar value will be determined by multiplying this percentage increase or decrease in the index by the represented quantity of steel incorporated into the work, and the established bidding index (BI) subject to the limitations herein.

#### Price increase/decrease will be computed as follows:

SPA = ((MI/BI) - 1) \* BI \* (Q/100)

Where:

SPA = Steel price adjustment in dollars

- MI = Monthly Shipping Index. in Dollars (\$) per hundredweight (CWT). Use the adjustment indices from the month the steel was shipped from the producing mill, received on the project, or member cast as defined in the Product Relationship Table.
- BI = Bidding Index. in Dollars (\$) per hundredweight (CWT). Use the adjustment indices as listed in the proposal.
- Q = Quantity of steel, product, pounds actually incorporated into the work as documented by the Contractor, or Design Build Team and verified by the Engineer.

Calculations for price adjustment shall be shown separate from the monthly progress estimate and will not be included in the total cost of work for determination of progress or for extension of Contract time in accordance with Subarticle 108-10(B)(1).

Any apparent attempt to unbalance bids in favor of items subject to price adjustment may result in rejection of the bid proposal.

Adjustments will be paid or charged to the Contractor only. Any Contractor receiving an adjustment under this provision shall distribute the proper proportional part of such adjustments to the subcontractor who performed the applicable work.

Delays to the work caused by steel shortages may be justification for a Contract time extension but will not constitute grounds for claims for standby equipment, extended office overhead, or other costs associated with such delays.

If an increase in the steel material price is anticipated to exceed 50% of the original quoted price, the contractor must notify the Department within 7 days prior to purchasing the material. Upon receipt of such notification, the Department will direct the Contractor to either (1) proceed with the work or (2) suspend the work and explore the use of alternate options.

If the decrease in the steel material exceeds 50% of the original quoted price, the contractor may submit to the Department additional market index information specific to the item in question to dispute the decrease. The Department will review this information and determine if the decrease is warranted.

When the steel product adjustment date, as defined in the Product Relationship Table, is after the approved contract completion date, the steel price adjustments will be based on the lesser value of either the MI for the month of the approved contract completion date or the MI for the actual adjustment date.

If the price adjustment is based on estimated material quantities for that time, and a revision to the total material quantity is made in a subsequent or final estimate, an appropriate adjustment will be made to the price adjustment previously calculated. The adjustment will be based on the same indices used to calculate the price adjustment which is being revised. If the adjustment date of the revised material quantity cannot be determined, the adjustment for the quantity in question, will be based on the indices utilized to calculate the steel price adjustment for the last initial documentation package submission, for the steel product subject to adjustment, that was incorporated into the particular item of work, for which quantities are being finalized. Example: Structural steel for a particular bridge was provided for in three different shipments with each having a different mill shipping date. The quantity of structural steel actually used for the bridge was calculated and a steel price adjustment was made in a progress payment. At the conclusion of the work an error was found in the plans of the final quantity of structural steel used for the bridge. The quantity to be adjusted cannot be directly related to any one of the three mill shipping dates. The steel price adjustment for the quantity in question would be calculated using the indices that were utilized to calculate the steel price adjustment for the quantity of structural steel represented by the last initial structural steel documentation package submission. The package used will be the one with the greatest sequential number.

#### **Extra Work/Force Account:**

When steel products, as specified herein, are added to the contract as extra work, in accordance with the provisions of Article 104-7 or 104-3, the Engineer will determine and specify in the supplemental agreement, the need for application of steel price adjustments on a case-by-case basis. No steel price adjustments will be made for any products manufactured from steel having an adjustment date prior to the supplemental agreement execution date. Price adjustments will be made as provided herein, except the Bidding Index will be based on the month in which the supplemental agreement pricing was executed.

For work performed on force account basis, reimbursement of actual material costs, along with the specified overhead and profit markup, will be considered to include full compensation for the current cost of steel and no steel price adjustments will be made.

#### **Examples** Form SPA-2

#### **Steel Price Adjustment Submission Form**

Contract Number	<u>C203394</u>	Bid Reference Month	January 2019
Submittal Date	8/31/2019		
Contract Line Item	<u>237</u>	-	
Line Item Description	APPROXLBS Structura	ıl Steel	
Sequential Submittal Number	<u>2</u>	-	

Supplier	Description of material	Location information	Quantity in lbs.	Adjustment Date
XYZ mill	Structural Steel	Structure 3, Spans A-C	1,200,000	May 4, 2020
ABC distributing	Various channel & angle shapes	Structure 3 Spans A-C	35,000	July 14, 2020
		Total Pounds of Steel	1,235,000	

Note: Attach the following supporting documentation to this form.

- Bill of Lading to support the shipping dates
- Supporting information for weight documentation (e.g., Pay item reference, Shop drawings, shipping documents, Standards Sheets, industry standards, or manufacturer's data)

By providing this data under my signature, I attest to the accuracy of and validity of the data on this form and certify that no deliberate misrepresentation in any manner has occurred.

Printed Name		Signature	
	_		

#### **Examples** Form SPA-2

#### **Steel Price Adjustment Submission Form**

Contract Number	<u>C203394</u>	Bid Reference Month	January 2019
Submittal Date	August 31, 2019		
Contract Line Item	<u>237</u>		
Line Item Description	SUPPORT, OVRHD SIGN STI	R -DFEB – STA 36+00	
Sequential Submittal Number	<u>2</u>		

Supplier	Description of material	Location	Quantity	Adjustment Date
	_	information	in lbs.	-
XYZ mill	Tubular Steel (Vertical legs)	<u>-DFEB – STA 36+00</u>	12000	December 11, 2021
PDQ Mill	4" Tubular steel (Horizontal	<u>-DFEB – STA 36+00</u>	5900	December 11, 2021
	legs)			
ABC	Various channel & angle	<u>-DFEB – STA 36+00</u>	1300	December 11, 2021
distributing	shapes (see quote)			
	Catwalk assembly	<u>-DFEB – STA 36+00</u>	2000	December 11, 2021
Nucor	Flat plate	<u>-DFEB – STA 36+00</u>	650	December 11, 2021
	_			
		Total Pounds of Steel	21,850	

Note: Attach the following supporting documentation to this form.

- Bill of Lading to support the shipping dates
- Supporting information for weight documentation (e.g., Pay item reference, Shop drawings, shipping documents, Standards Sheets, industry standards, or manufacturer's data)

By providing this data under my signature, I attest to the accuracy of and validity of the data on this form and certify that no deliberate misrepresentation in any manner has occurred.

Printed Name	Signature
<del></del>	

#### **Price Adjustment Sample Calculation (increase)**

Project bid on September 17, 2019

Line Item 635 "Structural Steel" has a plan quantity of 2,717,000 lbs.

Bidding Index for Structural Steel (Category 2) in the proposal was \$36.12/CWT = BI

450,000 lbs. of Structural Steel for Structure 2 at Station 44+08.60 were shipped to fabricator from the producing mill in same month, May 2021.

Monthly Index for Structural Steel (Category 2) for May 2021 was \$64.89/CWT = MI

The Steel Price Adjustment formula is as follows:

$$SPA = ((MI/BI) - 1) * BI * (Q/100)$$

Where; SPA = Steel price adjustment in dollars

BI = Bidding Index – in dollars (\$) per hundredweight (CWT). Use the adjustment indices as listed in the proposal.

MI = Mill Shipping Index – in dollars (\$) per hundredweight (CWT). Use the adjustment indices from the month the steel was shipped from the producing mill, received on the project, or member cast as defined in the Product Relationship Table.

Q = Quantity of steel product, in pounds (lbs.) actually incorporated into the work as documented by the Contractor, or Design Build Team and verified by the Engineer.

BI = \$36.12/CWT

MI = \$64.89 / CWT

% change = ((MI/BI)-1) = (\$64.89 / \$36.12 - 1) = (1.79651 - 1) = 0.79651162791

Q = 450,000 lbs.

SPA = 0.79651162791x \$36.12 x (450,000/100)

SPA = 0.79651162791\* \$36.12 \*4,500

SPA = \$129,465 pay adjustment to Contractor for Structural Steel (Structure 2 at Station 44+08.60)

#### **Price Adjustment Sample Calculation (decrease)**

Project bid on December 18, 2018

Line Item 635 Structural Steel has a plan quantity of 2,717,000 lbs.

Bidding Index for Structural Steel (Category 2) in the proposal was \$46.72/CWT = BI

600,000 lbs. of Structural Steel for Structure 1 at Station 22+57.68 were shipped to fabricator from the producing mill in same month, August 2020.

Monthly Index for Structural Steel (Category 2) for August 2020 was \$27.03/CWT = MI

The Steel Price Adjustment formula is as follows:

$$SPA = ((MI/BI) - 1) * BI * (Q/100)$$

Where; SPA = Steel price adjustment in dollars

BI = Bidding Index – in dollars (\$) per hundredweight (CWT). Use the adjustment indices as listed in the proposal.

MI = Mill Shipping Index – in dollars (\$) per hundredweight (CWT). Use the adjustment indices from the month the steel was shipped from the producing mill, received on the project, or member cast as defined in the Product Relationship Table.

Q = Quantity of steel product, in pounds (lbs.) actually incorporated into the work as documented by the Contractor, or Design Build Team and verified by the Engineer.

BI = \$46.72 / CWT

MI = \$27.03 / CWT

% change = ((MI/BI)-1) = (\$27.03/\$46.72-1) = (0.57855-1) = -0.421446917808

Q = 600,000 lbs.

SPA = -0.421446917808 \* \$46.72 \* (600,000/100)

SPA = -0.421446917808 \* \$46.72 \*6,000

SPA = \$118,140.00 Credit to the Department for Structural Steel (Structure 1 at Station 22+57.68)

#### **Price Adjustment Sample Calculation (increase)**

Project bid on July 16, 2020

Line Item 614 Reinforced Concrete Deck Slab has a plan quantity of 241974 lbs.

Bidding Index Reference Month was May 2020. Bidding Index for Reinforced Concrete Deck Slab (Category 1) in the proposal was \$29.21/CWT = BI

51,621 lbs. of reinforcing steel and 52,311 lbs. of epoxy coated reinforcing steel for Structure 2 at Station 107+45.55 -L- was shipped to fabricator from the producing mill in same month, May 2021.

Monthly Index for Reinforced Concrete Deck Slab (Category 1) for May 2021 was \$43.13/CWT = MI

The Steel Price Adjustment formula is as follows:

$$SPA = ((MI/BI) - 1) * BI * (Q/100)$$

Where; SPA = Steel price adjustment in dollars

BI = Bidding Index – in dollars (\$) per hundredweight (CWT). Use the adjustment indices as listed in the proposal.

MI = Mill Shipping Index – in dollars (\$) per hundredweight (CWT). Use the adjustment indices from the month the steel was shipped from the producing mill, received on the project, or member cast as defined in the Product Relationship Table.

Q = Quantity of steel product, in pounds (lbs.) actually incorporated into the work as documented by the Contractor, or Design Build Team and verified by the Engineer.

BI = \$29.21/CWT

MI = \$43.13 / CWT

% change = ((MI/BI)-1) = (\$43.13 / \$29.21 - 1) = (1.47655 - 1) = 0.47654912701

Q = 103932 lbs.

SPA = 0.47654912701 \* \$29.21 \* (103,932/100)

SPA = 0. 47654912701 \* \$29.21 \*1,039.32

SPA = \$14,467.33 Pay Adjustment to Contractor for Reinforced Concrete Deck Slab (Category 1) at Station 107+45.55 -L-

#### **PAYOUT SCHEDULE:**

(1-19-10) (Rev. 1-17-12) 108 SP1 G57

Submit an Anticipated Monthly Payout Schedule prior to beginning construction. The Anticipated Monthly Payout Schedule will be used by the Department to monitor funding levels for this project. Include a monthly percentage breakdown (in terms of the total contract amount) of the work anticipated to be completed. The schedule should begin with the date the Contractor plans to begin construction and end with the anticipated completion date. Submit updates of the Anticipated Monthly Payout Schedule on March 15, June 15, September 15, and December 15 of each calendar year until project acceptance. Submit the original Anticipated Monthly Payout Schedule and all subsequent updates to the Resident Engineer with a copy to the State Construction Engineer at 1 South Wilmington Street, 1543 Mail Service Center, Raleigh, NC 27699-1543.

#### SCHEDULE OF ESTIMATED COMPLETION PROGRESS:

(7-15-08) (Rev. 6-20-23) 108-2 SPI G58

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

	<u>Fiscal Year</u>	Progress (% of Dollar Value)
2024	(7/01/23 - 6/30/24)	8% of Total Amount Bid
2025	(7/01/24 - 6/30/25)	27% of Total Amount Bid
2026	(7/01/25 - 6/30/26)	25% of Total Amount Bid
2027	(7/01/26 - 6/30/27)	23% of Total Amount Bid
2028	(7/01/27 - 6/30/28)	15% of Total Amount Bid
2029	(7/01/28 - 6/30/29)	2% of Total Amount Bid

The Contractor shall also furnish his own progress schedule in accordance with Article 108-2 of the 2018 Standard Specifications. Any acceleration of the progress as shown by the Contractor's progress schedule over the progress as shown above shall be subject to the approval of the Engineer.

#### **DISADVANTAGED BUSINESS ENTERPRISE:**

(10-16-07)(Rev. 8-17-21) 102-15(J) SPI G61

#### **Description**

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

#### **Definitions**

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

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

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

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

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

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

*Manufacturer* - A firm that operates or maintains a factory or establishment that produces on the premises, the materials or supplies obtained by the Contractor.

Regular Dealer - A firm that owns, operates, or maintains a store, warehouse, or other establishment in which the materials or supplies required for the performance of the contract are bought, kept in stock, and regularly sold to the public in the usual course of business. A regular dealer engages in, as its principal business and in its own name, the purchase and sale or lease of the products in question. A regular dealer in such bulk items as steel, cement, gravel, stone, and petroleum products need not keep such products in stock, if it owns and operates distribution equipment for the products. Brokers and packagers are not regarded as manufacturers or regular dealers within the meaning of this section.

Replacement / Substitution – A full or partial reduction in the amount of work subcontracted to a committed (or an approved substitute) DBE firm.

North Carolina Unified Certification Program (NCUCP) - A program that provides comprehensive services and information to applicants for DBE certification, such that an applicant is required to apply only once for a DBE certification that will be honored by all recipients of USDOT funds in the state and not limited to the Department of Transportation only. The Certification Program is in accordance with 49 CFR Part 26.

*United States Department of Transportation (USDOT)* - Federal agency responsible for issuing regulations (49 CFR Part 26) and official guidance for the DBE program.

#### Forms and Websites Referenced in this Provision

DBE Payment Tracking System - On-line system in which the Contractor enters the payments made to DBE subcontractors who have performed work on the project. https://apps.dot.state.nc.us/Vendor/PaymentTracking/

DBE-IS Subcontractor Payment Information - Form for reporting the payments made to all DBE firms working on the project. This form is for paper bid projects only. https://connect.ncdot.gov/business/Turnpike/Documents/Form%20DBE-IS%20Subcontractor%20Payment%20Information.pdf

RF-1 *DBE Replacement Request Form* - Form for replacing a committed DBE. http://connect.ncdot.gov/projects/construction/Construction%20Forms/DBE%20MBE%20WBE%20Replacement%20Request%20Form.pdf

SAF *Subcontract Approval Form* - Form required for approval to sublet the contract. http://connect.ncdot.gov/projects/construction/Construction%20Forms/Subcontract%20Approval%20Form%20Rev.%202012.zip

JC-1 *Joint Check Notification Form* - Form and procedures for joint check notification. The form acts as a written joint check agreement among the parties providing full and prompt disclosure of the expected use of joint checks.

http://connect.ncdot.gov/projects/construction/Construction%20 Forms/Joint%20 Check%20 Notification%20 Form.pdf

Letter of Intent - Form signed by the Contractor and the DBE subcontractor, manufacturer or regular dealer that affirms that a portion of said contract is going to be performed by the signed DBE for the estimated amount (based on quantities and unit prices) listed at the time of bid. http://connect.ncdot.gov/letting/LetCentral/Letter%20of%20Intent%20to%20Perform%20as%20 a%20Subcontractor.pdf

Listing of DBE Subcontractors Form - Form for entering DBE subcontractors on a project that will meet this DBE goal. This form is for paper bids only.

http://connect.ncdot.gov/municipalities/Bid%20 Proposals%20 for %20 LGA%20 Content/08%20 DBE%20 Subcontractors%20 (Federal).docx

Subcontractor Quote Comparison Sheet - Spreadsheet for showing all subcontractor quotes in the work areas where DBEs quoted on the project. This sheet is submitted with good faith effort packages.

http://connect.ncdot.gov/business/SmallBusiness/Documents/DBE%20Subcontractor%20Quote %20Comparison%20Example.xls

#### **DBE Goal**

The following DBE goal for participation by Disadvantaged Business Enterprises is established for this contract:

Disadvantaged Business Enterprises 5.0 %

- (A) If the DBE goal is more than zero, the Contractor shall exercise all necessary and reasonable steps to ensure that DBEs participate in at least the percent of the contract as set forth above as the DBE goal.
- (B) If the DBE goal is zero, the Contractor shall make an effort to recruit and use DBEs during the performance of the contract. Any DBE participation obtained shall be reported to the Department.

#### **Directory of Transportation Firms (Directory)**

Real-time information is available about firms doing business with the Department and firms that are certified through NCUCP in the Directory of Transportation Firms. Only firms identified in the Directory as DBE certified shall be used to meet the DBE goal. The Directory can be found at the following link. https://www.ebs.nc.gov/VendorDirectory/default.html

The listing of an individual firm in the directory shall not be construed as an endorsement of the firm's capability to perform certain work.

#### **Listing of DBE Subcontractors**

At the time of bid, bidders shall submit <u>all</u> DBE participation that they anticipate to use during the life of the contract. Only those identified to meet the DBE goal will be considered committed, even though the listing shall include both committed DBE subcontractors and additional DBE subcontractors. Additional DBE subcontractor participation submitted at the time of bid will be used toward the Department's overall race-neutral goal. Only those firms with current DBE certification at the time of bid opening will be acceptable for listing in the bidder's submittal of DBE participation. The Contractor shall indicate the following required information:

#### (A) Electronic Bids

Bidders shall submit a listing of DBE participation in the appropriate section of the electronic submittal file.

- (1) Submit the names and addresses of DBE firms identified to participate in the contract. If the bidder uses the updated listing of DBE firms shown in the electronic submittal file, the bidder may use the dropdown menu to access the name and address of the DBE firm.
- (2) Submit the contract line numbers of work to be performed by each DBE firm. When no figures or firms are entered, the bidder will be considered to have no DBE participation.
- (3) The bidder shall be responsible for ensuring that the DBE is certified at the time of bid by checking the Directory of Transportation Firms. If the firm is not certified at the time of the bid-letting, that DBE's participation will not count towards achieving the DBE goal.

#### (B) Paper Bids

- (1) If the DBE goal is more than zero,
  - (a) Bidders, at the time the bid proposal is submitted, shall submit a listing of *DBE* participation, including the names and addresses on *Listing of DBE Subcontractors* contained elsewhere in the contract documents in order for the bid to be considered responsive. Bidders shall indicate the total dollar value of the DBE participation for the contract.

- (b) If bidders have no DBE participation, they shall indicate this on the *Listing of DBE Subcontractors* by entering the word "None" or the number "0." This form shall be completed in its entirety. **Blank forms will not be deemed to represent zero participation**. Bids submitted that do not have DBE participation indicated on the appropriate form will not be read publicly during the opening of bids. The Department will not consider these bids for award and the proposal will be rejected.
- (c) The bidder shall be responsible for ensuring that the DBE is certified at the time of bid by checking the Directory of Transportation Firms. If the firm is not certified at the time of the bid-letting, that DBE's participation will not count towards achieving the corresponding goal.
- (2) If the DBE goal is zero, entries on the Listing of DBE Subcontractors are not required for the zero goal, however any DBE participation that is achieved during the project shall be reported in accordance with requirements contained elsewhere in the special provision.

#### **DBE Prime Contractor**

When a certified DBE firm bids on a contract that contains a DBE goal, the DBE firm is responsible for meeting the goal or making good faith efforts to meet the goal, just like any other bidder. In most cases, a DBE bidder on a contract will meet the DBE goal by virtue of the work it performs on the contract with its own forces. However, all the work that is performed by the DBE bidder and any other DBE subcontractors will count toward the DBE goal. The DBE bidder shall list itself along with any DBE subcontractors, if any, in order to receive credit toward the DBE goal.

For example, if the DBE goal is 45% and the DBE bidder will only perform 40% of the contract work, the prime will list itself at 40%, and the additional 5% shall be obtained through additional DBE participation with DBE subcontractors or documented through a good faith effort.

DBE prime contractors shall also follow Sections A and B listed under *Listing of DBE Subcontractor* just as a non-DBE bidder would.

#### Written Documentation – Letter of Intent

The bidder shall submit written documentation for each DBE that will be used to meet the DBE goal of the contract, indicating the bidder's commitment to use the DBE in the contract. This documentation shall be submitted on the Department's form titled *Letter of Intent*.

The documentation shall be received in the office of the State Contractor Utilization Engineer or at DBE@ncdot.gov no later than 10:00 a.m. of the sixth calendar day following opening of bids, unless the sixth day falls on an official state holiday. In that situation, it is due in the office of the State Contractor Utilization Engineer no later than 10:00 a.m. on the next official state business day.

If the bidder fails to submit the Letter of Intent from each committed DBE to be used toward the DBE goal, or if the form is incomplete (i.e. both signatures are not present), the DBE participation

will not count toward meeting the DBE goal. If the lack of this participation drops the commitment below the DBE goal, the Contractor shall submit evidence of good faith efforts, completed in its entirety, to the State Contractor Utilization Engineer or DBE@ncdot.gov no later than 10:00 a.m. on the eighth calendar day following opening of bids, unless the eighth day falls on an official state holiday. In that situation, it is due in the office of the State Contractor Utilization Engineer no later than 10:00 a.m. on the next official state business day.

#### **Submission of Good Faith Effort**

If the bidder fails to meet or exceed the DBE goal, the apparent lowest responsive bidder shall submit to the Department documentation of adequate good faith efforts made to reach the DBE goal.

A hard copy and an electronic copy of this information shall be received in the office of the State Contractor Utilization Engineer or at DBE@ncdot.gov no later than 10:00 a.m. on the sixth calendar day following opening of bids unless the sixth day falls on an official state holiday. In that situation, it is due in the office of the State Contractor Utilization Engineer no later than 10:00 a.m. on the next official state business day. If the contractor cannot send the information electronically, then one complete set and 5 copies of this information shall be received under the same time constraints above.

Note: Where the information submitted includes repetitious solicitation letters, it will be acceptable to submit a representative letter along with a distribution list of the firms that were solicited. Documentation of DBE quotations shall be a part of the good faith effort submittal. This documentation may include written subcontractor quotations, telephone log notations of verbal quotations, or other types of quotation documentation.

#### Consideration of Good Faith Effort for Projects with DBE Goals More Than Zero

Adequate good faith efforts mean that the bidder took all necessary and reasonable steps to achieve the goal which, by their scope, intensity, and appropriateness, could reasonably be expected to obtain sufficient DBE participation. Adequate good faith efforts also mean that the bidder actively and aggressively sought DBE participation. Mere *pro forma* efforts are not considered good faith efforts.

The Department will consider the quality, quantity, and intensity of the different kinds of efforts a bidder has made. Listed below are examples of the types of actions a bidder will take in making a good faith effort to meet the goal and are not intended to be exclusive or exhaustive, nor is it intended to be a mandatory checklist.

(A) Soliciting through all reasonable and available means (e.g. attendance at pre-bid meetings, advertising, written notices, use of verifiable electronic means through the use of the NCDOT Directory of Transportation Firms) the interest of all certified DBEs who have the capability to perform the work of the contract. The bidder must solicit this interest within at least 10 days prior to bid opening to allow the DBEs to respond to the solicitation. Solicitation shall provide the opportunity to DBEs within the Division and surrounding Divisions where the project is located. The bidder must determine with certainty if the DBEs are interested by taking appropriate steps to follow up initial solicitations.

- (B) Selecting portions of the work to be performed by DBEs in order to increase the likelihood that the DBE goals will be achieved.
  - (1) Where appropriate, break out contract work items into economically feasible units to facilitate DBE participation, even when the prime contractor might otherwise prefer to perform these work items with its own forces.
  - (2) Negotiate with subcontractors to assume part of the responsibility to meet the contract DBE goal when the work to be sublet includes potential for DBE participation (2<sup>nd</sup> and 3<sup>rd</sup> tier subcontractors).
- (C) Providing interested DBEs with adequate information about the plans, specifications, and requirements of the contract in a timely manner to assist them in responding to a solicitation.
- (D) (1) Negotiating in good faith with interested DBEs. It is the bidder's responsibility to make a portion of the work available to DBE subcontractors and suppliers and to select those portions of the work or material needs consistent with the available DBE subcontractors and suppliers, to facilitate DBE participation. Evidence of such negotiation includes the names, addresses, and telephone numbers of DBEs that were considered; a description of the information provided regarding the plans and specifications for the work selected for subcontracting; and evidence as to why additional agreements could not be reached for DBEs to perform the work.
  - (2) A bidder using good business judgment would consider a number of factors in negotiating with subcontractors, including DBE subcontractors, and would take a firm's price and capabilities as well as contract goals into consideration. However, the fact that there may be some additional costs involved in finding and using DBEs is not in itself sufficient reason for a bidder's failure to meet the contract DBE goal, as long as such costs are reasonable. Also, the ability or desire of a prime contractor to perform the work of a contract with its own organization does not relieve the bidder of the responsibility to make good faith efforts. Bidding contractors are not, however, required to accept higher quotes from DBEs if the price difference is excessive or unreasonable.
- (E) Not rejecting DBEs as being unqualified without sound reasons based on a thorough investigation of their capabilities. The bidder's standing within its industry, membership in specific groups, organizations, or associates and political or social affiliations (for example, union vs. non-union employee status) are not legitimate causes for the rejection or non-solicitation of bids in the bidder's efforts to meet the project goal.
- (F) Making efforts to assist interested DBEs in obtaining bonding, lines of credit, or insurance as required by the recipient or bidder.
- (G) Making efforts to assist interested DBEs in obtaining necessary equipment, supplies, materials, or related assistance or services.
- (H) Effectively using the services of available minority/women community organizations; minority/women contractors' groups; Federal, State, and local minority/women business

assistance offices; and other organizations as allowed on a case-by-case basis to provide assistance in the recruitment and placement of DBEs. Contact within 7 days from the bid opening the Business Opportunity and Work Force Development Unit at BOWD@ncdot.gov to give notification of the bidder's inability to get DBE quotes.

(I) Any other evidence that the bidder submits which shows that the bidder has made reasonable good faith efforts to meet the DBE goal.

In addition, the Department may take into account the following:

- (1) Whether the bidder's documentation reflects a clear and realistic plan for achieving the DBE goal.
- (2) The bidders' past performance in meeting the DBE goals.
- (3) The performance of other bidders in meeting the DBE goal. For example, when the apparent successful bidder fails to meet the DBE goal, but others meet it, you may reasonably raise the question of whether, with additional reasonable efforts the apparent successful bidder could have met the goal. If the apparent successful bidder fails to meet the DBE goal, but meets or exceeds the average DBE participation obtained by other bidders, the Department may view this, in conjunction with other factors, as evidence of the apparent successful bidder having made a good faith effort.

If the Department does not award the contract to the apparent lowest responsive bidder, the Department reserves the right to award the contract to the next lowest responsive bidder that can satisfy to the Department that the DBE goal can be met or that an adequate good faith effort has been made to meet the DBE goal.

#### **Non-Good Faith Appeal**

The State Prequalification Engineer will notify the contractor verbally and in writing of non-good faith. A contractor may appeal a determination of non-good faith made by the Goal Compliance Committee. If a contractor wishes to appeal the determination made by the Committee, they shall provide written notification to the State Prequalification Engineer or at DBE@ncdot.gov. The appeal shall be made within 2 business days of notification of the determination of non-good faith.

#### **Counting DBE Participation Toward Meeting DBE Goal**

#### (A) Participation

The total dollar value of the participation by a committed DBE will be counted toward the contract goal requirement. The total dollar value of participation by a committed DBE will be based upon the value of work actually performed by the DBE and the actual payments to DBE firms by the Contractor.

#### (B) Joint Checks

Prior notification of joint check use shall be required when counting DBE participation for services or purchases that involves the use of a joint check. Notification shall be through submission of Form JC-1 (*Joint Check Notification Form*) and the use of joint checks shall be in accordance with the Department's Joint Check Procedures.

#### (C) Subcontracts (Non-Trucking)

A DBE may enter into subcontracts. Work that a DBE subcontracts to another DBE firm may be counted toward the contract goal requirement. Work that a DBE subcontracts to a non-DBE firm does <u>not</u> count toward the contract goal requirement. If a DBE contractor or subcontractor subcontracts a significantly greater portion of the work of the contract than would be expected on the basis of standard industry practices, it shall be presumed that the DBE is not performing a commercially useful function. The DBE may present evidence to rebut this presumption to the Department. The Department's decision on the rebuttal of this presumption is subject to review by the Federal Highway Administration but is not administratively appealable to USDOT.

#### (D) Joint Venture

When a DBE performs as a participant in a joint venture, the Contractor may count toward its contract goal requirement a portion of the total value of participation with the DBE in the joint venture, that portion of the total dollar value being a distinct clearly defined portion of work that the DBE performs with its forces.

#### (E) Suppliers

A contractor may count toward its DBE requirement 60 percent of its expenditures for materials and supplies required to complete the contract and obtained from a DBE regular dealer and 100 percent of such expenditures from a DBE manufacturer.

#### (F) Manufacturers and Regular Dealers

A contractor may count toward its DBE requirement the following expenditures to DBE firms that are not manufacturers or regular dealers:

- (1) The fees or commissions charged by a DBE firm for providing a *bona fide* service, such as professional, technical, consultant, or managerial services, or for providing bonds or insurance specifically required for the performance of a DOT-assisted contract, provided the fees or commissions are determined to be reasonable and not excessive as compared with fees and commissions customarily allowed for similar services.
- (2) With respect to materials or supplies purchased from a DBE, which is neither a manufacturer nor a regular dealer, count the entire amount of fees or commissions charged for assistance in the procurement of the materials and supplies, or fees or transportation charges for the delivery of materials or supplies required on a job site (but not the cost of the materials and supplies themselves), provided the fees are

determined to be reasonable and not excessive as compared with fees customarily allowed for similar services.

## **Commercially Useful Function**

## (A) DBE Utilization

The Contractor may count toward its contract goal requirement only expenditures to DBEs that perform a commercially useful function in the work of a contract. A DBE performs a commercially useful function when it is responsible for execution of the work of the contract and is carrying out its responsibilities by actually performing, managing, and supervising the work involved. To perform a commercially useful function, the DBE shall also be responsible with respect to materials and supplies used on the contract, for negotiating price, determining quality and quantity, ordering the material and installing (where applicable) and paying for the material itself. To determine whether a DBE is performing a commercially useful function, the Department will evaluate the amount of work subcontracted, industry practices, whether the amount the firm is to be paid under the contract is commensurate with the work it is actually performing and the DBE credit claimed for its performance of the work, and any other relevant factors.

## (B) DBE Utilization in Trucking

The following factors will be used to determine if a DBE trucking firm is performing a commercially useful function:

- (1) The DBE shall be responsible for the management and supervision of the entire trucking operation for which it is responsible on a particular contract, and there shall not be a contrived arrangement for the purpose of meeting DBE goals.
- (2) The DBE shall itself own and operate at least one fully licensed, insured, and operational truck used on the contract.
- (3) The DBE receives credit for the total value of the transportation services it provides on the contract using trucks it owns, insures, and operates using drivers it employs.
- (4) The DBE may subcontract the work to another DBE firm, including an owner-operator who is certified as a DBE. The DBE who subcontracts work to another DBE receives credit for the total value of the transportation services the subcontracted DBE provides on the contract.
- (5) The DBE may also subcontract the work to a non-DBE firm, including from an owner-operator. The DBE who subcontracts the work to a non-DBE is entitled to credit for the total value of transportation services provided by the non-DBE subcontractor not to exceed the value of transportation services provided by DBE-owned trucks on the contract. Additional participation by non-DBE subcontractors receives credit only for the fee or commission it receives as a result of the subcontract arrangement. The value of services performed under subcontract agreements between the DBE and the Contractor will not count towards the DBE contract requirement.

- (6) A DBE may lease truck(s) from an established equipment leasing business open to the general public. The lease must indicate that the DBE has exclusive use of and control over the truck. This requirement does not preclude the leased truck from working for others during the term of the lease with the consent of the DBE, so long as the lease gives the DBE absolute priority for use of the leased truck. This type of lease may count toward the DBE's credit as long as the driver is under the DBE's payroll.
- (7) Subcontracted/leased trucks shall display clearly on the dashboard the name of the DBE that they are subcontracted/leased to and their own company name if it is not identified on the truck itself. Magnetic door signs are not permitted.

### **DBE** Replacement

When a Contractor has relied on a commitment to a DBE subcontractor (or an approved substitute DBE subcontractor) to meet all or part of a contract goal requirement, the contractor shall not terminate the DBE subcontractor for convenience. This includes, but is not limited to, instances in which the Contractor seeks to perform the work of the terminated subcontractor with another DBE subcontractor, a non-DBE subcontractor, or with the Contractor's own forces or those of an affiliate.

The Contractor must give notice in writing both by certified mail and email to the DBE subcontractor, with a copy to the Engineer of its intent to request to terminate and/or substitute, and the reason for the request. The Contractor must give the DBE subcontractor five (5) business days to respond to the Contractor's Notice of Intent to Request Termination and/or Substitution. If the DBE subcontractor objects to the intended termination/substitution, the DBE, within five (5) business days must advise the Contractor and the Department of the reasons why the action should not be approved. The five-day notice period shall begin on the next business day after written notice is provided to the DBE subcontractor.

A committed DBE subcontractor may only be terminated after receiving the Department's written approval based upon a finding of good cause for the proposed termination and/or substitution. For purposes of this section, good cause shall include the following circumstances:

- (a) The listed DBE subcontractor fails or refuses to execute a written contract;
- (b) The listed DBE subcontractor fails or refuses to perform the work of its subcontract in a way consistent with normal industry standards. Provided, however, that good cause does not exist if the failure or refusal of the DBE subcontractor to perform its work on the subcontract results from the bad faith or discriminatory action of the prime contractor;
- (c) The listed DBE subcontractor fails or refuses to meet the prime contractor's reasonable, nondiscriminatory bond requirements;
- (d) The listed DBE subcontractor becomes bankrupt, insolvent, or exhibits credit unworthiness;
- (e) The listed DBE subcontractor is ineligible to work on public works projects because of suspension and debarment proceedings pursuant to 2 CFR Parts 180, 215 and 1,200 or applicable state law;
- (f) The listed DBE subcontractor is not a responsible contractor;
- (g) The listed DBE voluntarily withdraws from the project and provides written notice of withdrawal;
- (h) The listed DBE is ineligible to receive DBE credit for the type of work required;
- (i) A DBE owner dies or becomes disabled with the result that the listed DBE contractor is unable to complete its work on the contract;

(j) Other documented good cause that compels the termination of the DBE subcontractor. Provided, that good cause does not exist if the prime contractor seeks to terminate a DBE it relied upon to obtain the contract so that the prime contractor can self-perform the work for which the DBE contractor was engaged or so that the prime contractor can substitute another DBE or non-DBE contractor after contract award.

The Contractor shall comply with the following for replacement of a committed DBE:

## (A) Performance Related Replacement

When a committed DBE is terminated for good cause as stated above, an additional DBE that was submitted at the time of bid may be used to fulfill the DBE commitment. A good faith effort will only be required for removing a committed DBE if there were no additional DBEs submitted at the time of bid to cover the same amount of work as the DBE that was terminated.

If a replacement DBE is not found that can perform at least the same amount of work as the terminated DBE, the Contractor shall submit a good faith effort documenting the steps taken. Such documentation shall include, but not be limited to, the following:

- (1) Copies of written notification to DBEs that their interest is solicited in contracting the work defaulted by the previous DBE or in subcontracting other items of work in the contract.
- (2) Efforts to negotiate with DBEs for specific subbids including, at a minimum:
  - (a) The names, addresses, and telephone numbers of DBEs who were contacted.
  - (b) A description of the information provided to DBEs regarding the plans and specifications for portions of the work to be performed.
- (3) A list of reasons why DBE quotes were not accepted.
- (4) Efforts made to assist the DBEs contacted, if needed, in obtaining bonding or insurance required by the Contractor.

### (B) Decertification Replacement

- (1) When a committed DBE is decertified by the Department after the SAF (Subcontract Approval Form) has been received by the Department, the Department will not require the Contractor to solicit replacement DBE participation equal to the remaining work to be performed by the decertified firm. The participation equal to the remaining work performed by the decertified firm will count toward the contract goal requirement.
- (2) When a committed DBE is decertified prior to the Department receiving the SAF (*Subcontract Approval Form*) for the named DBE firm, the Contractor shall take all necessary and reasonable steps to replace the DBE subcontractor with another DBE subcontractor to perform at least the same amount of work to meet the DBE goal requirement. If a DBE firm is not found to do the same amount of

work, a good faith effort must be submitted to NCDOT (see A herein for required documentation).

(3) Exception: If the DBE's ineligibility is caused solely by its having exceeded the size standard during the performance of the contract, the Department will not require the Contractor to solicit replacement DBE participation equal to the remaining work to be performed by the decertified firm. The participation equal to the remaining work performed by the decertified firm will count toward the contract goal requirement and overall goal.

All requests for replacement of a committed DBE firm shall be submitted to the Engineer for approval on Form RF-1 (DBE Replacement Request). If the Contractor fails to follow this procedure, the Contractor may be disqualified from further bidding for a period of up to 6 months.

## **Changes in the Work**

When the Engineer makes changes that result in the reduction or elimination of work to be performed by a committed DBE, the Contractor will not be required to seek additional participation. When the Engineer makes changes that result in additional work to be performed by a DBE based upon the Contractor's commitment, the DBE shall participate in additional work to the same extent as the DBE participated in the original contract work.

When the Engineer makes changes that result in extra work, which has more than a minimal impact on the contract amount, the Contractor shall seek additional participation by DBEs unless otherwise approved by the Engineer.

When the Engineer makes changes that result in an alteration of plans or details of construction, and a portion or all of the work had been expected to be performed by a committed DBE, the Contractor shall seek participation by DBEs unless otherwise approved by the Engineer.

When the Contractor requests changes in the work that result in the reduction or elimination of work that the Contractor committed to be performed by a DBE, the Contractor shall seek additional participation by DBEs equal to the reduced DBE participation caused by the changes.

## **Reports and Documentation**

A SAF (*Subcontract Approval Form*) shall be submitted for all work which is to be performed by a DBE subcontractor. The Department reserves the right to require copies of actual subcontract agreements involving DBE subcontractors.

When using transportation services to meet the contract commitment, the Contractor shall submit a proposed trucking plan in addition to the SAF. The plan shall be submitted prior to beginning construction on the project. The plan shall include the names of all trucking firms proposed for use, their certification type(s), the number of trucks owned by the firm, as well as the individual truck identification numbers, and the line item(s) being performed.

Within 30 calendar days of entering into an agreement with a DBE for materials, supplies or services, not otherwise documented by the SAF as specified above, the Contractor shall furnish

the Engineer a copy of the agreement. The documentation shall also indicate the percentage (60% or 100%) of expenditures claimed for DBE credit.

## **Reporting Disadvantaged Business Enterprise Participation**

The Contractor shall provide the Engineer with an accounting of payments made to all DBE firms, including material suppliers and contractors at all levels (prime, subcontractor, or second tier subcontractor). This accounting shall be furnished to the Engineer for any given month by the end of the following month. Failure to submit this information accordingly may result in the following action:

- (A) Withholding of money due in the next partial pay estimate; or
- (B) Removal of an approved contractor from the prequalified bidders' list or the removal of other entities from the approved subcontractors list.

While each contractor (prime, subcontractor, 2nd tier subcontractor) is responsible for accurate accounting of payments to DBEs, it shall be the prime contractor's responsibility to report all monthly and final payment information in the correct reporting manner.

Failure on the part of the Contractor to submit the required information in the time frame specified may result in the disqualification of that contractor and any affiliate companies from further bidding until the required information is submitted.

Failure on the part of any subcontractor to submit the required information in the time frame specified may result in the disqualification of that contractor and any affiliate companies from being approved for work on future DOT projects until the required information is submitted.

Contractors reporting transportation services provided by non-DBE lessees shall evaluate the value of services provided during the month of the reporting period only.

At any time, the Engineer can request written verification of subcontractor payments.

The Contractor shall report the accounting of payments through the Department's DBE Payment Tracking System.

### **Failure to Meet Contract Requirements**

Failure to meet contract requirements in accordance with Subarticle 102-15(J) of the 2018 Standard Specifications may be cause to disqualify the Contractor.

# **CERTIFICATION FOR FEDERAL-AID CONTRACTS:**

90) SP1 G85

The prospective participant certifies, by signing and submitting this bid or proposal, to the best of his or her knowledge and belief, that:

(A) No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any Federal agency, a Member of Congress, an officer or employee of

Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

(B) If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any Federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, *Disclosure Form to Report Lobbying*, in accordance with its instructions.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by *Section 1352, Title 31, U.S. Code.* Any person who fails to file the required certification shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.

The prospective participant also agrees by submitting his or her bid or proposal that he or she shall require that the language of this certification be included in all lower tier subcontracts, which exceed \$100,000 and that all such subrecipients shall certify and disclose accordingly.

# **CONTRACTOR'S LICENSE REQUIREMENTS:**102-14

(7-1-95) 102-14 SPI G88

If the successful bidder does not hold the proper license to perform any plumbing, heating, air conditioning, or electrical work in this contract, he will be required to sublet such work to a contractor properly licensed in accordance with *Article 2 of Chapter 87 of the General Statutes* (licensing of heating, plumbing, and air conditioning contractors) and *Article 4 of Chapter 87* of the *General Statutes* (licensing of electrical contractors).

### **RESTRICTIONS ON ITS EQUIPMENT AND SERVICES:**

(11-17-20) SP01 G090

All telecommunications, video or other ITS equipment or services installed or utilized on this project must be in conformance with UNIFORM ADMINISTRATIVE REQUIREMENTS, COST PRINCIPLES, AND AUDIT REQUIREMENTS FOR FEDERAL AWARDS 2 CFR, § 200.216 Prohibition on certain telecommunications and video surveillance services or equipment.

### **USE OF UNMANNED AIRCRAFT SYSTEM (UAS):**

(8-20-19) SP1 G092

The Contractor shall adhere to all Federal, State and Local regulations and guidelines for the use of Unmanned Aircraft Systems (UAS). This includes but is not limited to US 14 CFR Part 107 Small UAS Rule, NC GS 15A-300.2 Regulation of launch and recovery sites, NC GS 63-95 Training required for the operation of unmanned aircraft systems, NC GS 63-96 Permit required for commercial operation of unmanned aircraft system, and NCDOT UAS Policy. The required operator certifications include possessing a current Federal Aviation Administration (FAA) Remote Pilot Certificate, a NC UAS Operator Permit as well as operating a UAS registered with the FAA.

Prior to beginning operations, the Contractor shall complete the NCDOT UAS – Flight Operation Approval Form and submit it to the Engineer for approval. All UAS operations shall be approved by the Engineer prior to beginning the operations.

All contractors or subcontractors operating UAS shall have UAS specific general liability insurance to cover all operations under this contract.

The use of UAS is at the Contractor's discretion. No measurement or payment will be made for the use of UAS. In the event that the Department directs the Contractor to utilize UAS, payment will be in accordance with Article 104-7 Extra Work.

## **EQUIPMENT IDLING GUIDELINES:**

(1-19-21) 107 SP1 G096

Exercise reduced fuel consumption and reduced equipment emissions during the construction of all work associated with this contract. Employees engaged in the construction of this project should turn off vehicles when stopped for more than thirty (30) minutes and off-highway equipment should idle no longer than fifteen (15) consecutive minutes.

These guidelines for turning off vehicles and equipment when idling do not apply to:

- 1. Idling when queuing.
- 2. Idling to verify the vehicle is in safe operating condition.
- 3. Idling for testing, servicing, repairing or diagnostic purposes.
- 4. Idling necessary to accomplish work for which the vehicle was designed (such as operating a crane, mixing concrete, etc.).
- 5. Idling required to bring the machine system to operating temperature.
- 6. Emergency vehicles, utility company, construction, and maintenance vehicles where the engines must run to perform needed work.
- 7. Idling to ensure safe operation of the vehicle.
- 8. Idling when the propulsion engine is providing auxiliary power for other than heating or air conditioning. (such as hydraulic systems for pavers)
- 9. When specific traffic, safety, or emergency situations arise.
- 10. If the ambient temperature is less than 32 degrees Fahrenheit. Limited idling to provide for the safety of vehicle occupants (e.g. to run the heater).
- 11. If the ambient temperature is greater than 90 degrees Fahrenheit. Limited idling to provide for the safety of vehicle occupants of off-highway equipment (e.g. to run the air conditioning) no more than 30 minutes.
- 12. Diesel powered vehicles may idle for up to 30 minutes to minimize restart problems.

Any vehicle, truck, or equipment in which the primary source of fuel is natural gas or electricity is exempt from the idling limitations set forth in this special provision.

## U.S. DEPARTMENT OF TRANSPORTATION HOTLINE:

(11-22-94) 108-5 SP1 G100

To report bid rigging activities call: 1-800-424-9071

The U.S. Department of Transportation (DOT) operates the above toll-free hotline Monday through Friday, 8:00 a.m. to 5:00 p.m. eastern time. Anyone with knowledge of possible bid rigging, bidder collusion, or other fraudulent activities should use the hotline to report such activities.

The hotline is part of the DOT's continuing effort to identify and investigate highway construction contract fraud and abuse is operated under the direction of the DOT Inspector General. All information will be treated confidentially and caller anonymity will be respected.

### **SUBSURFACE INFORMATION:**

(7-1-95) 450 SPI GI12 C

Subsurface information is available on the roadway and structure portions of this project.

### **PORTABLE CONCRETE BARRIER - (Partial Payments for Materials):**

(7-1-95) (Rev. 8-16-11) 1170-4 SP1 G121

When so authorized by the Engineer, partial materials payments will be made up to 95 percent of the delivered cost of portable concrete barrier, provided that these materials have been delivered on the project and stored in an acceptable manner, and further provided the documents listed in Subarticle 109-5(C) of the 2018 Standard Specifications have been furnished to the Engineer.

The provisions of Subarticle 109-5(B) of the 2018 Standard Specifications will apply to the portable concrete barrier.

## **MAINTENANCE OF THE PROJECT:**

(11-20-07) (Rev. 1-17-12) 104-10 SPI G125

Revise the 2018 Standard Specifications as follows:

Page 1-39, Article 104-10 Maintenance of the Project, line 25, add the following after the first sentence of the first paragraph:

All guardrail/guiderail within the project limits shall be included in this maintenance.

Page 1-39, Article 104-10 Maintenance of the Project, line 30, add the following as the last sentence of the first paragraph:

The Contractor shall perform weekly inspections of guardrail and guiderail and shall report damages to the Engineer on the same day of the weekly inspection. Where damaged guardrail or guiderail is repaired or replaced as a result of maintaining the project in accordance with this article, such repair or replacement shall be performed within 7 consecutive calendar days of such inspection report.

Page 1-39, Article 104-10 Maintenance of the Project, lines 42-44, replace the last sentence of the last paragraph with the following:

The Contractor will not be directly compensated for any maintenance operations necessary, except for maintenance of guardrail/guiderail, as this work will be considered incidental to the work covered by the various contract items. The provisions of Article 104-7, Extra Work, and Article 104-8, Compensation and Record Keeping will apply to authorized maintenance of guardrail/guiderail. Performance of weekly inspections of guardrail/guiderail, and the damage reports required as described above, will be considered to be an incidental part of the work being paid for by the various contract items.

## **ELECTRONIC BIDDING:**

(2-19-19) 101, 102, 103 SP1 G140

Revise the 2018 Standard Specifications as follows:

Page 1-4, Article 101-3, DEFINITIONS, BID (OR PROPOSAL) *Electronic Bid*, line 1, replace "Bid Express®" with "the approved electronic bidding provider".

Page 1-15, Subarticle 102-8(B), Electronic Bids, lines 39-40, replace "to Bid Express®" with "via the approved electronic bidding provider".

Page 1-15, Subarticle 102-8(B)(1), Electronic Bids, line 41, delete "from Bid Express®"

Page 1-17, Subarticle 102-9(C)(2), Electronic Bids, line 21, replace "Bid Express® miscellaneous folder within the .ebs" with "electronic submittal".

Page 1-29, Subarticle 103-4(C)(2), Electronic Bids, line 32, replace ".ebs miscellaneous data file of Expedite" with "electronic submittal file"

## **AWARD LIMITS:**

(4-19-22) 103 SP1 G141

Revise the 2018 Standard Specifications as follows:

Page 1-29, Subarticle 103-4(C), Award Limits, line 4-8, delete and replace the first sentence in the first paragraph with the following:

A bidder who desires to bid on more than one project on which bids are to be opened in the same letting and who desires to avoid receiving an award of more projects than he is equipped to handle, may bid on any number of projects but may limit the total amount of work awarded to him on selected projects by completing the form Award Limits on Multiple Projects for each project subject to the award limit.

### **BID DOCUMENTATION:**

(1-1-02) (Rev.8-18-15) 103 SP1 G142

### General

The successful Bidder (Contractor) shall submit the original, unaltered bid documentation or a certified copy of the original, unaltered bid documentation used to prepare the bid for this contract to the Department within 10 days after receipt of notice of award of contract. Such documentation shall be placed in escrow with a banking institution or other bonded document storage facility selected by the Department.

The Department will not execute the contract until the original, unaltered bid documentation or a certified copy of the original, unaltered bid documentation has been received by the Department.

#### Terms

Bid Documentation - Bid Documentation shall mean all written information, working papers, computer printouts, electronic media, charts, and all other data compilations which contain or reflect information, data, and calculations used by the Bidder in the preparation of the bid. The term bid documentation includes, but is not limited to, contractor equipment rates, contractor overhead rates, labor rates, efficiency or productivity factors, arithmetical calculations, and quotations from subcontractors and material suppliers to the extent that such rates and quotations were used by the Bidder in formulating and determining the bid. The term bid documentation also includes any manuals, which are standard to the industry used by the Bidder in determining the bid. Such manuals may be included in the bid documentation by reference. Such reference shall include the name and date of the publication and the publisher. Bid Documentation does not include bid documents provided by the Department for use by the Bidder in bidding on this project. The Bid Documentation can be in the form of electronic submittal (i.e. thumb drive) or paper. If the Bidder elects to submit the Bid Documentation in electronic format, the Department requires a backup submittal (i.e. a second thumb drive) in case one is corrupted.

Contractor's Representative - Officer of the Contractor's company; if not an officer, the Contractor shall supply a letter signed and notarized by an officer of the Contractor's company, granting permission for the representative to sign the escrow agreement on behalf of the Contractor.

*Escrow Agent* - Officer of the select banking institution or other bonded document storage facility authorized to receive and release bid documentation.

## **Escrow Agreement Information**

A draft copy of the Escrow Agreement will be mailed to the Bidder after the notice of award for informational purposes. The Bidder and Department will sign the actual Escrow Agreement at the time the bid documentation is delivered to the Escrow Agent.

### Failure to Provide Bid Documentation

The Bidder's failure to provide the original, unaltered bid documentation or a certified copy of the original, unaltered bid documentation within 10 days after the notice of award is received may be just cause for rescinding the award of the contract and may result in the removal of the Bidder from the Department's list of qualified bidders for a period of up to 180 days. Award may then be made to the next lowest responsible bidder or the work may be readvertised and constructed under the contract or otherwise, as the Department may decide.

### **Submittal of Bid Documentation**

- (A) Appointment Email <a href="mailto:specs@ncdot.gov">specs@ncdot.gov</a> or call 919.707.6900 to schedule an appointment.
- (B) Delivery A representative of the Bidder shall deliver the original, unaltered bid documentation or a certified copy of the original, unaltered bid documentation to the Department, in a container suitable for sealing, within 10 days after the notice of award is received.
- (C) Packaging The container shall be no larger than 15.5 inches in length by 12 inches wide by 11 inches high and shall be water resistant. The container shall be clearly marked on

the face and the back of the container with the following information: Bid Documentation, Bidder's Name, Bidder's Address, Date of Escrow Submittal, Contract Number, TIP Number if applicable, and County.

### **Affidavit**

Bid documentation will be considered a certified copy if the Bidder includes an affidavit stating that the enclosed documentation is an EXACT copy of the original documentation used by the Bidder to determine the bid for this project. The affidavit shall also list each bid document with sufficient specificity so a comparison may be made between the list and the bid documentation to ensure that all of the bid documentation listed in the affidavit has been enclosed for escrow. The affidavit shall attest that the affiant has personally examined the bid documentation, that the affidavit lists all of the documents used by the Bidder to determine the bid for this project, and that all bid documentation has been included. The affidavit shall be signed by a chief officer of the company, have the person's name and title typed below the signature, and the signature shall be notarized at the bottom of the affidavit.

### Verification

Upon delivery of the bid documentation, the Department's Contract Officer and the Bidder's representative will verify the accuracy and completeness of the bid documentation compared to the affidavit. Should a discrepancy exist, the Bidder's representative shall immediately furnish the Department's Contract Officer with any other needed bid documentation. The Department's Contract Officer upon determining that the bid documentation is complete will, in the presence of the Bidder's representative, immediately place the complete bid documentation and affidavit in the container and seal it. Both parties will deliver the sealed container to the Escrow Agent for placement in a safety deposit box, vault, or other secure accommodation.

### **Confidentiality of Bid Documentation**

The bid documentation and affidavit in escrow are, and will remain, the property of the Bidder. The Department has no interest in, or right to, the bid documentation and affidavit other than to verify the contents and legibility of the bid documentation unless the Contractor gives written notice of intent to file a claim, files a written claim, files a written and verified claim, or initiates litigation against the Department. In the event of such written notice of intent to file a claim, filing of a written claim, filing a written and verified claim, or initiation of litigation against the Department, or receipt of a letter from the Contractor authorizing release, the bid documentation and affidavit may become the property of the Department for use in considering any claim or in litigation as the Department may deem appropriate.

Any portion or portions of the bid documentation designated by the Bidder as a *trade secret* at the time the bid documentation is delivered to the Department's Contract Officer shall be protected from disclosure as provided by *G.S. 132-1.2*.

### **Duration and Use**

The bid documentation and affidavit shall remain in escrow until 60 calendar days from the time the Contractor receives the final estimate; or until such time as the Contractor:

- (A) Gives written notice of intent to file a claim,
- (B) Files a written claim,
- (C) Files a written and verified claim,
- (D) Initiates litigation against the Department related to the contract; or
- (E) Authorizes in writing its release.

Upon the giving of written notice of intent to file a claim, filing a written claim, filing a written and verified claim, or the initiation of litigation by the Contractor against the Department, or receipt of a letter from the Contractor authorizing release, the Department may obtain the release and custody of the bid documentation.

The Bidder certifies and agrees that the sealed container placed in escrow contains all of the bid documentation used to determine the bid and that no other bid documentation shall be relevant or material in litigation over claims brought by the Contractor arising out of this contract.

### **Release of Bid Documentation to the Contractor**

If the bid documentation remains in escrow 60 calendar days after the time the Contractor receives the final estimate and the Contractor has not filed a written claim, filed a written and verified claim, or has not initiated litigation against the Department related to the contract, the Department will instruct the Escrow Agent to release the sealed container to the Contractor.

The Contractor will be notified by certified letter from the Escrow Agent that the bid documentation will be released to the Contractor. The Contractor or his representative shall retrieve the bid documentation from the Escrow Agent within 30 days of the receipt of the certified letter. If the Contractor does not receive the documents within 30 days of the receipt of the certified letter, the Department will contact the Contractor to determine final dispersion of the bid documentation.

## **Payment**

The cost of the escrow will be borne by the Department. There will be no separate payment for all costs of compilation of the data, container, or verification of the bid documentation. Payment at the various contract unit or lump sum prices in the contract will be full compensation for all such costs.

### TWELVE MONTH GUARANTEE:

(7-15-03) 108 SP1 G145

- (A) The Contractor shall guarantee materials and workmanship against latent and patent defects arising from faulty materials, faulty workmanship or negligence for a period of twelve months following the date of final acceptance of the work for maintenance and shall replace such defective materials and workmanship without cost to the Department. The Contractor will not be responsible for damage due to faulty design, normal wear and tear, for negligence on the part of the Department, and/or for use in excess of the design.
- (B) Where items of equipment or material carry a manufacturer's guarantee for any period in excess of twelve months, then the manufacturer's guarantee shall apply for that particular piece of equipment or material. The Department's first remedy shall be through the manufacturer although the Contractor is responsible for invoking the warranted repair work

with the manufacturer. The Contractor's responsibility shall be limited to the term of the manufacturer's guarantee. NCDOT would be afforded the same warranty as provided by the Manufacturer.

This guarantee provision shall be invoked only for major components of work in which the Contractor would be wholly responsible for under the terms of the contract. Examples would include pavement structures, bridge components, and sign structures. This provision will not be used as a mechanism to force the Contractor to return to the project to make repairs or perform additional work that the Department would normally compensate the Contractor for. In addition, routine maintenance activities (i.e. mowing grass, debris removal, ruts in earth shoulders,) are not parts of this guarantee.

Appropriate provisions of the payment and/or performance bonds shall cover this guarantee for the project.

To ensure uniform application statewide the Division Engineer will forward details regarding the circumstances surrounding any proposed guarantee repairs to the Chief Engineer for review and approval prior to the work being performed.

## EROSION AND SEDIMENT CONTROL/STORMWATER CERTIFICATION:

(1-16-07) (Rev 12-15-20)

105-16, 225-2, 16

SP1 G180

### General

Schedule and conduct construction activities in a manner that will minimize soil erosion and the resulting sedimentation and turbidity of surface waters. Comply with the requirements herein regardless of whether or not a National Pollution discharge Elimination System (NPDES) permit for the work is required.

Establish a chain of responsibility for operations and subcontractors' operations to ensure that the *Erosion and Sediment Control/Stormwater Pollution Prevention Plan* is implemented and maintained over the life of the contract.

- (A) Certified Supervisor Provide a certified Erosion and Sediment Control/Stormwater Supervisor to manage the Contractor and subcontractor operations, insure compliance with Federal, State and Local ordinances and regulations, and manage the Quality Control Program.
- (B) Certified Foreman Provide a certified, trained foreman for each construction operation that increases the potential for soil erosion or the possible sedimentation and turbidity of surface waters.
- (C) Certified Installer Provide a certified installer to install or direct the installation for erosion or sediment/stormwater control practices.
- (D) Certified Designer Provide a certified designer for the design of the erosion and sediment control/stormwater component of reclamation plans and, if applicable, for the design of the project erosion and sediment control/stormwater plan.

### **Roles and Responsibilities**

- (A) Certified Erosion and Sediment Control/Stormwater Supervisor The Certified Supervisor shall be Level II and responsible for ensuring the erosion and sediment control/stormwater plan is adequately implemented and maintained on the project and for conducting the quality control program. The Certified Supervisor shall be on the project within 24 hours notice from initial exposure of an erodible surface to the project's final acceptance. Perform the following duties:
  - (1) Manage Operations Coordinate and schedule the work of subcontractors so that erosion and sediment control/stormwater measures are fully executed for each operation and in a timely manner over the duration of the contract.
    - (a) Oversee the work of subcontractors so that appropriate erosion and sediment control/stormwater preventive measures are conformed to at each stage of the work.
    - (b) Prepare the required National Pollutant Discharge Elimination System (NPDES) Inspection Record and submit to the Engineer.
    - (c) Attend all weekly or monthly construction meetings to discuss the findings of the NPDES inspection and other related issues.
    - (d) Implement the erosion and sediment control/stormwater site plans requested.
    - (e) Provide any needed erosion and sediment control/stormwater practices for the Contractor's temporary work not shown on the plans, such as, but not limited to work platforms, temporary construction, pumping operations, plant and storage yards, and cofferdams.
    - (f) Acquire applicable permits and comply with requirements for borrow pits, dewatering, and any temporary work conducted by the Contractor in jurisdictional areas.
    - (g) Conduct all erosion and sediment control/stormwater work in a timely and workmanlike manner.
    - (h) Fully perform and install erosion and sediment control/stormwater work prior to any suspension of the work.
    - (i) Coordinate with Department, Federal, State and Local Regulatory agencies on resolution of erosion and sediment control/stormwater issues due to the Contractor's operations.
    - (j) Ensure that proper cleanup occurs from vehicle tracking on paved surfaces or any location where sediment leaves the Right-of-Way.
    - (k) Have available a set of erosion and sediment control/stormwater plans that are initialed and include the installation date of Best Management Practices. These practices shall include temporary and permanent groundcover and be properly updated to reflect necessary plan and field changes for use and review by Department personnel as well as regulatory agencies.
  - (2) Requirements set forth under the NPDES Permit The Department's NPDES Stormwater permit (NCS000250) outlines certain objectives and management measures pertaining to construction activities. The permit references NCG010000, General Permit to Discharge Stormwater under the NPDES, and states that the Department shall incorporate the applicable requirements into its delegated Erosion

and Sediment Control Program for construction activities disturbing one or more acres of land. The Department further incorporates these requirements on all contracted bridge and culvert work at jurisdictional waters, regardless of size. Some of the requirements are, but are not limited to:

- (a) Control project site waste to prevent contamination of surface or ground waters of the state, i.e. from equipment operation/maintenance, construction materials, concrete washout, chemicals, litter, fuels, lubricants, coolants, hydraulic fluids, any other petroleum products, and sanitary waste.
- (b) Inspect erosion and sediment control/stormwater devices and stormwater discharge outfalls at least once every 7 calendar days and within 24 hours after a rainfall event equal to or greater than 1.0 inch that occurs within a 24 hour period. Additional monitoring may be required at the discretion of Division of Water Resources personnel if the receiving stream is 303(d) listed for turbidity and the project has had documented problems managing turbidity.
- (c) Maintain an onsite rain gauge or use the Department's Multi-Sensor Precipitation Estimate website to maintain a daily record of rainfall amounts and dates.
- (d) Maintain erosion and sediment control/stormwater inspection records for review by Department and Regulatory personnel upon request.
- (e) Implement approved reclamation plans on all borrow pits, waste sites and staging areas.
- (f) Maintain a log of turbidity test results as outlined in the Department's Procedure for Monitoring Borrow Pit Discharge.
- (g) Provide secondary containment for bulk storage of liquid materials.
- (h) Provide training for employees concerning general erosion and sediment control/stormwater awareness, the Department's NPDES Stormwater Permit NCS000250 requirements, and the applicable requirements of the *General Permit, NCG010000*.
- (i) Report violations of the NPDES permit to the Engineer immediately who will notify the Division of Water Quality Regional Office within 24 hours of becoming aware of the violation.
- (3) Quality Control Program Maintain a quality control program to control erosion, prevent sedimentation and follow provisions/conditions of permits. The quality control program shall:
  - (a) Follow permit requirements related to the Contractor and subcontractors' construction activities.
  - (b) Ensure that all operators and subcontractors on site have the proper erosion and sediment control/stormwater certification.
  - (c) Notify the Engineer when the required certified erosion and sediment control/stormwater personnel are not available on the job site when needed.
  - (d) Conduct the inspections required by the NPDES permit.
  - (e) Take corrective actions in the proper timeframe as required by the NPDES permit for problem areas identified during the NPDES inspections.

- (f) Incorporate erosion control into the work in a timely manner and stabilize disturbed areas with mulch/seed or vegetative cover on a section-by-section basis.
- (g) Use flocculants approved by state regulatory authorities where appropriate and where required for turbidity and sedimentation reduction.
- (h) Ensure proper installation and maintenance of temporary erosion and sediment control devices.
- (i) Remove temporary erosion or sediment control devices when they are no longer necessary as agreed upon by the Engineer.
- (j) The Contractor's quality control and inspection procedures shall be subject to review by the Engineer. Maintain NPDES inspection records and make records available at all times for verification by the Engineer.
- (B) Certified Foreman At least one Certified Foreman shall be onsite for each type of work listed herein during the respective construction activities to control erosion, prevent sedimentation and follow permit provisions:
  - (1) Foreman in charge of grading activities
  - (2) Foreman in charge of bridge or culvert construction over jurisdictional areas
  - (3) Foreman in charge of utility activities

The Contractor may request to use the same person as the Level II Supervisor and Level II Foreman. This person shall be onsite whenever construction activities as described above are taking place. This request shall be approved by the Engineer prior to work beginning.

The Contractor may request to name a single Level II Foreman to oversee multiple construction activities on small bridge or culvert replacement projects. This request shall be approved by the Engineer prior to work beginning.

- (C) *Certified Installers* Provide at least one onsite, Level I Certified Installer for each of the following erosion and sediment control/stormwater crew:
  - (1) Seeding and Mulching
  - (2) Temporary Seeding
  - (3) Temporary Mulching
  - (4) Sodding
  - (5) Silt fence or other perimeter erosion/sediment control device installations
  - (6) Erosion control blanket installation
  - (7) Hydraulic tackifier installation
  - (8) Turbidity curtain installation
  - (9) Rock ditch check/sediment dam installation
  - (10) Ditch liner/matting installation
  - (11) Inlet protection
  - (12) Riprap placement
  - (13) Stormwater BMP installations (such as but not limited to level spreaders, retention/detention devices)
  - (14) Pipe installations within jurisdictional areas

If a Level I Certified Installer is not onsite, the Contractor may substitute a Level II Foreman for a Level I Installer, provided the Level II Foreman is not tasked to another crew requiring Level II Foreman oversight.

(D) Certified Designer - Include the certification number of the Level III Certified Designer on the erosion and sediment control/stormwater component of all reclamation plans and if applicable, the certification number of the Level III Certified Designer on the design of the project erosion and sediment control/stormwater plan.

## **Preconstruction Meeting**

Furnish the names of the Certified Erosion and Sediment Control/Stormwater Supervisor, Certified Foremen, Certified Installers and Certified Designer and notify the Engineer of changes in certified personnel over the life of the contract within 2 days of change.

## **Ethical Responsibility**

Any company performing work for the North Carolina Department of Transportation has the ethical responsibility to fully disclose any reprimand or dismissal of an employee resulting from improper testing or falsification of records.

## **Revocation or Suspension of Certification**

Upon recommendation of the Chief Engineer to the certification entity, certification for *Supervisor*, *Certified Foremen*, *Certified Installers* and *Certified Designer* may be revoked or suspended with the issuance of an *Immediate Corrective Action (ICA)*, *Notice of Violation (NOV)*, or *Cease and Desist Order* for erosion and sediment control/stormwater related issues.

The Chief Engineer may recommend suspension or permanent revocation of certification due to the following:

- (A) Failure to adequately perform the duties as defined within this certification provision.
- (B) Issuance of an ICA, NOV, or Cease and Desist Order.
- (C) Failure to fully perform environmental commitments as detailed within the permit conditions and specifications.
- (D) Demonstration of erroneous documentation or reporting techniques.
- (E) Cheating or copying another candidate's work on an examination.
- (F) Intentional falsification of records.
- (G) Directing a subordinate under direct or indirect supervision to perform any of the above actions.
- (H) Dismissal from a company for any of the above reasons.
- (I) Suspension or revocation of one's certification by another entity.

Suspension or revocation of a certification will be sent by certified mail to the certificant and the Corporate Head of the company that employs the certificant.

A certificant has the right to appeal any adverse action which results in suspension or permanent revocation of certification by responding, in writing, to the Chief Engineer within 10 calendar days after receiving notice of the proposed adverse action.

Chief Engineer 1536 Mail Service Center Raleigh, NC 27699-1536

Failure to appeal within 10 calendar days will result in the proposed adverse action becoming effective on the date specified on the certified notice. Failure to appeal within the time specified will result in a waiver of all future appeal rights regarding the adverse action taken. The certificant will not be allowed to perform duties associated with the certification during the appeal process.

The Chief Engineer will hear the appeal and make a decision within 7 days of hearing the appeal. Decision of the Chief Engineer will be final and will be made in writing to the certificant.

If a certification is temporarily suspended, the certificant shall pass any applicable written examination and any proficiency examination, at the conclusion of the specified suspension period, prior to having the certification reinstated.

### **Measurement and Payment**

Certified Erosion and Sediment Control/Stormwater Supervisor, Certified Foremen, Certified Installers and Certified Designer will be incidental to the project for which no direct compensation will be made.

# <u>PROCEDURE FOR MONITORING BORROW PIT DISCHARGE:</u> (2-20-07) (Rev. 4-5-19) 105-16, 230, 801

(2-20-07) (Rev. 4-5-19)

SP1 G181

Water discharge from borrow pit sites shall not cause surface waters to exceed 50 NTUs (nephelometric turbidity unit) in streams not designated as trout waters and 10 NTUs in streams, lakes or reservoirs designated as trout waters. For lakes and reservoirs not designated as trout waters, the turbidity shall not exceed 25 NTUs. If the turbidity exceeds these levels due to natural background conditions, the existing turbidity level shall not be increased.

If during any operating day, the downstream water quality exceeds the standard, the Contractor shall do all of the following:

- (A) Either cease discharge or modify the discharge volume or turbidity levels to bring the downstream turbidity levels into compliance, or
- (B) Evaluate the upstream conditions to determine if the exceedance of the standard is due to natural background conditions. If the background turbidity measurements exceed the standard, operation of the pit and discharge can continue as long as the stream turbidity levels are not increased due to the discharge.
- (C) Measure and record the turbidity test results (time, date and sampler) at all defined sampling locations 30 minutes after startup and at a minimum, one additional sampling of all sampling locations during that 24-hour period in which the borrow pit is discharging.
- Notify DWQ within 24 hours of any stream turbidity standard exceedances that are not (D) brought into compliance.

During the Environmental Assessment required by Article 230-4 of the 2018 Standard Specifications, the Contractor shall define the point at which the discharge enters into the State's surface waters and the appropriate sampling locations. Sampling locations shall include points upstream and downstream from the point at which the discharge enters these waters. Upstream sampling location shall be located so that it is not influenced by backwater conditions and represents natural background conditions. Downstream sampling location shall be located at the point where complete mixing of the discharge and receiving water has occurred.

The discharge shall be closely monitored when water from the dewatering activities is introduced into jurisdictional wetlands. Any time visible sedimentation (deposition of sediment) on the wetland surface is observed, the dewatering activity will be suspended until turbidity levels in the stilling basin can be reduced to a level where sediment deposition does not occur. Staining of wetland surfaces from suspended clay particles, occurring after evaporation or infiltration, does not constitute sedimentation. No activities shall occur in wetlands that adversely affect the functioning of a wetland. Visible sedimentation will be considered an indication of possible adverse impacts on wetland use.

The Engineer will perform independent turbidity tests on a random basis. These results will be maintained in a log within the project records. Records will include, at a minimum, turbidity test results, time, date and name of sampler. Should the Department's test results exceed those of the Contractor's test results, an immediate test shall be performed jointly with the results superseding the previous test results of both the Department and the Contractor.

The Contractor shall use the NCDOT Turbidity Reduction Options for Borrow Pits Matrix, available at <a href="https://connect.ncdot.gov/resources/roadside/FieldOperationsDocuments/TurbidityReductionOptionSheet.pdf">https://connect.ncdot.gov/resources/roadside/FieldOperationsDocuments/TurbidityReductionOptionSheet.pdf</a> to plan, design, construct, and maintain BMPs to address water quality standards. Tier I Methods include stilling basins which are standard compensatory BMPs. Other Tier I methods are noncompensatory and shall be used when needed to meet the stream turbidity standards. Tier II Methods are also noncompensatory and are options that may be needed for protection of rare or unique resources or where special environmental conditions exist at the site which have led to additional requirements being placed in the DWQ's 401 Certifications and approval letters, Isolated Wetland Permits, Riparian Buffer Authorization or a DOT Reclamation Plan's Environmental Assessment for the specific site. Should the Contractor exhaust all Tier I Methods on a site exclusive of rare or unique resources or special environmental conditions, Tier II Methods may be required by regulators on a case by case basis per supplemental agreement.

The Contractor may use cation exchange capacity (CEC) values from proposed site borings to plan and develop the bid for the project. CEC values exceeding 15 milliequivalents per 100 grams of soil may indicate a high potential for turbidity and should be avoided when dewatering into surface water is proposed.

No additional compensation for monitoring borrow pit discharge will be paid.

## **NOTE TO CONTRACTOR:**

In accordance with Article 105-8 of the Standard Specifications, tree clearing operations shall be coordinated with utility owners.

## **PROJECT SPECIAL PROVISIONS**

## **ROADWAY**

### **CLEARING AND GRUBBING - METHOD II:**

(9-17-02) (Rev.8-18-15)

SP2 R02A

Perform clearing on this project to the limits established by Method "II" shown on Standard Drawing No. 200.02 of the 2018 Roadway Standard Drawings. Conventional clearing methods may be used except where permit drawings or conditions have been included in the proposal which require certain areas to be cleared by hand methods.

## **BUILDING REMOVAL:**

(1-1-02) (Rev. 4-16-13)

215

SP2 R15 A

Remove the buildings, underground storage tanks and appurtenances listed below in accordance with Section 215 of the 2018 Standard Specifications:

Parcel 009 24+50 -L- Rt. 1SMTLBUS

Parcel 031 71+00 to 73+00 -L- Lt. Garage

Parcel 035 80+00 to 85+00 -L- Lt. 1 SMTL BLD

Parcel 039 78+50 -L- Lt. 1SFD

Parcel 041 84+00 -L- Rt. Garage

Parcel 051 107+00 -L- Lt. 2 SMTLBUS

Parcel 061 117+00 -L- Rt. Shed

Parcel 083 153+34 to 159+85 -L- Rt. 2SFD

Parcel 088 161+95 to 167+90 -L- Lt. DWMH

Parcel 091 159+80 -L- to 160+90 -L- Rt. Abandoned MH

Parcel 093 162+90 to 169+00 -L- Rt. /10+35 to 16+50 Lt. -Y11A- Lt. 1SFD

Parcel 099 183+00 -L- Rt. 1SFD, 2 storage buildings

Parcel 101 190+25 to 196+40 -L- Rt. Storage Shed

Parcel 105 197+60 -L- Rt. Shed

## **TEMPORARY DETOURS:**

(7-1-95) (Rev. 11-19-13)

1101

Construct temporary detours required on this project in accordance with the typical sections in the plans or as directed.

After the detours have served their purpose, remove the portions deemed unsuitable for use as a permanent part of the project as directed by the Engineer. Salvage and stockpile the aggregate base course removed from the detours at locations within the right of way, as directed by the Engineer, for removal by State Forces. Place pavement and earth material removed from the detour in embankments or dispose of in waste areas furnished by the Contractor.

Aggregate base course and earth material that is removed will be measured and will be paid at the contract unit price per cubic yard for *Unclassified Excavation*. Pavement that is removed will be measured and will be paid at the contract unit price per square yard for *Removal of Existing*Pavement. Pipe culverts removed from the detours remain the property of the Contractor. Pipe culverts that are removed will be measured and will be paid at the contract unit price per linear foot for *Pipe Removal*. Payment for the construction of the detours will be made at the contract unit prices for the various items involved.

Such prices and payments will be full compensation for constructing the detours and for the work of removing, salvaging, and stockpiling aggregate base course; removing pipe culverts; and for placing earth material and pavement in embankments or disposing of earth material and pavement in waste areas.

### SHOULDER AND FILL SLOPE MATERIAL:

(5-21-02) 235, 560

SP2 R45 B

### **Description**

Perform the required shoulder and slope construction for this project in accordance with the applicable requirements of Section 560 and Section 235 of the 2018 Standard Specifications.

## **Measurement and Payment**

When the Contractor elects to obtain material from an area located beneath a proposed fill sections which does not require excavation for any reason other than to generate acceptable shoulder and fill slope material, the work of performing the excavation will be considered incidental to the item of *Borrow Excavation* or *Shoulder Borrow*. If there is no pay item for *Borrow* or *Shoulder Borrow* in the contract, this work will be considered incidental to *Unclassified Excavation*. Stockpile the excavated material in a manner to facilitate measurement by the Engineer. Fill the void created by the excavation of the shoulder and fill slope material with suitable material. Payment for material used from the stockpile will be made at the contract unit price for *Borrow Excavation* or *Shoulder Borrow*, then the material will be paid for at the contract unit price for *Unclassified Excavation*. The material used to fill the void created by the excavation of the shoulder and fill slope material will be made at the contract unit price for *Unclassified Excavation*, *Borrow Excavation*, or *Shoulder Borrow*, depending on the source of the material.

Material generated from undercut excavation, unclassified excavation or clearing and grubbing operations that is placed directly on shoulders or slope areas, will not be measured separately for

payment, as payment for the work requiring the excavation will be considered adequate compensation for depositing and grading the material on the shoulders or slopes.

When undercut excavation is performed at the direction of the Engineer and the material excavated is found to be suitable for use as shoulder and fill slope material, and there is no area on the project currently prepared to receive the material generated by the undercut operation, the Contractor may construct a stockpile for use as borrow at a later date. Payment for the material used from the stockpile will be made at the contract unit price for *Borrow Excavation* or *Shoulder Borrow*.

When shoulder material is obtained from borrow sources or from stockpiled material, payment for the work of shoulder construction will be made at the contract unit price per cubic yard for *Borrow Excavation* or *Shoulder Borrow* in accordance with the applicable provisions of Section 230 or Section 560 of the 2018 Standard Specifications.

# FLOWABLE FILL:

(9-17-02) (Rev 1-17-12)

300, 340, 1000, 1530, 1540, 1550

SP3 R30

### **Description**

This work consists of all work necessary to place flowable fill in accordance with these provisions, the plans, and as directed.

### **Materials**

Refer to Division 10 of the 2018 Standard Specifications.

ItemSectionFlowable Fill1000-6

### **Construction Methods**

Discharge flowable fill material directly from the truck into the space to be filled, or by other approved methods. The mix may be placed full depth or in lifts as site conditions dictate. The Contractor shall provide a method to plug the ends of the existing pipe in order to contain the flowable fill.

### **Measurement and Payment**

At locations where flowable fill is called for on the plans and a pay item for flowable fill is included in the contract, *Flowable Fill* will be measured in cubic yards and paid as the actual number of cubic yards that have been satisfactorily placed and accepted. Such price and payment will be full compensation for all work covered by this provision including, but not limited to, the mix design, furnishing, hauling, placing and containing the flowable fill.

Payment will be made under:

Pay ItemPay UnitFlowable FillCubic Yard

## **CORRUGATED ALUMINUM ALLOY CULVERT PIPE:**

(9-21-21) 305, 310 SP3 R34

Revise the *Standard Specifications* as follows:

Page 3-5, Article 305-2, MATERIALS, add the following after line 16:

Item	Section
Waterborne Paint	1080-9
Hot Bitumen	1081-3

## Page 3-5, Article 305-3, CONSTRUCTION METHODS, add the following after line 24:

Coating must be applied to the aluminum when in contact with concrete. Immediately prior to coating, aluminum surfaces to be coated shall be cleaned by a method that will remove all dirt, oil, grease, chips, and other foreign substances. Aluminum to be coated shall be given one coat of suitable quality coating such as:

Approved Waterborne paint (Section 1080-9) Approved Hot Bitumen (Section 1081-3)

Other coating materials may be submitted to the Engineer for approval.

# Page 3-7, Article 310-6, MEASUREMENT AND PAYMENT, lines 6-11, delete the fourth sentence and replace with the following:

Select bedding and backfill material and coating will be included in the cost of the installed pipe. Such price and payment will be full compensation for all materials, labor, equipment, and other incidentals necessary to complete the work.

## **CULVERT PIPE:**

(8-20-19)(Rev. 5-17-22) 305,310 SP3 R35

Revise the 2018 Standard Specifications as follows:

## Page 3-5, Article 305-1 DESCRIPTION, lines 12-14, replace with the following:

Where shown in the plans, the Contractor may use reinforced concrete pipe, aluminum alloy pipe, aluminized corrugated steel pipe, galvanized corrugated steel pipe, HDPE pipe, Polypropylene pipe or PVC pipe in accordance with the following requirements.

### Page 3-5, Article 305-2 MATERIALS, add the following after line 16:

Item	Section
Polypropylene Pipe	1032-9
Galvanized Corrugated Steel Pipe	1032-3

## Page 3-6, Article 310-2 MATERIALS, add the following after line 9:

Item	Section
Polypropylene Pipe	1032-9

Galvanized Corrugated Steel Pipe

1032-3

**Page 3-6, Article 310-4 SIDE DRAIN PIPE,** lines 24-25, replace the first sentence of the second paragraph with the following:

Where shown in the plans, side drain pipe may be Class II reinforced concrete pipe, aluminized corrugated steel pipe, galvanized corrugated steel pipe, corrugated aluminum alloy pipe, Polypropylene pipe, HDPE pipe or PVC pipe.

**Page 3-7, Article 310-5 PIPE END SECTIONS**, lines 2-4, replace the second sentence with the following:

Both corrugated steel and concrete pipe end sections will work on concrete pipe, corrugated steel pipe, Polypropylene pipe and HDPE smooth lined corrugated plastic pipe.

## Page 3-7, Article 310-6 MEASUREMENT AND PAYMENT, add the following after line 14:

Pay Item	Pay Unit
" Polypropylene Pipe	Linear Foot

### Page 10-60, add Article 1032-9:

### (A) General

Use polypropylene pipe from sources participating in the Department's Polypropylene Pipe QA/QC Program. A list of participating sources is available from the Materials and Tests Unit. The Department will remove a manufacturer of polypropylene pipe from this program if the monitoring efforts indicated that non-specification material is being provided or test procedures are not being followed.

Use polypropylene culvert pipe that meets AASHTO M 330 for Type S or Type D, or ASTM F2881 or ASTM F2764 Double or Triple wall; and has been evaluated by NTPEP.

### (B) End Treatments, Pipe Tees and Elbows

End treatments, pipe tees and elbows shall meet AASHTO M 330, Section 7.7, or ASTM F2764, Section 6.6.

### (C) Marking

Clearly mark each section of pipe, end section, tee and elbow and other accessories according to the Department's Polypropylene Pipe QC/QA Program:

- (1) AASHTO or ASTM Designation
- (2) The date of manufacture
- (3) Name or trademark of the manufacturer

When polypropylene pipe, end sections, tees and elbows have been inspected and accepted a sticker will be applied to the inside of the pipe. Do no use pipe sections, flared end sections, tees or elbows which do not have this seal of approval.

## **#57 STONE:**

7-18-06 SPI 10 -01

### **Description**

The Contractor shall place #57 stone in accordance with the details in the plans and the following provision.

### **Materials**

ItemSection# 57 Stone1005

### **Construction Methods**

The stone shall be placed and compacted as directed by the Engineer.

### **Measurement and Payment**

#57 Stone will be measured and paid in tons that are completed and accepted. The stone will be measured by being weighed in trucks on certified platform scales or other certified weighing devices. The price and payment will be full compensation for furnishing, hauling, placing, and all incidentals necessary to complete the work.

Payment will be made under:

Pay ItemPay Unit#57 StoneTon

### **INCIDENTAL MILLING:**

(11-15-22)(Rev. 1-17-23) 607 SP6 R02R

Revise the 2018 Standard Specifications as follows:

**Page 6-5, Article 607-3 CONSTRUCTION METHODS,** add the following paragraph after line 45:

Variable depth milling is intended to improve the cross-sectional slope of the pavement.

Page 6-6, Article 607-3 CONSTRUCTION METHODS, line 9, delete and replace the first sentence in the sixth paragraph with the following:

The Engineer may require re-milling of any area exhibiting pavement laminations, scabbing or other defects.

Page 6-6, Article 607-4 TOLERANCE, lines 17-18, delete and replace the second sentence with the following:

The Engineer may vary the depth of milling by not more than one inch. In the event the directed depth of milling cut is altered by the Engineer more than one inch, either the Department or the Contractor may request an adjustment in unit price in accordance with Article 104-3. In administering Article 104-3, the Department will give no consideration to value given to RAP due to the deletion or reduction in quantity of milling. Article 104-3 will not apply to the item of *Incidental Milling*.

Page 6-6, Subarticle 607-5(A) Milled Asphalt Pavement, lines 21-23, delete and replace the first sentence with the following:

Milled Asphalt Pavement, \_\_" Depth will be measured and paid as the actual number of square yards of pavement surface milled in accordance with this specification.

Page 6-6, Subarticle 607-5(A) Milled Asphalt Pavement, lines 24-28, delete and replace the third and fourth sentence with the following:

The width will be the width required by the plans or directed by the Engineer, measured along the pavement surface. Areas to be paid under this item include mainline travel lanes, full width turn lanes greater than 500 feet in length, collector lanes, shoulders, and any additional equipment necessary to remove pavement in the area of manholes, water valves, curb, gutter and other obstructions.

Page 6-6, Subarticle 607-5(B) Milled Asphalt Pavement Depth Varies from Required Depth, lines 29-37, delete and replace the title and first paragraph with the following:

## (B) Variable Depth Milled Asphalt Pavement

Milling Asphalt Pavement, \_\_" to \_\_" will be measured and paid as the actual number of square yards of pavement surface milled in accordance with this specification. In measuring this quantity, the length will be the actual length milled, measured along the pavement surface. The width will be the width required by the plans or directed by the Engineer, measured along the pavement surface. Areas to be paid under this item include mainline travel lanes, full width turn lanes greater than 500 feet in length, collector lanes, shoulders, and any additional equipment necessary to remove pavement in the area of manholes, water valves, curb, gutter and other obstructions.

Page 6-6, Subarticle 607-5(C) Incidental Milling, lines 45-49, delete and replace the first and second sentence with the following:

Incidental Milling will be measured and paid as the actual number of square yards of surface milled where the Contractor is required to mill butt joints, irregular areas, full width turn lanes 500 feet or less, intersections and re-mill areas that are not due to the Contractor's negligence. In measuring this quantity, the length will be the actual length milled, measured along the pavement surface. The width will be the width required by the plans or directed by the Engineer, measured along the pavement surface.

Page 6-7, Subarticle 607-5(D) Milling of Defects, lines 6-10, delete and replace the second sentence with the following:

If the Engineer directs re-milling of an area and is not due to the Contractor's negligence, the remilled area will be measured as provided in Subarticle 607-5(C) and paid at the contract unit price per square yard for *Incidental Milling*.

## PRICE ADJUSTMENT - ASPHALT BINDER FOR PLANT MIX:

(11-21-00) 620 SP6 R25

Price adjustments for asphalt binder for plant mix will be made in accordance with Section 620 of the 2018 Standard Specifications.

The base price index for asphalt binder for plant mix is \$ 595.00 per ton.

This base price index represents an average of F.O.B. selling prices of asphalt binder at supplier's terminals on **November 1, 2023**.

## **MILLING ASPHALT PAVEMENT:**

(1-15-19) 607 SP6 R59

Revise the 2018 Standard Specifications as follows:

Page 6-5, Article 607-2, EQUIPMENT, lines 14-16, delete the seventh sentence of this Article and replace with the following:

Use either a non-contacting laser or sonar type ski system with a minimum of three referencing stations mounted on the milling machine at a length of at least 24 feet.

### **ASPHALT CONCRETE PLANT MIX PAVEMENTS:**

(2-20-18) (Rev. 7-18-23) 610, 1012 SP6 R65

Revise the 2018 Standard Specifications as follows:

Page 6-14, Table 609-3, LIMITS OF PRECISION FOR TEST RESULTS, replace with the following:

TABLE 609-3 LIMITS OF PRECISION FOR TEST RESULTS		
Mix Property	<b>Limits of Precision</b>	
25.0 mm sieve (Base Mix)	± 10.0%	
19.0 mm sieve (Base Mix)	$\pm~10.0\%$	
12.5 mm sieve (Intermediate & Type P-57)	$\pm~6.0\%$	
9.5 mm sieve (Surface Mix)	$\pm~5.0\%$	
4.75 mm sieve (Surface Mix)	$\pm~5.0\%$	
2.36 mm sieve (All Mixes, except S4.75A)	± 5.0%	
1.18 mm sieve (S4.75A)	$\pm~5.0\%$	
0.075 mm sieve (All Mixes)	$\pm~2.0\%$	
Asphalt Binder Content	$\pm0.5\%$	
Maximum Specific Gravity (G <sub>mm</sub> )	$\pm \ 0.020$	
Bulk Specific Gravity (G <sub>mb</sub> )	$\pm \ 0.030$	
TSR	± 15.0%	

QA retest of prepared QC Gyratory Compacted Volumetric Specimens	± 0.015
Retest of QC Core Sample	± 1.2% (% Compaction)
Comparison QA Core Sample	± 2.0% (% Compaction)
QA Verification Core Sample	± 2.0% (% Compaction)
Density Gauge Comparison of QC Test	± 2.0% (% Compaction)
QA Density Gauge Verification Test	± 2.0% (% Compaction)

Page 6-17, Table 610-1, MIXING TEMPERATURE AT THE ASPHALT PLANT, replace with the following:

TABLE 610-1 MIXING TEMPERATURE AT THE ASPHALT PLANT		
Binder Grade	JMF Temperature	
PG 58-28; PG 64-22	250 - 290°F	
PG 76-22	300 - 325°F	

Page 6-17, Subarticle 610-3(C), Job Mix Formula (JMF), lines 38-39, delete the fourth paragraph.

Page 6-18, Subarticle 610-3(C), Job Mix Formula (JMF), line 12, replace "SF9.5A" with "S9.5B".

Page 6-18, Table 610-3, MIX DESIGN CRITERIA, replace with the following:

TABLE 610-3 MIX DESIGN CRITERIA									
Mix	Design	Binder		Compaction Levels	Max. Volumetric Properties <sup>B</sup>				
Type	ESALs millions A	PG Grade	Gm	m (a)	Depth	VMA	VTM	VFA	%G <sub>mm</sub>
	IIIIIIIIIIIII	Grade	Nini	Ndes	(mm)	% Min.	%	MinMax.	@ Nini
S4.75A	< 1	64 - 22	6	50	11.5	16.0	4.0 - 6.0	65 - 80	≤ 91.5
S9.5B	0 - 3	64 - 22	6	50	9.5	16.0	3.0 - 5.0	70 - 80	≤ 91.5
S9.5C	3 - 30	64 - 22	7	65	6.5	15.5	3.0 - 5.0	65 - 78	≤ 90.5
S9.5D	> 30	76 - 22	8	100	4.5	15.5	3.0 - 5.0	65 - 78	≤ 90.0
I19.0C	ALL	64 - 22	7	65	-	13.5	3.0 - 5.0	65 - 78	≤ 90.5
B25.0C	ALL	64 - 22	7	65	-	12.5	3.0 - 5.0	65 - 78	≤ 90.5
		Design Para	meter				Design (	Criteria	
All Mix	Dust to	Dust to Binder Ratio (P <sub>0.075</sub> / P <sub>be</sub> )				0.6 - 1.4 <sup>C</sup>			
Types	Tensil	le Strength Ra	atio (TSR)	D			85% I	Min. E	

- **A.** Based on 20 year design traffic.
- ${f B.}$  Volumetric Properties based on specimens compacted to  $N_{des}$  as modified by the Department.
- C. Dust to Binder Ratio  $(P_{0.075} / P_{be})$  for Type S4.75A is 1.0 2.0.
- **D.** NCDOT-T-283 (No Freeze-Thaw cycle required).
- E. TSR for Type S4.75A & B25.0C mixes is 80% minimum.

Page 6-19, Table 610-5, BINDER GRADE REQUIREMENTS (BASED ON RBR%), replace with the following:

Mix Type	%RBR ≤ 20%	$21\% \le \% RBR \le 30\%$	%RBR > 30%
S4.75A, S9.5B,			
S9.5C, I19.0C,	PG 64-22	PG 64-22 <sup>A</sup>	PG-58-28
B25.0C			
S9.5D, OGFC	PG 76-22 <sup>B</sup>	n/a	n/a

**A.** If the mix contains any amount of RAS, the virgin binder shall be PG 58-28.

Page 6-20, Table 610-6, PLACEMENT TEMPERATURES FOR ASPHALT, replace with the following:

TABLE 610-6 PLACEMENT TEMPERATURES FOR ASPHALT		
Asphalt Concrete Mix Type	Minimum Surface and Air Temperature	
B25.0C	35°F	
I19.0C	35°F	
S4.75A, S9.5B, S9.5C	40°F A	
S9.5D	50°F	

**A.** For the final layer of surface mixes containing recycled asphalt shingles (RAS), the minimum surface and air temperature shall be 50°F.

Page 6-21, Article 610-8, SPREADING AND FINISHING, lines 34-35, delete the second sentence and replace with the following:

Use an MTV for all surface mix regardless of binder grade on Interstates, US Routes, and NC Routes (primary routes) that have 4 or more lanes and are median divided.

Page 6-21, Article 610-8, SPREADING AND FINISHING, lines 36-38, delete the fourth sentence and replace with the following:

Use MTV for all ramps, loops, and Y-lines that have 4 or more lanes and are median divided, and all full width acceleration lanes, full width deceleration lanes, and full width turn lanes that are greater than 1000 feet in length.

Page 6-23, Table 610-7, DENSITY REQUIREMENTS, replace with the following:

TABLE 610-7 DENSITY REQUIREMENTS		
Mix Type	Minimum % G <sub>mm</sub> (Maximum Specific Gravity)	
S4.75A	85.0 <sup>A</sup>	
S9.5B	90.0	
S9.5C, S9.5D, I19.0C, B25.0C	92.0	

**A.** Compaction to the above specified density shall be required when the S4.75A mix is applied at a rate of 100 lbs/sy or higher.

Page 6-24, Article 610-13, FINAL SURFACE TESTING, lines 35-36, delete the second sentence and replace with the following:

Final surface testing is not required on ramps, loops and turn lanes.

**B.** Maximum Recycled Binder Replacement (%RBR) is 18% for mixes using PG 76-22 binder.

Page 6-26, Subarticle 610-13(A)(1), Acceptance for New Construction, lines 29-30, delete the second sentence and replace with the following:

Areas excluded from testing by the profiler may be tested using a 10-foot straightedge in accordance with Article 610-12.

Page 6-27, Subarticle 610-13(B), Option 2- North Carolina Hearne Straightedge, lines 41-46, delete the eighth and ninth sentence of this paragraph and replace with the following:

Take profiles over the entire length of the final surface travel lane pavement exclusive of structures, approach slabs, paved shoulders, tapers, or other irregular shaped areas of pavement, unless otherwise approved by the Engineer. Test in accordance with this provision all mainline travel lanes, full width acceleration or deceleration lanes and collector lanes.

Page 6-28, Subarticle 610-13(B), Option 2- North Carolina Hearne Straightedge, lines 1-2, delete these two lines.

Page 6-32, Article 610-16 MEASUREMENT AND PAYMENT, replace with the following:

Pay Item	Pay Unit
Asphalt Concrete Base Course, Type B25.0C	Ton
Asphalt Concrete Intermediate Course, Type I19.0C	Ton
Asphalt Concrete Surface Course, Type S4.75A	Ton
Asphalt Concrete Surface Course, Type S9.5B	Ton
Asphalt Concrete Surface Course, Type S9.5C	Ton
Asphalt Concrete Surface Course, Type S9.5D	Ton

Page 10-30, Table 1012-1, AGGREGATE CONSENSUS PROPERTIES, replace with the following:

TABLE 1012-1 AGGREGATE CONSENSUS PROPERTIES<sup>A</sup>

Mix Type	Coarse Aggregate Angularity <sup>B</sup>	Fine Aggregate Angularity % Minimum	Sand Equivalent % Minimum	Flat and Elongated 5:1 Ratio % Maximum
Test Method	ASTM D5821	AASHTO T 304	AASHTO T 176	ASTM D4791
S4.75A; S9.5B	75 / -	40	40	-
S9.5C; I19.0C; B25.0C	95 / 90	45	45	10
S9.5D	100 / 100	45	50	10
OGFC	100 / 100	45	45	10
UBWC	100 / 85	45	45	10

**A**. Requirements apply to the design aggregate blend.

**B.** 95 / 90 denotes that 95% of the coarse aggregate has one fractured face and 90% has 2 or more fractured faces.

Page 10-30, Subarticle 1012-1(B)(6), Toughness (Resistance to Abrasion), line 12, replace "OGAFC" with "OGFC".

**FIELD OFFICE:** 

(6-1-07)(Rev. 2-15-22)

## **Description**

This work consists of furnishing, erecting, equipping, maintaining, and removing a field office for the exclusive use of Department Engineers and Inspectors at a location on the project approved by the Engineer. Provide a field office that complies with the current ADA Design and Accessibility Standards, the National Electric Code, local, state, and federal regulations, and the following requirements.

### **Procedures**

The field office and equipment will remain the property of the Contractor upon completion of the contract. The field office shall be separated from buildings and trailers used by the Contractor and shall be erected and functional as an initial operation. Failure to have the field office functional when work first begins on the project and maintained, as determined by the Engineer, throughout the life of the project will result in withholding payment of the Contractor's monthly progress estimate. Maintain the field office in an operational state throughout the duration of the project. Remove the field office when directed by the Engineer.

Provide a field office that is weatherproof, tightly floored and roofed, constructed with an air space above the ceiling for ventilation, supported above the ground, has a width of at least 10 feet, and the floor-to-ceiling height that is at least 7 feet 6 inches. Provide inside walls and a ceiling constructed of plywood, fiber board, gypsum board, or other suitable materials. Have the exterior walls, ceiling, and floor insulated.

Provide a field office with at least 1,000 square feet of floor space and that is equipped with the following:

### <u>Item</u>

Telephone service.

Internet Connection Service with modem for Wi-Fi with 2 Data ports in all rooms (with exception of kitchenette and bathrooms).

<u>Number</u> <u>Item</u>

- Double-pedestal desk (approximately 60 by 34 inches, at least 2,000 square inches).
- Plan and drafting table (approximately 30 by 96 inches) with adjustable stool.
- 1 Computer table at least 48 by 30 by 29 inches.
- 1 Plan rack for 24 by 36 inch drawings with 6 plan clamps.
- 4-drawer fire protection file, 15 inch drawer width, minimum UL rating of Class 350.
- 6 Adjustable five-leg base rolling office chairs.
- 1 Wastebasket per room.
- 1 Telephone.
- 1 Print/Copy/Scan/Fax machine (11 inch x 17 inch copies).

### **Windows and Doors**

Provide a field office with at least three windows with blinds, each having an area of at least 540 square inches, capable of being opened and secured from the inside and having at least two exterior passage doors. Provide doors at least 30 inches in width and 78 inches in height. Provide screens for windows and doors. Equip exterior passage doors with locks and furnish at least two keys to the Engineer. Provide accessibility in compliance with the current ADA Design and Accessibility Standards, and the State Building Code and maintain them free from obstructions.

### **Steps**

Provide accessibility in compliance with the current ADA Design and Accessibility Standards, and the State Building Code and maintain them free from obstructions.

### **Storage Facility for Nuclear Gauge**

Provide an outside storage facility for the Department's nuclear gauge. Provide a facility that has at least 64 square feet of floor space, is weatherproof, tightly floored and roofed, and has a tamper resistant key operated lock. The storage facility shall not be located within 10 feet of any other structure including the field office. Furnish at least two keys to the Engineer.

## Lighting, Heating, and Air Conditioning

The field office shall have satisfactory lighting, electrical outlets, heating equipment, an exhaust fan, and an air conditioner connected to an operational power source. Provide at least one lighting fixture in each room and at least one fluorescent light fixture over the plan and drafting table. Furnish electrical current and fuel for heating equipment.

### **Fire Extinguishers**

Furnish and maintain one fire extinguisher for each exterior passage door. Fire extinguisher may be chemical or dry powder. UL Classification 10-B:C (minimum), suitable for Type A:B:C: fires. Provide, mount, and maintain fire extinguishers in accordance with OSHA Safety and Health Standards.

### **Toilets**

Provide a toilet conforming to the requirements of the state and local boards of health or other bodies or courts having jurisdiction in the area. When separate facilities for men and women are not available, place a sign with the words "Rest Room" (with letters at least 1 inch in height) over the doorway, and provide an adequate positive locking system on the inside of the doorway. Maintain responsibility for the water and sewer connections or the installation and connection of a water well and septic tank and drain field. These facilities shall conform to all local and state permits.

#### Utilities

Except for telephone service, make necessary utility and internet connections, maintain utilities and internet connections, pay internet and utility service fees and bills, and handle final disconnection of internet and utilities. Furnish a telephone in each field office and permit the work necessary to install it.

### **Storage Facility for Test Equipment**

Provide a storage facility, separate from the office for storage of test equipment, other than the nuclear gauge. Provide a facility that has at least 64 square feet of floor space, is weatherproof, tightly floored and roofed, and has a tamper resistant key operated lock. Furnish at least two keys to the Engineer.

### **Miscellaneous Items**

The field office shall also include the following:

- 1. A certification that the office is free of asbestos and other hazardous materials.
- 2. A broom, dustpan, mop and bucket, and general cleaning supplies.
- 3. Provide and maintain an all-weather parking area for six vehicles, including graveled access to the paved surface.

## **Measurement and Payment**

Payment at the contract lump sum bid price for *Field Office* will be full compensation for all work covered by this provision including but not limited to furnishing, erecting, equipping, maintaining, and removing the field office as outlined in this provision.

Installation and service fees for the telephone will be paid for by the Department.

Payment will be made under:

Pay Item
Field Office

Pay Unit
Lump Sum

## **SUPPLEMENTAL SURVEYING:**

(4-20-21) 801 SP8 R03

Revise the 2018 Standard Specifications as follows:

Page 8-7, Article 801-3 MEASUREMENT AND PAYMENT, lines 10-11, replace with the following:

Supplemental Surveying Office Calculations will be paid at the stated price of \$85.00 per hour. Supplemental Field Surveying will be paid at the stated price of \$145.00 per hour. The

## **BICYCLE SAFE STEEL FRAME AND GRATE:**

The work covered by this provision consists of furnishing and placing steel frames with grate at locations shown in the plans and as directed by the Engineer.

All materials shall meet the requirements of Section 840 of the Standard Specifications.

The steel frame with grates shall be constructed in accordance with the applicable requirements of Section 840 of the *Standard Specifications*, the details in the plans, and as directed by the Engineer.

The quantity of steel frame with grate to be paid for will be the actual number of assemblies which have been incorporated into the completed work.

The quantity of steel frame with grate, measured as provided for above will be paid for at the contract unit price each for "Bicycle Safe Steel Frame and Grate".

The above prices and payment will be full compensation for all work covered by this provision including but not limited to furnishing all material, transporting, labor, and all incidentals necessary to complete the work.

Pay Item Pay Unit

Bicycle Safe Steel Frame and Grate

Each

### **CONVERT EXISTING JUNCTION BOX TO OPEN THROAT CATCH BASIN:**

(1-1-02) (Rev. 7-18-06)

340, 859

SP8 R50

At the proper phase of construction, convert the existing junction box at locations indicated in the plans or where directed, to open throat catch basin in accordance with the details in the plans and the applicable requirements of Sections 840 and 859 of the 2018 Standard Specifications.

Convert Junction Box to Open Throat Catch Basin will be measured and paid as each, completed and accepted. Such price and payment is considered full compensation for all equipment, materials, labor, tools, and incidentals necessary to complete each conversion satisfactorily.

Payment will be made under:

Pay Item
Convert Junction Box to Open Throat Catch Basin

Pay Unit Each

## **GUARDRAIL END UNITS & TEMPORARY GUARDRAIL END UNITS, TYPE - TL-2:**

(10-21-08) (Rev. 5-16-23)

862

SP8 R64

### **Description**

Furnish and install guardrail end units in accordance with the details in the plans, the applicable requirements of Section 862 of the *Standard Specifications*, and at locations shown in the plans.

### **Materials**

Furnish guardrail end units listed on the NCDOT APL. Units shall not be modified by the manufacturer and installer once approved and on the NCDOT APL.

Prior to installation the Contractor shall submit to the Engineer certified working drawings and assembling instructions from the manufacturer for each guardrail end unit in accordance with Article 105-2 of the *Standard Specifications*.

Perform installation in accordance with the details in the plans, and details and assembling instructions furnished by the manufacturer.

#### **Construction Methods**

Guardrail end delineation is required on all approach and trailing end sections for both temporary and permanent installations. Guardrail end delineation consists of yellow reflective sheeting applied to the entire end section of the guardrail in accordance with Article 1088-3 of the *Standard Specifications* and is incidental to the cost of the guardrail end unit.

## **Measurement and Payment**

Measurement and payment will be made in accordance with Article 862-6 of the *Standard Specifications*.

Payment will be made under:

Pay ItemPay UnitGuardrail End Units, Type TL-2EachTemporary Guardrail End Units, Type TL-2Each

### **GUARDRAIL END UNITS & TEMPORARY GUARDRAIL END UNITS, TYPE - TL-3:**

(4-20-04) (Rev. 5-16-23) 862 SP8 R65

## **Description**

Furnish and install guardrail end units in accordance with the details in the plans, the applicable requirements of Section 862 of the *Standard Specifications*, and at locations shown in the plans.

### **Materials**

Furnish guardrail end units listed on the NCDOT APL. Units shall not be modified by the manufacturer and installer once approved and on the NCDOT APL.

Prior to installation the Contractor shall submit to the Engineer certified working drawings and assembling instructions from the manufacturer for each guardrail end unit in accordance with Article 105-2 of the *Standard Specifications*.

Perform installation in accordance with the details in the plans, and details and assembling instructions furnished by the manufacturer.

### **Construction Methods**

Guardrail end delineation is required on all approach and trailing end sections for both temporary and permanent installations. Guardrail end delineation consists of yellow reflective sheeting applied to the entire end section of the guardrail in accordance with Article 1088-3 of the *Standard Specifications* and is incidental to the cost of the guardrail end unit.

### **Measurement and Payment**

Measurement and payment will be made in accordance with Article 862-6 of the *Standard Specifications*.

Payment will be made under:

Pay Item	Pay Unit
Guardrail End Units, Type TL-3	Each
Temporary Guardrail End Units, Type TL-3	Each

# **GUARDRAIL ANCHOR UNITS AND TEMPORARY GUARDRAIL ANCHOR UNITS:**

(1-16-2018) 862 SP8 R70

Guardrail anchor units will be in accordance with the details in the plans and the applicable requirements of Section 862 of the 2018 Standard Specifications.

Revise the 2018 Standard Specifications as follows:

### Page 8-42, Article 862-6 MEASUREMENT AND PAYMENT, add the following:

Guardrail Anchor Units, Type \_\_\_ and Temporary Guardrail Anchor Units Type \_\_\_ will be measured and paid as units of each completed and accepted. No separate measurement will be made of any rail, terminal sections, posts, offset blocks, concrete, hardware or any other components of the completed unit that are within the pay limits shown in the plans for the unit as all such components will be considered to be part of the unit.

Payment will be made under:

Pay Item	Pay Unit	
Guardrail Anchor Units, Type	Each	
Temporary Guardrail Anchor Units, Type	Each	

# VINYL COATED CHAIN LINK FENCE, "FABRIC:

(1-1-02) (Rev.4-30-12) SPI 8-37

Provide vinyl coated chain link fence that complies with the plans and Section 866 of the 2018 Standard Specifications. Vinyl Coated Chain Link Fence, \_\_" Fabric will be measured and paid in linear feet, of fence measured in place from center of each post or gate post to center of end post or gate post exclusive of gate sections, that has been completed and accepted.

Work includes, but is not limited to, clearing and grading; and furnishing and installing fence fabric, staples, tie wires, stretcher bars, top rails, tension wire, posts and post braces, concrete, gates, fittings and any other materials.

When use of short pieces of woven wire is permitted, furnish and install the additional required brace posts and braces at no additional cost to the Department.

Payment will be made under:

Pay ItemPay UnitVinyl Coated Chain Link Fence," FabricLinear Foot

# ADJUSTMENT OF CATCH BASINS, MANHOLES, DROP INLETS, METER BOXES AND VALVE BOXES:

(11-15-22) 858 SP8 R98R

Revise the 2018 Standard Specifications as follows:

Page 8-38, Article 858-4 MEASUREMENT AND PAYMENT, lines 10-11, delete and replace the fifth paragraph with the following:

Where any catch basin, drop inlet, manhole, meter box or valve box is adjusted more than once because of milling operations, each adjustment will be measured and paid.

# **FOUNDATIONS AND ANCHOR ROD ASSEMBLIES FOR METAL POLES:**

(1-17-12) (Rev. 1-16-18) 9, 14, 17 SP9 R05

## **Description**

Foundations for metal poles include foundations for signals, cameras, overhead and dynamic message signs (DMS) and high mount and light standards supported by metal poles or upright trusses. Foundations consist of footings with pedestals and drilled piers with or without grade beams or wings. Anchor rod assemblies consist of anchor rods (also called anchor bolts) with nuts and washers on the exposed ends of rods and nuts and a plate or washers on the other ends of rods embedded in the foundation.

Construct concrete foundations with the required resistances and dimensions and install anchor rod assemblies in accordance with the contract and accepted submittals. Construct drilled piers consisting of cast-in-place reinforced concrete cylindrical sections in excavated holes. Provide temporary casings or polymer slurry as needed to stabilize drilled pier excavations. Use a prequalified Drilled Pier Contractor to construct drilled piers for metal poles. Define "excavation" and "hole" as a drilled pier excavation and "pier" as a drilled pier.

This provision does not apply to foundations for signal pedestals; see Section 1743 of the 2018 Standard Specifications and 2018 Roadway Standard Drawing No. 1743.01.

## **Materials**

Refer to the 2018 Standard Specifications.

Item	Section
Conduit	1091-3
Grout, Type 2	1003

Item	Section
Polymer Slurry	411-2(B)(2)
Portland Cement Concrete	1000
Reinforcing Steel	1070
Rollers and Chairs	411-2(C)
Temporary Casings	411-2(A)

Provide Type 3 material certifications in accordance with Article 106-3 of the 2018 Standard Specifications for conduit, rollers, chairs and anchor rod assemblies. Store steel materials on blocking at least 12" above the ground and protect it at all times from damage; and when placing in the work make sure it is free from dirt, dust, loose mill scale, loose rust, paint, oil or other foreign materials. Load, transport, unload and store foundation and anchor rod assembly materials so materials are kept clean and free of damage. Bent, damaged or defective materials will be rejected.

Use conduit type in accordance with the contract. Use Class A concrete for footings and pedestals, Class Drilled Pier concrete for drilled piers and Class AA concrete for grade beams and wings including portions of drilled piers above bottom of wings elevations. Corrugated temporary casings may be accepted at the discretion of the Engineer. A list of approved polymer slurry products is available from:

connect.ncdot.gov/resources/Geological/Pages/Products.aspx

Provide anchor rod assemblies in accordance with the contract consisting of the following:

- (A) Straight anchor rods,
- (B) Heavy hex top and leveling nuts and flat washers on exposed ends of rods, and
- (C) Nuts and either flat plates or washers on the other ends of anchor rods embedded in foundations.

Do not use lock washers. Use steel anchor rods, nuts and washers that meet ASTM F1554 for Grade 55 rods and Grade A nuts. Use steel plates and washers embedded in concrete with a thickness of at least 1/4". Galvanize anchor rods and exposed nuts and washers in accordance with Article 1076-4 of the 2018 Standard Specifications. It is not necessary to galvanize nuts, plates and washers embedded in concrete.

#### **Construction Methods**

Install the required size and number of conduits in foundations in accordance with the plans and accepted submittals. Construct top of piers, footings, pedestals, grade beams and wings flat, level and within 1" of elevations shown in the plans or approved by the Engineer. Provide an Ordinary Surface finish in accordance with Subarticle 825-6(B) of the 2018 Standard Specifications for portions of foundations exposed above finished grade. Do not remove anchor bolt templates or pedestal or grade beam forms or erect metal poles or upright trusses onto foundations until concrete attains a compressive strength of at least 3,000 psi.

## (A) Drilled Piers

Before starting drilled pier construction, hold a predrill meeting to discuss the installation, monitoring and inspection of the drilled piers. Schedule this meeting after the Drilled Pier Contractor has mobilized to the site. The Resident or Division Traffic Engineer, Contractor and Drilled Pier Contractor Superintendent will attend this predrill meeting.

Do not excavate holes, install piles or allow equipment wheel loads or vibrations within 20 ft of completed piers until 16 hours after Drilled Pier concrete reaches initial set.

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

Construct drilled piers with the minimum required diameters shown in the plans. Install piers with tip elevations no higher than shown in the plans or approved by the Engineer.

Excavate holes with equipment of the sizes required to construct drilled piers. Depending on the subsurface conditions encountered, drilling through rock and boulders may be required. Do not use blasting for drilled pier excavations.

Contain and dispose of drilling spoils and waste concrete as directed and in accordance with Section 802 of the 2018 Standard Specifications. Drilling spoils consist of all materials and fluids removed from excavations.

If unstable, caving or sloughing materials are anticipated or encountered, stabilize holes with temporary casings and/or polymer slurry. Do not use telescoping temporary casings. If it becomes necessary to replace a temporary casing during drilling, backfill the excavation, insert a larger casing around the casing to be replaced or stabilize the excavation with polymer slurry before removing the temporary casing.

If temporary casings become stuck or the Contractor proposes leaving casings in place, temporary casings should be installed against undisturbed material. Unless otherwise approved, do not leave temporary casings in place for mast arm poles and cantilever signs. The Engineer will determine if casings may remain in place. If the Contractor proposes leaving temporary casings in place, do not begin drilling until a casing installation method is approved.

Use polymer slurry and additives to stabilize holes in accordance with the slurry manufacturer's recommendations. Provide mixing water and equipment suitable for polymer slurry. Maintain the required slurry properties at all times except for sand content.

Define a "sample set" as slurry samples collected from mid-height and within 2 ft of the bottom of holes. Take sample sets from excavations to test polymer slurry immediately after filling holes with slurry, at least every 4 hours thereafter and immediately before placing concrete. Do not place Drilled Pier concrete until both slurry samples from an excavation meet the required polymer 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 polymer slurry properties.

Remove soft and loose material from bottom of holes using augers to the satisfaction of the Engineer. Assemble rebar cages and place cages and Drilled Pier concrete in accordance with Subarticle 411-4(E) of the 2018 Standard Specifications except for the following:

- (1) Inspections for tip resistance and bottom cleanliness are not required,
- (2) Temporary casings may remain in place if approved, and
- (3) Concrete placement may be paused near the top of pier elevations for anchor rod assembly installation and conduit placement or
- (4) If applicable, concrete placement may be stopped at bottom of grade beam or wings elevations for grade beam or wing construction.

If wet placement of concrete is anticipated or encountered, do not place Drilled Pier concrete until a concrete placement procedure is approved. If applicable, temporary casings and fluids may be removed when concrete placement is paused or stopped in accordance with the exceptions above provided holes are stable. Remove contaminated concrete from exposed Drilled Pier concrete after removing casings and fluids. If holes are unstable, do not remove temporary casings until a procedure for placing anchor rod assemblies and conduit or constructing grade beams or wings is approved.

Use collars to extend drilled piers above finished grade. Remove collars after Drilled Pier concrete sets and round top edges of piers.

If drilled piers are questionable, pile integrity testing (PIT) and further investigation may be required in accordance with Article 411-5 of the 2018 Standard Specifications. A drilled pier will be considered defective in accordance with Subarticle 411-5(D) of the 2018 Standard Specifications and drilled pier acceptance is based in part on the criteria in Article 411-6 of the 2018 Standard Specifications except for the top of pier tolerances in Subarticle 411-6(C) of the 2018 Standard Specifications.

If a drilled pier is under further investigation, do not grout core holes, backfill around the pier or perform any work on the drilled pier until the Engineer accepts the pier. If the drilled pier is accepted, dewater and grout core holes and backfill around the pier with approved material to finished grade. If the Engineer determines a pier is unacceptable, remediation is required in accordance with Article 411-6 of the 2018 Standard Specifications. No extension of completion date or time will be allowed for remediation of unacceptable drilled piers or post repair testing.

Permanently embed a plate in or mark top of piers with the pier diameter and depth, size and number of vertical reinforcing bars and the minimum compressive strength of the concrete mix at 28 days.

# (B) Footings, Pedestals, Grade Beams and Wings

Excavate as necessary for footings, grade beams and wings in accordance with the plans, accepted submittals and Section 410 of the 2018 Standard Specifications. If unstable, caving or sloughing materials are anticipated or encountered, shore foundation excavations as needed with an approved method. Notify the Engineer when foundation excavation is

complete. Do not place concrete or reinforcing steel until excavation dimensions and foundation material are approved.

Construct cast-in-place reinforced concrete footings, pedestals, grade beams and wings with the dimensions shown in the plans and in accordance with Section 825 of the 2018 Standard Specifications. Use forms to construct portions of pedestals and grade beams protruding above finished grade. Provide a chamfer with a 3/4" horizontal width for pedestal and grade beam edges exposed above finished grade. Place concrete against undisturbed soil or backfill and fill in accordance with Article 410-8 of the 2018 Standard Specifications. Proper compaction around footings and wings is critical for foundations to resist uplift and torsion forces.

## (C) Anchor Rod Assemblies

Size anchor rods for design and the required projection above top of foundations. Determine required anchor rod projections from nut, washer and base plate thicknesses, the protrusion of 3 to 5 anchor rod threads above top nuts after tightening and the distance of one nut thickness between top of foundations and bottom of leveling nuts.

Protect anchor rod threads from damage during storage and installation of anchor rod assemblies. Before placing anchor rods in foundations, turn nuts onto and off rods past leveling nut locations. Turn nuts with the effort of one workman using an ordinary wrench without a cheater bar. Report any thread damage to the Engineer that requires extra effort to turn nuts.

Arrange anchor rods symmetrically about center of base plate locations as shown in the plans. Set anchor rod elevations based on required projections above top of foundations. Securely brace and hold rods in the correct position, orientation and alignment with a steel template. Do not weld to reinforcing steel, temporary casings or anchor rods.

Install top and leveling (bottom) nuts, washers and the base plate for each anchor rod assembly in accordance with the following procedure:

- (1) Turn leveling nuts onto anchor rods to a distance of one nut thickness between the top of foundation and bottom of leveling nuts. Place washers over anchor rods on top of leveling nuts.
- (2) Determine if nuts are level using a flat rigid template on top of washers. If necessary, lower leveling nuts to level the template in all directions or if applicable, lower nuts to tilt the template so the metal pole or upright truss will lean as shown in the plans. If leveling nuts and washers are not in full contact with the template, replace washers with galvanized beveled washers.
- (3) Verify the distance between the foundation and leveling nuts is no more than one nut thickness.
- (4) Place base plate with metal pole or upright truss over anchor rods on top of washers. High mount luminaires may be attached before erecting metal poles but do not attach cables, mast arms or trusses to metal poles or upright trusses at this time.
- (5) Place washers over anchor rods on top of base plate. Lubricate top nut bearing surfaces and exposed anchor rod threads above washers with beeswax, paraffin or other approved lubricant.

- (6) Turn top nuts onto anchor rods. If nuts are not in full contact with washers or washers are not in full contact with the base plate, replace washers with galvanized beveled washers.
- (7) Tighten top nuts to snug-tight with the full effort of one workman using a 12" wrench. Do not tighten any nut all at once. Turn top nuts in increments. Follow a star pattern cycling through each nut at least twice.
- (8) Repeat (7) for leveling nuts.
- (9) Replace washers above and below the base plate with galvanized beveled washers if the slope of any base plate face exceeds 1:20 (5%), any washer is not in firm contact with the base plate or any nut is not in firm contact with a washer. If any washers are replaced, repeat (7) and (8).
- (10) With top and leveling nuts snug-tight, mark each top nut on a corner at the intersection of 2 flats and a corresponding reference mark on the base plate. Mark top nuts and base plate with ink or paint that is not water-soluble. Use the turn-of-nut method for pretensioning. Do not pretension any nut all at once. Turn top nuts in increments for a total turn that meets the following nut rotation requirements:

NUT ROTATION REQUIREMENTS					
(Turn-of-Nut Pretensioning Method)					
Anchor Rod Diameter, inch Requirement					
≤ 1 1/2	1/3 turn (2 flats)				
> 1 1/2 1/6 turn (1 flat)					

Follow a star pattern cycling through each top nut at least twice.

- (11) Ensure nuts, washers and base plate are in firm contact with each other for each anchor rod. Cables, mast arms and trusses may now be attached to metal poles and upright trusses.
- (12) Between 4 and 14 days after pretensioning top nuts, use a torque wrench calibrated within the last 12 months to check nuts in the presence of the Engineer. Completely erect mast arm poles and cantilever signs and attach any hardware before checking top nuts for these structures. Check that top nuts meet the following torque requirements:

TORQUE REQUIREMENTS						
Anchor Rod Diameter, inch Requirement, ft-lb						
7/8	180					
1	270					
1 1/8	380					
1 1/4	420					
≥ 1 1/2	600					

If necessary, retighten top nuts in the presence of the Engineer with a calibrated torque wrench to within  $\pm$  10 ft-lb of the required torque. Do not overtighten top nuts.

(13) Do not grout under base plate.

#### **Measurement and Payment**

Foundations and anchor rod assemblies for metal poles and upright trusses will be measured and paid for elsewhere in the contract.

No payment will be made for temporary casings that remain in drilled pier excavations. No payment will be made for PIT. No payment will be made for further investigation of defective piers. Further investigation of piers that are not defective will be paid as extra work in accordance with Article 104-7 of the 2018 Standard Specifications. No payment will be made for remediation of unacceptable drilled piers or post repair testing.

## PORTLAND CEMENT CONCRETE PRODUCTION AND DELIVERY:

(9-15-20) 1000, 1014, 1024 SP10 R01

Revise the 2018 Standard Specifications as follows:

Page 10-6, Table 1000-1, REQUIREMENTS FOR CONCRETE, replace with the following:

	TABLE 1000-1 REQUIREMENTS FOR CONCRETE												
ssive days		Maxi	ximum Water-Cement Ratio			Consistency Maximum Slump		Cement Content					
Class of	Min. Compressive Strength at 28 days		Air-Entrained En		Non-Air- Entrained Concrete		Non- Vibrated	Vib	rated	Non-V	ibrated		
	Min. Stren		Rounded Angular Aggregate Aggregate		Angular Aggregate	Vibrated	Ne	7.6		7.5			
	_							-		Min.	Max.	Min.	Max.
Units	psi					inch	inch	lb/cy	lb/cy	lb/cy	lb/cy		
AA SI	4500	0.381	0.426			3.5 <sup>A</sup>		639	715				
AA Slip Form	4500	0.381	0.426			1.5		639	715				
Drilled Pier	4500			0.450	0.450		5 – 7 dry 7 - 9 wet			640	800		
A	3000	0.488	0.532	0.550	0.594	3.5 A	4.0	564		602			
В	2500	0.488	0.567	0.559	0.630	1.5 machine placed 2.5 A hand placed	4.0	508		545			
Sand Light- weight	4500		0.420			4.0 A		715					
Latex Modified	3000 (at 7 days)	0.400	0.400			6.0		658					
Flowable Fill excavatable	150 max. (at 56 days)	as needed	as needed	as needed	as needed		Flowable			40	100		
Flowable Fill non- excavatable	125	as needed	as needed	as needed	as needed		Flowable			100	as needed		

Pavement	4500 Design, field 650 flexural, design only	0.559	0.559	 	1.5 slip form 3.0 hand placed		526			
Precast	See Table 1077-1	as needed	as needed	 	6.0	as needed				
Prestressed	per contract	See Table 1078-1	See Table 1078-1	 	8.0		564	as needed		

A. The slump may be increased to 6 inches, provided the increase in slump is achieved by adding a chemical admixture conforming to Section 1024-3. In no case shall the water-cement ratio on the approved design be exceeded. Concrete exhibiting segregation and/or excessive bleeding will be rejected. Utilizing an Admixture to modify slump does not relinquish the contractor's responsibility to ensure the final product quality and overall configuration meets design specifications. Caution should be taken when placing these modified mixes on steep grades to prevent unintended changes to the set slope.

## HIGH STRENGTH CONCRETE FOR DRIVEWAYS:

(11-21-00) (Rev. 1-17-12)

848

SP10 R02

Use high early strength concrete for all driveways shown in the plans and as directed by the Engineer. Provide high early strength concrete that meets the requirements of Article 1000-5 of the 2018 Standard Specifications.

Measurement and payment will be in accordance with Section 848 of the 2018 Standard Specifications.

#### THERMOPLASTIC INTERMIXED BEAD TESTING:

7-19-22 1087 SP10 R04

Revise the 2018 Standard Specifications as follows:

Page 10-183, Subarticle 1087-7(B) Thermoplastic Pavement Marking Material Composition, delete line 34 and 35.

Page 10-184, Article 1087-8 MATERIAL CERTIFICATION, delete and replace with the following after line 34:

Drop-on Glass Beads	Type 3 Material Certification and Type 4 Material Certification
Intermix Glass Beads	Type 2 Material Certification and Type 3 Material Certification
Paint	Type 3 Material Certification
Removable Tape	Type 3 Material Certification
Thermoplastic	Type 3 Material Certification and Type 4 Material Certification
Cold Applied Plastic	Type 2 Material Certification and Type 3 Material Certification
Polyurea	Type 2 Material Certification and Type 3 Material Certification

## THERMOPLASTIC PAVEMENT MARKING MATERIAL - COLOR TESTING:

3-19-19 1087 SP10 R05

Revise the 2018 Standard Specifications as follows:

Pages 10-183 and 10-184, Subarticle 1087-7(D)(1)(b) Yellow, lines 9-11, delete and replace with the following:

Obtain Color Values Y,x,y per ASTM E1349 using C/2° illuminant/observer. Results shall be  $Y \ge 45\%$ , and x,y shall fall within PR#1 chart chromaticity limits.

## **NON-CAST IRON SNOWPLOWABLE PAVEMENT MARKERS:**

10-19-21 (Rev. 11-16-21)

086, 1250, 1253

SP10 R08

Revise the 2018 Standard Specifications as follows:

Pages 10-177 and 10-178, Subarticle 1086-3 SNOWPLOWABLE PAVEMENT MARKERS, delete items (A), (B) and (C)(1) and replace with the following:

### (A) General

Use non-cast iron snowplowable pavement markers evaluated by NTPEP. The non-cast iron snowplowable pavement marker shall consist of a housing with one or more glass or plastic face lens type reflective lenses to provide the required color designation. The marker shall be designed or installed in a manner that minimizes damage from snowplow blades. Plastic lens faces shall use an abrasion resistant coating.

### (B) Housings

(1) Dimensions

The dimension, slope and minimum area of reflecting surface shall conform to dimensions as shown in the plans. The minimum area of each reflecting surface shall be 1.44 sq.in.

- (2) Materials
  - Use non-cast iron snowplowable pavement markers that are on the NCDOT Approved Products List.
- (3) Surface
  - The surface of the housing shall be free of scale, dirt, rust, oil, grease or any other contaminant which might reduce its bond to the epoxy adhesive.
- (4) Identification
  - Mark the housing with the manufacturer's name and model number of marker.

## (C) Reflectors

(1) General

Laminate the reflector to an elastomeric pad and attach with adhesive to the housing. The thickness of the elastomeric pad shall be 0.04".

Pages 12-14, Subarticle 1250-3(C) Removal of Existing Pavement Markers, lines 19-29, delete and replace with the following:

Remove the existing raised pavement markers or the snowplowable pavement markers including the housings, before overlaying an existing roadway with pavement. Repair the pavement by filling holes as directed by the Engineer.

When traffic patterns are changed in work zones due to construction or reconstruction, remove all raised pavement markers or snowplowable markers including housings that conflict with the new traffic pattern before switching traffic to the new traffic pattern. Lens removal in lieu of total housing removal is not an acceptable practice for snowplowable markers.

Properly dispose of the removed pavement markers. No direct payment will be made for removal or disposal of existing pavement markers or repair of pavement, as such work will be incidental to other items in the contract.

Pages 12-16, Subarticle 1253-1 DESCRIPTION, lines 4-5, delete and replace with the following:

Furnish, install and maintain non-cast iron snowplowable pavement markers in accordance with the contract.

**Pages 12-16 and 12-17, Subarticle 1253-3 CONSTRUCTION METHODS,** delete items (A), (B) and (C) and replace with the following:

## (A) General

Bond marker housings to the pavement with epoxy adhesive. Mechanically mix and dispense epoxy adhesives as required by the manufacturer's specifications. Place the markers immediately after the adhesive has been mixed and dispensed.

If saw cutting, milling, or grooving operations are used, promptly remove all resulting debris from the pavement surface. Install the marker housings within 7 calendar days after saw cutting, milling, or grooving the pavement. Remove and dispose of loose material from the slots by brushing, blow cleaning, or vacuuming. Dry the slots before applying the epoxy adhesive. Install non-cast iron snowplowable pavement markers according to the manufacturer's recommendations.

Protect the non-cast iron snowplowable pavement markers until the epoxy has initially cured and is track free.

#### (B) Reflector Replacement

In the event that a reflector is damaged, replace the damaged reflector by using adhesives and methods recommended by the manufacturer of the markers and approved by the Engineer. This work is considered incidental if damage occurs during the initial installation of the marker housings and maintenance of initial non-cast iron snowplowable markers specified in this section. This work will be paid for under the pay item for the type of reflector replacement if the damage occurred after the initial installation of the non-cast iron snowplowable pavement marker.

Missing housings shall be replaced. Broken housings shall be removed and replaced. In both cases the slot for the housings shall be properly prepared prior to installing the new housing; patch the existing marker slots as directed by the Engineer and install the new marker

approximately one foot before or after the patch. Removal of broken housings and preparation of slots will be considered incidental to the work of replacing housings.

# Pages 12-17, Subarticle 1253-4 MAINTENANCE, lines 5, delete and replace with the following:

Maintain all installed non-cast iron snowplowable pavement markers until acceptance.

# Pages 12-17, Subarticle 1253-5 MEASUREMENT AND PAYMENT, lines 7-8, delete and replace with the following:

Non-Cast Iron Snowplowable Pavement Markers will be measured and paid as the actual number of non-cast iron snowplowable pavement markers satisfactorily placed and accepted by the Engineer.

# Pages 12-17, Subarticle 1253-5 MEASUREMENT AND PAYMENT, lines 11, delete and replace with the following:

Payment will be made under:

Pay Item	Pay Unit
Non-Cast Iron Snowplowable Pavement Marker	Each
Replace Snowplowable Pavement Marker Reflector	Each

## **MATERIALS FOR PORTLAND CEMENT CONCRETE:**

(9-15-20) 1000, 1024 SP10 R24

Revise the 2018 Standard Specifications as follows:

## Page 10-52, Article 1024-4, WATER, lines 3-6, delete and replace with the following:

Test water from wells at all locations. Test public water supplies from all out of state locations and in the following counties: Beaufort, Bertie, Brunswick, Camden, Carteret, Chowan, Craven, Currituck, Dare, Gates, Hyde, New Hanover, Onslow, Pamlico, Pasquotank, Pender, Perquimans, Tyrell and Washington unless the Engineer waives the testing requirements.

Page 10-52, Table 1024-2, PHYSICAL PROPERTIES OF WATER, replace with the following:

Property	Requirement	Test Method
Compression Strength, minimum percent of control at 3 and 7 days	90%	ASTM C1602
Time of set, deviation from control	From 1:00 hr. earlier to 1:30 hr. later	ASTM C1602
рН	4.5 to 8.5	ASTM D1293 *
Chloride Ion Content, Max.	250 ppm	ASTM D512 *
Total Solids Content (Residue), Max.	1,000 ppm	SM 2540B *
Resistivity, Min.	0.500 kohm-cm	ASTM D1125 *

\*Denotes an alternate method is acceptable. Test method used shall be referenced in the test report.

**GEOSYNTHETICS:** 

(03-21-23)(Rev. 4-18-23) 1056 SP10 R56

Revise the *Standard Specifications* as follows:

Page 10-77, Article 1056-1 DESCRIPTION, lines 13-16, delete and replace the second sentence in the second paragraph with the following:

Steel anchor pins shall have a diameter of at least 3/16 inch, a length of at least 18 inches, a point at one end and a head at the other end that will retain a steel washer with an outside diameter of at least 1.5 inches.

Page 10-77, Article 1056-2 HANDLING AND STORING, lines 20-21, delete and replace the third sentence in the first paragraph with the following:

Geosynthetics with defects, flaws, deterioration or damage will be rejected by the Engineer.

Page 10-77, Article 1056-3 CERTIFICATIONS AND IDENTIFICATION, lines 25-27, delete and replace the first sentence in the first paragraph with the following:

Provide Type 1, Type 2 or Type 4 material certifications in accordance with Article 106-3 for geosynthetics except certifications are not required for Type 1 through Type 5 geotextiles.

Page 10-77, Article 1056-3 CERTIFICATIONS AND IDENTIFICATION, lines 32-35, delete the second paragraph.

Page 10-77, Article 1056-3 CERTIFICATIONS AND IDENTIFICATION, lines 36-41, delete and replace the third paragraph with the following:

Allow the Engineer to visually identify geosynthetic products before installation. Open packaged geosynthetics just before use in the presence of the Engineer to verify the correct product. Geosynthetics that are missing original packaging or product labels or that have been unwrapped or previously opened will be rejected unless otherwise approved by the Engineer.

Page 10-77, Article 1056-4 GEOTEXTILES, lines 43-45, delete the first paragraph.

Page 10-78, Article 1056-4 GEOTEXTILES, before line 1 and lines 1-5, delete Table 1056-1 and lines 1-5 and replace with the following:

TABLE 1056-1						
				IREMENTS MADE		
Property <sup>A</sup>	Towns 1		quirement (		T	To 24
Typical	Shoulder	Type 2 Under	Type 3 <sup>B</sup> Silt Fence Fabric	Soil Stabilization	Type 5 <sup>C</sup> Subgrade Stabilization	Test Method
Application Elongation (MD & CD)	Drains ≥ 50%	<i>Rip Rap</i> ≥ 50%	≤ 25%	< 50%	< 50%	ASTM D4632
Grab Strength (MD & CD) <sup>A</sup>			100 lb			ASTM D4632
Tear Strength (MD & CD) <sup>A</sup>	Table 1 <sup>D</sup> , Class 3	Table 1 <sup>D</sup> , Class 1	_	Table 1 <sup>D</sup> , Class 3	_	ASTM D4533
Puncture Strength			_			ASTM D6241
Ultimate Tensile Strength (MD & CD) <sup>A</sup>	_	_	_	_	Table 12 <sup>D</sup> , Class 4A	ASTM D4595
Permittivity	Table 2 <sup>D</sup> ,	Table 6 <sup>D</sup> ,				ASTM D4491
Apparent Opening Size	15% to 50% in Situ Soil	15% to 50% in Situ Soil	Table 7 <sup>D</sup>	Table 5 <sup>D</sup>	Table 12 <sup>D</sup> , Class 4A	ASTM D4751
UV Stability (Retained Strength)	Passing 0.075 mm	Passing 0.075 mm			C1055 7/1	ASTM D4355

- A. MD, CD and MARV per Article 1056-3.
- **B.** Minimum roll width of 36 inches required.
- **C.** Minimum roll width of 13 feet required unless otherwise approved by the Engineer for the application.
- **D.** Per AASHTO M 288.

**Page 10-78, Article 1056-5 GEOCOMPOSITE DRAINS, before line 9 and lines 9-10**, delete Table 1056-2 and lines 9-10 and replace with the following:

TABLE 1056-2 GEOCOMPOSITE DRAIN REQUIREMENTS							
Duanautri		Requirement		Test			
Property	Property Sheet Drain Strip Drain Wick Drain						
Width	≥ 12"	12" ±1/4"	4" ±1/4"	N/A			
In-Plane Flow Rate <sup>A</sup> (with gradient of 1.0	6 gpm/ft @ applied normal	15 gpm/ft @ applied normal	1.5 gpm <sup>B</sup> @ applied normal	ASTM			
and 24-hour seating period)	compressive stress of 10 psi	compressive stress of 7.26 psi	compressive stress of 1.45 psi	D4716			

- **A.** MARV per Article 1056-3.
- **B.** Per foot of width tested.

Page 10-79, Article 1056-5 GEOCOMPOSITE DRAINS, before line 3, delete Table 1056-3 and replace with the following:

I		E 1056-3 E REQUIREMENT	S	
Requirement Test Method				
Property	Sheet Drain	Strip Drain		
Thickness	1/4"	1"	ASTM D1777 or D5199	
Compressive Strength <sup>A</sup>	40 psi	30 psi	ASTM D6364	

**A.** MARV per Article 1056-3.

Page 10-79, Article 1056-5 GEOCOMPOSITE DRAINS, before line 6 and lines 6-11, delete Table 1056-4, lines 6-7 and the last paragraph and replace with the following:

TABLE 1056-4 WICK DRAIN GEOTEXTILE REQUIREMENTS			
Property	Test Method		
Elongation	≥ 50%	ASTM D4632	
Grab Strength	Table 1A	ASTM D4632	
Tear Strength	Table 1 <sup>A</sup> , Class 3	ASTM D4533	
Puncture Strength	Class 3	ASTM D6241	
Permittivity <sup>B</sup>	0.7 sec <sup>-1</sup>	ASTM D4491	
Apparent Opening Size (AOS)	Table 2 <sup>A</sup> , > 50% in Situ Soil Passing 0.075 mm	ASTM D4751	
UV Stability (Retained Strength)		ASTM D4355	

- A. Per AASHTO M 288.
- **B.** MARV per Article 1056-3.

For wick drains with a geotextile fused to both faces of a corrugated drainage core along the peaks of the corrugations, use wick drains with an ultimate tensile strength of at least 1,650 lbs. per 4 inch width in accordance with ASTM D4595 and geotextiles with a permittivity, AOS and UV stability that meet Table 1056-4.

Page 10-80, Article 1056-6 GEOCELLS, before line 1 and lines 1-4, delete Table 1056-5 and lines 1-4 and replace with the following:

TABLE 1056-5 GEOCELL REQUIREMENTS					
Property Requirement Test Method					
Cell Depth	4"	N/A			
Fully Expanded Cell Area	100 sq.in. max	N/A			
Sheet Thickness	50 mil -5%, +10%	ASTM D5199			
Density	58.4 pcf min	ASTM D1505			
Carbon Black Content	1.5% min	ASTM D1603 or D4218			
ESCR <sup>A</sup>	5000 hr min	ASTM D1693			
Coefficient of Direct Sliding (with material that meets AASHTO M 145 for soil classification A-2)	0.85 min	ASTM D5321			
Short-Term Seam (Peel) Strength (for 4" seam)	320 lb min	USACE <sup>C</sup> Technical			
Long-Term Seam (Hang) Strength <sup>B</sup> (for 4" seam)	160 lb min	Report GL-86-19, Appendix A			

- A. Environmental Stress Crack Resistance.
- **B.** Minimum test period of 168 hours with a temperature change from 74°F to 130°F in 1-hour cycles.
- C. US Army Corps of Engineers (USACE).

## **TEMPORARY SHORING:**

(2-20-07) (Rev. 10-19-21) SP11 R02

### **Description**

Temporary shoring includes cantilever, braced and anchored shoring and temporary mechanically stabilized earth (MSE) walls. Temporary shoring does not include trench boxes. At the Contractor's option, use any type of temporary shoring unless noted otherwise in the plans or as directed. Design and construct temporary shoring based on actual elevations and shoring dimensions in accordance with the contract and accepted submittals. Construct temporary shoring at locations shown in the plans and as directed. Temporary shoring is required to maintain traffic when a 2:1 (H:V) slope from the top of an embankment or bottom of an excavation will intersect the existing ground line less than 5 feet from the edge of pavement of an open travelway. This provision does not apply to pipe, inlet or utility installation unless noted otherwise in the plans.

Positive protection includes concrete barrier and temporary guardrail. Provide positive protection for temporary shoring at locations shown in the plans and as directed. Positive protection is required if temporary shoring is located in the clear zone in accordance with the AASHTO Roadside Design Guide.

## (A) Cantilever and Braced Shoring

Cantilever shoring consists of steel sheet piles or H-piles with timber lagging. Braced shoring consists of sheet piles or H-piles with timber lagging and bracing such as beams, plates, walers, struts, rakers, etc. Define "piles" as sheet piles or H-piles.

#### (B) Anchored Shoring

Anchored shoring consists of sheet piles with walers or H-piles with timber lagging anchored with ground or helical anchors. Driven anchors may be accepted at the discretion of the Engineer. A ground anchor consists of a grouted steel bar or multi-strand tendon with an anchorage. A helical anchor consists of a lead section with a central steel shaft and at least one helix steel plate followed by extensions with only central shafts (no helixes) and an anchorage. Anchorages consist of steel bearing plates with washers and hex nuts for bars or steel wedge plates and wedges for strands. Use a prequalified Anchored Wall Contractor to install ground anchors. Define "anchors" as ground, helical or driven anchors.

# (C) Temporary MSE Walls

Temporary MSE walls include temporary geosynthetic and wire walls. Define "temporary wall" as a temporary MSE wall and "Temporary Wall Vendor" as the vendor supplying the temporary MSE wall. Define "reinforcement" as geotextile, geogrid, geostrip, welded wire grid or metallic strip reinforcement.

Temporary geosynthetic walls consist of geotextiles or geogrids wrapped behind welded wire facing or geostrips connected to welded wire facing. Define "temporary geotextile wall" as a temporary geosynthetic wall with geotextile reinforcement, "temporary geogrid wall" as a temporary geosynthetic wall with geogrid reinforcement and "temporary geostrip wall" as a temporary geosynthetic wall with geostrip reinforcement.

Temporary wire walls consist of welded wire grid or metallic strip reinforcement connected to welded wire facing. Define "Wire Wall Vendor" as the vendor supplying the temporary wire wall.

### (D) Embedment

Define "embedment" for cantilever, braced and anchored shoring as the pile depth below the grade in front of shoring. Define "embedment" for temporary walls as the wall embedment below the grade at the wall face.

#### (E) Positive Protection

Define "unanchored or anchored portable concrete barrier" as portable concrete barrier (PCB) that meets 2018 Roadway Standard Drawing No. 1170.01. Define "concrete barrier" as unanchored or anchored PCB or an approved equal. Define "temporary guardrail" as temporary steel beam guardrail that meets 2018 Roadway Standard Drawing No. 862.02.

#### **Materials**

Refer to the 2018 Standard Specifications.

Item	Section
Concrete Barrier Materials	1170-2
Flowable Fill, Excavatable	1000-6
Geosynthetics	1056

Item	Section
Grout, Type 1	1003
Portland Cement	1024-1
Portland Cement Concrete	1000
Select Materials	1016
Steel Beam Guardrail Materials	862-2
Steel Plates	1072-2
Steel Sheet Piles and H-Piles	1084
Untreated Timber	1082-2
Water	1024-4
Welded Wire Reinforcement	1070-3

Provide Type 6 material certifications for shoring materials in accordance with Article 106-3 of the 2018 Standard Specifications. Use Class IV select material for temporary guardrail and Class A concrete that meets Article 450-2 of the 2018 Standard Specifications or Type 1 grout for drilledin piles. Provide untreated timber with a thickness of at least 3 inches and a bending stress of at least 1,000 pounds per square inch for timber lagging. Provide steel bracing that meets ASTM A36.

## (A) Shoring Backfill

Use Class II, Type 1, Class III, Class V or Class VI select material or material that meets AASHTO M 145 for soil classification A-2-4 with a maximum PI of 6 for shoring backfill except do not use A-2-4 soil for backfill around culverts.

## (B) Anchors

Store anchor materials on blocking a minimum of 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 anchor materials so materials are kept clean and free of damage. Bent, damaged or defective materials will be rejected.

#### (1) Ground Anchors

Use high-strength deformed steel bars that meet AASHTO M 275 or seven-wire strands that meet ASTM A886 or Article 1070-5 of the 2018 Standard Specifications. Splice bars in accordance with Article 1070-9 of the 2018 Standard Specifications. Do not splice strands. Use bondbreakers, spacers and centralizers that meet Article 6.3.5 of the AASHTO LRFD Bridge Construction Specifications.

Use neat cement grout that only contains cement and water with a water cement ratio of 0.4 to 0.5 which is approximately 5.5 gallons of water per 94 pounds of Portland cement. Provide grout with a compressive strength at 3 and 28 days of at least 1,500 and 4,000 psi, respectively.

### (2) Helical Anchors

Use helical anchors with an ICC Evaluation Service, Inc. (ICC-ES) report. Provide

couplers, thread bar adapters and bolts recommended by the Anchor Manufacturer to connect helical anchors together and to piles.

## (3) Anchorages

Provide steel plates for bearing plates and steel washers, hex nuts, wedge plates and wedges recommended by the Anchor Manufacturer.

## (C) Temporary Walls

#### (1) Welded Wire Facing

Use welded wire reinforcement for welded wire facing, struts and wires. For temporary wire walls, provide welded wire facing supplied by the Wire Wall Vendor or a manufacturer approved or licensed by the vendor. For temporary wire walls with separate reinforcement and facing components, provide connectors (e.g., bars, clamps, plates, etc.) and fasteners (e.g., bolts, nuts, washers, etc.) required by the Wire Wall Vendor.

## (2) Geotextiles

Provide Type 2 geotextile for separation and retention geotextiles. Provide Type 5 geotextile for geotextile reinforcement with ultimate tensile strengths in accordance with the accepted submittals.

# (3) Geogrid and Geostrip Reinforcement

Use geogrids with a roll width of at least 4 feet. Use geogrids for geogrid reinforcement and geostrips for geostrip reinforcement with an "approved" status code in accordance with the NCDOT Geosynthetic Reinforcement Evaluation Program. The list of approved geogrids and geostrips is available from: connect.ncdot.gov/resources/Geological/Pages/Products.aspx

Provide geogrids and geostrips with design strengths in accordance with the accepted submittals. Geogrids and geostrips are approved for short-term design strengths (3-year design life) in the machine direction (MD) and cross-machine direction (CD) based on material type. Define material type from the website above for shoring backfill as follows:

Material Type	Shoring Backfill
Borrow	A-2-4 Soil
Fine Aggregate	Class II, Type 1 or Class III Select Material
Coarse Aggregate	Class V or VI Select Material

# (4) Welded Wire Grid and Metallic Strip Reinforcement

Provide welded wire grid and metallic strip reinforcement supplied by the Wire Wall Vendor or a manufacturer approved or licensed by the vendor. Use welded wire grid reinforcement ("mesh", "mats" and "ladders") that meet Article 1070-3

of the 2018 Standard Specifications and metallic strip reinforcement ("straps") that meet ASTM A572 or A1011.

## **Preconstruction Requirements**

## (A) Concrete Barrier

Define "clear distance" behind concrete barrier as the horizontal distance between the barrier and edge of pavement. The minimum required clear distance for concrete barrier is shown in the plans. At the Contractor's option or if the minimum required clear distance is not available, set concrete barrier next to and up against traffic side of temporary shoring except for barrier above temporary walls. Concrete barrier with the minimum required clear distance is required above temporary walls.

# (B) Temporary Guardrail

Define "clear distance" behind temporary guardrail as the horizontal distance between guardrail posts and temporary shoring. At the Contractor's option or if clear distance for cantilever, braced and anchored shoring is less than 4 feet, attach guardrail to traffic side of shoring as shown in the plans. Place ABC in clear distance and around guardrail posts instead of pavement. Do not use temporary guardrail above temporary walls.

## (C) Temporary Shoring Designs

Before beginning temporary shoring design, survey existing ground elevations in the vicinity of shoring locations to determine actual design heights (H). Submit PDF files of working drawings and design calculations for temporary shoring designs in accordance with Article 105-2 of the 2018 Standard Specifications. Submit working drawings showing plan views, shoring profiles, typical sections and details of temporary shoring design and construction sequence. Do not begin shoring construction until a design submittal is accepted.

Have cantilever and braced shoring designed, detailed and sealed by an engineer licensed in the state of North Carolina. Use a prequalified Anchored Wall Design Consultant to design anchored shoring. Provide anchored shoring designs sealed by a Design Engineer approved as a Geotechnical Engineer (key person) for an Anchored Wall Design Consultant. Include details in anchored shoring working drawings of anchor locations and lock-off loads, unit grout/ground bond strengths for ground anchors or minimum installation torque and torsional strength rating for helical anchors and if necessary, obstructions extending through shoring or interfering with anchors. Include details in the anchored shoring construction sequence of pile and anchor installation, excavation and anchor testing.

Provide temporary wall designs sealed by a Design Engineer licensed in the state of North Carolina and employed or contracted by the Temporary Wall Vendor. Include details in temporary wall working drawings of geotextile and reinforcement types, locations and directions and obstructions extending through walls or interfering with reinforcement.

### (1) Soil Parameters

Design temporary shoring for the assumed soil parameters and groundwater or flood elevations shown in the plans. Assume the following soil parameters for shoring backfill:

(a) Unit weight  $(\gamma) = 120 \text{ pcf}$ ,

(b)	Friction Angle (φ)	Shoring Backfill
	30°	A-2-4 Soil
	34°	Class II, Type 1 or Class III Select Material
	38°	Class V or VI Select Material

(c) Cohesion (c) = 0 psf.

## (2) Traffic Surcharge

Design temporary shoring for a traffic surcharge of 250 pounds per square foot if traffic will be above and within H of shoring. This traffic surcharge does not apply to construction traffic. Design temporary shoring for any construction surcharge if construction traffic will be above and within H of shoring. Design temporary shoring for a traffic (live load) surcharge in accordance with Article 11.5.6 of the AASHTO LRFD Bridge Design Specifications.

# (3) Cantilever, Braced and Anchored Shoring Designs

Use shoring backfill for fill sections and voids between cantilever, braced and anchored shoring and the critical failure surface. Use concrete or Type 1 grout for embedded portions of drilled-in H-piles. Do not use drilled-in sheet piles.

Define "top of shoring" for cantilever, braced and anchored shoring as where the grade intersects the back of sheet piles or H-piles and timber lagging. Design cantilever, braced and anchored shoring for a traffic impact load of 2,000 pounds per foot applied 18 inches above top of shoring if concrete barrier is above and next to shoring or temporary guardrail is above and attached to shoring. Extend cantilever, braced and anchored shoring at least 32 inches above top of shoring if shoring is designed for traffic impact. Otherwise, extend shoring at least 6 inches above top of shoring.

Design cantilever, braced and anchored shoring for a maximum deflection of 3 inches if the horizontal distance to the closest edge of pavement or structure is less than H. Otherwise, design shoring for a maximum deflection of 6 inches. Design cantilever and braced shoring in accordance with the plans and AASHTO Guide Design Specifications for Bridge Temporary Works.

Design anchored shoring in accordance with the plans and Article 11.9 of the AASHTO LRFD Bridge Design Specifications. Use a resistance factor of 0.80 for tensile resistance of anchors with bars, strands or shafts. Extend the unbonded length for ground anchors and the shallowest helix for helical anchors at least 5 feet behind the critical failure surface. Do not extend anchors beyond right-of-way or

easement limits. If existing or future obstructions such as foundations, guardrail posts, pavements, pipes, inlets or utilities will interfere with anchors, maintain a clearance of at least 6 inches between obstructions and anchors.

## (4) Temporary Wall Designs

Use shoring backfill in the reinforced zone of temporary walls. Separation geotextiles are required between shoring backfill and backfill, natural ground or culverts along the sides of the reinforced zone perpendicular to the wall face. For Class V or VI select material in the reinforced zone, separation geotextiles are also required between shoring backfill and backfill or natural ground on top of and at the back of the reinforced zone.

Design temporary walls in accordance with the plans and Article 11.10 of the AASHTO LRFD Bridge Design Specifications. Embed temporary walls at least 18 inches except for walls on structures or rock as determined by the Engineer. Use a uniform reinforcement length throughout the wall height of at least 0.7H or 6 feet, whichever is longer. Extend the reinforced zone at least 6 inches beyond end of reinforcement. Do not locate the reinforced zone outside right-of-way or easement limits.

Use the simplified method for determining maximum reinforcement loads in accordance with the AASHTO LRFD specifications. For geotextile reinforcement, use geotextile properties approved by the Department or default values in accordance with the AASHTO LRFD specifications. For geogrid and geostrip reinforcement, use approved geosynthetic reinforcement properties available from the website shown elsewhere in this provision. Use geosynthetic properties for the direction reinforcement will be installed, a 3-year design life and shoring backfill to be used in the reinforced zone.

Do not use more than 4 different reinforcement strengths for each temporary geosynthetic wall. Design temporary geotextile walls for a reinforcement coverage ratio ( $R_c$ ) of 1.0. For temporary geogrid walls with an  $R_c$  of less than 1.0, use a maximum horizontal clearance between geogrids of 3 feet and stagger reinforcement so geogrids are centered over gaps in the reinforcement layer below.

For temporary geosynthetic walls, use "L" shaped welded wire facing with 18 to 24 inch long legs. Locate geosynthetic reinforcement so reinforcement layers are at the same level as the horizontal legs of welded wire facing. Use vertical reinforcement spacing equal to facing height. Wrap geotextile or geogrid reinforcement behind welded wire facing and extend reinforcement at least 3 feet back behind facing into shoring backfill. Attach geostrip reinforcement to welded wire facing with a connection approved by the Department.

For temporary wire walls with separate reinforcement and facing components, attach welded wire grid or metallic strip reinforcement to welded wire facing with a connection approved by the Department. For temporary geogrid, geostrip and wire walls, retain shoring backfill at welded wire facing with retention geotextiles and extend geotextiles at least 3 feet back behind facing into backfill.

## (D) Preconstruction Meeting

The Engineer may require a shoring preconstruction meeting to discuss the construction, inspection and testing of the temporary shoring. If required and if this meeting occurs before all shoring submittals have been accepted, additional preconstruction meetings may be required before beginning construction of temporary shoring without accepted submittals. The Resident, District or Bridge Maintenance Engineer, Area Construction Engineer, Geotechnical Operations Engineer, Contractor and Shoring Contractor Superintendent will attend preconstruction meetings.

#### **Construction Methods**

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

Install positive protection in accordance with the contract and accepted submittals. Use PCB in accordance with Section 1170 of the 2018 Standard Specifications and 2018 Roadway Standard Drawing No. 1170.01. Use temporary guardrail in accordance with Section 862 of the 2018 Standard Specifications and 2018 Roadway Standard Drawing Nos. 862.01, 862.02 and 862.03.

## (A) Tolerances

Construct shoring with the following tolerances:

- (1) Horizontal wires of welded wire facing are level in all directions,
- (2) Shoring location is within 6 inches of horizontal and vertical alignment shown in the accepted submittals, and
- (3) Shoring plumbness (batter) is not negative and within 2 degrees of vertical.

#### (B) Cantilever, Braced and Anchored Shoring Installation

If overexcavation behind cantilever, braced or anchored shoring is shown in the accepted submittals, excavate before installing piles. Otherwise, install piles before excavating for shoring. Install cantilever, braced or anchored shoring in accordance with the construction sequence shown in the accepted submittals. Remove piles and if applicable, timber lagging when shoring is no longer needed.

#### (1) Pile Installation

Install piles with the minimum required embedment and extension in accordance with Subarticles 450-3(D) and 450-3(E) of the 2018 Standard Specifications except that a pile driving equipment data form is not required. Piles may be installed with a vibratory hammer as approved by the Engineer.

Do not splice sheet piles. Use pile excavation to install drilled-in H-piles. After

filling holes with concrete or Type 1 grout to the elevations shown in the accepted submittals, remove any fluids and fill remaining portions of holes with flowable fill. Cure concrete or grout at least 7 days before excavating.

Notify the Engineer if refusal is reached before pile excavation or driven piles attain the minimum required embedment. When this occurs, a revised design submittal may be required.

### (2) Excavation

Excavate in front of piles from the top down in accordance with the accepted submittals. For H-piles with timber lagging and braced and anchored shoring, excavate in staged horizontal lifts with a maximum height of 5 feet. Remove flowable fill and material in between H-piles as needed to install timber lagging. Position lagging with at least 3 inches of contact in the horizontal direction between the lagging and pile flanges. Do not excavate the next lift until timber lagging for the current lift is installed and if applicable, bracing and anchors for the current lift are accepted. Backfill behind cantilever, braced or anchored shoring with shoring backfill.

#### (3) Anchor Installation

If applicable, install foundations located behind anchored shoring before installing anchors. Fabricate and install ground anchors in accordance with the accepted submittals, Articles 6.4 and 6.5 of the *AASHTO LRFD Bridge Construction Specifications* and the following unless otherwise approved:

- (a) Materials in accordance with this provision are required instead of materials conforming to Articles 6.4 and 6.5.3 of the AASHTO LRFD Specifications,
- (b) Encapsulation-protected ground anchors in accordance with Article 6.4.1.2 of the AASHTO LRFD specifications are not required, and
- (c) Corrosion protection for unbonded lengths of ground anchors and anchorage covers are not required.
- (d) Mix and place neat cement grout in accordance with Subarticles 1003-5, 1003-6 and 1003-7 of the 2018 Standard Specifications. Measure grout temperature, density and flow during grouting with at least the same frequency grout cubes are made for compressive strength. Perform density and flow field tests in the presence of the Engineer in accordance with American National Standards Institute/American Petroleum Institute Recommended Practice 13B-1 (Section 4, Mud Balance) and ASTM C939 (Flow Cone), respectively.

Install helical anchors in accordance with the accepted submittals and Anchor Manufacturer's instructions. Measure torque during installation and do not exceed the torsional strength rating of the helical anchor. Attain the minimum required installation torque and penetration before terminating anchor installation. When

replacing a helical anchor, embed last helix of the replacement anchor at least 3 helix plate diameters past the location of the first helix of the previous anchor.

## (4) Anchor Testing

Proof test and lock-off anchors in accordance with the accepted submittals and Article 6.5.5 of the *AASHTO LRFD Bridge Construction Specifications* except for the acceptance criteria in Article 6.5.5.5. For the AASHTO LRFD specifications, "ground anchor" refers to a ground or helical anchor and "tendon" refers to a bar, strand or shaft.

## (a) Anchor Acceptance

Anchor acceptance is based in part on the following criteria.

- (i) For ground and helical anchors, total movement is less than 0.04 inches between the 1 and 10 minute readings or less than 0.08 inches between the 6 and 60 minute readings.
- (ii) For ground anchors, total movement at maximum test load exceeds 80% of the theoretical elastic elongation of the unbonded length.

#### (b) Anchor Test Results

Submit PDF files of anchor test records including movement versus load plots for each load increment within 24 hours of completing each row of anchors. The Engineer will review the test records to determine if the anchors are acceptable.

If the Engineer determines an anchor is unacceptable, revise the anchor design or installation methods. Submit a revised anchored shoring design for acceptance and provide an acceptable anchor with the revised design or installation methods. If required, replace the anchor or provide additional anchors with the revised design or installation methods.

## (C) Temporary Wall Installation

Excavate as necessary for temporary walls in accordance with the plans and accepted submittals. If applicable, install foundations located in the reinforced zone before placing shoring backfill or reinforcement unless otherwise approved. Notify the Engineer when foundation excavation is complete. Do not place shoring backfill or reinforcement until excavation dimensions and foundation material are approved.

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

Attach geostrip reinforcement to welded wire facing and wrap geotextile reinforcement and retention geotextiles behind welded wire facing as shown in the plans and accepted submittals. Cover geotextiles with at least 3" of shoring backfill. Overlap adjacent geotextile reinforcement and retention and separation geotextiles at least 18 inches with seams oriented perpendicular to the wall face. Hold geotextiles in place with wire staples or anchor pins as needed.

Place reinforcement within 3 inches of locations shown in the plans and accepted submittals. Before placing shoring backfill, pull geosynthetic reinforcement taut so it is in tension and free of kinks, folds, wrinkles or creases. Install reinforcement with the direction shown in the plans and accepted submittals. For temporary wire walls with separate reinforcement and facing components, attach welded wire grid or metallic strip reinforcement to welded wire facing as shown in the accepted submittals. Do not splice or overlap reinforcement so seams are parallel to the wall face. Contact the Engineer when unanticipated existing or future obstructions such as foundations, pavements, pipes, inlets or utilities will interfere with reinforcement.

Place shoring backfill in the reinforced zone in 8 to 10 inch thick lifts. Compact A-2-4 soil and Class II, Type 1 and Class III select material in accordance with Subarticle 235-3(C) of the 2018 Standard Specifications. Use only hand operated compaction equipment to compact backfill within 3 feet of welded wire facing. At a distance greater than 3 feet, compact shoring backfill with at least 4 passes of an 8 to 10 ton vibratory roller in a direction parallel to the wall face. Smooth wheeled or rubber tired rollers are also acceptable for compacting backfill. Do not use sheepsfoot, grid rollers or other types of compaction equipment with feet. Do not displace or damage reinforcement when placing and compacting shoring backfill. End dumping directly on geosynthetics is not permitted. Do not operate heavy equipment on reinforcement until it is covered with at least 8 inches of shoring backfill. Replace any damaged reinforcement to the satisfaction of the Engineer.

Backfill for temporary walls outside the reinforced zone in accordance with Article 410-8 of the 2018 Standard Specifications. Bench temporary walls into the sides of excavations where applicable. For temporary geosynthetic walls with top of wall within 5 feet of finished grade, remove top facing and incorporate top reinforcement layer into fill when placing fill in front of wall. Temporary walls remain in place permanently unless otherwise required.

## **Measurement and Payment**

Temporary Shoring will be measured and paid in square feet. Temporary walls will be measured as the square feet of exposed wall face area. Cantilever, braced or anchored shoring will be measured as the square feet of exposed shoring face area with the shoring height equal to the difference between the top and bottom of shoring elevations. Define "top of shoring" as where the grade intersects the back of sheet piles or H-piles and timber lagging. Define "bottom of shoring" as where the grade intersects front of sheet piles or H-piles and timber lagging. No measurement will be made for any embedment, shoring extension above top of shoring or pavement thickness above temporary walls.

The contract unit price for *Temporary Shoring* will be full compensation for providing shoring designs, submittals and materials, excavating, backfilling, hauling and removing excavated materials and supplying all labor, tools, equipment and incidentals necessary to construct temporary shoring.

No payment will be made for temporary shoring not shown in the plans or required by the Engineer including shoring for OSHA reasons or the Contractor's convenience. No value engineering proposals will be accepted based solely on revising or eliminating shoring locations shown in the plans or estimated quantities shown in the bid item sheets as a result of actual field measurements or site conditions.

PCB will be measured and paid in accordance with Section 1170 of the 2018 Standard Specifications. No additional payment will be made for anchoring PCB for temporary shoring. Costs for anchoring PCB will be incidental to temporary shoring.

Temporary guardrail will be measured and paid for in accordance with Section 862 of the 2018 Standard Specifications.

Payment will be made under:

Pay Item
Temporary Shoring

Pay Unit Square Foot

# MATERIAL AND EQUIPMENT STORAGE & PARKING OF PERSONAL VEHICLES:

11-17-21(Rev. 8-16-22)

1101

SP11 R0

Revise the 2018 Standard Specifications as follows:

Page 11-2, Article 1101-8 MATERIAL AND EQUIPMENT STORAGE, line 35-38, delete and replace with the following:

When work is not in progress, keep all personnel, equipment, machinery, tools, construction debris, materials and supplies away from active travel lanes that meets Table 1101-1.

TABLE 1101-1		
MATERIAL AND EQUIPMENT STORAGE FROM ACTIVE TRAVEL LANES		
Posted Speed Limit (mph)	Distance (ft)	
40 or less	≥ 18	
45-50	≥ 28	
55	≥ 32	
60 or higher	≥ 40	

When vehicles, equipment and materials are protected by concrete barrier or guardrail, they shall be offset at least 5 feet from the barrier or guardrail.

Page 11-2, Article 1101-9 PARKING OF PERSONAL VEHICLES, line 40-41, delete and replace with the following:

Provide staging areas for personal vehicle parking in accordance with Article 1101-8 or as directed by the Engineer before use.

# **WORK ZONE INSTALLER:**

(7-20-21)(Rev. 8-16-22) 1101, 1150 SP11 R04

Provide the service of at least one qualified work zone installer during the setup, installation, and removal of temporary traffic control within the highway right of way. The qualified work zone installer shall serve as crew leader and shall be on site and directing the installation and removal of temporary traffic control. If multiple temporary traffic control installations or removals are occurring simultaneously, then each shall have a qualified work zone installer.

The work zone installer shall be qualified by an NCDOT approved training agency or other NCDOT approved training provider in the safe and competent set up of temporary traffic control. For a complete listing of approved training agencies, see the Work Zone Safety Training webpage.

A work zone supervisor, in accordance with Article 1101-13 of the *Standard Specifications*, may fulfill the role of the work zone installer during the setup, installation, and removal of temporary traffic control within the highway right of way provided they are on site and directing the installation and removal of temporary traffic control.

All other individuals participating in the setup, installation, and removal of temporary traffic control within the highway right of way shall be certified as a qualified flagger in accordance with Article 1150-3 of the *Standard Specifications*, even if flagging is not being performed as part of the traffic control.

Provide the name and contact information of all qualified work zone installers to the Engineer prior to or at the preconstruction conference. Additionally, provide a qualification statement that all other individuals participating in the setup, installation, and removal of temporary traffic control are qualified flaggers that have been properly trained through an NCDOT approved training agency or other NCDOT approved training provider.

All certification records for qualified work zone installers and flaggers shall be uploaded by the approved training agency or other NCDOT approved training provider to the Department's Work Zone Education Verification App (WZ-EVA) prior to the qualified work zone installer or flagger performing any traffic control duties on the project. For more information about WZ-EVA, see the Work Zone Safety Training webpage.

## **PORTABLE CHANGEABLE MESSAGE SIGNS:**

(9-20-22)(Rev. 11-15-22) 1089, 1120 SP11 R10

Revise the 2018 Standard Specifications as follows:

Page 10-197, Subarticle 1089-7(D) Controller, line 16, add the following after the third sentence of the first paragraph:

Change the controller password from the factory default and periodically change the controller password to deter unauthorized programming of the controller.

Page 10-197, Subarticle 1089-7(D) Controller, lines 16-19, replace the forth sentence of the first paragraph with the following:

The password system is recommended to include at least two levels of security such that operators at one level may only change message sequences displayed using preprogrammed sequences and operators at a higher level may create and store messages or message sequences.

Page 10-197, Subarticle 1089-7(D) Controller, line 24 replace the sentence with the following:

The controller shall be stored in a locked, weather and vandal resistant box when not in use and after changes to the messages are made.

Page 11-8, Article 1120-3 CONSTRUCTION METHODS, lines 26-32, replace the second paragraph with the following:

Provide an experienced operator for the portable changeable message sign during periods of operation to ensure that the messages displayed on the sign panel are in accordance with the plans and Subarticle 1089-7(D). Change the controller password from the factory default and periodically change the controller password to deter unauthorized programming of the controller. Using two levels of password security is recommended such that operators at one level may only change message sequences displayed using preprogrammed sequences and operators at a higher level may create and store messages or message sequences. Lock the controller in a weather and vandal resistant box when not in use and after changes to the messages are made.

#### LAW ENFORCEMENT:

(6-21-22)(Rev. 11-15-22) 1190 SP11 R30

Revise the 2018 Standard Specifications as follows:

Page 11-19, Article 1190-1 DESCRIPTION, lines 4-5, replace the paragraph with the following:

Furnish Law Enforcement Officers and official Law Enforcement vehicles to direct traffic in accordance with the contract.

Page 11-19, Article 1190-2 CONSTRUCTION METHODS, lines 7-10, replace the first and second paragraph with the following:

Use off duty uniformed Law Enforcement Officers and official Law Enforcement vehicles equipped with blue lights to direct or control traffic as required by the plans or by the Engineer.

Law Enforcement vehicles shall not be parked within the buffer space on any roadway. Law Enforcement vehicles shall not be used to close or block an active travel lane on multilane roadways with a posted speed limit of 45 MPH or higher, except as allowed during rolling roadblock operations as shown in the *Roadway Standard Drawings* or while responding to an emergency.

Page 11-19, Article 1190-3 MEASUREMENT AND PAYMENT, lines 14-15, replace the second sentence of the first paragraph with the following:

There will be no direct payment for official Law Enforcement vehicles as they are considered incidental to the pay item.

## **EXTRUDED THERMOPLASTIC PAVEMENT MARKING THICKNESS:**

3-19-19 (Rev. 6-21-22) 1205 SP12 R05

Revise the 2018 Standard Specifications as follows:

Page 12-6, Subarticle 1205-4(A)(1) General, lines 5-8, delete the second sentence and replace with the following:

Use application equipment that provides multiple width settings ranging from 4 inches to 12 inches and multiple thickness settings to achieve the required thickness above the surface of the pavement as shown in Table 1205-3.

Page 12-7, Table 1205-3, THICKNESS REQUIREMENTS FOR THERMOPLASTIC, replace with the following:

TABLE 1205-3		
MINIMUM THICKNESS REQUIREMENTS FOR THERMOPLASTIC		
Thickness	Location	
240 mils	In-lane and shoulder-transverse pavement markings (rumble strips). May be	
	placed in 2 passes.	
90 mils	Center lines, skip lines, transverse bands, mini-skip lines, characters, bike lane	
	symbols, crosswalk lines, edge lines, gore lines, diagonals, and arrow symbols	

# PERMANENT SEEDING AND MULCHING:

(7-1-95) 1660 SP16 R02

The Department desires that permanent seeding and mulching be established on this project as soon as practical after slopes or portions of slopes have been graded. As an incentive to obtain an early stand of vegetation on this project, the Contractor's attention is called to the following:

For all permanent seeding and mulching that is satisfactorily completed in accordance with the requirements of Section 1660 in the 2018 Standard Specifications and within the following percentages of elapsed contract times, an additional payment will be made to the Contractor as an incentive additive. The incentive additive will be determined by multiplying the number of acres of seeding and mulching satisfactorily completed times the contract unit bid price per acre for Seeding and Mulching times the appropriate percentage additive.

Percentage of Elapsed Contract Time	Percentage Additive
0% - 30%	30%
30.01% - 50%	15%

Percentage of elapsed contract time is defined as the number of calendar days from the date of availability of the contract to the date the permanent seeding and mulching is acceptably completed divided by the total original contract time.

# STANDARD SPECIAL PROVISION AVAILABILITY OF FUNDS – TERMINATION OF CONTRACTS

(5-20-08)

Z-2

General Statute 143C-6-11. (h) Highway Appropriation is hereby incorporated verbatim in this contract as follows:

(h) Amounts Encumbered. – Transportation project appropriations may be encumbered in the amount of allotments made to the Department of Transportation by the Director for the estimated payments for transportation project contract work to be performed in the appropriation fiscal year. The allotments shall be multiyear allotments and shall be based on estimated revenues and shall be subject to the maximum contract authority contained in General Statute 143C-6-11(c). Payment for transportation project work performed pursuant to contract in any fiscal year other than the current fiscal year is subject to appropriations by the General Assembly. Transportation project contracts shall contain a schedule of estimated completion progress, and any acceleration of this progress shall be subject to the approval of the Department of Transportation provided funds are available. The State reserves the right to terminate or suspend any transportation project contract, and any transportation project contract shall be so terminated or suspended if funds will not be available for payment of the work to be performed during that fiscal year pursuant to the contract. In the event of termination of any contract, the contractor shall be given a written notice of termination at least 60 days before completion of scheduled work for which funds are available. In the event of termination, the contractor shall be paid for the work already performed in accordance with the contract specifications.

Payment will be made on any contract terminated pursuant to the special provision in accordance with Subarticle 108-13(D) of the 2018 Standard Specifications.

# STANDARD SPECIAL PROVISION NCDOT GENERAL SEED SPECIFICATION FOR SEED QUALITY

(5-17-11) Z-3

Seed shall be sampled and tested by the North Carolina Department of Agriculture and Consumer Services, Seed Testing Laboratory. When said samples are collected, the vendor shall supply an independent laboratory report for each lot to be tested. Results from seed so sampled shall be final. Seed not meeting the specifications shall be rejected by the Department of Transportation and shall not be delivered to North Carolina Department of Transportation warehouses. If seed has been delivered it shall be available for pickup and replacement at the supplier's expense.

Any re-labeling required by the North Carolina Department of Agriculture and Consumer Services, Seed Testing Laboratory, that would cause the label to reflect as otherwise specified herein shall be rejected by the North Carolina Department of Transportation.

Seed shall be free from seeds of the noxious weeds Johnsongrass, Balloonvine, Jimsonweed, Witchweed, Itchgrass, Serrated Tussock, Showy Crotalaria, Smooth Crotalaria, Sicklepod, Sandbur, Wild Onion, and Wild Garlic. Seed shall not be labeled with the above weed species on the seed analysis label. Tolerances as applied by the Association of Official Seed Analysts will NOT be allowed for the above noxious weeds except for Wild Onion and Wild Garlic.

Tolerances established by the Association of Official Seed Analysts will generally be recognized. However, for the purpose of figuring pure live seed, the found pure seed and found germination percentages as reported by the North Carolina Department of Agriculture and Consumer Services, Seed Testing Laboratory will be used. Allowances, as established by the NCDOT, will be recognized for minimum pure live seed as listed on the following pages.

The specifications for restricted noxious weed seed refers to the number per pound as follows:

Restricted Noxious Weed	Limitations per Lb. Of Seed	Restricted Noxious Weed	Limitations per Lb. of Seed
Blessed Thistle	4 seeds	Cornflower (Ragged Robin)	27 seeds
Cocklebur	4 seeds	Texas Panicum	27 seeds
Spurred Anoda	4 seeds	Bracted Plantain	54 seeds
Velvetleaf	4 seeds	Buckhorn Plantain	54 seeds
Morning-glory	8 seeds	Broadleaf Dock	54 seeds
Corn Cockle	10 seeds	Curly Dock	54 seeds
Wild Radish	12 seeds	Dodder	54 seeds
Purple Nutsedge	27 seeds	Giant Foxtail	54 seeds
Yellow Nutsedge	27 seeds	Horsenettle	54 seeds
Canada Thistle	27 seeds	Quackgrass	54 seeds
Field Bindweed	27 seeds	Wild Mustard	54 seeds
Hedge Bindweed	27 seeds		

Seed of Pensacola Bahiagrass shall not contain more than 7% inert matter, Kentucky Bluegrass, Centipede and Fine or Hard Fescue shall not contain more than 5% inert matter whereas a maximum of 2% inert matter will be allowed on all other kinds of seed. In addition, all seed shall not contain more than 2% other crop seed nor more than 1% total weed seed. The germination

rate as tested by the North Carolina Department of Agriculture shall not fall below 70%, which includes both dormant and hard seed. Seed shall be labeled with not more than 7%, 5% or 2% inert matter (according to above specifications), 2% other crop seed and 1% total weed seed.

Exceptions may be made for minimum pure live seed allowances when cases of seed variety shortages are verified. Pure live seed percentages will be applied in a verified shortage situation. Those purchase orders of deficient seed lots will be credited with the percentage that the seed is deficient.

#### FURTHER SPECIFICATIONS FOR EACH SEED GROUP ARE GIVEN BELOW:

Minimum 85% pure live seed; maximum 1% total weed seed; maximum 2% total other crop seed; maximum 144 restricted noxious weed seed per pound. Seed less than 83% pure live seed will not be approved.

Sericea Lespedeza Oats (seeds)

Minimum 80% pure live seed; maximum 1% total weed seed; maximum 2% total other crop; maximum 144 restricted noxious weed seed per pound. Seed less than 78% pure live seed will not be approved.

Tall Fescue (all approved varieties)

Kobe Lespedeza

Bermudagrass

Browntop Millet

Korean Lespedeza German Millet – Strain R Weeping Lovegrass Clover – Red/White/Crimson

Carpetgrass

Minimum 78% pure live seed; maximum 1% total weed seed; maximum 2% total other crop seed; maximum 144 restricted noxious weed seed per pound. Seed less than 76% pure live seed will not be approved.

Common or Sweet Sundangrass

Minimum 76% pure live seed; maximum 1% total weed seed; maximum 2% total other crop seed; maximum 144 restricted noxious weed seed per pound. Seed less than 74% pure live seed will not be approved.

Rye (grain; all varieties) Kentucky Bluegrass (all approved varieties) Hard Fescue (all approved varieties) Shrub (bicolor) Lespedeza

Minimum 70% pure live seed; maximum 1% total weed seed; maximum 2% total other crop seed; maximum 144 noxious weed seed per pound. Seed less than 70% pure live seed will not be approved.

Centipedegrass Japanese Millet Crownvetch Reed Canary Grass

Pensacola Bahiagrass Zoysia

Creeping Red Fescue

Minimum 70% pure live seed; maximum 1% total weed seed; maximum 2% total other crop seed; maximum 5% inert matter; maximum 144 restricted noxious weed seed per pound.

Barnyard Grass
Big Bluestem
Little Bluestem
Bristly Locust
Birdsfoot Trefoil
Indiangrass
Orchardgrass
Switchgrass

Yellow Blossom Sweet Clover

## STANDARD SPECIAL PROVISION

## **ERRATA**

(10-16-18) (Rev. 6-20-23)

Revise the 2018 Standard Specifications as follows:

#### **Division 1**

- Page 1-1, Article 101-2 Abbreviations, line 13, replace "American National Standards Institute, Inc." with "American National Standards Institute".
- Page 1-1, Article 101-2 Abbreviations, line 32, replace "Equivalent Single Axis Load" with "Equivalent Single Axle Load".
- **Page 1-16, Subarticle 102-9(A) General, line 26,** replace "10 U.S.C. 2304(g)" with "10 U.S.C. 3205".
- Page 1-43, Article 104-13 RECYCLED PRODUCTS OR SOLID WASTE MATERIALS, line 4, replace "104-13(B)(2)" with "104-13(B)".
- Page 1-52, Article 106-1 RECYCLED PRODUCTS OR SOLID WASTE MATERIALS, line 25, replace "13 NCAC 7CF.0101(a)(99)" with "29 CFR 1910.1200".
- Page 1-79, Article 109-1 MEASUREMENT AND PAYMENT, Test Method prior to line 34, replace "AASHTO M 32" with "AASHTO M 336".

#### **Division 2**

- **Page 2-5, Article 210-2 CONSTRUCTION METHODS, line 21,** replace "NCGS §§ 130A-444 to -452" with "NCGS §§ 130A-444 to -453".
- Page 2-13, Article 225-2 EROSION CONTROL REQUIREMENTS, line 17, replace "the Sedimentation and Pollution Control Act" with "Article 107-12".
- Page 2-20, Subarticle 230-4(B)(3) Reclamation Plan, line 12, replace "Department's borrow and waste site reclamation procedures for contracted projects" with "Department's Borrow Waste and Staging Site Reclamation Procedures for Contract Projects".
- Page 2-25, Subarticle 235-3(E) Surcharges and Waiting Periods, line 21 and 27, delete "Department's Materials and Tests Unit.".
- Page 2-27, Article 240-4 MEASUREMENT AND PAYMENT, line 23, replace "Section 225" with "Article 225-7".
- Page 2-30, Article 275-4 MEASUREMENT AND PAYMENT, line 33, replace "Section 815" with "Article 815-4".

#### **Division 4**

Page 4-18, Subarticle 411-5(C)(3) Coring, line 11, replace "in accordance with ASTM D5079" with "with methods acceptable to the Engineer".

- Page 4-50, Article 430-2 MATERIALS, prior to line 15, replace Section "1080-9" with "1080-7".
- Page 4-53, Article 440-2 MATERIALS, prior to line 6, replace Section "1080-9" with "1080-7".
- Page 4-58, Article 442-2 MATERIALS, prior to line 15, replace Section "1080-6" with "1080-12".
- Page 4-59, Subarticle 442-7(A) Blast Cleaning, line 36, replace Article "1080-6" with "1080-12".
- Page 4-76, Article 454-2 MATERIALS, prior to line 24, replace Section "815-2" with "1044".
- Page 4-79, Article 455-2 MATERIALS, prior to line 21, replace Section "815" with "1044".
- Page 4-80, Subarticle 455-3(B) Precast Gravity Wall Designs, line 23 and lines 25-26, replace "AASHTO LRFD specifications" with "AASHTO LRFD Bridge Design Specifications".
- Page 4-84, Article 458-5 MEASUREMENT AND PAYMENT, line 31, replace article number "454-1" with "458-1".

#### **Division 6**

- Page 6-7, Article 609-1 DESCRIPTION, line 29, replace article number "609-10" with "609-9".
- Page 6-10, Subarticle 609-6(C) Control Charts, line 17, replace Section number "7021" with "7.20.1".
- Page 6-13, Article 609-9 QUALITY ASSURANCE, line 31, replace Section number "7.60" with "7.6".
- Page 6-26, Subarticle 610-13(A)(1) Acceptance for New Construction, line 31, replace Table number "610-7" with "610-8".
- Page 6-29, Subarticle 610-13(B) North Carolina Hearne Straightedge, line 32, replace Table number "610-8" with "610-9".
- Page 6-31, Article 610-14 DENSITY ACCEPTANCE, Specified Density prior to line 30 and line 32, replace Table number "610-6" with "610-7".
- Page 6-37, Article 650-5 CONSTRUCTION METHODS, line 10, replace Section number "9.5(E)" with "9.5.1(E)".
- Page 6-44, Subarticle 660-8(B) Asphalt Mat and Seal, line 40, replace Subarticle number "660-8(A)" with "660-8(C)".
- Page 6-44, Subarticle 660-8(B) Asphalt Mat and Seal, line 42, replace Subarticle number "660-8(C)" with "660-8(A)".

### **Division 7**

Page 7-11, Subarticle 700-15(E) Compressive Strength, line 5, replace "AASHTO T 23" with "AASHTO R 100".

Page 7-24, Article 723-4 Very High Early Strength Concrete for Concrete Pavement Repair, line 4, replace "AASHTO T126" with "AASHTO R 39".

Page 7-24, Article 723-5 MEASUREMENT AND PAYMENT, line 34, replace "Section 225" with "Article 225-7".

Page 7-24, Article 723-5 MEASUREMENT AND PAYMENT, line 36, replace "Section 270" with "Article 270-4".

**Page 7-27, Article 725-1 MEASUREMENT AND PAYMENT, line 4,** replace article number "725-1" with "724-4".

**Page 7-28, Article 725-1 MEASUREMENT AND PAYMENT, line 10,** replace article number "725-1" with "725-3".

### **Division 8**

Page 8-11, Article 815-1 MATERIALS, after line 35, replace "1080-12" with "1080-10".

Page 8-13, Article 816-1 MATERIALS, after line 28, replace "1080-12" with "1080-10".

Page 8-17, Article 825-1 Description, line 5, delete "853" and "855".

### **Division 10**

Page 10-2, Subarticle 1000-3(B) Air Entrainment, line 33, replace "Chase" with "Chace".

Page 10-4, Subarticle 1000-4(A) Composition and Design, after line 17, replace "T23" with "R100".

Page 10-4, Subarticle 1000-4(B) Air Entrainment, line 31 and 33, replace "Chase" with "Chace".

Page 10-4, Subarticle 1000-4(C) Strength of Concrete, line 39 and 41, replace "T 23" with "R 100".

Page 10-15, Subarticle 1000-11(B) Mixing Time for Central Mixed Concrete, after line 35, replace "T 23" with "R 100".

Page 10-22, Article 1003-3 COMPOSITION AND DESIGN, line 9, replace "Engineer" with "engineer".

Page 10-23, Article 1003-4 GROUT REQUIREMENTS, line 16 and 18, replace "T 23" with "R 100".

**Page 10-26, Article 1005-4 TESTING, after line 26,** replace " $1014-2 \in (6)$ " with " $1014-2 \in (6)$ " in C. of Table 1005-1 footnote and replace "Lightweight<sup>B</sup>" with "Lightweight<sup>C</sup>".

Page 10-29, Subarticle 1012-1(B)(4) Flat and Elongated Pieces, line 44, delete "SF9.5A"

Page 10-36, Subarticle 1012-2(E) Toughness (Resistance to Abrasion), line 31, replace "course" with "coarse".

Page 10-37, Article 1012-4, LIGHTWEIGHT AGGREGATE, line 4, replace Table number "1012-8" with "1012-5".

Page 10-48, Subarticle 1020-10(A) Mineral Fibers, line 27, replace "Table 1012-5" with "Table 1020-2".

Page 10-52, Article 1024-5 FLY ASH, line 12, replace "Table 2" with "Table 3".

Page 10-60, Subarticle 1032-6(F) Joint Materials, line 15, replace "AASHTO M 198" with "ASTM C990" and delete "Type B".

**Page 10-61, Article 1034-3 CONCRETE SEWER PIPE, line 33,** replace "AASHTO M 198" with "ASTM C990" and delete "Type A or B".

Page 10-64, Article 1040-1 BRICK, line 12, replace "ASTM C62" with "ASTM C62 or ASTM C216".

Page 10-67, Article 1044-7 CORRUGATED PLASTIC PIPE AND FITTINGS, line 24, replace "AASHTO M 294 for heavy duty tubing" with "Article 1032-7 and AASHTO M 252".

Page 10-68, Subarticle 1046-3(D) Offset Blocks, lines 30-32, delete "Before beginning the installation of recycled offset block, submit the FHWA acceptance letter for each type of block to the Engineer for approval."

**Page 10-69, Subarticle 1046-3(D) Offset Blocks, before line 1,** replace "WIRE DIAMETER" with "COMPOSITE OFFSET BLOCKS" as the title of Table 1046-1, delete "Testing" property and associated requirement from Table 1046-1, and replace "Approval" requirement of "Approved for use by the FHWA" with "Approved for use on the NCDOT APL" in Table 1046-1.

Page 10-80, Article 1060-2 FERTILIZER, line 18, replace "North Carolina Fertilizer Law" with "North Carolina Commercial Fertilizer Law".

**Page 10-83, Article 1060-9 WATER, line 9,** replace "15 NCAC 2B.0200" with "15A NCAC 02B.0200".

Page 10-86, Article 1070-3 COLD DRAWN STEEL WIRE AND WIRE REINFORCEMENT, line 23 and 25, replace "M 32" and "M 55" with "M 336".

Page 10-87, Article 1070-6 DOWELS AND TIE BARS FOR PORTLAND CEMENT CONCRETE PAVEMENT, line 17, replace "AASHTO M 32" with "AASHTO M 336".

Page 10-88, Subarticle 1070-7(D) Handling, Storage and Transportation, line 40, replace "Section" with "Subarticle".

Page 10-89, Article 1070-8 SPIRAL COLUMN REINFORCING STEEL, line 21, replace "AASHTO M 32" with "AASHTO M 336".

Page 10-91, Article 1072-3 BEARING PLATE ASSEMBLIES, line 44, replace "Article 1080-9" with "Article 1080-7".

Page 10-92, Subarticle 1072-5(A) General, after line 30, replace "SAMPLING REQUIREMENTS FOR HIGH STRENGTH BOLTS, NUTS AND WASHERS" with "SAMPLING REQUIREMENTS FOR HIGH STRENGTH BOLTS, NUTS AND WASHERS TO INCLUDE DIRECT TENSION INDICATORS" as the title of Table 1072-1.

Page 10-95, Subarticle 1072-5(D)(7)(a) Mill Test Report(s), line 18, replace title with "Mill Test Report(s) (MTR)".

Page 10-95, Subarticle 1072-5(D)(7)(b) Manufacturer Certified Test Report(s), line 24, replace title with "Manufacturer Certified Test Report(s) (MCTR)".

Page 10-96, Subarticle 1072-5(D)(7)(c) Distributor Certified Test Report(s), line 1, replace title with "Distributor Certified Test Report(s) (DCTR)".

Page 10-98, Subarticle 1072-5(F) Galvanized High Strength Bolts, Nuts and Washers, line 11, replace "Article 1080-9" with "Article 1080-7".

Page 10-111, Subarticle 1072-18(B) General, line 24, replace "Structural Welding Code-Reinforcing Steel" with "Structural Welding Code-Steel Reinforcing Bars".

Page 10-117, Article 1074-1 WELDING, lines 21-22, replace "Structural Welding Code-Reinforcing Steel" with "Structural Welding Code-Steel Reinforcing Bars".

Page 10-119, Article 1074-7(B) Gray Iron Castings, line 16, replace "M306" with "AASHTO M 306".

Page 10-121, Article 1076-7, REPAIR OF GALVANIZING, line 8, replace article number "1080-9" with "1080-7".

Page 10-125, Subarticle 1077-5(B) Testing, line 31, replace "T 23" with "R 100".

Page 10-131, Subarticle 1078-4(A) Composition and Design, after line 23, in Table 1078-2 replace "T 23" with "R 100".

Page 10-135, Subarticle 1078-4(J)(2) Mixing Time for Central Mixed Concrete, line 46, replace "Table 1078-2" with "Table 1078-3"

Page 10-136, Subarticle 1078-4(J)(2) Mixing Time for Central Mixed Concrete, after line 17, replace "T23" with "R100".

Page 10-153, Subarticle 1079-1 PREFORMED BEARING PADS, line 8, replace "MIL-C882-D" with "MIL-C-882-E".

**Page 10-154, Subarticle 1079-2(A) General, line 6,** delete "and 1079-2(E)".

Page 10-156, Article 1080-5 SELF-CURING INORGANIC ZINC PAINT, line 8, replace "AASHTO M 252" with "AASHTO M 300".

Page 10-156, Article 1080-5 SELF-CURING INORGANIC ZINC PAINT, line 20, replace "AASHTO M 253" with "AASHTO M 300".

**Page 10-156, Subarticle 1080-9(A) Composition, line 40,** replace "Tables 1080-7 through 1080-14" with "Tables 1080-1 through 1080-3".

**Page 10-157, Subarticle 1080-9(B) Properties, line 5,** replace "Tables 1080-7 through 1080-14" with "Tables 1080-1 through 1080-3".

**Page 10-157, Subarticle 1080-9(B) Properties, line 35,** replace "Materials and Tests Standards CLS-P-1.0" with "*Structural Steel Shop Coatings Program*".

Page 10-159, Subarticle 1080-9(E) Color Variation, Table 1080-1, replace "ASTM D1159" with "ASTM D1199".

Page 10-159, Subarticle 1080-9(E) Color Variation, Table 1080-1, replace "NCDOT M&T P-10" with "ASTM D6280".

Page 10-161, Subarticle 1080-9(E) Color Variation, Table 1080-3, replace "ASTM D13278" and "ASTM D3278".

**Page 10-161, Subarticle 1080-9(E) Color Variation, Table 1080-3,** replace "NCDOT M&T P-10" and "Structural Steel Shop Coatings Program".

Page 10-161, Subarticle 1080-9(E) Color Variation, Table 1080-3, add Test Method "ASTM D4400" for the Leneta Sag Test property in Table 1080-3.

**Page 10-161, Subarticle 1080-9(E) Color Variation, Table 1080-3,** add Test Method "ASTM D523" for the Gloss, Specular property in Table 1080-3.

Page 10-161, Subarticle 1080-9(E) Color Variation, Table 1080-3, replace Test Method "ASTM" with "ASTM E70" for the pH property in Table 1080-3.

Page 10-162, Article 1080-50 PAINT FOR VERTICAL MARKERS, line 1, replace article number "1080-50" with "1080-10".

Page 10-162, Article 1080-61 EPOXY RESIN FOR REINFORCING STEEL, line 5, replace article number "1080-61" with "1080-11".

Page 10-162, Article 1080-72 ABRASIVE MATERIALS FOR BLAST CLEANING STEEL, line 22, replace article number "1080-72" with "1080-12".

Page 10-163, Article 1080-83 FIELD PERFORMANCE AND SERVICES, line 25, replace article number "1080-83" with "1080-13".

Page 10-166, Subarticle 1081-1(E) Prequalification, line 24, replace "Value Management Unit" with "Product Evaluation Program".

Page 10-168, Subarticle 1081-3(A) Physical Requirements, after line 25, replace "Subarticle 1081-4(B)" with "Subarticle 1081-3(B)" in Table 1081-2.

Page 10-168, Subarticle 1087-2(A) Paint Composition, lines 19-20, replace "Federal Specification TTP 1952F" with "Federal Specification TT-P-1952".

Page 10-200, Subarticle 1090-1(C) Anchor Bolts, line 38, replace ASTM number "A325" with "F3125".

**Page 10-202, Subarticle 1091-3(F) Solid Wall HDPE Conduit, line 5,** replace ", Table 1091-1, 1091-2 and 1091-3" with "and Table 1091-1".

Page 10-208, Subarticle 1094-1(A) Breakaway or Simple Steel Beam Sign Supports, line 19, replace ASTM number "A325" with "F3125".

Page 10-209, Subarticle 1094-1(D) Steel Square Tube Posts, line 10, replace ASTM number "A123" with "A653".

**Page 10-209, Subarticle 1094-1(E) Wood Supports, line 17,** replace "Article 1082-2 and 1082-3" with "Section 1082".

Page 10-212, Subarticle 1098-1(H) Electrical Service, line 21, replace "NEMA Type 3R" with "NEMA 3R".

Page 10-212, Subarticle 1098-1(H) Electrical Service, line 36, replace "UL Standard 231" with "UL Standard UL-231".

Page 10-212, Subarticle 1098-1(H) Electrical Service, line 37, replace "UL Standard 67" with "UL Standard UL-67".

Page 10-224, Subarticle 1098-14(H)(1) Type I – Pedestrian Pushbutton Post, line 3, replace ASTM number "325" with "F3125".

Page 10-224, Article 1098-16 CABINET BASE ADAPTER/EXTENDER, line 33, replace Section number "6.7" with "6.8".

### **Division 14**

**Page 14-11, Subarticle 1401-2(B) Lowering Device, line 36,** replace Military Specification "MIL-W-83420E" with "MIL-DTL-83420".

Page 14-22, Article 1412-2 MATERIALS, line 29, replace UL Standard "1572" with "1598".

### **Division 15**

Page 15-6, Subarticle 1510-3(B) Testing and Sterilization, line 40, replace Section number "4.4.3" with "4.4".

Page 15-14, Article 1525-2 MATERIALS, line 9, replace "AASHTO M 198" with "ASTM C990".

Page 15-14, Article 1525-2 MATERIALS, lines 17-18, delete "in the Grout Production and Delivery provision".

**Page 15-19, Article 1550-2 MATERIALS, line 16,** replace "AASHTO LRFD Bridge Design Specifications" with "AASHTO LRFD Bridge Construction Specifications".

### **Division 16**

Page 16-9, Article 1630-3 MEASUREMENT AND PAYMENT, line 7, replace "Section 225" with "Article 225-7".

Page 16-9, Article 1630-3 MEASUREMENT AND PAYMENT, line 8, replace "Section 230" with "Article 230-5".

Page 16-16, Article 1637-5 MEASUREMENT AND PAYMENT, line 17, replace "Section 310" with "Article 310-6".

### **Division 17**

Page 17-15, Article 1715-4 MEASUREMENT AND PAYMENT, lines 42-44, replace the second sentence with the following:

An example is an installation of a single 1.25 inch HDPE conduit would be paid as:

Directional Drill (1)(1.25") Linear Foot

**Page 17-15, Subarticle 1715-3(E) Bore and Jack, line 5,** replace article number "1540-4" with "1550-4".

**Page 17-15, Subarticle 1715-3(E) Bore and Jack, lines 10 & 11,** replace "NCDOT Policies and Procedures for Accommodating Utilities on Highway Rights of Way" with "NCDOT Utilities Accommodations Manual".

### STANDARD SPECIAL PROVISION

### PLANT AND PEST QUARANTINES

(Imported Fire Ant, Gypsy Moth, Witchweed, Emerald Ash Borer, Guava Root Knot Nematode, And Other Noxious Weeds)

(3-18-03) (Rev. 5-21-19) Z-04a

### Within Quarantined Area

This project may be within a county regulated for plant and/or pests. If the project or any part of the Contractor's operations is located within a quarantined area, thoroughly clean all equipment prior to moving out of the quarantined area. Comply with federal/state regulations by obtaining a certificate or limited permit for any regulated article moving from the quarantined area.

### **Originating in a Quarantined County**

Obtain a certificate or limited permit issued by the N.C. Department of Agriculture/United States Department of Agriculture. Have the certificate or limited permit accompany the article when it arrives at the project site.

### Contact

Contact the N.C. Department of Agriculture/United States Department of Agriculture at 1-800-206-9333, 919-707-3730, or <a href="https://www.ncagr.gov/plantindustry/Plant/quaran/table2.htm">https://www.ncagr.gov/plantindustry/Plant/quaran/table2.htm</a> to determine those specific project sites located in the quarantined area or for any regulated article used on this project originating in a quarantined county.

### **Regulated Articles Include**

- 1. Soil, sand, gravel, compost, peat, humus, muck, and decomposed manure, separately or with other articles. This includes movement of articles listed above that may be associated with cut/waste, ditch pulling, and shoulder cutting.
- 2. Plants with roots including grass sod.
- 3. Plant crowns and roots.
- 4. Bulbs, corms, rhizomes, and tubers of ornamental plants.
- 5. Hay, straw, fodder, and plant litter of any kind.
- 6. Clearing and grubbing debris.
- 7. Used agricultural cultivating and harvesting equipment.
- 8. Used earth-moving equipment.
- 9. Any other products, articles, or means of conveyance, of any character, if determined by an inspector to present a hazard of spreading imported fire ant, gypsy moth, witchweed, emerald ash borer, guava root knot nematode, or other noxious weeds.

### STANDARD SPECIAL PROVISION

### TITLE VI AND NONDISCRIMINATION:

(6-28-77)(Rev 6/19/2018)

Z-6

Revise the 2018 Standard Specifications as follows:

Replace Article 103-4(B) with the following:

The North Carolina Department of Transportation is committed to carrying out the U.S. Department of Transportation's policy of ensuring nondiscrimination in the award and administration of contracts.

The provisions of this section related to United States Department of Transportation (US DOT) Order 1050.2A, Title 49 Code of Federal Regulations (CFR) part 21, 23 United States Code (U.S.C.) 140 and 23 CFR part 200 (or 49 CFR 303, 49 U.S.C. 5332 or 49 U.S.C. 47123) are applicable to all North Carolina Department of Transportation (NCDOT) contracts and to all related subcontracts, material supply, engineering, architectural and other service contracts, regardless of dollar amount. Any Federal provision that is specifically required not specifically set forth is hereby incorporated by reference.

### (1) Title VI Assurances (USDOT Order 1050.2A, Appendix A)

During the performance of this contract, the contractor, for itself, its assignees, and successors in interest (hereinafter referred to as the "contractor") agrees as follows:

- (a) Compliance with Regulations
  - The contractor (hereinafter includes consultants) shall comply with the Acts and the Regulations relative to Nondiscrimination in Federally-assisted programs of the U.S. Department of Transportation, Federal Highway Administration (FHWA), as they may be amended from time to time, which are herein incorporated by reference and made a part of this contract.
- (b) Nondiscrimination
  - The contractor, with regard to the work performed by it during the contract, shall not discriminate on the grounds of race, color, or national origin in the selection and retention of subcontractors, including procurements of materials and leases of equipment. The contractor shall not participate directly or indirectly in the discrimination prohibited by the Acts and the Regulations, including employment practices when the contract covers any activity, project, or program set forth in Appendix B of 49 CFR Part 21.
- (c) Solicitations for Subcontractors, Including Procurements of Materials and Equipment In all solicitations, either by competitive bidding, or negotiation made by the contractor for work to be performed under a subcontract, including procurements of materials, or leases of equipment, each potential subcontractor or supplier shall be notified by the contractor of the contractor's obligations under this contract and the Acts and the Regulations relative to Nondiscrimination on the grounds of race, color, or national origin.

### (d) Information and Reports

The contractor shall provide all information and reports required by the Acts, the Regulations, and directives issued pursuant thereto and shall permit access to its books, records, accounts, other sources of information, and its facilities as may be determined by the Recipient or the FHWA to be pertinent to ascertain compliance with such Acts, Regulations, and instructions. Where any information required of a contractor is in the

exclusive possession of another who fails or refuses to furnish the information, the contractor shall so certify to the Recipient or the FHWA, as appropriate, and shall set forth what efforts it has made to obtain the information.

### (e) Sanctions for Noncompliance:

In the event of a contractor's noncompliance with the Non-discrimination provisions of this contract, the Recipient will impose such contract sanctions as it and/or the FHWA may determine to be appropriate, including, but not limited to:

- (i) Withholding payments to the contractor under the contract until the contractor complies; and/or
- (ii) Cancelling, terminating, or suspending a contract, in whole or in part.

### (f) Incorporation of Provisions

The contractor shall include the provisions of paragraphs (a) through (f) in every subcontract, including procurements of materials and leases of equipment, unless exempt by the Acts, the Regulations and directives issued pursuant thereto. The contractor shall take action with respect to any subcontract or procurement as the Recipient or the FHWA may direct as a means of enforcing such provisions including sanctions for noncompliance. Provided, that if the contractor becomes involved in, or is threatened with litigation by a subcontractor, or supplier because of such direction, the contractor may request the Recipient to enter into any litigation to protect the interests of the Recipient. In addition, the contractor may request the United States to enter into the litigation to protect the interests of the United States.

### (2) Title VI Nondiscrimination Program (23 CFR 200.5(p))

The North Carolina Department of Transportation (NCDOT) has assured the USDOT that, as a condition to receiving federal financial assistance, NCDOT will comply with Title VI of the Civil Rights Act of 1964 and all requirements imposed by Title 49 CFR part 21 and related nondiscrimination authorities to ensure that no person shall, on the ground of race, color, national origin, limited English proficiency, sex, age, or disability (including religion/creed or income-level, where applicable), be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any programs, activities, or services conducted or funded by NCDOT. Contractors and other organizations under contract or agreement with NCDOT must also comply with Title VI and related authorities, therefore:

- (a) During the performance of this contract or agreement, contractors (e.g., subcontractors, consultants, vendors, prime contractors) are responsible for complying with NCDOT's Title VI Program. Contractors are not required to prepare or submit Title VI Programs. To comply with this section, the prime contractor shall:
  - 1. Post NCDOT's Notice of Nondiscrimination and the Contractor's own Equal Employment Opportunity (EEO) Policy in conspicuous locations accessible to all employees, applicants and subcontractors on the jobsite.
  - 2. Physically incorporate the required Title VI clauses into all subcontracts on federally-assisted and state-funded NCDOT projects, and ensure inclusion by subcontractors into all lower-tier subcontracts.
  - 3. Required Solicitation Language. The Contractor shall include the following notification in all solicitations for bids and requests for work or material, regardless of funding source:

"The North Carolina Department of Transportation, in accordance with the provisions of Title VI of the Civil Rights Act of 1964 (78 Stat. 252, 42 US.C. §§ 2000d to 2000d-4) and the Regulations, hereby notifies all bidders that it will affirmatively ensure that any contract entered into pursuant to this advertisement, disadvantaged business enterprises will be afforded full and fair opportunity to submit bids in response to this invitation and will not

- be discriminated against on the grounds of race, color, or national origin in consideration for an award. In accordance with other related nondiscrimination authorities, bidders and contractors will also not be discriminated against on the grounds of sex, age, disability, low-income level, creed/religion, or limited English proficiency in consideration for an award."
- 4. Physically incorporate the FHWA-1273, in its entirety, into all subcontracts and subsequent lower tier subcontracts on Federal-aid highway construction contracts only.
- Provide language assistance services (i.e., written translation and oral interpretation), free of charge, to LEP employees and applicants. Contact NCDOT OCR for further assistance, if needed.
- 6. For assistance with these Title VI requirements, contact the NCDOT Title VI Nondiscrimination Program at 1-800-522-0453.
- (b) Subrecipients (e.g. cities, counties, LGAs, planning organizations) may be required to prepare and submit a Title VI Plan to NCDOT, including Title VI Assurances and/or agreements. Subrecipients must also ensure compliance by their contractors and subrecipients with Title VI. (23 CFR 200.9(b)(7))
- (c) If reviewed or investigated by NCDOT, the contractor or subrecipient agrees to take affirmative action to correct any deficiencies found within a reasonable time period, not to exceed 90 calendar days, unless additional time is granted by NCDOT. (23 CFR 200.9(b)(15))
- (d) The Contractor is responsible for notifying subcontractors of NCDOT's External Discrimination Complaints Process.
  - 1. Applicability
    Title VI and related laws protect participants and beneficiaries (e.g., members of the public and contractors) from discrimination by NCDOT employees, subrecipients and contractors, regardless of funding source.
  - 2. Eligibility
    - Any person—or class of persons—who believes he/she has been subjected to discrimination based on race, color, national origin, Limited English Proficiency (LEP), sex, age, or disability (and religion in the context of employment, aviation, or transit) may file a written complaint. The law also prohibits intimidation or retaliation of any sort.
  - 3. Time Limits and Filing Options
    Complaints may be filed by the affected individual(s) or a representative and must be filed no later than 180 calendar days after the following:
    - (i) The date of the alleged act of discrimination; or
    - (ii) The date when the person(s) became aware of the alleged discrimination; or
    - (iii) Where there has been a continuing course of conduct, the date on which that conduct was discontinued or the latest instance of the conduct.

Title VI and related discrimination complaints may be submitted to the following entities:

- North Carolina Department of Transportation, Office of Civil Rights, Title VI Program, 1511 Mail Service Center, Raleigh, NC 27699-1511; toll free 1-800-522-0453
- ➤ Federal Highway Administration, North Carolina Division Office, 310 New Bern Avenue, Suite 410, Raleigh, NC 27601, 919-747-7010
- ➤ US Department of Transportation, Departmental Office of Civil Rights, External Civil Rights Programs Division, 1200 New Jersey Avenue, SE, Washington, DC 20590; 202-366-4070

### 4. Format for Complaints

Complaints must be in writing and signed by the complainant(s) or a representative, and include the complainant's name, address, and telephone number. Complaints received by fax or e-mail will be acknowledged and processed. Allegations received by telephone will be reduced to writing and provided to the complainant for confirmation or revision before processing. Complaints will be accepted in other languages, including Braille.

5. Discrimination Complaint Form
Contact NCDOT Civil Rights to receive a full copy of the Discrimination
Complaint Form and procedures.

### 6. Complaint Basis

Allegations must be based on issues involving race, color, national origin (LEP), sex, age, disability, or religion (in the context of employment, aviation or transit). "Basis" refers to the complainant's membership in a protected group category.

TABLE 103-1 COMPLAINT BASIS					
Protected Categories	Definition	Examples	Applicable Nondiscrimination Authorities		
Race and Ethnicity	An individual belonging to one of the accepted racial groups; or the perception, based usually on physical characteristics that a person is a member of a racial group	Black/African American, Hispanic/Latino, Asian, American Indian/Alaska Native, Native Hawaiian/Pacific Islander, White	Title VI of the Civil Rights Act of 1964; 49 CFR Part 21; 23 CFR 200; 49 U.S.C. 5332(b); 49 U.S.C. 47123. (Executive Order 13166)		
Color	Color of skin, including shade of skin within a racial group	Black, White, brown, yellow, etc.			
National Origin (Limited English Proficiency)	Place of birth. Citizenship is not a factor. (Discrimination based on language or a person's accent is also covered)	Mexican, Cuban, Japanese, Vietnamese, Chinese			
Sex	Gender. The sex of an individual.  Note: Sex under this program does not include sexual orientation.	Women and Men	1973 Federal-Aid Highway Act; 49 U.S.C. 5332(b); 49 U.S.C. 47123.		
Age	Persons of any age	21-year-old person	Age Discrimination Act of 1975 49 U.S.C. 5332(b); 49 U.S.C. 47123.		
Disability	Physical or mental impairment, permanent or temporary, or perceived.	Blind, alcoholic, para-amputee, epileptic, diabetic, arthritic	Section 504 of the Rehabilitation Act of 1973; Americans with Disabilities Act of 1990		

Religion (in the context of employment) (Religion/ Creed in all aspects of any aviation or transit-related construction)	An individual belonging to a religious group; or the perception, based on distinguishable characteristics that a person is a member of a religious group. In practice, actions taken as a result of the moral and ethical beliefs as to what is right and wrong, which are sincerely held with the strength of traditional religious views. <i>Note:</i> Does not have to be associated with a recognized religious group or church; if an individual sincerely holds to the belief, it is a protected religious practice.	Muslim, Christian, Sikh, Hindu, etc.	Title VII of the Civil Rights Act of 1964; 23 CFR 230; FHWA-1273 Required Contract Provisions. (49 U.S.C. 5332(b); 49 U.S.C. 47123)
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### (3) Pertinent Nondiscrimination Authorities

During the performance of this contract, the contractor, for itself, its assignees, and successors in interest agrees to comply with the following non-discrimination statutes and authorities, including, but not limited to:

- (a) Title VI of the Civil Rights Act of 1964 (42 U.S.C. § 2000d et seq., 78 stat. 252), (prohibits discrimination on the basis of race, color, national origin); and 49 CFR Part 21.
- (b) The Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, (42 U.S.C. § 4601), (prohibits unfair treatment of persons displaced or whose property has been acquired because of Federal or Federal-aid programs and projects);
- (c) Federal-Aid Highway Act of 1973, (23 U.S.C. § 324 et seq.), (prohibits discrimination on the basis of sex):
- (d) Section 504 of the Rehabilitation Act of 1973, (29 U.S.C. § 794 et seq.), as amended, (prohibits discrimination on the basis of disability) and 49 CFR Part 27;
- (e) The Age Discrimination Act of 1975, as amended, (42 U.S.C. § 6101 et seq.), (prohibits discrimination on the basis of age);
- (f) Airport and Airway Improvement Act of 1982, (49 USC § 471, Section 47123), as amended, (prohibits discrimination based on race, creed, color, national origin, or sex);
- (g) The Civil Rights Restoration Act of 1987, (PL 100-209), (Broadened the scope, coverage and applicability of Title VI of the Civil Rights Act of 1964, The Age Discrimination Act of 1975 and Section 504 of the Rehabilitation Act of 1973, by expanding the definition of the terms "programs or activities" to include all of the programs or activities of the Federal-aid recipients, sub-recipients and contractors, whether such programs or activities are Federally funded or not);
- (h) Titles II and III of the Americans with Disabilities Act, which prohibit discrimination on the basis of disability in the operation of public entities, public and private transportation systems, places of public accommodation, and certain testing entities (42 U.S.C. §§ 12131-12189) as implemented by Department of Transportation regulations at 49 C.F.R. parts 37 and 38;
- (i) The Federal Aviation Administration's Nondiscrimination statute (49 U.S.C. § 47123) (prohibits discrimination on the basis of race, color, national origin, and sex);
- (j) Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, which ensures Nondiscrimination against minority populations by discouraging programs, policies, and activities with disproportionately high and adverse human health or environmental effects on minority and low-income populations;

- (k) Executive Order 13166, Improving Access to Services for Persons with Limited English Proficiency, and resulting agency guidance, national origin discrimination includes discrimination because of Limited English proficiency (LEP). To ensure compliance with Title VI, you must take reasonable steps to ensure that LEP persons have meaningful access to your programs (70 Fed. Reg. at 74087 to 74100);
- (l) Title IX of the Education Amendments of 1972, as amended, which prohibits you from discriminating because of sex in education programs or activities (20 U.S.C. 1681 et seq).
- (m) Title VII of the Civil Rights Act of 1964 (42 U.S.C. § 2000e et seq., Pub. L. 88-352), (prohibits employment discrimination on the basis of race, color, religion, sex, or national origin).

### (4) Additional Title VI Assurances

- \*\*The following Title VI Assurances (Appendices B, C and D) shall apply, as applicable
- (a) Clauses for Deeds Transferring United States Property (1050.2A, Appendix B) The following clauses will be included in deeds effecting or recording the transfer of real property, structures, or improvements thereon, or granting interest therein from the United States pursuant to the provisions of Assurance 4.

NOW, THEREFORE, the U.S. Department of Transportation as authorized by law and upon the condition that the North Carolina Department of Transportation (NCDOT) will accept title to the lands and maintain the project constructed thereon in accordance with the North Carolina General Assembly, the Regulations for the Administration of the Federal-Aid Highway Program, and the policies and procedures prescribed by the Federal Highway Administration of the U.S. Department of Transportation in accordance and in compliance with all requirements imposed by Title 49, Code of Federal Regulations, U.S. Department of Transportation, Subtitle A, Office of the Secretary, Part 21, Nondiscrimination in Federally-assisted programs of the U.S Department of Transportation pertaining to and effectuating the provisions of Title VI of the Civil Rights Act of 1964 (78 Stat. 252; 42 U.S.C. § 2000d to 2000d-4), does hereby remise, release, quitclaim and convey unto the NCDOT all the right, title and interest of the U.S. Department of Transportation in and to said lands described in Exhibit A attached hereto and made a part hereof.

### (HABENDUM CLAUSE)

TO HAVE AND TO HOLD said lands and interests therein unto the North Carolina Department of Transportation (NCDOT) and its successors forever, subject, however, to the covenants, conditions, restrictions and reservations herein contained as follows, which will remain in effect for the period during which the real property or structures are used for a purpose for which Federal financial assistance is extended or for another purpose involving the provision of similar services or benefits and will be binding on the NCDOT, its successors and assigns.

The NCDOT, in consideration of the conveyance of said lands and interests in lands, does hereby covenant and agree as a covenant running with the land for itself, its successors and assigns, that (1) no person will on the grounds of race, color, or national origin, be excluded from participation in, be denied the benefits of, or be otherwise subjected to discrimination with regard to any facility located wholly or in part on, over, or under such lands hereby conveyed [,] [and]\* (2) that the NCDOT will use the lands and interests in lands and interests in lands so conveyed, in compliance with all requirements imposed by or pursuant to Title 49, Code of Federal Regulations, U.S. Department of Transportation, Subtitle A, Office of the Secretary, Part 21, Nondiscrimination in Federally-assisted programs of the U.S. Department of Transportation, Effectuation of Title VI of the Civil Rights Act of 1964, and as said Regulations and Acts may be amended [, and (3) that in the event of breach of any of the above-mentioned nondiscrimination conditions, the Department will have a right to enter or re-enter said lands and facilities on said land, and that above described land and facilities will thereon revert to and vest in and become the absolute property of the U.S. Department of Transportation and its assigns as such interest existed prior to this instruction].\*

- (\*Reverter clause and related language to be used only when it is determined that such a clause is necessary in order to make clear the purpose of Title VI.)
- (b) Clauses for Transfer of Real Property Acquired or Improved Under the Activity, Facility, or Program (1050.2A, Appendix C)

  The following clauses will be included in deeds, licenses, leases, permits, or similar instruments entered into by the North Carolina Department of Transportation

(NCDOT) pursuant to the provisions of Assurance 7(a):

- 1. The (grantee, lessee, permittee, etc. as appropriate) for himself/herself, his/her heirs, personal representatives, successors in interest, and assigns, as a part of the consideration hereof, does hereby covenant and agree [in the case of deeds and leases add "as a covenant running with the land"] that:
  - (i.) In the event facilities are constructed, maintained, or otherwise operated on the property described in this (deed, license, lease, permit, etc.) for a purpose for which a U.S. Department of Transportation activity, facility, or program is extended or for another purpose involving the provision of similar services or benefits, the (grantee, licensee, lessee, permittee, etc.) will maintain and operate such facilities and services in compliance with all requirements imposed by the Acts and Regulations (as may be amended) such that no person on the grounds of race, color, or national origin, will be excluded from participation in, denied the benefits of, or be otherwise subjected to discrimination in the use of said facilities.
- 2. With respect to licenses, leases, permits, etc., in the event of breach of any of the above Nondiscrimination covenants, the NCDOT will have the right to terminate the (lease, license, permit, etc.) and to enter, re-enter, and repossess said lands and facilities thereon, and hold the same as if the (lease, license, permit, etc.) had never been made or issued. \*
- 3. With respect to a deed, in the event of breach of any of the above Nondiscrimination covenants, the NCDOT will have the right to enter or re-enter the lands and facilities thereon, and the above described lands and facilities will there upon revert to and vest in and become the absolute property of the NCDOT and its assigns. \*

- (\*Reverter clause and related language to be used only when it is determined that such a clause is necessary to make clear the purpose of Title VI.)
- (c) Clauses for Construction/Use/Access to Real Property Acquired Under the Activity, Facility or Program (1050.2A, Appendix D)

The following clauses will be included in deeds, licenses, permits, or similar instruments/ agreements entered into by the North Carolina Department of Transportation (NCDOT) pursuant to the provisions of Assurance 7(b):

- 1. The (grantee, licensee, permittee, etc., as appropriate) for himself/herself, his/her heirs, personal representatives, successors in interest, and assigns, as a part of the consideration hereof, does hereby covenant and agree (in the case of deeds and leases add, "as a covenant running with the land") that (1) no person on the ground of race, color, or national origin, will be excluded from participation in, denied the benefits of, or be otherwise subjected to discrimination in the use of said facilities, (2) that in the construction of any improvements on, over, or under such land, and the furnishing of services thereon, no person on the ground of race, color, or national origin, will be excluded from participation in, denied the benefits of, or otherwise be subjected to discrimination, (3) that the (grantee, licensee, lessee, permittee, etc.) will use the premises in compliance with all other requirements imposed by or pursuant to the Acts and Regulations, as amended, set forth in this Assurance.
- 2. With respect to (licenses, leases, permits, etc.), in the event of breach of any of the above Non¬ discrimination covenants, the NCDOT will have the right to terminate the (license, permit, etc., as appropriate) and to enter or re-enter and repossess said land and the facilities thereon, and hold the same as if said (license, permit, etc., as appropriate) had never been made or issued. \*
- 3. With respect to deeds, in the event of breach of any of the above Nondiscrimination covenants, the NCDOT will there upon revert to and vest in and become the absolute property of the NCDOT and its assigns. \*

(\*Reverter clause and related language to be used only when it is determined that such a clause is necessary to make clear the purpose of Title VI.)

### **STANDARD SPECIAL PROVISION**

### MINORITY AND FEMALE EMPLOYMENT REQUIREMENTS

Z-7

NOTICE OF REQUIREMENTS FOR AFFIRMATIVE ACTION TO ENSURE EQUAL EMPLOYMENT OPPORTUNITY (EXECUTIVE NUMBER 11246)

1. The goals and timetables for minority and female participation, expressed in percentage terms for the Contractor's aggregate workforce in each trade on all construction work in the covered area, see as shown on the attached sheet entitled "Employment Goals for Minority and Female participation".

These goals are applicable to all the Contractor's construction work (whether or not it is Federal or federally assisted) performed in the covered area. If the Contractor performs construction work in a geographical area located outside of the covered area, it shall apply the goals established for such geographical area where the work is actually performed. With regard to this second area, the Contractor also is subject to the goals for both its federally involved and nonfederally involved construction.

The Contractor's compliance with the Executive Order and the regulations in 41 CFR Part 60-4 shall be based on its implementation of the Equal Opportunity Clause, specific affirmative action obligations required by the specifications set forth in 41 CFR 60-4.3(a), and its effort to meet the goals. The hours of minority and female employment and training must be substantially uniform throughout the length of the contract, and in each trade and the Contractor shall make a good faith effort to employ minorities and women evenly on each of its projects. The transfer of minority or female employees or trainees from Contractor to Contractor or from project to project for the sole purpose of meeting the Contractor's goals shall be a violation of the contract, the executive Order and the regulations in 41 CFR Part 60-4. Compliance with the goals will be measured against the total work hours performed.

2. As used in this Notice and in the contract resulting from this solicitation, the "covered area" is the county or counties shown on the cover sheet of the proposal form and contract.

### **EMPLOYMENT GOALS FOR MINORITY** AND FEMALE PARTICIPATION

### **Economic Areas**

### Area 023 29.7%

Bertie County Camden County Chowan County **Gates County** Hertford County Pasquotank County **Perquimans County** 

### Area 024 31.7%

**Beaufort County** Carteret County Craven County Dare County **Edgecombe County** Green County Halifax County Hyde County Jones County Lenoir County Martin County Nash County Northampton County Pamlico County Pitt County Tyrrell County Washington County

### Area 025 23.5%

Wayne County

Wilson County

Columbus County **Duplin County Onslow County Pender County** 

Area 026 33.5% Bladen County **Hoke County Richmond County** Robeson County Sampson County **Scotland County** 

### <u> Area 027 24.7%</u>

Chatham County Franklin County Granville County Harnett County Johnston County Lee County Person County Vance County Warren County

### Area 028 15.5%

Alleghany County Ashe County Caswell County **Davie County Montgomery County** Moore County **Rockingham County Surry County** Watauga County Wilkes County

### <u> Area 029 15.7%</u> **Alexander County**

**Anson County Burke County** Cabarrus County Caldwell County Catawba County Cleveland County Iredell County Lincoln County **Polk County** Rowan County **Rutherford County Stanly County** 

### <u>Area 0480 8.5%</u>

Buncombe County **Madison County** 

### Area 030 6.3%

Avery County Cherokee County Clay County **Graham County** Haywood County Henderson County **Jackson County** McDowell County **Macon County** Mitchell County **Swain County** 

Transylvania County Yancey County

### **SMSA Areas**

<u>Area 5720 26.6%</u>

Currituck County

Area 9200 20.7%

Brunswick County
New Hanover County

Area 2560 24.2%

**Cumberland County** 

Area 6640 22.8%

Durham County
Orange County
Wake County

<u>Area 1300 16.2%</u>

Alamance County

Area 3120 16.4%

Davidson County Forsyth County Guilford County

Randolph County Stokes County

Yadkin County

Area 1520 18.3%

Gaston County Mecklenburg County Union County

### Goals for Female

### Participation in Each Trade

(Statewide) 6.9%

FHWA-1273 -- Revised October 23, 2023

### REQUIRED CONTRACT PROVISIONS FEDERAL-AID CONSTRUCTION CONTRACTS

- General
- II. Nondiscrimination
- III. Non-segregated Facilities
- IV. Davis-Bacon and Related Act Provisions
- V. Contract Work Hours and Safety Standards Act Provisions
- VI. Subletting or Assigning the Contract
- VII. Safety: Accident Prevention
- VIII. False Statements Concerning Highway Projects
- IX. Implementation of Clean Air Act and Federal Water Pollution Control Act
- X. Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion
- Certification Regarding Use of Contract Funds for Lobbying
- XII. Use of United States-Flag Vessels:

### ATTACHMENTS

A. Employment and Materials Preference for Appalachian Development Highway System or Appalachian Local Access Road Contracts (included in Appalachian contracts only)

#### I. GENERAL

1. Form FHWA-1273 must be physically incorporated in each construction contract funded under title 23, United States Code, as required in 23 CFR 633.102(b) (excluding emergency contracts solely intended for debris removal). The contractor (or subcontractor) must insert this form in each subcontract and further require its inclusion in all lower tier subcontracts (excluding purchase orders, rental agreements and other agreements for supplies or services). 23 CFR 633.102(e).

The applicable requirements of Form FHWA-1273 are incorporated by reference for work done under any purchase order, rental agreement or agreement for other services. The prime contractor shall be responsible for compliance by any subcontractor, lower-tier subcontractor or service provider. 23 CFR 633.102(e).

Form FHWA-1273 must be included in all Federal-aid designbuild contracts, in all subcontracts and in lower tier subcontracts (excluding subcontracts for design services, purchase orders, rental agreements and other agreements for supplies or services) in accordance with 23 CFR 633.102. The design-builder shall be responsible for compliance by any subcontractor, lower-tier subcontractor or service provider.

Contracting agencies may reference Form FHWA-1273 in solicitation-for-bids or request-for-proposals documents, however, the Form FHWA-1273 must be physically incorporated (not referenced) in all contracts, subcontracts and lower-tier subcontracts (excluding purchase orders, rental agreements and other agreements for supplies or services related to a construction contract). 23 CFR 633.102(b).

2. Subject to the applicability criteria noted in the following sections, these contract provisions shall apply to all work

performed on the contract by the contractor's own organization and with the assistance of workers under the contractor's immediate superintendence and to all work performed on the contract by piecework, station work, or by subcontract. 23 CFR 633.102(d).

- 3. A breach of any of the stipulations contained in these Required Contract Provisions may be sufficient grounds for withholding of progress payments, withholding of final payment, termination of the contract, suspension / debarment or any other action determined to be appropriate by the contracting agency and FHWA.
- 4. Selection of Labor: During the performance of this contract, the contractor shall not use convict labor for any purpose within the limits of a construction project on a Federal-aid highway unless it is labor performed by convicts who are on parole, supervised release, or probation. 23 U.S.C. 114(b). The term Federal-aid highway does not include roadways functionally classified as local roads or rural minor collectors. 23 U.S.C. 101(a).

### **II. NONDISCRIMINATION** (23 CFR 230.107(a); 23 CFR Part 230, Subpart A, Appendix A; EO 11246)

The provisions of this section related to 23 CFR Part 230, Subpart A, Appendix A are applicable to all Federal-aid construction contracts and to all related construction subcontracts of \$10,000 or more. The provisions of 23 CFR Part 230 are not applicable to material supply, engineering, or architectural service contracts.

In addition, the contractor and all subcontractors must comply with the following policies: Executive Order 11246, 41 CFR Part 60, 29 CFR Parts 1625-1627, 23 U.S.C. 140, Section 504 of the Rehabilitation Act of 1973, as amended (29 U.S.C. 794), Title VI of the Civil Rights Act of 1964, as amended (42 U.S.C. 2000d et seq.), and related regulations including 49 CFR Parts 21, 26, and 27; and 23 CFR Parts 200, 230, and 633.

The contractor and all subcontractors must comply with: the requirements of the Equal Opportunity Clause in 41 CFR 60-1.4(b) and, for all construction contracts exceeding \$10,000, the Standard Federal Equal Employment Opportunity Construction Contract Specifications in 41 CFR 60-4.3.

Note: The U.S. Department of Labor has exclusive authority to determine compliance with Executive Order 11246 and the policies of the Secretary of Labor including 41 CFR Part 60, and 29 CFR Parts 1625-1627. The contracting agency and the FHWA have the authority and the responsibility to ensure compliance with 23 U.S.C. 140, Section 504 of the Rehabilitation Act of 1973, as amended (29 U.S.C. 794), and Title VI of the Civil Rights Act of 1964, as amended (42 U.S.C. 2000d et seq.), and related regulations including 49 CFR Parts 21, 26, and 27; and 23 CFR Parts 200, 230, and 633.

The following provision is adopted from 23 CFR Part 230, Subpart A, Appendix A, with appropriate revisions to conform to the U.S. Department of Labor (US DOL) and FHWA requirements.

- 1. Equal Employment Opportunity: Equal Employment Opportunity (EEO) requirements not to discriminate and to take affirmative action to assure equal opportunity as set forth under laws, executive orders, rules, regulations (see 28 CFR Part 35, 29 CFR Part 1630, 29 CFR Parts 1625-1627, 41 CFR Part 60 and 49 CFR Part 27) and orders of the Secretary of Labor as modified by the provisions prescribed herein, and imposed pursuant to 23 U.S.C. 140, shall constitute the EEO and specific affirmative action standards for the contractor's project activities under this contract. The provisions of the Americans with Disabilities Act of 1990 (42 U.S.C. 12101 et seq.) set forth under 28 CFR Part 35 and 29 CFR Part 1630 are incorporated by reference in this contract. In the execution of this contract, the contractor agrees to comply with the following minimum specific requirement activities of EEO:
- a. The contractor will work with the contracting agency and the Federal Government to ensure that it has made every good faith effort to provide equal opportunity with respect to all of its terms and conditions of employment and in their review of activities under the contract. 23 CFR 230.409 (g)(4) & (5).
- b. The contractor will accept as its operating policy the following statement:
  - "It is the policy of this Company to assure that applicants are employed, and that employees are treated during employment, without regard to their race, religion, sex, sexual orientation, gender identity, color, national origin, age or disability. Such action shall include: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship, pre-apprenticeship, and/or on-the-job training."
- 2. EEO Officer: The contractor will designate and make known to the contracting officers an EEO Officer who will have the responsibility for and must be capable of effectively administering and promoting an active EEO program and who must be assigned adequate authority and responsibility to do so.
- 3. Dissemination of Policy: All members of the contractor's staff who are authorized to hire, supervise, promote, and discharge employees, or who recommend such action or are substantially involved in such action, will be made fully cognizant of and will implement the contractor's EEO policy and contractual responsibilities to provide EEO in each grade and classification of employment. To ensure that the above agreement will be met, the following actions will be taken as a minimum:
- a. Periodic meetings of supervisory and personnel office employees will be conducted before the start of work and then not less often than once every six months, at which time the contractor's EEO policy and its implementation will be reviewed and explained. The meetings will be conducted by the EEO Officer or other knowledgeable company official.
- b. All new supervisory or personnel office employees will be given a thorough indoctrination by the EEO Officer, covering all major aspects of the contractor's EEO obligations within thirty days following their reporting for duty with the contractor.
- c. All personnel who are engaged in direct recruitment for the project will be instructed by the EEO Officer in the contractor's procedures for locating and hiring minorities and women.

- d. Notices and posters setting forth the contractor's EEO policy will be placed in areas readily accessible to employees, applicants for employment and potential employees.
- e. The contractor's EEO policy and the procedures to implement such policy will be brought to the attention of employees by means of meetings, employee handbooks, or other appropriate means.
- **4. Recruitment:** When advertising for employees, the contractor will include in all advertisements for employees the notation: "An Equal Opportunity Employer." All such advertisements will be placed in publications having a large circulation among minorities and women in the area from which the project work force would normally be derived.
- a. The contractor will, unless precluded by a valid bargaining agreement, conduct systematic and direct recruitment through public and private employee referral sources likely to yield qualified minorities and women. To meet this requirement, the contractor will identify sources of potential minority group employees and establish with such identified sources procedures whereby minority and women applicants may be referred to the contractor for employment consideration.
- b. In the event the contractor has a valid bargaining agreement providing for exclusive hiring hall referrals, the contractor is expected to observe the provisions of that agreement to the extent that the system meets the contractor's compliance with EEO contract provisions. Where implementation of such an agreement has the effect of discriminating against minorities or women, or obligates the contractor to do the same, such implementation violates Federal nondiscrimination provisions.
- c. The contractor will encourage its present employees to refer minorities and women as applicants for employment. Information and procedures with regard to referring such applicants will be discussed with employees.
- 5. Personnel Actions: Wages, working conditions, and employee benefits shall be established and administered, and personnel actions of every type, including hiring, upgrading, promotion, transfer, demotion, layoff, and termination, shall be taken without regard to race, color, religion, sex, sexual orientation, gender identity, national origin, age or disability. The following procedures shall be followed:
- a. The contractor will conduct periodic inspections of project sites to ensure that working conditions and employee facilities do not indicate discriminatory treatment of project site personnel.
- b. The contractor will periodically evaluate the spread of wages paid within each classification to determine any evidence of discriminatory wage practices.
- c. The contractor will periodically review selected personnel actions in depth to determine whether there is evidence of discrimination. Where evidence is found, the contractor will promptly take corrective action. If the review indicates that the discrimination may extend beyond the actions reviewed, such corrective action shall include all affected persons.
- d. The contractor will promptly investigate all complaints of alleged discrimination made to the contractor in connection with its obligations under this contract, will attempt to resolve such complaints, and will take appropriate corrective action

within a reasonable time. If the investigation indicates that the discrimination may affect persons other than the complainant, such corrective action shall include such other persons. Upon completion of each investigation, the contractor will inform every complainant of all of their avenues of appeal.

### 6. Training and Promotion:

- a. The contractor will assist in locating, qualifying, and increasing the skills of minorities and women who are applicants for employment or current employees. Such efforts should be aimed at developing full journey level status employees in the type of trade or job classification involved.
- b. Consistent with the contractor's work force requirements and as permissible under Federal and State regulations, the contractor shall make full use of training programs (i.e., apprenticeship and on-the-job training programs for the geographical area of contract performance). In the event a special provision for training is provided under this contract, this subparagraph will be superseded as indicated in the special provision. The contracting agency may reserve training positions for persons who receive welfare assistance in accordance with 23 U.S.C. 140(a).
- c. The contractor will advise employees and applicants for employment of available training programs and entrance requirements for each.
- d. The contractor will periodically review the training and promotion potential of employees who are minorities and women and will encourage eligible employees to apply for such training and promotion.
- 7. Unions: If the contractor relies in whole or in part upon unions as a source of employees, the contractor will use good faith efforts to obtain the cooperation of such unions to increase opportunities for minorities and women. 23 CFR 230.409. Actions by the contractor, either directly or through a contractor's association acting as agent, will include the procedures set forth below:
- a. The contractor will use good faith efforts to develop, in cooperation with the unions, joint training programs aimed toward qualifying more minorities and women for membership in the unions and increasing the skills of minorities and women so that they may qualify for higher paying employment.
- b. The contractor will use good faith efforts to incorporate an EEO clause into each union agreement to the end that such union will be contractually bound to refer applicants without regard to their race, color, religion, sex, sexual orientation, gender identity, national origin, age, or disability.
- c. The contractor is to obtain information as to the referral practices and policies of the labor union except that to the extent such information is within the exclusive possession of the labor union and such labor union refuses to furnish such information to the contractor, the contractor shall so certify to the contracting agency and shall set forth what efforts have been made to obtain such information.
- d. In the event the union is unable to provide the contractor with a reasonable flow of referrals within the time limit set forth in the collective bargaining agreement, the contractor will, through independent recruitment efforts, fill the employment vacancies without regard to race, color, religion, sex, sexual orientation, gender identity, national origin, age, or disability; making full efforts to obtain qualified and/or qualifiable minorities and women. The failure of a union to provide

sufficient referrals (even though it is obligated to provide exclusive referrals under the terms of a collective bargaining agreement) does not relieve the contractor from the requirements of this paragraph. In the event the union referral practice prevents the contractor from meeting the obligations pursuant to Executive Order 11246, as amended, and these special provisions, such contractor shall immediately notify the contracting agency.

## 8. Reasonable Accommodation for Applicants / Employees with Disabilities: The contractor must be familiar with the requirements for and comply with the Americans with

with the requirements for and comply with the Americans with Disabilities Act and all rules and regulations established thereunder. Employers must provide reasonable accommodation in all employment activities unless to do so would cause an undue hardship.

- 9. Selection of Subcontractors, Procurement of Materials and Leasing of Equipment: The contractor shall not discriminate on the grounds of race, color, religion, sex, sexual orientation, gender identity, national origin, age, or disability in the selection and retention of subcontractors, including procurement of materials and leases of equipment. The contractor shall take all necessary and reasonable steps to ensure nondiscrimination in the administration of this contract.
- a. The contractor shall notify all potential subcontractors, suppliers, and lessors of their EEO obligations under this contract.
- b. The contractor will use good faith efforts to ensure subcontractor compliance with their EEO obligations.

### 10. Assurances Required:

- a. The requirements of 49 CFR Part 26 and the State DOT's FHWA-approved Disadvantaged Business Enterprise (DBE) program are incorporated by reference.
- b. The contractor, subrecipient or subcontractor shall not discriminate on the basis of race, color, national origin, or sex in the performance of this contract. The contractor shall carry out applicable requirements of 49 CFR part 26 in the award and administration of DOT-assisted contracts. Failure by the contract or carry out these requirements is a material breach of this contract, which may result in the termination of this contract or such other remedy as the recipient deems appropriate, which may include, but is not limited to:
  - (1) Withholding monthly progress payments;
  - (2) Assessing sanctions;
  - (3) Liquidated damages; and/or
- (4) Disqualifying the contractor from future bidding as non-responsible.
- c. The Title VI and nondiscrimination provisions of U.S. DOT Order 1050.2A at Appendixes A and E are incorporated by reference. 49 CFR Part 21.
- 11. Records and Reports: The contractor shall keep such records as necessary to document compliance with the EEO requirements. Such records shall be retained for a period of three years following the date of the final payment to the contractor for all contract work and shall be available at reasonable times and places for inspection by authorized representatives of the contracting agency and the FHWA.
- a. The records kept by the contractor shall document the following:

- (1) The number and work hours of minority and nonminority group members and women employed in each work classification on the project;
- (2) The progress and efforts being made in cooperation with unions, when applicable, to increase employment opportunities for minorities and women; and
- (3) The progress and efforts being made in locating, hiring, training, qualifying, and upgrading minorities and women.
- b. The contractors and subcontractors will submit an annual report to the contracting agency each July for the duration of the project indicating the number of minority, women, and non-minority group employees currently engaged in each work classification required by the contract work. This information is to be reported on Form FHWA-1391. The staffing data should represent the project work force on board in all or any part of the last payroll period preceding the end of July. If on-the-job training is being required by special provision, the contractor will be required to collect and report training data. The employment data should reflect the work force on board during all or any part of the last payroll period preceding the end of July.

### III. NONSEGREGATED FACILITIES

This provision is applicable to all Federal-aid construction contracts and to all related construction subcontracts of more than \$10,000. 41 CFR 60-1.5.

As prescribed by 41 CFR 60-1.8, the contractor must ensure that facilities provided for employees are provided in such a manner that segregation on the basis of race, color, religion, sex, sexual orientation, gender identity, or national origin cannot result. The contractor may neither require such segregated use by written or oral policies nor tolerate such use by employee custom. The contractor's obligation extends further to ensure that its employees are not assigned to perform their services at any location under the contractor's control where the facilities are segregated. The term "facilities" includes waiting rooms, work areas, restaurants and other eating areas, time clocks, restrooms, washrooms, locker rooms and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing provided for employees. The contractor shall provide separate or single-user restrooms and necessary dressing or sleeping areas to assure privacy between sexes.

### IV. DAVIS-BACON AND RELATED ACT PROVISIONS

This section is applicable to all Federal-aid construction projects exceeding \$2,000 and to all related subcontracts and lower-tier subcontracts (regardless of subcontract size), in accordance with 29 CFR 5.5. The requirements apply to all projects located within the right-of-way of a roadway that is functionally classified as Federal-aid highway. 23 U.S.C. 113. This excludes roadways functionally classified as local roads or rural minor collectors, which are exempt. 23 U.S.C. 101. Where applicable law requires that projects be treated as a project on a Federal-aid highway, the provisions of this subpart will apply regardless of the location of the project. Examples include: Surface Transportation Block Grant Program projects funded under 23 U.S.C. 133 [excluding recreational trails projects], the Nationally Significant Freight and Highway

Projects funded under 23 U.S.C. 117, and National Highway Freight Program projects funded under 23 U.S.C. 167.

The following provisions are from the U.S. Department of Labor regulations in 29 CFR 5.5 "Contract provisions and related matters" with minor revisions to conform to the FHWA-1273 format and FHWA program requirements.

### 1. Minimum wages (29 CFR 5.5)

- a. Wage rates and fringe benefits. All laborers and mechanics employed or working upon the site of the work (or otherwise working in construction or development of the project under a development statute), will be paid unconditionally and not less often than once a week, and without subsequent deduction or rebate on any account (except such payroll deductions as are permitted by regulations issued by the Secretary of Labor under the Copeland Act (29 CFR part 3)), the full amount of basic hourly wages and bona fide fringe benefits (or cash equivalents thereof) due at time of payment computed at rates not less than those contained in the wage determination of the Secretary of Labor which is attached hereto and made a part hereof, regardless of any contractual relationship which may be alleged to exist between the contractor and such laborers and mechanics. As provided in paragraphs (d) and (e) of 29 CFR 5.5, the appropriate wage determinations are effective by operation of law even if they have not been attached to the contract. Contributions made or costs reasonably anticipated for bona fide fringe benefits under the Davis-Bacon Act (40 U.S.C. 3141(2)(B)) on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of paragraph 1.e. of this section; also, regular contributions made or costs incurred for more than a weekly period (but not less often than quarterly) under plans, funds, or programs which cover the particular weekly period, are deemed to be constructively made or incurred during such weekly period. Such laborers and mechanics must be paid the appropriate wage rate and fringe benefits on the wage determination for the classification(s) of work actually performed, without regard to skill, except as provided in paragraph 4. of this section. Laborers or mechanics performing work in more than one classification may be compensated at the rate specified for each classification for the time actually worked therein: Provided, That the employer's payroll records accurately set forth the time spent in each classification in which work is performed. The wage determination (including any additional classifications and wage rates conformed under paragraph 1.c. of this section) and the Davis-Bacon poster (WH-1321) must be posted at all times by the contractor and its subcontractors at the site of the work in a prominent and accessible place where it can be easily seen by the workers.
- b. Frequently recurring classifications. (1) In addition to wage and fringe benefit rates that have been determined to be prevailing under the procedures set forth in 29 CFR part 1, a wage determination may contain, pursuant to § 1.3(f), wage and fringe benefit rates for classifications of laborers and mechanics for which conformance requests are regularly submitted pursuant to paragraph 1.c. of this section, provided that:
  - (i) The work performed by the classification is not performed by a classification in the wage determination for which a prevailing wage rate has been determined;

- (ii) The classification is used in the area by the construction industry; and
- (iii) The wage rate for the classification bears a reasonable relationship to the prevailing wage rates contained in the wage determination.
- (2) The Administrator will establish wage rates for such classifications in accordance with paragraph 1.c.(1)(iii) of this section. Work performed in such a classification must be paid at no less than the wage and fringe benefit rate listed on the wage determination for such classification.
- c. Conformance. (1) The contracting officer must require that any class of laborers or mechanics, including helpers, which is not listed in the wage determination and which is to be employed under the contract be classified in conformance with the wage determination. Conformance of an additional classification and wage rate and fringe benefits is appropriate only when the following criteria have been met:
  - (i) The work to be performed by the classification requested is not performed by a classification in the wage determination; and
  - (ii) The classification is used in the area by the construction industry; and
  - (iii) The proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination.
- (2) The conformance process may not be used to split, subdivide, or otherwise avoid application of classifications listed in the wage determination.
- (3) If the contractor and the laborers and mechanics to be employed in the classification (if known), or their representatives, and the contracting officer agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), a report of the action taken will be sent by the contracting officer by email to <code>DBAconformance@dol.gov</code>. The Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification action within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30–day period that additional time is necessary.
- (4) In the event the contractor, the laborers or mechanics to be employed in the classification or their representatives, and the contracting officer do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), the contracting officer will, by email to <code>DBAconformance@dol.gov</code>, refer the questions, including the views of all interested parties and the recommendation of the contracting officer, to the Administrator for determination. The Administrator, or an authorized representative, will issue a determination within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30–day period that additional time is necessary.
- (5) The contracting officer must promptly notify the contractor of the action taken by the Wage and Hour Division

- under paragraphs 1.c.(3) and (4) of this section. The contractor must furnish a written copy of such determination to each affected worker or it must be posted as a part of the wage determination. The wage rate (including fringe benefits where appropriate) determined pursuant to paragraph 1.c.(3) or (4) of this section must be paid to all workers performing work in the classification under this contract from the first day on which work is performed in the classification.
- d. Fringe benefits not expressed as an hourly rate. Whenever the minimum wage rate prescribed in the contract for a class of laborers or mechanics includes a fringe benefit which is not expressed as an hourly rate, the contractor may either pay the benefit as stated in the wage determination or may pay another bona fide fringe benefit or an hourly cash equivalent thereof.
- e. Unfunded plans. If the contractor does not make payments to a trustee or other third person, the contractor may consider as part of the wages of any laborer or mechanic the amount of any costs reasonably anticipated in providing bona fide fringe benefits under a plan or program, Provided, That the Secretary of Labor has found, upon the written request of the contractor, in accordance with the criteria set forth in § 5.28, that the applicable standards of the Davis-Bacon Act have been met. The Secretary of Labor may require the contractor to set aside in a separate account assets for the meeting of obligations under the plan or program.
- f. *Interest*. In the event of a failure to pay all or part of the wages required by the contract, the contractor will be required to pay interest on any underpayment of wages.

### 2. Withholding (29 CFR 5.5)

- a. Withholding requirements. The contracting agency may, upon its own action, or must, upon written request of an authorized representative of the Department of Labor, withhold or cause to be withheld from the contractor so much of the accrued payments or advances as may be considered necessary to satisfy the liabilities of the prime contractor or any subcontractor for the full amount of wages and monetary relief, including interest, required by the clauses set forth in this section for violations of this contract, or to satisfy any such liabilities required by any other Federal contract, or federally assisted contract subject to Davis-Bacon labor standards, that is held by the same prime contractor (as defined in § 5.2). The necessary funds may be withheld from the contractor under this contract, any other Federal contract with the same prime contractor, or any other federally assisted contract that is subject to Davis-Bacon labor standards requirements and is held by the same prime contractor, regardless of whether the other contract was awarded or assisted by the same agency, and such funds may be used to satisfy the contractor liability for which the funds were withheld. In the event of a contractor's failure to pay any laborer or mechanic, including any apprentice or helper working on the site of the work all or part of the wages required by the contract, or upon the contractor's failure to submit the required records as discussed in paragraph 3.d. of this section, the contracting agency may on its own initiative and after written notice to the contractor, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds until such violations have ceased.
- b. Priority to withheld funds. The Department has priority to funds withheld or to be withheld in accordance with paragraph

- 2.a. of this section or Section V, paragraph 3.a., or both, over claims to those funds by:
- (1) A contractor's surety(ies), including without limitation performance bond sureties and payment bond sureties;
  - (2) A contracting agency for its reprocurement costs;
- (3) A trustee(s) (either a court-appointed trustee or a U.S. trustee, or both) in bankruptcy of a contractor, or a contractor's bankruptcy estate;
  - (4) A contractor's assignee(s);
  - (5) A contractor's successor(s); or
- (6) A claim asserted under the Prompt Payment Act, 31 U.S.C. 3901–3907.

### 3. Records and certified payrolls (29 CFR 5.5)

- a. Basic record requirements (1) Length of record retention. All regular payrolls and other basic records must be maintained by the contractor and any subcontractor during the course of the work and preserved for all laborers and mechanics working at the site of the work (or otherwise working in construction or development of the project under a development statute) for a period of at least 3 years after all the work on the prime contract is completed.
- (2) Information required. Such records must contain the name; Social Security number; last known address, telephone number, and email address of each such worker; each worker's correct classification(s) of work actually performed; hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalents thereof of the types described in 40 U.S.C. 3141(2)(B) of the Davis-Bacon Act); daily and weekly number of hours actually worked in total and on each covered contract; deductions made; and actual wages paid.
- (3) Additional records relating to fringe benefits. Whenever the Secretary of Labor has found under paragraph 1.e. of this section that the wages of any laborer or mechanic include the amount of any costs reasonably anticipated in providing benefits under a plan or program described in 40 U.S.C. 3141(2)(B) of the Davis-Bacon Act, the contractor must maintain records which show that the commitment to provide such benefits is enforceable, that the plan or program is financially responsible, and that the plan or program has been communicated in writing to the laborers or mechanics affected, and records which show the costs anticipated or the actual cost incurred in providing such benefits.
- (4) Additional records relating to apprenticeship. Contractors with apprentices working under approved programs must maintain written evidence of the registration of apprenticeship programs, the registration of the apprentices, and the ratios and wage rates prescribed in the applicable programs.
- b. Certified payroll requirements (1) Frequency and method of submission. The contractor or subcontractor must submit weekly, for each week in which any DBA- or Related Acts-covered work is performed, certified payrolls to the contracting

- agency. The prime contractor is responsible for the submission of all certified payrolls by all subcontractors. A contracting agency or prime contractor may permit or require contractors to submit certified payrolls through an electronic system, as long as the electronic system requires a legally valid electronic signature; the system allows the contractor, the contracting agency, and the Department of Labor to access the certified payrolls upon request for at least 3 years after the work on the prime contract has been completed; and the contracting agency or prime contractor permits other methods of submission in situations where the contractor is unable or limited in its ability to use or access the electronic system.
- (2) Information required. The certified payrolls submitted must set out accurately and completely all of the information required to be maintained under paragraph 3.a.(2) of this section, except that full Social Security numbers and last known addresses, telephone numbers, and email addresses must not be included on weekly transmittals. Instead, the certified payrolls need only include an individually identifying number for each worker (e.g., the last four digits of the worker's Social Security number). The required weekly certified payroll information may be submitted using Optional Form WH-347 or in any other format desired. Optional Form WH-347 is available for this purpose from the Wage and Hour Division website at <a href="https://www.dol.gov/sites/dolgov/files/WHD/">https://www.dol.gov/sites/dolgov/files/WHD/</a> legacy/files/wh347/.pdf or its successor website. It is not a violation of this section for a prime contractor to require a subcontractor to provide full Social Security numbers and last known addresses, telephone numbers, and email addresses to the prime contractor for its own records, without weekly submission by the subcontractor to the contracting agency.
- (3) Statement of Compliance. Each certified payroll submitted must be accompanied by a "Statement of Compliance," signed by the contractor or subcontractor, or the contractor's or subcontractor's agent who pays or supervises the payment of the persons working on the contract, and must certify the following:
  - (i) That the certified payroll for the payroll period contains the information required to be provided under paragraph 3.b. of this section, the appropriate information and basic records are being maintained under paragraph 3.a. of this section, and such information and records are correct and complete;
  - (ii) That each laborer or mechanic (including each helper and apprentice) working on the contract during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in 29 CFR part 3; and
  - (iii) That each laborer or mechanic has been paid not less than the applicable wage rates and fringe benefits or cash equivalents for the classification(s) of work actually performed, as specified in the applicable wage determination incorporated into the contract.
- (4) Use of Optional Form WH–347. The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH–347 will satisfy the requirement for submission of the "Statement of Compliance" required by paragraph 3.b.(3) of this section.

- (5) Signature. The signature by the contractor, subcontractor, or the contractor's or subcontractor's agent must be an original handwritten signature or a legally valid electronic signature.
- (6) Falsification. The falsification of any of the above certifications may subject the contractor or subcontractor to civil or criminal prosecution under 18 U.S.C. 1001 and 31 U.S.C. 3729.
- (7) Length of certified payroll retention. The contractor or subcontractor must preserve all certified payrolls during the course of the work and for a period of 3 years after all the work on the prime contract is completed.
- c. Contracts, subcontracts, and related documents. The contractor or subcontractor must maintain this contract or subcontract and related documents including, without limitation, bids, proposals, amendments, modifications, and extensions. The contractor or subcontractor must preserve these contracts, subcontracts, and related documents during the course of the work and for a period of 3 years after all the work on the prime contract is completed.
- d. Required disclosures and access (1) Required record disclosures and access to workers. The contractor or subcontractor must make the records required under paragraphs 3.a. through 3.c. of this section, and any other documents that the contracting agency, the State DOT, the FHWA, or the Department of Labor deems necessary to determine compliance with the labor standards provisions of any of the applicable statutes referenced by § 5.1, available for inspection, copying, or transcription by authorized representatives of the contracting agency, the State DOT, the FHWA, or the Department of Labor, and must permit such representatives to interview workers during working hours on the job.
- (2) Sanctions for non-compliance with records and worker access requirements. If the contractor or subcontractor fails to submit the required records or to make them available, or refuses to permit worker interviews during working hours on the job, the Federal agency may, after written notice to the contractor, sponsor, applicant, owner, or other entity, as the case may be, that maintains such records or that employs such workers, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds. Furthermore, failure to submit the required records upon request or to make such records available, or to permit worker interviews during working hours on the job, may be grounds for debarment action pursuant to § 5.12. In addition, any contractor or other person that fails to submit the required records or make those records available to WHD within the time WHD requests that the records be produced will be precluded from introducing as evidence in an administrative proceeding under 29 CFR part 6 any of the required records that were not provided or made available to WHD. WHD will take into consideration a reasonable request from the contractor or person for an extension of the time for submission of records. WHD will determine the reasonableness of the request and may consider, among other things, the location of the records and the volume of production.
- (3) Required information disclosures. Contractors and subcontractors must maintain the full Social Security number and last known address, telephone number, and email address

of each covered worker, and must provide them upon request to the contracting agency, the State DOT, the FHWA, the contractor, or the Wage and Hour Division of the Department of Labor for purposes of an investigation or other compliance action

### **4.** Apprentices and equal employment opportunity (29 CFR 5.5)

- a. Apprentices (1) Rate of pay. Apprentices will be permitted to work at less than the predetermined rate for the work they perform when they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the U.S. Department of Labor, Employment and Training Administration, Office of Apprenticeship (OA), or with a State Apprenticeship Agency recognized by the OA. A person who is not individually registered in the program, but who has been certified by the OA or a State Apprenticeship Agency (where appropriate) to be eligible for probationary employment as an apprentice, will be permitted to work at less than the predetermined rate for the work they perform in the first 90 days of probationary employment as an apprentice in such a program. In the event the OA or a State Apprenticeship Agency recognized by the OA withdraws approval of an apprenticeship program, the contractor will no longer be permitted to use apprentices at less than the applicable predetermined rate for the work performed until an acceptable program is approved.
- (2) Fringe benefits. Apprentices must be paid fringe benefits in accordance with the provisions of the apprenticeship program. If the apprenticeship program does not specify fringe benefits, apprentices must be paid the full amount of fringe benefits listed on the wage determination for the applicable classification. If the Administrator determines that a different practice prevails for the applicable apprentice classification, fringe benefits must be paid in accordance with that determination.
- (3) Apprenticeship ratio. The allowable ratio of apprentices to journeyworkers on the job site in any craft classification must not be greater than the ratio permitted to the contractor as to the entire work force under the registered program or the ratio applicable to the locality of the project pursuant to paragraph 4.a.(4) of this section. Any worker listed on a payroll at an apprentice wage rate, who is not registered or otherwise employed as stated in paragraph 4.a.(1) of this section, must be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any apprentice performing work on the job site in excess of the ratio permitted under this section must be paid not less than the applicable wage rate on the wage determination for the work actually performed.
- (4) Reciprocity of ratios and wage rates. Where a contractor is performing construction on a project in a locality other than the locality in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyworker's hourly rate) applicable within the locality in which the construction is being performed must be observed. If there is no applicable ratio or wage rate for the locality of the project, the ratio and wage rate specified in the contractor's registered program must be observed.
- b. Equal employment opportunity. The use of apprentices and journeyworkers under this part must be in conformity with

the equal employment opportunity requirements of Executive Order 11246, as amended, and 29 CFR part 30.

c. Apprentices and Trainees (programs of the U.S. DOT).

Apprentices and trainees working under apprenticeship and skill training programs which have been certified by the Secretary of Transportation as promoting EEO in connection with Federal-aid highway construction programs are not subject to the requirements of paragraph 4 of this Section IV. 23 CFR 230.111(e)(2). The straight time hourly wage rates for apprentices and trainees under such programs will be established by the particular programs. The ratio of apprentices and trainees to journeyworkers shall not be greater than permitted by the terms of the particular program.

- **5.** Compliance with Copeland Act requirements. The contractor shall comply with the requirements of 29 CFR part 3, which are incorporated by reference in this contract as provided in 29 CFR 5.5.
- 6. Subcontracts. The contractor or subcontractor must insert FHWA-1273 in any subcontracts, along with the applicable wage determination(s) and such other clauses or contract modifications as the contracting agency may by appropriate instructions require, and a clause requiring the subcontractors to include these clauses and wage determination(s) in any lower tier subcontracts. The prime contractor is responsible for the compliance by any subcontractor or lower tier subcontractor with all the contract clauses in this section. In the event of any violations of these clauses, the prime contractor and any subcontractor(s) responsible will be liable for any unpaid wages and monetary relief, including interest from the date of the underpayment or loss, due to any workers of lower-tier subcontractors, and may be subject to debarment, as appropriate. 29 CFR 5.5.
- **7. Contract termination: debarment.** A breach of the contract clauses in 29 CFR 5.5 may be grounds for termination of the contract, and for debarment as a contractor and a subcontractor as provided in 29 CFR 5.12.
- **8.** Compliance with Davis-Bacon and Related Act requirements. All rulings and interpretations of the Davis-Bacon and Related Acts contained in 29 CFR parts 1, 3, and 5 are herein incorporated by reference in this contract as provided in 29 CFR 5.5.
- 9. Disputes concerning labor standards. As provided in 29 CFR 5.5, disputes arising out of the labor standards provisions of this contract shall not be subject to the general disputes clause of this contract. Such disputes shall be resolved in accordance with the procedures of the Department of Labor set forth in 29 CFR parts 5, 6, and 7. Disputes within the meaning of this clause include disputes between the contractor (or any of its subcontractors) and the contracting agency, the U.S. Department of Labor, or the employees or their representatives.
- 10. Certification of eligibility. a. By entering into this contract, the contractor certifies that neither it nor any person or firm who has an interest in the contractor's firm is a person or firm ineligible to be awarded Government contracts by virtue of  $\underline{40}$  U.S.C. 3144(b) or  $\S 5.12(a)$ .

- b. No part of this contract shall be subcontracted to any person or firm ineligible for award of a Government contract by virtue of 40 U.S.C. 3144(b) or § 5.12(a).
- c. The penalty for making false statements is prescribed in the U.S. Code, Title 18 Crimes and Criminal Procedure,  $\underline{18}$  U.S.C. 1001.
- 11. Anti-retaliation. It is unlawful for any person to discharge, demote, intimidate, threaten, restrain, coerce, blacklist, harass, or in any other manner discriminate against, or to cause any person to discharge, demote, intimidate, threaten, restrain, coerce, blacklist, harass, or in any other manner discriminate against, any worker or job applicant for:
- a. Notifying any contractor of any conduct which the worker reasonably believes constitutes a violation of the DBA, Related Acts, this part, or 29 CFR part 1 or 3;
- b. Filing any complaint, initiating or causing to be initiated any proceeding, or otherwise asserting or seeking to assert on behalf of themselves or others any right or protection under the DBA, Related Acts, this part, or 29 CFR part 1 or 3;
- c. Cooperating in any investigation or other compliance action, or testifying in any proceeding under the DBA, Related Acts, this part, or 29 CFR part 1 or 3; or
- d. Informing any other person about their rights under the DBA, Related Acts, this part, or 29 CFR part 1 or 3.

### V. CONTRACT WORK HOURS AND SAFETY STANDARDS ACT

Pursuant to 29 CFR 5.5(b), the following clauses apply to any Federal-aid construction contract in an amount in excess of \$100,000 and subject to the overtime provisions of the Contract Work Hours and Safety Standards Act. These clauses shall be inserted in addition to the clauses required by 29 CFR 5.5(a) or 29 CFR 4.6. As used in this paragraph, the terms laborers and mechanics include watchpersons and guards.

- 1. Overtime requirements. No contractor or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers or mechanics shall require or permit any such laborer or mechanic in any workweek in which he or she is employed on such work to work in excess of forty hours in such workweek unless such laborer or mechanic receives compensation at a rate not less than one and one-half times the basic rate of pay for all hours worked in excess of forty hours in such workweek. 29 CFR 5.5.
- 2. Violation; liability for unpaid wages; liquidated damages. In the event of any violation of the clause set forth in paragraph 1. of this section the contractor and any subcontractor responsible therefor shall be liable for the unpaid wages and interest from the date of the underpayment. In addition, such contractor and subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory), for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or

mechanic, including watchpersons and guards, employed in violation of the clause set forth in paragraph 1. of this section, in the sum currently provided in 29 CFR 5.5(b)(2)\* for each calendar day on which such individual was required or permitted to work in excess of the standard workweek of forty hours without payment of the overtime wages required by the clause set forth in paragraph 1. of this section.

\* \$31 as of January 15, 2023 (See 88 FR 88 FR 2210) as may be adjusted annually by the Department of Labor, pursuant to the Federal Civil Penalties Inflation Adjustment Act of 1990.

### 3. Withholding for unpaid wages and liquidated damages

- a. Withholding process. The FHWA or the contracting agency may, upon its own action, or must, upon written request of an authorized representative of the Department of Labor, withhold or cause to be withheld from the contractor so much of the accrued payments or advances as may be considered necessary to satisfy the liabilities of the prime contractor or any subcontractor for any unpaid wages: monetary relief, including interest; and liquidated damages required by the clauses set forth in this section on this contract, any other Federal contract with the same prime contractor, or any other federally assisted contract subject to the Contract Work Hours and Safety Standards Act that is held by the same prime contractor (as defined in § 5.2). The necessary funds may be withheld from the contractor under this contract, any other Federal contract with the same prime contractor, or any other federally assisted contract that is subject to the Contract Work Hours and Safety Standards Act and is held by the same prime contractor, regardless of whether the other contract was awarded or assisted by the same agency, and such funds may be used to satisfy the contractor liability for which the funds were withheld.
- b. *Priority to withheld funds*. The Department has priority to funds withheld or to be withheld in accordance with Section IV paragraph 2.a. or paragraph 3.a. of this section, or both, over claims to those funds by:
- (1) A contractor's surety(ies), including without limitation performance bond sureties and payment bond sureties;
  - (2) A contracting agency for its reprocurement costs;
- (3) A trustee(s) (either a court-appointed trustee or a U.S. trustee, or both) in bankruptcy of a contractor, or a contractor's bankruptcy estate;
  - (4) A contractor's assignee(s);
  - (5) A contractor's successor(s); or
- (6) A claim asserted under the Prompt Payment Act,  $\underline{31}$  U.S.C. 3901-3907.
- **4. Subcontracts.** The contractor or subcontractor must insert in any subcontracts the clauses set forth in paragraphs 1. through 5. of this section and a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor is responsible for compliance by any subcontractor or lower tier subcontractor with the clauses set forth in paragraphs 1. through 5. In the

event of any violations of these clauses, the prime contractor and any subcontractor(s) responsible will be liable for any unpaid wages and monetary relief, including interest from the date of the underpayment or loss, due to any workers of lowertier subcontractors, and associated liquidated damages and may be subject to debarment, as appropriate.

- **5. Anti-retaliation.** It is unlawful for any person to discharge, demote, intimidate, threaten, restrain, coerce, blacklist, harass, or in any other manner discriminate against, or to cause any person to discharge, demote, intimidate, threaten, restrain, coerce, blacklist, harass, or in any other manner discriminate against, any worker or job applicant for:
- a. Notifying any contractor of any conduct which the worker reasonably believes constitutes a violation of the Contract Work Hours and Safety Standards Act (CWHSSA) or its implementing regulations in this part;
- b. Filing any complaint, initiating or causing to be initiated any proceeding, or otherwise asserting or seeking to assert on behalf of themselves or others any right or protection under CWHSSA or this part;
- c. Cooperating in any investigation or other compliance action, or testifying in any proceeding under CWHSSA or this part; or
- d. Informing any other person about their rights under CWHSSA or this part.

### VI. SUBLETTING OR ASSIGNING THE CONTRACT

This provision is applicable to all Federal-aid construction contracts on the National Highway System pursuant to 23 CFR 635.116.

- 1. The contractor shall perform with its own organization contract work amounting to not less than 30 percent (or a greater percentage if specified elsewhere in the contract) of the total original contract price, excluding any specialty items designated by the contracting agency. Specialty items may be performed by subcontract and the amount of any such specialty items performed may be deducted from the total original contract price before computing the amount of work required to be performed by the contractor's own organization (23 CFR 635.116).
- a. The term "perform work with its own organization" in paragraph 1 of Section VI refers to workers employed or leased by the prime contractor, and equipment owned or rented by the prime contractor, with or without operators. Such term does not include employees or equipment of a subcontractor or lower tier subcontractor, agents of the prime contractor, or any other assignees. The term may include payments for the costs of hiring leased employees from an employee leasing firm meeting all relevant Federal and State regulatory requirements. Leased employees may only be included in this term if the prime contractor meets all of the following conditions: (based on longstanding interpretation)
- (1) the prime contractor maintains control over the supervision of the day-to-day activities of the leased employees;
- (2) the prime contractor remains responsible for the quality of the work of the leased employees;

- (3) the prime contractor retains all power to accept or exclude individual employees from work on the project; and
- (4) the prime contractor remains ultimately responsible for the payment of predetermined minimum wages, the submission of payrolls, statements of compliance and all other Federal regulatory requirements.
- b. "Specialty Items" shall be construed to be limited to work that requires highly specialized knowledge, abilities, or equipment not ordinarily available in the type of contracting organizations qualified and expected to bid or propose on the contract as a whole and in general are to be limited to minor components of the overall contract. 23 CFR 635.102.
- 2. Pursuant to 23 CFR 635.116(a), the contract amount upon which the requirements set forth in paragraph (1) of Section VI is computed includes the cost of material and manufactured products which are to be purchased or produced by the contractor under the contract provisions.
- 3. Pursuant to 23 CFR 635.116(c), the contractor shall furnish (a) a competent superintendent or supervisor who is employed by the firm, has full authority to direct performance of the work in accordance with the contract requirements, and is in charge of all construction operations (regardless of who performs the work) and (b) such other of its own organizational resources (supervision, management, and engineering services) as the contracting officer determines is necessary to assure the performance of the contract.
- 4. No portion of the contract shall be sublet, assigned or otherwise disposed of except with the written consent of the contracting officer, or authorized representative, and such consent when given shall not be construed to relieve the contractor of any responsibility for the fulfillment of the contract. Written consent will be given only after the contracting agency has assured that each subcontract is evidenced in writing and that it contains all pertinent provisions and requirements of the prime contract. (based on long-standing interpretation of 23 CFR 635.116).
- 5. The 30-percent self-performance requirement of paragraph (1) is not applicable to design-build contracts; however, contracting agencies may establish their own self-performance requirements. 23 CFR 635.116(d).

### VII. SAFETY: ACCIDENT PREVENTION

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts.

- 1. In the performance of this contract the contractor shall comply with all applicable Federal, State, and local laws governing safety, health, and sanitation (23 CFR Part 635). The contractor shall provide all safeguards, safety devices and protective equipment and take any other needed actions as it determines, or as the contracting officer may determine, to be reasonably necessary to protect the life and health of employees on the job and the safety of the public and to protect property in connection with the performance of the work covered by the contract. 23 CFR 635.108.
- 2. It is a condition of this contract, and shall be made a condition of each subcontract, which the contractor enters into pursuant to this contract, that the contractor and any subcontractor shall not permit any employee, in performance of the contract, to work in surroundings or under conditions which are unsanitary, hazardous or dangerous to his/her health or safety, as determined under construction safety and

health standards (29 CFR Part 1926) promulgated by the Secretary of Labor, in accordance with Section 107 of the Contract Work Hours and Safety Standards Act (40 U.S.C. 3704). 29 CFR 1926.10.

3. Pursuant to 29 CFR 1926.3, it is a condition of this contract that the Secretary of Labor or authorized representative thereof, shall have right of entry to any site of contract performance to inspect or investigate the matter of compliance with the construction safety and health standards and to carry out the duties of the Secretary under Section 107 of the Contract Work Hours and Safety Standards Act (40 U.S.C. 3704).

### VIII. FALSE STATEMENTS CONCERNING HIGHWAY PROJECTS

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts.

In order to assure high quality and durable construction in conformity with approved plans and specifications and a high degree of reliability on statements and representations made by engineers, contractors, suppliers, and workers on Federal-aid highway projects, it is essential that all persons concerned with the project perform their functions as carefully, thoroughly, and honestly as possible. Willful falsification, distortion, or misrepresentation with respect to any facts related to the project is a violation of Federal law. To prevent any misunderstanding regarding the seriousness of these and similar acts, Form FHWA-1022 shall be posted on each Federal-aid highway project (23 CFR Part 635) in one or more places where it is readily available to all persons concerned with the project:

### 18 U.S.C. 1020 reads as follows:

"Whoever, being an officer, agent, or employee of the United States, or of any State or Territory, or whoever, whether a person, association, firm, or corporation, knowingly makes any false statement, false representation, or false report as to the character, quality, quantity, or cost of the material used or to be used, or the quantity or quality of the work performed or to be performed, or the cost thereof in connection with the submission of plans, maps, specifications, contracts, or costs of construction on any highway or related project submitted for approval to the Secretary of Transportation; or

Whoever knowingly makes any false statement, false representation, false report or false claim with respect to the character, quality, quantity, or cost of any work performed or to be performed, or materials furnished or to be furnished, in connection with the construction of any highway or related project approved by the Secretary of Transportation; or

Whoever knowingly makes any false statement or false representation as to material fact in any statement, certificate, or report submitted pursuant to provisions of the Federal-aid Roads Act approved July 11, 1916, (39 Stat. 355), as amended and supplemented;

Shall be fined under this title or imprisoned not more than 5 years or both."

## IX. IMPLEMENTATION OF CLEAN AIR ACT AND FEDERAL WATER POLLUTION CONTROL ACT (42 U.S.C. 7606; 2 CFR 200.88; EO 11738)

This provision is applicable to all Federal-aid construction contracts in excess of \$150,000 and to all related subcontracts. 48 CFR 2.101; 2 CFR 200.327.

By submission of this bid/proposal or the execution of this contract or subcontract, as appropriate, the bidder, proposer, Federal-aid construction contractor, subcontractor, supplier, or vendor agrees to comply with all applicable standards, orders or regulations issued pursuant to the Clean Air Act (42 U.S.C. 7401-7671q) and the Federal Water Pollution Control Act, as amended (33 U.S.C. 1251-1387). Violations must be reported to the Federal Highway Administration and the Regional Office of the Environmental Protection Agency. 2 CFR Part 200, Appendix II.

The contractor agrees to include or cause to be included the requirements of this Section in every subcontract, and further agrees to take such action as the contracting agency may direct as a means of enforcing such requirements. 2 CFR 200.327.

## X. CERTIFICATION REGARDING DEBARMENT, SUSPENSION, INELIGIBILITY AND VOLUNTARY EXCLUSION

This provision is applicable to all Federal-aid construction contracts, design-build contracts, subcontracts, lower-tier subcontracts, purchase orders, lease agreements, consultant contracts or any other covered transaction requiring FHWA approval or that is estimated to cost \$25,000 or more — as defined in 2 CFR Parts 180 and 1200. 2 CFR 180.220 and 1200.220.

### 1. Instructions for Certification – First Tier Participants:

- a. By signing and submitting this proposal, the prospective first tier participant is providing the certification set out below.
- b. The inability of a person to provide the certification set out below will not necessarily result in denial of participation in this covered transaction. The prospective first tier participant shall submit an explanation of why it cannot provide the certification set out below. The certification or explanation will be considered in connection with the department or agency's determination whether to enter into this transaction. However, failure of the prospective first tier participant to furnish a certification or an explanation shall disqualify such a person from participation in this transaction. 2 CFR 180.320.
- c. The certification in this clause is a material representation of fact upon which reliance was placed when the contracting agency determined to enter into this transaction. If it is later determined that the prospective participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the contracting agency may terminate this transaction for cause of default. 2 CFR 180.325.
- d. The prospective first tier participant shall provide immediate written notice to the contracting agency to whom this proposal is submitted if any time the prospective first tier participant learns that its certification was erroneous when submitted or has become erroneous by reason of changed circumstances. 2 CFR 180.345 and 180.350.

- e. The terms "covered transaction," "debarred,"
  "suspended," "ineligible," "participant," "person," "principal,"
  and "voluntarily excluded," as used in this clause, are defined
  in 2 CFR Parts 180, Subpart I, 180.900-180.1020, and 1200.
  "First Tier Covered Transactions" refers to any covered
  transaction between a recipient or subrecipient of Federal
  funds and a participant (such as the prime or general contract).
  "Lower Tier Covered Transactions" refers to any covered
  transaction under a First Tier Covered Transaction (such as
  subcontracts). "First Tier Participant" refers to the participant
  who has entered into a covered transaction with a recipient or
  subrecipient of Federal funds (such as the prime or general
  contractor). "Lower Tier Participant" refers any participant who
  has entered into a covered transaction with a First Tier
  Participant or other Lower Tier Participants (such as
  subcontractors and suppliers).
- f. The prospective first tier participant agrees by submitting this proposal that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the department or agency entering into this transaction. 2 CFR 180.330.
- g. The prospective first tier participant further agrees by submitting this proposal that it will include the clause titled "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion-Lower Tier Covered Transactions," provided by the department or contracting agency, entering into this covered transaction, without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions exceeding the \$25,000 threshold. 2 CFR 180.220 and 180.300.
- h. A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. 2 CFR 180.300; 180.320, and 180.325. A participant is responsible for ensuring that its principals are not suspended, debarred, or otherwise ineligible to participate in covered transactions. 2 CFR 180.335. To verify the eligibility of its principals, as well as the eligibility of any lower tier prospective participants, each participant may, but is not required to, check the System for Award Management website (<a href="https://www.sam.gov/">https://www.sam.gov/</a>). 2 CFR 180.300, 180.320, and 180.325.
- i. Nothing contained in the foregoing shall be construed to require the establishment of a system of records in order to render in good faith the certification required by this clause. The knowledge and information of the prospective participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.
- j. Except for transactions authorized under paragraph (f) of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the department or agency may terminate this transaction for cause or default. 2 CFR 180.325.

\* \* \* \* \*

- 2. Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion First Tier Participants:
- a. The prospective first tier participant certifies to the best of its knowledge and belief, that it and its principals:
- (1) Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participating in covered transactions by any Federal department or agency, 2 CFR 180.335;.
- (2) Have not within a three-year period preceding this proposal been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State, or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property, 2 CFR 180.800;
- (3) Are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State or local) with commission of any of the offenses enumerated in paragraph (a)(2) of this certification, 2 CFR 180.700 and 180.800; and
- (4) Have not within a three-year period preceding this application/proposal had one or more public transactions (Federal, State or local) terminated for cause or default. 2 CFR 180.335(d).
- (5) Are not a corporation that has been convicted of a felony violation under any Federal law within the two-year period preceding this proposal (USDOT Order 4200.6 implementing appropriations act requirements); and
- (6) Are not a corporation with any unpaid Federal tax liability that has been assessed, for which all judicial and administrative remedies have been exhausted, or have lapsed, and that is not being paid in a timely manner pursuant to an agreement with the authority responsible for collecting the tax liability (USDOT Order 4200.6 implementing appropriations act requirements)
- b. Where the prospective participant is unable to certify to any of the statements in this certification, such prospective participant should attach an explanation to this proposal. 2 CFR 180.335 and 180.340.

\* \* \* \* \*

### 3. Instructions for Certification – Lower Tier Participants:

(Applicable to all subcontracts, purchase orders, and other lower tier transactions requiring prior FHWA approval or estimated to cost \$25,000 or more - 2 CFR Parts 180 and 1200). 2 CFR 180.220 and 1200.220.

- a. By signing and submitting this proposal, the prospective lower tier participant is providing the certification set out below.
- b. The certification in this clause is a material representation of fact upon which reliance was placed when this transaction was entered into. If it is later determined that the prospective lower tier participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the department, or agency with which

this transaction originated may pursue available remedies, including suspension and/or debarment.

- c. The prospective lower tier participant shall provide immediate written notice to the person to which this proposal is submitted if at any time the prospective lower tier participant learns that its certification was erroneous by reason of changed circumstances. 2 CFR 180.365.
- d. The terms "covered transaction," "debarred," "suspended," "ineligible," "participant," "person," "principal," and "voluntarily excluded," as used in this clause, are defined in 2 CFR Parts 180, Subpart I, 180.900 - 180.1020, and 1200. You may contact the person to which this proposal is submitted for assistance in obtaining a copy of those regulations. "First Tier Covered Transactions" refers to any covered transaction between a recipient or subrecipient of Federal funds and a participant (such as the prime or general contract). "Lower Tier Covered Transactions" refers to any covered transaction under a First Tier Covered Transaction (such as subcontracts). "First Tier Participant" refers to the participant who has entered into a covered transaction with a recipient or subrecipient of Federal funds (such as the prime or general contractor). "Lower Tier Participant" refers any participant who has entered into a covered transaction with a First Tier Participant or other Lower Tier Participants (such as subcontractors and suppliers).
- e. The prospective lower tier participant agrees by submitting this proposal that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the department or agency with which this transaction originated. 2 CFR 1200.220 and 1200.332.
- f. The prospective lower tier participant further agrees by submitting this proposal that it will include this clause titled "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion-Lower Tier Covered Transaction," without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions exceeding the \$25,000 threshold. 2 CFR 180.220 and 1200.220.
- g. A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. A participant is responsible for ensuring that its principals are not suspended, debarred, or otherwise ineligible to participate in covered transactions. To verify the eligibility of its principals, as well as the eligibility of any lower tier prospective participants, each participant may, but is not required to, check the System for Award Management website (https://www.sam.gov/), which is compiled by the General Services Administration. 2 CFR 180.300, 180.320, 180.330, and 180.335.
- h. Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render in good faith the certification required by this clause. The knowledge and information of participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.
- i. Except for transactions authorized under paragraph e of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily

excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the department or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment. 2 CFR 180.325.

\*\*\*\*

## 4. Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion--Lower Tier Participants:

- a. The prospective lower tier participant certifies, by submission of this proposal, that neither it nor its principals:
- (1) is presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participating in covered transactions by any Federal department or agency, 2 CFR 180.355;
- (2) is a corporation that has been convicted of a felony violation under any Federal law within the two-year period preceding this proposal (USDOT Order 4200.6 implementing appropriations act requirements); and
- (3) is a corporation with any unpaid Federal tax liability that has been assessed, for which all judicial and administrative remedies have been exhausted, or have lapsed, and that is not being paid in a timely manner pursuant to an agreement with the authority responsible for collecting the tax liability. (USDOT Order 4200.6 implementing appropriations act requirements)
- b. Where the prospective lower tier participant is unable to certify to any of the statements in this certification, such prospective participant should attach an explanation to this proposal.

\*\*\*\*

### XI. CERTIFICATION REGARDING USE OF CONTRACT FUNDS FOR LOBBYING

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts which exceed \$100,000. 49 CFR Part 20, App. A.

- 1. The prospective participant certifies, by signing and submitting this bid or proposal, to the best of his or her knowledge and belief, that:
- a. No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any Federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.
- b. If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any Federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or

cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.

- 2. This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by 31 U.S.C. 1352. Any person who fails to file the required certification shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.
- 3. The prospective participant also agrees by submitting its bid or proposal that the participant shall require that the language of this certification be included in all lower tier subcontracts, which exceed \$100,000 and that all such recipients shall certify and disclose accordingly.

### XII. USE OF UNITED STATES-FLAG VESSELS:

This provision is applicable to all Federal-aid construction contracts, design-build contracts, subcontracts, lower-tier subcontracts, purchase orders, lease agreements, or any other covered transaction. 46 CFR Part 381.

This requirement applies to material or equipment that is acquired for a specific Federal-aid highway project. 46 CFR 381.7. It is not applicable to goods or materials that come into inventories independent of an FHWA funded-contract.

When oceanic shipments (or shipments across the Great Lakes) are necessary for materials or equipment acquired for a specific Federal-aid construction project, the bidder, proposer, contractor, subcontractor, or vendor agrees:

- 1. To utilize privately owned United States-flag commercial vessels to ship at least 50 percent of the gross tonnage (computed separately for dry bulk carriers, dry cargo liners, and tankers) involved, whenever shipping any equipment, material, or commodities pursuant to this contract, to the extent such vessels are available at fair and reasonable rates for United States-flag commercial vessels. 46 CFR 381.7.
- 2. To furnish within 20 days following the date of loading for shipments originating within the United States or within 30 working days following the date of loading for shipments originating outside the United States, a legible copy of a rated, 'on-board' commercial ocean bill-of-lading in English for each shipment of cargo described in paragraph (b)(1) of this section to both the Contracting Officer (through the prime contractor in the case of subcontractor bills-of-lading) and to the Office of Cargo and Commercial Sealift (MAR-620), Maritime Administration, Washington, DC 20590. (MARAD requires copies of the ocean carrier's (master) bills of lading, certified onboard, dated, with rates and charges. These bills of lading may contain business sensitive information and therefore may be submitted directly to MARAD by the Ocean Transportation Intermediary on behalf of the contractor). 46 CFR 381.7.

ATTACHMENT A - EMPLOYMENT AND MATERIALS PREFERENCE FOR APPALACHIAN DEVELOPMENT HIGHWAY SYSTEM OR APPALACHIAN LOCAL ACCESS ROAD CONTRACTS (23 CFR 633, Subpart B, Appendix B) This provision is applicable to all Federal-aid projects funded under the Appalachian Regional Development Act of 1965.

- 1. During the performance of this contract, the contractor undertaking to do work which is, or reasonably may be, done as on-site work, shall give preference to qualified persons who regularly reside in the labor area as designated by the DOL wherein the contract work is situated, or the subregion, or the Appalachian counties of the State wherein the contract work is situated, except:
- a. To the extent that qualified persons regularly residing in the area are not available.
- b. For the reasonable needs of the contractor to employ supervisory or specially experienced personnel necessary to assure an efficient execution of the contract work.
- c. For the obligation of the contractor to offer employment to present or former employees as the result of a lawful collective bargaining contract, provided that the number of nonresident persons employed under this subparagraph (1c) shall not exceed 20 percent of the total number of employees employed by the contractor on the contract work, except as provided in subparagraph (4) below.
- 2. The contractor shall place a job order with the State Employment Service indicating (a) the classifications of the laborers, mechanics and other employees required to perform the contract work, (b) the number of employees required in each classification, (c) the date on which the participant estimates such employees will be required, and (d) any other pertinent information required by the State Employment Service to complete the job order form. The job order may be placed with the State Employment Service in writing or by telephone. If during the course of the contract work, the information submitted by the contractor in the original job order is substantially modified, the participant shall promptly notify the State Employment Service.
- 3. The contractor shall give full consideration to all qualified job applicants referred to him by the State Employment Service. The contractor is not required to grant employment to any job applicants who, in his opinion, are not qualified to perform the classification of work required.
- 4. If, within one week following the placing of a job order by the contractor with the State Employment Service, the State Employment Service is unable to refer any qualified job applicants to the contractor, or less than the number requested, the State Employment Service will forward a certificate to the contractor indicating the unavailability of applicants. Such certificate shall be made a part of the contractor's permanent project records. Upon receipt of this certificate, the contractor may employ persons who do not normally reside in the labor area to fill positions covered by the certificate, notwithstanding the provisions of subparagraph (1c) above.
- 5. The provisions of 23 CFR 633.207(e) allow the contracting agency to provide a contractual preference for the use of mineral resource materials native to the Appalachian region.
- 6. The contractor shall include the provisions of Sections 1 through 4 of this Attachment A in every subcontract for work which is, or reasonably may be, done as on-site work.

### STANDARD SPECIAL PROVISION

### **ON-THE-JOB TRAINING**

(10-16-07) (Rev. 4-21-15) Z-10

### **Description**

The North Carolina Department of Transportation will administer a custom version of the Federal On-the-Job Training (OJT) Program, commonly referred to as the Alternate OJT Program. All contractors (existing and newcomers) will be automatically placed in the Alternate Program. Standard OJT requirements typically associated with individual projects will no longer be applied at the project level. Instead, these requirements will be applicable on an annual basis for each contractor administered by the OJT Program Manager.

On the Job Training shall meet the requirements of 23 CFR 230.107 (b), 23 USC – Section 140, this provision and the On-the-Job Training Program Manual.

The Alternate OJT Program will allow a contractor to train employees on Federal, State and privately funded projects located in North Carolina. However, priority shall be given to training employees on NCDOT Federal-Aid funded projects.

### **Minorities and Women**

Developing, training and upgrading of minorities and women toward journeyman level status is a primary objective of this special training provision. Accordingly, the Contractor shall make every effort to enroll minority and women as trainees to the extent that such persons are available within a reasonable area of recruitment. This training commitment is not intended, and shall not be used, to discriminate against any applicant for training, whether a member of a minority group or not.

### **Assigning Training Goals**

The Department, through the OJT Program Manager, will assign training goals for a calendar year based on the contractors' past three years' activity and the contractors' anticipated upcoming year's activity with the Department. At the beginning of each year, all contractors eligible will be contacted by the Department to determine the number of trainees that will be assigned for the upcoming calendar year. At that time the Contractor shall enter into an agreement with the Department to provide a self-imposed on-the-job training program for the calendar year. This agreement will include a specific number of annual training goals agreed to by both parties. The number of training assignments may range from 1 to 15 per contractor per calendar year. The Contractor shall sign an agreement to fulfill their annual goal for the year.\

### **Training Classifications**

The Contractor shall provide on-the-job training aimed at developing full journeyman level workers in the construction craft/operator positions. Preference shall be given to providing training in the following skilled work classifications:

Equipment Operators Office Engineers

Truck Drivers Estimators

Carpenters Iron / Reinforcing Steel Workers

Concrete Finishers Mechanics
Pipe Layers Welders

The Department has established common training classifications and their respective training requirements that may be used by the contractors. However, the classifications established are not all-inclusive. Where the training is oriented toward construction applications, training will be allowed in lower-level management positions such as office engineers and estimators. Contractors shall submit new classifications for specific job functions that their employees are performing. The Department will review and recommend for acceptance to FHWA the new classifications proposed by contractors, if applicable. New classifications shall meet the following requirements:

Proposed training classifications are reasonable and realistic based on the job skill classification needs, and

The number of training hours specified in the training classification is consistent with common practices and provides enough time for the trainee to obtain journeyman level status.

The Contractor may allow trainees to be trained by a subcontractor provided that the Contractor retains primary responsibility for meeting the training and this provision is made applicable to the subcontract. However, only the Contractor will receive credit towards the annual goal for the trainee.

Where feasible, 25 percent of apprentices or trainees in each occupation shall be in their first year of apprenticeship or training. The number of trainees shall be distributed among the work classifications on the basis of the contractor's needs and the availability of journeymen in the various classifications within a reasonable area of recruitment.

No employee shall be employed as a trainee in any classification in which they have successfully completed a training course leading to journeyman level status or in which they have been employed as a journeyman.

### **Records and Reports**

The Contractor shall maintain enrollment, monthly and completion reports documenting company compliance under these contract documents. These documents and any other information as requested shall be submitted to the OJT Program Manager.

Upon completion and graduation of the program, the Contractor shall provide each trainee with a certification Certificate showing the type and length of training satisfactorily completed.

### **Trainee Interviews**

All trainees enrolled in the program will receive an initial and Trainee/Post graduate interview conducted by the OJT program staff.

### **Trainee Wages**

Contractors shall compensate trainees on a graduating pay scale based upon a percentage of the prevailing minimum journeyman wages (Davis-Bacon Act). Minimum pay shall be as follows:

60 percent	of the journeyman wage for the first half of the training period
75 percent	of the journeyman wage for the third quarter of the training period
90 percent	of the journeyman wage for the last quarter of the training period

In no instance shall a trainee be paid less than the local minimum wage. The Contractor shall adhere to the minimum hourly wage rate that will satisfy both the NC Department of Labor (NCDOL) and the Department.

### **Achieving or Failing to Meet Training Goals**

The Contractor will be credited for each trainee employed by him on the contract work who is currently enrolled or becomes enrolled in an approved program and who receives training for at least 50 percent of the specific program requirement. Trainees will be allowed to be transferred between projects if required by the Contractor's scheduled workload to meet training goals.

If a contractor fails to attain their training assignments for the calendar year, they may be taken off the NCDOT's Bidders List.

### **Measurement and Payment**

No compensation will be made for providing required training in accordance with these contract documents.

# STANDARD SPECIAL PROVISION MINIMUM WAGES GENERAL DECISION NC20230086 01/06/2023 NC86

Z-086

Date: January 6, 2023

General Decision Number: NC20230086 01/06/2023 NC86

Superseded General Decision Numbers: NC20220086

State: North Carolina

Construction Type: HIGHWAY

### **COUNTIES:**

Alleghany	Jackson	Surry
Ashe	Lincoln	Swain
Avery	Macon	Transylvania
Cherokee	McDowell	Watauga
Clay	Mitchell	Wilkes
Cleveland	Polk	Yancey
Graham	Rutherford	

HIGHWAY CONSTRUCTION PROJECTS (excluding tunnels, building structures in rest area projects & railroad construction; bascule, suspension & spandrel arch bridges designed for commercial navigation, bridges involving marine construction; and other major bridges).

Note: Contracts subject to the Davis-Bacon Act are generally required to pay at least the applicable minimum wage rate required under Executive Order 14026 or Executive Order 13658. Please note that these Executive Orders apply to covered contracts entered into by the federal government that are subject to the Davis-Bacon Act itself, but do not apply to contracts subject only to the Davis-Bacon Related Acts, including those set forth at 29 CFR 5.1(a)(2)-(60).

If the contract is entered into on or after January 30, 2022, or the contract is renewed or extended (e.g., an option is exercised) on or after January 30, 2022:	Executive Order 14026 generally applies to the contract.  The contractor must pay all covered workers at least \$16.20 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on that contract in 2023.
If the contract was awarded on or between January 1, 2015 and January 29, 2022, and the contract is not renewed or extended on or after January 30, 2022:	Executive Order 13658 generally applies to the contract.  The contractor must pay all covered workers at least \$12.15 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on that contract in 2023.

The applicable Executive Order minimum wage rate will be adjusted annually. If this contract is covered by one of the Executive Orders and a classification considered necessary for performance

of work on the contract does not appear on this wage determination, the contractor must still submit a conformance request.

Additional information on contractor requirements and worker protections under the Executive Orders is available at http://www.dol.gov/whd/govcontracts.

Modification Number

Publication Date 01/06/2023

SUNC2014-001 11/13/2014

		E.:
DIACTED	Rates	Fringes
BLASTER	21.83	
CARPENTER  CENTENTA MA CONTROLLER EDUCATE	12.54 **	
CEMENT MASON/CONCRETE FINISHER	14.10 **	
ELECTRICIAN	10.10	2.20
Electrician	19.19	2.39
Telecommunications Technician	15.13 **	
IRONWORKER	14.53 **	
LABORER	10.00 44	
Asphalt Raker and Spreader	12.23 **	
Asphalt Screed/Jackman	15.22 **	
Carpenter Tender	10.00 **	
Cement Mason/Concrete Finisher Tender	12.26 **	
Common or General	10.68 **	
Guardrail/Fence Installer	13.43 **	
Pipelayer	12.22 **	
Traffic Signal/Lighting Installer	15.85 **	
PAINTER		
Bridge	19.62	
POWER EQUIPMENT OPERATORS		
Asphalt Broom Tractor	11.00 **	
Bulldozer Fine	16.20	
Bulldozer Rough	13.89 **	
Concrete Grinder/Groover	24.66	
Crane Boom Trucks	14.44 **	.53
Crane Other	19.59	
Crane Rough/All-Terrain	21.25	
Drill Operator Rock	15.25 **	
Drill Operator Structure	20.92	
Excavator Fine	16.11 **	
Excavator Rough	13.10 **	
Grader/Blade Fine	19.24	
Grader/Blade Rough	13.07 **	
Loader 2 Cubic Yards or Less	13.38 **	
Loader Greater Than 2 Cubic Yards	16.01 **	
Material Transfer Vehicle (Shuttle Buggy)	17.39	
Mechanic	18.51	
Milling Machine	13.88 **	
Off-Road Hauler/Water Tanker	13.87 **	
Oiler/Greaser	14.98 **	
Pavement Marking Equipment	13.33 **	
Paver Asphalt	15.68 **	.05
Roller Asphalt Breakdown	14.05 **	.06
Roller Asphalt Finish	14.98 **	.04

	Rates	Fringes
Roller Other	11.75 **	
Scraper Finish	13.87 **	
Scraper Rough	11.53 **	
Slip Form Machine	20.79	
Tack Truck/Distributor Operator	14.67 **	.06
TRUCK DRIVER		
GVWR of 26,000 Lbs or Less	11.72 **	
GVWR of 26,001 Lbs or Greater	13.50 **	

Welders – Receive rate prescribed for craft performing operation to which welding is incidental.

\*\* Workers in this classification may be entitled to a higher minimum wage under Executive Order 14026 (\$16.20) or 13658 (\$12.15). Please see the Note at the top of the wage determination for more information.

Note: Executive Order (EO) 13706, Establishing Paid Sick Leave for Federal Contractors applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2017. If this contract is covered by the EO, the contractor must provide employees with 1 hour of paid sick leave for every 30 hours they work, up to 56 hours of paid sick leave each year. Employees must be permitted to use paid sick leave for their own illness, injury or other health-related needs, including preventive care; to assist a family member (or person who is like family to the employee) who is ill, injured, or has other health-related needs, including preventive care; or for reasons resulting from, or to assist a family member (or person who is like family to the employee) who is a victim of, domestic violence, sexual assault, or stalking. Additional information on contractor requirements and worker protections under the EO is available at http://www.dol.gov/agencies/whd/government-contracts.

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29 CFR 5.5(a)(1)(ii)).

The body of each wage determination lists the classification and wage rates that have been found to be prevailing for the cited type(s) of construction in the area covered by the wage determination. The classifications are listed in alphabetical order of "identifiers" that indicate whether the particular rate is a union rate (current union negotiated rate for local), a survey rate (weighted average rate) or a union average rate (weighted union average rate).

### Union Rate Identifiers

A four letter classification abbreviation identifier enclosed in dotted lines beginning with characters other than "SU" or "UAVG" denotes that the union classification and rate were prevailing for that classification in the survey. Example: PLUM0198-005 07/01/2014. PLUM is an abbreviation identifier of the union which prevailed in the survey for this classification, which in this example would be Plumbers. 0198 indicates the local union number or district council number where applicable, i.e., Plumbers Local 0198. The next number, 005 in the example, is an internal number used in processing the wage determination. 07/01/2014 is the effective date of the most current negotiated rate, which in this example is July 1, 2014.

Union prevailing wage rates are updated to reflect all rate changes in the collective bargaining agreement (CBA) governing this classification and rate.

# Survey Rate Identifiers

Classifications listed under the "SU" identifier indicate that no one rate prevailed for this classification in the survey and the published rate is derived by computing a weighted average rate based on all the rates reported in the survey for that classification. As this weighted average rate includes all rates reported in the survey, it may include both union and non-union rates. Example: SULA2012-007 5/13/2014. SU indicates the rates are survey rates based on a weighted average calculation of rates and are not majority rates. LA indicates the State of Louisiana. 2012 is the year of survey on which these classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. 5/13/2014 indicates the survey completion date for the classifications and rates under that identifier.

Survey wage rates are not updated and remain in effect until a new survey is conducted.

# Union Average Rate Identifiers

Classification(s) listed under the UAVG identifier indicate that no single majority rate prevailed for those classifications; however, 100% of the data reported for the classifications was union data. EXAMPLE: UAVG-OH-0010 08/29/2014. UAVG indicates that the rate is a weighted union average rate. OH indicates the state. The next number, 0010 in the example, is an internal number used in producing the wage determination. 08/29/2014 indicates the survey completion date for the classifications and rates under that identifier.

A UAVG rate will be updated once a year, usually in January of each year, to reflect a weighted average of the current negotiated/CBA rate of the union locals from which the rate is based.

### WAGE DETERMINATION APPEALS PROCESS

- 1.) Has there been an initial decision in the matter? This can be:
  - \* an existing published wage determination
  - \* a survey underlying a wage determination
  - \* a Wage and Hour Division letter setting forth a position on a wage determination matter
  - \* a conformance (additional classification and rate) ruling

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour National Office because National Office has responsibility for the David-Bacon survey program. If the response from this initial contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

With regard to any other matter not yet ripe for the formal process described here, initial contact should be with the Branch of Construction Wage Determinations. Write to:

Branch of Construction Wage Determinations Wage and Hour Division U. S. Department of Labor 200 Constitution Avenue, N.W. Washington, D.C. 20210

2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

Wage and Hour Administrator U.S. Department of Labor 200 Constitution Avenue, N.W. Washington, D.C. 20210

The request should be accompanied by a full statement of the interested party's position and by any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

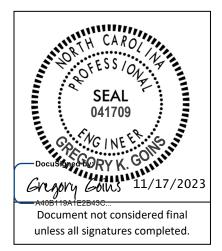
3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board U.S. Department of Labor 200 Constitution Avenue, N.W. Washington, D.C. 20210

4.) All decisions by the Administrative Review Board are final.

END OF GENERAL DECISION

R5861 Cherokee County



# **Geotechnical Unit Provisions**

Prepared By: GKG 17-Nov-23

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# **SOIL NAIL RETAINING WALLS**

(10-19-21)

### 1.0 GENERAL

Construct soil nail retaining walls consisting of soil nails spaced at a regular pattern and connected to a CIP reinforced concrete face. A soil nail consists of a solid steel bar grouted in a drilled hole inclined at an angle below horizontal. Use shotcrete for temporary support of excavations during construction. Design and construct soil nail retaining walls based on actual elevations and wall dimensions in accordance with the contract and accepted submittals. Use a prequalified Anchored Wall Contractor to construct soil nail retaining walls. Define "soil nail wall" as a soil nail retaining wall and "Soil Nail Wall Contractor" as the Anchored Wall Contractor installing soil nails and applying shotcrete. Define "nail" as a soil nail and "concrete facing" as a CIP reinforced concrete face. An abutment wall is defined as a soil nail wall with nails that extend under a bridge end bent or a soil nail wall connected to an abutment wall. Even if only one nail extends under a bridge end bent, the entire soil nail wall is considered an abutment wall.

### 2.0 MATERIALS

Refer to the Standard Specifications.

Item	Section
Geosynthetics	1056
Joint Materials	1028
Masonry	1040
Portland Cement	1024-1
Portland Cement Concrete, Class A	1000
Reinforcing Steel	1070
Select Material, Class VI	1016
Shotcrete	1002
Shoulder Drain Materials	816-2
Steel Plates	1072-2
Water	1024-4
Welded Stud Shear Connectors	1072-6

Provide Class VI select material (standard size No. 57 stone) for leveling pads. Use neat cement grout that only contains cement and water with a water cement ratio of 0.4 to 0.5 which is approximately 5.5 gallons of water per 94 lb of Portland cement. Provide grout with a compressive strength at 3 and 28 days of at least 1,500 psi and 4,000 psi, respectively.

Provide soil nails consisting of grouted steel bars and nail head assemblies. Use deformed solid steel bars that meet AASHTO M 275 or M 31, Grade 60, 75 or 80. Splice bars in accordance with Article 1070-9 of the *Standard Specifications*.

Provide epoxy coated bars that meet Article 1070-7 of the *Standard Specifications*. Provide Class A corrosion protection (encapsulated bar) or Class B corrosion protection (epoxy coated bar only, no galvanized bar) for soil nails in accordance with Article 34.3.3 of the *AASHTO LRFD Bridge Construction Specifications*. Use centralizers that meet Article

# 34.3.4 of the AASHTO LRFD specifications.

Provide nail head assemblies consisting of nuts, washers and bearing plates with welded stud shear connectors. Use steel plates for bearing plates and steel washers and hex nuts recommended by the Soil Nail Manufacturer.

Provide Type 3 material certifications for soil nail materials in accordance with Article 106-3 of the *Standard Specifications*. Store steel materials on blocking at least 12" above the ground and protect it at all times from damage; and when placing in the work make sure it is free from dirt, dust, loose mill scale, loose rust, paint, oil or other foreign materials. Load, transport, unload and store soil nail wall materials so materials are kept clean and free of damage. Do not crack, fracture or otherwise damage grout inside sheaths of encapsulated nails. Bent, damaged or defective materials will be rejected.

# 3.0 PRECONSTRUCTION REQUIREMENTS

# A. Soil Nail Wall Surveys

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

# B. Soil Nail Wall Designs

For soil nail wall designs, submit PDF files of working drawings and design calculations at least 30 days before the preconstruction meeting. Do not begin soil nail wall construction until a design submittal is accepted.

Use a prequalified Anchored Wall Design Consultant to design soil nail walls. Provide designs sealed by a Design Engineer approved as a Geotechnical Engineer (key person) for the Anchored Wall Design Consultant.

Design soil nail walls in accordance with the plans and the AASHTO LRFD Bridge Design Specifications unless otherwise required. For abutment walls only, design soil nail walls for seismic if wall sites meet either or both of the following:

- Wall site is in seismic zone 2 based on Figure 2-1 of the Structure Design Manual,
- Wall site is classified as AASHTO Site Class E, as noted in the plans, and is in or west of Pender, Duplin, Wayne, Johnston, Wake, Durham or Person County.

Design soil nails that meet the following unless otherwise approved:

1. Horizontal and vertical spacing of at least 3 ft,

- 2. Inclination of at least 12° below horizontal,
- 3. Clearance between ends of bars and drill holes of at least 6",
- 4. Grout cover between epoxy coated bars and drill hole walls of at least 1" or in accordance with Article 11.12.8 of the AASHTO LRFD specifications for encapsulated bars and
- 5. Diameter of 6" to 10".

Four inch diameter soil nails may be approved for nails in rock at the discretion of the Engineer. Do not extend nails beyond right-of-way or easement limits. If existing or future obstructions such as foundations, guardrail, fence or handrail posts, pavements, pipes, inlets or utilities will interfere with nails, maintain a clearance of at least 6" between obstructions and nails.

When noted in the plans, design soil nail walls for a live load (traffic) surcharge of 250 psf. For steel beam guardrail with 8 ft posts above soil nail walls, analyze facing and top row of nails for a nominal horizontal load (PHI) of 300 lb/ft of wall in accordance with Figure 3.11.6.3-2(a) of the AASHTO LRFD specifications. For concrete barrier rail above soil nail walls, analyze facing and top row of nails for a nominal PHI of 500 lb/ft of wall in accordance with Figure 3.11.6.3-2(a).

Provide wall drainage systems consisting of geocomposite sheet drains, an aggregate shoulder drain and outlet components. Place sheet drains with a horizontal spacing of no more than 10 ft and center drains between adjacent nails. Attach sheet drains to excavation faces and connect drains to aggregate leveling pads. Locate a continuous aggregate shoulder drain along the base of concrete facing in front of leveling pads. Provide aggregate shoulder drains and outlet components in accordance with Roadway Standard Drawing No. 816.02.

Use No. 57 stone for aggregate leveling pads. Use 6" thick leveling pads beneath concrete facing. Unless required otherwise in the plans, embed top of leveling pads at least 12" below bottom of walls shown in the plans.

Design shotcrete and concrete facing in accordance with the plans and Article 11.12.6.2 of the *AASHTO LRFD Bridge Design Specifications*. Use shotcrete and concrete facing with the dimensions shown in the plans and attach facing to nail heads with welded stud shear connectors. When concrete barrier rail is required above soil nail walls, use concrete barrier rail with moment slab as shown in the plans.

Submit working drawings and design calculations including unit grout/ground bond strengths for acceptance in accordance with Article 105-2 of the *Standard Specifications*. Submit working drawings showing plan views, wall profiles with nail locations including known test nail locations, typical sections and details of nails, drainage, shotcrete, leveling pads and concrete facing. If necessary, include details on working drawings for concrete barrier rail with moment slab and obstructions extending through walls or interfering with nails, barriers or moment slabs. Submit design calculations for each wall section with different surcharge loads, geometry or material parameters. Include analysis

of temporary conditions in design calculations. At least one analysis is required for each wall section with different nail lengths. Analyze internal and compound stability with a computer software program that uses limit equilibrium methods and submit all PDF output files from the program with the design calculations. See Article C11.12.2 of the AASHTO LRFD specifications for determining the maximum soil nail force, T<sub>maxsn</sub>. Once T<sub>maxsn</sub> and pullout length behind slip surface, L<sub>P</sub>, are determined from limit equilibrium methods at the target soil failure resistance factor (1 over factor of safety output from computer software), use these values for soil nail (pullout and tensile resistance) and wall facing (flexure, punching shear and headed-stud tensile resistance) design in accordance with Articles 11.12.5.2, 11.12.6.1 and 11.12.6.2 of the AASHTO LRFD specifications.

When designing soil nail walls with computer software Snail manufactured by the California Department of Transportation (CALTRANS), use Snail, version 2.2.0 or later, to calculate factors of safety and T<sub>maxsn</sub> and L<sub>P</sub> values in accordance with the following:

- 1. Allowable Stress Design for Analysis Method with no load factors applied except those applied to factored surcharge loads from structures or traffic,
- 2. Perform Below Toe Search option selected when any soil layer has a friction angle less than 30° and
- 3. Default value of 0.33 for Interface Friction Reduction Factor.

When designing soil nail walls with computer software other than Snail, use bi-linear (or tri-linear, as applicable) search surfaces intended to reproduce Snail results. Factors of safety and T<sub>maxsn</sub> and L<sub>P</sub> values are acceptable if they are within 5% of the factors of safety and T<sub>maxsn</sub> and L<sub>P</sub> values calculated by the Engineer using the computer software Slide2 manufactured by Rocscience, Inc.

#### C. Soil Nail Wall Construction Plan

Submit a PDF file of a soil nail wall construction plan at least 30 days before the preconstruction meeting. Do not begin soil nail wall construction until the construction plan submittal is accepted. Provide detailed project specific information in the soil nail wall construction plan that includes the following:

- 1. Overall description and sequence of soil nail wall construction;
- 2. List and sizes of excavation equipment, drill rigs and tools, tremies and grouting equipment;
- 3. Procedures for excavations, drilling and grouting, soil nail and wall drainage system installation and facing construction;
- 4. Details of shotcrete equipment and application including mix process, test panels, thickness gauges and shooting methods;
- 5. Shotcrete nozzleman with certification in accordance with Article 1002-1 of the *Standard Specifications*;

- 6. Plan and methods for nail testing with calibration certificates dated within 90 days of the submittal date;
- 7. Examples of construction records to be provided that meet Section 4.0(F) and test nail records to be used in accordance with Section 5.0(D) of this provision;
- 8. Grout mix design with acceptable ranges for grout flow and density;
- 9. Shotcrete mix design that meets Section 1002 of the Standard Specifications; and
- 10. Other information shown in the plans or requested by the Engineer.

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

# D. Preconstruction Meeting

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

# 4.0 Construction Methods

Control drainage during construction in the vicinity of soil nail walls. Direct run off away from soil nail walls and areas above and behind walls.

Notify the Engineer before blasting in the vicinity of soil nail walls. Perform blasting in accordance with the contract. Unless required otherwise in the plans, install foundations located behind soil nail walls before beginning wall construction.

Install soil nail walls in accordance with the accepted submittals and as directed. Do not excavate behind soil nail walls. If overexcavation occurs, repair walls with an approved method and a revised soil nail wall design or construction plan may be required.

#### A. Excavation

Excavate for soil nail walls from the top down in accordance with the accepted submittals. Excavate in staged horizontal lifts with no negative batter (excavation face leaning forward). Excavate lifts in accordance with the following:

- 1. Heights not to exceed vertical nail spacing,
- 2. Bottom of lifts no more than 3 ft below nail locations for current lift and
- 3. Horizontal and vertical alignment within 2" of location shown in the accepted submittals.

Remove any cobbles, boulders, rubble or debris that will protrude more than 2" into the required shotcrete thickness. Rocky ground such as colluvium, boulder fills and weathered rock may be difficult to excavate without leaving voids.

Apply shotcrete to excavation faces within 24 hours of excavating each lift unless otherwise approved. Shotcreting may be delayed if it can be demonstrated that delays will not adversely affect excavation stability. If excavation faces will be exposed for more than 24 hours, use polyethylene sheets anchored at top and bottom of lifts to protect excavation faces from changes in moisture content.

If an excavation becomes unstable at any time, suspend soil nail wall construction and temporarily stabilize the excavation by immediately placing an earth berm up against the unstable excavation face. When this occurs, repair walls with an approved method and a revised soil nail wall design or construction plan may be required.

Do not excavate the next lift until nail installations and testing and shotcrete application for the current lift are accepted and grout and shotcrete for the current lift have cured at least 3 days and 1 day, respectively.

#### B. Soil Nails

Install soil nails in the same way as acceptable test nails. Drill and grout nails the same day and do not leave drill holes open overnight.

Control drilling and grouting to prevent excessive ground movements, damaging structures and pavements or fracturing rock and soil formations. If ground heave or subsidence occurs, suspend soil nail wall construction and take corrective action to minimize movement. If property damage occurs, make repairs with an approved method and a revised soil nail wall design or construction plan may be required.

### 1. Drilling

Use drill rigs of the sizes necessary to install soil nails and with sufficient capacity to drill through whatever materials are encountered. Drill straight and clean holes with the dimensions and inclination shown in the accepted submittals. Drill holes within 6" of locations and 2° of inclination shown in the accepted submittals unless otherwise approved.

Stabilize drill holes with temporary casings if unstable, caving or sloughing material is anticipated or encountered. Do not use drilling fluids to stabilize drill holes or remove cuttings.

### 2. Steel Bars

Center steel bars in drill holes with centralizers. Securely attach centralizers along bars at no more than 8 ft centers. Attach uppermost and lowermost centralizers 18" from excavation faces and ends of holes.

Do not insert steel bars into drill holes until hole locations, dimensions, inclination and cleanliness are approved. Do not vibrate, drive or otherwise force bars into holes. If a steel bar cannot be completely and easily inserted into a drill hole, remove the bar and clean or redrill the hole.

### 3. Grouting

Mix and place grout in accordance with Subarticles 1003-5, 1003-6 and 1003-7 of the *Standard Specifications*. Remove oil, rust inhibitors, residual drilling fluids and similar foreign materials from holding tanks/hoppers, stirring devices, pumps, lines, tremie pipes and any other equipment in contact with grout before use. Measure grout temperature, density and flow during grouting with at least the same frequency grout cubes are made for compressive strength. Perform density and flow field tests in the presence of the Engineer in accordance with American National Standards Institute/American Petroleum Institute Recommended Practice 13B-1 (Section 4, Mud Balance) and ASTM C939 (Flow Cone), respectively.

Inject grout at the lowest point of drill holes through tremies, e.g., grout tubes, casings, hollow-stem augers or drill rods, in one continuous operation. Fill drill holes progressively from ends of holes to excavation faces and withdraw tremies at a slow even rate as holes are filled to prevent voids in grout. Extend tremies into grout at least 5 ft at all times except when grout is initially placed in holes.

Provide grout free of segregation, intrusions, contamination, structural damage or inadequate consolidation (honeycombing). Cold joints in grout are not allowed except for test nails. Remove any temporary casings as grout is placed and record grout volume for each drill hole.

#### 4. Nail Heads

Weld stud shear connectors to bearing plates of nails in accordance with Article 1072-6 of the *Standard Specifications*. Install nail head assemblies after shotcreting. Before shotcrete reaches initial set, seat bearing plates and tighten nuts so plates contact shotcrete uniformly. If uniform contact is not possible, install nail head assemblies on mortar pads so nail heads are evenly loaded.

# C. Wall Drainage Systems

Install wall drainage systems as shown in the accepted submittals and in accordance with Section 816 of the *Standard Specifications*. Before installing shotcrete reinforcement, place geocomposite sheet drains with the geotextile side against excavation faces. For highly irregular faces and at the discretion of the Engineer, sheet drains may be placed after shotcreting over weep holes through the shotcrete. Hold sheet drains in place with anchor pins so drains are in continuous contact with surfaces to which they are attached and allow for full flow the entire height of soil nail walls. Discontinuous sheet drains are not allowed. If splices are needed, overlap sheet drains at least 12" so flow is not impeded. Connect sheet drains to aggregate leveling pads by embedding drain ends at least 4" into No. 57 stone.

#### D. Shotcrete

Clean ungrouted zones of drill holes and excavation faces of loose materials, mud, rebound and other foreign material. Moisten surfaces to receive shotcrete. Install shotcrete reinforcement in accordance with the contract and accepted submittals. Secure reinforcing steel so shooting does not displace or vibrate reinforcement. Install approved thickness gauges on 5 ft centers in the horizontal and vertical directions to measure shotcrete thickness.

Apply shotcrete in accordance with the contract, accepted submittals and Subarticle 1002-3(F) of the *Standard Specifications*. Use approved shotcrete nozzlemen who made satisfactory preconstruction test panels to apply shotcrete. Direct shotcrete at right angles to excavation faces except when shooting around reinforcing steel. Rotate nozzle steadily in small circular patterns and apply shotcrete from bottom of lifts up.

Make shotcrete surfaces uniform and free of sloughing or sagging. Completely fill ungrouted zones of drill holes and any other voids with shotcrete. Taper construction joints to a thin edge over a horizontal distance of at least the shotcrete thickness. Wet joint surfaces before shooting adjacent sections.

Repair surface defects as soon as possible after shooting. Remove any shotcrete which lacks uniformity, exhibits segregation, honeycombing or lamination or contains any voids or sand pockets and replace with fresh shotcrete to the satisfaction of the Engineer. Protect shotcrete from freezing and rain until shotcrete reaches initial set.

# E. Leveling Pads and Concrete Facing

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

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

If a brick veneer is required, construct brick masonry in accordance with Section 830 of the *Standard Specifications*. Anchor brick veneers to soil nail walls in accordance with Subarticle 453-4 of the *Standard Specifications*. Seal joints above and behind soil nail walls between concrete facing and slope protection with silicone sealant.

#### F. Construction Records

Provide 2 copies of soil nail wall construction records within 24 hours of completing each lift. Include the following in construction records:

- 1. Names of Soil Nail Wall Contractor, Superintendent, Nozzleman, Drill Rig Operator, Project Manager and Design Engineer;
- 2. Wall description, county, Department's contract, TIP and WBS element number;
- 3. Wall station and number and lift location, dimensions, elevations and description;
- 4. Nail locations, dimensions and inclinations, bar types, sizes and grades, corrosion protection and temporary casing information;
- 5. Date and time drilling begins and ends, steel bars are inserted into drill holes, grout and shotcrete are mixed and arrives on-site and grout placement and shotcrete application begins and ends;
- 6. Grout volume, temperature, flow and density records;
- 7. Ground and surface water conditions and elevations if applicable;
- 8. Weather conditions including air temperature at time of grout placement and shotcrete application; and
- 9. All other pertinent details related to soil nail wall construction.

After completing each soil nail wall or stage of a wall, provide a PDF file of all corresponding construction records.

#### 5.0 NAIL TESTING

Test soil nails in accordance with the contract and as directed. "Verification tests" are performed on nails not incorporated into soil nail walls, i.e., sacrificial nails and "proof tests" are performed on nails incorporated into walls, i.e., production nails. Define "verification test nail" and "proof test nail" as a nail tested with either a verification or proof test, respectively. Define "test nails" as verification or proof test nails.

Verification tests are typically required for at least one nail per soil type per soil nail wall or 2 nails per wall, whichever is greater. Proof tests are typically required for at least one nail per nail row per soil nail wall or at least 5% of production nails, whichever is greater. More or less test nails may be required depending on subsurface conditions encountered. The Engineer will determine the number and locations of verification and proof tests required. The approximate known test nail locations may be shown in the plans.

Do not test nails until grout and shotcrete attain the required 3-day compressive strength. Do not install any production nails until verification tests are accepted.

# A. Test Equipment

Use the following equipment to test nails:

- 1. Two dial gauges with rigid supports,
- 2. Hydraulic jack and pressure gauge,
- 3. Jacking block or reaction frame and
- 4. Electrical resistance load cell (verification tests only).

Provide dial gauges with enough range and precision to measure the maximum test nail movement to 0.001". Use pressure gauges graduated in 100 psi increments or less. Submit identification numbers and calibration records for load cells, jacks and pressure gauges with the soil nail wall construction plan. Calibrate each jack and pressure gauge as a unit.

Align test equipment to uniformly and evenly load test nails. Use a jacking block or reaction frame that does not damage or contact shotcrete within 3 ft of nail heads. Place dial gauges opposite each other on either side of test nails and align gauges within 5° of bar inclinations. Set up test equipment so resetting or repositioning equipment during nail testing is not needed.

#### B. Test Nails

Test nails include both unbonded and bond lengths. Grout only bond lengths before nail testing. Provide unbonded and bond lengths of at least 3 ft and 10 ft, respectively.

Steel bars for production nails may be overstressed under higher test nail loads. If necessary, use larger size or higher grade bars with more capacity for test nails instead of shortening bond lengths to less than the minimum required.

### C. Nail Tests

Install verification test nails with the same equipment, installation methods and drill hole diameter and inclination as production nails. Test verification and proof test nails in accordance with the accepted submittals and Articles 34.5.5.2 and 34.5.5.3, respectively of the AASHTO LRFD Bridge Construction Specifications except correct Eq. 34.5.5.2-2 to  $VTL = L_{BVT} \times r_{po}$  (kips/ft).

# D. Test Nail Acceptance

Submit 2 copies of test nail records including load versus movement and time versus creep movement plots within 24 hours of completing each verification or proof test. The Engineer will review the test nail records to determine if test nails are acceptable. Test nail acceptance is based in part on the acceptance criteria in Article 34.5.5.4 of the AASHTO LRFD Bridge Construction Specifications.

For proof test nails, maintain stability of unbonded lengths for subsequent grouting. If a proof test nail is accepted but the unbonded length cannot be satisfactorily grouted, do not incorporate the proof test nail into the soil nail wall and add another production nail to replace the test nail.

If the Engineer determines a verification test nail is unacceptable, revise the soil nail design or installation methods. Submit a revised soil nail wall design or construction plan for acceptance and provide acceptable verification test nails with the revised design or installation methods.

If the Engineer determines a proof test nail is unacceptable, either perform additional proof tests on adjacent production nails or revise the soil nail design or installation methods for the production nails represented by the unacceptable proof test nail as determined by the Engineer. Submit a revised soil nail wall design or construction plan for acceptance, provide an acceptable proof test nail with the revised design or installation methods and install additional production nails for the nails represented by the unacceptable proof test nail.

After completing nail testing for each soil nail wall or stage of a wall, provide a PDF file of all corresponding test nail records.

#### 6.0 MEASUREMENT AND PAYMENT

Soil Nail Retaining Wall will be measured and paid in square feet. Soil nail walls will be measured as the square feet of wall face area with the pay height equal to the difference between top of wall and top of leveling pad elevations. Define "top of wall" as top of concrete facing.

The contract unit price for *Soil Nail Retaining Wall* will be full compensation for providing designs, submittals, labor, tools, equipment and soil nail wall materials, excavating, hauling and removing excavated materials, installing soil nails, grouting, shotcreting and supplying wall drainage systems, leveling pads, concrete facing and any incidentals necessary to construct soil nail walls. The contract unit price for *Soil Nail Retaining Walls* will also be full compensation for brick veneers, if required. No additional payment will be made and no extension of completion date or time will be allowed for repairing property damage, overexcavations or unstable excavations, unacceptable test nails or thicker shotcrete or concrete facing.

The contract unit price for *Soil Nail Retaining Wall* does not include the cost for ditches, fences, handrails, barrier or guardrail associated with soil nail walls as these items will be paid for elsewhere in the contract.

Soil Nail Verification Tests and Soil Nail Proof Tests will be measured and paid in units of each. Soil nail testing will be measured as the number of initial verification or proof tests performed. The contract unit prices for Soil Nail Verification Tests and Soil Nail Proof Tests will be full compensation for initial nail testing. No payment will be made for subsequent nail testing performed on the same or replacement test nails.

Payment will be made under:

# Pay Item

Soil Nail Retaining Wall Soil Nail Verification Tests Soil Nail Proof Tests



Pay Unit Square Foot Each Each

### SIMULATED STONE FORM LINER FINISH

(SPECIAL)

### 1.0 GENERAL

The work covered by this special provision consists of constructing textured surfaces on formed reinforced concrete surfaces as indicated on the Plans and in this Special Provision. The Contractor shall furnish all materials, labor, equipment, and incidentals necessary for the construction of architectural concrete surface treatment using simulated stone masonry form liners (molds) and a compatible concrete coloring system.

The architectural concrete surface treatment should match the appearance (stone size and shape, stone color, and stone texture, pattern, and relief) of natural stone and rock, in the project vicinity, or as directed by the Engineer. Grout pattern joints (mortar joints) and bed thickness should re-create the appearance and color of natural stone on the cast-in-place and/or precast concrete panels for the Soil Nail Wall No. 1 as indicated in the Plans, this Special Provision, or as directed by the Engineer.

### 2.0 SUBMITTALS

**Shop Drawings** - The Contractor shall submit for review and acceptance, plan and elevation views and details showing overall simulated stone pattern, joint locations, form tie locations, and end, edge or other special conditions. The drawings should include typical cross sections of applicable surfaces, joints, corners, stone relief, stone size, pitch/working line, mortar joint and bed depths. If necessary, the Contractor shall revise the shop drawings until the proposed form liner patterns and arrangement have been accepted by the Engineer. Shop drawings should be of sufficient scale to show the detail of all stone and joints patterns. The size of the sheets used for the shop drawings shall be 22" x 34".

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. Special attention should be given to details for wrapping form liners around corners.

Shop drawings shall be reviewed and accepted prior to fabrication of form liners.

Sample Panels – After the shop drawings have been reviewed and accepted by the Engineer, the Contractor shall construct 24" x 24" transportable sample panel(s) at the project site. The materials used in construction of the sample panel(s) shall comply with section 420 of the Standard Specifications. The sample panel(s) shall be constructed using approved form liners. Sample panels will be required for each different form liner pattern that is to be used on the project. Any sample panel that is not accepted by the Engineer is to be removed from the project site and a new sample panel produced at no additional expense to the Department.

Architectural surface treatments and patterns of the finished work shall achieve the same final effect as demonstrated on the accepted sample panel(s). Upon acceptance by the Engineer, the sample panel(s) shall be used as the quality standard for the project. After

the acceptance of the completed structure, the Contractor shall dispose of the sample panels as directed by the Engineer.

# 3.0 MATERIAL REQUIREMENTS

Form Liner – 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 ½" when concrete is poured at a rate of 10 vertical feet (3 vertical meters) per hour. The form liners shall be removable without causing deterioration of the surface or underlying concrete.

The Contractor is required to use the same source of form liner for all required elements. The architectural concrete surface treatment should match the appearance (stone size and shape, stone texture, pattern and relief) of dry stacked natural stone to resemble a pattern similar to the #1203 New England Drystack by Custom Rock, as shown below.



All texture is to be in addition to the nominal thickness of each element within tolerances. Relief of any texture is to have a minimum depth of  $\frac{1}{2}$ " and not a maximum depth of  $1\frac{1}{2}$ ".

The form liners are to be patterned as referenced above and as directed by the Engineer.

The Contractor may choose one of the following manufactures to supply the stone-textured surface treatment as specified above. One form liner pattern will be used on this project.

Hunt Valley Distributors, LLC 3705 Crondall Lane Owings Mills, MD 21117 410.356.9677

Custom Rock International

1156 Homer Street St. Paul, Minnesota 55116 800.637.2447

Fitzgerald Prime Form and Construction Supply Company 1341 East Pomona Street
Santa Ana, California 92705
714.547.6710
Fax 714.547.7958

Greenstreak Plastics 3400 Tree Court Industrial Boulevard St. Louis, Missouri 63112 314.225.9400 / 800.325.9504 Fax 800.551.5145

Symons Corporation 200 East Touhy Avenue Des Plaines, Illinois 60018 847.296.3200 Fax 847.635.9287

Form Release Agent – Form release agent shall be a nonstaining petroleum distillate free from water, asphaltic, and other insoluble residue, or an equivalent product. Form release agents shall be compatible with the color system applied and any special surface finish.

**Form Ties** - Form ties shall be set back a minimum of 2" from the finished concrete surface. The ties shall be designed so that all material in the device to a depth of at least 2" back of the concrete face (bottom of simulated mortar groove) can be disengaged and removed without spalling or damaging the concrete. The Contractor shall submit the type of form ties to the Engineer for approval.

Concrete color system/stain – The final coloration of the wall is to be dark gray in color and is to be approved by the Engineer prior to application.

Color stains shall be a special penetrating stain mix as provided by the manufacturer and shall be in multiple colors of gray, brown, white, and black to achieve a full, natural color variation in the finished surface. The stain shall create a surface finish that is breathable (allowing water vapor transmission), and that resists deterioration from water, acid, alkali, fungi, sunlight, or weathering. Stain mix shall meet the requirements for mildew resistance of Federal Test Method Standard 144, Method 6271, and requirements for weathering resistance of 1.000 hours accelerated exposure measures by Weatherometer in accordance with ASTM G 26. Color samples must be submitted for approval. Concrete stains shall be supplied by one of the following or as approved by the Engineer.

Sherwin Williams H & C Shield Plus 101 Prospect Ave., NW Cleveland, OH 44115

Canyon Tone Stain United Coatings E 1901 Cataldo Green Acres, Washington 90016

Cementrate Acrylic Stain Fosroc, Inc. 55 Skyline Drive Plainview, New York 11803

Hydroshield Stain Robson-Downes Associates, Inc. Oxford, Maryland 21654

Quality Standards - Manufacturer of simulated stone masonry form liners and custom coloring system shall have at least five years experience making stone masonry molds and color stains to create formed concrete surfaces to match natural stone shapes, surface textures and colors. The Contractor shall schedule a pre-installation conference with manufacturer representative and the Engineer to assure understanding of simulated stone masonry form liner use, color application, requirements for construction of sample panel(s), and to coordinate the work. The Contractor shall be required to disclose their source of simulated stone masonry manufacturer and final coloration contractor at the Preconstruction Conference.

# 4.0 CONSTRUCTION

# Simulated Stone Form Liner System and Surface Finish

The Contractor shall demonstrate his workmanship by first constructing a sample panel of the simulated stone masonry form liner pattern and coloration. The sample panel shall be constructed on site a minimum of six weeks prior to the construction of the walls. The sample panel shall measure 3' height by 5' length by 8" thick and shall be unreinforced, vertically cast, and of concrete construction to determine the surface texture resulting from the use of form liners. Sample panels shall be cast, finished, and stained until approved by the Engineer. The approved sample panel shall remain on site as the basis for comparison for work constructed on the project. The architectural surface treatment and pattern of the finished work shall achieve the same final effect as demonstrated on the approved sample panel. Upon completion of all work, the panel shall be removed from the site.

The simulated stone form liners are to be capable of withstanding anticipated concrete pour pressures without leakage or without causing physical or visual defects. The simulated stone form liners are to be removable without causing concrete surface deterioration or weakness in the substrate. Form release agents, form stripping methods, patching

materials, as well as related construction are to be in accordance with the manufacturer's recommendations or as directed by the Engineer.

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.

The Contractor shall submit the type of form ties to be used in this construction to the Engineer for approval prior to use. Form tie holes shall be finished in accordance with standard concreting practices and shall be acceptable to the Engineer. All patching material shall exactly match the color and appearance of the poured concrete surface.

Concrete surfaces shall be clean, free of laitance, dirt, dust, grease, efflorescence, paint, or other foreign material, following manufacturer's specifications for surface preparation prior to application of color stain. The surface area shall also be free of blemishes, discolorations, surface voids, and unnatural form marks. The Contractor is advised that sandblasting will not be allowed for cleaning concrete surfaces. Pressure washing for removal of laitance shall be used.

The contractor shall provide a Color Application Artist who is trained in the special techniques to achieve realistic surface appearances, if requested by the Engineer. To avoid contaminating or damaging the wall surfaces, color stain application shall be scheduled when all concrete work is completed, the concrete has cured a minimum of 28 days, the surface has been determined to be acceptable for coloring, and after adjacent earthwork is complete. The Contractor is to coordinate coloring applications without interference from other work. The Contractor is required to apply coloring to an appropriate test area of 50 square feet and as designated by the Engineer, which will serve as a quality standard for the remaining surface to be colored. Upon approval of the test area by the Engineer, the remaining surfaces may be colored. Stains shall be applied when ambient air temperatures are in accordance with manufacturer's specifications or as directed by the Engineer. The number of coats of stain applied shall be in accordance with manufacturer's specifications or as directed by the Engineer. Treated surfaces located adjacent to exposed soil or pavement shall be temporarily covered to prevent dirt or soil splatter from rain.

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.

**Experience and Qualifications** - The Contractor shall have a minimum of three consecutive years of experience in architectural concrete surface treatment construction on similar types of projects. The Contractor shall furnish to the Engineer 5 references who were responsible for supervision of similar projects and will testify to the successful completion of these projects. Include name, address, telephone number, and specific type of application.

# 5.0 MEASUREMENT AND PAYMENT

This work will not be measured for payment, but shall be included in the per square foot or linear foot bid price for the pertinent walls as shown on plans. Payment will include the furnishing and use of all form liners, coloring stains, the construction, finishing, and removal of all sample panels, and all equipment, materials, labor, and incidentals necessary to complete the work in conformance with the Contract Documents.



### **STANDARD SHORING:**

(10-19-21)

# **Description**

Standard shoring includes standard temporary shoring and standard temporary mechanically stabilized earth (MSE) walls. At the Contractor's option, use standard shoring as noted in the plans or as directed. When using standard shoring, a temporary shoring design submittal is not required. Construct standard shoring based on actual elevations and shoring dimensions in accordance with the contract and Geotechnical Standard Detail No. 1801.01 or 1801.02.

Define "standard temporary shoring" as cantilever shoring that meets the standard temporary shoring detail (Geotechnical Standard Detail No. 1801.01). Define "standard temporary wall" as a temporary MSE wall with geotextile or geogrid reinforcement that meets the standard temporary wall detail (Geotechnical Standard Detail No. 1801.02). Define "standard temporary geotextile wall" as a standard temporary wall with geotextile reinforcement and "standard temporary geogrid wall" as a standard temporary wall with geogrid reinforcement.

Provide positive protection for standard shoring at locations shown in the plans and as directed. See *Temporary Shoring* provision for positive protection types and definitions.

#### **Materials**

Refer to the Standard Specifications.

Item	Section
Concrete Barrier Materials	1170-2
Flowable Fill, Excavatable	1000-6
Geosynthetics	1056
Grout, Type 1	1003
Portland Cement Concrete, Class A	1000
Select Materials	1016
Steel Beam Guardrail Materials	862-2
Steel Sheet Piles and H-Piles	1084
Untreated Timber	1082-2
Welded Wire Reinforcement	1070-3

Provide Type 6 material certifications for shoring materials. Use Class IV select material for temporary guardrail. Use Class A concrete that meets Article 450-2 of the *Standard Specifications* or Type 1 grout for drilled-in piles.

Based on actual shoring height, positive protection, groundwater elevation, slope or surcharge case and traffic impact at each standard temporary shoring location, use sheet piles with the minimum required section modulus or H-piles with the sizes shown in Geotechnical Standard Detail No. 1801.01. Use untreated timber with a thickness of at least 3" and a bending stress of at least 1,000 psi for timber lagging.

# (A) Shoring Backfill

Use Class II, Type 1, Class III, Class V or Class VI select material or material that meets AASHTO M 145 for soil classification A-2-4 with a maximum PI of 6 for shoring backfill except do not use the following:

(1) A-2-4 soil for backfill around culverts,

- (2) A-2-4 soil in the reinforced zone of standard temporary walls with a back slope and
- (3) Class VI select material in the reinforced zone of standard temporary geotextile walls.

# (B) Standard Temporary Walls

Use welded wire reinforcement for welded wire facing, struts and wires with the dimensions and minimum wire sizes shown in Geotechnical Standard Detail No. 1801.02. Provide Type 2 geotextile for separation and retention geotextiles. Do not use more than 4 different reinforcement strengths for each standard temporary wall.

### (1) Geotextile Reinforcement

Provide Type 5 geotextile for geotextile reinforcement with a mass per unit area of at least 8 oz/sy in accordance with ASTM D5261. Based on actual wall height, groundwater elevation, slope or surcharge case and shoring backfill to be used in the reinforced zone at each standard temporary geotextile wall location, provide geotextiles with ultimate tensile strengths as shown in Geotechnical Standard Detail No. 1801.02.

# (2) Geogrid Reinforcement

Use geogrids for geogrid reinforcement with a roll width of at least 4 ft and an "approved" status code in accordance with the NCDOT Geosynthetic Reinforcement Evaluation Program. The list of approved geogrids is available from:

# connect.ncdot.gov/resources/Geological/Pages/Products.aspx

Based on actual wall height, groundwater or flood elevation, slope or surcharge case and shoring backfill to be used in the reinforced zone at each standard temporary geogrid wall location, provide geogrids for geogrid reinforcement with short-term design strengths as shown in Geotechnical Standard Detail No. 1801.02. Geogrids are approved for short-term design strengths (3-year design life) in the machine direction (MD) and cross-machine direction (CD) based on material type. Define material type from the website above for shoring backfill as follows:

Material Type	Shoring Backfill
Borrow	A-2-4 Soil
Fine Aggregate	Class II, Type 1 or Class III Select Material
Coarse Aggregate	Class V or VI Select Material

### **Preconstruction Requirements**

# (A) Concrete Barrier

Define "clear distance" behind concrete barrier as the horizontal distance between the barrier and edge of pavement. The minimum required clear distance for concrete barrier is shown in the plans. At the Contractor's option or if the minimum required clear distance is not available, set concrete barrier next to and up against traffic side of standard shoring except for barrier above standard temporary walls. Concrete barrier with the minimum required clear distance is required above standard temporary walls.

# (B) Temporary Guardrail

Define "clear distance" behind temporary guardrail as the horizontal distance between guardrail posts and standard shoring. At the Contractor's option or if clear distance for standard temporary shoring is less than 4 ft, attach guardrail to traffic side of shoring as shown in the plans. Place ABC in clear distance and around guardrail posts instead of pavement. Do not use temporary guardrail above standard temporary walls.

# (C) Standard Shoring Selection Forms

Before beginning standard shoring construction, survey existing ground elevations in the vicinity of standard shoring locations to determine actual shoring or wall heights (H). Submit a standard shoring selection form for each location at least 7 days before starting standard shoring construction. Standard shoring selection forms are available from: <a href="mailto:connect.ncdot.gov/resources/Geological/Pages/Geotech\_Forms\_Details.aspx">connect.ncdot.gov/resources/Geological/Pages/Geotech\_Forms\_Details.aspx</a>

#### **Construction Methods**

Construct standard shoring in accordance with the *Temporary Shoring* provision.

# (A) Standard Temporary Shoring Installation

Based on actual shoring height, positive protection, groundwater elevation, slope or surcharge case and traffic impact at each standard temporary shoring location, install piles with the minimum required embedment and extension for each shoring section in accordance with Geotechnical Standard Detail No. 1801.01. For concrete barrier above and next to standard temporary shoring and temporary guardrail above and attached to standard temporary shoring, use "surcharge case with traffic impact" in accordance with Geotechnical Standard Detail No. 1801.01. Otherwise, use "slope or surcharge case with no traffic impact" in accordance with Geotechnical Standard Detail No. 1801.01. If refusal is reached before driven piles attain the minimum required embedment, use drilled-in H-piles with timber lagging for standard temporary shoring.

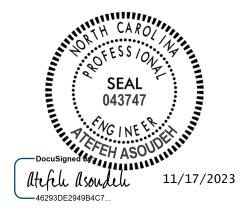
# (B) Standard Temporary Walls Installation

Based on actual wall height, groundwater elevation, slope or surcharge case, geotextile or geogrid reinforcement and shoring backfill in the reinforced zone at each standard temporary wall location, construct walls with the minimum required reinforcement length and number of reinforcement layers for each wall section in accordance with Geotechnical Standard Detail No. 1801.02. For standard temporary walls with pile foundations in the reinforced zone, drive piles through reinforcement after constructing temporary walls.

For standard temporary walls with interior angles less than 90°, wrap geosynthetics at acute corners as directed by the Engineer. Place geosynthetics as shown in Geotechnical Standard Detail No. 1801.02. Place separation geotextiles between shoring backfill and backfill, natural ground or culverts along the sides of the reinforced zone perpendicular to the wall face. For Class V or VI select material in the reinforced zone, place separation geotextiles between shoring backfill and backfill or natural ground on top of and at the back of the reinforced zone.

# **Measurement and Payment**

Standard shoring will be measured and paid in accordance with the *Temporary Shoring* provision.



### **TEMPORARY SOIL NAIL WALLS:**

(10-19-21)

# **Description**

Construct temporary soil nail walls consisting of soil nails spaced at a regular pattern and connected to a reinforced shotcrete face. A soil nail consists of a solid or hollow steel bar grouted in a drilled hole inclined at an angle below horizontal. At the Contractor's option, use temporary soil nail walls instead of temporary shoring for full cut sections. Design and construct temporary soil nail walls based on actual elevations and wall dimensions in accordance with the contract and accepted submittals. Use a prequalified Anchored Wall Contractor to construct temporary soil nail walls. Define "soil nail wall" as a temporary soil nail wall and "Soil Nail Wall Contractor" as the Anchored Wall Contractor installing soil nails and applying shotcrete. Define "nail" as a soil nail.

Provide positive protection for soil nail walls at locations shown in the plans and as directed. See *Temporary Shoring* provision for positive protection types and definitions.

### **Materials**

Refer to Division 10 of the Standard Specifications.

Item	Section
Geocomposites	1056
Portland Cement	1024-1
Reinforcing Steel	1070
Shotcrete	1002
Select Material, Class IV	1016
Steel Plates	1072-2
Water	1024-4

Use neat cement grout that only contains cement and water with a water cement ratio of 0.4 to 0.5 which is approximately 5.5 gallons of water per 94 lb of Portland cement. Provide grout with a compressive strength at 3 and 28 days of at least 1,500 psi and 4,000 psi, respectively.

Use Class IV select material for temporary guardrail. Provide soil nails consisting of grouted steel bars and nail head assemblies. Use deformed solid steel bars that meet AASHTO M 275 or M 31, Grade 60, 75 or 80. Splice solid bars in accordance with Article 1070-9 of the *Standard Specifications*. Use hollow steel bars manufactured by DYWIDAG-Systems International USA Inc., Nucor Skyline, Williams Form Engineering Corp. or an approved equal.

Use centralizers that meet Article 34.3.4 of the AASHTO LRFD Bridge Construction Specifications. Provide nail head assemblies consisting of nuts, washers and bearing plates. Use steel plates for bearing plates and steel washers and hex nuts recommended by the Soil Nail Manufacturer.

Provide Type 6 material certifications for soil nail materials in accordance with Article 106-3 of the *Standard Specifications*. Store steel materials on blocking at least 12" above the ground and protect it at all times from damage; and when placing in the work make sure it is free from dirt, dust, loose mill scale, loose rust, paint, oil or other foreign materials. Load, transport, unload and store soil nail wall materials so materials are kept clean and free of damage. Bent, damaged or defective materials will be rejected.

# **Preconstruction Requirements**

# (A) Concrete Barrier

Define "clear distance" behind concrete barrier as the horizontal distance between the barrier and edge of pavement. The minimum required clear distance for concrete barrier is shown in the plans. At the Contractor's option or if the minimum required clear distance is not available, set concrete barrier next to and up against traffic side of soil nail walls except for barrier above walls. Concrete barrier with the minimum required clear distance is required above soil nail walls.

# (B) Temporary Guardrail

Define "clear distance" behind temporary guardrail as the horizontal distance between guardrail posts and soil nail walls. At the Contractor's option or if clear distance for soil nail walls is less than 4 ft, use temporary guardrail with 8 ft posts and a clear distance of at least 2.5 ft. Place ABC in clear distance and around guardrail posts instead of pavement.

# (C) Soil Nail Wall Designs

Before beginning soil nail wall design, survey existing ground elevations in the vicinity of wall locations to determine actual design heights (H). Use a prequalified Anchored Wall Design Consultant to design soil nail walls. Provide designs sealed by a Design Engineer approved as a Geotechnical Engineer (key person) for the Anchored Wall Design Consultant.

Design soil nail walls in accordance with the plans and the AASHTO LRFD Bridge Design Specifications unless otherwise required. Design soil nails that meet the following unless otherwise approved:

- (1) Horizontal and vertical spacing of at least 3 ft,
- (2) Inclination of at least 12° below horizontal and
- (3) Diameter of 4" to 10".

Do not extend nails beyond right-of-way or easement limits. If existing or future obstructions such as foundations, pavements, pipes, inlets or utilities will interfere with nails, maintain a clearance of at least 6" between obstructions and nails.

Design soil nail walls for a traffic surcharge of 250 psf if traffic will be above and within H of walls. This traffic surcharge does not apply to construction traffic. Design soil nail walls for any construction surcharge if construction traffic will be above and within H of walls. For temporary guardrail with 8 ft posts above soil nail walls, analyze shotcrete and top row of nails for a nominal horizontal load of 300 lb/ft of wall with a load factor of 1.0.

Place geocomposite sheet drains with a horizontal spacing of no more than 10 ft and center drains between adjacent nails. Attach sheet drains to excavation faces. Design shotcrete in accordance with Article 11.12.6.2 of the AASHTO LRFD Bridge Design Specifications.

Submit PDF files of working drawings and design calculations for soil nail wall designs

in accordance with Article 105-2 of the *Standard Specifications*. Submit working drawings showing plan views, wall profiles, typical sections and details of soil nail wall design and construction sequence. Include details in working drawings of soil nail locations, unit grout/ground bond strengths, shotcrete reinforcement and if necessary, obstructions extending through walls or interfering with nails. Include details in construction sequence of excavation, grouting, installing reinforcement, nail testing and shotcreting with mix designs and shotcrete nozzleman certifications. Do not begin soil nail wall construction until a design submittal is accepted.

Submit design calculations for each wall section with different surcharge loads, geometry or material parameters. Include analysis of temporary conditions during construction in design calculations. At least one analysis is required for each wall section with different nail lengths. Analyze internal and compound stability with a computer software program that uses limit equilibrium methods and submit all PDF output files from the program with the design calculations. See Article C11.12.2 of the AASHTO LRFD specifications for determining the maximum soil nail force, T<sub>maxsn</sub>. Once T<sub>maxsn</sub> and pullout length behind slip surface, L<sub>P</sub>, are determined from limit equilibrium methods at the target soil failure resistance factor (1 over factor of safety output from computer software), use these values for soil nail (pullout and tensile resistance) and wall facing (flexure, punching shear and headed-stud tensile resistance) design in accordance with Articles 11.12.5.2, 11.12.6.1 and 11.12.6.2 of the AASHTO LRFD specifications.

- (1) When designing soil nail walls with computer software Snail manufactured by the California Department of Transportation (CALTRANS), use Snail version 2.2.0 or later, to calculate factors of safety and T<sub>maxsn</sub> and L<sub>P</sub> values in accordance with the following: Allowable Stress Design for Analysis Method with no load factors applied except those applied to factored surcharge loads from structures or traffic,
- (2) Perform Below Toe Search option selected when any soil layer has a friction angle less than 30° and
- (3) Default value of 0.33 for Interface Friction Reduction Factor.

When designing soil nail walls with computer software other than Snail, use bi-linear (or tri-linear, as applicable) search surfaces intended to reproduce Snail results. Factors of safety and  $T_{maxsn}$  and  $L_P$  values are acceptable if they are within 5% of the factors of safety and  $T_{maxsn}$  and  $L_P$  values calculated by the Engineer using the computer software Slide2 manufactured by Rocscience, Inc.

# (D) Preconstruction Meeting

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

#### **Construction Methods**

Control drainage during construction in the vicinity of soil nail walls. Direct run off away from soil nail walls and areas above and behind walls.

Install foundations located behind soil nail walls before beginning wall construction. Do not excavate behind soil nail walls. If overexcavation occurs, repair walls with an approved method and a revised soil nail wall design may be required.

Install positive protection in accordance with the contract and accepted submittals. Use PCB in accordance with Section 1170 of the *Standard Specifications* and Roadway Standard Drawing No. 1170.01. Use temporary guardrail in accordance with Section 862 of the *Standard Specifications* and Roadway Standard Drawing No. 862.01, 862.02 and 862.03.

# (A) Excavation

Excavate for soil nail walls from the top down in accordance with the accepted submittals. Excavate in staged horizontal lifts with no negative batter (excavation face leaning forward). Excavate lifts in accordance with the following:

- (1) Heights not to exceed vertical nail spacing,
- (2) Bottom of lifts no more than 3 ft below nail locations for current lift and
- (3) Horizontal and vertical alignment within 6" of location shown in the accepted submittals.

Remove any cobbles, boulders, rubble or debris that will protrude more than 2" into the required shotcrete thickness. Rocky ground such as colluvium, boulder fills and weathered rock may be difficult to excavate without leaving voids.

Apply shotcrete to excavation faces within 24 hours of excavating each lift unless otherwise approved. Shotcreting may be delayed if it can be demonstrated that delays will not adversely affect excavation stability. If excavation faces will be exposed for more than 24 hours, use polyethylene sheets anchored at top and bottom of lifts to protect excavation faces from changes in moisture content.

If an excavation becomes unstable at any time, suspend soil nail wall construction and temporarily stabilize the excavation by immediately placing an earth berm up against the unstable excavation face. When this occurs, repair walls with an approved method and a revised soil nail wall design may be required.

Do not excavate the next lift until nail installations and testing and shotcrete application for the current lift are accepted and grout and shotcrete for the current lift have cured at least 3 days and 1 day, respectively.

# (B) Soil Nails

Drill and grout nails the same day and do not leave drill holes open overnight. Control drilling and grouting to prevent excessive ground movements, damaging structures and pavements or fracturing rock and soil formations. If ground heave or subsidence occurs, suspend soil nail wall construction and take corrective action to minimize movement. If property damage occurs, make repairs with an approved method and a revised soil nail wall design may be required.

The drilling, steel bar and grouting requirements below are for solid bar nails and may not apply to hollow bar nails. Hollow bar nails are typically installed by simultaneously drilling and grouting as a sacrificial drill bit is advanced and grout is pumped through the bar. For hollow bar nails, submit drilling and grouting procedures for approval before installing soil nails.

# (1) Drilling

Use drill rigs of the sizes necessary to install soil nails and with sufficient capacity to drill through whatever materials are encountered. Drill straight and clean holes with the dimensions and inclination shown in the accepted submittals. Drill holes within 6" of locations and 2° of inclination shown in the accepted submittals unless otherwise approved.

Stabilize drill holes with temporary casings if unstable, caving or sloughing material is anticipated or encountered. Do not use drilling fluids to stabilize drill holes or remove cuttings.

# (2) Steel Bars

Center solid steel bars in drill holes with centralizers. Securely attach centralizers along bars at no more than 8 ft centers. Attach uppermost and lowermost centralizers 18" from excavation faces and ends of holes.

Do not insert solid steel bars into drill holes until hole locations, dimensions, inclination and cleanliness are approved. Do not vibrate, drive or otherwise force bars into holes. If a steel bar cannot be completely and easily inserted into a drill hole, remove the bar and clean or redrill the hole.

# (3) Grouting

Mix and place grout in accordance with Subarticles 1003-5, 1003-6 and 1003-7 of the *Standard Specifications*. Remove oil, rust inhibitors, residual drilling fluids and similar foreign materials from holding tanks/hoppers, stirring devices, pumps, lines, tremie pipes and any other equipment in contact with grout before use. Measure grout temperature, density and flow during grouting with at least the same frequency grout cubes are made for compressive strength. Perform density and flow field tests in the presence of the Engineer in accordance with American National Standards Institute/American Petroleum Institute Recommended Practice 13B-1 (Section 4, Mud Balance) and ASTM C939 (Flow Cone), respectively.

Inject grout at the lowest point of drill holes through tremies, e.g., grout tubes, casings, hollow-stem augers or drill rods, in one continuous operation. Fill drill holes progressively from ends of holes to excavation faces and withdraw tremies at a slow even rate as holes are filled to prevent voids in grout. Extend tremies into grout at least 5 ft at all times except when grout is initially placed in holes.

Provide grout free of segregation, intrusions, contamination, structural damage or inadequate consolidation (honeycombing). Cold joints in grout are not allowed except for test nails. Remove any temporary casings as grout is placed and record grout volume for each drill hole.

# (4) Nail Heads

Install nail head assemblies after shotcreting. Before shotcrete reaches initial set, seat bearing plates and tighten nuts so plates contact shotcrete uniformly. If uniform contact is not possible, install nail head assemblies on mortar pads so nail heads are evenly loaded.

# (C) Sheet Drains

Install geocomposite sheet drains as shown in the accepted submittals. Before installing shotcrete reinforcement, place sheet drains with the geotextile side against excavation faces. For highly irregular faces and at the discretion of the Engineer, sheet drains may be placed after shotcreting over weep holes through the shotcrete. Hold sheet drains in place with anchor pins so drains are in continuous contact with surfaces to which they are attached and allow for full flow the entire height of soil nail walls. Discontinuous sheet drains are not allowed. If splices are needed, overlap sheet drains at least 12" so flow is not impeded. Cut off excess sheet drain length and expose drain ends below shotcrete when soil nail wall construction is complete.

# (D) Shotcrete

Clean ungrouted zones of drill holes and excavation faces of loose materials, mud, rebound and other foreign material. Moisten surfaces to receive shotcrete. Install shotcrete reinforcement in accordance with the contract and accepted submittals. Secure reinforcing steel so shooting does not displace or vibrate reinforcement. Install approved thickness gauges on 5 ft centers in the horizontal and vertical directions to measure shotcrete thickness.

Apply shotcrete in accordance with the contract, accepted submittals and Subarticle 1002-3(F) of the *Standard Specifications*. Use approved shotcrete nozzlemen who made satisfactory preconstruction test panels to apply shotcrete. Direct shotcrete at right angles to excavation faces except when shooting around reinforcing steel. Rotate nozzle steadily in small circular patterns and apply shotcrete from bottom of lifts up.

Make shotcrete surfaces uniform and free of sloughing or sagging. Completely fill ungrouted zones of drill holes and any other voids with shotcrete. Taper construction joints to a thin edge over a horizontal distance of at least the shotcrete thickness. Wet joint surfaces before shooting adjacent sections.

Repair surface defects as soon as possible after shooting. Remove any shotcrete which lacks uniformity, exhibits segregation, honeycombing or lamination or contains any voids or sand pockets and replace with fresh shotcrete to the satisfaction of the Engineer. Protect shotcrete from freezing and rain until shotcrete reaches initial set.

# (E) Construction Records

Provide 2 copies of soil nail wall construction records within 24 hours of completing each lift. Include the following in construction records:

- (1) Names of Soil Nail Wall Contractor, Superintendent, Nozzleman, Drill Rig Operator, Project Manager and Design Engineer;
- (2) Wall description, county, Department's contract, TIP and WBS element number;

- (3) Wall station and number and lift location, dimensions, elevations and description;
- (4) Nail locations, dimensions and inclinations, bar types, sizes and grades and temporary casing information;
- (5) Date and time drilling begins and ends, steel bars are inserted into drill holes, grout and shotcrete are mixed and arrives on-site and grout placement and shotcrete application begins and ends;
- (6) Grout volume, temperature, flow and density records;
- (7) Ground and surface water conditions and elevations if applicable;
- (8) Weather conditions including air temperature at time of grout placement and shotcrete application; and
- (9) All other pertinent details related to soil nail wall construction.

After completing each soil nail wall or stage of a wall, provide a PDF file of all corresponding construction records.

### **Nail Testing**

"Proof tests" are performed on nails incorporated into walls, i.e., production nails. Define "test nail" as a nail tested with a proof test. Proof tests are typically required for at least one nail per nail row per soil nail wall or at least 5% of production nails, whichever is greater. More or less test nails may be required depending on subsurface conditions encountered. The Engineer will determine the number and locations of proof tests required. Do not test nails until grout and shotcrete attain the required 3-day compressive strength.

# (A) Test Equipment

Use the following equipment to test nails:

- (1) Two dial gauges with rigid supports,
- (2) Hydraulic jack and pressure gauge and
- (3) Jacking block or reaction frame.

Provide dial gauges with enough range and precision to measure the maximum test nail movement to 0.001". Use pressure gauges graduated in 100 psi increments or less. Submit identification numbers and calibration records for load cells, jacks and pressure gauges with the soil nail wall design. Calibrate each jack and pressure gauge as a unit.

Align test equipment to uniformly and evenly load test nails. Use a jacking block or reaction frame that does not damage or contact shotcrete within 3 ft of nail heads. Place dial gauges opposite each other on either side of test nails and align gauges within 5° of bar inclinations. Set up test equipment so resetting or repositioning equipment during nail testing is not needed.

# (B) Test Nails

Test nails include both unbonded and bond lengths. Grout only bond lengths before nail testing. Provide unbonded and bond lengths of at least 3 ft and 10 ft, respectively.

Steel bars for production nails may be overstressed under higher test nail loads. If

necessary, use larger size or higher grade bars with more capacity for test nails instead of shortening bond lengths to less than the minimum required.

# (C) Proof Tests

Test proof test nails in accordance with the accepted submittals and Article 34.5.5.3, respectively of the AASHTO LRFD Bridge Construction Specifications.

# (D) Test Nail Acceptance

Submit 2 copies of test nail records including load versus movement and time versus creep movement plots within 24 hours of completing each proof test. The Engineer will review the test nail records to determine if test nails are acceptable. Test nail acceptance is based in part on the acceptance criteria in Article 34.5.5.4 of the AASHTO LRFD Bridge Construction Specifications.

Maintain stability of unbonded lengths for subsequent grouting. If a test nail is accepted but the unbonded length cannot be satisfactorily grouted, do not incorporate the test nail into the soil nail wall and add another production nail to replace the test nail.

If the Engineer determines a test nail is unacceptable, either perform additional proof tests on adjacent production nails or revise the soil nail design or installation methods for the production nails represented by the unacceptable test nail as determined by the Engineer. Submit a revised soil nail wall design for acceptance, provide an acceptable test nail with the revised design or installation methods and install additional production nails for the nails represented by the unacceptable test nail.

After completing nail testing for each soil nail wall or stage of a wall, provide a PDF file of all corresponding test nail records.

# **Measurement and Payment**

Temporary soil nail walls will be measured and paid in square feet. Temporary soil nail walls will be paid for at the contract unit price for *Temporary Shoring*. Temporary soil nail walls will be measured as the square feet of exposed wall face area. No measurement will be made for any embedment or pavement thickness above soil nail walls.

The contract unit price for *Temporary Shoring* will be full compensation for providing soil nail wall designs, submittals, labor, tools, equipment and soil nail wall materials, excavating, hauling and removing excavated materials, installing and testing soil nails, grouting, shotcreting and supplying sheet drains and any incidentals necessary to construct soil nail walls. No additional payment will be made and no extension of completion date or time will be allowed for repairing property damage, overexcavations or unstable excavations, unacceptable test nails or thicker shotcrete.

No payment will be made for temporary shoring not shown in the plans or required by the Engineer including shoring for OSHA reasons or the Contractor's convenience. No value engineering proposals will be accepted based solely on revising or eliminating shoring locations shown in the plans or estimated quantities shown in the bid item sheets as a result of actual field measurements or site conditions.

PCB will be measured and paid in accordance with Section 1170 of the *Standard Specifications*. No additional payment will be made for anchoring PCB for soil nail walls. Costs for anchoring

PCB will be incidental to soil nail walls.

Temporary guardrail will be measured and paid for in accordance with Section 862 of the *Standard Specifications*.



#### AGGREGATE SUBGRADE

(SPECIAL)

Revise the 2018 Standard Specifications as follows:

Page 5-8, Article 505-1 DESCRIPTION, lines 4-6, replace the paragraph with the following:

Construct aggregate subgrades in accordance with the contract. Install geotextile for soil stabilization and place Class IV subgrade stabilization at locations shown in the plans and as directed.

Undercut natural soil materials if necessary to construct aggregate subgrades. Define "subbase" as the portion of the roadbed below the Class IV subgrade stabilization. For Type 2 aggregate subgrades, undercut subbases as needed. The types of aggregate subgrade with thickness and compaction requirements for each are as shown below.

**Type 1** – A 6 to 24 inch thick aggregate subgrade with Class IV subgrade stabilization compacted to 92% of AASHTO T 180 as modified by the Department or to the highest density that can be reasonably obtained.

**Type 2** – An 8 inch thick aggregate subgrade on a proof rolled subbase with Class IV subgrade stabilization compacted to 97% of AASHTO T 180 as modified by the Department.

Page 5-8, Article 505-3 CONSTRUCTION METHODS, line 12, insert the following after the first sentence of the first paragraph:

For Type 2 aggregate subgrades, proof roll subbases in accordance with Section 260 before installing geotextile for soil stabilization.

Page 5-8, Article 505-3 CONSTRUCTION METHODS, lines 16-17, replace the last sentence of the first paragraph with the following:

Compact ABC as required for the type of aggregate subgrade constructed.

Page 5-8, Article 505-4 MEASUREMENT AND PAYMENT, line 26, insert the following after the last sentence of the first paragraph:

*Undercut Excavation* of natural soil materials from subbases for Type 2 aggregate subgrades will be measured and paid in accordance with Article 225-7 or 226-3. No measurement will be made for any undercut excavation of fill materials from subbases.



#### **REINFORCED SOIL SLOPES:**

(12-17-19)

# **Description**

Construct reinforced soil slopes (RSS) consisting of select material and geogrid reinforcement in the reinforced zone with erosion control products on slope faces. Slope erosion control includes matting with shoulder and slope borrow or geocells with compost blankets. Construct RSS in accordance with the contract and if included in the plans, Geotechnical Standard Detail No. 1802.01 or 1802.02. RSS are required to reinforce embankments and stabilize slopes at locations shown in the plans and as directed. Define "geogrids" as primary or secondary geogrids and "matting" as coir fiber mats or matting for erosion control. Define "standard RSS" as an RSS that meets either of the standard reinforced soil slope drawings (Geotechnical Standard Detail No. 1802.01 or 1802.02).

#### **Materials**

Refer to Division 10 of the Standard Specifications.

Item	Section
Geogrids	1056
Matting for Erosion Control	1060-8
Select Materials	1016
Shoulder and Slope Borrow	1019-2

Unless required otherwise in the plans, use Class I, II or III select material in the reinforced zone of RSS. Use geocells that meet the *Cellular Confinement Systems* provision, seeded compost blankets that meet the *Compost Blanket* provision and coir fiber mats that meet the *Coir Fiber Mat* provision.

Handle and store geogrids in accordance with Article 1056-2 of the *Standard Specifications*. Define "machine direction" (MD) and "cross-machine direction" (CD) for geogrids per Article 1056-3 of the *Standard Specifications*. Provide Type 1 material certifications and identify geogrids in accordance with Article 1056-3 of the *Standard Specifications*.

Use primary geogrids with a roll width of at least 4 ft and an "approved" status code in accordance with the NCDOT Geosynthetic Reinforcement Evaluation Program. The list of approved geogrids is available from:

connect.ncdot.gov/resources/Geological/Pages/Products.aspx

Provide primary geogrids with design strengths in accordance with the plans. For standard RSS and based on actual RSS angle and height and select material to be used in the reinforced zone at each standard RSS location, provide primary geogrids with long-term design strengths in accordance with Geotechnical Standard Detail No. 1802.01 or 1802.02. Primary geogrids are approved for long-term design strengths for a 75-year design life in the MD based on material type. Define material type from the website above for select material as follows:

Material Type	Select Material
Borrow	Class I Select Material
Fine Aggregate	Class II or III Select Material

For secondary geogrids, provide extruded geogrids produced in the United States and manufactured from punched and drawn polypropylene sheets. Use secondary geogrids with a roll

width of at least 6 ft that meet the following:

Property	Requirement <sup>1</sup>	Test Method
Aperture Dimensions <sup>2</sup>	1" x 1.3"	Direct Measure
Minimum Rib Thickness <sup>2</sup>	0.03" x 0.03"	Direct Measure
Tensile Strength @ 2% Strain <sup>2</sup>	280 lb/ft x 450 lb/ft	A C(T) ( D ( (27
Tensile Strength @ 5% Strain <sup>2</sup>	580 lb/ft x 920 lb/ft	ASTM D6637, Method B
Ultimate Tensile Strength <sup>2</sup>	850 lb/ft x 1,300 lb/ft	Wicthod B
Junction Efficiency <sup>3</sup> (MD)	93%	ASTM D7737
Flexural Rigidity <sup>4</sup>	250,000 mg-cm	ASTM D7748
Aperture Stability Modulus <sup>5</sup>	0.32 lb-ft/degrees	ASTM D7864
UV Resistance (500 hr exposure)	100% retained	ASTM D4355

- **1.** MARV per Article 1056-3 of the *Standard Specifications* except dimensions and thickness are nominal.
- **2.** Requirement for MD x CD.
- 3. Junction Efficiency (%) = (Average Junction Strength ( $X_{jave}$ ) / Ultimate Tensile Strength in the MD from ASTM D6637, Method A) × 100.
- **4.** Test specimens two ribs wide, with transverse ribs cut flush with exterior edges of longitudinal ribs, and sufficiently long to enable measurement of the overhang dimension.
- **5.** Applied moment of 17.7 lb—inch (torque increment).

#### **Construction Methods**

Before starting RSS construction, the Engineer may require a preconstruction meeting to discuss the construction and inspection of the RSS. If this meeting is required and occurs before all RSS submittals and material certifications have been accepted, additional preconstruction meetings may be required before beginning construction of RSS without accepted submittals. The Resident or District Engineer, Area Construction Engineer, Geotechnical Operations Engineer, Contractor and RSS Contractor Superintendent will attend preconstruction meetings.

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

Excavate as necessary for RSS in accordance with the contract. Maintain a horizontal clearance of at least 12" between the ends of primary geogrids and limits of reinforced zone as shown in the plans. When excavating existing slopes, bench slopes in accordance with Subarticle 235-3(A) of the *Standard Specifications*. Notify the Engineer when excavation is complete. Do not place primary geogrids until excavation dimensions and in-situ material are approved.

Place geogrids within 3" of locations shown in the plans. Install geogrids with the orientation, dimensions and number of layers shown in the plans. Before placing select material, pull geogrids taut so they are in tension and free of kinks, folds, wrinkles or creases. Contact the Engineer when existing or future obstructions such as foundations, pavements, pipes, inlets or utilities will interfere with geogrids. If necessary, the top geogrid layer may be lowered up to 9" to avoid

obstructions. Extend geogrids to slope faces.

Install primary geogrids with the MD perpendicular to the embankment centerline. The MD is the direction of the length or long dimension of the geogrid roll. Do not splice or overlap primary geogrids in the MD so splices or overlaps are parallel to toe of RSS. Unless shown otherwise in the plans and except for clearances at the ends of primary geogrids, completely cover select material at each primary geogrid layer with geogrid so primary geogrids are adjacent to each other in the CD, i.e., perpendicular to the MD. The CD is the direction of the width or short dimension of the geogrid roll.

Install secondary geogrids with MD parallel to toe of RSS. Secondary geogrids should be continuous for each secondary geogrid layer. If secondary geogrid roll length is too short, overlap ends of secondary geogrid rolls at least 12" in the direction that select material will be placed to prevent lifting the edge of the top geogrid.

Place select material in the reinforced zone in 8" to 10" thick lifts and compact material in accordance with Subarticle 235-3(C) of the *Standard Specifications*. For RSS steeper than 1.5:1 (H:V), compact slope faces with an approved method. Do not use sheepsfoot, grid rollers or other types of compaction equipment with feet. Do not displace or damage geogrids when placing and compacting select material. End dumping directly on geogrids is not permitted. Do not operate heavy equipment on geogrids until they are covered with at least 8" of select material. To prevent damaging geogrids, minimize turning and avoid sudden braking and sharp turns with compaction equipment. Replace any damaged geogrids to the satisfaction of the Engineer. Construct remaining portions of embankments outside the reinforced zone in accordance with Section 235 of the *Standard Specifications*.

Plate slope faces of RSS with at least 6" of shoulder and slope borrow except when using geocells for slope erosion control. Install slope erosion control as shown in the plans and as soon as possible to prevent damage to slope faces of RSS. If damage occurs, repair RSS and slope faces to the satisfaction of the Engineer before seeding or installing erosion control products. For matting, seed slope faces and cover shoulder and slope borrow with coir fiber mat or matting for erosion control as shown in the plans in accordance with the *Coir Fiber Mat* provision or Section 1631 of the *Standard Specifications*, respectively. Install geocells filled with seeded compost in accordance with the accepted submittals and the *Cellular Confinement Systems* and *Compost Blanket* provisions. Maintain slope erosion control until vegetation is established.

# **Measurement and Payment**

Reinforced Soil Slopes will be measured and paid in square yards. RSS will be measured along the slope faces of RSS before installing slope erosion control as the square yards of RSS. No payment will be made for repairing damaged RSS or slope faces.

The contract unit price for *Reinforced Soil Slopes* will be full compensation for providing labor, tools, equipment and RSS materials, compacting select materials and supplying and placing geogrids, select material, shoulder and slope borrow and any incidentals necessary to construct RSS except for erosion control products. The contract unit price for *Reinforced Soil Slopes* will also be full compensation for excavating and hauling and removing excavated materials to install RSS.

Coir fiber mat and matting for erosion control will be measured and paid in accordance with the *Coir Fiber Mat* provision and Article 1631-4 of the *Standard Specifications*, respectively.

Geocells and seeded compost blankets will be measured and paid in accordance with the *Cellular Confinement Systems* and *Compost Blanket* provisions, respectively.

Payment will be made under:

Pay Item Reinforced Soil Slopes Pay Unit Square Yard



#### **CELLULAR CONFINEMENT SYSTEMS:**

(1-16-18)

# **Description**

Install cellular confinement systems, i.e., geocells on slope faces and fill geocells with seeded compost in accordance with the contract. Geocells are required or an option for slope erosion control to establish vegetation at locations shown in the plans and as directed. Define "tendons" as straps or cords laced through geocells to support the weight and resist sliding of expanded and filled geocells on slope faces.

#### **Materials**

Refer to Division 10 of the Standard Specifications.

Item	Section
PVC Pipes	1044-6
Geocells	1056

Provide geocell accessories (e.g., stakes, anchors, pins, clips, staples, rings, etc.) recommended by the Geocell Manufacturer/Vendor. For tendons, use woven polyester or aramid strapping with widths of either 3/4" or 1" and sufficient break strengths for geocell designs. Provide Type 1, Type 2 or Type 4 material certifications for tendons in accordance with Article 106-3 of the *Standard Specifications*. Use seeded compost blankets that meet the *Compost Blanket* provision.

#### **Preconstruction Requirements**

For geocell designs, submit PDF files of working drawings and design calculations at least 30 days before the preconstruction meeting. Do not start geocell installation until a design submittal is accepted. Provide designs sealed by an engineer licensed in the State of North Carolina and approved by the Geocell Manufacturer/Vendor.

Design cellular confinement systems in accordance with the plans. Design cellular confinement systems for a minimum factor of safety of 1.3 for all failure modes and ground snow loads from Figure 7-1 of the ASCE Minimum Design Load and Associated Criteria for Buildings and Other Structures.

Assume a unit weight of 80 pcf for seeded compost and a friction angle of 28 degrees for the interface between filled geocells and slope faces. For slopes constructed with Class II or III select material, use a friction angle of 34 degrees and a unit weight of 115 pcf for select material. For slopes constructed with Class I select material or borrow, use a friction angle of 30 degrees and a unit weight of 125 pcf for select material or borrow. Assume Class I select material or borrow is saturated and use effective stress for determining passive resistance.

Anchor geocells at tops of slopes by burying ends of geocells behind slope crests or wrapping tendons around PVC pipes buried behind slope crests. Supply driven anchors or stakes as needed to hold geocells in place but do not consider them for design. Use the Ovesen Method to design the anchor slab, i.e., pipe deadman and neglect wall friction. Use a reduction factor of 3.0 for determining tendon rupture and tie tendons with bowline, clove hitch or other approved knots.

Submit working drawings and design calculations for acceptance in accordance with Article 105-2 of the *Standard Specifications*. Submit working drawings showing typical cross sections, plan views with geocell layout, details of the cellular confinement system including all accessories

and a detailed installation procedure. Include details of slope and crest anchorage systems and tendon sizes and locations. Submit stability calculations for each cross section with different surcharge loads, geometry or material parameters. At least one analysis is required for each slope angle with the tallest slope.

Before beginning geocell installation, the Engineer may require a preconstruction meeting to discuss the construction and inspection of the cellular confinement systems. If required, schedule this meeting after all geocell submittals have been accepted. The Resident or District Engineer, Area Construction Engineer, Geotechnical Operations Engineer, Contractor and Geocell Installer Superintendent will attend this preconstruction meeting. If geocells are required for reinforced soil slopes (RSS), the RSS preconstruction meeting may also serve as the geocell preconstruction meeting provided all geocell submittals have been accepted before the meeting and the Geocell Installer Superintendent attends the meeting.

#### **Construction Methods**

Control drainage during construction in the vicinity of RSS and embankments with cellular confinement systems. Direct run off away from slopes and protect slope faces from erosion. Compact slope faces in accordance with the contract. A smooth firm surface free of rocks, clods and debris is required before placing geocells on slopes.

Submit documentation that the Geocell Installer is prequalified by the Geocell Manufacturer/Vendor and has successfully completed at least 2 geocell projects within the last 3 years. Each project should comprise at least 1,000 sy of geocells installed on slopes with angles and heights similar to those for this project.

If the Geocell Installer does not have the required project experience, a Geocell Manufacturer/Vendor representative is required to assist and guide the Geocell Installer on-site for at least 8 hours when the first geocells are placed. If problems are encountered during construction, the Engineer may require the manufacturer/vendor representative to return to the site for a time period determined by the Engineer.

Install cellular confinement systems in accordance with the accepted submittals. Follow installation instructions in the accepted submittals for geocells and all accessories including procedures for installing tendons and anchoring geocells at tops of slopes.

Place seeded compost blankets in accordance with the *Compost Blanket* provision except fill expanded geocells in place with seeded compost to a depth sufficient to cover the geocells. Keep geocells filled and covered with compost and maintain and repair compost blankets per the provision to establish and support vegetation.

#### **Measurement and Payment**

Geocells will be measured and paid in square yards. Cellular confinement systems will be measured along slope faces as the square yards of expanded geocells in place. The contract unit price for *Geocells* will be full compensation for providing designs, submittals, labor, tools and equipment, supplying and installing cellular confinement systems and all accessories including tendons and PVC pipes and any incidentals necessary for geocell installation.

Seeded compost blankets will be measured and paid in accordance with the *Compost Blanket* provision.

Payment will be made under:

**Pay Item** Geocells

Pay Unit Square Yard



# COMPOST BLANKET FOR GEOCELLS: (1-23-18)

### **Description**

This work shall consist of furnishing, installing, maintaining, and seeding a water permeable Compost Blanket for establishment of vegetation in expanded geocells used in reinforced soil slopes.

#### **Materials**

# Compost:

Compost used for Compost Blankets shall be weed free and derived from a well-decomposed source of organic matter. The compost shall be produced using an aerobic composting process meeting CFR 503 regulations, including time and temperature data indicating effective weed seed, pathogen, and insect larvae kill. The compost shall be free of any refuse, contaminants or other materials toxic to plant growth. Non-composted products will not be accepted. Test methods for the items below should follow USCC TMECC guidelines for laboratory procedures:

- 1. pH between 5.0-8.0 in accordance with TMECC 04.11-A, "Electrometric pH Determinations for Compost".
- 2. For seeded Compost Blankets, seed should be incorporated at the time of application in the entire depth of the compost blanket, at rates per foot, per square yard, or per acre, as acceptable to the engineer. The following particle sizes shall also be followed: 100% passing a 2" sieve; 99% passing a 1" sieve; minimum of 60% passing a ½" sieve. All other testing parameters remain the same. The seeding rates are generally similar or slightly higher than those used when considering application of seed via hydroseeding or other seeding methods.
- 3. Moisture content of less than 60% in accordance with standardized test methods for moisture determination.
- 4. Material shall be relatively free (<1% by dry weight) of inert or foreign man made materials.
- 5. A sample shall be submitted to the engineer for approval prior to being used and must comply with all local, state and federal regulations.

# **Construction Methods**

Compost Blankets will be placed with sufficient depth to fill and cover the expanded geocells and as directed. The Compost Blanket shall be seeded at time of installation for establishment of permanent vegetation. The type and rate of seed, fertilizer and lime shall be in accordance with the Seeding and Mulching provisions of this contract and as directed.

#### Maintenance

The Contractor shall perform routine inspections and maintain the Compost Blanket in a functional condition at all times. Where the Compost Blanket fails, it will be routinely repaired. The Compost Blanket will be seeded on site, at rates and seed types as determined by the Engineer. Once vegetation is established, final seeding is not required.

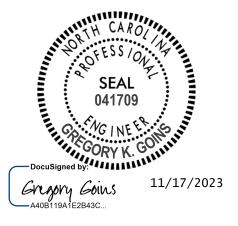
# **Measurement and Payment**

The Contractor shall provide the Engineer with proof that the Compost Blanket has been applied with sufficient depth to cover the geocells after settling. The Contractor shall supply satisfactory evidence that the specified amount of material has been effectively placed by manufacturer's receipt or truck measurement.

Compost Blanket will be measured and paid for as the actual number of cubic yards installed and accepted.

Payment will be made under:

Pay Item
Compost Blanket
Cubic Yard



# PROJECT SPECIAL PROVISIONS GEOENVIRONMENTAL

# **CONTAMINATED SOIL (6/1/2023)**

The Contractor's attention is directed to the fact that soil contaminated with petroleum hydrocarbon compounds may exist within the project area. The suspected areas of contamination are indicated on corresponding plans sheets. Information relating to these potentially contaminated areas, sample locations, and investigation reports will be available at the following web address by navigating to the correct letting year and month then selecting, "Plans and Proposals", "R-5861", "Individual Sheets/520 GeoEnvironmental":

# http://dotw-xfer01.dot.state.nc.us/dsplan/

Petroleum contaminated soil may be encountered during any earthwork activities on the project. The Contractor shall only excavate those soils that the Engineer designates necessary to complete a particular task. The Engineer shall determine if soil is contaminated based on areas shown on the plans, petroleum odors, and unusual soil staining. Contaminated soil not required to be excavated is to remain in place and undisturbed. Undisturbed soil shall remain in place, whether contaminated or not. The Contractor shall transport all contaminated soil excavated from the project to a facility licensed to accept contaminated soil.

In the event that a stockpile is needed, the stockpile shall be created within the property boundaries of the source material and in accordance with the Diagram for Temporary Containment and Treatment of Petroleum-Contaminated Soil per North Carolina Department of Environmental Quality's (NCDEQ) Division of Waste Management UST Section GUIDELINES FOR EX SITU PETROLEUM CONTAMINATED SOIL REMEDIATION. If the volume of contaminated material exceeds available space on site, the Contractor shall obtain a permit from the NCDEQ UST Section's Regional Office for off-site temporary storage. The Contractor shall provide copies of disposal manifests completed per the disposal facilities requirements and weigh tickets to the Engineer.

# **Measurement and Payment:**

The quantity of contaminated soil hauled and disposed of shall be the actual number of tons of material, which has been acceptably transported and weighed with certified scales as documented by disposal manifests and weigh tickets. The quantity of contaminated soil, measured as provided above, shall be paid for at the contract unit price per ton for "Hauling and Disposal of Petroleum Contaminated Soil".

The above price and payment shall be full compensation for all work covered by this section, including, but not limited to stockpiling, loading, transportation, weighing, laboratory testing, disposal, equipment, decontamination of equipment, labor, and personal protective equipment.

Payment shall be made under:

# Pay Item

Hauling and Disposal of Petroleum Contaminated Soil





# 1. RECTANGULAR RAPID FLASHING BEACON SOLAR POWERED DISPLAY AND CONTROLLER ASSEMBLY

#### 1.1. DESCRIPTION

Provide rectangular rapid flashing beacon (RRFB) that is solar powered and pedestrian activated. Ensure the RRFB consist of two rapidly flashing rectangular-shaped yellow indications, solar panel, battery, controller assembly and all necessary hardware. Ensure multiple RRFB units at a given crosswalk are synchronized.

Ensure the RRFB meets the physical display and operational requirements in the interim approval for RRFB by the Federal Highway Administration; see requirements at <a href="http://mutcd.fhwa.dot.gov/resources/interim">http://mutcd.fhwa.dot.gov/resources/interim</a> approval/ia11/ia11 rrfb iapmemo.pdf

Ensure the RRFB meets the full requirements as noted in the subsequent Official Interpretations issued by the Federal Highway Administration.

#### 1.2. MATERIALS

Comply with Section 1094 of the 2018 Standard Specifications for Roads and Structures for ground mounted sign supports. Unless otherwise shown on the plans, Three Pound Steel U-Channel Posts shall be used for mounting the rectangular rapid flashing beacon assembly.

Provide two rapid flashing yellow indications that are aligned horizontally in a single housing with a space between both indications of a minimum of 7" from inside edge of one indication to inside edge of the other indication. Ensure each indication is rectangular-shaped and has minimum dimensions of 5" wide by 2" high. Provide a Light Emitting Diode (LED) array for each indication. Provide Independent Laboratory Certification and test results for each indication facing motorists as evidence that the light intensity meets the Class 1 requirements for of the Society of Automotive Engineers (SAE) standard J595 (Directional Flashing Optical Warning Devices for Authorized Emergency, Maintenance, and Service Vehicles) dated November 2008. Provide an aluminum housing that can be attached to a 4.5" OD pedestal pole. Powder coat the housing with an electrostatically-applied, fused-polyester paint in highway yellow (Federal Standard 595C, Color Chip Number 13538) a minimum of 2.5 to 3.5 mils thick. Ensure the housing does not project beyond the outside edges of a W11-2 or S1-1 sign. Ensure the two indications are installed into the housing assembly to face in the direction of the approaching vehicular traffic. When specified, provide two additional identical indications for the motorists in a similar constructed housing that can be attached on the opposite side of the pole.

Provide the two yellow indications facing motorists to flash in a rapidly alternating "wig-wag" flashing sequence (left light on, then right light on). Ensure 70 to 80 periods of flashing per minute with the left indication emitting two slow pulses of light and the right indication emitting four rapid

pulses of light followed by a long pulse of light. Ensure the indications have approximately equal periods of rapid pulsing light emissions and dark operation. Ensure flash rates are not at frequencies between 5 and 30 flashes per second to avoid flash-induced seizures. Provide a flashing yellow LED indication on the end of the housing to provide notification of activation and operation of the device to pedestrians in the crosswalk.

During operation, ensure the RRFB remains dark until a pedestrian actuation occurs and then returns back dark at a programmed time after the pedestrian activation. Provide wireless communication equipment to ensure all RRFBs associated at a given crosswalk simultaneously start operation of their alternating rapid flashing indications when activated and cease operation simultaneously. Provide a means to prevent interference with other systems utilizing similar communications equipment.

Provide a 12VDC sealed gel, sealed lead acid, or absorption glass mat battery with sufficient capacity for 5 days of 3 hours of continuous operation with no additional charge from solar panel. Ensure the battery is located in a moisture and corrosion resistant enclosure. Provide a solar panel with a minimum array-to-load ratio of 1.2 and charging circuitry for the battery. Provide a solar sizing report that shows the system loss of load probability is 0% for the entire year for Raleigh, North Carolina. Provide mounting hardware to allow solar panel to be tilted at least 45 degrees from horizontal and panned 360 degrees.

Provide stainless steel fasteners for all items exposed to the weather. For fasteners protected from the weather, provide fasteners fabricated from stainless steel or other corrosion-resistant materials.

Ensure assemblies provide protection from environmental conditions and accidental contact equivalent to a NEMA 3R-rated enclosure. Ensure all components operate properly within the following limits unless otherwise noted:

- Humidity: 5% to 95%, non-condensing
- Ambient Temperature: -30.0°F to +165°F
- Shock NEMA TS2-2003, Section 2.1.10
- Vibration NEMA TS2-2003, Section 2.1.9

#### 1.3. CONSTRUCTION METHODS

For each approach to the RRFB location, use two RRFB assemblies, installed at the crosswalk, one on the right-hand side of the roadway and one on the left-hand side of the roadway. On a divided highway, install the left-hand side assembly in the median, if practical, rather than on the far left side of the highway. Each RRFB assembly shall consist of a W11-2 (Pedestrian) or S1-1 (School) crossing warning sign, a RRFB, and W16-7p (downward diagonal arrow) plaque. Install the RRFB on the same support as the associated W11-2 (Pedestrian) or S1-1 (School) crossing warning sign and plaque. Do not install an RRFB independent of the crossing signs for the approach the RRFB faces.

Ensure that the outside edges of the RRFB indications, including any housings, do not project beyond the outside edges of the W11-2 or S1-1 sign. Locate the RRFB between the bottom of the crossing warning sign and the top of the supplemental W16-7p plaque, rather than 12 inches above or below the sign assembly.

If using pushbuttons to activate the RRFBs (versus passive detection), install the pushbutton assembly below the RRFB and W16-7p plaque. Mount the pushbutton at a minimum height of 3.5 feet but no higher than 4.0 feet above the adjacent pedestrian travelway. With pushbutton activation, mount a pedestrian

instructional sign with legend "PUSH BUTTON TO TURN ON WARNING LIGHTS" adjacent to or integral with each pedestrian pushbutton.

Obtain flashing duration to be programmed into the RRFB from the Engineer.

#### 1.4. MEASUREMENT AND PAYMENT

Actual number of rectangular rapid flashing beacon assemblies furnished, installed, and accepted.

No measurement will be made of rapidly flashing rectangular-shaped yellow indications, solar panel, battery, controller assembly, mounting posts, and all necessary hardware as these items will be considered incidental to furnishing and installing rectangular rapid flashing beacon assemblies.

Payment will be made under:

Rectangular Rapid Flashing Beacon Assembly......Each



### **DISPOSAL OF FLASHER SYSTEM:**

The work covered by this special provision consists of removal and disposal of a flasher system. The system includes the sign and the sign post, utility service pole, electric meter and base, circuit breaker panel and breaker(s), control devices such as relays, wire, cable, conduit, flasher units, and all other devices and equipment in the system.

All materials shall be removed and disposed of according to the State and Local codes, regulations, and ordinances and shall be in accordance with Section 907 of the NCDOT Standard Specifications For Roads and Structures.

# **Measurement And Payment**

Disposal Of Flasher System will be measured and paid as the actual number of flasher systems removed and disposed of by the Contractor.

Pay ItemPay UnitDisposal Of Flasher SystemEach

# PROJECT SPECIAL PROVISIONS Utility Construction



700 Huger Street Columbia, SC 29201 Firm License No.: F-1084

# **Utility Owner:**

Town of Murphy Public Works Department 5 Wofford Street Murphy, NC 28906



# Revise the 2018 Standard Specifications as follows:

Page 10-61, Sub-article 1034-1 Clay Pipe, strike this sub-article in its entirety. No vitrified clay pipe will be included in this project.

Page 10-61, Sub-article 1034-2 Plastic Pipe, (A) PVC Gravity Sewer Pipe, delete in its entirety and add the following sentences:

#### Main Line Pipe:

Sewer pipe 8-inches through 15-inches in diameter may be Poly Vinyl Chloride (PVC) sewer pipe and fittings with a minimum Standard Dimension Ratio (SDR) of **26** and will meet all requirements of ASTM Specification D3034. PVC pipe will have markings required by ASTM D-3034.

PVC gravity sewer piping will have a green exterior color. Under no circumstances will pipe with a blue exterior color be accepted. If green color pipe is not available, it shall be stamped "Sanitary Sewer".

#### **Service Lateral Pipe:**

PVC pipe for gravity sewer service lateral applications, including the cleanout stack will be PVC Schedule 40, manufactured in accordance with ASTM D1785, "Standard Specification for Poly (Vinyl Chloride) (PVC) Plastic Pipe" solvent cement joints (type SC).

Page 10-61, Sub-article 1034-3 Concrete Sewer Pipe, strike this sub-article in its entirety. No concrete sewer pipe will be included in this project.

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**Page 10-61, Sub-article 1034-4 Ductile Iron Pipe,** add the following paragraphs to Sub-articles (A) and (B) for Gravity and Force Main Sewer Pipe:

# Pipe Lining:

The pipe lining material shall be an amine cured novolac epoxy containing at least 20% by volume of ceramic quartz pigment. Any request for substitution must be accompanied by a successful history of lining pipe and fittings for sewer service, a test report verifying the following properties, and a certification of the test results.

- A. A permeability rating of 0.00 when tested according to Method A of ASTM E96 Standard Test Methods for Water Vapor Transmission of Materials, Procedure A with a test duration of 30 days.
- B. The following test must be run on coupons from factory lined ductile iron pipe:
  - ASTM B117 Standard Method of Salt Spray (Fog) Testing
    - Scribed panel Results to equal 0.0 undercutting after two years.
  - ASTM G95 Standard Test Method for Cathodic Disbondment Test of Pipeline Coatings (Attached Cell Method)
    - 1.5 volts @ 77 °F. Results to equal no more than 0.5 mm undercutting after 30 days.
  - ASTM D714 Standard Test Method for Evaluating Degree of Blistering Paints
    - Immersion testing
      - 20% Sulfuric acid No effect after two years.
      - 140 °F 25% Sodium Hydroxide No effect after two years.
      - 160 °F Distilled Water No effect after two years.
      - 120 °F Tap Water (scribed panel) 0.0 undercutting after two years with no effect.
  - ASTM G22 Standard Practice for Determining Resistance of Synthetic Polymeric Materials to Bacteria.
    - The test shall determine the resistance to growth of Acidithiobacillus Bacteria and shall be conducted at 30 degrees centigrade for a period of 7 days on a minimum of 4 panels. The growth shall be limited only to trace amounts of bacteria.
- C. An abrasion resistance of no more than 3 mils (.075 mm) loss after one million cycles using European Standard EN 598 *Ductile iron pipes, fittings, accessories and their joints for sewerage applications* Section 7.8, Abrasion Resistance.

After surface preparation and within 12 hours of surface preparation, the interior of the pipe shall receive 40 mils nominal dry film thickness. No pipe lining shall occur when the substrate or ambient temperature is below 40°F. The surface also shall be dry and dust free.

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# **Pipe Joints:**

All bells and spigots for pipes shall be coated with a minimum of 8 mils of joint compound compatible with the liner material, or as recommended by the manufacturer. Ductile iron sewer pipe must be easily recognized by the brownish red bells and spigots, as well as stenciling of the words showing "For Sewer Only".

# **Pipe Handling:**

Lined pipe and fittings must be handled only from the outside of the pipe and fittings. No forks, chains, straps, hooks, etc. shall be placed inside the pipe and fittings for lifting, positioning, or laying. The pipe shall not be dropped or unloaded by rolling. Care should be taken not to let the pipe strike sharp objects while swinging or being off loaded

Page 10-62, Sub-article 1036-4 Steel Pipe, (A) Water Pipe, strike sub-article (A) in its entirety. No galvanized steel water pipe will be included in this project.

Page 10-63, Sub-article 1036-7 (A), replace the first sentence with the following:

All gate valves will be designed for a minimum working pressure of 200 psi unless otherwise specified.

Use iron body gate valves which conform to ANSI/AWWA C509 for resilient seat-type valves.

# **Pressure Testing:**

Piping and other equipment designed to carry fluids under pressure will be tested as a whole, or in sections isolated by valves or bulk-headed at the ends. Testing will be under a hydrostatic pressure equal to the design pressure, but not less than 200 psi. All pressure testing will be performed in accordance with AWWA C600 or AWWA C605, current editions, as applicable.

Test pressure will be applied by means of a pump and a tap in the pipe. The rate of leakage will be determined by means of volumetric measurement of the water added during the test, for a minimum of 2 hours after the rate of leakage has stabilized

Lines which fail to meet tests will be repaired and re-tested as necessary until the test requirements are met. All rework for additional testing will be at the Contractor's expense.

Any pipe, fittings, and other materials found to be defective under the test will be removed and replaced at the Contractor's expense.

Tests of insulated and concealed piping will be made before the piping is covered or concealed. Where leaks are visible at exposed joints and/or evident on the surface where joints are covered, the pipe will be rejoined, and leakage minimized regardless of total leakage as shown by test.

For pressure pipelines installed in the ground, the rate of leakage will not exceed the following:

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$$L = \frac{SD\sqrt{P}}{148.000}$$

Where:

L = Testing allowance (make-up water) in gallons per hour (gph)

County: Cherokee

S = Length of pipe tested in feet (ft)

D = Nominal pipe diameter in inches (in)

P = Average test pressure during hydrostatic test in psi

# **Chlorination / Sterilization:**

After pressure testing and prior to placing pipe into service, the pipe will be flushed and disinfected. Pipe flushing will be done to remove any sediment or foreign matter from the pipe.

Pipe will be disinfected by the addition and thorough dispersion of a chlorine solution in concentrations sufficient to produce a chlorine residual of at least 50 milligrams per liter (or ppm) in the water throughout the new distribution system pipe, including all water mains and storage tanks.

The chlorine solution will remain in contact with interior surfaces of the water system for a period of 24 hours. Then the water system will be flushed with fresh water from an approved water source until the chlorine solution is dispelled to a maximum of 2.0 milligrams per liter (or ppm) free chlorine.

Representative samples of the water will then be collected. If bacteriological tests of the samples indicate that the water quality is satisfactory, the water mains and storage tanks may be placed in service. Contractor is responsible for taking the sample and having it tested at an AWWA approved laboratory.

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# PROJECT SPECIAL PROVISIONS

Utilities by Others



8601 Six Forks Rd., Forum 1 Suite 700 | Raleigh, NC 27615 | P 919.878.9560 | T 888.521.4455 | www.rkk.com

#### General:

The following utility companies have facilities that will be in conflict with the construction of this project:

- A) Power- Blue Ridge Mountain EMC (BRMEMC) (Distribution)
- B) Power- Tennessee Valley Authority (TVA) (Transmission)
- C) Communications- Frontier (Telephone)
- D) Communications- Balsam West FiberNet (BWFN)
- E) Communications- The Cable Company (CATV)

The conflicting facilities of these concerns will be adjusted prior to the date of availability, unless otherwise noted, and are therefore listed in these special provisions for the benefit of the Contractor. All utility work listed herein will be done by the utility owners. Utility relocation has been divided into four (4) phases as follows: Phase 1 work (-L- Sta. ~10+25 to Sta. 62+00), Phase 2 work (-L- Sta. ~62+00 to Sta. 107+50), Phase 3 work (-L- Sta. ~107+50 to 152+00), Phase 4 work (-L- Sta. ~152+00 to 209+46.82) An additional Phase is needed for Frontier to permanently relocate their facilities, Phase 5 work (-L- Sta. ~171+25 to 184+00) to be coordinated with the contractor for final shoulder grade. All utilities are shown on the plans from the best available information.

✓ The Contractor's attention is directed to Article 105-8 of the 2018 *Standard Specifications*.

#### **Utilities Requiring Adjustment:**

Utility relocations are shown on the Utilities by Others Plans.

- A) Blue Ridge Mountain EMC (BRMEMC) Power Distribution
- 1. BRMEMC has overhead facilities throughout the project limits that are in conflict. They will phase relocation into four (4) utility phases.
- 2. BRMEMC relocation work for Phase 1 work (-L- Sta. 10+25 to Sta. 62+00) has been completed 10/2023.
- 3. Phase 2 work (-L- Sta. ~62+00 to 107+50) to be completed by February 01, 2024.
- 4. Phase 3 work (-L- Sta. ~107+50 to 152+00) and Phase 4 work (-L- Sta. ~152+00 to 209+46.82) to be complete by August 01, 2024.

11/1/23

# PROJECT SPECIAL PROVISIONS

Utilities by Others

5. Contact person for Blue Ridge Mountain EMC is Mr. Colton Payne 706.835.5265 or email Colton.Payne@brmemc.com.

# B) Tennessee Valley Authority (TVA)- Power Transmission

- 1. TVA has transmission facilities that are in conflict crossing at  $\sim$  -L- Sta 178+00.
- 2. TVA relocation to be complete by February 01, 2024.
- 3. Contact person for TVA is Mr. Todd Moore 865.250.4472 or email <a href="mailto:TCMoore@tva.gov">TCMoore@tva.gov</a>

#### C) Frontier

- 1. Frontier Telecommunications has mostly facilities throughout the project with some overhead. Frontier will relocate to the proposed BRMEMC pole route and will follow the Utility Relocation Phasing 1 through 4.
- 2. Once BRMEMC has completed Phase 1 and notification given to Frontier, relocation work for Phase 1 work (-L- Sta. 10+25 to Sta. 62+00) will be completed April 15,2024.
- 3. Once BRMEMC has completed Phase 2 and notification given to Frontier, relocation work for Phase 2 work (-L- Sta ~62+00 to 107+50) will be completed April 15,2024.
- 4. Once BRMEMC has completed Phase 3 and 4, and notification given to Frontier, Phase 3 work (-L- Sta ~107+50 to 152+00) and Phase 4 work (-L- Sta. ~152+00 to 209+46.82) to be complete by October 01, 2024.
- 5. Phase 5 work (-L- ~ Sta. 171+25 to 184+00) to be coordinated with the contractor for near final shoulder grade before permanent relocation can be made. Contractor shall allow a four (4) week notification and six (6) weeks to perform relocation.
- 6. Contact person for Frontier Telecommunications' is Mr. Jerry Fisher 828.507.1681 or email Jerry.D.Fisher@ftr.com.

#### D) Balsam West FiberNet (BWFN)

- 1. BWFN has facilities within project limits and located near other construction activities. BWFN is limited to the intersection of US 19/129 (Blairsville Road) and the intersection of Hwy 64. However, they are not in conflict with the current design of the project. In case of an unforeseen conflict or adjustment please contact BWFN to coordinate.
- 2. Contact person for Balsam West FiberNet is Mr. Allen Davenport 828. 339.0624 or email adavenport@balsamwest.net.

# E) The Cable Company (CATV)

11/1/23

# PROJECT SPECIAL PROVISIONS Utilities by Others

- 1. CATV has facilities within the project limits from -L- Sta. ~ 106+50 to the end of the projects. CATV will relocate to the proposed BRMEMC pole route and will follow the Utility Relocation Phasing 3 and 4.
- 2. Once BRMEMC has completed Phase 3 and 4, and notification given to CATV, Phase 3 work (-L- Sta. ~107+50 to 152+00) and Phase 4 work (-L- Sta. ~152+00 to 209+46.82) to be complete by August 01, 2024.
- 3. Contact person for Murphy CATV is Mr. Gary Smith 828.506.1572 or email geovisionnc@outlook.com.

11/1/23

# **Project Special Provisions Erosion Control**

### **STABILIZATION REQUIREMENTS:**

(4-30-2019)

Stabilization for this project shall comply with the time frame guidelines as specified by the NCG-010000 general construction permit effective April 1, 2019 issued by the North Carolina Department of Environmental Quality Division of Water Resources. Temporary or permanent ground cover stabilization shall occur within 7 calendar days from the last land-disturbing activity, with the following exceptions in which temporary or permanent ground cover shall be provided in 14 calendar days from the last land-disturbing activity:

- Slopes between 2:1 and 3:1, with a slope length of 10 ft. or less
- Slopes 3:1 or flatter, with a slope of length of 50 ft. or less
- Slopes 4:1 or flatter

The stabilization timeframe for High Quality Water (HQW) Zones shall be 7 calendar days with no exceptions for slope grades or lengths. High Quality Water Zones (HQW) Zones are defined by North Carolina Administrative Code 15A NCAC 04A.0105 (25). Temporary and permanent ground cover stabilization shall be achieved in accordance with the provisions in this contract and as directed.

#### **SEEDING AND MULCHING:**

(WestEd)

The kinds of seed and fertilizer, and the rates of application of seed, fertilizer, and limestone, shall be as stated below. During periods of overlapping dates, the kind of seed to be used shall be determined. All rates are in pounds per acre.

#### Shoulder and Median Areas

August 1 - June 1		May 1 - September 1	
20#	Kentucky Bluegrass	20#	Kentucky Bluegrass
75#	Hard Fescue	75#	Hard Fescue
25#	Rye Grain	10#	German or Browntop Millet
500#	Fertilizer	500#	Fertilizer
4000#	Limestone	4000#	Limestone

Areas Beyond the Mowing Pattern, Waste and Borrow Areas:

August 1 - June 1 May 1 - September 1		tember 1	
100#	Tall Fescue	100#	Tall Fescue
15#	Kentucky Bluegrass	15#	Kentucky Bluegrass
30#	Hard Fescue	30#	Hard Fescue
25#	Rye Grain	10#	German or Browntop Millet
500#	Fertilizer	500#	Fertilizer
4000#	Limestone	4000#	Limestone

# Approved Tall Fescue Cultivars

06 Dust Escalade **Justice** Serengeti 2<sup>nd</sup> Millennium Essential Kalahari Shelby 3<sup>rd</sup> Millennium Evergreen 2 Kitty Hawk 2000 Sheridan Apache III Falcon IV Legitimate Signia Silver Hawk Avenger Falcon NG Lexington Barlexas Falcon V LSD Sliverstar Barlexas II Faith Magellan Shenandoah Elite Bar Fa Matador Sidewinder Fat Cat Barrera Festnova Millennium SRP Skyline Solara Barrington **Fidelity** Monet Barrobusto Finelawn Elite Mustang 4 Southern Choice II Barvado Finelawn Xpress Ninja 2 Speedway Finesse II Spyder LS Biltmore Ol' Glory Firebird Bingo Olympic Gold Sunset Gold Firecracker LS Padre Bizem Taccoa Blackwatch Firenza Patagonia Tanzania Blade Runner II **Five Point** Pedigree Trio Bonsai Focus Picasso Tahoe II Braveheart Forte Piedmont Talladega Bravo Garrison Plantation Tarheel Bullseye Gazelle II Proseeds 5301 Terrano Gold Medallion Cannavaro **Prospect** Titan 1td Catalyst Grande 3 Pure Gold Titanium LS Tracer Cayenne Greenbrooks **Ouest** Cessane Rz Greenkeeper Raptor II Traverse SRP Tulsa Time Chipper Gremlin Rebel Exeda Cochise IV Rebel Sentry Turbo Grevstone Constitution Guardian 21 Rebel IV Turbo RZ Corgi Guardian 41 Regiment II Tuxedo RZ Corona Hemi Regenerate Ultimate Honky Tonk Coyote Rendition Venture Darlington Hot Rod Rhambler 2 SRP Umbrella Davinci Rembrandt Hunter Van Gogh Desire Inferno Reunion Watchdog Dominion Innovator Riverside Wolfpack II **Dynamic** Integrity **RNP** Xtremegreen Dynasty Jaguar 3 Rocket Endeavor Jamboree Scorpion

# Approved Kentucky Bluegrass Cultivars:

4-Season	Blue Velvet	Gladstone	Quantum Leap
Alexa II	Blueberry	Granite	Rambo
America	Boomerang	Hampton	Rhapsody
Apollo	Brilliant	Harmonie	Rhythm
Arcadia	Cabernet	Impact	Rita
Aries	Champagne	Jefferson	Royce
Armada	Champlain	Juliet	Rubicon
Arrow	Chicago II	Jump Start	Rugby II
Arrowhead	Corsair	Keeneland	Shiraz
Aura	Courtyard	Langara	Showcase
Avid	Delight	Liberator	Skye
Award	Diva	Madison	Solar Eclipse
Awesome	Dynamo	Mercury	Sonoma
Bandera	Eagleton	Midnight	Sorbonne
Barduke	Emblem	Midnight II	Starburst
Barnique	Empire	Moon Shadow	Sudden Impact
Baroness	Envicta	Moonlight SLT	Total Eclipse
Barrister	Everest	Mystere	Touche
Barvette HGT	Everglade	Nu Destiny	Tsunami
Bedazzled	Excursion	NuChicago	Unique
Belissimo	Freedom II	NuGlade	Valor
Bewitched	Freedom III	Odyssey	Voyager II
Beyond	Front Page	Perfection	Washington
Blacksburg II	Futurity	Pinot	Zinfandel
Blackstone	Gaelic	Princeton 105	
Blue Note	Ginney II	Prosperity	
	•	1 /	

# Approved Hard Fescue Cultivars:

Aurora II	Eureka II	Oxford	Scaldis II
Aurora Gold	Firefly	Reliant II	Spartan II
Berkshire	Granite	Reliant IV	Stonehenge
Bighorn GT	Heron	Rescue 911	
Chariot	Nordic	Rhino	

On cut and fill slopes 2:1 or steeper add 20# Sericea Lespedeza and 15# Crown Vetch January 1 - December 31.

The Crown Vetch Seed should be double inoculated if applied with a hand seeder. Four times the normal rate of inoculant should be used if applied with a hydroseeder. If a fertilizer-seed slurry is used, the required limestone should also be included to prevent fertilizer acidity from killing the inoculant bacteria. Caution should be used to keep the inoculant below 80° F to prevent harm to the bacteria. The rates and grades of fertilizer and limestone shall be the same as specified for *Seeding and Mulching*.

Fertilizer shall be 10-20-20 analysis. A different analysis of fertilizer may be used provided the 1-2-2 ratio is maintained and the rate of application adjusted to provide the same amount of plant food as a 10-20-20 analysis and as directed.

#### **Native Grass Seeding And Mulching**

(West)

Native Grass Seeding and Mulching shall be performed on the disturbed areas of wetlands and riparian areas, and adjacent to Stream Relocation and/or trout stream construction within a 50 foot zone on both sides of the stream or depression, measured from top of stream bank or center of depression. The stream bank of the stream relocation shall be seeded by a method that does not alter the typical cross section of the stream bank. Native Grass Seeding and Mulching shall also be performed in the permanent soil reinforcement mat section of preformed scour holes, and in other areas as directed.

The kinds of seed and fertilizer, and the rates of application of seed, fertilizer, and limestone, shall be as stated below. During periods of overlapping dates, the kind of seed to be used shall be determined. All rates are in pounds per acre.

August 1 - June 1 Ma		<b>May 1</b> -	May 1 – September 1	
18#	Creeping Red Fescue	18#	Creeping Red Fescue	
8#	Big Bluestem	8#	Big Bluestem	
6#	Indiangrass	6#	Indiangrass	
4#	Switchgrass	<b>4</b> #	Switchgrass	
35#	Rye Grain	25#	German or Browntop Millet	
500#	Fertilizer	500#	Fertilizer	
4000#	Limestone	4000#	Limestone	

#### Approved Creeping Red Fescue Cultivars:

Aberdeen	Boreal	Epic	Cindy Lou

Fertilizer shall be 10-20-20 analysis. A different analysis of fertilizer may be used provided the 1-2-2 ratio is maintained and the rate of application adjusted to provide the same amount of plant food as a 10-20-20 analysis and as directed.

Native Grass Seeding and Mulching shall be performed in accordance with Section 1660 of the *Standard Specifications* and vegetative cover sufficient to restrain erosion shall be installed immediately following grade establishment.

#### **Measurement and Payment**

Native Grass *Seeding and Mulching* will be measured and paid for in accordance with Article 1660-8 of the *Standard Specifications*.

# **TEMPORARY SEEDING:**

Fertilizer shall be the same analysis as specified for *Seeding and Mulching* and applied at the rate of 400 pounds and seeded at the rate of 50 pounds per acre. German Millet, or Browntop Millet shall be used in summer months and rye grain during the remainder of the year. The Engineer will determine the exact dates for using each kind of seed.

# **FERTILIZER TOPDRESSING:**

Fertilizer used for topdressing shall be 16-8-8 grade and shall be applied at the rate of 500 pounds per acre. A different analysis of fertilizer may be used provided the 2-1-1 ratio is maintained and the rate of application adjusted to provide the same amount of plant food as 16-8-8 analysis and as directed.

# **SUPPLEMENTAL SEEDING:**

The kinds of seed and proportions shall be the same as specified for *Seeding and Mulching*, and the rate of application may vary from 25# to 75# per acre. The actual rate per acre will be determined prior to the time of topdressing and the Contractor will be notified in writing of the rate per acre, total quantity needed, and areas on which to apply the supplemental seed. Minimum tillage equipment, consisting of a sod seeder shall be used for incorporating seed into the soil as to prevent disturbance of existing vegetation. A clodbuster (ball and chain) may be used where degree of slope prevents the use of a sod seeder.

# **MOWING:**

The minimum mowing height on this project shall be six inches.

#### **LAWN TYPE APPEARANCE:**

All areas adjacent to lawns must be hand finished as directed to give a lawn type appearance. Remove all trash, debris, and stones <sup>3</sup>/<sub>4</sub>" and larger in diameter or other obstructions that could interfere with providing a smooth lawn type appearance. These areas shall be reseeded to match their original vegetative conditions, unless directed otherwise by the Field Operations Engineer.

# **RESPONSE FOR EROSION CONTROL:**

# **Description**

Furnish the labor, materials, tools and equipment necessary to move personnel, equipment, and supplies to the project necessary for the pursuit of any or all of the following work as shown herein, by an approved subcontractor.

Section	Erosion Control Item	Unit
1605	Temporary Silt Fence	LF
1606	Special Sediment Control Fence	LF/TON
1615	Temporary Mulching	ACR
1620	Seed - Temporary Seeding	LB
1620	Fertilizer - Temporary Seeding	TN
1631	Matting for Erosion Control	SY
SP	Coir Fiber Mat	SY
1640	Coir Fiber Baffles	LF
SP	Permanent Soil Reinforcement Mat	SY
1660	Seeding and Mulching	ACR
1661	Seed - Repair Seeding	LB
1661	Fertilizer - Repair Seeding	TON
1662	Seed - Supplemental Seeding	LB
1665	Fertilizer Topdressing	TON
SP	Safety/Highly Visible Fencing	LF
SP	Response for Erosion Control	EA

#### **Construction Methods**

Provide an approved subcontractor who performs an erosion control action as described in the NPDES Inspection Form SPPP30. Each erosion control action may include one or more of the above work items.

# **Measurement and Payment**

Response for Erosion Control will be measured and paid for by counting the actual number of times the subcontractor moves onto the project, including borrow and waste sites, and satisfactorily completes an erosion control action described in Form 1675. The provisions of Article 104-5 of the Standard Specifications will not apply to this item of work.

Payment will be made under:

Pay ItemPay UnitResponse for Erosion ControlEach

#### **MINIMIZE REMOVAL OF VEGETATION:**

The Contractor shall minimize removal of vegetation within project limits to the maximum extent practicable. Vegetation along stream banks and adjacent to other jurisdictional resources outside the construction limits shall only be removed upon approval of Engineer. No additional payment will be made for this minimization work.

# **STOCKPILE AREAS:**

The Contractor shall install and maintain erosion control devices sufficient to contain sediment around any erodible material stockpile areas as directed.

# **ACCESS AND HAUL ROADS:**

At the end of each working day, the Contractor shall install or re-establish temporary diversions or earth berms across access/haul roads to direct runoff into sediment devices. Silt fence sections that are temporarily removed shall be reinstalled across access/haul roads at the end of each working day.

# **CONSTRUCTION MATERIALS MANAGEMENT**

(3-19-19) (rev. 04-27-20)

# **Description**

The requirements set forth shall be adhered to in order to meet the applicable materials handling requirements of the NCG010000 permit. Structural controls installed to manage construction materials stored or used on site shall be shown on the E&SC Plan. Requirements for handling materials on construction sites shall be as follows:

#### Polyacrylamides (PAMS) and Flocculants

Polyacrylamides (PAMS) and flocculants shall be stored in leak-proof containers that are kept under storm-resistant cover or surrounded by secondary containment structures designed to protect adjacent surface waters. PAMS or other flocculants used shall be selected from the NC DWR List of Approved PAMS/Flocculants The concentration of PAMS and other flocculants used shall not exceed those specified in the NC DWR List of Approved PAMS/Flocculants and in accordance with the manufacturer's instructions. The NC DWR List of Approved PAMS/Flocculants is available at:

https://files.nc.gov/ncdeq/Water+Quality/Environmental+Sciences/ATU/PAM8 30 18.pdf

#### **Equipment Fluids**

Fuels, lubricants, coolants, and hydraulic fluids, and other petroleum products shall be handled and disposed of in a manner so as not to enter surface or ground waters and in accordance with applicable state and federal regulations. Equipment used on the site must be operated and

maintained properly to prevent discharge of fluids. Equipment, vehicle, and other wash waters shall not be discharged into E&SC basins or other E&SC devices. Alternative controls should be provided such that there is no discharge of soaps, solvents, or detergents.

#### **Waste Materials**

Construction materials and land clearing waste shall be disposed of in accordance with North Carolina General Statutes, Chapter 130A, Article 9 - Solid Waste Management, and rules governing the disposal of solid waste (15A NCAC 13B). Areas dedicated for managing construction material and land clearing waste shall be at least 50 feet away from storm drain inlets and surface waters unless it can be shown that no other alternatives are reasonably available. Paint and other liquid construction material waste shall not be dumped into storm drains. Paint and other liquid construction waste washouts should be located at least 50 feet away from storm drain inlets unless there is no alternative. Other options are to install lined washouts or use portable, removable bags or bins. Hazardous or toxic waste shall be managed in accordance with the federal Resource Conservation and Recovery Act (RCRA) and NC Hazardous Waste Rules at 15A NCAC, Subchapter 13A. Litter and sanitary waste shall be managed in a manner to prevent it from entering jurisdictional waters and shall be disposed of offsite.

# Herbicide, Pesticide, and Rodenticides

Herbicide, pesticide, and rodenticides shall be stored and applied in accordance with the Federal Insecticide, Fungicide, and Rodenticide Act, North Carolina Pesticide Law of 1971 and labeling restrictions.

#### **Concrete Materials**

Concrete materials onsite, including excess concrete, must be controlled and managed to avoid contact with surface waters, wetlands or buffers. No concrete or cement slurry shall be discharged from the site. (Note that discharges from onsite concrete plants require coverage under a separate NPDES permit – NCG140000.) Concrete wash water shall be managed in accordance with the *Concrete Washout Structure* provision. Concrete slurry shall be managed and disposed of in accordance with *NCDOT DGS and HOS DCAR Distribution of Class A Residuals Statewide* (Permit No. WQ0035749). Any hardened concrete residue will be disposed of, or recycled on site, in accordance with state solid waste regulations.

#### **Earthen Material Stock Piles**

Earthen material stock piles shall be located at least 50 feet away from storm drain inlets and surface waters unless it can be shown that no other alternatives are reasonably available.

# **Measurement and Payment**

Conditions set within the *Construction Materials Management* provision are incidental to the project for which no direct compensation will be made.

### **WASTE AND BORROW SOURCES:**

(2-16-11) (Rev. 3-17-22)

Payment for temporary erosion control measures, except those made necessary by the Contractor's own negligence or for his own convenience, will be paid for at the appropriate contract unit price for the devices or measures utilized in borrow sources and waste areas.

No additional payment will be made for erosion control devices or permanent seeding and mulching in any commercial borrow or waste pit. All erosion and sediment control practices that may be required on a commercial borrow or waste site will be done at the Contractor's expense.

All offsite Staging Areas, Borrow and Waste sites shall be in accordance with "Borrow and Waste Site Reclamation Procedures for Contracted Projects" located at:

 $\frac{https://connect.ncdot.gov/resources/roadside/FieldOperationsDocuments/Contract\%20Reclamation\%20Procedures.pdf}{}$ 

All forms and documents referenced in the "Borrow and Waste Site Reclamation Procedures for Contracted Projects" shall be included with the reclamation plans for offsite staging areas, and borrow and waste sites.

### **TEMPORARY DIVERSION:**

This work consists of installation, maintenance, and cleanout of *Temporary Diversions* in accordance with Section 1630 of the *Standard Specifications*. The quantity of excavation for installation and cleanout will be measured and paid for as *Silt Excavation* in accordance with Article 1630-3 of the *Standard Specifications*.

#### **CLEAN WATER DIVERSION:**

# **Description**

This work consists of installing, maintaining, and removing any and all material required for the construction of clean water diversions. The clean water diversions shall be used to direct water flowing from offsite around/away from specific area(s) of construction.

#### **Materials**

Refer to Division 10

ItemSectionGeotextile for Soil Stabilization, Type 41056

#### **Construction Methods**

The Contractor shall install the clean water diversions in accordance with the details in the plans and at locations indicated in the plans, and as directed. Upon installation, the excavated material shall be immediately stabilized as provided in Section 1620 of the *Standard Specifications*. Other stabilization methods may be utilized with prior approval from the Engineer.

Line clean water diversion with geotextile unrolled in the direction of flow and lay smoothly but loosely on soil surface without creases. Bury top of slope geotextile edge in a trench at least 5" deep and tamp securely. Make vertical overlaps a minimum of 18" with upstream geotextile overlapping the downstream geotextile.

Secure geotextile with eleven gauge wire staples shaped into a u shape with a length of not less than 6" and a throat not less than 1" in width. Place staples along outer edges and throughout the geotextile a maximum of 3 ft. horizontally and vertically.

#### **Measurement and Payment**

*Silt Excavation* will be measured and paid for in accordance with Article 1630-4 of the *Standard Specifications*.

Geotextile for Soil Stabilization will be measured and paid for in accordance with Article 270-4 of the Standard Specifications.

Stabilization of the excavated material will be paid for as *Temporary Seeding* as provided in Section 1620 of the *Standard Specifications*.

Such price and payment shall be considered full compensation for all work covered by this section including all materials, construction, maintenance, and removal of the clean water diversions.

#### **SAFETY FENCE AND JURISDICTIONAL FLAGGING:**

# **Description**

Safety Fence shall consist of furnishing materials, installing and maintaining polyethylene or polypropylene fence along the outside riparian buffer, wetland, or water boundary, or other boundaries located within the construction corridor to mark the areas that have been approved to infringe within the buffer, wetland, endangered vegetation, culturally sensitive areas or water. The fence shall be installed prior to any land disturbing activities.

Interior boundaries for jurisdictional areas noted above shall be delineated by stakes and highly visible flagging.

Jurisdictional boundaries at staging areas, waste sites, or borrow pits, whether considered outside or interior boundaries shall be delineated by stakes and highly visible flagging.

#### **Materials**

# (A) Safety Fencing

Polyethylene or polypropylene fence shall be a highly visible preconstructed safety fence approved by the Engineer. The fence material shall have an ultraviolet coating.

Either wood posts or steel posts may be used. Wood posts shall be hardwood with a wedge or pencil tip at one end, and shall be at least 5 ft. in length with a minimum nominal 2" x 2" cross section. Steel posts shall be at least 5 ft. in length, and have a minimum weight of 0.85 lb/ft of length.

# (B) Boundary Flagging

Wooden stakes shall be 4 feet in length with a minimum nominal 3/4" x 1-3/4" cross section. The flagging shall be at least 1" in width. The flagging material shall be vinyl and shall be orange in color and highly visible.

#### **Construction Methods**

No additional clearing and grubbing is anticipated for the installation of this fence. The fence shall be erected to conform to the general contour of the ground.

# (A) Safety Fencing

Posts shall be set at a maximum spacing of 10 ft., maintained in a vertical position and hand set or set with a post driver. Posts shall be installed a minimum of 2 ft. into the ground. If hand set, all backfill material shall be thoroughly tamped. Wood posts may be sharpened to a dull point if power driven. Posts damaged by power driving shall be removed and replaced prior to final acceptance. The tops of all wood posts shall be cut at a 30-degree angle. The wood posts may, at the option of the Contractor, be cut at this angle either before or after the posts are erected.

The fence geotextile shall be attached to the wood posts with one 2" galvanized wire staple across each cable or to the steel posts with wire or other acceptable means.

Place construction stakes to establish the location of the safety fence in accordance with Article 105-9 or Article 801-1 of the *Standard Specifications*. No direct pay will be made for the staking of the safety fence. All stakeouts for safety fence shall be considered incidental to the work being paid for as "Construction Surveying", except that where there is no pay item for construction surveying, all safety fence stakeout will be performed by state forces.

The Contractor shall be required to maintain the safety fence in a satisfactory condition for the duration of the project as determined by the Engineer.

# (B) Boundary Flagging

Boundary flagging delineation of interior boundaries shall consist of wooden stakes on 25 feet maximum intervals with highly visible orange flagging attached. Stakes shall be installed a minimum of 6" into the ground. Interior boundaries may be staked on a tangent that runs parallel to buffer but must not encroach on the buffer at any location. Interior boundaries of hand clearing shall be identified with a different colored flagging to distinguish it from mechanized clearing.

Boundary flagging delineation of interior boundaries will be placed in accordance with Article 105-9 or Article 801-1 of the *Standard Specifications*. No direct pay will be made for delineation of the interior boundaries. This delineation will be considered incidental to the work being paid for as *Construction Surveying*, except that where there is no pay item or construction surveying the cost of boundary flagging delineation shall be included in the unit prices bid for the various items in the contract. Installation for delineation of all jurisdictional boundaries at staging areas, waste sites, or borrow pits shall consist of wooden stakes on 25 feet maximum intervals with highly visible orange flagging attached. Stakes shall be installed a minimum of 6" into the ground. Additional flagging may be placed on overhanging vegetation to enhance visibility but does not substitute for installation of stakes.

Installation of boundary flagging for delineation of all jurisdictional boundaries at staging areas, waste sites, or borrow pits shall be performed in accordance with Subarticle 230-4(B)(5) or Subarticle 802-2(F) of the *Standard Specifications*. No direct pay will be made for this delineation, as the cost of same shall be included in the unit prices bid for the various items in the contract.

The Contractor shall be required to maintain alternative stakes and highly visible flagging in a satisfactory condition for the duration of the project as determined by the Engineer.

#### **Measurement and Payment**

Safety Fence will be measured and paid as the actual number of linear feet of polyethylene or polypropylene fence installed in place and accepted. Such payment will be full compensation including but not limited to furnishing and installing fence geotextile with necessary posts and post bracing, staples, tie wires, tools, equipment and incidentals necessary to complete this work.

Payment will be made under:

Pay ItemPay UnitSafety FenceLinear Foot

### **PERMANENT SOIL REINFORCEMENT MAT:**

#### **Description**

This work consists of furnishing and placing *Permanent Soil Reinforcement Mat*, of the type specified, over previously prepared areas as directed.

#### **Materials**

The product shall be a permanent erosion control reinforcement mat and shall be constructed of synthetic or a combination of coconut and synthetic fibers evenly distributed throughout the mat between a bottom UV stabilized netting and a heavy duty UV stabilized top net. The matting shall be stitched together with UV stabilized polypropylene thread to form a permanent three-dimensional structure. The mat shall have the following minimum physical properties:

Property	<b>Test Method</b>	Value	Unit
Light Penetration	ASTM D6567	9	<b>%</b>
Thickness	ASTM D6525	0.40	in
Mass Per Unit Area	ASTM D6566	0.55	lb/sy
Tensile Strength	ASTM D6818	385	lb/ft
Elongation (Maximum)	ASTM D6818	49	<b>%</b>
Resiliency	ASTM D1777	>70	<b>%</b>
UV Stability *	ASTM D4355	<u>≥</u> 80	<b>%</b>
Porosity (Permanent Net)	ECTC Guidelines	≥85	%
Maximum Permissible Shear	Performance Bench	≥8.0	$1b/ft^2$
Stress (Vegetated)	Test		
Maximum Allowable Velocity	Performance Bench	≥16.0	ft/s
(Vegetated)	Test		

<sup>\*</sup>ASTM D1682 Tensile Strength and % strength retention of material after 1000 hours of exposure.

Submit a certification (Type 1, 2, or 3) from the manufacturer showing:

- (A) the chemical and physical properties of the mat used, and
- (B) conformance of the mat with this specification.

#### **Construction Methods**

Matting shall be installed in accordance with Subarticle 1631-3(B) of the *Standard Specifications*.

All areas to be protected with the mat shall be brought to final grade and seeded in accordance with Section 1660 of the *Standard Specifications*. The surface of the soil shall be smooth, firm, stable and free of rocks, clods, roots or other obstructions that would prevent the mat from lying in direct contact with the soil surface. Areas where the mat is to be placed will not need to be mulched.

#### **Measurement and Payment**

Permanent Soil Reinforcement Mat will be measured and paid for as the actual number of square yards measured along the surface of the ground over which Permanent Soil Reinforcement Mat is installed and accepted. Overlaps will not be included in the measurement, and will be considered as incidental to the work. Such payment shall be full compensation for furnishing and installing the mat, including overlaps, and for all required maintenance.

Payment will be made under:

Pay ItemPay UnitPermanent Soil Reinforcement MatSquare Yard

### **SKIMMER BASIN WITH BAFFLES:**

# **Description**

Provide a skimmer basin to remove sediment from construction site runoff at locations shown in the erosion control plans. See the Skimmer Basin with Baffles Detail sheet provided in the erosion control plans. Work includes constructing sediment basin, installation of temporary slope drain pipe and coir fiber baffles, furnishing, installation and cleanout of skimmer, providing and placing stone pad on bottom of basin underneath skimmer device, providing and placing a geotextile spillway liner, providing coir fiber mat stabilization for the skimmer outlet, disposing of excess materials, removing temporary slope drain, coir fiber baffles, geotextile liner and skimmer device, backfilling basin area with suitable material and providing proper drainage when basin area is abandoned.

#### **Materials**

Item	Section
Stone for Erosion Control, Class B	1042
Geotextile for Soil Stabilization, Type 4	1056
Fertilizer for Temporary Seeding	1060-2
Seed for Temporary Seeding	1060-4
Seeding and Mulching	1060-4
Matting for Erosion Control	1060-8
Staples	1060-8
Coir Fiber Mat	1060-14
Temporary Slope Drain	1622-2
Coir Fiber Baffle	1640

Provide appropriately sized and approved skimmer device.

Provide Schedule 40 PVC pipe with a length of 6 ft. to attach to the skimmer and the coupling connection to serve as the arm pipe. For skimmer sizes of 2.5 in. and smaller, the arm pipe diameter shall be 1.5 inches. For skimmer sizes of 3 in. and larger, refer to manufacturer recommendation.

Provide 4" diameter Schedule 40 PVC pipe to attach to coupling connection of skimmer to serve as the barrel pipe through the earthen dam.

Anchors: Staples, stakes, or reinforcement bars shall be used as anchors.

#### Wooden Stakes:

Provide hardwood stakes 12"- 24" long with a 2" x 2" nominal square cross section. One end of the stake must be sharpened or beveled to facilitate driving through the coir fiber mat and down into the underlying soil. The other end of the stake needs to have a 1"- 2" long head at the top with a 1"- 2" notch following to catch and secure the coir fiber mat.

#### Steel Reinforcement Bars:

Provide uncoated #10 steel reinforcement bars 24" nominal length. The bars shall have a 4" diameter bend at one end with a 4" straight section at the tip to catch and secure the coir fiber mat.

## Staples:

Provide staples made of 0.125" diameter new steel wire formed into a u shape not less than 12" in length with a throat of 1" in width.

#### **Construction Methods**

Excavate basin according to the erosion control plans with basin surface free of obstructions, debris, and pockets of low-density material. Install temporary slope drain pipe and construct the primary spillway according to the Skimmer Basin with Baffles Detail sheet in the erosion control plans. Temporary slope drain pipe at inlet of basin may be replaced by geotextile as directed. Construct the coir fiber baffles according to *Roadway Standard Drawings* No. 1640.01 and Section 1640 of the *Standard Specifications*.

Install skimmer device according to manufacturer recommendations. Install 4" Schedule 40 PVC pipe into dam on the lower side of basin 1 ft. from the bottom of the basin and according to the detail, and extend the pipe so the basin will drain. Attach a 6 ft. arm pipe to the coupling connection and skimmer according to manufacturer recommendations. The coupling shall be rigid and non-buoyant and not exceed a diameter of 4" and 12" in length. Attach the rope included with the skimmer to the tee between the vent socket and the tube inlet, and the other end to a wooden stake or metal post. Clean out skimmer device when it becomes clogged with sediment and/or debris and is unable to float at the top of water in skimmer basin. Take appropriate measures to avoid ice accumulation in the skimmer device. Construct a stone pad of Class B stone directly underneath the skimmer device at bottom of basin. The pad shall be a minimum of 12" in height, and shall have a minimum cross sectional area of 4 ft. by 4 ft.

Line primary spillway with geotextile unrolled in the direction of flow and lay smoothly but loosely on soil surface without creases. Bury edges of geotextile in a trench at least 5" deep and tamp firmly. If geotextile for the primary spillway is not one continuous piece of material, make horizontal overlaps a minimum of 18" with upstream geotextile overlapping the downstream geotextile. Secure geotextile with eleven gauge wire staples shaped into a u shape with a length of not less than 12" and a throat not less than 1" in width. Place staples along outer edges and throughout the geotextile a maximum of 3 ft. horizontally and vertically. Geotextile shall be placed

to the bottom and across the entire width of the basin according to the Skimmer Basin with Baffles detail. Place sealant inside basin around barrel pipe on top of geotextile with a minimum width of 6 in.

At the skimmer outlet, provide a smooth soil surface free from stones, clods, or debris that will prevent contact of the coir fiber matting with the soil. Unroll the matting and apply without stretching such that it will lie smoothly but loosely on the soil surface. Wooden stakes, reinforcement bars, or staples may be used as anchors in accordance with the details in the plans and as directed. Place anchors across the matting at the ends approximately 1 ft. apart. Place anchors along the outer edges and down the center of the matting 3 ft. apart.

All bare side slope sections of the skimmer basin shall be seeded with a temporary or permanent seed mix as directed and in accordance with Articles 1620-3, 1620-4, 1620-5, 1660-4, 1660-5 and 1660-7 of the *Standard Specifications*. Straw or excelsior matting shall be installed on all bare side slope sections immediately upon the completion of seeding and in accordance with Article 1631-3 of the *Standard Specifications*.

## **Measurement and Payment**

*Silt Excavation* will be measured and paid for in accordance with Article 1630-4 of the *Standard Specifications*, as calculated from the typical section throughout the length of the basin as shown on the final approved plans.

Geotextile for Soil Stabilization will be measured and paid for in accordance with Article 270-4 of the Standard Specifications.

Coir Fiber Baffles will be measured and paid for in accordance with Article 1640-4 of the Standard Specifications.

\_\_" Skimmer will be measured in units of each. \_\_" Skimmer will be measured and paid for as the maximum number of each size skimmer acceptably installed and in use at any one time during the life of the project. Barrel and arm pipe, cleanout, relocation and reinstallation of \_\_" Skimmer is considered incidental to the measurement of the quantity of \_\_" Skimmer and no separate payment will be made. No separate payment shall be made if \_\_" Skimmer, barrel and/or arm pipe(s) are damaged by ice accumulation.

Coir Fiber Mat will be measured and paid for as the actual number of square yards measured along the surface of the ground over which coir fiber mat is installed and accepted.

*Temporary Slope Drain* will be measured and paid for in accordance with Article 1622-4 of the *Standard Specifications*.

Stone for Erosion Control, Class \_\_ will be measured and paid for in accordance with Article 1610-4 of the Standard Specifications.

Seeding and Mulching will be measured and paid for in accordance with Article 1660-8 of the Standard Specifications.

Seed for Temporary Seeding will be measured and paid for in accordance with Article 1620-6 of the Standard Specifications.

Fertilizer for Temporary Seeding will be measured and paid for in accordance with Article 1620-6 of the Standard Specifications.

*Matting for Erosion Control* will be measured and paid for in accordance with Article 1631-4 of the *Standard Specifications*.

No measurement will be made for other items or for over excavation or stockpiling.

Payment will be made under:

Pay Item

\_" Skimmer

Coir Fiber Mat

Pay Unit

Each
Square Yard

## **COIR FIBER WATTLES WITH POLYACRYLAMIDE (PAM):**

## **Description**

Coir Fiber Wattles are tubular products consisting of coir fibers (coconut fibers) encased in coir fiber netting. Coir Fiber Wattles are used on slopes or channels to intercept runoff and act as a velocity break. Coir Fiber Wattles are to be placed at locations shown on the plans or as directed. Installation shall follow the detail provided in the plans and as directed. Work includes furnishing materials, installation of coir fiber wattles, matting installation, PAM application, and removing wattles.

#### **Materials**

Coir Fiber Wattle shall meet the following specifications:

100% Coir (Coconut) Fibers Minimum Diameter 12 in.

Minimum Density  $3.5 \text{ lb/ft}^3 +/- 10\%$ 

Net Material Coir Fiber
Net Openings 2 in. x 2 in.
Net Strength 90 lbs.

Minimum Weight 2.6 lbs./ft. +/- 10%

Anchors: Stakes shall be used as anchors.

#### Wooden Stakes:

Provide hardwood stakes a minimum of 2-ft. long with a 2 in. x 2 in. nominal square cross section. One end of the stake must be sharpened or beveled to facilitate driving down into the underlying soil.

Matting shall meet the requirements of Article 1060-8 of the *Standard Specifications*, or shall meet specifications provided elsewhere in this contract.

Provide staples made of 0.125" diameter new steel wire formed into a u shape not less than 12" in length with a throat of 1" in width.

Polyacrylamide (PAM) shall be applied in powder form and shall be anionic or neutrally charged. Soil samples shall be obtained in areas where the wattles will be placed, and from offsite material used to construct the roadway, and analyzed for the appropriate PAM flocculant to be utilized with each wattle. The PAM product used shall be listed on the North Carolina Department of Environmental Quality Division of Water Resources web site as an approved PAM product for use in North Carolina.

#### **Construction Methods**

Coir Fiber Wattles shall be secured to the soil by wire staples approximately every 1 linear foot and at the end of each section of wattle. A minimum of 4 stakes shall be installed on the downstream side of the wattle with a maximum spacing of 2 linear feet along the wattle, and according to the detail. Install a minimum of 2 stakes on the upstream side of the wattle according to the detail provided in the plans. Stakes shall be driven into the ground a minimum of 10 in. with no more than 2 in. projecting from the top of the wattle. Drive stakes at an angle according to the detail provided in the plans.

Only install coir fiber wattle(s) to a height in ditch so flow will not wash around wattle and scour ditch slopes and according to the detail provided in the plans and as directed. Overlap adjoining sections of wattles a minimum of 6 in.

Installation of matting shall be in accordance with the detail provided in the plans, and in accordance with Article 1631-3 of the *Standard Specifications*, or in accordance with specifications provided elsewhere in this contract.

Apply PAM over the lower center portion of the coir fiber wattle where the water is going to flow over at a rate of 2 ounces per wattle, and 1 ounce of PAM on matting on each side of the wattle. PAM applications shall be done during construction activities after every rainfall event that is equal to or exceeds 0.50 in.

The Contractor shall maintain the coir fiber wattles until the project is accepted or until the wattles are removed, and shall remove and dispose of silt accumulations at the wattles when so directed in accordance with the requirements of Section 1630 of the *Standard Specifications*.

### **Measurement and Payment**

Coir Fiber Wattles will be measured and paid for by the actual number of linear feet of wattles which are installed and accepted. Such price and payment will be full compensation for all work covered by this section, including, but not limited to, furnishing all materials, labor, equipment and incidentals necessary to install the Coir Fiber Wattles.

Matting will be measured and paid for in accordance with Article 1631-4 of the *Standard Specifications*, or in accordance with specifications provided elsewhere in this contract.

Polyacrylamide(PAM) will be measured and paid for by the actual weight in pounds of PAM applied to the coir fiber wattles. Such price and payment will be full compensation for all work covered by this section, including, but not limited to, furnishing all materials, labor, equipment and incidentals necessary to apply the Polyacrylamide(PAM).

Payment will be made under:

Pay ItemPay UnitPolyacrylamide(PAM)PoundCoir Fiber WattleLinear Foot

### SILT FENCE COIR FIBER WATTLE BREAK:

(8-21-12) 1605,1630

#### **Description**

Silt fence coir fiber wattle breaks are tubular products consisting of coir fibers (coconut fibers) encased in coir fiber netting and used in conjunction with temporary silt fence at the toe of fills to intercept runoff. Silt fence coir fiber wattle breaks are to be placed at locations shown on the plans or as directed. Installation shall follow the detail provided in the plans and as directed. Work includes furnishing materials, installation, maintenance and removing Silt fence coir fiber wattle breaks.

#### **Materials**

Coir fiber wattle shall meet the following specifications:

100% Coir (Coconut) Fibers		
Minimum Diameter	12"	
Minimum Length	10 ft	
Minimum Density	$3.5 \text{ lb/cf} \pm 10\%$	
Net Material	Coir Fiber	
Net Openings	2" x 2"	
Net Strength	90 lb.	
Minimum Weight	$2.6 \text{ lb/ft} \pm 10\%$	

Stakes shall be used as anchors. Provide hardwood stakes a minimum of 2-ft long with a 2" x 2" nominal square cross section. One end of the stake shall be sharpened or beveled to facilitate driving down into the underlying soil.

Provide staples made of 0.125" diameter new steel wire formed into a U-shape not less than 12" in length with a throat of 1" in width.

#### **Construction Methods**

Excavate a trench the entire length of each wattle with a depth of 1" to 2" for the wattle to be placed. Secure silt fence coir fiber wattle breaks to the soil by wire staples approximately every linear foot and at the end of each wattle. Install at least 4 stakes on the downslope side of the wattle with a maximum spacing of 2 linear feet and according to the detail. Install at least 2 stakes on the upslope side of the silt fence coir fiber wattle break according to the detail provided in the plans. Drive stakes into the ground at least 10" with no more than 2" projecting from the top of the wattle. Drive stakes at an angle according to the detail provided in the plans.

Install temporary silt fence in accordance with Section 1605 of the *Standard Specifications* and overlap each downslope side of silt fence wattle break by 6".

Maintain the silt fence coir fiber wattle breaks until the project is accepted or until the silt fence coir fiber wattle breaks are removed, and remove and dispose of silt accumulations at the silt fence coir fiber wattle breaks when so directed in accordance with Section 1630 of the *Standard Specifications*.

#### **Measurement and Payment**

Coir Fiber Wattle will be measured and paid as the actual number of linear feet of wattles installed and accepted. Such price and payment will be full compensation for all work covered by this provision, including, but not limited to, furnishing all materials, labor, equipment and incidentals necessary to install the silt fence coir fiber wattle break.

Payment will be made under:

Pay ItemPay UnitCoir Fiber WattleLinear Foot

## **WATTLE BARRIER:**

(5-20-13) 1630

## **Description**

Wattle barriers are tubular products consisting of excelsior fibers encased in natural or synthetic netting and used at the toe of fills or on slopes to intercept runoff. Wattle barriers are to be placed at locations shown on the plans or as directed. Installation shall follow the detail provided in the

plans and as directed. Work includes furnishing materials, installation, maintenance and removing wattle barriers.

#### **Materials**

Wattle shall meet the following specifications:

Inner Material	100% Curled Wood (Excelsior) Fibers
Minimum Diameter	18"
Minimum Length	10 ft.
Minimum Density	2.9 lb./c.f.± 10%
Net Material	Synthetic
Net Openings	1" x 1"
Net Configuration	Totally Encased
Minimum Weight	5 lb./ft. ± 10%

Stakes shall be used as anchors. Provide hardwood stakes a minimum of 2-ft long with a 2" x 2" nominal square cross section. One end of the stake shall be sharpened or beveled to facilitate driving down into the underlying soil.

Provide staples made of 0.125" diameter new steel wire formed into a U-shape not less than 12" in length with a throat of 1" in width.

#### **Construction Methods**

Align wattle barriers in an overlapping and alternating pattern. Excavate a trench the entire length of each wattle with a depth of 2" to 3" for the wattle to be placed. Secure wattle barriers to the soil by wire staples approximately every linear foot and at the end of each wattle. Install at least 4 stakes on the downslope side of the wattle with a maximum spacing of 2 linear feet, and according to the detail. Install at least 2 stakes on the upslope side of the wattle barrier according to the detail provided in the plans. Drive stakes into the ground at least 10" with no more than 2" projecting from the top of the wattle. Drive stakes at an angle according to the detail provided in the plans.

For wattle barriers used to reduce runoff velocity for large slopes, use a maximum spacing of 25 ft. for the barrier measured along the slope.

Maintain the wattle barriers until the project is accepted or until the wattle barriers are removed, and remove and dispose of silt accumulations at the wattle barriers when so directed in accordance with Section 1630 of the *Standard Specifications*.

## **Measurement and Payment**

Wattle Barrier will be measured and paid as the actual number of linear feet of wattles installed and accepted. Such price and payment will be full compensation for all work covered by this provision, including, but not limited to, furnishing all materials, labor, equipment and incidentals necessary to install the wattle barrier.

Payment will be made under:

Pay ItemPay UnitWattle BarrierLinear Foot

# TEMPORARY ROCK SILT CHECK TYPE A WITH EXCELSIOR MATTING AND POLYACRYLAMIDE (PAM):

## **Description**

Temporary Rock Silt Checks Type A with Excelsior Matting and Polyacrylamide (PAM) are devices utilized in temporary and permanent ditches to reduce runoff velocity and incorporate PAM into the construction runoff to increase settling of sediment particles and reduce turbidity of runoff. Temporary Rock Silt Checks Type A with Excelsior Matting and PAM are to be placed at locations shown on the plans or as directed. Installation shall follow the detail provided in the plans and as directed. Work includes furnishing materials, installation of Temporary Rock Silt Checks Type A, matting installation, PAM application, and removing Temporary Rock Silt Checks Type A with Excelsior Matting and PAM.

#### **Materials**

Structural stone shall be class B stone that meets the requirements of Section 1042 of the *Standard Specifications* for Stone for Erosion Control, Class B.

Sediment control stone shall be #5 or #57 stone, which meets the requirements of Section 1005 of the *Standard Specifications* for these stone sizes.

Matting shall meet the requirements of Excelsior Matting in Subarticle 1060-8(B) of the *Standard Specifications*, or shall meet specifications provided elsewhere in this contract.

Polyacrylamide (PAM) shall be applied in powder form and shall be anionic or neutrally charged. Soil samples shall be obtained in areas where the Temporary Rock Silt Checks Type A with Excelsior Matting and PAM will be placed, and from offsite material used to construct the roadway, and analyzed for the appropriate PAM flocculant to be utilized with each Temporary Rock Silt Check Type A. The PAM product used shall be listed on the North Carolina Department of Environmental Quality Division of Water Resources web site as an approved PAM product for use in North Carolina.

#### **Construction Methods**

Temporary Rock Silt Checks Type A shall be installed in accordance with Subarticle 1633-3(A) of the *Standard Specifications*, Roadway Standard Drawing No. 1633.01 and the detail provided in the plans.

Installation of matting shall be in accordance with the detail provided in the plans, and anchored by placing Class B stone on top of the matting at the upper and lower ends.

Apply PAM at a rate of 4 ounces over the center portion of the Temporary Rock Silt Checks Type A and matting where the water is going to flow over. PAM applications shall be done during construction activities and after every rainfall event that is equal to or exceeds 0.50 in.

The Contractor shall maintain the Temporary Rock Silt Checks Type A with Excelsior Matting and PAM until the project is accepted or until the Temporary Rock Silt Checks Type A with Excelsior Matting and PAM are removed, and shall remove and dispose of silt accumulations at the Temporary Rock Silt Checks Type A with Excelsior Matting and PAM when so directed in accordance with the requirements of Section 1630 of the *Standard Specifications*.

## **Measurement and Payment**

Temporary Rock Silt Checks Type A will be measured and paid for in accordance with Article 1633-5 of the Standard Specifications, or in accordance with specifications provided elsewhere in this contract.

Matting will be measured and paid for in accordance with Article 1631-4 of the *Standard Specifications*, or in accordance with specifications provided elsewhere in this contract.

*Polyacrylamide(PAM)* will be measured and paid for by the actual weight in pounds of PAM applied to the Temporary Rock Silt Checks Type A. Such price and payment will be full compensation for all work covered by this section, including, but not limited to, furnishing all materials, labor, equipment and incidentals necessary to apply the *Polyacrylamide(PAM)*.

Payment will be made under:

Pay Item
Polyacrylamide(PAM)
Pound

## **CULVERT DIVERSION CHANNEL:**

## **Description**

This work consists of providing a *Culvert Diversion Channel* to detour the existing stream around the culvert construction site at locations shown on the plans. Work includes constructing the diversion channel, disposing of excess materials, providing and placing geotextile liner, maintaining the diversion area in an acceptable condition, removing geotextile liner, backfilling diversion channel area with suitable material, and providing proper drainage when diversion channel area is abandoned.

#### **Materials**

Refer to Division 10

ItemSectionGeotextile for Soil Stabilization, Type 41056

#### **Construction Methods**

Grade channel according to the plans with channel surface free of obstructions, debris, and pockets of low-density material. Utilize suitable material and provide disposal area for unsuitable material.

Line channel with geotextile unrolled in the direction of flow and lay smoothly but loosely on soil surface without creases. Bury top of slope geotextile edge in a trench at least 5" deep and tamp securely. Make vertical overlaps a minimum of 18" with upstream geotextile overlapping the downstream geotextile.

Secure geotextile with eleven gauge wire staples shaped into a u shape with a length of not less than 6" and a throat not less than 1" in width. Place staples along outer edges and throughout the geotextile a maximum of 3 ft. horizontally and vertically.

## **Measurement and Payment**

Culvert Diversion Channel will be measured and paid for as the actual number of cubic yards excavated, as calculated from the typical section throughout the length of the diversion channel as shown on the final approved plans.

Geotextile for Soil Stabilization will be measured and paid for in accordance with Article 270-4 of the Standard Specifications.

Such price and payment shall be considered full compensation for all work covered by this section including all materials, construction, maintenance, and removal of *Culvert Diversion Channel*.

Payment will be made under:

Pay Item

Culvert Diversion Channel

Cubic Yard

## **IMPERVIOUS DIKE:**

(9-9-11)(Rev. 11-15-22)

## **Description**

This work consists of furnishing, installing, maintaining, pumping and removing an *Impervious Dike* for the purpose of diverting normal stream flow around the construction site. The Contractor shall construct an impervious dike in such a manner approved by the Engineer. The impervious dike shall not permit seepage of water into the construction site or contribute to siltation of the stream. The impervious dike shall be constructed of an acceptable material in the locations noted on the plans or as directed by the Engineer.

#### **Materials**

Acceptable materials shall include but not be limited to sheet piles, sandbags, and/or the placement of an acceptable size stone lined with polypropylene or other impervious geotextile.

Earth material shall not be used to construct an impervious dike when it is in direct contact with the stream unless vegetation can be established before contact with the stream takes place.

#### **Construction Methods**

Where impervious dikes are shown on the plans and used to dewater or lower the water elevation, construct in accordance with Article 410-4 and 410-5.

## **Measurement and Payment**

Impervious Dike will be measured and paid as the actual number of linear feet of impervious dike(s) constructed, measured in place from end to end of each separate installation that has been completed and accepted by the Engineer. Such price and payment will be full compensation for all work including but not limited to furnishing materials, construction, maintenance, pumping and removal of the impervious dike.

Payment will be made under:

Pay Item
Impervious Dike
Linear Foot

## **TEMPORARY PIPE FOR CULVERT CONSTRUCTION:**

# **Description**

This work consists of furnishing, installing, maintaining and removing any and all temporary pipe used on this project in conjunction with the culvert construction.

#### **Construction Methods**

The Contractor shall install temporary pipe in locations shown on the plans in such a manner approved by the Engineer. The temporary pipe shall provide a passageway for the stream through the work-site. The minimum size requirements will be as stated on the erosion control plans.

## **Measurement and Payment**

\_\_" Temporary Pipe will be measured and paid for at the contract unit price per linear foot of temporary pipe approved by the Engineer and measured in place from end to end. Such price and payment will be full compensation for all work covered by this section including but not limited to furnishing all materials required for installation, construction, maintenance, and removal of temporary pipe.

Payment will be made under:

Pay Item Pay Unit
\_\_" Temporary Pipe Linear Foot

### **PUMP AROUND OPERATION:**

## **Description**

The work covered by this section consists of furnishing, installing, maintaining and removing any and all pump around systems used on this project. The Contractor shall install a pump around system in locations as shown in the plans and in other locations approved by the Engineer. The pump around system shall provide a passageway for the stream flow around the work site.

The quantity of pump around systems may be increased, decreased, or eliminated entirely as directed. Such variations in quantity will not be considered as alterations in the details of construction or a change in the character of the work. See NCDOT *Best Management Practices for Construction and Maintenance Activities* manual for example pump around operation.

#### **Materials**

Item	Section
Special Stilling Basin	1639

*Impervious Dike* shall meet the specifications as provided elsewhere in this contract.

Pumps shall be of sufficient size to divert the stream flow around the work area, as approved by the Engineer.

#### **Construction Methods**

Install *impervious dike(s)* as shown on the plans or as directed. Pump water around the work site. If the water is turbid or exposed to bare soil, pump through a *special stilling basin*. Once the work is complete in an area remove the *impervious dike(s)* and pump system, and stabilize the area.

## **Measurement and Payment**

*Impervious Dike* will be measured and paid for as provided elsewhere in this contract.

Special Stilling Basin will be measured and paid for in accordance with Article 1639-4 of the Standard Specifications.

Payment for pumping operations shall be considered incidental to the work of installing pipes and culverts. The pumping operations shall include but not be limited to, diverting the stream flow around the work area and pumping runoff from the work area into a stilling basin, special stilling

basin or other sediment control device. No additional payment will be made for furnishing materials or maintenance of the pumping operations for the installation of pipes and culverts.

The above prices and payments will be full compensation for all work covered by this section including, but not limited to furnishing all of the necessary materials, construction, maintenance and removal of the impervious dike and pump around system.

### **COIR FIBER MAT:**

## **Description**

Furnish material, install and maintain coir fiber mat in locations shown on the plans or in locations as directed. Work includes providing all materials, excavating and backfilling, and placing and securing coir fiber mat with stakes, steel reinforcement bars or staples as directed.

#### **Materials**

ItemSectionCoir Fiber Mat1060-14

Anchors: Stakes, reinforcement bars, or staples shall be used as anchors.

#### Wooden Stakes:

Provide hardwood stakes 12"- 24" long with a 2" x 2" nominal square cross section. One end of the stake must be sharpened or beveled to facilitate driving through the coir fiber mat and down into the underlying soil. The other end of the stake needs to have a 1"- 2" long head at the top with a 1"- 2" notch following to catch and secure the coir fiber mat.

#### Steel Reinforcement Bars:

Provide uncoated #10 steel reinforcement bars 24" nominal length. The bars shall have a 4" diameter bend at one end with a 4" straight section at the tip to catch and secure the coir fiber mat.

#### Staples:

Provide staples made of 0.125" diameter new steel wire formed into a u shape not less than 12" in length with a throat of 1" in width.

#### **Construction Methods**

Place the coir fiber mat immediately upon final grading. Provide a smooth soil surface free from stones, clods, or debris that will prevent the contact of the mat with the soil. Unroll the mat and apply without stretching such that it will lie smoothly but loosely on the soil surface.

For stream relocation applications, take care to preserve the required line, grade, and cross section of the area covered. Bury the top slope end of each piece of mat in a narrow trench at least 6 in. deep and tamp firmly. Where one roll of matting ends and a second roll begins, overlap the end of the upper roll over the buried end of the second roll so there is a 6 in. overlap. Construct check trenches at least 12 in. deep every 50 ft. longitudinally along the edges of the mat or as directed. Fold over and bury mat to the full depth of the trench, close and tamp firmly. Overlap mat at least 6 in. where 2 or more widths of mat are installed side by side.

Place anchors across the mat at the ends approximately 1 ft. apart. Place anchors along the outer edges and down the center of the mat 3 ft. apart.

Adjustments in the trenching or anchoring requirements to fit individual site conditions may be required.

## **Measurement and Payment**

Coir Fiber Mat will be measured and paid for as the actual number of square yards measured along the surface of the ground over which coir fiber mat is installed and accepted.

No measurement will be made for anchor items.

Payment will be made under:

Pay ItemPay UnitCoir Fiber MatSquare Yard

## **POND DRAINAGE PLAN REQUIREMENT:**

The Contractor shall develop a Pond Drainage Plan for all ponds that are required to be drained for the construction of this project and submit the plan to the Engineer at the preconstruction conference for approval. The Pond Drainage Plan shall include but not be limited to procedures and rate of water drawdown, sediment control measures, water quality monitoring, fish and wildlife relocation plan, shall address procedures avoiding the inundation of a receiving body of water with deoxygenated or nutrient rich water resulting in impacts to aquatic life or algae bloom and procedures for maintaining downstream channel stability. If such ponds to be drained are on the NC DEQ Dam Safety Inventory List, all NC DEQ Dam Safety procedures must be followed.

Any erosion control devices or permanent seeding and mulching in areas where ponds have been drained will be paid for at the contract unit price for the item required. All additional erosion and sediment control practices not included in the contract documents that may be required on a pond drainage site will be done at the Contractor's expense.

No direct payment will be made for developing or implementing the Pond Drainage Plan as the cost of such shall be included in the lump sum price bid for *Clearing and Grubbing*.

## **CONCRETE WASHOUT STRUCTURE:**

(8-17-23)

# **Description**

Concrete washout structures are enclosures above or below grade to contain concrete waste water and associated concrete mix from washing out ready-mix trucks, drums, pumps, or other equipment. Concrete washouts must collect and retain all the concrete washout water and solids, so that this material does not migrate to surface waters or into the ground water. These enclosures are not intended for concrete waste not associated with wash out operations.

The concrete washout structure may include constructed devices above or below ground and or commercially available devices designed specifically to capture concrete wash water.

#### **Materials**

ItemSectionTemporary Silt Fence1605

Safety Fence shall meet the specifications as provided elsewhere in this contract.

Geomembrane basin liner shall meet the following minimum physical properties for low permeability; it shall consist of a polypropylene or polyethylene 10 mil think geomembrane. If the minimum setback dimensions can be achieved the liner is not required. (5 feet above groundwater, 50 feet from top of bank of perennial stream, other surface water body, or wetland.)

#### **Construction Methods**

Build an enclosed earthen berm or excavate to form an enclosure in accordance with the details and as directed.

Install temporary silt fence around the perimeter of the enclosure in accordance with the details and as directed if structure is not located in an area where existing erosion and sedimentation control devices are capable to containing any loss of sediment.

Post a sign with the words "Concrete Washout" in close proximity of the concrete washout area, so it is clearly visible to site personnel. Install safety fence as directed for visibility to construction traffic.

Alternate details for accommodating concrete washout may be submitted for review and approval.

The alternate details shall include the method used to retain and dispose of concrete waste water within the project limits and in accordance with the minimum setback requirements. (5 feet above groundwater, 50 feet from top of bank of perennial stream, other surface water body, or wetland.)

#### **Maintenance and Removal**

Maintain the concrete washout structure(s) to provide adequate holding capacity plus a minimum freeboard of 12 inches. Remove and dispose of hardened concrete and return the structure to a functional condition after reaching 75% capacity.

Inspect concrete washout structures for damage and maintain for effectiveness.

Remove the concrete washout structures and sign upon project completion. Grade the earth material to match the existing contours and permanently seed and mulch area.

## **Measurement and Payment**

Concrete Washout Structure will be paid for per each enclosure installed in accordance with the details. If alternate details or commercially available devices are approved, then those devices will also be paid for per each approved and installed device.

Temporary Silt Fence will be measured and paid for in accordance with Article 1605-5 of the Standard Specifications.

Safety Fence shall be measured and paid for as provided elsewhere in this contract.

No measurement will be made for other items or for over excavation or stockpiling.

Payment will be made under:

Pay Item
Concrete Washout Structure
Each

## **LITTER REMOVAL (MOWING AREAS ONLY):**

(07-19-22)

## **Description**

This work consists of the pickup, removal, and disposal of litter from roadsides within the construction project prior to mowing operations.

#### **Construction Methods**

Provide labor, equipment and materials necessary for the pickup and removal of litter from non-construction sources and the disposal of same into state approved landfills. The Contractor shall abide by all ordinances, laws and regulations regarding disposal of litter and recycling of eligible materials. Wastes generated from construction activities shall be managed as provided elsewhere in the contract. Litter items may consist of any item not considered normal to the right-of-way, including but not limited to, varied sizes of bottles, cans, paper, tires, tire pieces, lumber, vehicle parts, building supplies, metals, household furnishings, cardboard, plastics, ladders, brush and

other items not considered normal to the right of way. Litter removal shall be performed in designated areas within five days prior to any mowing operations and as directed. Designated areas shall include vegetated medians and shoulders within the project limits including all interchange ramps and other areas to be mown. Designated areas may be omitted for litter removal by the Engineer due to safety concerns.

The Contractor shall provide adequate personnel and materials to collect and remove litter. The Contractor shall be responsible for locating and utilizing approved local landfills and recycling facilities. Refer to Section 105-27 of the *Standard Specifications* for potential hazardous materials. All collected litter shall be containerized immediately and kept off the traveled portions of the roadway, shoulders, and rights-of-way (including paved shoulders). All collected litter that is small enough to be placed in a bag shall be bagged immediately. All collected litter that is too large for a bag shall be placed into a vehicle. Extended storage or stockpiling of collected litter and recyclables will not be permitted.

The Contractor's personnel shall dispose of any litter in a landfill approved by North Carolina Division of Waste Management. The Contractor will not be allowed to use NCDOT accounts at the landfills/recycling centers nor be allowed to dispose of the litter in NCDOT trash containers on any NCDOT property.

The Contractor shall report online the number of bags of litter and any recycling on the NCDOT Litter Management Website on the date of the pickup at the following website:

# https://apps.ncdot.gov/LM

An access code ('Pickup Key') for the online reporting portal may be obtained via emailing the Roadside Environmental Unit Litter Management Section at <a href="mailto:ncdot.gov">ncdot.gov</a>. The Contractor shall request access to the litter removal reporting website prior to starting initial litter collection operations.

## **Measurement and Payment**

The quantity of litter removal to be performed will be affected by the actual conditions that occur during construction of the project. The quantity of litter removal may be increased, decreased, or eliminated entirely as directed. Such variations in quantity will not be considered as alterations in the details of construction or a change in the character of the work.

Manual Litter Removal will be measured and paid as the actual number of man hours each worker spends picking up litter. Such price and payment will be full compensation for all litter removal work covered by Litter Removal, including, but not limited to, furnishing all materials, labor, equipment, transport, reporting, and incidentals necessary to accomplish the work.

Litter Disposal will be measured and paid for by the actual number of tons of litter collected and properly disposed of at a state approved landfill. Such price and payment will be full compensation for all fees, labor, transport, and incidentals necessary to dispose of collected litter associated with Litter Removal.

All traffic control necessary to provide a safe work area for *Litter Removal* shall be paid for as specified elsewhere in the contract.

Payment will be made under:

Pay Item	Pay Unit
Manual Litter Removal	MHR
Litter Disposal	TON

# FABRIC INSERT INLET PROTECTION DEVICE (HIGH FLOW)

(6-29-17)

## **Description**

This work shall consist of installing, maintaining, and removing *Fabric Insert Inlet Protection Device*, of the type specified, in inlet structures (catch basins, drop inlets, etc) in areas where asphalt or concrete may prevent the proper installation of a Rock Inlet Sediment Traps Type C, or as directed.

#### **Materials**

The product shall be a fabric inlet protection device composed of a fitted woven polypropylene geotextile double sewn with nylon thread suspended sack. The *Fabric Insert Inlet Protection Device* shall be manufactured to fit the opening of the catch basin or drop inlet or shall have a deflector to direct runoff from the curb opening into the fabric sack. The *Fabric Insert Inlet Protection Device* shall have a rigid frame or support system to support the loaded weight of the product. The product shall have lifting loops for removing the device from the basin and will have dump straps attached at the bottom to facilitate the emptying of the device. The *Fabric Insert Inlet Protection Device* shall have an overflow system to allow stormwater to enter the inlet structure and avoid ponding on the roadway when the device reaches capacity.

The stitching shall meet the following physical properties:

Physical	Test Method	English
Average Wide Width Strength	ASTM D-4884	165 lb/in

The fitted filter assembly shall have the following physical properties:

Physical	Test Method	English
Grab Tensile	ASTM D-4632	255 x 275 lbs
Minimum Puncture Strength	ASTM D-4833	125 lbs
Mullen Burst	ASTM D-3786	420 PSI
Minimum UV Resistance	ASTM D-4355	70 %.
Flow Rate	ASTM D-4491	200 gal/min/ft <sup>2</sup>
Apparent Opening	ASTM D-4751	20 US Sieve
Permittivity	ASTM D-4491	1.5 sec <sup>-1</sup>

#### **Construction Methods**

Strictly comply with manufacturer's installation instructions and recommendations. Maintenance shall include regular daily inspections and after each qualifying rain event. The *Fabric Insert Inlet Protection Device* shall be emptied, cleaned and placed back into the basin when it reaches 50% capacity or as directed.

## **Measurement and Payment**

This work will be paid for at the contract unit price per *Fabric Insert Inlet Protection Device* of the type specified, complete in place and accepted. Such payment shall be full compensation for furnishing and installing the *Fabric Insert Inlet Protection Device* in accordance with this specification and for all required maintenance.

Maintenance of the device, cleanout and disposal of accumulated sediments shall be paid for by Fabric Insert Inlet Protection Device Cleanout.

Payment will be made under:

Pay ItemPay UnitFabric Insert Inlet Protection DeviceEachFabric Insert Inlet Protection Device CleanoutEach

# TACK FOR MULCH FOR EROSION CONTROL:

(07-19-22)

## **Description**

This work consists of supplying and installing of an approved material for binding mulch for erosion control in accordance with Section 1060-5, Section 1615 and Section 1660 of the *Standard Specifications*. This provision defines acceptable materials and rates for tacking material for holding mulch in place.

#### **Materials**

## (a) Emulsified Asphalt

Asphalt emulsion tack shall conform to the requirements of AASHTO M 140, Specification for Emulsified Asphalt. The emulsified asphalt may be rapid setting, medium setting, or slow setting. Apply emulsified asphalt tackifier at a rate of 0.10 gallons per square yard (approximately 484 gallons per acre).

## (b) Cellulose Hydromulch

Cellulose hydromulch products shall be non-toxic, weed-free, prepackaged cellulose fiber (pulp) material containing no more than 3% ash or other inert materials. Cellulose

hydromulches may contain dyes or binders specifically formulated to enhance the adhesive qualities of the hydromulch. Apply cellulose hydromulches at a rate of 1000 pounds (dry weight) per acre.

Wood fiber or wood fiber blend hydromulches may be substituted for cellulose hydromulch at the same application rate.

## (c) Other tackifiers

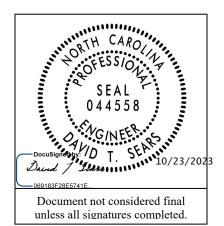
Other approved materials, specifically designed and manufactured for application as a straw mulch tacking agent, may be used at the manufacturer's recommended rate.

#### **Construction Methods**

Apply the Tack for Mulch for Erosion Control uniformly across straw mulch per Section 1615 and Section 1660 of the *Standard Specifications*.

## **Payment**

Tack for Mulch for Erosion Control is incidental to the application of Temporary Mulching, Section 1615-4, and Seeding and Mulching, Section 1660-8, and no additional payment will be made.



# Signals and Intelligent Transportation Systems Project Special Provisions (Version 18.9)

Prepared By: WPJ 25-Jul-23

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## 1. 2018 STANDARD SPECIFICATIONS FOR ROADS & STRUCTURES

The 2018 Standard Specifications are revised as follows:

## 1.1. GENERAL REQUIREMENTS – Materials (1098-1(H))

Page 10-212, line 12, revise title of section 1098-1(H) from "Electrical Service" to "Electrical Service for Traffic Signals".

Page 10-212, revise paragraph beginning on line 13 to read "Furnish external electrical service disconnects with a single pole 50 ampere inverse time circuit breaker with at least 10,000 RMS symmetrical amperes short circuit current rating in a lockable NEMA 3R enclosure. For electrical service to an Advanced Transportation Controller (ATC) cabinet, provide a single pole 30 ampere inverse time circuit breaker with at least 10,000 RMS symmetrical amperes short circuit current rating. Ensure service disconnects are listed as meeting UL Standard UL-489 and marked as being suitable for use as service equipment. Fabricate enclosure from galvanized steel and electrostatically apply dry powder paint finish, light gray in color, to yield a minimum thickness of 2.4 mils. Provide ground bus and neutral bus with at least 5 terminals with minimum wire capacity range of number 14 through number 4. Ensure each service has only one disconnecting means in the enclosure. Place barriers in service equipment such that no uninsulated, ungrounded service busbar, or service terminal is exposed."

## 1.2. BACKPLATES (1098-2)

Page 10-213, revise paragraph starting on line 27 to read:

"Provide polycarbonate or vacuum formed ABS plastic or composite material backplates that are black on both the front and back sides with a consistent color throughout the entire piece for each backplate. Provide backplates that contain UV inhibitors and stabilizers for protection against UV degradation. Provide backplates that have a minimum tensile stress at yield of 5,300 psi at 73°F and meet UL Standard 94. Ensure polycarbonate backplates have a minimum thickness of 0.100 inch with one side dull black and the other side semi-gloss black. Ensure vacuum formed ABS plastic backplates have a minimum thickness of 0.125 inch with a hair cell finish on the front side and a smooth finish on the back side. Ensure composite material backplates have a polyethylene core with a minimum thickness of 0.074 inch surrounded by 2 aluminum sheets with each aluminum sheet at a minimum of 0.010 inch. Ensure the 2 aluminum sheets and the polyethylene core are bonded together with fluoropolymer or polyester coating on both outer sides for the composite material backplates."

Page 10-213, add the following after line 34:

"Provide backplates with a florescent yellow retroreflective sheeting strip 2 inches wide, placed along the perimeter of the face of the signal backplate to reflect the profile of the signal head in low-light and darkness. Ensure connecting corner sections of the retroreflective sheeting strips are butt spliced with a minimum gap of 30 mil to a maximum gap of 45 mil. The sheeting strip shall meet the performance requirements of AASHTO M268 Type D and ASTM D4956 Type X1 sheeting material." Ensure the retroreflective sheeting strip is applied in accordance with manufacturer's guidelines.

#### 1.3. GENERAL REQUIREMENTS – Construction Methods (1700-3(K))

Page 17-4, revise paragraph starting on line 10 to read:

"Where electrical services do not include an external electrical service disconnect, modify service to include electrical service disconnect and a new grounding electrode system.

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Provide a grounding electrode system at all new electrical services. All grounding and bonding equipment shall conform to UL Standard 467. Permanently bond grounding conductor to ground rod using an irreversible ground connector. Unless the irreversible ground connectors are designed for use with more than one conductor, only one conductor shall be used with each irreversible ground connector. Ensure all irreversible ground connectors are installed per manufacturer's installation instructions. Irreversible compression ground connectors requiring the use of a die for installation shall be made using a hydraulic, power, or ratcheting type crimper with appropriate dies. The use of handheld pliers for crimping irreversible compression ground connectors is prohibited.

Modify existing electrical services, as necessary, to meet the grounding requirements of the NEC, these Standard Specifications and the project plans. Remove any ground rods in the cabinet foundation and install a new grounding electrode system. Cut off abandoned ground rods in the cabinet foundation flush with the foundation surface.

In addition to NEC requirements, test grounding electrode resistance for a maximum of 20 ohms. Furnish and install additional ground rods to grounding electrode system as necessary to meet the Standard Specifications, Standard Drawings, and test requirements. Grounding electrode resistance test shall be verified or witnessed by the Engineer or the Engineer's designated representative.

Follow test equipment's procedures for measuring grounding electrode resistance. When using clamp-type ground resistance meters, readings of less than one ohm typically indicate a ground loop. Rework bonding and grounding circuits as necessary to remove ground loop circuits and retest. If a ground loop cannot be identified and removed to allow the proper use of a clamp-type ground resistance meter, use the three-point test method.

Submit a completed Inductive Loop & Grounding Test Form available on the Department's website.

For ease of inspection, the top of ground rods shall be 12 inches ( $\pm$  1 inch) below finished grade and shall remain exposed until electrical inspection is complete. Provide a length of marker tape 6 inches below finished grade directly over grounding electrodes and conductors.

For ground rods installed in areas where the slope is greater than 4:1, the top of the ground rods shall be a minimum of 24" below finished grade. Provide a length of marker tape 6 inches to 12 inches below finished grade directly over grounding electrodes and conductors."

## 1.4. GENERAL REQUIREMENTS – Construction Methods (1700-3(L))

Page 17-4, revise paragraph starting on line 35 to read "Using an approved termination means, connect a #14 AWG minimum, 19-strand copper conductor (Type THWN) with insulation that is green or green with one or more yellow stripes to serve as an equipment grounding conductor to metal poles, vehicular and pedestrian signal pedestals, and other metallic components which are not otherwise bonded through means approved by the Engineer. For traffic signal installations, equipment grounding conductors shall have insulation that is green with one or more yellow stripes."

# 1.5. GENERAL REQUIREMENTS – Construction Methods (1700-3(M))

Page 17-4, Replace the sentence beginning on line 41 with "Prior to placing signal in the steady (stop-and-go) mode, the signal should be placed in the flashing mode for up to 7 days or as directed by the Engineer. The signal should not be placed in the steady (stop-and-go) mode on a Saturday or Sunday without prior approval from the Engineer. Do not place the signal in steady (stop-and-go) mode until inspected and without the prior approval of the Engineer."

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## 1.6. WOOD POLES – Construction Methods (1720-3)

Page 17-18, revise sentence starting on line 13 to read "On new Department-owned poles, install a grounding system consisting of #6 AWG solid bare copper wire that is connected with an **irreversible ground connector** to a single ground rod installed at base of pole or to the electrical service grounding electrode system located within 10 feet of the pole."

#### 2. SIGNAL HEADS

#### 2.1. MATERIALS

#### A. General:

Fabricate vehicle signal head housings and end caps from die-cast aluminum. Provide visor mounting screws, door latches, and hinge pins fabricated from stainless steel. Provide interior screws, fasteners, and metal parts fabricated from stainless steel.

Fabricate tunnel and traditional visors from sheet aluminum.

Paint all surfaces inside and outside of signal housings and doors. Paint outside surfaces of tunnel and traditional visors, wire outlet bodies, wire entrance fitting brackets and end caps when supplied as components of messenger cable mounting assemblies, pole and pedestal mounting assemblies, and pedestrian pushbutton housings. Have electrostatically-applied, fused-polyester paint in highway yellow (Federal Standard 595C, Color Chip Number 13538) a minimum of 2.5 to 3.5 mils thick. Do not apply paint to the latching hardware, rigid vehicle signal head mounting brackets for mast-arm attachments, messenger cable hanger components or balance adjuster components.

Have the interior surfaces of tunnel and traditional visors painted an alkyd urea black synthetic baking enamel with a minimum gloss reflectance and meeting the requirements of MIL-E-10169, "Enamel Heat Resisting, Instrument Black."

Where required, provide polycarbonate signal heads and visors that comply with the provisions pertaining to the aluminum signal heads listed on the QPL with the following exceptions:

Fabricate signal head housings, end caps, and visors from virgin polycarbonate material. Provide UV stabilized polycarbonate plastic with a minimum thickness of  $0.1 \pm 0.01$  inches that is highway yellow (Federal Standard 595C, Color Chip 13538). Ensure the color is incorporated into the plastic material before molding the signal head housings and end caps. Ensure the plastic formulation provides the following physical properties in the assembly (tests may be performed on separately molded specimens):

Test	Required	Method
Specific Gravity	1.17 minimum	ASTM D 792
Flammability	Self-extinguishing	ASTM D 635
Tensile Strength, yield, PSI	8500 minimum	ASTM D 638
Izod impact strength, ft-lb/in [notched, 1/8 inch]	12 minimum	ASTM D 256

For light emitting diode (LED) traffic signal modules, provide the following requirements for inclusion on the Department's Qualified Products List for traffic signal equipment.

1. Sample submittal,

- 2. Third-party independent laboratory testing results for each submitted module with evidence of testing and conformance with all of the Design Qualification Testing specified in section 6.4 of each of the following Institute of Transportation Engineers (ITE) specifications:
  - Vehicle Traffic Control Signal Heads Light Emitting Diode (LED) Circular Signal Supplement
  - Vehicle Traffic Control Signal Heads Light Emitting Diode (LED) Vehicle Arrow Traffic Signal Supplement
  - Pedestrian Traffic Control Signal Indications –Light Emitting Diode (LED) Signal Modules.

(Note: The Department currently recognizes two approved independent testing laboratories. They are Intertek ETL Semko and Light Metrics, Incorporated with Garwood Laboratories. Independent laboratory tests from other laboratories may be considered as part of the QPL submittal at the discretion of the Department,

- 3. Evidence of conformance with the requirements of these specifications,
- 4. A manufacturer's warranty statement in accordance with the required warranty, and
- 5. Submittal of manufacturer's design and production documentation for the model, including but not limited to, electrical schematics, electronic component values, proprietary part numbers, bill of materials, and production electrical and photometric test parameters.
- 6. Evidence of approval of the product to bear the Intertek ETL Verified product label for LED traffic signal modules.

Ensure LED traffic signal modules meet the performance requirements for the minimum period of 15 years, provide a written warranty against defects in materials and workmanship for the modules for a period of 15 years after installation of the modules. During the warranty period, the manufacturer must provide new replacement modules within 45 days of receipt of modules that have failed at no cost to the State. Repaired or refurbished modules may not be used to fulfill the manufacturer's warranty obligations. Provide manufacturer's warranty documentation to the Department during evaluation of product for inclusion on Qualified Products List (QPL).

## **B.** Vehicle Signal Heads:

Comply with the ITE standard "Vehicle Traffic Control Signal Heads". Provide housings with provisions for attaching backplates.

Provide visors that are 10 inches in length for 12-inch vehicle signal heads.

Provide a termination block with one empty terminal for field wiring for each indication plus one empty terminal for the neutral conductor. Have all signal sections wired to the termination block. Provide barriers between the terminals that have terminal screws with a minimum Number 8 thread size and that will accommodate and secure spade lugs sized for a Number 10 terminal screw.

Mount termination blocks in the yellow signal head sections on all in-line vehicle signal heads. Mount the termination block in the red section on five-section vehicle signal heads.

Furnish vehicle signal head interconnecting brackets. Provide one-piece aluminum brackets less than 4.5 inches in height and with no threaded pipe connections. Provide hand holes on the bottom of the brackets to aid in installing wires to the signal heads. Lower brackets that carry no wires and are used only for connecting the bottom signal sections together may be flat in construction.

For messenger cable mounting, provide messenger cable hangers, wire outlet bodies, balance adjusters, bottom caps, wire entrance fitting brackets, and all other hardware necessary to make

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complete, watertight connections of the vehicle signal heads to the messenger cable. Fabricate messenger cable hanger components, wire outlet bodies and balance adjuster components from stainless steel or malleable iron galvanized in accordance with ASTM A153 (Class A) or ASTM A123. Provide serrated rings made of aluminum. Provide messenger cable hangers with U-bolt clamps. Fabricate washers, screws, hex-head bolts and associated nuts, clevis pins, cotter pins, U-bolt clamps and nuts from stainless steel.

Provide LED vehicular traffic signal modules (hereafter referred to as modules) that consist of an assembly that uses LEDs as the light source in lieu of an incandescent lamp for use in traffic signal sections. Use LEDs that are aluminum indium gallium phosphorus (AlInGaP) technology for red and yellow indications and indium gallium nitride (InGaN) for green indications. Install the ultra bright type LEDs that are rated for 100,000 hours of continuous operation from -40°F to +165°F. Design modules to have a minimum useful life of 15 years and to meet all parameters of this specification during this period of useful life.

For the modules, provide spade terminals crimped to the lead wires and sized for a #10 screw connection to the existing terminal block in a standard signal head. Do not provide other types of crimped terminals with a spade adapter.

Ensure the power supply is integral to the module assembly. On the back of the module, permanently mark the date of manufacture (month & year) or some other method of identifying date of manufacture.

Tint the red, yellow and green lenses to correspond with the wavelength (chromaticity) of the LED. Transparent tinting films are unacceptable. Provide a lens that is integral to the unit with a smooth outer surface.

# 1. LED Circular Signal Modules:

Provide modules in the following configurations: 12-inch circular sections. All makes and models of LED modules purchased for use on the State Highway System shall appear on the current NCDOT Traffic Signal Qualified Products List (QPL).

Provide the manufacturer's model number and the product number (assigned by the Department) for each module that appears on the 2018 or most recent Qualified Products List. In addition, provide manufacturer's certification in accordance with Article 106-3 of the *Standard Specifications*, that each module meets or exceeds the ITE "Vehicle Traffic Control Signal Heads – Light Emitting Diode (LED) Circular Signal Supplement" dated June 27, 2005 (hereafter referred to as VTCSH Circular Supplement) and other requirements stated in this specification.

Provide modules that meet the following requirements when tested under the procedures outlined in the VTCSH Circular Supplement:

Module Type	Max. Wattage at 165° F	Nominal Wattage at 77° F
12-inch red circular	17	11
12-inch green circular	15	15

For yellow circular signal modules, provide modules tested under the procedures outlined in the VTCSH Circular Supplement to insure power required at 77° F is 22 Watts or less for the 12-inch circular module and 13 Watts or less for the 8-inch circular module.

Note: Use a wattmeter having an accuracy of  $\pm 1\%$  to measure the nominal wattage and maximum wattage of a circular traffic signal module. Power may also be derived from voltage, current and power factor measurements.

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## 2. LED Arrow Signal Modules

Provide 12-inch omnidirectional arrow signal modules. All makes and models of LED modules purchased for use on the State Highway System shall appear on the current NCDOT Traffic Signal Qualified Products List (QPL).

Provide the manufacturer's model number and the product number (assigned by the Department) for each module that appears on the 2018 or most recent Qualified Products List. In addition, provide manufacturer's certification in accordance with Article 106-3 of the *Standard Specifications*, that each module meets or exceeds the requirements for 12-inch omnidirectional modules specified in the ITE "Vehicle Traffic Control Signal Heads – Light Emitting Diode (LED) Vehicle Arrow Traffic Signal Supplement" dated July 1, 2007 (hereafter referred to as VTCSH Arrow Supplement) and other requirements stated in this specification.

Provide modules that meet the following requirements when tested under the procedures outlined in the VTCSH Arrow Supplement:

Module Type	Max. Wattage at 165° F	Nominal Wattage at 77° F
12-inch red arrow	12	9
12-inch green arrow	11	11

For yellow arrow signal modules, provide modules tested under the procedures outlined in the VTCSH Arrow Supplement to insure power required at 77° F is 12 Watts or less.

Note: Use a wattmeter having an accuracy of  $\pm 1\%$  to measure the nominal wattage and maximum wattage of an arrow traffic signal module. Power may also be derived from voltage, current and power factor measurements.

# C. Signal Cable:

Furnish 16-4 and 16-7 signal cable that complies with IMSA specification 20-1 except provide the following conductor insulation colors:

- For 16-4 cable: white, yellow, red, and green
- For 16-7 cable: white, yellow, red, green, yellow with black stripe tracer, red with black stripe tracer, and green with black stripe tracer. Apply continuous stripe tracer on conductor insulation with a longitudinal or spiral pattern.

Provide a ripcord to allow the cable jacket to be opened without using a cutter. IMSA specification 19-1 will not be acceptable. Provide a cable jacket labeled with the IMSA specification number and provide conductors constructed of stranded copper.

#### 3. CONTROLLERS WITH CABINETS

#### 3.1. MATERIALS – TYPE 2070LX CONTROLLERS

Furnish model 2070LX controller units that conform to CALTRANS *Transportation Electrical Equipment Specifications* (TEES) (dated March 12, 2009, plus Errata 1 dated January 21, 2010 and Errata 2 dated December 5, 2014) except as required herein.

The Department will provide software at the beginning of the burning-in period. Contractor shall give 5 working days notice before needing software. Program software provided by the Department.

Provide model 2070LX controllers with Linux kernel 2.6.18 or higher and device drivers, composed of the unit chassis and at a minimum the following modules and assemblies:

• MODEL 2070-1C, CPU Module, Single Board, with 8Mb Datakey (blue in color)

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- MODEL 2070-2E+, Field I/O Module (FI/O)
  - Note: Configure the Field I/O Module to disable both the External WDT Shunt/Toggle Switch and SP3 (SP3 active indicator is "off")
- MODEL 2070-3B, Front Panel Module (FP), Display B (8x40)
- MODEL 2070-4A, Power Supply Module, 10 AMP

Provide a Board Support Package (BSP) to the state and to any specified applications software manufacturer when requested by the state to facilitate the porting of application software.

#### 3.2.MATERIALS – GENERAL CABINETS

Provide a moisture resistant coating on all circuit boards.

Provide one 20 mm diameter radial lead UL-recognized metal oxide varistor (MOV) between each load switch field terminal and equipment ground. Electrical performance is outlined below.

PROPERTIES OF MOV SURGE PROTECTOR		
Maximum Continuous Applied Voltage at	150 VAC (RMS)	
185° F	200 VDC	
Maximum Peak 8x20μs Current at 185° F	6500 A	
Maximum Energy Rating at 185° F	80 J	
Voltage Range 1 mA DC Test at 77° F	212-268 V	
Max. Clamping Voltage 8x20μs, 100A at 77° F	395 V	
Typical Capacitance (1 MHz) at 77° F	1600 pF	

Provide a power line surge protector that is a two-stage device that will allow connection of the radio frequency interference filter between the stages of the device. Ensure that a maximum continuous current is at least 10A at 120V. Ensure that the device can withstand a minimum of 20 peak surge current occurrences at 20,000A for an 8x20 microsecond waveform. Provide a maximum clamp voltage of 395V at 20,000A with a nominal series inductance of 200µh. Ensure that the voltage does not exceed 395V. Provide devices that comply with the following:

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Frequency (Hz)	Minimum Insertion Loss (dB)
60	0
10,000	30
50,000	55
100,000	50
500,000	50
2,000,000	60
5,000,000	40
10,000,000	20
20,000,000	25

#### 3.3. MATERIALS – TYPE 170E CABINETS

### A. Type 170 E Cabinets General:

Conform to the city of Los Angeles' Specification No. 54-053-08, *Traffic Signal Cabinet Assembly Specification* (dated July 2008), except as required herein.

Furnish model 332 base mounted cabinets configured for 8 vehicle phases, 4 pedestrian phases, and 6 overlaps. When overlaps are required, provide auxiliary output files for the overlaps. Do not reassign load switches to accommodate overlaps unless shown on electrical details.

Provide model 200 load switches, model 222 loop detector sensors, model 252 AC isolators, and model 242 DC isolators according to the electrical details. As a minimum, provide one (1) model 2018 conflict monitor, one (1) model 206L power supply unit, two (2) model 204 flashers, one (1) DC isolator (located in slot I14), and four (4) model 430 flash transfer relays (provide seven (7) model 430 flash transfer relays if auxiliary output file is installed) with each cabinet.

#### **B.** Type 170 E Cabinet Electrical Requirements:

Provide a cabinet assembly designed to ensure that upon leaving any cabinet switch or conflict monitor initiated flashing operation, the controller starts up in the programmed start up phases and start up interval.

Furnish two sets of non-fading cabinet wiring diagrams and schematics in a paper envelope or container and placed in the cabinet drawer.

All AC+ power is subject to radio frequency signal suppression.

Provide surge suppression in the cabinet for each type of cabinet device. Provide surge protection for the full capacity of the cabinet input file. Provide surge suppression devices that operate properly over a temperature range of -40° F to +185° F. Ensure the surge suppression devices provide both common and differential modes of protection.

Provide a pluggable power line surge protector that is installed on the back of the PDA (power distribution assembly) chassis to filter and absorb power line noise and switching transients. Ensure the device incorporates LEDs for failure indication and provides a dry relay contact closure for the purpose of remote sensing. Ensure the device meets the following specifications:

Peak Surge Current (Single pulse, 8x20µs)......20,000A

Occurrences (8x20µs waveform)	10 minimum @ 20,000A
Maximum Clamp Voltage	395VAC
Operating Current	15 amps
Response Time	< 5 nanoseconds

Provide a loop surge suppressor for each set of loop terminals in the cabinet. Ensure the device meets the following specifications:

Peak Surge Current (6 times, 8x20µs)	
(Differential Mode)	400A
(Common Mode)	1,000A
Occurrences (8x20µs waveform)	500 min @ 200A
Maximum Clamp Voltage	
(Differential Mode @400A)	35V
(Common Mode @1,000A)	35V
Response Time	< 5 nanoseconds
Maximum Capacitance	35 pF

Provide a data communications surge suppressor for each communications line entering or leaving the cabinet. Ensure the device meets the following specifications:

Peak Surge Current (Single pulse, 8x20µs)	10,000A
Occurrences (8x20µs waveform)	
Maximum Clamp Voltage	<u> </u>
Response Time	• • •
Maximum Capacitance	1,500 pF
Maximum Series Resistance	15Ω

Provide a DC signal surge suppressor for each DC input channel in the cabinet. Ensure the device meets the following specifications:

Peak Surge Current (Single pulse, 8x20µs)	10,000A
Occurrences (8x20µs waveform)	100 @ 2,000A
Maximum Clamp Voltage	30V
Response Time	< 1 nanosecond

Provide a 120 VAC signal surge suppressor for each AC+ interconnect signal input. Ensure the device meets the following specifications:

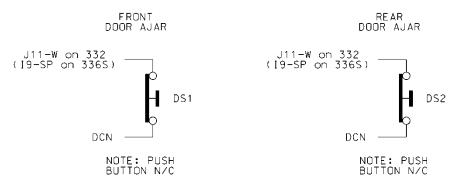
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Peak Surge Current (Single pulse, 8x20μs)	20,000A
Maximum Clamp Voltage	350VAC
Response Time	< 200 nanoseconds
Discharge Voltage	<200 Volts @ 1,000A
Insulation Resistance	≥100 MΩ

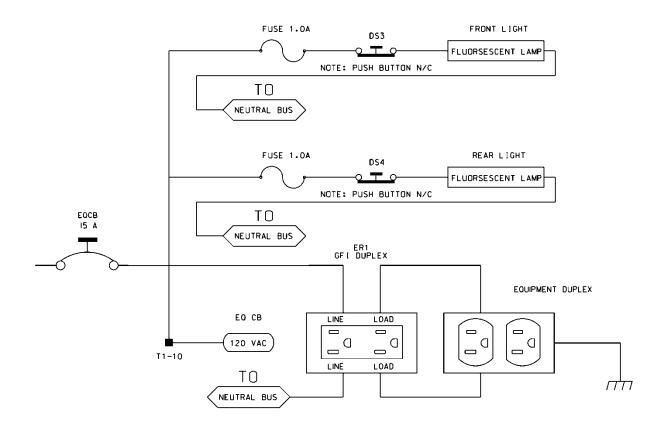
Provide conductors for surge protection wiring that are of sufficient size (ampacity) to withstand maximum overcurrents which could occur before protective device thresholds are attained and current flow is interrupted.

If additional surge protected power outlets are needed to accommodate fiber transceivers, modems, etc., install a UL listed, industrial, heavy-duty type power outlet strip with a minimum rating of 15 A / 125 VAC, 60 Hz. Provide a strip that has a minimum of 3 grounded outlets. Ensure the power outlet strip plugs into one of the controller unit receptacles located on the rear of the PDA. Ensure power outlet strip is mounted securely; provide strain relief if necessary.

Provide a door switch in the front and a door switch in the rear of the cabinet that will provide the controller unit with a Door Ajar alarm when either the front or the rear door is open. Ensure the door switches apply DC ground to the Input File when either the front door or the rear door is open.



Furnish a fluorescent fixture in the rear across the top of the cabinet and another fluorescent fixture in the front across the top of the cabinet at a minimum. Ensure that the fixtures provide sufficient light to illuminate all terminals, labels, switches, and devices in the cabinet. Conveniently locate the fixtures so as not to interfere with a technician's ability to perform work on any devices or terminals in the cabinet. Provide a protective diffuser to cover exposed bulbs. Install 16 watt T-4 lamps in the fluorescent fixtures. Provide a door switch to provide power to each fixture when the respective door is open. Wire the fluorescent fixtures to the 15 amp ECB (equipment circuit breaker).



Furnish a police panel with a police panel door. Ensure that the police panel door permits access to the police panel when the main door is closed. Ensure that no rainwater can enter the cabinet even with the police panel door open. Provide a police panel door hinged on the right side as viewed from the front. Provide a police panel door lock that is keyed to a standard police/fire call box key. In addition to the requirements of LA Specification No. 54-053-08, provide the police panel with a toggle switch connected to switch the intersection operation between normal stop-and-go operation (AUTO) and manual operation (MANUAL). Ensure that manual control can be implemented using inputs and software such that the controller provides full programmed clearance times for the yellow clearance and red clearance for each phase while under manual control.

Provide a 1/4-inch locking phone jack in the police panel for a hand control to manually control the intersection. Provide sufficient room in the police panel for storage of a hand control and cord.

For model 332 base mounted cabinets, ensure terminals J14-E and J14-K are wired together on the rear of the Input File. Connect TB9-12 (J14 Common) on the Input Panel to T1-2 (AC-) on the rear of the PDA.

Provide detector test switches mounted at the top of the cabinet rack or other convenient location which may be used to place a call on each of eight phases based on the chart below. Provide three positions for each switch: On (place call), Off (normal detector operation), and Momentary On (place momentary call and return to normal detector operation after switch is released). Ensure that the switches are located such that the technician can read the controller display and observe the intersection.

Connect detector test switches for cabinets as follows:

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332 Cabinet			
<b>Detector Call Switches</b>	Terminals		
Phase 1	I1-W		
Phase 2	I4-W		
Phase 3	I5-W		
Phase 4	I8-W		
Phase 5	J1-W		
Phase 6	J4-W		
Phase 7	J5-W		
Phase 8	J8-W		

Provide the PCB 28/56 connector for the conflict monitor unit (CMU) with 28 independent contacts per side, dual-sided with 0.156 inch contact centers. Provide the PCB 28/56 connector contacts with solder eyelet terminations. Ensure all connections to the PCB 28/56 connector are soldered to the solder eyelet terminations.

Ensure that all cabinets have the CMU connector wired according to the 332 cabinet connector pin assignments (include all wires for auxiliary output file connection). Wire pins 13, 16, R, and U of the CMU connector to a separate 4 pin plug, P1, as shown below. Provide a second plug, P2, which will mate with P1 and is wired to the auxiliary output file as shown below. Provide an additional plug, P3, which will mate with P1 and is wired to the pedestrian yellow circuits as shown below. When no auxiliary output file is installed in the cabinet, provide wires for the green and yellow inputs for channels 11, 12, 17, and 18, the red inputs for channels 17 and 18, and the wires for the P2 plug. Terminate the two-foot wires with ring type lugs, insulated, and bundled for optional use.

	P1		P2		P	3
PIN	<b>FUNCTION</b>	CONN TO	<b>FUNCTION</b>	CONN TO	<b>FUNCTION</b>	CONN TO
1	CH-9G	CMU-13	OLA-GRN	A123	2P-YEL	114
2	CH-9Y	CMU-16	OLA-YEL	A122	4P-YEL	105
3	CH-10G	CMU-R	OLB-GRN	A126	6P-YEL	120
4	CH-10Y	CMU-U	OLB-YEL	A125	8P-YEL	111

Do not provide the P20 terminal assembly (red monitor board) or red interface ribbon cable as specified in LA Specification No. 54-053-08.

Provide a P20 connector that mates with and is compatible with the red interface connector mounted on the front of the conflict monitor. Ensure that the P20 connector and the red interface connector on the conflict monitor are center polarized to ensure proper connection. Ensure that removal of the P20 connector will cause the conflict monitor to recognize a latching fault condition and place the cabinet into flashing operation.

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Wire the P20 connector to the output file and auxiliary output file using 22 AWG stranded wires. Ensure the length of these wires is a minimum of 42 inches in length. Provide a durable braided sleeve around the wires to organize and protect the wires.

Wire the P20 connector to the traffic signal red displays to provide inputs to the conflict monitor as shown below. Ensure the pedestrian Don't Walk circuits are wired to channels 13 through 16 of the P20 connector. When no auxiliary output file is installed in the cabinet, provide wires for channels 9 through 12 reds. Provide a wire for special function 1. Terminate the unused wires with ring type lugs, insulated, and bundled for optional use.

	P20 Connector				
PIN	FUNCTION	CONN TO	PIN	FUNCTION	CONN TO
1	Channel 15 Red	119	2	Channel 16 Red	110
3	Channel 14 Red	104	4	Chassis GND	01-9
5	Channel 13 Red	113	6	N/C	
7	Channel 12 Red	AUX 101	8	Spec Function 1	
9	Channel 10 Red	AUX 124	10	Channel 11 Red	AUX 114
11	Channel 9 Red	AUX 121	12	Channel 8 Red	107
13	Channel 7 Red	122	14	Channel 6 Red	134
15	Channel 5 Red	131	16	Channel 4 Red	101
17	Channel 3 Red	116	18	Channel 2 Red	128
19	Channel 1 Red	125	20	Red Enable	01-14

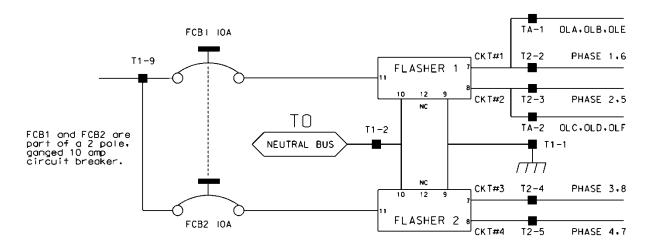
Ensure the controller unit outputs to the auxiliary output file are pre-wired to the C5 connector. When no auxiliary output file is installed in the cabinet, connect the C5 connector to a storage socket located on the Input Panel or on the rear of the PDA.

Do not wire pin 12 of the load switch sockets.

In addition to the requirements of LA Specification No. 54-053-08, ensure relay K1 on the Power Distribution Assembly (PDA) is a four pole relay and K2 on the PDA is a two pole relay.

Provide a two pole, ganged circuit breaker for the flash bus circuit. Ensure the flash bus circuit breaker is an inverse time circuit breaker rated for 10 amps at 120 VAC with a minimum of 10,000 RMS symmetrical amperes short circuit current rating. Do not provide the auxiliary switch feature on the flash bus circuit breaker. Ensure the ganged flash bus circuit breaker is certified by the circuit breaker manufacturer to provide gang tripping operation.

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Ensure auxiliary output files are wired as follows:

AUXILIARY OUTPUT FILE		
	ERMINAL BLOCK TA ASSIGNMENTS	
POSITION	FUNCTION	
1	Flasher Unit #1, Circuit 1/FTR1 (OLA, OLB)/FTR3 (OLE)	
2	Flasher Unit #1, Circuit 2/FTR2 (OLC, OLD)/FTR3 (OLF)	
3	Flash Transfer Relay Coils	
4	AC -	
5	Power Circuit 5	
6	Power Circuit 5	
7	Equipment Ground Bus	
8	NC	

Provide four spare load resistors mounted in each cabinet. Ensure each load resistor is rated as shown in the table below. Wire one side of each load resistor to AC-. Connect the other side of each resistor to a separate terminal on a four (4) position terminal block. Mount the load resistors and terminal block either inside the back of Output File No. 1 or on the upper area of the Service Panel.

ACCEPTABLE LOAD RESISTOR VALUES		
VALUE (ohms)	WATTAGE	
1.5K – 1.9 K	25W (min)	
2.0K – 3.0K	10W (min)	

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Provide Model 200 load switches, Model 204 flashers, Model 242 DC isolators, Model 252 AC isolators, and Model 206L power supply units that conform to CALTRANS' "Transportation Electrical Equipment Specifications" dated March 12, 2009 with Erratum 1.

# C. Type 170 E Cabinet Physical Requirements:

Do not mold, cast, or scribe the name "City of Los Angeles" on the outside of the cabinet door as specified in LA Specification No. 54-053-08. Do not provide a Communications Terminal Panel as specified in LA Specification No. 54-053-08. Do not provide terminal block TBB on the Service Panel. Do not provide Cabinet Verification Test Program software or associated test jigs as specified in LA Specification No. 54-053-08.

Furnish unpainted, natural, aluminum cabinet shells. Ensure that all non-aluminum hardware on the cabinet is stainless steel or a Department approved non-corrosive alternate.

Ensure the lifting eyes, gasket channels, police panel, and all supports welded to the enclosure and doors are fabricated from 0.125 inch minimum thickness aluminum sheet and meet the same standards as the cabinet and doors.

Provide front and rear doors with latching handles that allow padlocking in the closed position. Furnish 0.75 inch minimum diameter stainless steel handles with a minimum 0.5 inch shank. Place the padlocking attachment at 4.0 inches from the handle shank center to clear the lock and key. Provide an additional 4.0 inches minimum gripping length.

Provide Corbin #2 locks on the front and rear doors. Provide one (1) Corbin #2 and one (1) police master key with each cabinet. Ensure main door locks allow removal of keys in the locked position only.

Provide a surge protection panel with 16 loop surge protection devices and designed to allow sufficient free space for wire connection/disconnection and surge protection device replacement. For model 332 cabinets, provide an additional 20 loop surge protection devices. Provide an additional two AC+ interconnect surge devices to protect one slot and eight DC surge protection devices to protect four slots. Provide no protection devices on slot I14.

For base mounted cabinets, mount surge protection panels on the left side of the cabinet as viewed from the rear. Attach each panel to the cabinet rack assembly using bolts and make it easily removable. Mount the surge protection devices in vertical rows on each panel and connect the devices to one side of 12 position, double row terminal blocks with #8 screws. For each surge protection panel, terminate all grounds from the surge protection devices on a copper equipment ground bus attached to the surge protection panel. Wire the terminals to the rear of a standard input file using spade lugs for input file protection.

Provide permanent labels that indicate the slot and the pins connected to each terminal that may be viewed from the rear cabinet door. Label and orient terminals so that each pair of inputs is next to each other. Indicate on the labeling the input file (I or J), the slot number (1-14) and the terminal pins of the input slots (either D & E for upper or J & K for lower).

Provide a minimum 14 x 16 inch pull out, hinged top shelf located immediately below controller mounting section of the cabinet. Ensure the shelf is designed to fully expose the table surface outside the controller at a height approximately even with the bottom of the controller. Ensure the shelf has a storage bin interior which is a minimum of 1 inch deep and approximately the same dimensions as the shelf. Provide an access to the storage area by lifting the hinged top of the shelf. Fabricate the shelf and slide from aluminum or stainless steel and ensure the assembly can support the 2070L controller plus 15 pounds of additional weight. Ensure shelf has a locking mechanism to secure it in the fully extended position and does not inhibit the removal of the 2070L controller or removal of

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cards inside the controller when fully extended. Provide a locking mechanism that is easily released when the shelf is to be returned to its non-use position directly under the controller.

#### D. Model 2018 Enhanced Conflict Monitor:

Furnish Model 2018 Enhanced Conflict Monitors that provide monitoring of 18 channels. Ensure each channel consists of a green, yellow, and red field signal input. Ensure that the conflict monitor meets or exceeds CALTRANS' Transportation Electrical Equipment Specifications dated March 12, 2009, with Erratum 1 (hereafter referred to as CALTRANS' 2009 TEES) for a model 210 monitor unit and other requirements stated in this specification.

Ensure the conflict monitor is provided with an 18 channel conflict programming card. Pin EE and Pin T of the conflict programming card shall be connected together. Pin 16 of the conflict programming card shall be floating. Ensure that the absence of the conflict programming card will cause the conflict monitor to trigger (enter into fault mode), and remain in the triggered state until the programming card is properly inserted and the conflict monitor is reset.

Provide a conflict monitor that incorporates LED indicators into the front panel to dynamically display the status of the monitor under normal conditions and to provide a comprehensive review of field inputs with monitor status under fault conditions. Ensure that the monitor indicates the channels that were active during a conflict condition and the channels that experienced a failure for all other per channel fault conditions detected. Ensure that these indications and the status of each channel are retained until the Conflict Monitor is reset. Furnish LED indicators for the following:

- AC Power (Green LED indicator)
- VDC Failed (Red LED indicator)
- WDT Error (Red LED indicator)
- Conflict (Red LED indicator)
- Red Fail (Red LED indicator)
- Dual Indication (Red LED indicator)
- Yellow/Clearance Failure (Red LED indicator)
- PCA/PC Ajar (Red LED indicator)
- Monitor Fail/Diagnostic Failure (Red LED indicator)
- 54 Channel Status Indicators (1 Red, 1 Yellow, and 1 Green LED indicator for each of the 18 channels)

Provide a switch to set the Red Fail fault timing. Ensure that when the switch is in the ON position the Red Fail fault timing value is set to 1350 +/- 150 ms (2018 mode). Ensure that when the switch is in the OFF position the Red Fail fault timing value is set to 850 +/- 150 ms (210 mode).

Provide a switch to set the Watchdog fault timing. Ensure that when the switch is in the ON position the Watchdog fault timing value is set to  $1.0 \pm 0.1$  s (2018 mode). Ensure that when the switch is in the OFF position the Watchdog fault timing value is set to  $1.5 \pm 0.1$  s (210 mode).

Provide a jumper or switch to set the AC line brown-out levels. Ensure that when the jumper is present or the switch is in the ON position the AC line dropout voltage threshold is  $98 \pm 2 \text{ Vrms}$ , the AC line restore voltage threshold is  $103 \pm 2 \text{ Vrms}$ , and the AC line brown-out timing value is set to  $400 \pm 50 \text{ ms}$  (2018 mode). Ensure that when the jumper is not present or the switch is in the OFF position the AC line dropout voltage threshold is  $92 \pm 2 \text{ Vrms}$ , the AC line restore voltage

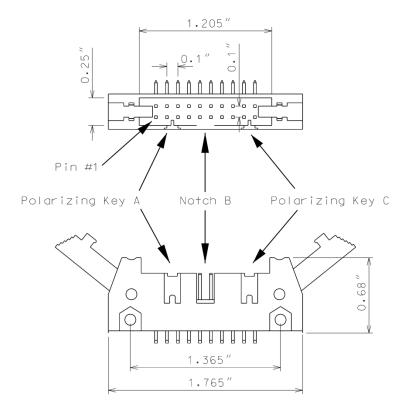
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threshold is  $98 \pm 2$  Vrms, and the AC line brown-out timing value is set to  $80 \pm 17$  ms (210 mode).

Provide a jumper or switch that will enable and disable the Watchdog Latch function. Ensure that when the jumper is not present or the switch is in the OFF position the Watchdog Latch function is disabled. In this mode of operation, a Watchdog fault will be reset following a power loss, brownout, or power interruption. Ensure that when the jumper is present or the switch is in the ON position the Watchdog Latch function is enabled. In this mode of operation, a Watchdog fault will be retained until a Reset command is issued.

Provide a jumper that will reverse the active polarity for pin #EE (output relay common). Ensure that when the jumper is not present pin #EE (output relay common) will be considered 'Active' at a voltage greater than 70 Vrms and 'Not Active' at a voltage less than 50 Vrms (Caltrans mode). Ensure that when the jumper is present pin #EE (output relay common) will be considered 'Active' at a voltage less than 50 Vrms and 'Not Active' at a voltage greater than 70 Vrms (Failsafe mode).

In addition to the connectors required by CALTRANS' 2009 TEES, provide the conflict monitor with a red interface connector mounted on the front of the monitor. Ensure the connector is a 20 pin, right angle, center polarized, male connector with latching clip locks and polarizing keys. Ensure the right angle solder tails are designed for a 0.062" thick printed circuit board. Keying of the connector shall be between pins 3 and 5, and between 17 and 19. Ensure the connector has two rows of pins with the odd numbered pins on one row and the even pins on the other row. Ensure the connector pin row spacing is 0.10" and pitch is 0.10". Ensure the mating length of the connector pins is 0.24". Ensure the pins are finished with gold plating  $30\mu$ " thick.



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Ensure the red interface connector pins on the monitor have the following functions:

Pin #	Function	Pin #	Function
1	Channel 15 Red	2	Channel 16 Red
3	Channel 14 Red	4	Chassis Ground
5	Channel 13 Red	6	Special Function 2
7	Channel 12 Red	8	Special Function 1
9	Channel 10 Red	10	Channel 11 Red
11	Channel 9 Red	12	Channel 8 Red
13	Channel 7 Red	14	Channel 6 Red
15	Channel 5 Red	16	Channel 4 Red
17	Channel 3 Red	18	Channel 2 Red
19	Channel 1 Red	20	Red Enable

Ensure that removal of the P20 cable connector will cause the conflict monitor to recognize a latching fault condition and place the cabinet into flashing operation.

Provide Special Function 1 and Special Function 2 inputs to the unit which shall disable only Red Fail Monitoring when either input is sensed active. A Special Function input shall be sensed active when the input voltage exceeds 70 Vrms with a minimum duration of 550 ms. A Special Function input shall be sensed not active when the input voltage is less than 50 Vrms or the duration is less than 250 ms. A Special Function input is undefined by these specifications and may or may not be sensed active when the input voltage is between 50 Vrms and 70 Vrms or the duration is between 250 ms and 550 ms.

Ensure the conflict monitor recognizes field signal inputs for each channel that meet the following requirements:

- consider a Red input greater than 70 Vrms and with a duration of at least 500 ms as an "on" condition:
- consider a Red input less than 50 Vrms or with a duration of less than 200 ms as an "off" condition (no valid signal);
- consider a Red input between 50 Vrms and 70 Vrms or with a duration between 200 ms and 500 ms to be undefined by these specifications;
- consider a Green or Yellow input greater than 25 Vrms and with a duration of at least 500 ms as an "on" condition;
- consider a Green or Yellow input less than 15 Vrms or with a duration of less than 200 ms as an "off" condition; and
- consider a Green or Yellow input between 15 Vrms and 25 Vrms or with a duration between 200 ms and 500 ms to be undefined by these specifications.

Provide a conflict monitor that recognizes the faults specified by CALTRANS' 2009 TEES and the following additional faults. Ensure the conflict monitor will trigger upon detection of a fault and

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will remain in the triggered (in fault mode) state until the unit is reset at the front panel or through the external remote reset input for the following failures:

- 1. Red Monitoring or Absence of Any Indication (Red Failure): A condition in which no "on" voltage signal is detected on any of the green, yellow, or red inputs to a given monitor channel. If a signal is not detected on at least one input (R, Y, or G) of a conflict monitor channel for a period greater than 1000 ms when used with a 170 controller and 1500 ms when used with a 2070 controller, ensure monitor will trigger and put the intersection into flash. If the absence of any indication condition lasts less than 700 ms when used with a 170 controller and 1200 ms when used with a 2070 controller, ensure conflict monitor will not trigger. Red fail monitoring shall be enabled on a per channel basis by the use of switches located on the conflict monitor. Have red monitoring occur when all of the following input conditions are in effect:
  - a) Red Enable input to monitor is active (Red Enable voltages are "on" at greater than 70 Vrms, off at less than 50 Vrms, undefined between 50 and 70 Vrms), and
  - b) Neither Special Function 1 nor Special Function 2 inputs are active.
  - c) Pin #EE (output relay common) is not active
- 2. Short/Missing Yellow Indication Fault (Clearance Error): Yellow indication following a green is missing or shorter than 2.7 seconds (with ± 0.1-second accuracy). If a channel fails to detect an "on" signal at the Yellow input for a minimum of 2.7 seconds (± 0.1 second) following the detection of an "on" signal at a Green input for that channel, ensure that the monitor triggers and generates a clearance/short yellow error fault indication. Short/missing yellow (clearance) monitoring shall be enabled on a per channel basis by the use of switches located on the conflict monitor. This fault shall not occur when the channel is programmed for Yellow Inhibit, when the Red Enable signal is inactive or pin #EE (output relay common) is active.
- 3. **Dual Indications on the Same Channel:** In this condition, more than one indication (R,Y,G) is detected as "on" at the same time on the same channel. If dual indications are detected for a period greater than 500 ms, ensure that the conflict monitor triggers and displays the proper failure indication (Dual Ind fault). If this condition is detected for less than 200 ms, ensure that the monitor does not trigger. G-Y-R dual indication monitoring shall be enabled on a per channel basis by the use of switches located on the conflict monitor. G-Y dual indication monitoring shall be enabled for all channels by use of a switch located on the conflict monitor. This fault shall not occur when the Red Enable signal is inactive or pin #EE (output relay common) is active.
- 4. **Configuration Settings Change:** The configuration settings are comprised of (as a minimum) the permissive diode matrix, dual indication switches, yellow disable jumpers, any option switches, any option jumpers, and the Watchdog Enable switch. Ensure the conflict monitor compares the current configuration settings with the previous stored configuration settings on power-up, on reset, and periodically during operation. If any of the configuration settings are changed, ensure that the conflict monitor triggers and causes the program card

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indicator to flash. Ensure that configuration change faults are only reset by depressing and holding the front panel reset button for a minimum of three seconds. Ensure the external remote reset input does not reset configuration change faults.

Ensure the conflict monitor will trigger and the AC Power indicator will flash at a rate of  $2~\mathrm{Hz}\pm20\%$  with a 50% duty cycle when the AC Line voltage falls below the "drop-out" level. Ensure the conflict monitor will resume normal operation when the AC Line voltage returns above the "restore" level. Ensure the AC Power indicator will remain illuminated when the AC voltage returns above the "restore" level. Should an AC Line power interruption occur while the monitor is in the fault mode, then upon restoration of AC Line power, the monitor will remain in the fault mode and the correct fault and channel indicators will be displayed.

Provide a flash interval of at least 6 seconds and at most 10 seconds in duration following a power-up, an AC Line interruption, or a brownout restore. Ensure the conflict monitor will suspend all fault monitoring functions, close the Output relay contacts, and flash the AC indicator at a rate of 4 Hz  $\pm$  20% with a 50% duty cycle during this interval. Ensure the termination of the flash interval after at least 6 seconds if the Watchdog input has made 5 transitions between the True and False state and the AC Line voltage is greater than the "restore" level. If the watchdog input has not made 5 transitions between the True and False state within  $10 \pm 0.5$  seconds, the monitor shall enter a WDT error fault condition.

Ensure the conflict monitor will monitor an intersection with a minimum of four approaches using the four-section Flashing Yellow Arrow (FYA) vehicle traffic signal as outlined by the NCHRP 3-54 research project for protected-permissive left turn signal displays. Ensure the conflict monitor will operate in the FYA mode and FYAc (Compact) mode as specified below to monitor each channel pair for the following fault conditions: Conflict, Flash Rate Detection, Red Fail, Dual Indication, and Clearance. Provide a switch to select between the FYA mode and FYAc mode. Provide a switch to select each FYA phase movement for monitoring.

#### FYA mode

FYA Signal Head	Phase 1	Phase 3	Phase 5	Phase 7
Red Arrow	Channel 9 Red	Channel 10 Red	Channel 11 Red	Channel 12 Red
Yellow Arrow	Channel 9 Yellow	Channel 10 Yellow	Channel 11 Yellow	Channel 12 Yellow
Flashing Yellow Arrow	Channel 9 Green	Channel 10 Green	Channel 11 Green	Channel 12 Green
Green Arrow	Channel 1 Green	Channel 3 Green	Channel 5 Green	Channel 7 Green

#### FYAc mode

FYA Signal Phase 1	Phase 3	Phase 5	Phase 7
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Red Arrow	Channel 1 Red	Channel 3 Red	Channel 5 Red	Channel 7 Red
Yellow	Channel 1	Channel 3	Channel 5	Channel 7
Arrow	Yellow	Yellow	Yellow	Yellow
Flashing Yellow Arrow	Channel 1 Green	Channel 3 Green	Channel 5 Green	Channel 7 Green
Green	Channel 9	Channel 9	Channel 10	Channel 10
Arrow	Green	Yellow	Green	Yellow

If a FYA channel pair is enabled for FYA operation, the conflict monitor will monitor the FYA logical channel pair for the additional following conditions:

- 1. **Conflict:** Channel conflicts are detected based on the permissive programming jumpers on the program card. This operation remains unchanged from normal operation except for the solid Yellow arrow (FYA clearance) signal.
- 2. Yellow Change Interval Conflict: During the Yellow change interval of the Permissive Turn channel (flashing Yellow arrow) the conflict monitor shall verify that no conflicting channels to the solid Yellow arrow channel (clearance) are active. These conflicting channels shall be determined by the program card compatibility programming of the Permissive Turn channel (flashing Yellow arrow). During the Yellow change interval of the Protected Turn channel (solid Green arrow) the conflict monitor shall verify that no conflicting channels to the solid Yellow arrow channel (clearance) are active as determined by the program card compatibility programming of the Protected Turn channel (solid Green arrow).
- 3. **Flash Rate Detection:** The conflict monitor unit shall monitor for the absence of a valid flash rate for the Permissive turn channel (flashing Yellow arrow). If the Permissive turn channel (flashing Yellow arrow) is active for a period greater than 1600 milliseconds, ensure the conflict monitor triggers and puts the intersection into flash. If the Permissive turn channel (flashing Yellow arrow) is active for a period less than 1400 milliseconds, ensure the conflict monitor does not trigger. Ensure the conflict monitor will remain in the triggered (in fault mode) state until the unit is reset at the front panel or through the external remote reset input. Provide a jumper or switch that will enable and disable the Flash Rate Detection function. Ensure that when the jumper is not present or the switch is in the OFF position the Flash Rate Detection function is enabled. Ensure that when the jumper is present or the switch is in the ON position the Flash Rate Detection function is disabled.
- 4. **Red Monitoring or Absence of Any Indication (Red Failure):** The conflict monitor unit shall detect a red failure if there is an absence of voltage on all four of the inputs of a FYA channel pair (RA, YA, FYA, GA).
- 5. **Dual Indications on the Same Channel:** The conflict monitor unit shall detect a dual indication if two or more inputs of a FYA channel pair (RA, YA, FYA, GA) are "on" at the same time.
- 6. Short/Missing Yellow Indication Fault (Clearance Error): The conflict monitor unit shall monitor the solid Yellow arrow for a clearance fault when terminating both the Protected Turn channel (solid Green arrow) interval and the Permissive Turn channel (flashing Yellow arrow) interval.

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Ensure that the conflict monitor will log at least nine of the most recent events detected by the monitor in non-volatile EEPROM memory (or equivalent). For each event, record at a minimum the time, date, type of event, status of each field signal indication with RMS voltage, and specific channels involved with the event. Ensure the conflict monitor will log the following events: monitor reset, configuration, previous fault, and AC line. Furnish the signal sequence log that shows all channel states (Greens, Yellows, and Reds) and the Red Enable State for a minimum of 2 seconds prior to the current fault trigger point. Ensure the display resolution of the inputs for the signal sequence log is not greater than 50 ms.

For conflict monitors used within an Ethernet communications system, provide a conflict monitor with an Ethernet 10/100 Mbps, RJ-45 port for data communication access to the monitor by a local notebook computer and remotely via a workstation or notebook computer device connected to the signal system local area network. The Ethernet port shall be electrically isolated from the conflict monitor's electronics and shall provide a minimum of 1500 Vrms isolation. Integrate monitor with Ethernet network in cabinet. Provide software to retrieve the time and date from a network server in order to synchronize the on-board times between the conflict monitor and the controller. Furnish and install the following Windows based, graphic user interface software on workstations and notebook computers where the signal system client software is installed: 1) software to view and retrieve all event log information, 2) software that will search and display a list of conflict monitor IP addresses and IDs on the network, and 3) software to change the conflict monitor's network parameters such as IP address and subnet mask.

For non-Ethernet connected monitors, provide a RS-232C/D compliant port (DB-9 female connector) on the front panel of the conflict monitor in order to provide communications from the conflict monitor to the 170/2070 controller or to a Department-furnished laptop computer. Electrically isolate the port interface electronics from all monitor electronics, excluding Chassis Ground. Ensure that the controller can receive all event log information through a controller Asynchronous Communications Interface Adapter (Type 170E) or Async Serial Comm Module (2070). Furnish and connect a serial cable from the conflict monitor's DB-9 connector to Comm Port 1 of the 2070 controller. Ensure conflict monitor communicates with the controller. Provide a Windows based graphic user interface software to communicate directly through the same monitor RS-232C/D compliant port to retrieve and view all event log information to a Department-furnished laptop computer. The RS-232C/D compliant port on the monitor shall allow the monitor to function as a DCE device with pin connections as follows:

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Conflict Mon	Conflict Monitor RS-232C/D (DB-9 Female) Pinout			
Pin Number	Function	I/O		
1	DCD	О		
2	TX Data	О		
3	RX Data	I		
4	DTR	I		
5	Ground	-		
6	DSR	О		
7	CTS	I		
8	RTS	0		
9	NC	-		

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	MONITOR BOARD F	EDGE CO	NNECTOR
Pin #	Function (Back Side)	Pin #	Function (Component Side)
1	Channel 2 Green	A	Channel 2 Yellow
2	Channel 13 Green	В	Channel 6 Green
3	Channel 6 Yellow	C	Channel 15 Green
4	Channel 4 Green	D	Channel 4 Yellow
5	Channel 14 Green	E	Channel 8 Green
6	Channel 8 Yellow	F	Channel 16 Green
7	Channel 5 Green	Н	Channel 5 Yellow
8	Channel 13 Yellow	J	Channel 1 Green
9	Channel 1 Yellow	K	Channel 15 Yellow
10	Channel 7 Green	L	Channel 7 Yellow
11	Channel 14 Yellow	M	Channel 3 Green
12	Channel 3 Yellow	N	Channel 16 Yellow
13	Channel 9 Green	P	Channel 17 Yellow
14	Channel 17 Green	R	Channel 10 Green
15	Channel 11 Yellow	S	Channel 11 Green
16	Channel 9 Yellow	T	Channel 18 Yellow
17	Channel 18 Green	U	Channel 10 Yellow
18	Channel 12 Yellow	V	Channel 12 Green
19	Channel 17 Red	W	Channel 18 Red
20	Chassis Ground	X	Not Assigned
21	AC-	Y	DC Common
22	Watchdog Timer	Z	External Test Reset
23	+24VDC	AA	+24VDC
24	Tied to Pin 25	BB	Stop Time (Output)
25	Tied to Pin 24	CC	Not Assigned
26	Not Assigned	DD	Not Assigned
27	Relay Output, Side #3, N.O.	EE	Relay Output,Side #2,Common
28	Relay Output, Side #1, N.C.	FF	AC+

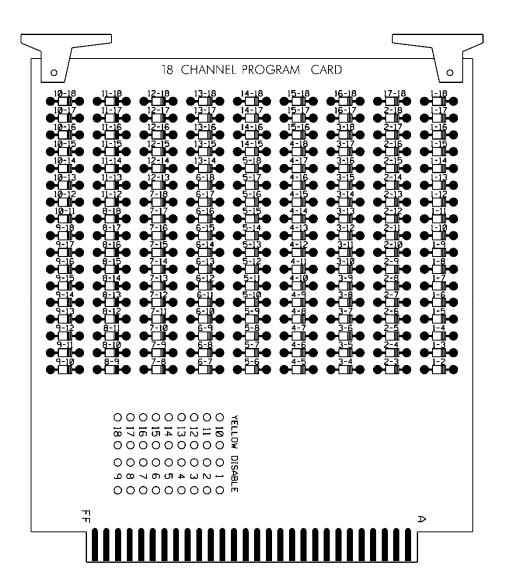
<sup>--</sup> Slotted for keying between Pins 17/U and 18/V

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CONFLICT PROGRAM CARD PIN ASSIGNMENTS			
Pin #	Function (Back Side)	Pin #	Function (Component Side)
1	Channel 2 Green	A	Channel 1 Green
2	Channel 3 Green	В	Channel 2 Green
3	Channel 4 Green	C	Channel 3 Green
4	Channel 5 Green	D	Channel 4 Green
5	Channel 6 Green	E	Channel 5 Green
6	Channel 7 Green	F	Channel 6 Green
7	Channel 8 Green	Н	Channel 7 Green
8	Channel 9 Green	J	Channel 8 Green
9	Channel 10 Green	K	Channel 9 Green
10	Channel 11 Green	L	Channel 10 Green
11	Channel 12 Green	M	Channel 11 Green
12	Channel 13 Green	N	Channel 12 Green
13	Channel 14 Green	P	Channel 13 Green
14	Channel 15 Green	R	Channel 14 Green
15	Channel 16 Green	S	Channel 15 Green
16	N/C	T	PC AJAR
17	Channel 1 Yellow	U	Channel 9 Yellow
18	Channel 2 Yellow	V	Channel 10 Yellow
19	Channel 3 Yellow	W	Channel 11 Yellow
20	Channel 4 Yellow	X	Channel 12 Yellow
21	Channel 5 Yellow	Y	Channel 13 Yellow
22	Channel 6 Yellow	Z	Channel 14 Yellow
23	Channel 7 Yellow	AA	Channel 15 Yellow
24	Channel 8 Yellow	BB	Channel 16 Yellow
25	Channel 17 Green	CC	Channel 17 Yellow
26	Channel 18 Green	DD	Channel 18 Yellow
27	Channel 16 Green	EE	PC AJAR (Program Card)
28	Yellow Inhibit Common	FF	Channel 17 Green

<sup>--</sup> Slotted for keying between Pins 24/BB and 25/CC

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#### 3.4. MATERIALS – TYPE 170 DETECTOR SENSOR UNITS

Furnish detector sensor units that comply with Chapter 5 Section 1, "General Requirements," and Chapter 5 Section 2, "Model 222 & 224 Loop Detector Sensor Unit Requirements," of the CALTRANS "Transportation Electrical Equipment Specifications" dated March 12, 2009 with Erratum 1.

# 4. VIDEO IMAGING LOOP EMULATOR DETECTOR SYSTEMS FOR TEMPORAY INSTALLATION

#### 4.1. DESCRIPTION

Design, furnish, provide training, and install video imaging loop emulator detection systems with all necessary hardware for temporary traffic signals in accordance with the plans and specifications.

Unless otherwise specified in the contract, all loop emulator detection equipment will remain the property of the contractor.

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#### 4.2. MATERIALS

#### A. General:

Material and equipment furnished under this section must be pre-approved on the Department's QPL by the date of installation except miscellaneous hardware such as cables and mounting hardware do not need to be pre-approved.

Used equipment will be acceptable provided the following conditions have been met:

- Equipment is listed on the current QPL.
- Equipment is in good working condition.
- Equipment is to remain the property of the contractor.

Ensure that software is licensed for use by the Department and by any other agency responsible for maintaining or operating the loop emulation system. Provide the Department with a license to duplicate and distribute the software as necessary for design and maintenance support.

Design and furnish video imaging loop emulator detection systems that detect vehicles at signalized intersections by processing video images and providing detection outputs to the signal controller in real time (within 112 milliseconds of vehicle arrival).

Furnish all required camera sensor units, loop emulator processor units, hardware and software packages, cabling, poles, mast arms, harnesses, camera mounting assemblies, surge protection panels, grounding systems, messenger cable and all necessary hardware. Furnish systems that allow the display of detection zones superimposed on an image of the roadway on a Department-furnished monitor or laptop computer screen. Ensure detection zones can be defined and data entered using a simple keyboard or mouse and monitor, or using a laptop PC with software.

Provide design drawings showing design details and camera sensor unit locations for review and acceptance before installation. Provide mounting height and location requirements for camera sensor units on the design based on site survey. Design video imaging loop emulator detection systems with all necessary hardware. Indicate all necessary poles, spans, mast arms, luminaire arms, cables, camera mounting assemblies and hardware to achieve the required detection zones where Department owned poles are not adequate to locate the camera sensor units. Do not design for the installation of poles in medians.

Obtain the Engineer's approval before furnishing video imaging loop emulator detection systems. The contractor is responsible for the final design of video imaging loop emulator detection systems. Review and acceptance of the designs by the Department does not relieve the contractor from the responsibility to provide fully functional systems and to ensure that the required detection zones can be provided.

Provide the ability to program each detection call (input to the controller) with the following functions:

- Full Time Delay Delay timer is active continuously,
- Normal Delay Delay timer is inhibited when assigned phase is green (except when used with TS 2 and 170/2070L controllers),
- Extend Call is extended for this amount of time after vehicle leaves detection area,
- Delay Call/Extend Call This feature uses a combination of full time delay and extend time on the same detection call. Ensure operation is as follows: Vehicle calls are received after the delay timer times out. When a call is detected, it is held until the detection area is empty and the programmed extend time expires. If another vehicle enters the detection area before the

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extend timer times out, the call is held and the extend time is reset. When the extend timer times out, the delay timer has to expire before another vehicle call can be received.

Provide the ability to program each detection zone as one of the following functions:

- Presence detector,
- Directional presence detector,
- Pulse detector,
- Directional pulse detector.

Ensure previously defined detector zones and configurations can be edited.

Provide each individual system with all the necessary equipment to focus and zoom the camera lenses without the need to enter the camera enclosure.

Provide systems that allow for the placement of at least 8 detection zones within the combined field of view of a single camera sensor unit. Provide a minimum of 8 detection outputs per camera.

Provide detection zones that can be overlapped. Ensure systems reliably detect vehicles when the horizontal distance from the camera sensor unit to the detection zone area is less than ten times the mounting height of the sensor. Ensure systems detect vehicles in multiple travel lanes.

Ensure systems can detect vehicle presence within a 98 to 102 percent accuracy (up to 2 percent of the vehicles missed and up to 2 percent of false detection) for clear, dry, daylight conditions, a 96 to 105 percent accuracy (up to 4 percent of the vehicles missed and up to 5 percent false detection) for dawn and dusk conditions, and a 96 percent accuracy (up to 4 percent of the vehicles missed) for night and adverse conditions (fog, snow, rain, etc.) using standard sensor optics and in the absence of occlusion.

Repair and replace all failed components within 72 hours.

The Department may conduct field-testing to ensure the accuracy of completed video imaging loop emulator detection systems.

#### **B.** Loop Emulator System:

Furnish loop emulator systems that receive and simultaneously process information from camera sensor units, and provides detector outputs to signal controllers.

Ensure systems provide the following:

- Operate in a typical roadside environment and meet the environmental specifications and are fully compatible with NEMA TS 1, NEMA TS 2, or Type 170/2070L controllers and cabinets,
- provide a "fail-safe" mode whereby failure of one or more of the camera sensor units or power failure of the loop emulator system will cause constant calls to be placed on the affected vehicle detection outputs to the signal controller,
- provide compensation for minor camera movement of up to 2 percent of the field of view at 400 feet without falsely detecting vehicles,
- process the video at a minimum rate of 30 times per second,
- provide separate wired connectors inside the controller cabinet for video recording each camera,
- provide remote video monitoring with a minimum refresh rate at 1 frame per second over a standard dial-up telephone line,
- provide remote video detection monitoring.

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Furnish camera sensor units that comply with the following:

- have an output signal conforming to EIA RS-170 standard,
- have a nominal output impedance of 75 ohms,
- be immune to bright light sources, or have built in circuitry or protective devices to prevent damage to the sensor when pointed directly at strong light sources,
- be housed in a light colored environmental enclosure that is water proof and dust tight, and that conforms to NEMA-4 specifications or better,
- simultaneously monitor at least five travel lanes when placed at the proper mounting location with a zoom lens,
- have a sunshield attached to the environmental enclosure to minimize solar heating,
- meet FCC class B requirements for electromagnetic interference emissions,
- have a heater attached to the viewing window of the environmental enclosure to prevent ice and condensation in cold weather.

Where coaxial video cables and other cables are required between the camera sensor and other components located in the controller cabinet, furnish surge protection in the controller cabinet.

If furnishing coaxial communications cable comply with the following, as recommended by the approved loop emulator manufacturer:

- Number 20 AWG, solid bare copper conductor terminated with crimped-on BNC connectors (do not use BNC adapters) from the camera sensor to the signal controller cabinet.
- Number 22 AWG, stranded bare copper conductor terminated with crimped-on BNC connectors (do not use BNC adapters) from the camera sensor unit to the junction box, and within the signal controller cabinet.

Furnish power cable appropriately sized to meet the power requirements of the sensors. At a minimum, provide three conductor 120 VAC field power cable.

As determined during the site survey, furnish sensor junction boxes with nominal 6 x 10 x 6 inches dimensions at each sensor location. Provide terminal blocks and tie points for coaxial cable.

# C. Video Imaging Loop Emulator System Support:

Furnish video imaging loop emulator systems with either a simple keyboard or a mouse with monitor and appropriate software, or with system software for use on department-owned laptop PCs. Ensure the system is Windows 2000 and Windows XP compatible.

Provide Windows 2000 and Windows XP compatible personal computer software, if needed, to provide remote video and video detection monitoring.

Ensure systems allow the user to edit previously defined detector configurations. When a vehicle is within a detection zone, provide for a change in color or intensity of the detection zone perimeter or other appropriate display changes on the Department-furnished monitor or laptop computer screen.

Provide cabling and interconnection hardware with 6-foot minimum length interconnection cable to interface with the system.

Provide all associated equipment manuals and documentation.

#### 4.3. CONSTRUCTION METHODS

Arrange and conduct site surveys with the system manufacturer's representative and Department personnel to determine proper camera sensor unit selection and placement. Provide the Department

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at least 3 working days notice before conducting site surveys. Upon completion of the site surveys the Department will provide revised plans reflecting the findings of the site survey.

Before beginning work at locations requiring video imaging loop emulator detection systems, furnish system software. Upon activation of detection zones, provide detector configuration files. Ensure that up-to-date detection configuration files are furnished for various detection zone configurations that may be required for construction phasing.

Place into operation loop emulator detection systems. Configure loop emulator detection systems to achieve required detection in designated zones. Have a certified manufacturer's representative on site to supervise and assist with installation, set up, and testing of the system.

Install the necessary processing and communications equipment in the signal controller cabinet. Make all necessary modifications to install equipment, cabling harnesses, and camera sensor interface panels with surge suppression.

Perform modifications to camera sensor unit gain, sensitivity, and iris limits necessary to complete the installation.

Do not install camera sensor units on signal poles unless approved by the Engineer.

Install the necessary cables from each sensor to the signal controller cabinet along signal cabling routes. Install surge protection and terminate all cable conductors.

Relocate camera sensor units and reconfigure detection zones as necessary according to the plans for construction phases.

Provide at least 8 hours of training on the set up, operation, troubleshooting, and maintenance of the loop emulator detection system to a maximum of ten Department personnel. Arrange for training to be conducted by the manufacturer's representative at an approved site within the Division responsible for administration of the project. Thirty days before conducting training submit a detailed course curriculum, draft manuals and materials, and resumes. Obtain approval of the submittal before conducting the training. At least one week before beginning training, provide three sets of complete documentation necessary to maintain and operate the system. Do not perform training until installation of loop emulator detection systems is complete.

# 4.4. MEASUREMENT AND PAYMENT

Actual number of site surveys, arranged, conducted, and accepted.

Actual number of luminaire arms for temporary video systems furnished, installed, and accepted.

Actual number of cameras without internal loop emulator processing units furnished, installed, and accepted.

Actual number of external loop emulator processing units furnished, installed, and accepted.

No measurement will be made of video imaging loop emulator system support or training, power and video cables, and trenching as these items will be considered incidental to furnishing and installing video imaging loop emulator detection systems.

Payment will be made under:

Site Survey	. Each
Luminaire Arm for Temporary Video System	. Each
Camera without Internal Loop Emulator Processing Unit	.Each
External Loop Emulator Processing Unit	. Each

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#### 5. METAL POLE SUPPORTS

# 5.1. METAL POLES

#### A. General:

Furnish and install metal poles, grounding systems, and all necessary hardware. Work covered under this special provision includes requirements for design, fabrication, and installation of standard and custom/site-specific designed metal pole supports and associated foundations.

Comply with applicable sections of the 2018 STANDARD SPECIFICATIONS FOR ROADS & STRUCTURES, hereinafter referred to as the Standard Specifications. Provide designs of completed assemblies with hardware equaling or exceeding AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals 6<sup>th</sup> Edition, 2013 (hereinafter called 6<sup>th</sup> Edition AASHTO), including the latest interim specifications. Provide assemblies with a round or near-round (18 sides or more) cross-section, or a multi-sided cross section with no less than six sides. The sides may be straight, convex, or concave.

For bid purposes, pole heights shown on plans are estimated from available data. Prior to furnishing metal poles, use field measurements and adjusted cross-sections to determine whether pole heights will meet required clearances. If pole heights do not meet required clearances, the Contractor should immediately notify the Engineer of the required revised pole heights.

Standard Drawings for Metal Poles are available that supplement these project special provisions. The drawings are located on the Department's website:

https://connect.ncdot.gov/resources/safety/pages/ITS-Design-Resources.aspx

Comply with article 1098-1B of the *Standard Specifications* for submittal requirements. Furnish shop drawings for approval. Provide copies of detailed shop drawings for each type of structure as summarized below. Ensure shop drawings include material specifications for each component. Ensure shop drawings identify welds by type and size on the <u>detail drawing only</u>, not in table format. **Do not release structures for fabrication until shop drawings have been approved by NCDOT**. Ensure shop drawings contain an itemized bill of materials for all structural components and associated connecting hardware.

Comply with article 1098-1A of the *Standard Specifications* for Qualified Products List (QPL) submittals. All shop drawings must include project location description, signal or asset inventory number(s) and project number or work order number.

Summary of information required for metal pole review submittal:

Item	Electronic Submittal	Comments / Special Instructions
Sealed, Approved Signal or ITS Plan/Loading Diagram	1 set	All structure design information needs to reflect the latest approved Signal or ITS plans
Custom Pole Shop Drawings	1 set	Submit drawings on 11" x 17" format media. Show NCDOT signal or asset inventory number(s), Contractor's name and relevant revision number in the title block. All drawings must have a <u>unique drawing number</u> for each project.
Standard Strain Pole Shop Drawings (from the QPL)	1 set	Submit drawings on 11" x 17" format media. Show NCDOT signal inventory number(s),

		Contractor's name and relevant revision number in the title block. All drawings must have a unique drawing number for each project.
Structure Calculations	1 set	Not required for Standard QPL Poles
Standard Strain Pole Foundation Drawings	1 set	Submit drawings on 11" x 17" format media. Submit a completed Standard Foundation Selection form for each pole using foundation table on Metal Pole Drawing M8.
Custom Foundation Drawings	1 set	Submit drawings on 11" x 17" format media.  Show NCDOT signal or asset inventory number(s), Contractor's name and relevant revision number in the title block. All drawings must have a unique drawing number for each project.  If QPL Poles are used, include the corresponding QPL pole shop drawings with this submittal.
Foundation Calculations	1 set	Submit copies of LPILE input, output, and pile tip deflection graph per Section titled Drilled Pier Foundations for Metal Poles of this specification for each foundation.  Not required for Standard Strain Poles (from the QPL)
Soil Boring Logs and Report	1 set	Report shall include a location plan and a soil classification report including soil capacity, water level, hammer efficiency, soil bearing pressure, soil density, etc. for each pole.

**NOTE** – All shop drawings and custom foundation design drawings must be sealed by a Professional Engineer licensed in the state of North Carolina. All geotechnical information must be sealed by either a Professional Engineer or Geologist licensed in the state of North Carolina. Include a title block and revision block on the shop drawings and foundation drawings showing the NCDOT signal or asset inventory number(s).

Shop drawings and foundation drawings may be submitted together or separately for approval. However, shop drawings must be approved before foundations can be reviewed. Foundation designs will be returned without review if the associated shop drawing has not been approved. Boring reports shall include the following: Engineer's summary, boring location maps, soil classification per AASHTO Classification System, hammer efficiency, and Metal Pole Standard Foundation Selection Form. Incomplete submittals will be returned without review. The Reviewer has the right to request additional analysis and copies of the calculations to expedite the approval process.

#### **B.** Materials:

Fabricate metal pole from coil or plate steel that meet the requirements of ASTM A 572 Gr 55 or ASTM A 595 Grade A tubes. For structural steel shapes, plates, and bars use, as a minimum, ASTM A572 Gr 50, AASHTO M270 Gr 50, ASTM A709 Gr 50, or an approved equivalent. Provide pole shafts of round or near round (18 sides or more) cross-section, or multi-sided tubular cross-section with no less than six sides, having a uniform linear taper of 0.14 in/ft. Construct shafts from one

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piece of single-ply plate or coil. For anchor base fabrication, conform to the applicable bolt pattern and orientation as shown on Metal Pole Standard Drawing Sheet M2.

Use the submerged arc process, or other NCDOT previously approved process suitable for shafts, to continuously weld pole shafts along their entire length. Finish the longitudinal seam weld flush with the outside contour of the base metal. Ensure shaft has no circumferential welds except at the lower end joining the shaft to the pole base. Use full penetration groove welds with backing ring for all tube-to-transverse-plate connections in accordance with 6<sup>th</sup> Edition AASHTO. Provide welding that conforms to Article 1072-18 of the *Standard Specifications*. No field welding on any part of the pole will be permitted unless approved by a qualified Engineer.

After fabrication, hot-dip galvanize steel poles and all assembly components in accordance with section 1076-3 of the *Standard Specifications*. Design structural assemblies with weep holes large enough and properly located to drain molten zinc during the galvanization process. Galvanize hardware in accordance with section 1076-4 of the *Standard Specifications*. Ensure threaded material is brushed and retapped as necessary after galvanizing. Perform repair of damaged galvanizing in accordance with section 1076-7 of the Standard *Specifications*. *Ensure* all hardware is galvanized steel or stainless steel. The Contractor is responsible for ensuring the Designer/Fabricator specifies connecting hardware and/or materials that prevent a dissimilar metal corrosive reaction.

Ensure each anchor rod is 2-inch minimum diameter and 60-inch length. Provide 10-inch minimum thread projection at the top of the rod, and 8-inch minimum at the bottom of the rod. Use anchor rod assembly and drilled pier foundation materials complying with SP09\_R005, hereinafter referred to as *Foundations and Anchor Rod Assemblies for Metal Poles*.

Ensure anchor bolt hole diameters are ¼-inch larger than the anchor bolt diameters in the base plate.

Provide a circular anchor bolt lock plate securing the anchor bolts at the embedded end with two (2) washers and two (2) nuts. Provide a base plate template matching the bolt circle diameter of the anchor bolt lock plate. Construct plates and templates from ¼-inch minimum thick steel with a minimum width of 4 inches. Hot-dip galvanizing is not required for both plates.

Provide four (4) heavy hex nuts and four (4) flat washers for each anchor bolt. For nuts, use AASHTO M291 grade 2H, DH, or DH3 or equivalent material. For flat washers, use AASHTO M293 or equivalent material. Ensure anchor bolts have required diameters, lengths, and positions, and will develop strengths comparable to their respective poles.

For each pole, provide a grounding lug with a ½-inch minimum thread diameter, coarse thread stud and nut that will accommodate #4 AWG ground wire. Ensure the lug is electrically bonded to the pole and is conveniently located inside the pole at the hand hole.

Provide a removable pole cap with stainless steel attachment screws for the top of each pole. Ensure cap is cast aluminum conforming to Aluminum Association Alloy 356.0F. Furnish cap attached to the pole with a sturdy stainless-steel chain that is long enough to permit cap to hang clear of the pole-top opening when cap is removed.

Where required by the plans, furnish couplings 42 inches above bottom of the pole base for mounting of pedestrian pushbuttons. Provide mounting points consisting of 1½-inch internally threaded half-couplings complying with the NEC, mounted within the poles. Ensure that couplings are essentially flush with the outside surfaces of the poles and are installed before any required hotdip galvanizing. Provide a threaded plug in each mounting point. Ensure the surface of the plug is

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essentially flush with the outer end of the mounting point when installed and has a recessed slot that will accommodate a ½ "drive standard socket wrench.

Metal poles may be erected and fully loaded after concrete has attained a minimum allowable compressive strength of 3,000 psi.

Connect poles to grounding electrodes and bond them to the electrical service grounding electrodes.

When field drilling is necessary for wire or cable entrances into the pole, comply with the following requirements:

- Do not drill holes within 2 inches of any welds.
- Do not drill any holes larger than 3 inches in diameter without checking with the ITS & Signals Structure Engineers.
- Avoid drilling multiple holes along the same cross section of tube shafts.
- Install rubber grommets in all field drilled holes that wire, or cable will directly enter unless holes are drilled for installation of weather heads or couplings.
- Treat the inside of the drilled holes and repair all galvanized surfaces in accordance with Section 1076-7 of the latest edition of the *Standard Specification prior to installing grommets, caps, or plugs.*
- Cap or plug any existing field drilled holes that are no longer used with rubber, aluminum, or stainless-steel hole plugs.

When street lighting is installed on metal signal structures, isolate the conductors feeding the luminaires inside the pole shaft using liquid tight flexible metal conduit (Type LFMC), liquid tight flexible nonmetallic conduit (Type LFNC), high density polyethylene conduit (Type HDPE), or approved equivalent. All conductors supplying power for luminaires must run through an external disconnect prior to entrance into the structure. Comply with applicable National Electrical Safety Codes (NESC). Refer to Article "G" Luminaire Arms.

Install a ¼-inch thick plate for a concrete foundation tag to include the following information: concrete grade, depth, diameter, and reinforcement sizes of the installed foundation. Install galvanized wire mesh to cover gap between the base plate and top of foundation for debris and pest control. Refer to standard drawing M7 for further details.

Immediately notify the Engineer of any structural deficiency that becomes apparent in any assembly, or member of any assembly, because of the design requirements imposed by these specifications, the plans, or the typical drawings.

# C. Design:

Unless otherwise specified, design all metal pole support structures using the following 6<sup>th</sup> Edition AASHTO specifications:

- Design for a 50-year service life as recommended by Table 3.8.3-2.
- Use wind pressure map developed from 3-second gust speeds, as provided in Section 3.8.
- Assume wind loads as shown in Figures 3.9.4.2-2 and 3.9.4.2-3 of the 6<sup>th</sup> Edition AASHTO for Group III loading with Ice.
- Ensure metal pole support structures include natural wind gust loading and truck-induced gust loading for fatigue design, as provided in Sections 11.7.1.2 and 11.7.1.3, respectively. Designs need not consider periodic galloping forces.

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- Assume 11.2 mph natural wind gust speed in North Carolina. For natural wind fatigue stress
  calculations, utilize a drag coefficient (C<sub>d</sub>) based on the yearly mean wind velocity of 11.2
  mph.
- When selecting Fatigue Importance Factors, utilize Fatigue Importance Category II, as provided for in Table 11.6-1, unless otherwise specified.
- Calculate all stresses using applicable equations from Section 5. The Maximum allowable stress ratio for all metal pole support designs is 0.9.
- Conform to Sections 10.4.2 and 11.8 for deflection requirements. For CCTV and MVD support structures, ensure maximum deflection at top of pole does not exceed 2.0 percent of pole height.
- Assume the combined minimum weight of a messenger cable bundle (including messenger cable, signal cable and detector lead-in cables) is 1.3 lbs/ft. Assume the combined minimum diameter of the cable bundle is 1.3 inches.
- All CCTV and MVD poles shall meet the compact section limits per section 5.5.2 along with Table 5.5.2-1. Minimum thickness of CCTV and MVD pole shafts shall be ¼-inch.
- All CCTV and MVD poles shall use full-penetration groove weld tube-to-transverse plate connection with backing ring. Refer to Metal Pole Standard Drawing Sheet M9 for details. Fillet-welded tube-to-transverse-plate connections are not permitted.

Unless otherwise specified by special loading criteria, the following computed surface area for ice load on signal heads shall be used:

- 3-section, 12-inch, Surface area: 26.0 ft<sup>2</sup>
- 4-section, 12-inch, Surface area: 32.0 ft<sup>2</sup>
- 5-section, 12-inch, Surface area: 42.0 ft<sup>2</sup>

Design a base plate for each pole. The minimum base plate thickness for all poles is determined by the following criteria:

<u>Case 1</u> Circular or rectangular solid base plate with the upright pole welded to the top surface of base plate with full penetration butt weld, where no stiffeners are provided. A base plate with a small center hole, which is less than 1/3 of the upright diameter, and located concentrically with the upright pole, may be considered as a solid base plate.

The magnitude of bending moment in the base plate, induced by the anchoring force of each anchor bolt is  $M = (P \times D_1) / 2$ , where

M = bending moment at the critical section of the base plate induced by one (1) anchor bolt

P = anchoring force of each anchor bolt

 $D_1$  = horizontal distance between the anchor bolt center and the outer face of the upright, or the difference between the bolt circle radius and the outside radius of the upright

Locate the critical section at the face of the anchor bolt and perpendicular to the bolt circle radius. The overlapped part of two (2) adjacent critical sections is considered ineffective.

<u>Case 2</u> Circular or rectangular base plate with the upright pole socketed into and attached to the base plate with two (2) lines of fillet weld, and where no stiffeners are provided, or any base plate with a center hole that is larger in diameter than 1/3 of the upright diameter.

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The magnitude of bending moment induced by the anchoring force of each anchor bolt is  $M = P \times D_2$ ,

where P = anchoring force of each anchor bolt

 $D_2$  = horizontal distance between the face of the upright and the face of the anchor bolt nut

Locate the critical section at the face of the anchor bolt top nut and perpendicular to the radius of the bolt circle. The overlapped part of two (2) adjacent critical sections is considered ineffective.

If the base plate thickness calculated for Case 2 is less than Case 1, use the thickness calculated for Case 1.

The following additional requirements apply concerning pole base plates.

- Ensure that whichever case governs as defined above, the anchor bolt diameter is set to match the base plate thickness. If the minimum diameter required for the anchor bolt exceeds the thickness required for the base plate, set the base plate thickness equal to the required bolt diameter.
- For all metal poles, use a full penetration groove weld with a backing ring to connect the pole upright component to the base. Refer to Metal Pole Standard Drawing Sheet M3 or M4.

The Professional Engineer is wholly responsible for the design of all poles. Review and acceptance of these designs by the Department does not relieve the said Professional Engineer of his or her responsibility.

#### D. Strain Poles:

Refer to Metal Pole Standard Drawing Sheets M2 and M3 for fabrication details.

Provide two (2) messenger cable (span wire) clamps and associated hardware for attachment of messenger cable. Ensure diameter of the clamp is appropriate to its location on the pole and is appropriately designed for adjustment from 1'-6" below the top, down to 6'-6" below the top of the pole. Do not attach more than one (1) support cable to a messenger cable clamp.

Provide a minimum of three (3) 2-inch holes equipped with an associated coupling and weatherhead on the messenger cable load side of the pole to accommodate passage of signal cables from inside the pole. Provide galvanized threaded plugs for all unused couplings at pole entrance points. Refer to Metal Pole Standard Drawing Sheet M3 for fabrication details.

Provide designs with a 6" x 12" hand hole with reinforcing frame for each pole.

Provide a terminal compartment with cover and screws in each pole encompassing the hand hole and containing a 12-terminal barrier type terminal block. Provide two (2) terminal screws with a removable shorting bar between them for each termination. Furnish terminal compartment covers attached to the pole by a sturdy chain or cable approved by the Engineer. Ensure chain or cable is long enough to permit cover to hang clear of the compartment opening when cover is removed and is strong enough to prevent vandalism. Ensure chain or cable will not interfere with service to cables in the pole base.

Have poles permanently stamped above the hand holes with the identification tag details as shown on Metal Pole Standard Drawing Sheets M2 and M3.

Provide grounding lug(s) in the approximate vicinity of the messenger cable clamp for bonding and grounding messenger cable. Lugs must accept #4 AWG wire to bond messenger cables to the

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pole in order to provide an effective ground fault circuit path. Refer to Metal Pole Standard Drawing Sheet M6 for construction details.

Install metal poles, hardware, and fittings as shown on the manufacturer's installation drawings. Ensure the installed pole, when fully loaded, is within 1 degree 40 minutes (1°40') of vertical. Install poles with the manufacturer's recommended "rake." Where required, use threaded leveling nuts to establish rake.

#### 5.2. DRILLED PIER FOUNDATIONS FOR METAL POLES

Analysis procedures and formulas shall be based on AASHTO 6<sup>th</sup> Edition, latest ACI-318 code and the *Drilled Shafts: Construction Procedures and Design Methods* FHWA-NHI-10-016 manual. Design methods based on engineering publications or research papers must have prior approval from NCDOT. The Department reserves the right to accept or reject any method used for the analysis.

Use the following Safety Factors for the foundation design:

- 1.0 x Service (Unfactored) Loads for LPile Shaft Lateral Deflection
- 1.3 x Torsion (Unfactored) Load for Drilled Shaft Concrete and Steel Strength
- (1.3 / 1.33) x Torsion (Unfactored) Load for Shaft Soil-to-Concrete Torsion Capacity
- (2.0 / 1.33) x Axial (Unfactored) Load for Shaft Axial Capacity in Soil

Ensure deflection at top of foundation does not exceed 1 inch for worst-case lateral load.

Use LPILE Plus V6.0 or later for lateral analysis. Submit inputs, results and corresponding graphs with the design calculations.

Calculate skin friction using the  $\alpha$ -method for cohesive soils and the  $\beta$ -method for cohesion-less soils (**Broms method will not be accepted**). Detailed descriptions of the " $\alpha$ " and " $\beta$ " methods can be found in *FHWA-NHI-10-016*.

Omit first 2.5 feet for cohesive soils when calculating skin friction.

Assume a hammer efficiency of 0.70 unless value is provided.

Design custom foundations to carry maximum capacity of each metal pole. For standard case strain poles with custom design, use actual shear, axial and moment reactions from the Standard Strain Pole Foundation Selection Table shown on Standard Drawing No. M8.

When poor soil conditions are encountered, which could create an excessively large foundation design, consideration may be given to allow an exemption to the maximum capacity design. The Contractor must gain approval from the Engineer before reducing a foundation's capacity. On projects where poor soil is known to be present, the Contractor should have foundation designs approved before releasing poles for fabrication.

Have the Contractor notify the Engineer if the proposed foundation is to be installed on a slope other than 8H: 1V or flatter.

# A. Description:

Furnish and install foundations for NCDOT metal poles with all necessary hardware in accordance with the plans and specifications.

Metal Pole Standards have been developed and implemented by NCDOT for use at signalized intersections in North Carolina. If the plans call for a standard strain pole, then a standard foundation may be selected from the plans. However, the Contractor is not required to use a standard foundation. If the Contractor chooses to design a non-standard site-specific foundation for a standard strain pole or if the plans call for a non-standard site-specific pole, design the foundation to conform to the applicable provisions in the NCDOT Metal Pole Standard Drawings and Section

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B4 (Non-Standard Foundation Design) below. If non-standard site-specific foundations are designed for standard QPL approved strain poles, the foundation designer must use the design moment specified by load case on Metal Pole Standard Drawing Sheet M8. Failure to conform to this requirement will be grounds for rejection of the design.

If the Contractor chooses to design a non-standard foundation for a standard strain pole and the soil test results indicate a standard foundation is feasible for the site, the Contractor will be paid the cost of the standard foundation. Any additional cost associated with a non-standard site-specific foundation including additional materials, labor and equipment will be considered incidental to the cost of the standard foundation. All costs for the non-standard foundation design will be considered incidental to the cost of the standard foundation.

#### **B.** Soil Test and Foundation Determination:

#### 1. General:

Drilled piers are reinforced concrete sections, cast-in-place against in situ, undisturbed material. Drilled piers are of straight shaft type and vertical.

#### 2. Soil Test:

Perform a soil test at each proposed metal pole location. Complete all required fill placement and excavation at each pole location to finished grade before drilling each boring. Soil tests performed that are not in compliance with this requirement may be rejected and will not be paid. Drill one boring to a depth of 26 feet within a 25-foot radius of each proposed foundation.

Perform standard penetration tests (SPT) in accordance with ASTM D 1586 at depths of 1, 2.5, 5, 7.5, 10, 15, 20 and 26 feet. Discontinue the boring if one of the following occurs:

- A total of 100 blows have been applied in any two consecutive 6-inch intervals.
- A total of 50 blows have been applied with < 3-inch penetration.

Describe each pole location along the project corridor in a manner that is easily discernible to both the Contractor's Designer and NCDOT Reviewers. If the pole is at an intersection, label the boring the "Intersection of (*Route or SR #*), (*Street Name*) and (*Route or SR #*), (*Street Name*), \_\_\_\_\_\_ County, Signal or Asset Inventory No. \_\_\_\_\_ ". Label borings with "B- <u>N, S, E, W, NE, NW, SE or SW</u>" corresponding to the quadrant location within the intersection.

If the pole location is located between intersections, provide a coordinate location and offset, or milepost number and offset. Pole numbers should be made available to the Drill Contractor. Include pole numbers in the boring label if they are available. If they are not available, ensure the boring labels can be cross-referenced to corresponding pole numbers. For each boring, submit a legible (hand-written or typed) boring log signed and sealed by a licensed Geologist or Professional Engineer registered in North Carolina. Include on each boring the SPT blow counts and N-values at each depth, depth of the boring, hammer efficiency, depth of water table and a general description of the soil types encountered using the AASHTO Classification System.

Borings that cannot be easily correlated to their specific pole location will be returned to the Contractor for clarification; or if approved by the Engineer, the foundation may be designed using the worst-case soil condition obtained as part of this project.

#### 3. Standard Foundation Determination:

Use the following method for determining the Design N-value:

$$N_{AVG} = \frac{N_{@1'} + N_{@2.5'} + \dots + N_{@Deepest\ Boring\ Depth}}{Total\ Number\ of\ N\ values}$$

$$Y = (N_{@1'})^2 + (N_{@2.5'})^2 + \dots + (N_{@Deepest\ Boring\ Depth})^2$$

$$Z = N_{@1'} + N_{@2.5'} + \dots + N_{@Deeepest\ Boring\ Depth}$$

$$N_{STD\ DEV} = \sqrt{\frac{(Total\ Number\ of\ N\ values\ \times Y) - Z^2}{(Total\ Number\ of\ N\ values) \times (Total\ Number\ of\ N\ values - 1)}}$$

**Design N-value** equals lesser of the following two conditions:

$$N_{AVG}-(N_{STD~DEV}\times0.45)$$
 
$$OR$$
 
$$Average~of~First~Four~(4)N~values=\frac{N_{@1},+N_{@2.5},+N_{@5},+N_{@7.5},}{4}$$

Note: If less than four (4) N-values are obtained because of criteria listed in Section 2 above, use average of N-values collected for second condition. Do not include the N-value at the deepest boring depth for above calculations if the boring is discontinued at or before the required boring depth because of criteria listed in Section 2 above. Use N-value of zero (0) for weight of hammer or weight of rod. If N-value is greater than fifty (50), reduce N-value to fifty (50) for calculations.

If standard NCDOT strain poles are shown on the plans and the Contractor chooses to use standard foundations, determine a drilled pier length, "L," for each signal pole from the Standard Strain Pole Foundations Chart (sheet M8) based on the Design N-value and the predominant soil type. For each standard pole location, submit a completed "Metal Pole Standard Foundation Selection Form" signed by the Contractor's representative. Signature on form is for verification purposes only. Include the Design N-value calculation and resulting drilled pier length, "L," on each form.

If non-standard site-specific poles are shown on the plans, submit completed boring logs collected in accordance with Section 2 (Soil Test) along with pole loading diagrams from the plans to the Contractor-selected pole Fabricator to assist in the pole and foundation design.

If one of the following occurs, the Standard Foundations Chart shown on the plans may not be used and a non-standard foundation may be required. In such case, contact the Engineer.

- The Design N-value is less than four (4).
- The drilled pier length, "L", determined from the Standard Foundations Chart, is greater than the depth of the corresponding boring.

In the case where a standard foundation cannot be used, the Department will be responsible for the additional cost of the non-standard foundation.

Foundation designs are based on level ground around the traffic signal pole. If the slope around the edge of the drilled pier is steeper than 8:1 (H:V) or the proposed foundation will be less than 10

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feet from the top of an embankment slope, the Contractor is responsible for providing slope information to the foundation Designer and to the Engineer so it can be considered in the design.

The "Metal Pole Standard Foundation Selection Form" may be found at:

https://connect.ncdot.gov/resources/safety/Pages/ITS-Design-Resources.aspx

If assistance is needed, contact the Engineer.

# 4. Non-Standard Foundation Design:

Design non-standard foundations based upon site-specific soil test information collected in accordance with Section 2 (Soil Test). Design drilled piers for side resistance in accordance with Section 4.6 of the 2002 AASHTO Standard Specifications for Highway Bridges, 17th Edition. Use computer software LPILE version-6.0 or later manufactured by Ensoft, Inc. to analyze drilled piers. Use computer software gINT V8i or later manufactured by Bentley Systems, Inc. with the current NCDOT gINT library and data template to produce SPT boring logs. Provide a drilled pier foundation for each pole with a length and diameter resulting in horizontal lateral movement less than 1 inch at top of the pier, and horizontal rotational movement less than 1 inch at the edge of pier. Contact the Engineer for pole loading diagrams of standard poles used for non-standard foundation designs. Submit non-standard foundation designs including drawings, calculations, and soil boring logs to the Engineer for review and approval before construction.

#### C. Drilled Pier Construction:

Construct drilled pier foundation and Install anchor rod assemblies in accordance with the *Foundations and Anchor Rod Assemblies for Metal Poles* Standard Special Provision SP09-R005 located at:

https://connect.ncdot.gov/resources/Specifications/Pages/2018-Specifications-and-Special-Provisions.aspx

# **5.3. POLE NUMBERING SYSTEM**

#### A. New Poles

Attach an identification tag to each pole shaft section as shown on Metal Pole Standard Sheet M2 "Typical Fabrication Details for All Metal Poles."

#### 5.4. MEASUREMENT AND PAYMENT

Actual number of metal strain signal poles (without regard to height or load capacity) furnished, installed and accepted.

Actual number of soil tests with SPT borings drilled furnished and accepted.

Actual volume of concrete poured in cubic yards of drilled pier foundation furnished, installed and accepted.

No measurement will be made for foundation designs prepared with metal pole designs, as these will be considered incidental to designing Traffic Signal, CCTV or MVD support structures.

# Payment will be made under:

Metal Strain Signal Pole	Each
Soil Test	Each
Drilled Pier Foundation	Cubic Yard

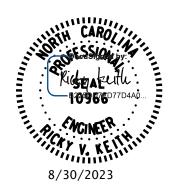
# PROJECT SPECIAL PROVISIONS

# Culvert

# Widening US 19/129 From the Georgia State Line to US 64/74

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# PROJECT SPECIALPROVISIONS <u>CULVERT</u>

# **FALSEWORK AND FORMWORK**

(2-14-22)

#### **DESCRIPTION**

Use this Special Provision as a guide to develop temporary works submittals required by the Standard Specifications or other provisions; no additional submittals are required herein. Such temporary works include, but are not limited to, falsework and formwork.

Falsework is any temporary construction used to support the permanent structure until it becomes self-supporting. Formwork is the temporary structure or mold used to retain plastic or fluid concrete in its designated shape until it hardens. Access scaffolding is a temporary structure that functions as a work platform that supports construction personnel, materials, and tools, but is not intended to support the structure. Scaffolding systems that are used to temporarily support permanent structures (as opposed to functioning as work platforms) are considered to be falsework under the definitions given. Shoring is a component of falsework such as horizontal, vertical, or inclined support members. Where the term "temporary works" is used, it includes all of the temporary facilities used in bridge construction that do not become part of the permanent structure.

Design and construct safe and adequate temporary works that will support all loads imposed and provide the necessary rigidity to achieve the lines and grades shown on the plans in the final structure.

#### **MATERIALS**

Select materials suitable for temporary works; however, select materials that also ensure the safety and quality required by the design assumptions. The Engineer has authority to reject material on the basis of its condition, inappropriate use, safety, or nonconformance with the plans. Clearly identify allowable loads or stresses for all materials or manufactured devices on the plans. Revise the plan and notify the Engineer if any change to materials or material strengths is required.

#### **DESIGN REQUIREMENTS**

# **Working Drawings**

Provide working drawings for items as specified in the contract, or as required by the Engineer, with design calculations and supporting data in sufficient detail to permit a structural and safety review of the proposed design of the temporary work.

On the drawings, show all information necessary to allow the design of any component to be checked independently as determined by the Engineer.

When concrete placement is involved, include data such as the drawings of proposed sequence, rate of placement, direction of placement, and location of all construction joints.

When required, have the drawings and calculations prepared under the guidance of, and sealed by, a North Carolina Registered Professional Engineer who is knowledgeable in temporary works design.

If requested by the Engineer, submit with the working drawings manufacturer's catalog data listing the weight of all construction equipment that will be supported on the temporary work. Show anticipated total settlements and/or deflections of falsework and forms on the working drawings. Include falsework footing settlements, joint take-up, and deflection of beams or girders.

As an option for the Contractor, overhang falsework hangers may be uniformly spaced, at a maximum of 36 inches, provided the following conditions are met:

Member Type (PCG)	Member Depth, (inches)	Max. Overhang Width, (inches)	Max. Slab Edge Thickness, (inches)	Max. Screed Wheel Weight, (lbs.)	Bracket Min. Vertical Leg Extension, (inches)
II	36	39	14	2000	26
III	45	42	14	2000	35
IV	54	45	14	2000	44
MBT	63	51	12	2000	50
MBT	72	55	12	1700	48

Overhang width is measured from the centerline of the girder to the edge of the deck slab. For Type II, III & IV prestressed concrete girders (PCG), 45-degree cast-in-place half hangers and rods must have a minimum safe working load of 6,000 lbs.

For MBT prestressed concrete girders, 45-degree angle holes for falsework hanger rods shall be cast through the girder top flange and located, measuring along the top of the member, 1'-2 ½" from the edge of the top flange. Hanger hardware and rods must have a minimum safe working load of 6,000 lbs.

For links slabs, the tops of girders directly beneath the link slab shall be free of overhang falsework attachments or other hardware. Submit calculations and working drawings for overhang falsework in the link slab region.

The overhang bracket provided for the diagonal leg shall have a minimum safe working load of 3,750 lbs. The vertical leg of the bracket shall extend to the point that the heel bears on the girder bottom flange, no closer than 4 inches from the bottom of the member. However, for 72-inch members, the heel of the bracket shall bear on the web, near the bottom flange transition.

Provide adequate overhang falsework and determine the appropriate adjustments for deck geometry, equipment, casting procedures and casting conditions.

If the optional overhang falsework spacing is used, indicate this on the falsework submittal and advise the girder producer of the proposed details. Failure to notify the Engineer of hanger type and hanger spacing on prestressed concrete girder casting drawings may delay the approval of those drawings.

Falsework hangers that support concentrated loads and are installed at the edge of thin top flange concrete girders (such as bulb tee girders) shall be spaced so as not to exceed 75% of the manufacturer's stated safe working load. Use of dual leg hangers (such as Meadow Burke HF-42 and HF-43) are not allowed on concrete girders with thin top flanges. Design the falsework and forms supporting deck slabs and overhangs on girder bridges so that there will be no differential settlement between the girders and the deck forms during placement of deck concrete.

When staged construction of the bridge deck is required, detail falsework and forms for screed and fluid concrete loads to be independent of any previous deck pour components when the mid-span girder deflection due to deck weight is greater than <sup>3</sup>/<sub>4</sub>".

Note on the working drawings any anchorages, connectors, inserts, steel sleeves or other such devices used as part of the falsework or formwork that remains in the permanent structure. If the plan notes indicate that the structure contains the necessary corrosion protection required for a Corrosive Site, epoxy coat, galvanize or metalize these devices. Electroplating will not be allowed. Any coating required by the Engineer will be considered incidental to the various pay items requiring temporary works.

Design falsework and formwork requiring submittals in accordance with the 1995 AASHTO *Guide Design Specifications for Bridge Temporary Works* except as noted herein.

# Wind Loads

Table 2.2 of Article 2.2.5.1 is modified to include wind velocities up to 110 mph. In addition, Table 2.2A is included to provide the maximum wind speeds by county in North Carolina.

Pressure, lb/ft<sup>2</sup> for Indicated Wind Velocity, mph Height Zone feet above ground 70 80 90 100 110 0 to 30 15 20 25 30 35 30 to 50 20 25 30 35 40 50 to 100 25 35 30 40 45 30 35 40 45 over 100 50

**Table 2.2 - Wind Pressure Values** 

# Time of Removal

The following requirements replace those of Article 3.4.8.2.

Do not remove forms until the concrete has attained strengths required in Article 420-16 of the Standard Specifications and these Special Provisions.

Do not remove forms until the concrete has sufficient strength to prevent damage to the surface.

**Table 2.2A - Steady State Maximum Wind Speeds by Counties in North Carolina** 

COUNTY	25 YR (mph)	COUNTY	25 YR (mph)	COUNTY	25 YR (mph)
Alamance	70	Franklin	70	Pamlico	100
Alexander	70	Gaston	70	Pasquotank	100
Alleghany	70	Gates	90	Pender	100
Anson	70	Graham	80	Perquimans	100
Ashe	70	Granville	70	Person	70
Avery	70	Greene	80	Pitt	90
Beaufort	100	Guilford	70	Polk	80
Bertie	90	Halifax	80	Randolph	70
Bladen	90	Harnett	70	Richmond	70
Brunswick	100	Haywood	80	Robeson	80
Buncombe	80	Henderson	80	Rockingham	70
Burke	70	Hertford	90	Rowan	70
Cabarrus	70	Hoke	70	Rutherford	70
Caldwell	70	Hyde	110	Sampson	90
Camden	100	Iredell	70	Scotland	70
Carteret	110	Jackson	80	Stanley	70
Caswell	70	Johnston	80	Stokes	70
Catawba	70	Jones	100	Surry	70
Cherokee	80	Lee	70	Swain	80
Chatham	70	Lenoir	90	Transylvania	80
Chowan	90	Lincoln	70	Tyrell	100
Clay	80	Macon	80	Union	70
Cleveland	70	Madison	80	Vance	70
Columbus	90	Martin	90	Wake	70
Craven	100	McDowell	70	Warren	70
Cumberland	80	Mecklenburg	70	Washington	100
Currituck	100	Mitchell	70	Watauga	70
Dare	110	Montgomery	70	Wayne	80
Davidson	70	Moore	70	Wilkes	70
Davie	70	Nash	80	Wilson	80
Duplin	90	New Hanover	100	Yadkin	70
Durham	70	Northampton	80	Yancey	70
Edgecombe	80	Onslow	100	-	
Forsyth	70	Orange	70		

# Review and Approval

The Engineer is responsible for the review and approval of temporary works' drawings.

Submit the working drawings sufficiently in advance of proposed use to allow for their review, revision (if needed), and approval without delay to the work.

The time period for review of the working drawings does not begin until complete drawings and design calculations, when required, are received by the Engineer.

Do not start construction of any temporary work for which working drawings are required until the drawings have been approved. Such approval does not relieve the Contractor of the responsibility for the accuracy and adequacy of the working drawings.

# **CONSTRUCTION REQUIREMENTS**

All requirements of Section 420 of the Standard Specifications apply.

Construct temporary works in conformance with the approved working drawings. Ensure that the quality of materials and workmanship employed is consistent with that assumed in the design of the temporary works. Do not weld falsework members to any portion of the permanent structure unless approved. Show any welding to the permanent structure on the approved construction drawings.

Provide tell-tales attached to the forms and extending to the ground, or other means, for accurate measurement of falsework settlement. Make sure that the anticipated compressive settlement and/or deflection of falsework does not exceed 1 inch. For cast-in-place concrete structures, make sure that the calculated deflection of falsework flexural members does not exceed 1/240 of their span regardless of whether or not the deflection is compensated by camber strips.

# Maintenance and Inspection

Inspect and maintain the temporary work in an acceptable condition throughout the period of its use. Certify that the manufactured devices have been maintained in a condition to allow them to safely carry their rated loads. Clearly mark each piece so that its capacity can be readily determined at the job site.

Perform an in-depth inspection of an applicable portion(s) of the temporary works, in the presence of the Engineer, not more than 24 hours prior to the beginning of each concrete placement. Inspect other temporary works at least once a month to ensure that they are functioning properly. Have a North Carolina Registered Professional Engineer inspect the cofferdams, shoring, sheathing, support of excavation structures, and support systems for load tests prior to loading.

#### **Foundations**

Determine the safe bearing capacity of the foundation material on which the supports for temporary works rest. If required by the Engineer, conduct load tests to verify proposed bearing capacity values that are marginal or in other high-risk situations.

The use of the foundation support values shown on the contract plans of the permanent structure is permitted if the foundations are on the same level and on the same soil as those of the permanent structure.

Allow for adequate site drainage or soil protection to prevent soil saturation and washout of the soil supporting the temporary works supports.

If piles are used, the estimation of capacities and later confirmation during construction using standard procedures based on the driving characteristics of the pile is permitted. If preferred, use load tests to confirm the estimated capacities; or, if required by the Engineer conduct load tests to verify bearing capacity values that are marginal or in other high risk situations.

The Engineer reviews and approves the proposed pile and soil bearing capacities.

#### REMOVAL

Unless otherwise permitted, remove and keep all temporary works upon completion of the work. Do not disturb or otherwise damage the finished work.

Remove temporary works in conformance with the contract documents. Remove them in such a manner as to permit the structure to uniformly and gradually take the stresses due to its own weight.

#### METHOD OF MEASUREMENT

Unless otherwise specified, temporary works will not be directly measured.

#### **BASIS OF PAYMENT**

Payment at the contract unit prices for the various pay items requiring temporary works will be full compensation for the above falsework and formwork.

# **SUBMITTAL OF WORKING DRAWINGS**

(2-14-22)

#### GENERAL

Submit working drawings in accordance with Article 105-2 of the *Standard Specifications* and this provision. For this provision, "submittals" refers to only those listed in this provision. The list of submittals contained herein does not represent a list of required

submittals for the project. Submittals are only necessary for those items as required by the contract. Make submittals that are not specifically noted in this provision directly to the Engineer. Either the Structures Management Unit or the Geotechnical Engineering Unit or both units will jointly review submittals.

If a submittal contains variations from plan details or specifications or significantly affects project cost, field construction or operations, discuss the submittal with and submit all copies to the Engineer. State the reason for the proposed variation in the submittal. To minimize review time, make sure all submittals are complete when initially submitted. Provide a contact name and information with each submittal. Direct any questions regarding submittal requirements to the Engineer, Structures Management Unit contacts or the Geotechnical Engineering Unit contacts noted below.

To facilitate in-plant inspection by NCDOT and approval of working drawings, provide the name, address and telephone number of the facility where fabrication will actually be done if different than shown on the title block of the submitted working drawings. This includes, but is not limited to, precast concrete items, prestressed concrete items and fabricated steel or aluminum items.

#### ADDRESSES AND CONTACTS

For submittals to the Structures Management Unit, use the following addresses:

Via Email: <u>SMU-wdr@ncdot.gov</u> (do not cc SMU Working Drawings staff)

Via US mail: Via other delivery service:

Mr. B. C. Hanks, P. E.

State Structures Engineer

North Carolina Department

of Transportation

Structures Management Unit

1581 Mail Service Center

Raleigh, NC 27699-1581

Mr. B. C. Hanks, P. E.

State Structures Engineer

North Carolina Department

of Transportation

Structures Management Unit

1000 Birch Ridge Drive

Raleigh, NC 27610

Attention: Mr. J. L. Bolden, P. E. Attention: Mr. J. L. Bolden, P. E.

For submittals to the Geotechnical Engineering Unit, use the following addresses:

For projects in Divisions 1-7, use the following Eastern Regional Office addresses:

Via Email: EastGeotechnicalSubmittal@ncdot.gov

Via US mail: Via other delivery service:

Mr. David Hering, L.G., P. E.
Assistant State Geotechnical

Mr. David Hering, L.G., P. E.
Assistant State Geotechnical

Engineer – Eastern Region
North Carolina Department
North Carolina Department
Officerous Engineer – Eastern Region
North Carolina Department

of Transportation of Transportation

Geotechnical Engineering Unit
Eastern Regional Office

Geotechnical Engineering Unit
Eastern Regional Office

1570 Mail Service Center 3301 Jones Sausage Road, Suite 100

Raleigh, NC 27699-1570 Garner, NC 27529

For projects in Divisions 8-14, use the following Western Regional Office addresses:

Via Email: WestGeotechnicalSubmittal@ncdot.gov

Via US mail or other delivery service:

Mr. Eric Williams, P. E.
Assistant State Geotechnical
Engineer – Western Region
North Carolina Department
of Transportation
Geotechnical Engineering Unit
Western Regional Office
5253 Z Max Boulevard
Harrisburg, NC 28075

The status of the review of structure-related submittals sent to the Structures Management Unit can be viewed from the Unit's website, via the "<u>Drawing Submittal Status</u>" link.

The status of the review of geotechnical-related submittals sent to the Geotechnical Engineering Unit can be viewed from the Unit's website, via the "Geotechnical Construction Submittals" link.

Direct any questions concerning submittal review status, review comments or drawing markups to the following contacts:

Primary Structures Contact: James Bolden (919) 707 – 6408

ilbolden@ncdot.gov

Secondary Structures Contacts: Emmanuel Omile (919) 707 – 6451

eomile@ncdot.gov

Madonna Rorie (919) 707 – 6508

mrorie@ncdot.gov

Eastern Regional Geotechnical Contact (Divisions 1-7):

David Hering (919) 662 – 4710

dthering@ncdot.gov

Western Regional Geotechnical Contact (Divisions 8-14):

Eric Williams (704) 455 – 8902 ewilliams3@ncdot.gov

#### SUBMITTAL COPIES

Furnish one complete copy of each submittal, including all attachments, to the Engineer. At the same time, submit a copy of the same complete submittal directly to the Structures Management Unit and/or the Geotechnical Engineering Unit as specified in the tables below.

The first table below covers "Structure Submittals." The Engineer will receive review comments and drawing markups for these submittals from the Structures Management Unit. The second table in this section covers "Geotechnical Submittals." The Engineer will receive review comments and drawing markups for these submittals from the Geotechnical Engineering Unit.

Unless otherwise required, submit one set of supporting calculations to either the Structures Management Unit or the Geotechnical Engineering Unit unless both units require submittal copies in which case submit a set of supporting calculations to each unit. Provide additional copies of any submittal as directed.

## **STRUCTURE SUBMITTALS**

Submittal	Submittal Required by Structures Management Unit?	Submittal Required by Geotechnical Engineering Unit?	Contract Reference Requiring Submittal <sup>1</sup>
Arch Culvert Falsework	Y	N	Plan Note, SN Sheet & "Falsework and Formwork"
Box Culvert Falsework <sup>7</sup>	Y	N	Plan Note, SN Sheet & "Falsework and Formwork"
Cofferdams	Y	Y	Article 410-4
Foam Joint Seals <sup>6</sup>	Y	N	"Foam Joint Seals"
Expansion Joint Seals (hold down plate type with base angle)	Y	N	"Expansion Joint Seals"
Expansion Joint Seals (modular)	Y	N	"Modular Expansion Joint Seals"
Expansion Joint Seals (strip seals)	Y	N	"Strip Seal Expansion Joints"

Project R-5861	ST-12		Cherokee County
Falsework & Forms <sup>2</sup> (substructure)	Y	N	Article 420-3 & "Falsework and Formwork"
Falsework & Forms (superstructure)	Y	N	Article 420-3 & "Falsework and Formwork"
Girder Erection over Railroad	Y	N	Railroad Provisions
Maintenance and Protection of Traffic Beneath Proposed Structure	Y	N	"Maintenance and Protection of Traffic Beneath Proposed Structure at Station"
Metal Bridge Railing	Y	N	Plan Note
Metal Stay-in-Place Forms	Y	N	Article 420-3
Metalwork for Elastomeric Bearings <sup>4,5</sup>	Y	N	Article 1072-8
Miscellaneous Metalwork <sup>4,5</sup>	Y	N	Article 1072-8
Disc Bearings <sup>4</sup>	Y	N	"Disc Bearings"
Overhead and Digital Message Signs (DMS) (metalwork and foundations)	Y	N	Applicable Provisions
Placement of Equipment on Structures (cranes, etc.)	Y	N	Article 420-20
Prestressed Concrete Box Beam (detensioning sequences) <sup>3</sup>	Y	N	Article 1078-11
Precast Concrete Box Culverts	Y	N	"Optional Precast Reinforced Concrete Box Culvert at Station"
Prestressed Concrete Cored Slab (detensioning sequences) <sup>3</sup>	Y	N	Article 1078-11
Prestressed Concrete Deck Panels	Y	N	Article 420-3
Prestressed Concrete Girder (strand elongation and detensioning sequences)	Y	N	Articles 1078-8 and 1078- 11
Removal of Existing Structure over Railroad	Y	N	Railroad Provisions
	Y	N	Article 420-3

Project R-5861	ST-13		Cherokee County
Revised Bridge Deck Plans (adaptation to prestressed deck panels)			
Revised Bridge Deck Plans (adaptation to modular expansion joint seals)	Y	N	"Modular Expansion Joint Seals"
Sound Barrier Wall (precast items)	Y	N	Article 1077-2 & "Sound Barrier Wall"
Sound Barrier Wall Steel Fabrication Plans <sup>5</sup>	Y	N	Article 1072-8 & "Sound Barrier Wall"
Structural Steel <sup>4</sup>	Y	N	Article 1072-8
Temporary Detour Structures	Y	Y	Article 400-3 & "Construction, Maintenance and Removal of Temporary Structure at Station"
TFE Expansion Bearings <sup>4</sup>	Y	N	Article 1072-8

#### **FOOTNOTES**

- 1. References are provided to help locate the part of the contract where the submittals are required. References in quotes refer to the provision by that name. Articles refer to the *Standard Specifications*.
- 2. Submittals for these items are necessary only when required by a note on plans.
- 3. Submittals for these items may not be required. A list of pre-approved sequences is available from the producer or the Materials & Tests Unit.
- 4. The fabricator may submit these items directly to the Structures Management Unit.
- 5. The two sets of preliminary submittals required by Article 1072-8 of the *Standard Specifications* are not required for these items.
- 6. Submittals for Fabrication Drawings are not required. Submittals for Catalogue Cuts of Proposed Material are required. See Section 5.A of the referenced provision.
- 7. Submittals are necessary only when the top slab thickness is 18" or greater.

## **GEOTECHNICAL SUBMITTALS**

Submittal	Submittals Required by Geotechnical Engineering Unit	Submittals Required by Structures Management Unit	Contract Reference Requiring Submittal <sup>1</sup>
Drilled Pier Construction Plans <sup>2</sup>	Y	N	Subarticle 411-3(A)
Crosshole Sonic Logging (CSL) Reports <sup>2</sup>	Y	N	Subarticle 411-5(A)(2)
Pile Driving Equipment Data Forms <sup>2,3</sup>	Y	N	Subarticle 450-3(D)(2)
Pile Driving Analyzer (PDA) Reports <sup>2</sup>	Y	N	Subarticle 450-3(F)(3)
Retaining Walls <sup>4</sup>	Y; drawings and calculations	Y; drawings	Applicable Provisions
Temporary Shoring <sup>4</sup>	Y; drawings and calculations	Y; drawings	"Temporary Shoring" & "Temporary Soil Nail Walls"

#### **FOOTNOTES**

- 1. References are provided to help locate the part of the contract where the submittals are required. References in quotes refer to the provision by that name. Subarticles refer to the *Standard Specifications*.
- 2. Submit one hard copy of submittal to the Engineer. Submit a second copy of submittal electronically (PDF via email), US mail or other delivery service to the appropriate Geotechnical Engineering Unit regional office. Electronic submission is preferred.
- 3. The Pile Driving Equipment Data Form is available from: <a href="https://connect.ncdot.gov/resources/Geological/Pages/Geotech\_Forms\_Details.aspx">https://connect.ncdot.gov/resources/Geological/Pages/Geotech\_Forms\_Details.aspx</a> See second page of form for submittal instructions.
- 4. Electronic copy of submittal is required. See referenced provision.

CRANE SAFETY (6-20-19)

Comply with the manufacturer specifications and limitations applicable to the operation of any and all cranes and derricks. Prime contractors, sub-contractors, and fully operated rental companies shall comply with the current Occupational Safety and Health Administration (OSHA) regulations.

Submit all items listed below to the Engineer prior to beginning crane operations. Changes in personnel or equipment must be reported to the Engineer and all applicable items listed below must be updated and submitted prior to continuing with crane operations.

#### CRANE SAFETY SUBMITTAL LIST

- A. <u>Competent Person:</u> Provide the name and qualifications of the "Competent Person" responsible for crane safety and lifting operations. The named competent person will have the responsibility and authority to stop any work activity due to safety concerns.
- B. <u>Riggers:</u> Provide the qualifications and experience of the persons responsible for rigging operations. Qualifications and experience should include, but not be limited to, weight calculations, center of gravity determinations, selection and inspection of sling and rigging equipment, and safe rigging practices.
- C. <u>Crane Inspections:</u> Inspection records for all cranes shall be current and readily accessible for review upon request.
- D. <u>Certifications:</u> Crane operators shall be certified by the National Commission for the Certification of Crane Operators (NCCCO) or the National Center for Construction Education and Research (NCCER). Other approved nationally accredited programs will be considered upon request. In addition, crane operators shall have a current CDL medical card. Submit a list of crane operator(s) and include current certification for each type of crane operated (small hydraulic, large hydraulic, small lattice, large lattice) and medical evaluations for each operator.

### **GROUT FOR STRUCTURES**

(12-1-17)

#### 1.0 DESCRIPTION

This special provision addresses grout for use in pile blockouts, grout pockets, shear keys, dowel holes and recesses for structures. This provision does not apply to grout placed in post-tensioning ducts for bridge beams, girders, decks, end bent caps, or bent caps. Mix and place grout in accordance with the manufacturer's recommendations, the applicable sections of the Standard Specifications and this provision.

#### 2.0 MATERIAL REQUIREMENTS

Unless otherwise noted on the plans, use a Type 3 Grout in accordance with Section 1003 of the Standard Specifications.

Initial setting time shall not be less than 10 minutes when tested in accordance with ASTM C266.

Construction loading and traffic loading shall not be allowed until the 3 day compressive strength is achieved.

#### 3.0 SAMPLING AND PLACEMENT

Place and maintain components in final position until grout placement is complete and accepted. Concrete surfaces to receive grout shall be free of defective concrete, laitance, oil, grease and other foreign matter. Saturate concrete surfaces with clean water and remove excess water prior to placing grout.

#### 4.0 BASIS OF PAYMENT

No separate payment will be made for "Grout for Structures". The cost of the material, equipment, labor, placement, and any incidentals necessary to complete the work shall be considered incidental to the structure item requiring grout.

### **PROJECT SPECIAL PROVISION**

Z-1a

(10-18-95) (Rev. 8-15-23)

Water Quality (401)

project.

## **PERMITS**

The Contractor's attention is directed to the following permits, which have been issued to the Department of Transportation by the authority granting the permit.

| Dredge and Fill and/or Work in Navigable Waters (404) | Division of Environmental Management, DEQ

The Contractor shall comply with all applicable permit conditions during construction of this

State of North Carolina

Agents of the permitting authority will periodically inspect the project for adherence to the permits.

The Contractor's attention is also directed to Articles 107-10 and 107-13 of the 2018 Standard Specifications and the following:

Should the Contractor propose to utilize construction methods (such as temporary structures or fill in waters and/or wetlands for haul roads, work platforms, cofferdams, etc.) not specifically identified in the permit (individual, general, or nationwide) authorizing the project it shall be the Contractor's responsibility to coordinate with the Engineer to determine what, if any, additional permit action is required. The Contractor shall also be responsible for initiating the request for the authorization of such construction method by the permitting agency. The request shall be submitted through the Engineer. The Contractor shall not utilize the construction method until it is approved by the permitting agency. The request normally takes approximately 60 days to process; however, no extensions of time or additional compensation will be granted for delays resulting from the Contractor's request for approval of construction methods not specifically identified in the permit.

Where construction moratoriums are contained in a permit condition which restricts the Contractor's activities to certain times of the year, those moratoriums will apply only to the portions of the work taking place in the restricted waters, wetlands or buffer zones, provided that activities outside those areas is done in such a manner as to not affect the restricted waters, wetlands or buffer zones.

## **U.S. ARMY CORPS OF ENGINEERS**

WILMINGTON DISTRICT

Action Id. SAW-2020-00534 County: Cherokee County U.S.G.S. Quad: Nottely Dam

## GENERAL PERMIT (REGIONAL AND NATIONWIDE) VERIFICATION

Permittee: North Carolina Department of Transportation

Mr. Patrick Breedlove

Address: <u>253 Webster Road</u>

**Sylva NC**, 28779

Size (acres) <u>approximately 3.9 miles</u> Nearest Town <u>Murphy</u>

Nearest Waterway Cobb Creek
USGS HUC
River Basin Middle Tennessee-Hiwassee
Coordinates Latitude: 35.0103618909945;

Longitude: <u>-84.0868536978985</u>

Location description: The R5861 US19/129 Improvement project involves the improvement of US19/129 starting at the Georgia/North Carolina state line, and extending approximately 3.9 miles north to terminate at the intersection of US 19/129 and US 74/64 in Murphy, Cherokee County, North Carolina.

Description of projects area and activity: This permit verification authorizes impacts resulting from the improvements to a 3.9-mile section of U.S 19/129 improvements from the Georgia Border to U.S. 64/74 in Cherokee County, N.C. The work will require stream and wetland impacts to accommodate fill slopes, culvert improvements, and stream bank stabilization. These impacts will result in the permanent impact to 3,247 If of stream channel, the temporary impact to 849 If of stream channel, the permanent impact to 0.288 acres of wetlands, the temporary impact to 0.071 acres of wetlands, the permanent impact to 0.135 acres of open water and the temporary impact to 0.043 acres of open water (see attached impact tables).

Applicable Law:	Section 404 (Clean Water Act, 33 USC 1344);
	Section 10 (Rivers and Harbors Act, 33 USC 403)

Authorization: Regional General Permit Number and/or Nationwide Permit Number: **GP 50 - NCDOT** - **Bridge, Road Widenings and Interchanges** 

## **Special Conditions**

- 1) <u>Endangered Species: In order to avoid and minimize effects to the Indiana and NLEB DOT will comply with the following measures:</u>
  - a. <u>Tree clearing will take place from October 16 to March 31, outside of the active season for tree roosting bats.</u>
- 2) This permit verification authorizes the relocation of streams at Sites 1C and 23C. These streams will be monitored per the enclosed document titled "R-5861 Stream Relocation Monitoring Plan."
- 3) Borrow and Waste: To ensure that all borrow and waste activities occur on high ground and do not result in the degradation of adjacent waters and wetlands, except as authorized by this permit, the Permittee shall require its contractors and/or agents to identify all areas to be used as borrow and/or waste sites associated with this project. The Permittee shall provide the U.S. Army Corps of Engineers with appropriate maps indicating the locations of proposed borrow and/or waste sites as soon as such information is available. The Permittee shall submit to the Corps site-specific

information needed to ensure that borrow and/or waste sites comply with all applicable Federal requirements, to include compliance with the Endangered Species Act and the National Historic Preservation Act, such as surveys or correspondence with agencies (e.g., the USFWS, the NC-HPO, etc.). The required information shall also include the location of all aquatic features, if any, out to a distance of 400 feet beyond the nearest boundary of the site. The Permittee shall not approve any borrow and/or waste sites before receiving written confirmation from the Corps that the proposed site meets all Federal requirements, whether or not waters of the U.S., including wetlands, are located in the proposed borrow and/or waste site. All delineations of aquatic sites on borrow and/or waste sites shall be verified by the U.S. Army Corps of Engineers and shown on the approved reclamation plans. Additionally, the Permittee shall produce and maintain documentation of all borrow and waste sites associated with this project. This documentation will include data regarding soils, vegetation, hydrology, any delineation(s) of aquatic sites, and any jurisdictional determinations made by the. All information will be available to the U.S. Army Corps of Engineers upon request. The Permittee shall require its contractors to complete and execute reclamation plans for each borrow and/or waste site and provide written documentation that the reclamation plans have been implemented and all work is completed. This documentation will be provided to the U.S. Army Corps of Engineers within 30 days of the completion of the reclamation work.

4) In order to compensate for impacts associated with this permit, mitigation shall be provided in accordance with the provisions outlined on the most recent version of the attached Compensatory Mitigation Responsibility Transfer Form. The requirements of this form, including any special conditions listed on this form, are hereby incorporated as special conditions of this permit authorization.

## SEE ATTACHED RGP or NWP GENERAL, REGIONAL AND/OR SPECIAL CONDITIONS

Your work is authorized by the above referenced permit provided it is accomplished in strict accordance with the attached conditions and your submitted application dated <u>June 5, 2023</u> and ensuing record. Any violation of the attached conditions or deviation from your submitted plans may subject the permittee to a stop work order, a restoration order, a Class I administrative penalty, and/or appropriate legal action.

This verification will remain valid until the expiration date identified below unless the nationwide and/or regional general permit authorization is modified, suspended or revoked. If, prior to the expiration date identified below, the nationwide and/or regional general permit authorization is reissued and/or modified, this verification will remain valid until the expiration date identified below, provided it complies with all requirements of the modified nationwide permit. If the nationwide and/or regional general permit authorization expires or is suspended, revoked, or is modified, such that the activity would no longer comply with the terms and conditions of the nationwide permit, activities which have commenced (i.e., are under construction) or are under contract to commence in reliance upon the nationwide and/or regional general permit, will remain authorized provided the activity is completed within twelve months of the date of the nationwide and/or regional general permit's expiration, modification or revocation, unless discretionary authority has been exercised on a case-by-case basis to modify, suspend or revoke the authorization.

Activities subject to Section 404 (as indicated above) may also require an individual Section 401 Water Quality Certification. You should contact the NC Division of Water Resources (telephone 919-807-6300) to determine Section 401 requirements.

For activities occurring within the twenty coastal counties subject to regulation under the Coastal Area Management Act (CAMA), prior to beginning work you must contact the N.C. Division of Coastal Management in Morehead City, NC, at (252) 808-2808.

This Department of the Army verification does not relieve the permittee of the responsibility to obtain any other required Federal, State or local approvals/permits.

If there are any questions regarding this verification, any of the conditions of the Permit, or the Corps of Engineers regulatory program, please contact Crystal Amschler at (828) 271-7980 X 4231 or Crystal.C.Amschler@usace.army.mil.

Monte 2023.09.29

Matthews 12:54:39 -04'00'

Date: September 29, 2023

Corps Regulatory Official:

Expiration Date of Verification: May 25, 2025

The Wilmington District is committed to providing the highest level of support to the public. To help us ensure we continue to do so, please complete our Customer Satisfaction Survey, located online at https://regulatorv.ops.usace.armv.mil/customer-service-survey/

Action ID Number: SAW-2020-00534 County: Cherokee County
Permittee: North Carolina Department of Transportation
Project Name: NCDOT R5861 Cherokee County US19/129 from Georgia State line to US 64/74 Div14
Date Verification Issued: <u>September 29, 2023</u>
Project Manager: Crystal Amschler
Upon completion of the activity authorized by this permit and any mitigation required by the permit, sign this certification and return it to the following address:
US ARMY CORPS OF ENGINEERS WILMINGTON DISTRICT Attn: Crystal Amschler, Project Manager Asheville Regulatory Field Office 151 Patton Avenue, Room 208 Asheville, North Carolina 28801
Please note that your permitted activity is subject to a compliance inspection by a U. S. Army Corps of Engineers representative. Failure to comply with any terms or conditions of this authorization may result in the Corps suspending, modifying or revoking the authorization and/or issuing a Class I administrative penalty, or initiating other appropriate legal action.
I hereby certify that the work authorized by the above referenced permit has been completed in accordance with the terms and condition of the said permit, and required mitigation was completed in accordance with the permit conditions.

Date

Signature of Permittee

Stream Impacts in HUC 06020002															
Permit Site No.	Stream Name/ JS ID <sup>1</sup>	Status/Class	Impact Type	Reason	Length (feet)	Width (feet)	Impact (acres)	USACE Mitigation Required	NCDWR Mitigation Required						
	SA	Perennial	Permanent Fill												
1A			Bank Stabilization												
IA	UT to Moccasin Creek	С	Channel Change	Channel Change	140	3	0.009	140							
			Temporary Fill	Channel Change	10	3	0.001								
	SA	Perennial	Permanent Fill	66" RCP	53	3	0.004	53							
1B	T.O.		Bank Stabilization												
TB	UT to Moccasin Creek	С	Channel Change												
			Temporary Fill	66" RCP	18	3	0.001								
	SA2	Intermittent	Permanent Fill												
	UT to Moccasin Creek		Bank Stabilization												
1C		С	Channel Relocation	Stream Relocation	403	2	0.018	403							
			Temporary Fill	Channel Change/ Detour	131	2	0.001								
	SB	SB Perennial	Permanent Fill												
2A	T. C.		Bank Stabilization	-1											
ZA	UT to Cobb Creek	Cobb	Cobb	Cobb	Cobb	Cobb	Cobb	С	Channel Change	Channel Change	50	2	0.003	50	
			Temporary Fill	Channel Change/ Detour	95	2	0.004								
	SB	Perennial	Permanent Fill	48" RCP	71	2	0.003	71							
2B	UT to		Bank Stabilization												
21)	Cobb Creek	С	Channel Change												
			Temporary Fill	48" RCP	10	2	0.001								
	SB	Perennial	Permanent Fill	Roadway Fill & 66" WSP	120	5	0.011	120							
7	UT to		Bank Stabilization												
	Cobb Creek	С	Channel Change												
			Temporary Fill	66" WSP	15	5	0.002								

R-5861, Cherokee County
Stream Impacts in HUC 06020002

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Stream Impacts in HUC 06020002								September 20, 2023 Revisions			
Permit Site No.	Stream Name/ JS ID <sup>1</sup>	Status/Class	Impact Type	Reason	Length (feet)	Width (feet)	Impact (acres)	USACE Mitigation Required	NCDWR Mitigation Required		
	SC	Perennial	Permanent Fill								
			Bank Stabilization	Base Ditch Tie In	17	10	0.003				
8	Cobb Creek	С	Channel Change								
			Temporary Fill	Base Ditch Tie In	40	10	0.008				
	SC	Perennial	Permanent Fill	42" WSP	12	1	0	12			
10			Bank Stabilization	Pipe Outlet	14	1	0				
	Cobb Creek	С	Channel Change								
			Temporary Fill	42" WSP	10	1	0				
	SC	Perennial	Permanent Fill	(2) 8'x8' RCBC & 72" WSP	73	9	0.017	73			
11	Cobb Creek		Bank Stabilization	Outlet/Inlet Improvements	69	9	0.013				
		C	Channel Change								
			Temporary Fill	(2) 8'x8' RCBC & 72" WSP	20	9	0.004				
	SE UT to Cobb Creek	Intermittent	Permanent Fill	Roadway Fill	52	1	0.001	52			
12		bb C	Bank Stabilization	-							
12			Channel Change								
			Temporary Fill								
	SF	Perennial	Permanent Fill								
			Bank Stabilization								
14A	UT to Cobb	C	Channel Change								
	Creek		Temporary Fill	Remove CMP, Reconnect (Daylight) Stream	53	5	0.006				
	SF	Perennial	Permanent Fill	66" WSP	36	9	0.006	36			
14B	IIT 4.		Bank Stabilization				1	1			
110	UT to Cobb Creek	С	Channel Change								
			Temporary Fill								
	SG	Perennial	Permanent Fill	54" RCP	21	5	0.002	21			
15	T TOTAL		Bank Stabilization								
13	UT to Cobb Creek	С	Channel Change								
		CICCK		Temporary Fill	54" RCP	12	5	0.001			

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	Stream Im	pacts in HUC 0		e 3			,	3 Kevisions		
Permit Site No.	Stream Name/ JS ID <sup>1</sup>	Status/Class	Impact Type	Reason	Length (feet)	Width (feet)	Impact (acres)	USACE Mitigation Required	NCDWR Mitigation Required	
	SF	Perennial	Permanent Fill							
			Bank Stabilization	36" RCP Outlet	13	5	0.001			
16A	UT to Cobb Creek	С	Channel Change							
	CICCK	еек	Temporary Fill	36" RCP Outlet	20	5	0.001			
	SF	Perennial	Permanent Fill							
1/D			Bank Stabilization	15" CSP Outlet	5	5	0			
16B	UT to Cobb Creek	С	Channel Change							
			Temporary Fill	15" CSP Outlet	15	5	0.001			
	SF	Perennial	Permanent Fill	Roadway Fill	77	3	0.013	77		
16C	UT to Cobb Creek	bb C	Bank Stabilization							
			Channel Change						-1	
			Temporary Fill	Roadway Fill	15	3	0.001		-	
	SI	Perennial / Intermittent	Permanent Fill	Roadway Fill	267 / 107	5	0.026 / 0.017	374		
19A	UT to Gold Branch		Bank Stabilization	30" CSP	10 / 0	5	0.001 /	-1	-1	
1711		Gold C ranch	Channel Change							
			Temporary Fill	Roadway Fill	16 / 0	5	0.002 /			
	SI		Permanent Fill							
19B	UT to		Bank Stabilization	24" CSP	19	3	0.001			
170	Gold Branch	С	Channel Change							
			Temporary Fill	24" CSP	29	3	0.002			
	SJ	Perennial	Permanent Fill	8'x 9' RCBC	65	5	0.008	65		
20A			Bank Stabilization							
20A	Gold Branch	С	Channel Change							
			Temporary Fill	8'x 9' RCBC	65	5	0.007			
	SJ	Perennial	Permanent Fill	8'x 9' RCBC	59	5	0.012	59		
200	Gold Branch			Bank Stabilization						
20B			Channel Change	Channel Change	40	5	0.005	40		
			Temporary Fill							

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		pacts in HUC 0		e 4		September 20, 2023 Revisions			
Permit Site No.	Stream Name/ JS ID <sup>1</sup>	Status/Class	Impact Type	Reason	Length (feet)	Width (feet)	Impact (acres)	USACE Mitigation Required	NCDWR Mitigation Required
	SJ	Perennial	Permanent Fill						
• 0 5			Bank Stabilization						
20C	Gold Branch	С	Channel Change	Channel Change	81	7	0.014	81	
			Temporary Fill	Channel Change	7	7	0.001		
	SL	Perennial	Permanent Fill						
21	UT to		Bank Stabilization						
21	Gold Branch	С	Channel Change	Channel Change	85	4	0.008	85	-
			Temporary Fill	Detour	128	4	0.012	1	-
	SK	Perennial	Permanent Fill	36" RCP	20	3	0.001	20	
22		С	Bank Stabilization	36" RCP	12	3	0.001		
22	UT to Gold Branch		Channel Change					-1	
			Temporary Fill	36" RCP	11	3	0		
	SM	Perennial	Permanent Fill	1	-1			1	
23A	UT to Gold Branch		Bank Stabilization	72" & 24" RCP Outlet	29	2	0.001	1	
2311		Gold C	Channel Change	-					
			Temporary Fill	72" & 24" RCP Outlet	18	2	0.008		
	SM	Perennial	Permanent Fill	anent 72" PCP 23		2	0.002	23	
23B	UT to		Bank Stabilization	1	1			1	
23B	Gold Branch	С	Channel Change						
			Temporary Fill						
	SM	Perennial	Permanent Fill						
22 C	IIT.		Bank Stabilization	1				1	
23C	UT to Gold Branch	С	Channel Relocation	Stream Relocation	353	3	0.02	353	353
	21		Temporary Fill	1	1			1	1
	SM	Perennial	Permanent Fill	60" RCP	29	2	0.001	29	
			Bank Stabilization						
23D	UT to Gold Branch	С	Channel Change						
			Temporary Fill	60" RCP	10	2	0		

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	Stream Impacts in HUC 06020002								
Permit Site No.	Stream Name/ JS ID <sup>1</sup>	Status/Class	Impact Type	Reason	Length (feet)	Width (feet)	Impact (acres)	USACE Mitigation Required	NCDWR Mitigation Required
	SM	Perennial	Permanent Fill	30" RCP	203	5	0.019	203	1
24	UT to		Bank Stabilization	30" RCP Outlet	10	5	0	-	
	Gold Branch	С	Channel Change						
			Temporary Fill	30" RCP	18	5	0.001		
	SO	Perennial	Permanent Fill	66" RCP	417	3	0.037	417	417
25	IIT 4-		Bank Stabilization		1				1
25	UT to Rominger Creek	С	Channel Change						
			Temporary Fill	66" RCP	29	3	0.002		
	SP	Perennial	Permanent Fill	Roadway Fill	48	2	0.004	48	
26	I ITT		Bank Stabilization						
26	UT to Rominger Creek	С	Channel Change						
			Temporary Fill						
	SN	Perennial	Permanent Fill		-1				
	Rominger Creek		Bank Stabilization	66" RCP Outlet	25	5	0.003		
27			Channel Change						
			Temporary Fill	66" RCP & Existing 48" CMP Access	31	5	0.003		-1
	SM	Perennial	Permanent Fill	60" RCP	50	4	0.002	50	1
			Bank Stabilization						
28	UT to Gold Branch	С	Channel Change						
			Temporary Fill	60" RCP	11	4	0.001		
	SM2	Perennial	Permanent Fill	Roadway Fill	58	1	0.001	58	
20	T ITT		Bank Stabilization						
29	UT to Gold Branch	fold C	Channel Change		-				
			Temporary Fill	Roadway Fill	12	1	0		1
Total St	ream Impact	s for HUC 0602			3,247 (P) 849 (T)		0.288 (P) 0.071 (T)	2,373 (2:1) 960 (1.5:1)	770 (1:1)
						Provided ised Tota	by DMS I Needed	6,026 5,706	

<sup>&</sup>lt;sup>1</sup>/ Stream IDs correspond to R-5861 PJD labeling. P-Permanent, T-Temporary

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Stream Impacts from Utilities in HUC 06020002

Permit Site No.	Stream Name/ JD ID <sup>1</sup>	Status/Class	Impact Type	Length (feet)	Width (feet)	Impact (acres)	USACE Mitigation Required	NCDWR Mitigation Required
	SF UT to Cobb Creek		Permanent Fill		1			1
		SF D	Bank Stabilization		-			
1		Perennial	Embedded rip-rap		-			
1		WS-IV	Channel Relocation		-			
		W 5-1 V	Temporary Fill (Guy Wire)	28	5	0.001	-	-
	Total S	Stream Impact	s for HUC 06020002	28		0.001	0	0

 $<sup>^{1/}\,\</sup>mathrm{Stream\;IDs}$  correspond to R-5861 PJD labeling.

Wetland Impacts in HUC 06020002

Permit Site / Wetland ID <sup>1</sup>	NC WAM / Hydraulic Classification	Reason	Permanent Fill (ac)	Mechanized Clearing (ac)
3 / WA	Headwater Forest Riparian	Roadway Fill	0.064	
4 / WA	Headwater Forest Riparian	Roadway Fill	0.012	
5 / WA	Headwater Forest Riparian	18" CSP	0.042	
6 / WB	Floodplain Pool Riparian	Roadway Fill	0.016	0.018
9 / WB	Floodplain Pool Riparian	Roadway Fill	0.024	0.047
13 / WC	Floodplain Pool Riparian	Roadway Fill	0.014	0.025
16B / WE	Floodplain Pool Riparian	Roadway Fill		0.000
18 / WE	Floodplain Pool Riparian	Roadway Fill	0.001	0.015
22 / WG	Floodplain Pool Riparian	36" RCP	0.001	0.000
Totals by Impact Type:			0.174	0.105
Total Permanent Wetlands			0.279	
Total Requested from DMS			0.279 (@2:1=0.558)	

 $<sup>^{1}</sup>$  Wetland IDs correspond to R-5861 PJD labeling.

Wetland Impacts in 06020002 From Utilities

Permit Site / Wetland ID <sup>1/</sup>	NCWAM / Hydraulic Classification	Reason	Permanent Fill (ac)	Mechanized Clearing (ac)
2 / WF	Floodplain Pool Riparian	Guy Wire	0.001	
Totals by Impact Type:			0.001	-
Total Permanent Wetland Impacts			0.001	-
Total Requested from DMS		0.001 (@2:1=0.002)		

<sup>&</sup>lt;sup>1</sup> Wetland IDs correspond to R-5861 PJD labeling.

Surface Water Impacts in 06020002

Permit Site / Pond ID <sup>1</sup>	Impact Type	Reason	Impact (Acres)
17 / PB	Temporary Fill	Roadway fill	0.002
17 / PB	Permanent Fill	Rock fill	0.027
17 / PB	Temporary Fill	Rock fill	0.027
18 / PC	Temporary Fill	Roadway fill	0.014
20B / PD	Permanent Fill	Roadway fill	0.108
Tot	0.178		

<sup>&</sup>lt;sup>1</sup>/Pond IDs correspond to R-5861 PJD labeling.

R-5861 Stream Relocation Monitoring Plan

U.S. 19 – 129 Road Widening Project

Cherokee County, North Carolina

September 27, 2023

NCDOT Division 14

This plan addresses requirements for the stream re-location impacted for the improvements to a 3.773-mile section of U.S. 19/129 from the Georgia State Line to U.S. 64/74 in Cherokee County, North Carolina. The project involves minor widening with vertical and horizontal alignment improvements, drainage improvements as well as a small section of new alignment.

### **VISUAL MONITORING**

The relocation site will be visually monitored each year, for three years, to identify areas of concern (poor plant vigor, invasive plants, streambank instability, etc.). Results will be provided in a monitoring report in a plan view format and recommended courses of action will be identified for approval by the U.S. Army Corps of Engineers (USACOE).

The site will be monitored for the presence of invasive species and adaptive management aimed at controlling the species will be conducted. Treatments with herbicides, in coordination with USACOE, will be used as needed where invasive species are identified in areas of planted and/or desirable species. Beaver control will be implemented, if needed, under NCDOT's statewide contract with the U.S. Department of Agriculture, should beaver damage occur during the monitoring period. These activities, if required, will be documented in annual reports. The stream relocation and buffers will remain under state control. No mow signs and white stakes will be erected along the stream buffers to protect against maintenance activities. Listed below in Table 1, depicts the proposed monitoring schedule:

**Table 1 Monitoring Schedule** 

Resource	Year 1	Year 2	Year 3
Vegetation	X	Х	X
Visual Assessment	Х	Х	Х
Report Submittal	Х	Х	Х

NCDOT will be responsible for implementing the monitoring plan. A consulting firm will be secured to complete the data collection and report writing.

#### **VEGETATION**

Vegetation planting will be conducted between November 15 and March 15. After planting has been completed, an initial evaluation will be performed to verify planting methods and to determine initial species composition and density. Supplemental planting and additional site modifications will be implemented, if necessary. Plants will be selected from the attached species list.

## P-15

## **Planting and Volunteer Plant List**

#### Stream Banks (TYPE I)

Cornus amomum (Silky Dogwood)
Salix sericea (Silky Willow)
Salix nigra (Black Willow)
Cephalanthus occidentalis (Buttonbush)
Alnus serrulata (Tag Alder)
Populus deltoides (Cottonwood)

#### Riparian-Upland Buffer (TYPE II)

Liriodendron tulipifera (Tulip Poplar)

Prunus serotine (Black Cherry)

Robinia psedoaccaia (Black Locust)

Acer rubrum (Red Maple)

Ulmus americana (American Elm)

Fraxinus americana (White Ash)

Cornus amomum (Silky Dogwood)

Carpinus caroliniana (Ironwood)

Cephalanthus occidentalis (Buttonbush)

Lindera benzoin (Spicebush)

*Liquidambar styraciflua* (Sweetgum)

Alnus serrulata (Tag Alder)

Plantanus occidentalis (Sycamore)

Betula nigra (River Birch)

Populus deltoides (Cottonwood)

Corylus americana (American Hazelnut)

Quercus michauxii (Swamp Chestnut Oak)

Sambucus canadensis (Elderberry)

Pinus strobus Eastern (White Pine)

Pinus echinata (Shortleaf Pine)

Pinus virginiana (Virginia Pine)

Quercus alba (White Oak)

Quercus falcata (Southern Red Oak)

Quercus stellata (Post Oak)

Juniperus virginiana (Eastern Red Cedar)

Diospyros virginiana (Common Persimmon)

Juglans nigra (Black Walnut)

Carya tomentosa (Mockernut Hickory)

Carya glabra (Pignut Hickory)

*Ilex opaca* (American Holly)

Cornus florida (Flowering Dogwood)

Fagus grandifolia (American Beech)

Cornus racemosa (Gray Dogwood)

Hamamelis virginiana (American Witch-hazel)

Viburnum dentatum (Southern Arrowwood)

Sambucus racemosa (Red Elderberry)

DEPARTMENT OF THE ARMY Wilmington District, Corps of Engineers 69 Darlington Avenue Wilmington, North Carolina 28403-1343

Regional General Permit No. SAW-2019-02350 (RGP 50)

Name of Permittee: North Carolina Department of Transportation

Effective Date: May 26, 2020 Expiration Date: May 25, 2025

# DEPARTMENT OF THE ARMY REGIONAL GENERAL PERMIT

A regional general permit (RGP) to perform work in or affecting navigable waters of the United States and waters of the United States, upon recommendation of the Chief of Engineers, pursuant to Section 10 of the Rivers and Harbors Act of March 3, 1899 (33 U.S.C. 403), and Section 404 of the Clean Water Act (33 U.S.C. 1344), is hereby issued by authority of the Secretary of the Army by the

District Commander U.S. Army Engineer District, Wilmington Corps of Engineers 69 Darlington Avenue Wilmington, North Carolina 28403-1343

TO AUTHORIZE THE DISCHARGE OF DREDGED OR FILL MATERIAL IN WATERS OF THE UNITED STATES (U.S.), INCLUDING WETLANDS, ASSOCIATED WITH MAINTENANCE, REPAIR, AND CONSTRUCTION PROJECTS CONDUCTED BY THE VARIOUS DIVISIONS OF THE NORTH CAROLINA DEPARTMENT OF TRANSPORTATION (NCDOT), INCLUDING THE NCDOT DIVISION OF HIGHWAYS, RAIL, BICYCLE/PEDESTRIAN, ETC.

## Activities authorized by this RGP:

- a. (1) Road widening, and/or (2) construction, maintenance, and/or repair of bridges. For bridge projects, work can include the approaches.
- b. (1) Improvement of interchanges or intersections, or (2) construction of interchanges or intersections over, or on, existing roads.

## Full descriptions/terms of "a" and "b":

a. (1) Road widening, and/or (2) construction, maintenance, and/or repair of bridges. For bridge projects, work can include the approaches.

Permanent impacts that result in a loss of waters of the U.S., <u>excluding stream relocation(s)</u>, must be less than or equal to 500 linear feet (lf) of stream and/or one (1) acre of wetland/open water for each single and complete linear project.

Single and complete linear project. As noted in 33 CFR 330.2(i), for linear projects, the "single and complete project" (i.e., single and complete crossing) will apply to each crossing of a separate water of the U.S. (i.e., single waterbody) at that location; except that for linear projects crossing a single waterbody several times at separate and distant locations, each crossing is considered a single and complete project. However, individual channels in a braided stream or river, or individual arms of a large, irregularly-shaped wetland or lake, etc., are not separate waterbodies and crossing of such features cannot be considered separately.

Also authorized under "a": (1) stream relocation(s) and (2) temporary impacts, such as those from temporary structures, fills, dewatering, and other work necessary to conduct the activities listed under "a". Stream relocation(s) and temporary impacts will be evaluated independently and are not limited to the permanent loss limits of 500 lf of stream and/or 1 acre of wetland/open water (i.e., stream relocations and/or temporary impacts do not factor into these limits) for each single and complete linear project; however, if the Corps determines that the proposed stream relocation(s) and/or temporary impacts are of such magnitude that they cannot be authorized under this section ("a") of RGP 50, even if the permanent losses from road widening, and/or construction, maintenance, and repair of bridges do not exceed the impact limits for this section ("a") of RGP 50, an Individual Permit will be required.

If the Corps determines, on a case-by-case basis, that the concerns for the aquatic environment so indicate, he/she may exercise discretionary authority to override this RGP and require an Individual Permit.

# b. (1) Improvement of interchanges or intersections, or (2) construction of interchanges or intersections, over or, on existing roads.

For activities authorized under "b", the limits for permanent impacts that result in a loss of waters of the U.S. depend on the location of the impacts, as described below:

• In the coastal plain of North Carolina (both inner coastal plain and outer coastal plain) - permanent impacts that result in a loss of waters of the U.S., excluding stream relocation(s), must be less than or equal to 1,000 lf of stream and/or 3 acres of wetland/open water for the entire interchange or intersection project.

• All other areas of North Carolina - permanent impacts that result in a loss of waters of the U.S., excluding stream relocation(s), must be less than or equal to 1,000 lf of stream and/or 2 acres of wetland/open water for the entire interchange or intersection project.

<u>Coastal plain</u> – See <a href="http://saw-reg.usace.army.mil/JD/LRRs\_PandT.pdf">http://saw-reg.usace.army.mil/JD/LRRs\_PandT.pdf</a> for Land Resource Areas LRRP (inner coastal plain) and LRRT (outer coastal plain).

When proposed impacts to waters of the U.S. are located both inside AND outside of the coastal plain, the Corps will determine, based on the location(s) of proposed impacts to waters of the U.S., if a project is a "coastal plain project".

<u>Single and complete project</u>. For permitting purposes, each interchange or intersection is considered to be one single and complete project. For example, an interchange project cannot result in a permanent loss (excluding stream relocation), of (1) greater than 1,000 lf of stream and/or 3 acres of wetland/open water in the coastal plain <u>OR</u> (2) greater than 1,000 lf of stream and/or 2 acres of wetland/open water in all other areas of North Carolina.

Approach fills may be considered to be part of an interchange or intersection project if the Corps determines that inclusion of these areas meet the terms of this section ("b") of RGP 50. Early coordination with the Corps is encouraged.

Intersections, regardless of the mode of transportation (e.g., railroad, other roadways, etc.), may be at grade or grade separated if the Corps determines that the project would meet the terms of this section ("b") of RGP 50. Early coordination with the Corps is encouraged.

Also authorized under "b": (1) stream relocation(s) and (2) temporary impacts, such as those from temporary structures, fills, dewatering, and other work necessary to conduct the activities listed under "b". Stream relocation(s) and temporary impacts will be evaluated independently and are not limited to the permanent loss limits of (1) 1,000 lf of stream and/or 3 acres of wetland/open water in the coastal plain <u>OR</u> (2) 1,000 lf of stream and/or 2 acres of wetland/open water in all other areas of North Carolina (i.e., stream relocations and/or temporary impacts do not factor into these limits) for each interchange or intersection project; however, if the Corps determines that the proposed stream relocation(s) and/or temporary impacts are of such magnitude that they cannot be authorized under this section ("b") of RGP 50, even if the permanent losses from improvement of interchanges or intersections, or construction of interchanges or intersections over, or on, existing roads do not exceed the impact limits for this section ("b") of RGP 50, an Individual Permit will be required.

If the Corps determines, on a case-by-case basis, that the concerns for the aquatic environment so indicate, he/she may exercise discretionary authority to override this RGP and require an Individual Permit.

## 1. Special Conditions.

- a. The prospective permittee must submit a pre-construction notification (PCN) and applicable supporting information to the District Engineer and receive written verification from the Corps that the proposed work complies with this RGP prior to commencing any activity authorized by this RGP.
- b. If the project will not impact a designated "Area of Environmental Concern" (AEC) in the twenty\* (20) counties of North Carolina covered by the North Carolina Coastal Area Management Act (CAMA) ("CAMA counties"), a consistency submission is not required. If the project will impact a designated AEC and meets the definition of "development", the prospective permittee must obtain the required CAMA permit. Development activities shall not commence until a copy of the approved CAMA permit is furnished to the appropriate Corps Regulatory Field Office (Wilmington Field Office 69 Darlington Avenue, Wilmington, NC 28403 or Washington Field Office 2407 West 5th Street, Washington, NC 27889).

\*The 20 CAMA counties in North Carolina include Beaufort, Bertie, Brunswick, Camden, Carteret, Chowan, Craven, Currituck, Dare, Gates, Hertford, Hyde, New Hanover, Onslow, Pamlico, Pasquotank, Pender, Perquimans, Tyrrell, and Washington.

- c. No work shall be authorized by this RGP within the 20\* CAMA counties without prior consultation with the National Oceanic and Atmospheric Administration's (NOAA) Habitat Conservation Division. For each activity reviewed by the Corps where it is determined that the activity may affect Essential Fish Habitat (EFH) for federally managed species, an EFH Assessment shall be prepared by the prospective permittee and forwarded to the Corps and NOAA Fisheries for review and comment prior to authorization of work.
- d. Culverts and pipes. The following conditions [(1)-(8)] apply to the construction of culverts/pipes, and work on existing culverts/pipes.

Additionally, if the proposed work would affect an existing culvert/pipe (e.g., culvert/pipe extensions), the prospective permittee must include actions (in the PCN) to correct any existing deficiencies that are located:

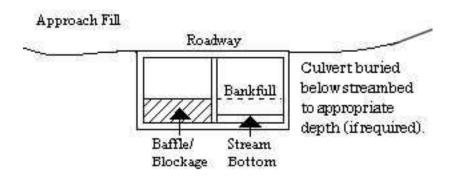
- At the inlet and/or outlet of the existing culvert/pipe, IF these deficiencies are/were caused by the existing culvert/pipe, or
- Near the inlet or outlet of the existing culvert/pipe, IF these deficiencies are/were caused by the existing culvert/pipe.

These deficiencies may include, but are not limited to, stream over-widening, bank erosion, streambed scour, perched culvert/pipes, and inadequate water depth in culvert(s). Also note if the proposed work would address the existing deficiency or eliminate it – e.g., bank erosion on left bank, but the culvert extension will be placed in this eroded area. If the prospective permittee is unable to correct the deficiencies caused by the existing culvert/pipe, they must document the reasons in the PCN for Corps consideration.

- (1) No activity may result in substantial, permanent disruption of the movement of those species of aquatic life indigenous to the waterbody, including those species that normally migrate through the area. Measures will be included that will promote the safe passage of fish and other aquatic organisms.
- (2) The dimension, pattern, and profile of the stream above and below a culvert/pipe shall not be modified by widening the stream channel or by reducing the depth of the stream in connection with the construction activity. It is acceptable to use rock vanes at culvert/pipe outlets to ensure, enhance, or maintain aquatic passage. Pre-formed scour holes are acceptable when designed for velocity reduction. The width, height, and gradient of a proposed opening shall be such as to pass the average historical low flow and spring flow without adversely altering flow velocity. Spring flow will be determined from gauge data, if available. In the absence of such data, bankfull flow will be used as a comparable level.
- (3) Burial/depth specifications: If the project is located within any of the 20\* CAMA counties, culvert/pipe inverts will be buried at least one foot below normal bed elevation when they are placed within the Public Trust AEC and/or the Estuarine Waters AEC as designated by CAMA. If the project is located outside of the 20\* CAMA counties, culvert/pipe inverts will be buried at least one foot below the bed of the stream for culverts/pipes that are greater than 48 inches in diameter. Culverts/pipes that are 48 inches in diameter or less shall be buried or placed on the stream bed as practicable and appropriate to maintain aquatic passage, to include passage during drought or low flow conditions. Every effort shall be made to maintain the existing channel slope. A waiver from the burial/depth specifications in this condition may be requested in writing. The prospective permittee is encouraged to request agency input about waiver requests as early as possible, and prior to submitting the PCN for a specific project; this will allow the agencies time to conduct a site visit, if necessary, and will prevent time delays and potential project revisions for the prospective permittee. The waiver will only be issued by the Corps if it can be demonstrated that the impacts of complying with burial requirements would result in more adverse impacts to the aquatic environment.
- (4) Appropriate actions to prevent destabilization of the channel and head cutting upstream shall be incorporated in the design and placement of culverts/pipes.
- (5) Culverts/pipes placed within riparian and/or riverine wetlands must be installed in a manner that does not restrict the flow and circulation patterns of waters of the U.S. Culverts/pipes placed across wetland fills purely for the purposes of equalizing surface

water do not have to be buried, but must be of adequate size and/or number to ensure unrestricted transmission of water.

(6) Bankfull flows (or less) shall be accommodated through maintenance of the existing bankfull channel cross sectional area in no more than one culvert/pipe or culvert/pipe barrel. Additional culverts/pipes or barrels at such crossings shall be allowed only to receive flows exceeding the bankfull flow. A waiver from this condition may be requested in writing; this request must be specific as to the reason(s) for the request. The waiver will be issued if it can be demonstrated that it is not practicable to comply with this condition.



- (7) Where adjacent floodplain is available, flows exceeding bankfull will be accommodated by installing culverts/pipes at the floodplain elevation. When multiple culverts/pipes are used, baseflow must be maintained at the appropriate width and depth by the construction of floodplain benches, sills, and/or construction methods to ensure that the overflow culvert(s)/pipe(s) is elevated above the baseflow culvert(s)/pipe(s).
- (8) The width of the baseflow culvert/pipe shall be comparable to the width of the bankfull width of the stream channel. If the width of the baseflow culvert/pipe is wider than the stream channel, the culvert/pipe shall include baffles, benches and/or sills to maintain the width of the stream channel. A waiver from this condition may be requested in writing; this request must be specific as to the reason(s) for the request. The waiver will be issued if it can be demonstrated that it is not practicable or necessary to include baffles, benches or sills.

See the remaining special conditions for additional information about culverts/pipes in specific areas.

e. Discharges into waters of the U.S. designated by either the North Carolina Division of Marine Fisheries (NCDMF) or the North Carolina Wildlife Resources Commission (NCWRC) as anadromous fish spawning areas are prohibited during the period between February 15th and June 30th, without prior written approval from the Corps and the appropriate wildlife agencies (NCDMF, NCWRC, and/or the National Marine Fisheries Service (NMFS)). Discharges into waters of the U.S. designated by NCWRC as primary nursery areas in inland waters are prohibited during the period between February 15th and September 30th, without prior written approval from the Corps and the appropriate wildlife agencies. Discharges into waters of the U.S. designated by NCDMF as primary nursery areas shall be coordinated with NCDMF prior to being authorized by

this RGP. Coordination with NCDMF may result in a required construction moratorium during periods of significant biological productivity or critical life stages.

The prospective permittee should contact:

NC Division of Marine Fisheries
3441 Arendell Street
Morehead City, NC 28557
Telephone 252-726-7021
or 800-682-2632
North Carolina Wildlife Resources Commission
Habitat Conservation Division
1721 Mail Service Center
Raleigh, NC 27699-1721
Telephone (919) 707-0220

- f. This permit does not authorize the use of culverts in areas designated as anadromous fish spawning areas by the NCDMF or the NCWRC.
- g. No in-water work shall be conducted in Waters of the U.S. designated as Atlantic sturgeon critical habitat during the periods between February 1st and June 30th. No in-water work shall be conducted in Waters of the U.S. in the Roanoke River designated as Atlantic sturgeon critical habitat during the periods between February 1st and June 30th, and between August 1st to October 31st, without prior written approval from NMFS.
- h. Before discharging dredged or fill material into waters of the U.S. in designated trout watersheds in North Carolina, the PCN will be sent to the NCWRC and the Corps concurrently. See https://www.saw.usace.army.mil/Missions/Regulatory-Permit-Program/Agency-Coordination/Trout.aspx for the designated trout watersheds. The PCN shall summarize alternatives to conducting work in waters of the U.S. in trout watersheds that were considered during the planning process and detail why alternatives were or were not selected. For proposals where (1) a bridge in a trout stream will be replaced with a culvert, or (2) a culvert will be placed in a trout stream, the PCN must also include a compensatory mitigation plan for all loss of stream bed, and details of any on-site evaluations that were conducted to determine that installation of a culvert will not adversely affect passage of fish or other aquatic biota at the project site. The evaluation information must include factors such as the proposed slope of the culvert and determinations of how the slope will be expected to allow or impede passage, the necessity of baffles and/or sills to ensure passage, design considerations to ensure that expected baseflow will be maintained for passage and that post-construction velocities will not prevent passage, site conditions that will or will not allow proper burial of the culvert, existing structures (e.g., perched culverts, waterfalls, etc.) and/or stream patterns up and downstream of the culvert site that could affect passage and bank stability, and any other considerations regarding passage. The level of detail for this information shall be based on site conditions (i.e., culverts on a slope over 3% will most likely require more information than culverts on a slope that is less than 1%, etc.). Also, in order to evaluate potential impacts, the prospective permittee will describe bedforms that will be impacted by the proposed culvert – e.g., pools, glides, riffles, etc. The NCWRC will respond to both the prospective permittee and the Corps.

- i. For all activities authorized by this RGP that involve the use of riprap material for bank stabilization, the following measures shall be applied:
- (1) Where bank stabilization is conducted as part of an activity, natural design, bioengineering, and/or geoengineering methods that incorporate natural durable materials, native seed mixes, and native plants and shrubs are to be utilized, as appropriate to site conditions, to the maximum extent practicable.
- (2) Filter cloth must be placed underneath the riprap as an additional requirement of its use in North Carolina waters; however, the prospective permittee may request a waiver from this requirement. The waiver request must be in writing. The Corps will only issue a waiver if the prospective permittee demonstrates that the impacts of complying with this requirement would result in greater adverse impacts to the aquatic environment. Note that filter fabric is not required if the riprap will be pushed or "keyed" into the bank of the waterbody.
- (3) The placement of riprap shall be limited to the areas depicted on submitted work plan drawings.
  - (4) Riprap shall not be placed in a manner that prevents or impedes fish passage.
- (5) Riprap shall be clean and free from loose dirt or any pollutant except in trace quantities that will not have an adverse environmental effect.
- (6) Riprap shall be of a size sufficient to prevent its movement from the authorized alignment by natural forces under normal conditions.
- (7) Riprap material shall consist of clean rock or masonry material such as, but not limited to, granite, marl, or broken concrete.
- j. Discharges of dredged or fill material into waters of the U.S., including wetlands, must be minimized or avoided to the maximum extent practicable.
- k. Generally, off-site detours are preferred to avoid and minimize impacts to the human and natural environment; however, if an off-site detour is considered impracticable, then an onsite detour may be considered as a necessary component of the actions authorized by this RGP. Impacts from the detour may be considered temporary and may not require compensatory mitigation if the impacted area is restored to pre-construction elevations and contours after construction is complete. The permittee shall also restore natural hydrology and stream corridors (if applicable), and reestablish native vegetation/riparian corridors. If the construction of a detour (on-site or off-site) includes standard undercutting methods, removal of all material and backfilling with suitable material is required. See special condition "s" for additional information.
  - 1. All activities authorized by this RGP shall, to the maximum extent practicable, be

conducted "in the dry", with barriers installed between work areas and aquatic habitat to protect that habitat from sediment, concrete, and other pollutants. Where concrete is utilized, measures will be taken to prevent live or fresh concrete, including bags of uncured concrete, from coming into contact with waters of the U.S. until the concrete has set and cured. All water in the work area that has been in contact with concrete shall only be returned to waters of the U.S. when it no longer poses a threat to aquatic organisms (concrete is set and cured).

- m. In cases where new alignment approaches are to be constructed and the existing approach fill in waters of the U.S. is to be abandoned and no longer maintained as a roadway, the abandoned fill shall be removed and the area will be restored to pre-construction elevations and contours. The permittee shall also restore natural hydrology and stream corridors (if applicable), and reestablish native vegetation/riparian corridors, to the extent practicable. This activity may qualify as compensatory mitigation credit for the project and will be assessed on a case-by-case basis in accordance with Special Conditions "q" and "r" in this document. Any proposed on-site wetland restoration area must be void of utility conflicts and/or utility maintenance areas. A restoration plan detailing this activity will be required with the submittal of the PCN.
- n. To the maximum extent practicable, the pre-construction course, condition, capacity, and location of open waters must be maintained for each activity, including stream channelization and storm water management activities, except as provided below. The activity must be constructed to withstand expected high flows. The activity must not restrict or impede the passage of normal or high flows, unless the primary purpose of the activity is to impound water or manage high flows. The activity may alter the pre-construction course, condition, capacity, and location of open waters if it benefits the aquatic environment (e.g., stream restoration or relocation activities).
- o. The project must be implemented and/or conducted so that all reasonable and practicable measures to ensure that equipment, structures, fill pads, and work associated with the project do not adversely affect upstream and/or downstream reaches. Adverse effects include, but are not limited to, channel instability, scour, flooding, and/or shoreline/streambank erosion. During construction, the permittee shall routinely monitor for these effects, cease all work if/when detected, take initial corrective measures to correct actively eroding areas, and notify the Corps immediately. Permanent corrective measures may require additional authorization from the Corps.
- p. All PCNs will describe sedimentation and erosion control structures and measures proposed for placement in waters of the U.S. To the maximum extent practicable, structures and measures will be depicted on maps, surveys or drawings showing location and impacts to jurisdictional wetlands and streams. In addition, appropriate soil and erosion control measures must be established and maintained during construction. All fills, temporary and permanent, must be adequately stabilized at the earliest practicable date to prevent erosion of fill material into adjacent waters or wetlands.

- q. Compensatory mitigation will be required for permanent impacts resulting in a loss of waters of the U.S. due to culvert/pipe installation and other similar activities. Mitigation may be required for stream relocation projects (see Special Condition "r" below). When compensatory mitigation is required, the prospective permittee will attach a proposed mitigation plan to the PCN. Compensatory mitigation proposals will be written in accordance with currently approved Wilmington District guidance and Corps mitigation regulations, unless the purchase of mitigation credits from an approved mitigation bank or the North Carolina Division of Mitigation Services (NCDMS) is proposed to address all compensatory mitigation requirements. The Corps Project Manager will make the final determination concerning the appropriate amount and type of mitigation.
- r. Stream Relocations (non-tidal only) for the purposes of permitting, stream relocations are considered a loss of waters of the U.S. Depending on the condition and location of (1) the existing stream, and (2) the relocated channel, stream relocation(s) may provide a functional uplift. The Corps will determine if an uplift is possible based on the information submitted with the PCN. If the anticipated uplift(s) occurs, it may offset, either partially or fully, the loss associated with a stream relocation(s) (i.e., due to the uplift, either no compensatory mitigation would be required for the stream relocation itself, or compensatory mitigation would be required at a reduced ratio).

Because the amount of potential uplift is dependent upon the condition (or quality) of the channel to be relocated, there is no pre-determined amount of uplift needed to satisfy the requirements for a successful relocation project. After performing the evaluation(s) noted in this document, the prospective permittee will propose a certain amount of uplift potential and the Corps project manager will make the final determination. Baseline conditions and subsequent monitoring must show that the relocated channel is providing/will provide aquatic function at, or above, the level provided by the baseline (pre-project) condition. If the required uplift is not achieved, the work will not be in compliance with this special condition of RGP 50 and remediation will be required through repair (and continued monitoring), or by the permittee providing compensatory mitigation (e.g., mitigation credit through an approved bank, mitigation credit through NCDMS, etc.).

Compensatory mitigation, in addition to the stream relocation activity, may be required if the Corps determines that (a) no uplift in stream function is achievable, (b) the proposed uplift in stream function is not sufficient, by itself, (c) the risks associated with achieving potential uplifts in stream function are excessive, and/or (d) the time period for achieving the potential uplifts/functional success is too great.

On-site compensatory mitigation is not the same as stream relocation. While stream relocation simply moves a stream to a nearby, geographically similar area, it does not generate mitigation credits. If NCDOT proposes to generate compensatory mitigation on a project site, NCDOT must submit a mitigation plan that complies with 33 CFR 332.4.

The prospective permittee is required to submit the following information for any proposed project that involves stream relocation, regardless of the size/length of the stream relocation (note that 1-5 below only apply to stream relocations and <u>not</u> to compensatory mitigation):

- (1) A statement detailing why relocating the stream is unavoidable. In order to ensure that this action is separate from a compensatory mitigation project, the need for the fill must be related to road/interchange/intersection construction or improvement, and the project must meet the requirements set forth in the full descriptions/terms of "a" and "b" on pages 2 and 3 of this permit.
- (2) An evaluation of effects on the relocated stream and buffer from utilities, or potential for impact from utility placement in the future.
- (3) An evaluation of the baseline condition of the stream to be relocated. In order to demonstrate a potential uplift, the prospective permittee must provide the baseline (preimpact) condition of the stream that is proposed for relocation. The prospective permittee will document the baseline condition of the stream by using the Corps' (Wilmington District's) current functional assessment method e.g., the North Carolina Stream Assessment Method (NCSAM). The functional assessment must be used to identify specific areas where an uplift would reasonably be expected to occur, and also show important baseline functions that will remain after the relocation.
- (4) An evaluation of the potential uplifts to stream function for the relocated channel. The amount of detail required in the plan will be commensurate with the functional capacity of the original stream and proposed uplift(s). Low functional capacity will warrant less monitoring and less detail in the plan in order to ensure that the relocated channel provides the same, or better/increased, suite of aquatic functions as the existing channel.
- (5) A proposed monitoring plan for the relocated channel (and buffer, if applicable), will be prepared in accordance with current District guidance. The level of detail needed in the plan will be directly related to the quality of baseline functions and the anticipated uplift, therefore it is recommended that a pre-application discussion occur with the Corps Project Manager as early as possible. For example, if the risk for achieving the anticipated functional uplift is moderate or low, or if there is a low amount of proposed uplift, less information and monitoring will be required in the proposed relocation plan; similar to the requirements found in the "2003 Stream Mitigation Guidelines". If the risk for uplift is higher, or if there is a high amount of proposed uplift, additional monitoring and information will be required, trending toward the prescriptions found in the most recent Wilmington District Compensatory Mitigation Guidance e.g., the 2016 Wilmington District Stream and Wetland Compensatory Mitigation Update. All monitoring will be for at least 5 years unless the Corps project manager determines that (a) a specific project requires less than 5 years due to site conditions or limited risk/uplift potential, and/or complexity (or simplicity) of the existing channel and/or the

relocation work, or (b) the Corps project manager determines (during the monitoring period) that the 5 years of monitoring may be reduced (or that no further monitoring is required) based on monitoring information received once the stream relocation has been completed.

- s. Upon completion of any work authorized by this RGP, all temporary fills (to include culverts, pipes, causeways, etc.) will be completely removed from waters of the U.S. and the areas will be restored to pre-construction elevations and contours. The permittee shall also restore natural hydrology and stream corridors (if applicable), and reestablish native vegetation/riparian corridors. This work will be completed within 60 days of completion of project construction. If this timeframe occurs while a required moratorium of this permit is in effect, the temporary fill shall be removed in its entirety within 60 days of the moratorium end date. If vegetation cannot be planted due to the time of the year, all disturbed areas will be seeded with a native mix appropriate for the impacted area, and vegetation will be planted during the next appropriate time frame. A native seed mix may contain non-invasive small grain annuals (e.g. millet and rye grain) to ensure adequate cover while native vegetation becomes established. The PCN must include a restoration plan showing how all temporary fills and structures will be removed and how the area will be restored to pre-project elevations and contours.
- t. Once the authorized work in waters of the U.S. is complete, the permittee shall sign and return the compliance certificate that is attached to the RGP verification letter.
  - u. The District Engineer will consider any comments from Federal and/or State agencies concerning the proposed activity's compliance with the terms and conditions of this RGP.
- v. The Corps may place additional special conditions, limitations, or restrictions on any verification of the use of RGP 50 on a project-by-project basis.

#### 2. General Conditions.

- a. Except as authorized by this RGP or any Corps approved modification to this RGP, no excavation, fill or mechanized land-clearing activities shall take place within waters or wetlands, at any time during construction or maintenance of the project. This permit does not authorize temporary placement or double handling of excavated or fill material within waters or wetlands outside the permitted area. This prohibition applies to all borrow and fill activities connected with the project.
- b. Authorization under this RGP does not obviate the need to obtain other federal, state, or local authorizations.
- c. All work authorized by this RGP must comply with the terms and conditions of the applicable CWA Section 401 Water Quality Certification for this RGP issued by the North Carolina Division of Water Resources (NCDWR).

- d. The permittee shall employ all sedimentation and erosion control measures necessary to prevent an increase in sedimentation or turbidity within waters and wetlands outside of the permit area. This shall include, but is not limited to, the immediate installation of silt fencing or similar appropriate devices around all areas subject to soil disturbance or the movement of earthen fill, and the immediate stabilization of all disturbed areas. Additionally, the project must remain in full compliance with all aspects of the Sedimentation Pollution Control Act of 1973 (North Carolina General Statutes Chapter 113A Article 4).
- e. The activities authorized by this RGP must not interfere with the public's right to free navigation on all navigable waters of the U.S. No attempt will be made by the permittee to prevent the full and free use by the public of all navigable waters at, or adjacent to, the authorized work for a reason other than safety.
- f. The permittee understands and agrees that if future operations by the U.S. require the removal, relocation, or other alteration, of the structure or work herein authorized, or if, in the opinion of the Secretary of the Army or his authorized representative, said structure or work shall cause unreasonable obstruction to the free navigation of the navigable waters, the permittee will be required, upon due notice from the Corps, to remove, relocate, or alter the structural work or obstructions caused thereby, without expense to the U.S. No claim shall be made against the U.S. on account of any such removal or alteration.
- g. The permittee, upon receipt of a notice of revocation of this RGP for the verified individual activity, may apply for an individual permit, or will, without expense to the U.S. and in such time and manner as the Secretary of the Army or his/her authorized representative may direct, restore the affected water of the U.S. to its former conditions.
- h. This RGP does not authorize any activity that would conflict with a federal project's congressionally authorized purposes, established limitations or restrictions, or limit an agency's ability to conduct necessary operation and maintenance functions. Per Section 14 of the Rivers and Harbors Act of 1899, as amended (33 U.S.C. 408), no project that has the potential to take possession of or make use of for any purpose, or build upon, alter, deface, destroy, move, injure, or obstruct a federally constructed work or project, including, but not limited to, levees, dams, jetties, navigation channels, borrow areas, dredged material disposal sites, flood control projects, etc., shall be permitted unless the project has been reviewed and approved by the appropriate Corps approval authority. Permittees shall not begin the activity authorized by this RGP until notified by the Corps that the activity may proceed.
- i. The permittee shall obtain a Consent to Cross Government Easement from the appropriate Corps District's Land Use Coordinator prior to any crossing of a Corps easement and/or prior to commencing construction of any structures, authorized dredging, or other work within the right-of-way of, or in proximity to, a federally designated disposal area.

- j. The permittee will allow the Wilmington District Engineer or his/her representative to inspect the authorized activity at any time deemed necessary to ensure that the activity is being performed or maintained in strict accordance with the Special and General Conditions of this permit.
  - k. This RGP does not grant any property rights or exclusive privileges.
  - 1. This RGP does not authorize any injury to the property or rights of others.
- m. This RGP does not authorize the interference with any existing or proposed federal project.
- n. In issuing this permit, the Federal Government does not assume any liability for the following:
- (1) Damages to the permitted project or uses thereof as a result of other permitted or unpermitted activities or from natural causes.
- (2) Damages to the permitted project or uses thereof as a result of current or future activities undertaken by or on behalf of the U.S. in the public interest.
- (3) Damages to persons, property, or to other permitted or unpermitted activities or structures caused by the activity authorized by this permit.
  - (4) Design or construction deficiencies associated with the permitted work.
- (5) Damage claims associated with any future modification, suspension, or revocation of this permit.
- o. Authorization provided by this RGP may be modified, suspended or revoked in whole, or in part, if the Wilmington District Engineer, acting for the Secretary of the Army, determines that such action would be in the best public interest. The term of this RGP shall be five (5) years unless subject to modification, suspension, or revocation. Any modification, suspension, or revocation of this authorization will not be the basis for any claim for damages against the U.S. Government.
- p. No activity may occur in a component of the National Wild and Scenic Rivers System, or in a river officially designated by Congress as a "study river" for possible inclusion in the system while the river is in an official study status, unless the appropriate Federal agency with direct management responsibility for such river, has determined in writing that the proposed activity will not adversely affect the Wild and Scenic designation or study status. Information on Wild and Scenic Rivers may be obtained from the appropriate Federal land management agency responsible for the designated Wild and Scenic River or "study river" (e.g., National Park Service, U.S. Forest Service, etc.).

## q. Endangered Species.

- (1) No activity is authorized under this RGP which is likely to directly or indirectly jeopardize the continued existence of a threatened or endangered species or a species proposed for such designation, as identified under the Federal Endangered Species Act (ESA), or which will directly or indirectly destroy or adversely modify the critical habitat of such species. No activity is authorized under this RGP which "may affect" a listed species or critical habitat, unless Section 7 consultation addressing the effects of the proposed activity has been completed.
- (2) Federal agencies should follow their own procedures for complying with the requirements of the ESA. Federal prospective permittees (and when FHWA is the lead federal agency) must provide the District Engineer with the appropriate documentation to demonstrate compliance with those requirements. The District Engineer will review the documentation and determine whether it is sufficient to address ESA compliance for the RGP activity, or whether additional ESA consultation is necessary.
- (3) Non-federal prospective permittees for activities that might affect federally-listed endangered or threatened species or designated critical habitat, the PCN must include the name(s) of the endangered or threatened species that might be affected by the proposed work or that utilize the designated critical habitat that might be affected by the proposed work. The District Engineer will determine whether the proposed activity "may affect" or will have "no effect" to listed species and designated critical habitat. In cases where the non-federal prospective permittee has identified listed species or critical habitat that might be affected or is in the vicinity of the project, and has so notified the Corps, the prospective permittee shall not begin work until the Corps has provided notification that the proposed activities will have "no effect" on listed species or critical habitat, or until Section 7 consultation has been completed.
- (4) As a result of formal or informal consultation with the U.S. Fish and Wildlife Service (USFWS) or NMFS, the District Engineer may add species-specific endangered species conditions to the RGP verification letter for a project.
- (5) Authorization of an activity by a RGP does not authorize the "take" of a threatened or endangered species as defined under the ESA. In the absence of separate authorization (e.g., an ESA Section 10 Permit, a Biological Opinion with "incidental take" provisions, etc.) from the USFWS or the NMFS, the ESA prohibits any person subject to the jurisdiction of the U.S. to take a listed species, where "take" means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct. The word "harm" in the definition of "take" means an act which actually kills or injures wildlife. Such an act may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding or sheltering.

(6) Information on the location of threatened and endangered species and their critical habitat can be obtained directly from the offices of the USFWS in North Carolina at the addresses provided below, or from the USFWS and NMFS via their world wide web pages at http://www.fws.gov/ or http://www.fws.gov/ipac and http://www.noaa.gov/fisheries.html respectively.

#### USFWS offices in North Carolina:

The Asheville USFWS Office covers all NC counties west of, and including, Anson, Stanly, Davidson, Forsyth and Stokes Counties.

US Fish and Wildlife Service Asheville Field Office 160 Zillicoa Street Asheville, NC 28801 Telephone: (828) 258-3939

The Raleigh USFWS Office covers all NC counties east of, and including, Richmond, Montgomery, Randolph, Guilford, and Rockingham Counties.

US Fish and Wildlife Service Raleigh Field Office Post Office Box 33726 Raleigh, NC 27636-3726 Telephone: (919) 856-4520

r. The Wilmington District, USFWS, NCDOT, and the FHWA have conducted programmatic Section 7(a)(2) consultation for a number of federally listed species and habitat, and programmatic consultation concerning other federally listed species and/or habitat may occur in the future. The result of completed programmatic consultation is a Programmatic Biological Opinion (PBO) issued by the USFWS. These PBOs contain mandatory terms and conditions to implement the reasonable and prudent measures that are associated with "incidental take" of whichever species or critical habitat is covered by a specific PBO. Authorization under RGP 50 is conditional upon the permittee's compliance with all the mandatory terms and conditions associated with incidental take of the applicable PBO (or PBOs), which are incorporated by reference in RGP 50. Failure to comply with the terms and conditions associated with incidental take of an applicable PBO, where a take of the federally listed species occurs, would constitute an unauthorized take by the permittee, and would also constitute permittee non-compliance with the authorization under RGP 50. If the terms and conditions of a specific PBO (or PBOs) apply to a project, the Corps will include this/these requirements in any RGP 50 verification that may be issued for a project. The USFWS is the appropriate authority to determine compliance with the terms and conditions of its PBO, and with the ESA.

- s. Northern long-eared bat (NLEB) (Myotis septentrionalis). Standard Local Operating Procedures for Endangered Species (SLOPES) for the NLEB have been approved by the Corps and the U.S. Fish and Wildlife Service. See http://www.saw.usace.army.mil/Missions/Regulatory-Permit-Program/Agency-Coordination/ESA/. This SLOPES details how the Corps will make determinations of effect to the NLEB when the Corps is the lead federal agency for an NCDOT project that is located in the western 41 counties of North Carolina. This SLOPES does not address NCDOT projects (either federal or state funded) in the eastern 59 counties in North Carolina. Note that if another federal agency is the lead federal agency for a project in the western 41 counties, procedures for satisfying the requirements of Section 7(a)(2) of the ESA will be dictated by that agency and will not be applicable for consideration under the SLOPES; however, information that demonstrates the lead federal agency's (if other than the Corps) compliance with Section 7(a)(2) / 4(d) Rule for the NLEB, will be required in the PCN. Note that at the time of issuance of RGP 50, the federal listing status of the NLEB as "Threatened" is being litigated at the National level. If, as a result of litigation, the NLEB is federally listed as "Endangered", this general condition ("s") will no longer be applicable because the 4(d) Rule, and this NLEB SLOPES, will no longer apply/be valid.
- t. For proposed activities the sixteen (16) counties listed below, prospective permittees must provide a copy of the PCN to the USFWS, 160 Zillicoa Street, Asheville, North Carolina 28801. This PCN must be sent concurrently to the USFWS and the Corps Project Manager for that specific county.

The 16 counties with tributaries that drain to designated critical habitat that require notification to the Asheville USFWS are: Avery, Cherokee, Forsyth, Graham, Haywood, Henderson, Jackson, Macon Mecklenburg, Mitchell, Stokes, Surry, Swain, Transylvania, Union and Yancey.

u. If the permittee discovers or observes any live, damaged, injured or dead individual of an endangered or threatened species during construction, the permittee shall immediately notify the Wilmington District Engineer so that required coordination can be initiated with the U.S. Fish and Wildlife Service and/or National Marine Fisheries Service.

#### v. Historic Properties.

- (1) In cases where the District Engineer determines that the activity may have the potential to cause effects to properties listed, or eligible for listing, in the National Register of Historic Places (NRHP), the activity is not authorized, until the requirements of Section 106 of the National Historic Preservation Act (NHPA) have been satisfied.
- (2) Federal prospective permittees (or when FHWA is the lead federal agency) should follow their own procedures for complying with the requirements of Section 106 of the NHPA. Federal prospective permittees must provide the District Engineer with the appropriate documentation to demonstrate compliance with those requirements; this includes copies of correspondence sent to all interested, federally recognized tribes and a summary statement about

tribal consultation efforts or, if the Corps enters into a Programmatic Agreement (PA) with the FHWA/NCDOT, documentation that the FHWA/NCDOT has complied with PA requirements. The District Engineer will review the documentation and determine whether it is sufficient to address Section 106 compliance for this RGP activity, or whether additional Section 106 consultation is necessary.

- (3) Non-federal prospective permittees the PCN must state which historic properties may be affected by the proposed work or include a vicinity map indicating the location of the historic properties or the potential for the presence of historic properties. Assistance regarding information on the location of or potential for the presence of historic resources can be sought from the State Historic Preservation Officer (SHPO) and/or Tribal Historic Preservation Officer (THPO), as appropriate, and the NRHP (see 33 CFR 330.4(g)). When reviewing PCNs, the District Engineer will comply with the current procedures for addressing the requirements of Section 106 of the NHPA. The District Engineer shall make a reasonable and good faith effort to carry out appropriate identification efforts, which may include background research, consultation, oral history interviews, sample field investigation, and field survey. Based on the information submitted and these efforts, the District Engineer shall determine whether the proposed activity has the potential to cause an effect on the historic properties.
- (4) Section 106 consultation is not required when the Corps determines that the activity does not have the potential to cause effects on historic properties (see 36 CFR §800.3(a)).
- (5) Section 110k of the NHPA (16 U.S.C. 470h-2(k)) prevents the Corps from granting a permit or other assistance to a prospective permittee who, with intent to avoid the requirements of Section 106 of the NHPA, has intentionally significantly adversely affected a historic property to which the permit will relate, or having legal power to prevent it, allowed such significant adverse effect to occur, unless the Corps, after consultation with the Advisory Council on Historic Preservation (ACHP), determines that circumstances justify granting such assistance despite the adverse effect created or permitted by the prospective permittee. If circumstances justify granting the assistance, the Corps is required to notify the ACHP and provide documentation specifying the circumstances, the degree of damage to the integrity of any historic properties affected, and proposed mitigation. This documentation must include any views obtained from the prospective permittee, SHPO/THPO, appropriate Indian tribes if the undertaking occurs on or affects historic properties on tribal lands or affects properties of interest to those tribes, and other parties known to have a legitimate interest in the impacts to the permitted activity on historic properties.
- w. If you discover any previously unknown historic or archeological remains while accomplishing the activity authorized by this general permit, you must immediately notify this office of what you have found. We will initiate the Federal and state coordination required to determine if the remains warrant a recovery effort or if the site is eligible for listing in the National Register of Historic Places.

- x. Permittees are advised that development activities in or near a floodway may be subject to the National Flood Insurance Program that prohibits any development, including fill, within a floodway that results in any increase in base flood elevations. This general permit does not authorize any activity prohibited by the National Flood Insurance Program.
- y. The permittee must install and maintain, at his/her expense, any signal lights and signals prescribed by the U.S. Coast Guard, through regulations or otherwise, on authorized facilities. For further information, the permittee should contact Coast Guard Sector North Carolina at (910) 772-2191 or email Coast Guard Fifth District at cgd5waterways@uscg.mil.
- z. The permittee must maintain any structure or work authorized by this general permit in good condition and in conformance with the terms and conditions of this general permit. The permittee is not relieved of this requirement if the permittee abandons the structure or work. Transfer in fee simple of the work authorized by this general permit will automatically transfer this general permit to the property's new owner, with all of the rights and responsibilities enumerated herein. The permittee must inform any subsequent owner of all activities undertaken under the authority of this general permit and provide the subsequent owner with a copy of the terms and conditions of this general permit.
- aa. At his or her sole discretion, any time during the processing cycle, the Wilmington District Engineer may determine that this general permit will not be applicable to a specific proposal. In such case, the procedures for processing an individual permit in accordance with 33 CFR 325 will be available.
- bb. Except as authorized by this general permit or any Corps approved modification to this general permit, all fill material placed in waters or wetlands shall be generated from an upland source and will be clean and free of any pollutants except in trace quantities. Metal products, organic materials (including debris from land clearing activities), or unsightly debris will not be used.
- cc. Except as authorized by this general permit or any Corps approved modification to this general permit, all excavated material will be disposed of in approved upland disposal areas.
- dd. Activities which have commenced (i.e., are under construction) or are under contract to commence in reliance upon this general permit will remain authorized provided the activity is completed within twelve months of the date of the general permit's expiration, modification, or revocation. Activities completed under the authorization of this general permit that were in effect at the time the activity was completed continue to be authorized by the general permit.
- ee. The permittee is responsible for obtaining any "take" permits required under the USFWS's regulations governing compliance with the Migratory Bird Treaty Act or the Bald and Golden Eagle Protection Act. The permittee should contact the appropriate local office of the USFWS to determine if such "take" permits are required for a particular activity.

- ff. The activity must comply with applicable FEMA approved state or local floodplain management requirements.
- gg. There will be no unreasonable interference with navigation or the right of the public to riparian access by the existence or use of activities authorized by this RGP.
- hh. Unless authorization to fill those specific wetlands or mudflats has been issued by the Corps, heavy equipment working in wetlands or mudflats must be placed on mats, or other measures must be taken to minimize soil disturbance.
- ii. This RGP will not be applicable to proposed construction when the Wilmington District Engineer determines that the proposed activity will significantly affect the quality of the human environment and determines that an EIS must be prepared.

BY AUTHORITY OF THE SECRETARY OF THE ARMY:

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Robert J. Clark Colonel, U. S. Army District Commander DocuSign Envelope ID: 76437B4F-5B85-42FA-B66A-E1CB0DE15BD0

ROY COOPER Governor ELIZABETH S. BISER Secretary RICHARD E. ROGERS, JR. Director



July 13, 2023

DWR # 20230795 Cherokee County

Mr. Patrick Breedlove, Division PDEA Engineer NCDOT Division 14 253 Webster Road Sylva, NC 28779

Subject: APPROVAL OF 401 WATER QUALITY CERTIFICATION WITH ADDITIONAL

CONDITIONS

US 19/129 Improvements (R-5861)

Cobb Creek, Gold Branch, and Rominger Creek [Hiwassee River Basin, 06020002, C]

Dear Mr. Breedlove:

You have our approval for the impacts listed below for the purpose described in your application dated June 6, 2023, and received by the Division of Water Resources (Division) on June 6, 2023, with additional information received on June 30, 2023, and July 10, 2023. These impacts are covered by the attached Water Quality General Certification Number 4135 and the conditions listed below. This certification is associated with the use of General Permit Number 201902350 once it is issued to you by the U.S. Army Corps of Engineers. Please note that you should get any other federal, state, or local permits before proceeding with your project, including those required by (but not limited to) Sediment and Erosion Control, Non-Discharge, and Water Supply Watershed regulations.

The Division has determined that the proposed project will comply with water quality requirements provided that you adhere to the conditions listed in the enclosed certification and to the additional conditions itemized below.

The following proposed impacts are hereby approved. No other impacts are approved, including incidental impacts. [15A NCAC 02H .0506(b)]

#### Stream Impacts in the Hiwassee River Basin

Site		Temporary Fill in Intermittent Stream (linear ft)	Permanent Fill in Perennial Stream (linear ft)	Temporary Fill in Perennial Stream (linear ft)	Total Stream Impact (linear ft)	Stream Impacts Requiring Mitigation (linear ft)
S1			2,685		2,685	770
S2				746	746	
S3	562				562	
S4		131			131	
TOTAL	562	131	2,685	746	4,124	770

Total Stream Impact for Project: 3,247 linear feet of permanent and 877 linear feet of temporary.



#### Wetland Impacts in the Hiwassee River Basin

Site	Permanent Fill (ac)	Temporary Fill (ac)	Excavation (ac)	Mechanized Clearing (ac)	Total Wetland Impact (ac)	Wetland Impacts Requiring Mitigation (ac)
W1	0.175				0.175	0.175
W2				0.105	0.105	0.105
TOTAL	0.175	0.000	0.000	0.105	0.280	0.280

Total Wetland Impact for Project: 0.28 acres.

Open Water Impacts in the Hiwassee River Basin

Site	Temporary Fill (acres)	Permanent Fill (acres)	Total Impact (acres)
O1	0.043		0.043
O2		0.135	0.135
Total	0.043	0.135	0.178

Total Open Water Impact for Project: 0.178 acres.

This approval is for the purpose and design described in your application. The plans and specifications for this project are incorporated by reference as part of this Certification. If you change your project, you must notify the Division and you may be required to submit a new application package with the appropriate fee. If the property is sold, the new owner must be given a copy of this Certification and is responsible for complying with all conditions. [15A NCAC 02H .0507(d)(2)].

If you are unable to comply with any of the conditions of the attached Water Quality General Certification or with the additional conditions itemized below, you must notify the Asheville Regional Office within 24 hours (or the next business day if a weekend or holiday) from the time the permittee becomes aware of the circumstances.

The permittee shall report to the Asheville Regional Office any noncompliance with, and/or any violation of, stream or wetland standards [15A NCAC 02B .0200] including but not limited to sediment impacts to streams or wetlands. Information shall be provided orally within 24 hours (or the next business day if a weekend or holiday) from the time the permittee became aware of the non-compliance circumstances.

#### Condition(s) of Certification:

#### **Project Specific Conditions**

- The NCDOT Division Environmental Officer or Environmental Assistant will conduct a preconstruction meeting with all appropriate staff to ensure that the project supervisor and essential staff understand potential issues at the permitted site. NCDWR staff shall be invited to the pre-construction meeting. [15A NCAC 02H.0506(b)(2) and (b)(3)]
- 2. Prior to commencing ground disturbing activities, an acceptable monitoring and mitigation plan for the presence of sulfide-bearing rock must be approved by the NCDWR.
- 3. Compensatory mitigation for 0.28 acre of wetland and 770 linear feet of stream is required. We understand that you have chosen to perform compensatory mitigation for impacts to streams and wetlands through the North Carolina Division of Mitigation Service (DMS) (formerly NCEEP), and that the DMS has agreed to implement the mitigation for the project. The DMS has indicated in a letter dated May 25, 2023, that they will assume responsibility for satisfying the federal Clean Water Act



- compensatory mitigation requirements for the above-referenced project, in accordance with the DMS Mitigation Banking Instrument signed July 28, 2010.
- 4. At locations where ponds will be drained, proper measures will be taken to drain the pond with limited impact to upstream and downstream channel stability as well as to native aquatic species. Proper measures will be taken to avoid sediment release and/or sediment accumulation downstream as a result of pond draining. If typical pond draining techniques will create significant disturbance to native aquatic species, additional measures such as collection and relocation may be necessary to prevent a significant fish kill. NCDOT shall consult with NC Wildlife Resources staff to determine if there are any sensitive species, and the most appropriate measures to limit impacts to these species. [15A NCAC 2H.0506(b)(3)]
- 5. Channel relocations at sites 1A (Station 15+00 LT) and 23C (Station 147+00 RT) shall be completed and stabilized, and approved on site by NCDWR staff, prior to diverting water into the new channel. Stream banks shall be matted with coir-fiber matting. Vegetation used for bank stabilization shall be limited to native riparian vegetation, and should include establishment of a vegetated buffer on both sides of the relocated channel to the maximum extent practical. Also, rip-rap may be allowed if it is necessary to maintain the physical integrity of the stream, but the applicant must provide written justification and any calculations used to determine the extent of rip-rap coverage requested. Once the stream has been turned into the new channel, it may be necessary to relocate stranded fish to the new channel to prevent fish kills. [15A NCAC 02H .0506(b)(3)]
- 6. If multiple pipes or barrels are required, they shall be designed to mimic natural stream cross section as closely as possible including pipes or barrels at flood plain elevation and/or sills where appropriate. Widening the stream channel should be avoided. Stream channel widening at the inlet or outlet end of structures typically decreases water velocity causing sediment deposition that requires increased maintenance and disrupts aquatic life passage. [15A NCAC 02H.0506(b)(2)]

#### **General Conditions**

- 1. Unless otherwise approved in this certification, placement of culverts and other structures in open waters and streams shall be placed below the elevation of the streambed by one foot for all culverts with a diameter greater than 48 inches, and 20 percent of the culvert diameter for culverts having a diameter less than 48 inches, to allow low flow passage of water and aquatic life. Design and placement of culverts and other structures including temporary erosion control measures shall not be conducted in a manner that may result in dis-equilibrium of wetlands or streambeds or banks, adjacent to or upstream and downstream of the above structures. The applicant is required to provide evidence that the equilibrium is being maintained if requested in writing by NCDWR. If this condition is unable to be met due to bedrock or other limiting features encountered during construction, please contact NCDWR for guidance on how to proceed and to determine whether or not a permit modification will be required. [15A NCAC 02H.0506(b)(2)]
- If concrete is used during construction, a dry work area shall be maintained to prevent direct contact between curing concrete and stream water. Water that inadvertently contacts uncured concrete shall not be discharged to surface waters due to the potential for elevated pH and possible aquatic life and fish kills. [15A NCAC 02B.0200]
- 3. During the construction of the project, no staging of equipment of any kind is permitted in waters of the U.S. or protected riparian buffers. [15A NCAC 02H.0506(b)(2)]
- 4. The dimension, pattern, and profile of the stream above and below the crossing shall not be modified. Disturbed floodplains and streams shall be restored to natural geomorphic conditions. [15A NCAC 02H.0506(b)(2)]
- 5. The use of rip-rap above the Normal High Water Mark shall be minimized. Any rip-rap placed for stream stabilization shall be placed in stream channels in such a manner that it does not impede aquatic life passage. [15A NCAC 02H.0506(b)(2)]



- 6. The Permittee shall ensure that the final design drawings adhere to the permit and to the permit drawings submitted for approval. [15A NCAC 02H .0507(c) and 15A NCAC 02H .0506 (b)(2) and (c)(2)]
- 7. All work in or adjacent to stream waters shall be conducted in a dry work area. Approved BMP measures from the most current version of NCDOT Construction and Maintenance Activities manual such as sandbags, rock berms, cofferdams and other diversion structures shall be used to prevent excavation in flowing water. [15A NCAC 02H.0506(b)(3) and (c)(3)]
- 8. Heavy equipment shall be operated from the banks rather than in the stream channel in order to minimize sedimentation and reduce the introduction of other pollutants into the stream. [15A NCAC 02H.0506(b)(3)]
- 9. All mechanized equipment operated near surface waters must be regularly inspected and maintained to prevent contamination of stream waters from fuels, lubricants, hydraulic fluids, or other toxic materials. [15A NCAC 02H.0506(b)(3)]
- 10. No rock, sand or other materials shall be dredged from the stream channel except where authorized by this certification. [15A NCAC 02H.0506(b)(3)]
- 11. Discharging hydroseed mixtures and washing out hydro seeders and other equipment in or adjacent to surface waters is prohibited. [15A NCAC 02H.0506(b)(3)]
- 12. The permittee and its authorized agents shall conduct its activities in a manner consistent with State water quality standards (including any requirements resulting from compliance with §303(d) of the Clean Water Act) and any other appropriate requirements of State and Federal law. If the NCDWR determines that such standards or laws are not being met (including the failure to sustain a designated or achieved use) or that State or federal law is being violated, or that further conditions are necessary to assure compliance, the NCDWR may reevaluate and modify this certification. [15A NCAC 02B.0200]
- 13. All fill slopes located in jurisdictional wetlands shall be placed at slopes no flatter than 3:1, unless otherwise authorized by this certification. [15A NCAC 02H.0506(b)(2)]
- 14. A copy of this Water Quality Certification shall be maintained on the construction site at all times. In addition, the Water Quality Certification and all subsequent modifications, if any, shall be maintained with the Division Engineer and the on-site project manager. [15A NCAC 02H .0507(c) and 15A NCAC 02H .0506 (b)(2) and (c)(2)]
- 15. The outside buffer, wetland or water boundary located within the construction corridor approved by this authorization shall be clearly marked by highly visible fencing prior to any land disturbing activities. Impacts to areas within the fencing are prohibited unless otherwise authorized by this certification. [15A NCAC 02H.0501 and .0502]
- 16. The issuance of this certification does not exempt the Permittee from complying with any and all statutes, rules, regulations, or ordinances that may be imposed by other government agencies (i.e. local, state, and federal) having jurisdiction, including but not limited to applicable buffer rules, stormwater management rules, soil erosion and sedimentation control requirements, etc.
- 17. The Permittee shall report any violations of this certification to the Division of Water Resources within 24 hours of discovery. [15A NCAC 02B.0506(b)(2)]
- 18. Upon completion of the project (including any impacts at associated borrow or waste sites), the NCDOT Division Engineer shall complete and return the enclosed "Certification of Completion Form" to notify the NCDWR when all work included in the 401 Certification has been completed. [15A NCAC 02H.0502(f)]



- 19. Native riparian vegetation must be reestablished in the riparian areas within the construction limits of the project by the end of the growing season following completion of construction. [15A NCAC 02B.0506(b)(2)]
- 20. There shall be no excavation from, or waste disposal into, jurisdictional wetlands or waters associated with this permit without appropriate modification. Should waste or borrow sites, or access roads to waste or borrow sites, be located in wetlands or streams, compensatory mitigation will be required since that is a direct impact from road construction activities. [15A NCAC 02H.0506(b)(3) and (c)(3)]
- 21. Erosion and sediment control practices must be in full compliance with all specifications governing the proper design, installation and operation and maintenance of such Best Management Practices in order to protect surface waters standards [15A NCAC 02H.0506(b)(3) and (c)(3]):
  - a. The erosion and sediment control measures for the project must be designed, installed, operated, and maintained in accordance with the most recent version of the North Carolina Sediment and Erosion Control Planning and Design Manual.
  - b. The design, installation, operation, and maintenance of the sediment and erosion control measures must be such that they equal, or exceed, the requirements specified in the most recent version of the *North Carolina Sediment and Erosion Control Manual*. The devices shall be maintained on all construction sites, borrow sites, and waste pile (spoil) projects, including contractor-owned or leased borrow pits associated with the project.
  - c. For borrow pit sites, the erosion and sediment control measures must be designed, installed, operated, and maintained in accordance with the most recent version of the *North Carolina Surface Mining Manual*.
  - d. The reclamation measures and implementation must comply with the reclamation in accordance with the requirements of the Sedimentation Pollution Control Act.
- 22. Sediment and erosion control measures shall not be placed in wetlands or waters unless otherwise approved by this Certification. [15A NCAC 02H.0506(b)(3) and (c)(3)]

This approval and its conditions are final and binding unless contested. [G.S. 143-215.5] This Certification can be contested as provided in Chapter 150B of the North Carolina General Statutes by filing a Petition for a Contested Case Hearing (Petition) with the North Carolina Office of Administrative Hearings (OAH) within sixty (60) calendar days. Requirements for filing a Petition are set forth in Chapter 150B of the North Carolina General Statutes and Title 26 of the North Carolina Administrative Code. Additional information regarding requirements for filing a Petition and Petition forms may be accessed at <a href="http://www.ncoah.com/">http://www.ncoah.com/</a> or by calling the OAH Clerk's Office at (919) 431-3000.

One (1) copy of the Petition must also be served to the North Carolina Department of Environmental Quality:

William F. Lane, General Counsel Department of Environmental Quality 1601 Mail Service Center Raleigh, NC 27699-1601



DocuSign Envelope ID: 76437B4F-5B85-42FA-B66A-E1CB0DE15BD0

This letter completes the review of the Division under section 401 of the Clean Water Act and 15A NCAC 02H .0500. Please contact Kevin Mitchell at 828-296-4650 or <a href="kevin.mitchell@deq.nc.gov">kevin.mitchell@deq.nc.gov</a> if you have any questions or concerns.

Sincerely,
Docusigned by:

any Chapman

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Richard E. Rogers, Jr., Director
Division of Water Resources

ec: Crystal Amschler, US Army Corps of Engineers Asheville Regulatory Field Office (via email)
Dave McHenry, NC Wildlife Resources Commission (via email)
Holland Youngman, US Fish and Wildlife Service (via email)
Kevin Barnett, NC Department of Transportation (via email)

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# STATE OF NORTH CAROLINA DEPARTMENT OF ENVIRONMENTAL QUALITY DIVISION OF WATER RESOURCES

## **WATER QUALITY GENERAL CERTIFICATION NO. 4135**

#### **GENERAL CERTIFICATION FOR PROJECTS ELIGIBLE FOR US ARMY CORPS OF ENGINEERS**

- NATIONWIDE PERMIT NUMBER 14 (LINEAR TRANSPORTATION PROJECTS), AND
- REGIONAL GENERAL PERMIT 198200031 (NCDOT BRIDGES, WIDENING PROJECTS, INTERCHANGE IIMPROVEMENTS)

Water Quality Certification Number 4135 is issued in conformity with the requirements of Section 401, Public Laws 92-500 and 95-217 of the United States and subject to the North Carolina Regulations in 15A NCAC 02H .0500 and 15A NCAC 02B .0200 for the discharge of fill material to surface waters and wetland areas as described in 33 CFR 330 Appendix A (B) (14) of the US Army Corps of Engineers regulations and Regional General Permit 198200031.

The State of North Carolina certifies that the specified category of activity will not violate applicable portions of Sections 301, 302, 303, 306 and 307 of the Public Laws 92-500 and 95-217 if conducted in accordance with the conditions hereinafter set forth.

Effective date: December 1, 2017

Signed this day: December 1, 2017

By

for Linda Culpepper Interim Director

## GC4135

Activities meeting any one (1) of the following thresholds or circumstances require <u>written</u> <u>approval</u> for a 401 Water Quality Certification from the Division of Water Resources (DWR):

- a) If any of the conditions of this Certification (listed below) cannot be met; or
- b) Any temporary or permanent impacts to wetlands, open waters and/or streams, except for construction of a driveway to a single family residential lot that is determined to not be part of a larger common plan of development, as long as the driveway involves a travel lane of less than 25 feet and total stream impacts of less than 60 feet, including any topographic/slope stabilization or in-stream stabilization needed for the crossing; or
- c) Any stream relocation or stream restoration; or
- d) Any high-density project, as defined in 15A NCAC 02H .1003(2)(a) and by the density thresholds specified in 15A NCAC 02H .1017, which:
  - i. Disturbs one acre or more of land (including a project that disturbs less than one acre of land that is part of a larger common plan of development or sale); and
  - ii. Has permanent wetland, stream or open water impacts; and
  - iii. Is proposing new built-upon area; and
  - iv. Does not have a stormwater management plan reviewed and approved under a state stormwater program<sup>1</sup> or a state-approved local government stormwater program<sup>2</sup>.

Projects that have vested rights, exemptions, or grandfathering from state or locally-implemented stormwater programs and projects that satisfy state or locally-implemented stormwater programs through use of community in-lieu programs **require** written approval; or

- e) Any permanent impacts to waters, or to wetlands adjacent to waters, designated as: ORW (including SAV), HQW (including PNA), SA, WS-1, WS-11, or North Carolina or National Wild and Scenic River.
- f) Any permanent impacts to waters, or to wetlands adjacent to waters, designated as Trout except for driveway projects that are below threshold (b) above provided that:
  - i. The impacts are not adjacent to any existing structures
  - ii. All conditions of this General Certification can be met, including adherence to any moratoriums as stated in Condition #10; and
  - iii. A *Notification of Work in Trout Watersheds Form* is submitted to the Division at least 60 days prior to commencement of work; or
- g) Any permanent impacts to coastal wetlands [15A NCAC 07H .0205], or Unique Wetlands (UWL); or
- h) Any impact associated with a Notice of Violation or an enforcement action for violation(s) of NC Wetland Rules (15A NCAC 02H .0500), NC Isolated Wetland Rules (15A NCAC 02H .1300), NC Surface Water or Wetland Standards (15A NCAC 02B .0200), or State Regulated Riparian Buffer Rules (15A NCAC 02B .0200); or

<sup>&</sup>lt;sup>1</sup> e.g. Coastal Counties, HQW, ORW, or state-implemented Phase II NPDES

<sup>&</sup>lt;sup>2</sup> e.g. Delegated Phase II NPDES, Water Supply Watershed, Nutrient-Sensitive Waters, or Universal Stormwater Management Program

# GC4135

- i) Any impacts to subject water bodies and/or state regulated riparian buffers along subject water bodies in the Neuse, Tar-Pamlico, or Catawba River Basins or in the Randleman Lake, Jordan Lake or Goose Creek Watersheds (or any other basin or watershed with State Regulated Riparian Area Protection Rules [Buffer Rules] in effect at the time of application) unless:
  - i. The activities are listed as "EXEMPT" from these rules; or
  - ii. A Buffer Authorization Certificate is issued by the NC Division of Coastal Management (DCM); or
  - iii. A Buffer Authorization Certificate or a Minor Variance is issued by a delegated or designated local government implementing a state riparian buffer program pursuant to 143-215.23

Activities included in this General Certification that do not meet one of the thresholds listed above do not require written approval.

#### I. ACTIVITY SPECIFIC CONDITIONS:

- 1. If this Water Quality Certification is used to access residential, commercial or industrial building sites, then all parcels owned by the applicant that are part of the single and complete project authorized by this Certification must be buildable without additional impacts to streams or wetlands. If required in writing by DWR, the applicant shall provide evidence that the parcels are buildable without requiring additional impacts to wetlands, waters, or state regulated riparian buffers. [15A NCAC 02H .0506(b)(4) and (c)(4)]
- 2. For road and driveway construction purposes, this Certification shall only be utilized from natural high ground to natural high ground. [15A NCAC 02H .0506(b)(2) and (c)(2)]
- 3. Deed notifications or similar mechanisms shall be placed on all lots with retained jurisdictional wetlands, waters, and state regulated riparian buffers within the project boundaries in order to assure compliance with NC Wetland Rules (15A NCAC 02H .0500), NC Isolated Wetland Rules (15A NCAC 02H .1300), and/or State Regulated Riparian Buffer Rules (15A NCAC 02B .0200). These mechanisms shall be put in place at the time of recording of the property or individual parcels, whichever is appropriate. [15A NCAC 02H .0506(b)(4) and (c)(4)]
- 4. For the North Carolina Department of Transportation, compliance with the NCDOT's individual NPDES permit NCS000250 shall serve to satisfy this condition. All other high-density projects that trigger threshold item (d) above shall comply with one of the following requirements: [15A NCAC 02H .0506(b)(5) and (c)(5)]

## GC4135

- a. Provide a completed Stormwater Management Plan (SMP) for review and approval, including all appropriate stormwater control measure (SCM) supplemental forms and associated items, that complies with the high-density development requirements of 15A NCAC 02H .1003. Stormwater management shall be provided throughout the entire project area in accordance with 15A NCAC 02H .1003. For the purposes of 15A NCAC 02H .1003(2)(a), density thresholds shall be determined in accordance with 15A NCAC 02H .1017.
- b. Provide documentation (including calculations, photos, etc.) that the project will not cause degradation of downstream surface waters. Documentation shall include a detailed analysis of the hydrological impacts from stormwater runoff when considering the volume and velocity of stormwater runoff from the project built upon area and the size and existing condition of the receiving stream(s).

Exceptions to this condition require application to and written approval from DWR.

#### **II. GENERAL CONDITIONS:**

- 1. When written authorization is required, the plans and specifications for the project are incorporated into the authorization by reference and are an enforceable part of the Certification. Any modifications to the project require notification to DWR and may require an application submittal to DWR with the appropriate fee. [15A NCAC 02H .0501 and .0502]
- No waste, spoil, solids, or fill of any kind shall occur in wetlands or waters beyond the footprint of the impacts (including temporary impacts) as authorized in the written approval from DWR; or beyond the thresholds established for use of this Certification without written authorization. [15A NCAC 02H .0501and .0502]
  - No removal of vegetation or other impacts of any kind shall occur to state regulated riparian buffers beyond the footprint of impacts approved in a Buffer Authorization or Variance or as listed as an exempt activity in the applicable riparian buffer rules. [15A NCAC 028 .0200]
- 3. In accordance with 15A NCAC 02H .0506(h) and Session Law 2017-10, compensatory mitigation may be required for losses of greater than 300 linear feet of perennial streams and/or greater than one (1) acre of wetlands. Impacts associated with the removal of a dam shall not require mitigation when the removal complies with the requirements of Part 3 of Article 21 in Chapter 143 of the North Carolina General Statutes. Impacts to isolated and other non-404 jurisdictional wetlands shall not be combined with 404 jurisdictional wetlands for the purpose of determining when impact thresholds trigger a mitigation requirement. For linear publicly owned and maintained transportation projects that are not determined to be part of a larger common plan of development by the US Army Corps of Engineers, compensatory mitigation may be required for losses of greater than 300 linear feet per perennial stream.

## GC4135

Compensatory stream and/or wetland mitigation shall be proposed and completed in compliance with G.S. 143-214.11. For applicants proposing to conduct mitigation within a project site, a complete mitigation proposal developed in accordance with the most recent guidance issued by the US Army Corps of Engineers Wilmington District shall be submitted for review and approval with the application for impacts.

- 4. All activities shall be in compliance with any applicable State Regulated Riparian Buffer Rules in Chapter 2 of Title 15A.
- 5. When applicable, all construction activities shall be performed and maintained in full compliance with G.S. Chapter 113A Article 4 (Sediment and Pollution Control Act of 1973). Regardless of applicability of the Sediment and Pollution Control Act, all projects shall incorporate appropriate Best Management Practices for the control of sediment and erosion so that no violations of state water quality standards, statutes, or rules occur. [15A NCAC 02H .0506{b)(3) and (c)(3) and 15A NCAC 02B .0200]

Design, installation, operation, and maintenance of all sediment and erosion control measures shall be equal to or exceed the requirements specified in the most recent version of the *North Carolina Sediment and Erosion Control Manual*, or for linear transportation projects, the *NCDOT Sediment and Erosion Control Manual*.

All devices shall be maintained on all construction sites, borrow sites, and waste pile (spoil) sites, including contractor-owned or leased borrow pits associated with the project. Sufficient materials required for stabilization and/or repair of erosion control measures and stormwater routing and treatment shall be on site at all times.

For borrow pit sites, the erosion and sediment control measures shall be designed, installed, operated, and maintained in accordance with the most recent version of the *North Carolina Surface Mining Manual*. Reclamation measures and implementation shall comply with the reclamation in accordance with the requirements of the Sedimentation Pollution Control Act and the Mining Act of 1971.

If the project occurs in waters or watersheds classified as Primary Nursery Areas (PNAs), SA, WS-1, WS-11, High Quality Waters (HQW), or Outstanding Resource Waters (ORW), then the sedimentation and erosion control designs shall comply with the requirements set forth in 15A NCAC 04B .0124, Design Standards in Sensitive Watersheds.

- Sediment and erosion control measures shall not be placed in wetlands or waters except within the footprint of temporary or permanent impacts authorized under this Certification. Exceptions to this condition require application to and written approval from DWR. [15A NCAC 02H .0501 and .0502]
- 7. Erosion control matting that incorporates plastic mesh and/or plastic twine shall not be used along streambanks or within wetlands. Exceptions to this condition require application to and written approval from DWR. [15A NCAC 02B .0201]

## GC4135

8. An NPDES Construction Stormwater Permit (NCG0I0000) is required for construction projects that disturb one (1) or more acres of land. The NCG0I0000 Permit allows stormwater to be discharged during land disturbing construction activities as stipulated in the conditions of the permit. If the project is covered by this permit, full compliance with permit conditions including the erosion & sedimentation control plan, inspections and maintenance, self-monitoring, record keeping and reporting requirements is required. [15A NCAC 02H .0506{b)(5) and (c)(5)]

The North Carolina Department of Transportation (NCDOT) shall be required to be in full compliance with the conditions related to construction activities within the most recent version of their individual NPDES (NCS000250) stormwater permit. [15A NCAC 02H .0506(b)(5) and (c)(5)]

- 9. All work in or adjacent to streams shall be conducted so that the flowing stream does not come in contact with the disturbed area. Approved best management practices from the most current version of the NC Sediment and Erosion Control Manual, or the NC DOT Construction and Maintenance Activities Manual, such as sandbags, rock berms, cofferdams, and other diversion structures shall be used to minimize excavation in flowing water. Exceptions to this condition require application to and written approval from DWR. [15A NCAC 02H .0506(b)(3) and (c)(3)]
- 10. If activities must occur during periods of high biological activity (e.g. sea turtle nesting, fish spawning, or bird nesting), then biological monitoring may be required at the request of other state or federal agencies and coordinated with these activities. [15A NCAC 02H .0506 (b)(2) and 15A NCAC 04B .0125]

All moratoriums on construction activities established by the NC Wildlife Resources Commission (WRC), US Fish and Wildlife Service (USFWS), NC Division of Marine Fisheries (DMF), or National Marine Fisheries Service (NMFS) shall be implemented. Exceptions to this condition require written approval by the resource agency responsible for the given moratorium. A copy of the approval from the resource agency shall be forwarded to DWR.

Work within a designated trout watershed of North Carolina (as identified by the Wilmington District of the US Army Corps of Engineers), or identified state or federal endangered or threatened species habitat, shall be coordinated with the appropriate WRC, USFWS, NMFS, and/or DMF personnel.

11. Culverts shall be designed and installed in such a manner that the original stream profiles are not altered and allow for aquatic life movement during low flows. The dimension, pattern, and profile of the stream above and below a pipe or culvert shall not be modified by widening the stream channel or by reducing the depth of the stream in connection with the construction activity. The width, height, and gradient of a proposed culvert shall be such as to pass the average historical low flow and spring flow without adversely altering flow velocity. [15A NCAC 02H .0506(b)(2) and (c)(2)]

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Placement of culverts and other structures in streams shall be below the elevation of the streambed by one foot for all culverts with a diameter greater than 48 inches, and 20% of the culvert diameter for culverts having a diameter less than or equal to 48 inches, to allow low flow passage of water and aquatic life.

If multiple pipes or barrels are required, they shall be designed to mimic the existing stream cross section as closely as possible including pipes or barrels at flood plain elevation and/or sills where appropriate. Widening the stream channel shall be avoided.

When topographic constraints indicate culvert slopes of greater than 5%, culvert burial is not required, provided that all alternative options for flattening the slope have been investigated and aquatic life movement/connectivity has been provided when possible {e.g. rock ladders, cross vanes, etc.). Notification, including supporting documentation to include a location map of the culvert, culvert profile drawings, and slope calculations, shall be provided to DWR 60 calendar days prior to the installation of the culvert.

When bedrock is present in culvert locations, culvert burial is not required provided that there is sufficient documentation of the presence of bedrock. Notification, including supporting documentation such as, a location map of the culvert, geotechnical reports, photographs, etc. shall be provided to DWR a minimum of 60 calendar days prior to the installation of the culvert. If bedrock is discovered during construction, then DWR shall be notified by phone or email within 24 hours of discovery.

If other site-specific topographic constraints preclude the ability to bury the culverts as described above and/or it can be demonstrated that burying the culvert would result in destabilization of the channel, then exceptions to this condition require application to and written approval from DWR.

Installation of culverts in wetlands shall ensure continuity of water movement and be designed to adequately accommodate high water or flood conditions. When roadways, causeways, or other fill projects are constructed across FEMA-designated floodways or wetlands, openings such as culverts or bridges shall be provided to maintain the natural hydrology of the system as well as prevent constriction of the floodway that may result in destabilization of streams or wetlands.

The establishment of native woody vegetation and other soft stream bank stabilization techniques shall be used where practicable instead of rip-rap or other bank hardening methods.

12. Bridge deck drains shall not discharge directly into the stream. Stormwater shall be directed across the bridge and pre-treated through site-appropriate means to the maximum extent practicable {e.g. grassed swales, pre-formed scour holes, vegetated buffers, etc.) before entering the stream. Exceptions to this condition require application to and written approval from DWR. [ISA NCAC 02H .0506{b){S)]

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- 13. Application of fertilizer to establish planted/seeded vegetation within disturbed riparian areas and/or wetlands shall be conducted at agronomic rates and shall comply with all other Federal, State and Local regulations. Fertilizer application shall be accomplished in a manner that minimizes the risk of contact between the fertilizer and surface waters. [15A NCAC 02B .0200 and 15A NCAC 02B .0231]
- 14. If concrete is used during construction, then all necessary measures shall be taken to prevent direct contact between uncured or curing concrete and waters of the state. Water that inadvertently contacts uncured concrete shall not be discharged to waters of the state. [15A NCAC 02B .0200]
- 15. All proposed and approved temporary fill and culverts shall be removed and the impacted area shall be returned to natural conditions within 60 calendar days after the temporary impact is no longer necessary. The impacted areas shall be restored to original grade, including each stream's original cross-sectional dimensions, planform pattern, and longitudinal bed profile. For projects that receive written approval, no temporary impacts are allowed beyond those included in the application and authorization. All temporarily impacted sites shall be restored and stabilized with native vegetation. [15A NCAC 02H .0506(b)(2) and (c)(2)]
- 16. All proposed and approved temporary pipes/culverts/rip-rap pads etc. in streams shall be installed as outlined in the most recent edition of the North Carolina Sediment and Erosion Control Planning and Design Manual or the North Carolina Surface Mining Manual or the North Carolina Department of Transportation Best Management Practices for Construction and Maintenance Activities so as not to restrict stream flow or cause dis-equilibrium during use of this Certification. [15A NCAC 02H .0506(b)(2) and (c)(2)]
- 17. Any rip-rap required for proper culvert placement, stream stabilization, or restoration of temporarily disturbed areas shall be restricted to the area directly impacted by the approved construction activity. All rip-rap shall be placed such that the original stream elevation and streambank contours are restored and maintained. Placement of rip-rap or other approved materials shall not result in de-stabilization of the stream bed or banks upstream or downstream of the area or in a manner that precludes aquatic life passage. [15A NCAC 02H.0506(b)(2)]
- 18. Any rip-rap used for stream or shoreline stabilization shall be of a size and density to prevent movement by wave, current action, or stream flows and shall consist of clean rock or masonry material free of debris or toxic pollutants. Rip-rap shall not be installed in the streambed except in specific areas required for velocity control and to ensure structural integrity of bank stabilization measures. [15A NCAC 02H.0506(b)(2)]
- 19. Applications for rip-rap groins proposed in accordance with 15A NCAC 07H .1401 (NC Division of Coastal Management General Permit for construction of Wooden and Rip-rap Groins in Estuarine and Public Trust Waters) shall meet all the specific conditions for design and construction specified in 15A NCAC 07H.1405.

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- 20. All mechanized equipment operated near surface waters shall be inspected and maintained regularly to prevent contamination of surface waters from fuels, lubricants, hydraulic fluids, or other toxic materials. Construction shall be staged in order to minimize the exposure of equipment to surface waters to the maximum extent practicable. Fueling, lubrication and general equipment maintenance shall be performed in a manner to prevent, to the maximum extent practicable, contamination of surface waters by fuels and oils. [15A NCAC 02H .0506(b)(3) and (c)(3) and 15A NCAC 02B .0211(12)]
- 21. Heavy equipment working in wetlands shall be placed on mats or other measures shall be taken to minimize soil disturbance. [15A NCAC 02H .0506{b)(3) and {c)(3)]
- 22. In accordance with 143-215.85(b), the applicant shall report any petroleum spill of 25 gallons or more; any spill regardless of amount that causes a sheen on surface waters; any petroleum spill regardless of amount occurring within 100 feet of surface waters; and any petroleum spill less than 25 gallons that cannot be cleaned up within 24 hours.
- 23. If an environmental document is required under the State Environmental Policy Act {SEPA}, then this General Certification is not valid until a Finding of No Significant Impact {FONSI}) or Record of Decision {ROD} is issued by the State Clearinghouse. If an environmental document is required under the National Environmental Policy Act {NEPA}, then this General Certification is not valid until a Categorical Exclusion, the Final Environmental Assessment, or Final Environmental Impact Statement is published by the lead agency. [15A NCAC 0IC .0107{a}]
- 24. This General Certification does not relieve the applicant of the responsibility to obtain all other required Federal, State, or Local approvals before proceeding with the project, including those required by, but not limited to, Sediment and Erosion Control, Non-Discharge, Water Supply Watershed, and Trout Buffer regulations.
- 25. The applicant and their authorized agents shall conduct all activities in a manner consistent with State water quality standards (including any requirements resulting from compliance with §303(d) of the Clean Water Act), and any other appropriate requirements of State and Federal Law. If DWR determines that such standards or laws are not being met, including failure to sustain a designated or achieved use, or that State or Federal law is being violated, or that further conditions are necessary to assure compliance, then DWR may revoke or modify a written authorization associated with this General Water Quality Certification. [15A NCAC 02H .0507(d)]
- 26. The permittee shall require its contractors and/or agents to comply with the terms and conditions of this permit in the construction and maintenance of this project and shall provide each of its contractors and/or agents associated with the construction or maintenance of this project with a copy of this Certification. A copy of this Certification, including all conditions shall be available at the project site during the construction and maintenance of this project. [15A NCAC 02H .0507 {c) and 15A NCAC 02H .0506 {b)(2) and {c)(2)}

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- 27. When written authorization is required for use of this Certification, upon completion of all permitted impacts included within the approval and any subsequent modifications, the applicant shall be required to return a certificate of completion (available on the DWR website <a href="https://edocs.deg.nc.gov/Forms/Certificate-of-Completion">https://edocs.deg.nc.gov/Forms/Certificate-of-Completion</a>). [15A NCAC 02H .0502(f)]
- 28. Additional site-specific conditions, including monitoring and/or modeling requirements, may be added to the written approval letter for projects proposed under this Water Quality Certification in order to ensure compliance with all applicable water quality and effluent standards. [15A NCAC 02H.0507(c)]
- 29. If the property or project is sold or transferred, the new permittee shall be given a copy of this Certification (and written authorization if applicable) and is responsible for complying with all conditions. [15A NCAC 02H .0501 and .0502]

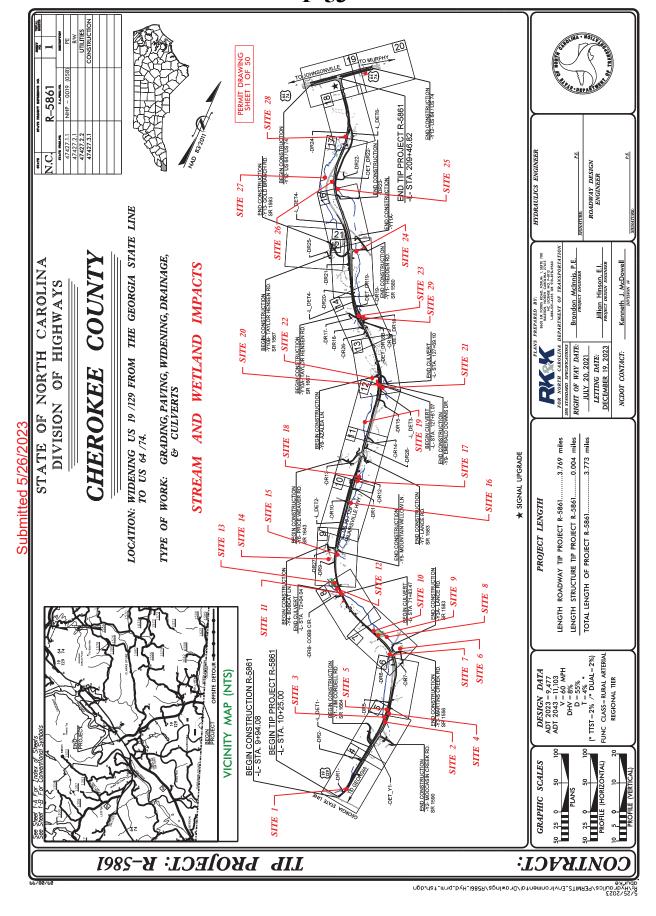
#### 111. GENERAL CERTIFICATION ADMINISTRATION:

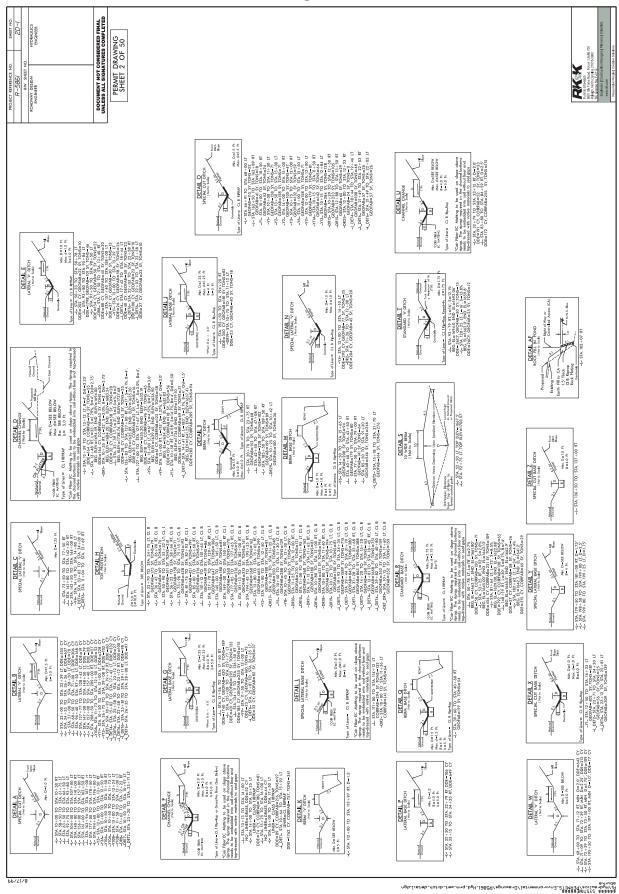
- 1. In accordance with North Carolina General Statute 143-215.3D(e), written approval for a 401 Water Quality General Certification must include the appropriate fee. An applicant for a CAMA permit under Article 7 of Chapter 113A of the General Statutes for which a Water Quality Certification is required shall only make one payment to satisfy both agencies; the fee shall be as established by the Secretary in accordance with 143-215.3D(e)(7).
- 2. This Certification neither grants nor affirms any property right, license, or privilege in any waters, or any right of use in any waters. This Certification does not authorize any person to interfere with the riparian rights, littoral rights, or water use rights of any other person and this Certification does not create any prescriptive right or any right of priority regarding any usage of water. This Certification shall not be interposed as a defense in any action respecting the determination of riparian or littoral rights or other rights to water use. No consumptive user is deemed by virtue of this Certification to possess any prescriptive or other right of priority with respect to any other consumptive user regardless of the quantity of the withdrawal or the date on which the withdrawal was initiated or expanded.
- This Certification grants permission to the Director, an authorized representative of the Director, or DWR staff, upon the presentation of proper credentials, to enter the property during normal business hours. [ISA NCAC 02H .0502(e)]
- 4. This General Certification shall expire on the same day as the expiration date of the corresponding Nationwide Permit and/or Regional General Permit. The conditions in effect on the date of issuance of Certification for a specific project shall remain in effect for the life of the project, regardless of the expiration date of this Certification. This General Certification is rescinded when the US Army Corps of Engineers reauthorizes any of the corresponding Nationwide Permits and/or Regional General Permits or when deemed appropriate by the Director of the Division of Water Resources.

## GC4135

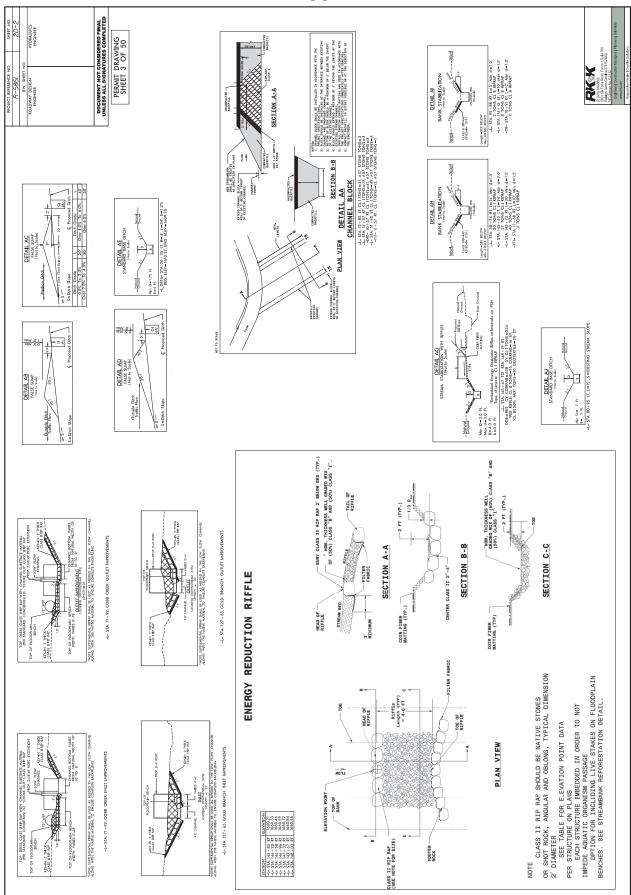
- 5. Non-compliance with or violation of the conditions herein set forth by a specific project may result in revocation of this General Certification for the project and may also result in criminal and/or civil penalties.
- 6. The Director of the North Carolina Division of Water Resources may require submission of a formal application for Individual Certification for any project in this category of activity if it is deemed in the public's best interest or determined that the project is likely to have a significant adverse effect upon water quality, including state or federally listed endangered or threatened aquatic species, or degrade the waters so that existing uses of the water or downstream waters are precluded.

History Note: Water Quality Certification (WQC) Number 4135 issued December 1, 2017 replaces WQC Number 4088 issued March 3, 2017; WQC 3886 issued March 12, 2012; WQC Number 3820 issued April 6, 2010; WQC Number 3627 issued March 2007; WQC Number 3404 issued March 2003; WQC Number 3375 issued March 18, 2002; WQC Number 3289 issued June 1, 2000; WQC Number 3103 issued February 11, 1997; WQC Number 2732 i s s u e d May 1, 1992; WQC Number 2666 issued January 21, 1992; WQC Number 2177 issued November 5, 1987.

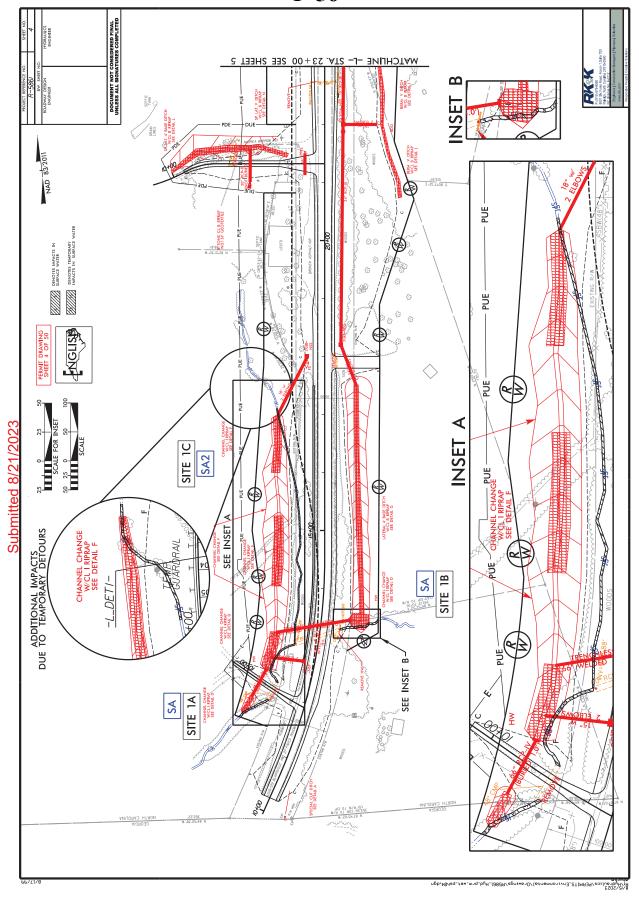


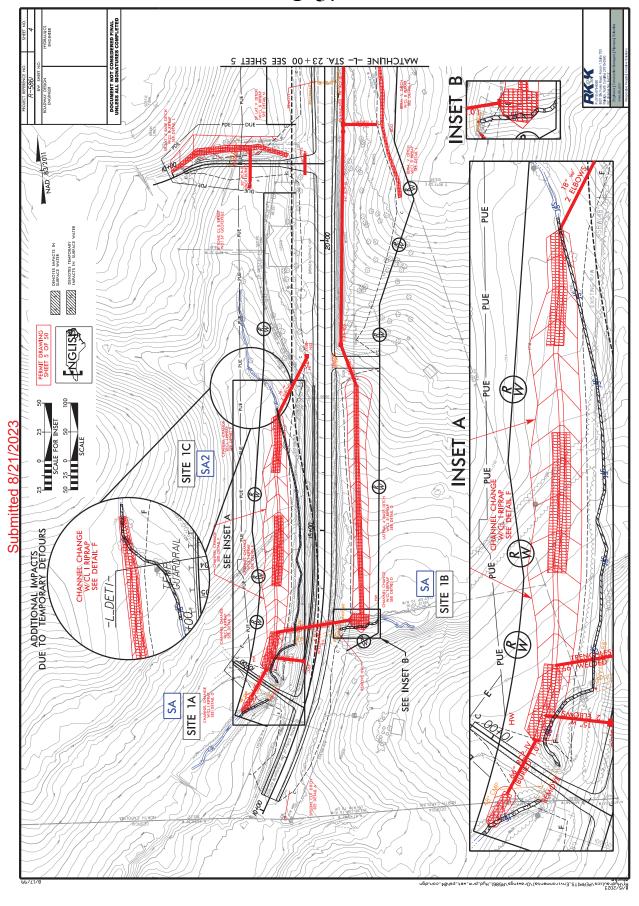


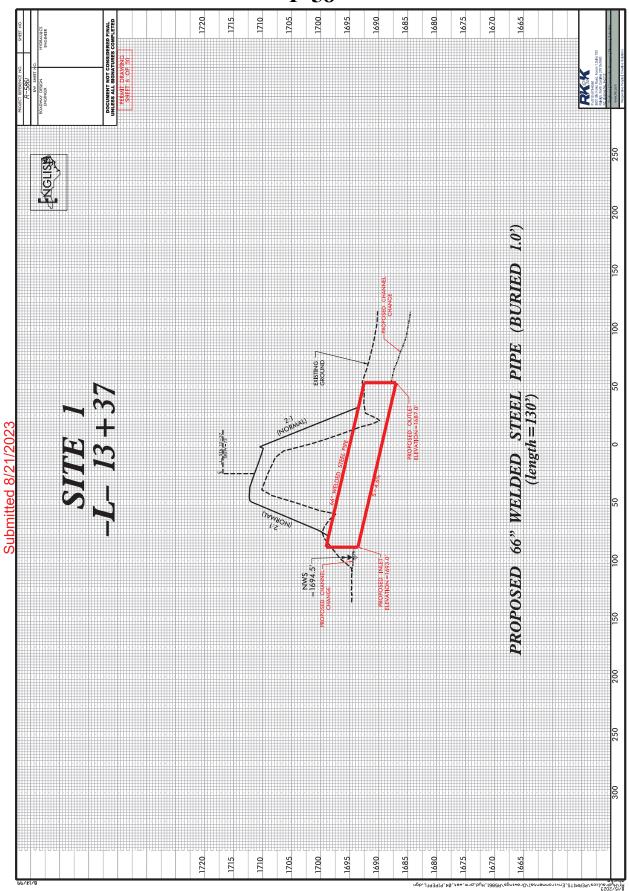
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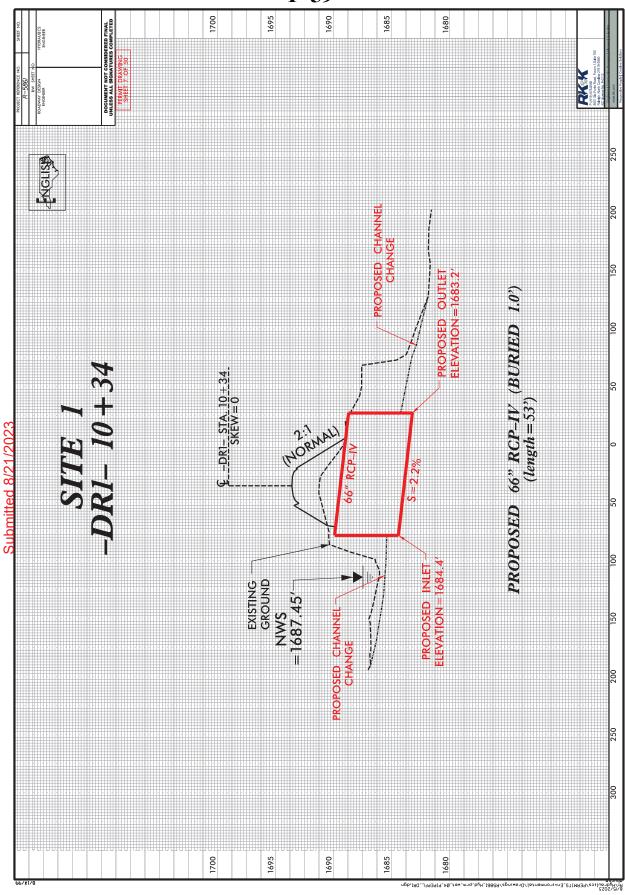


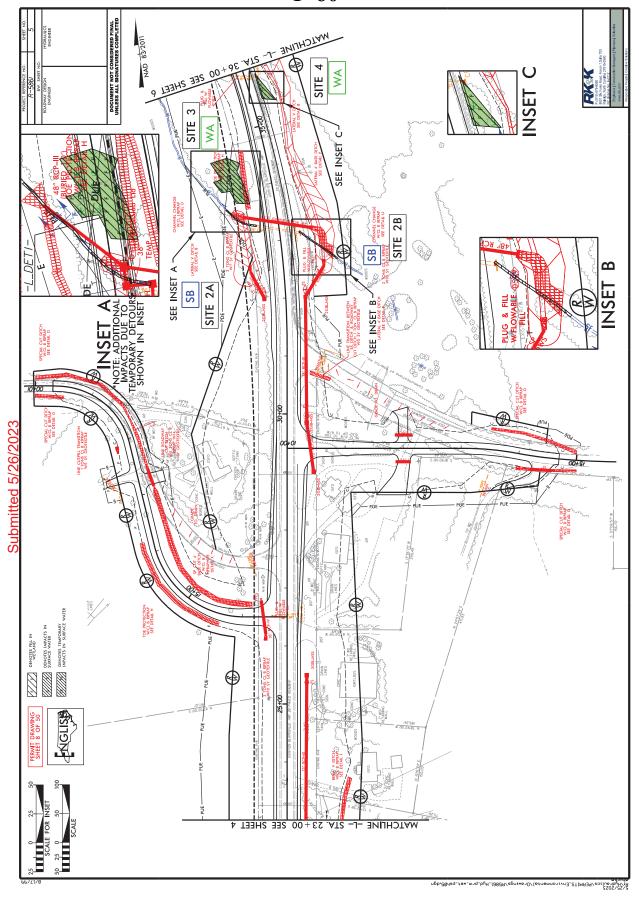
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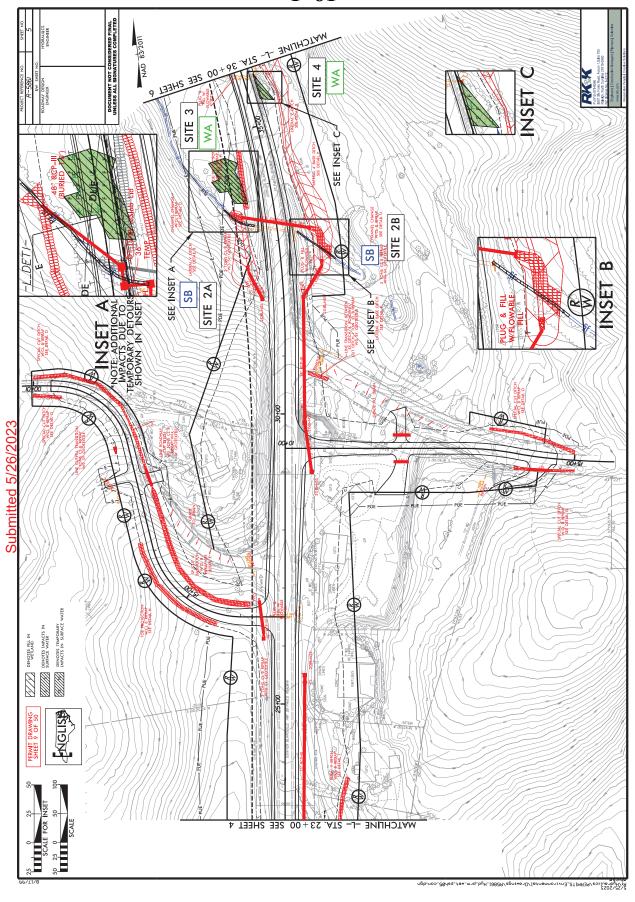


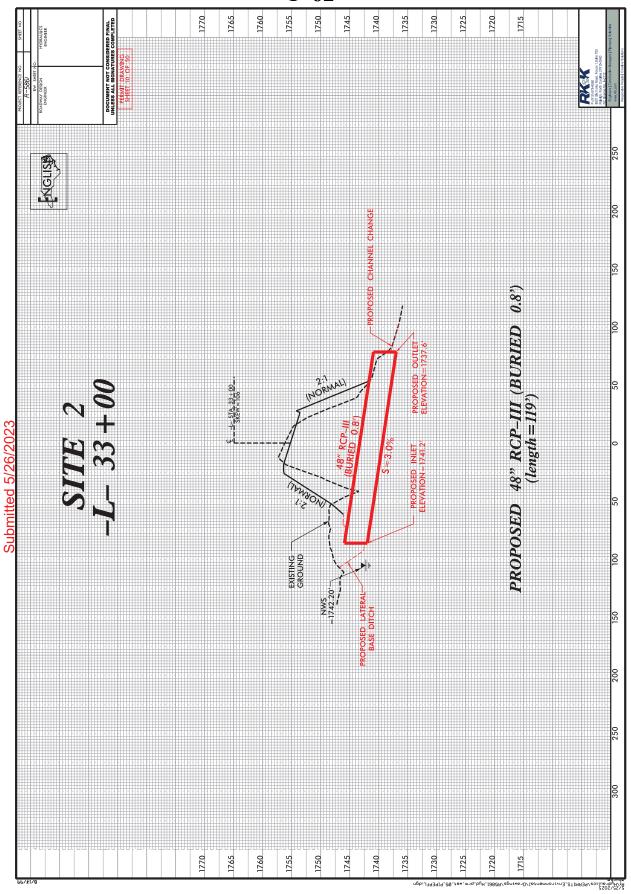


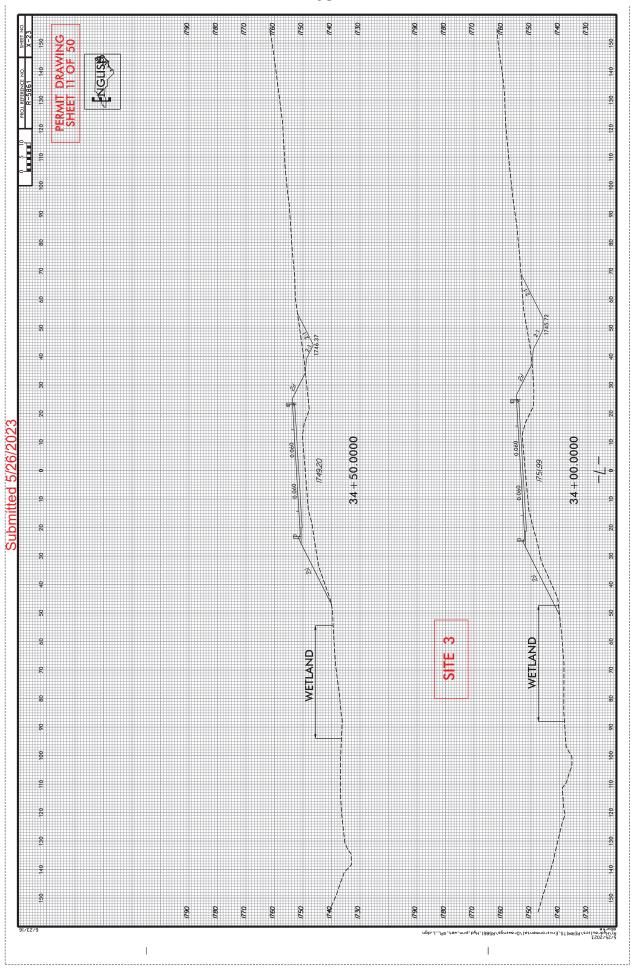


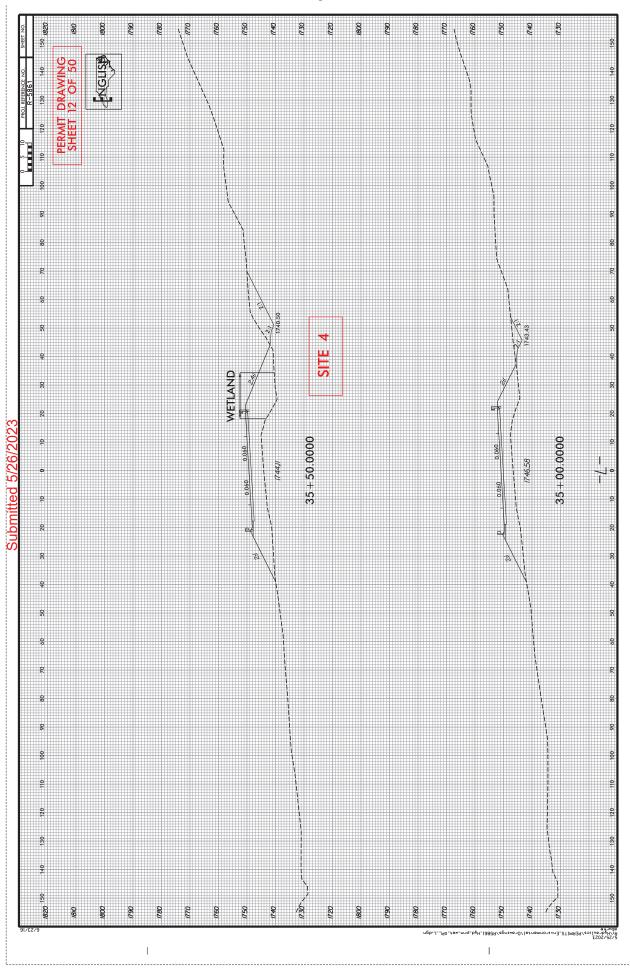


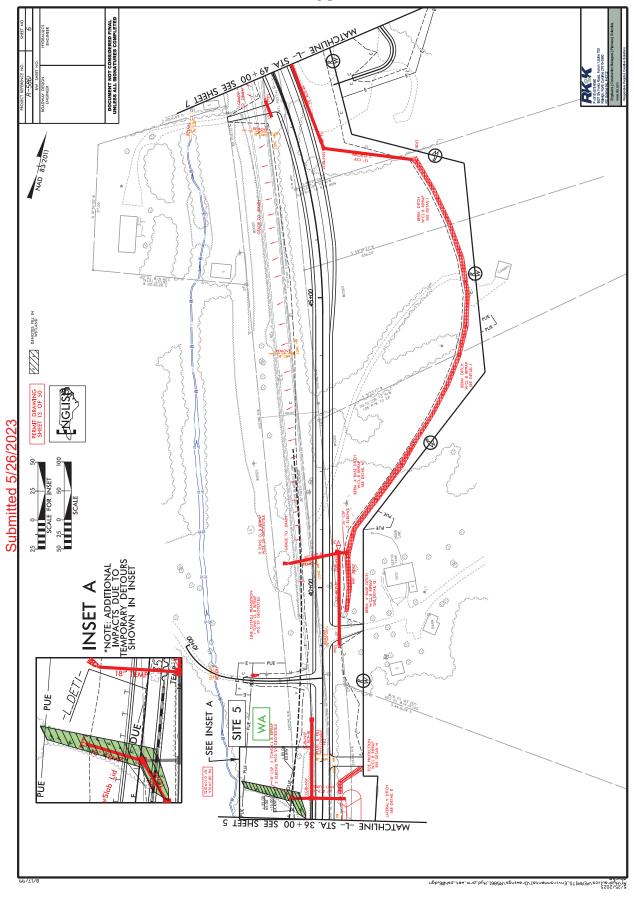


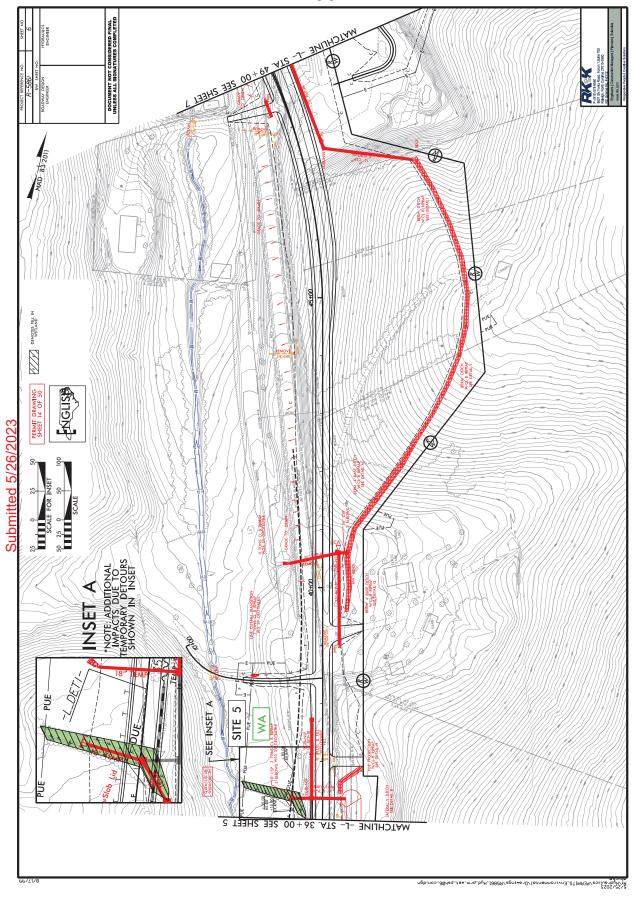


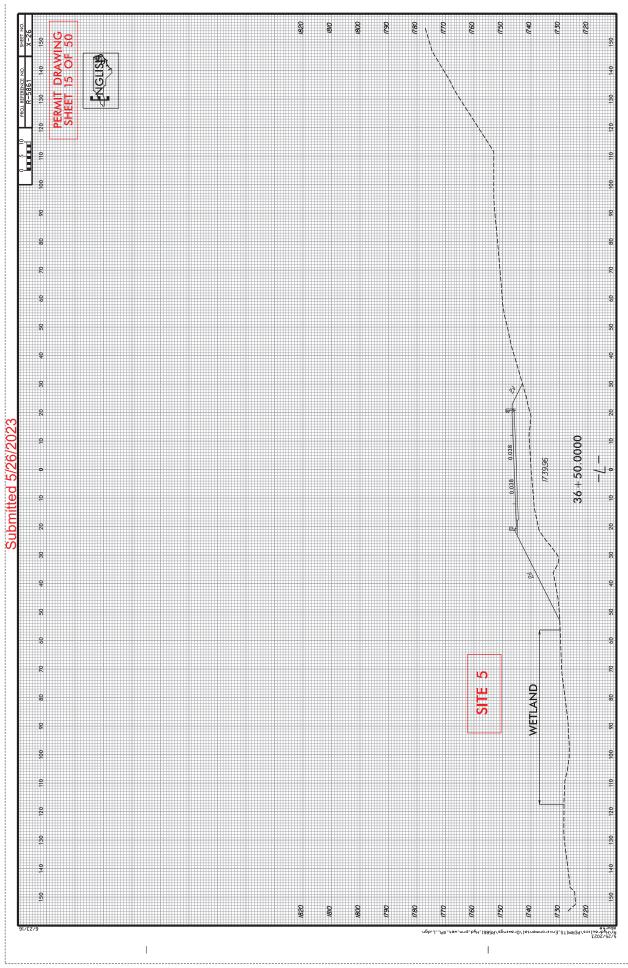


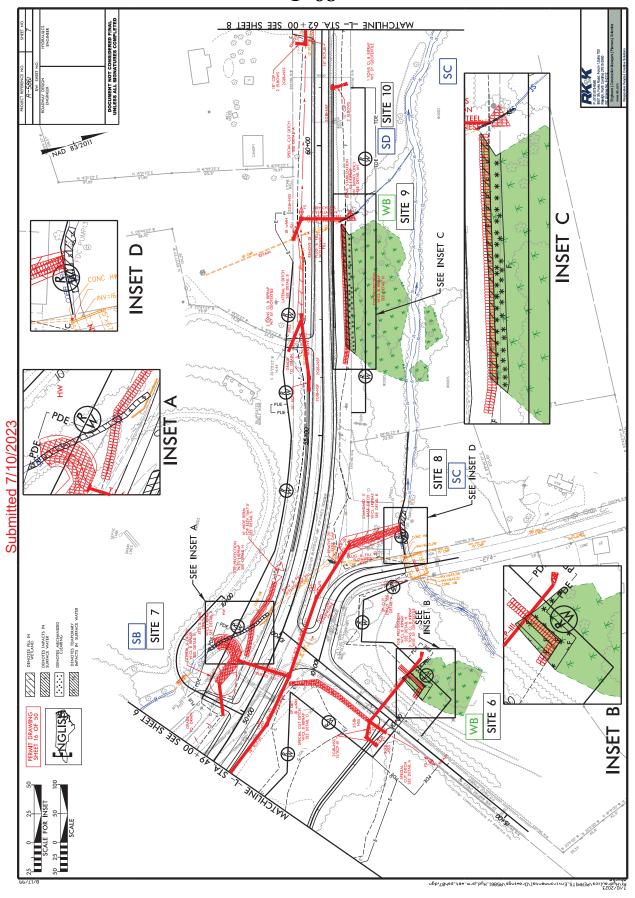


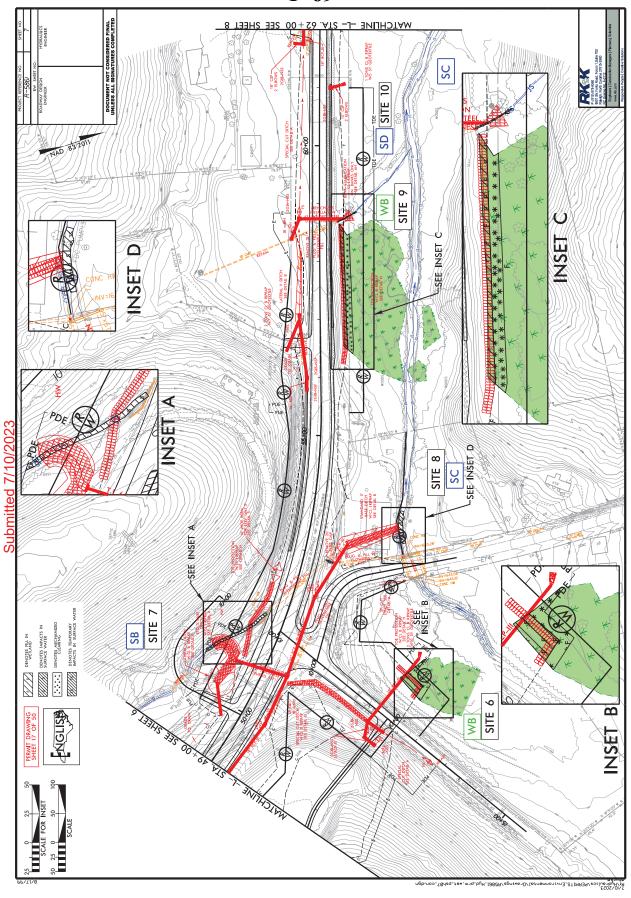


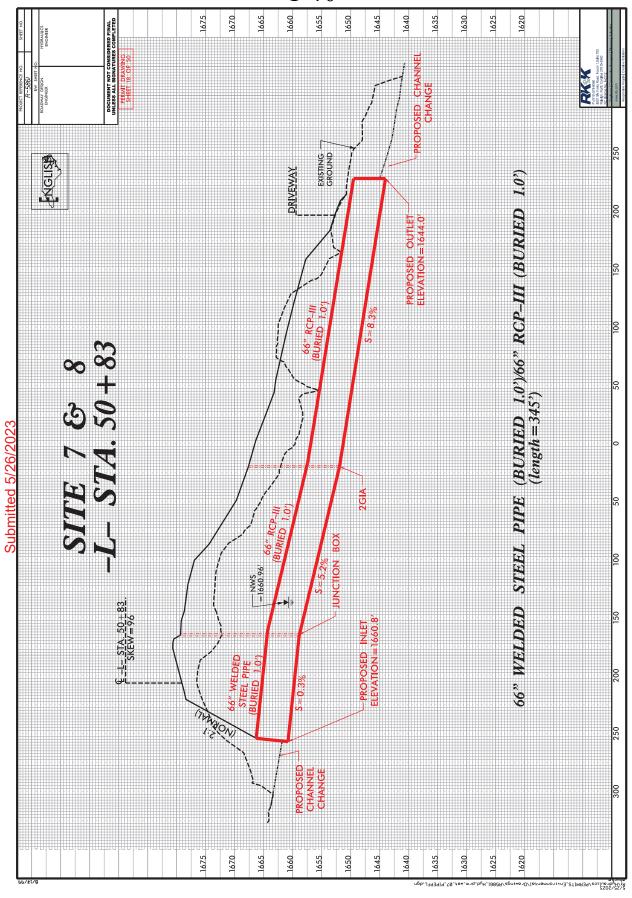


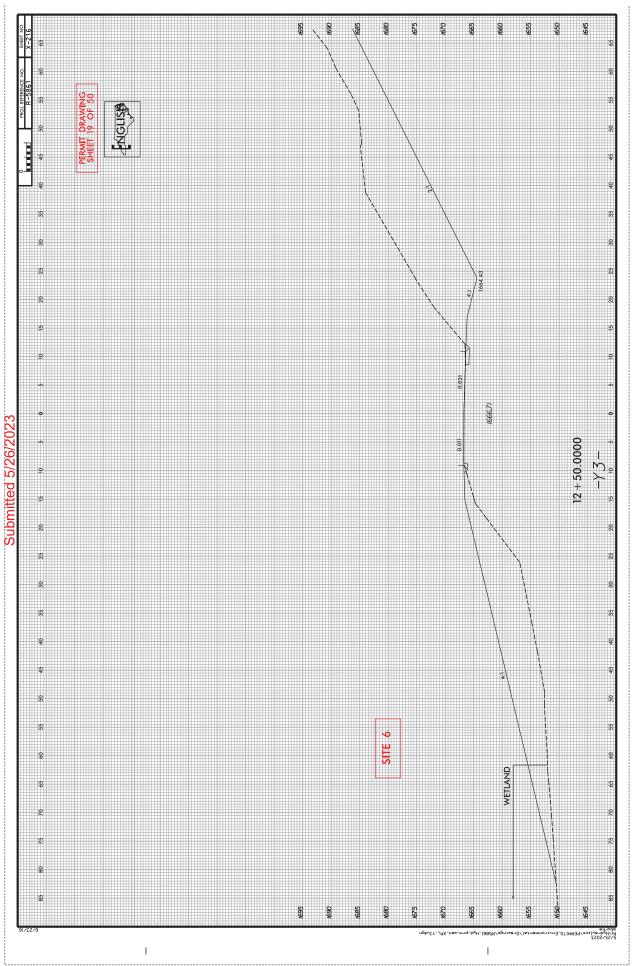


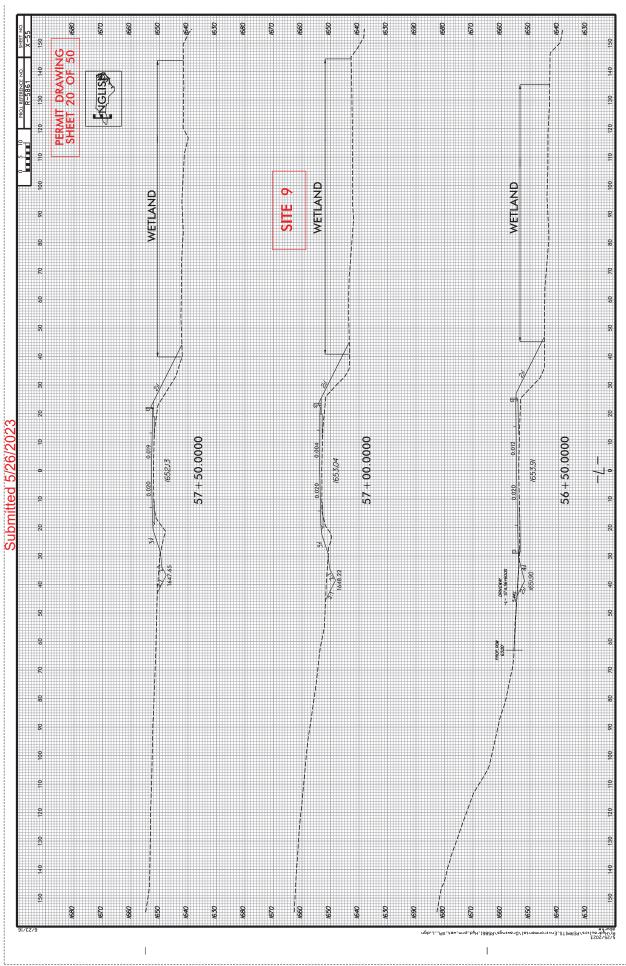


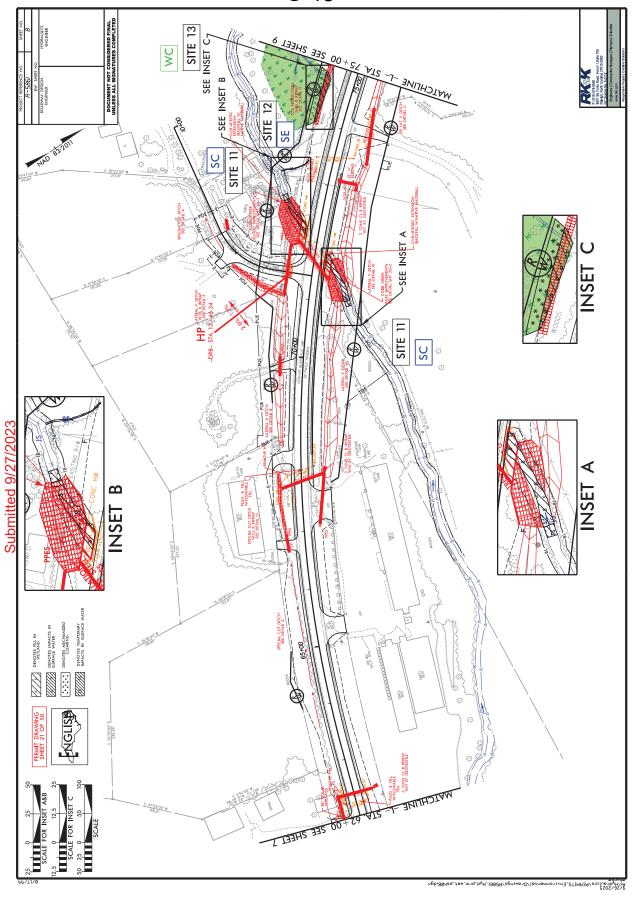


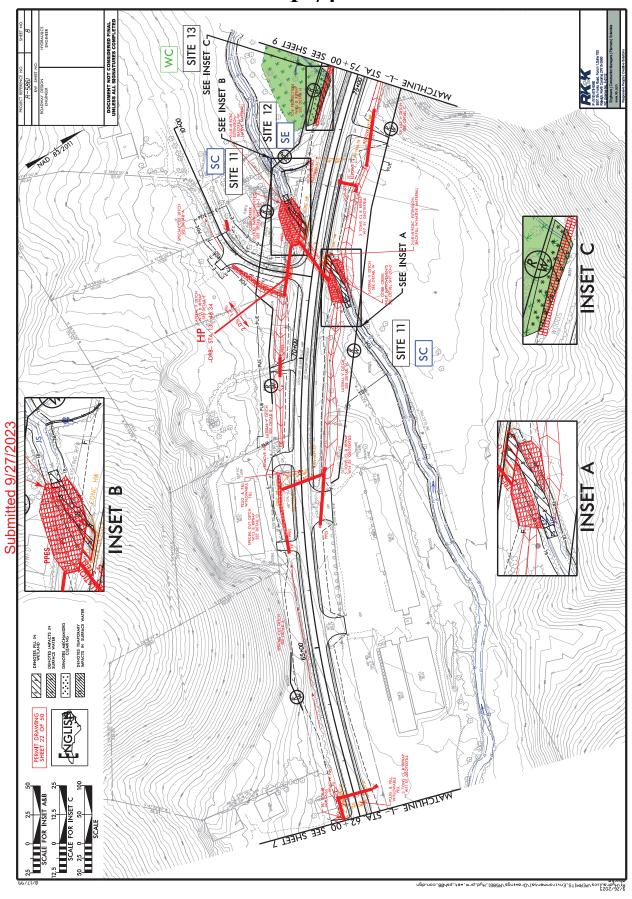


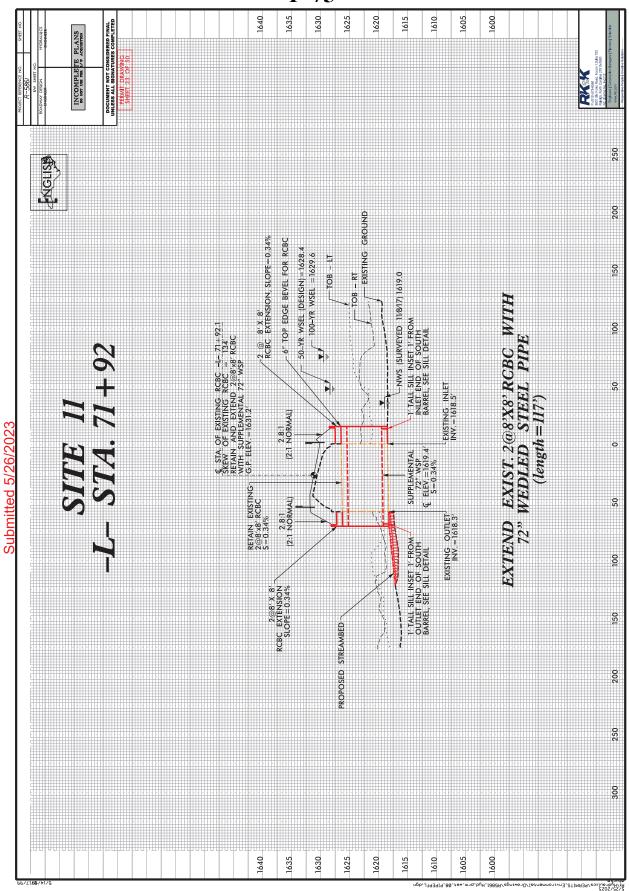


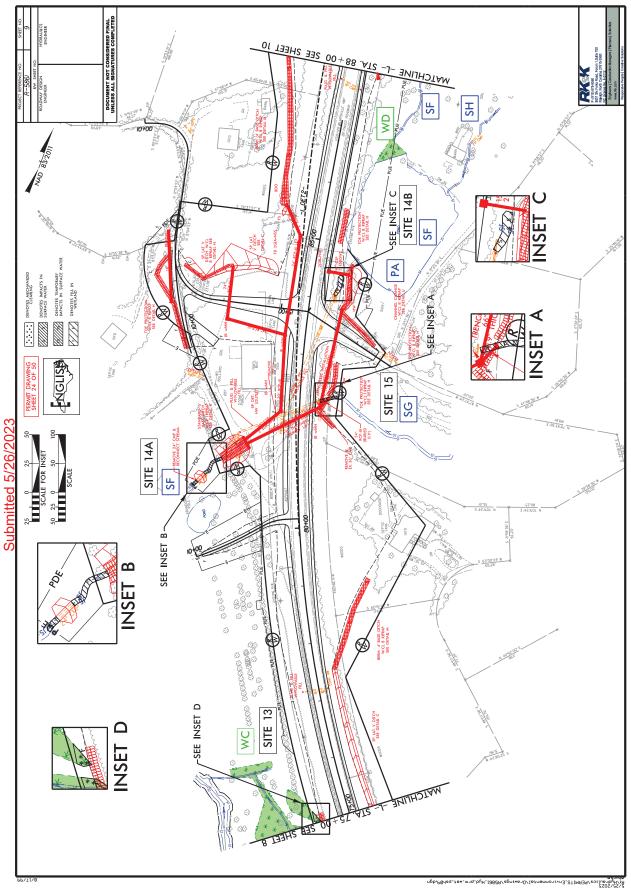


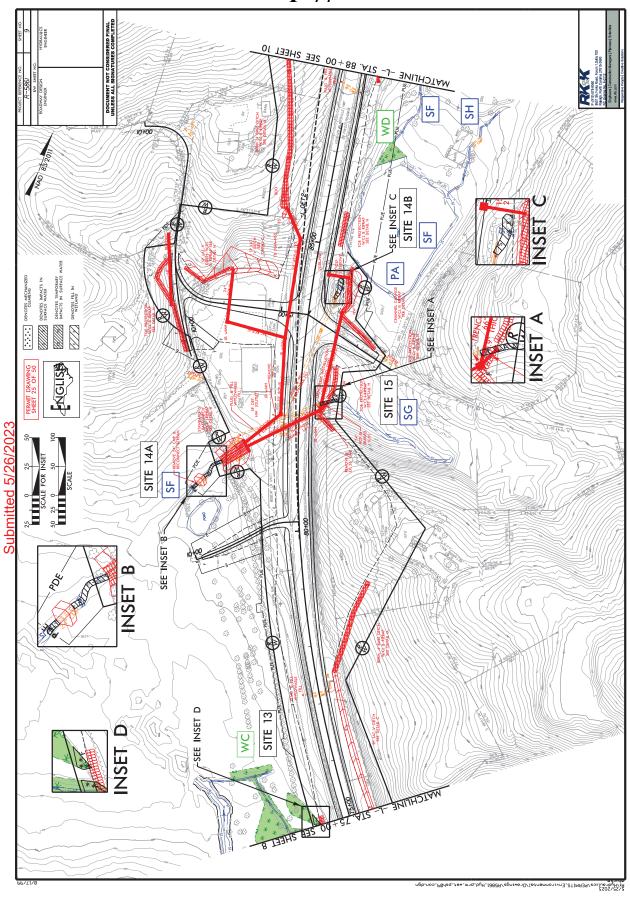


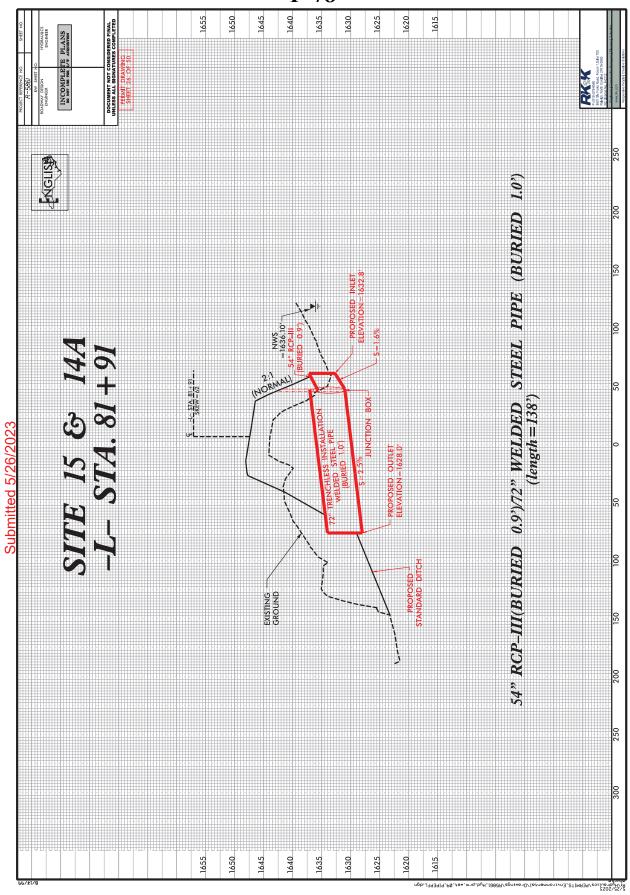


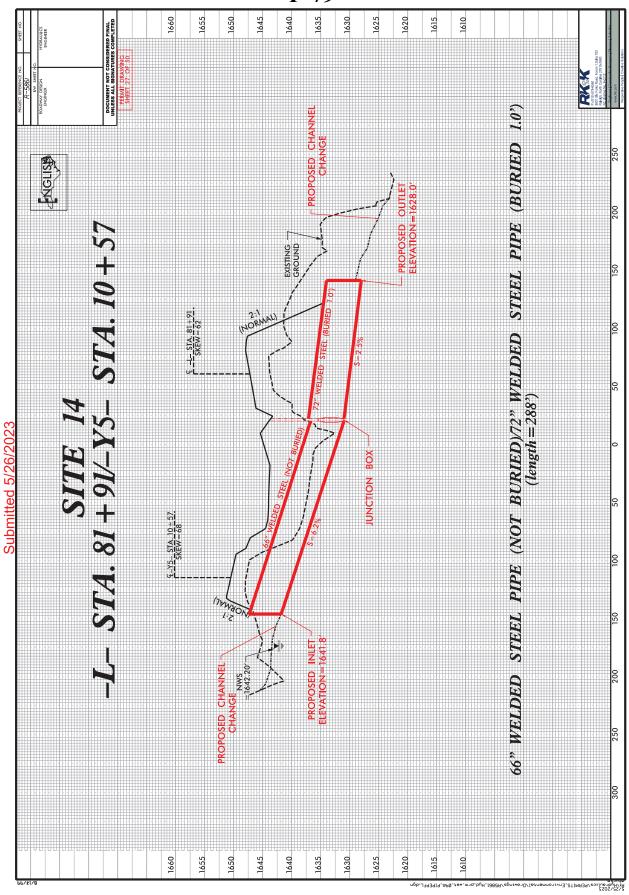


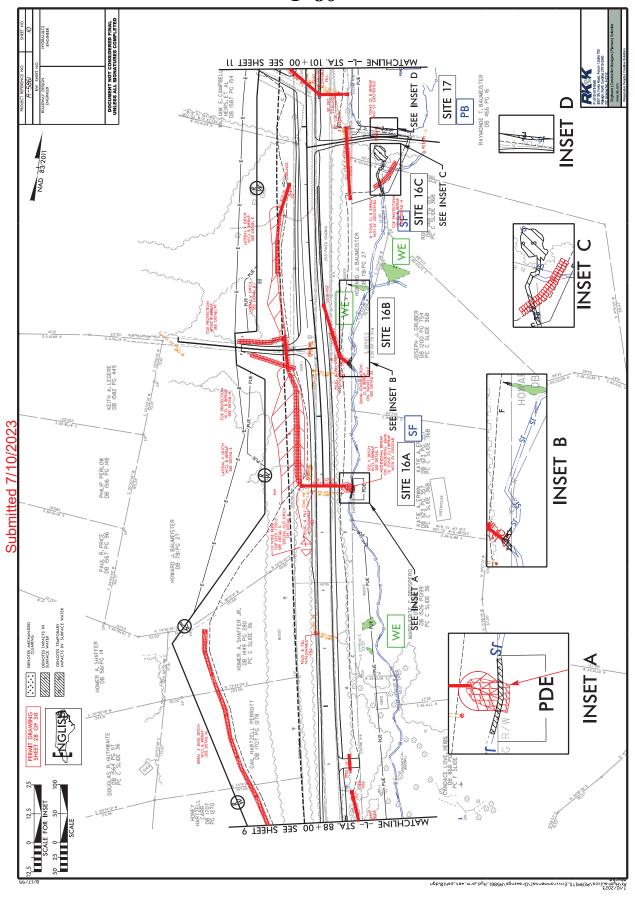


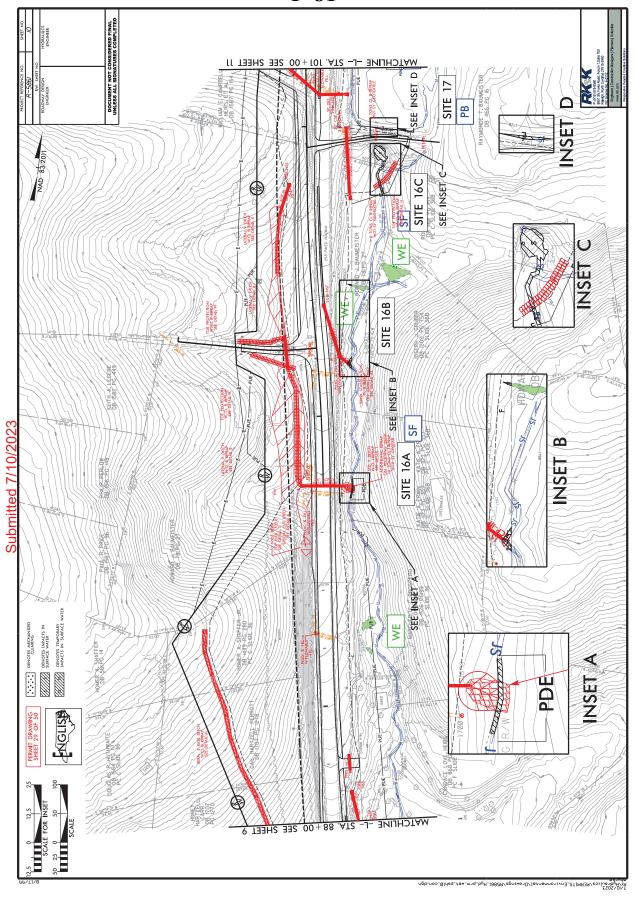


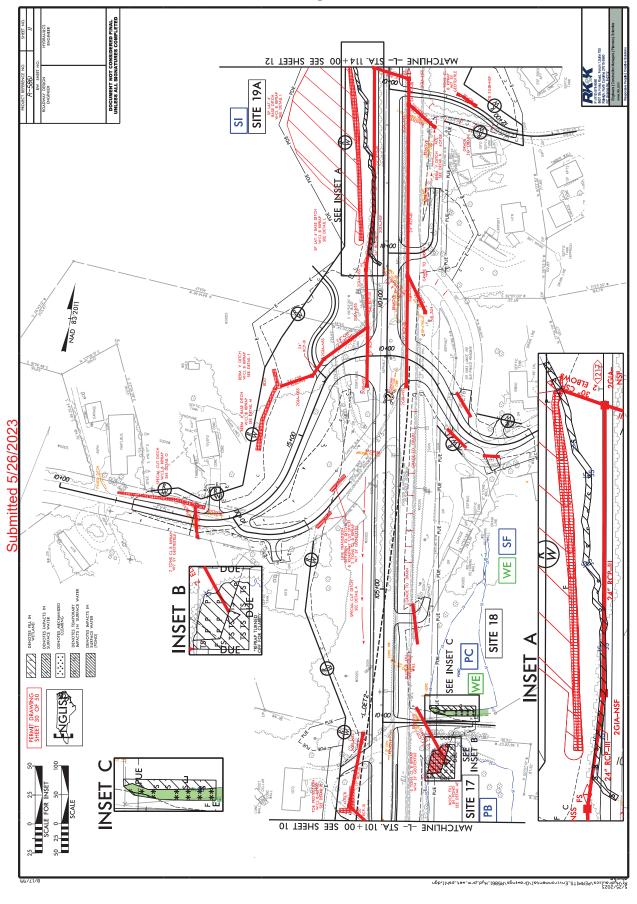


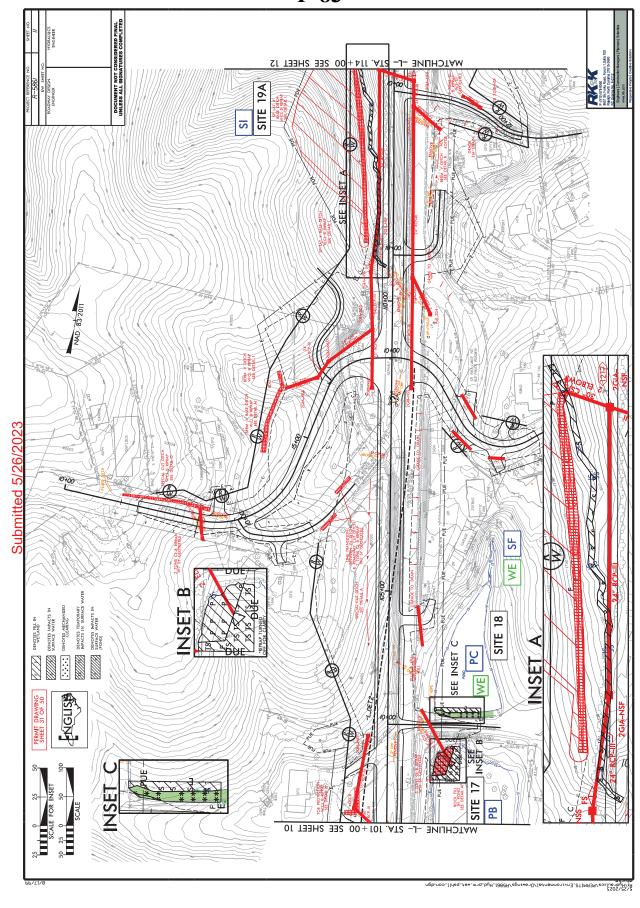


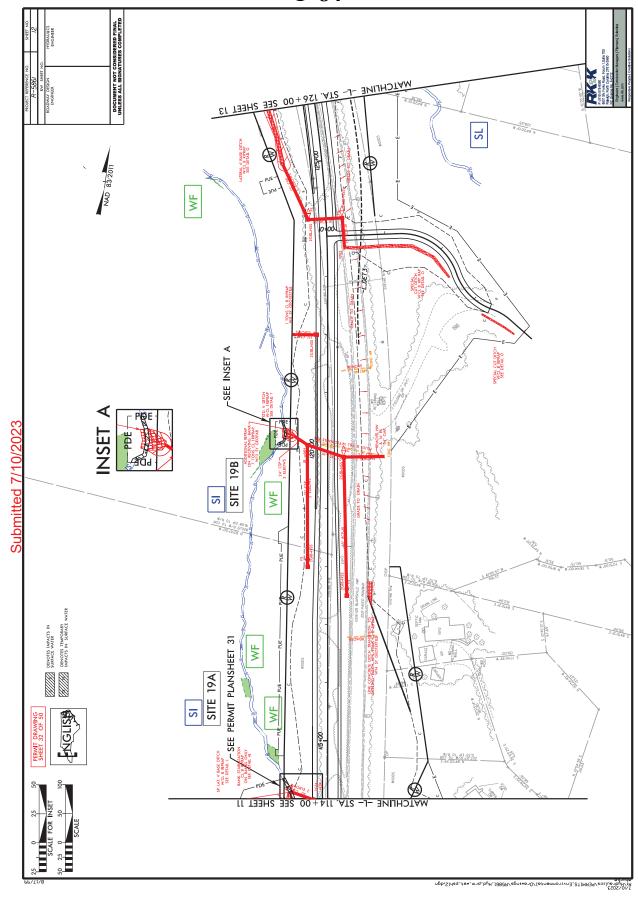


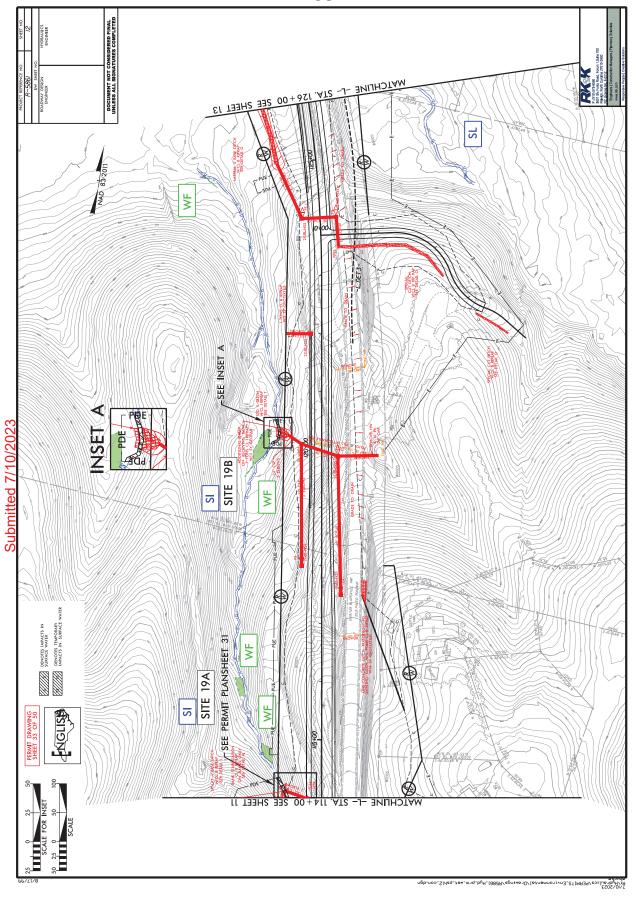


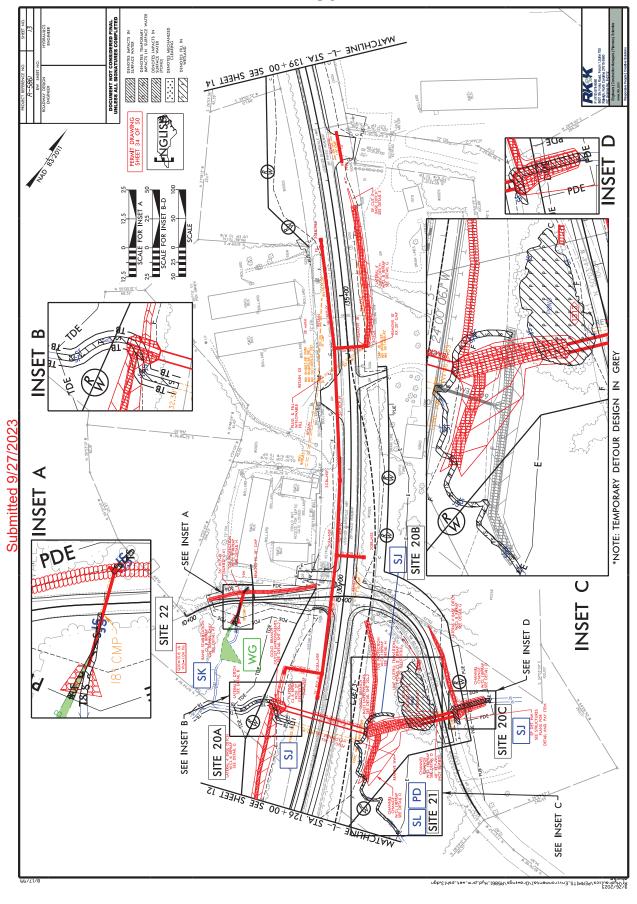


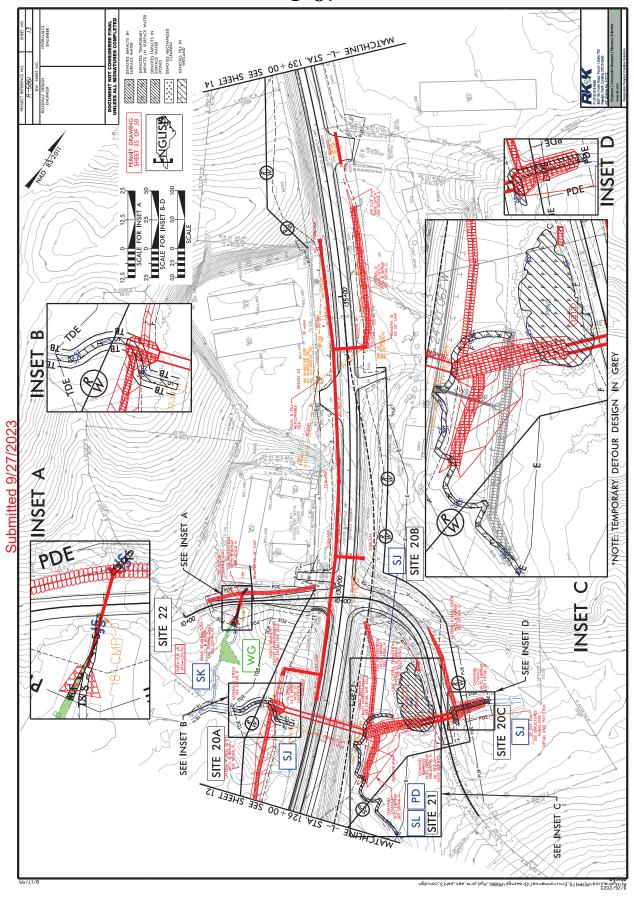


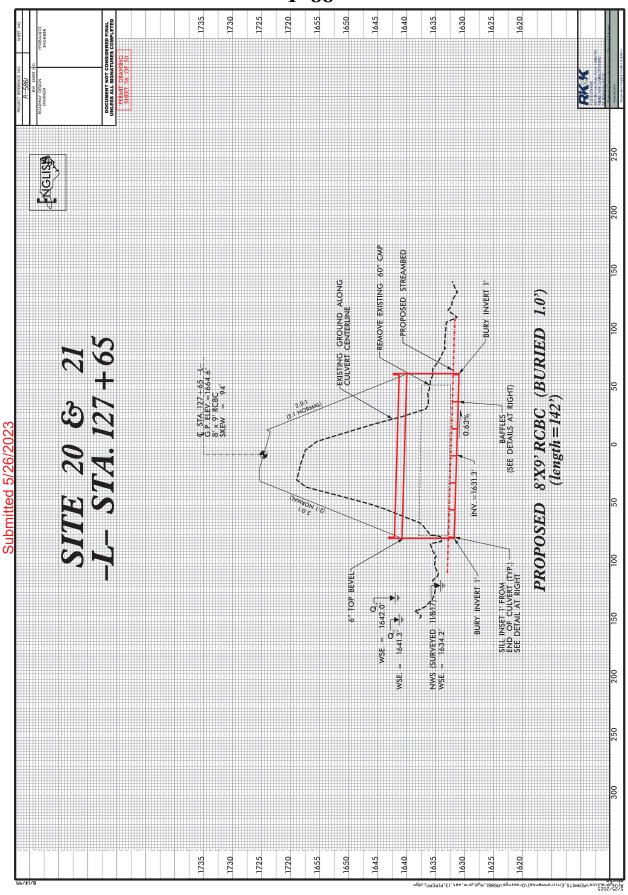


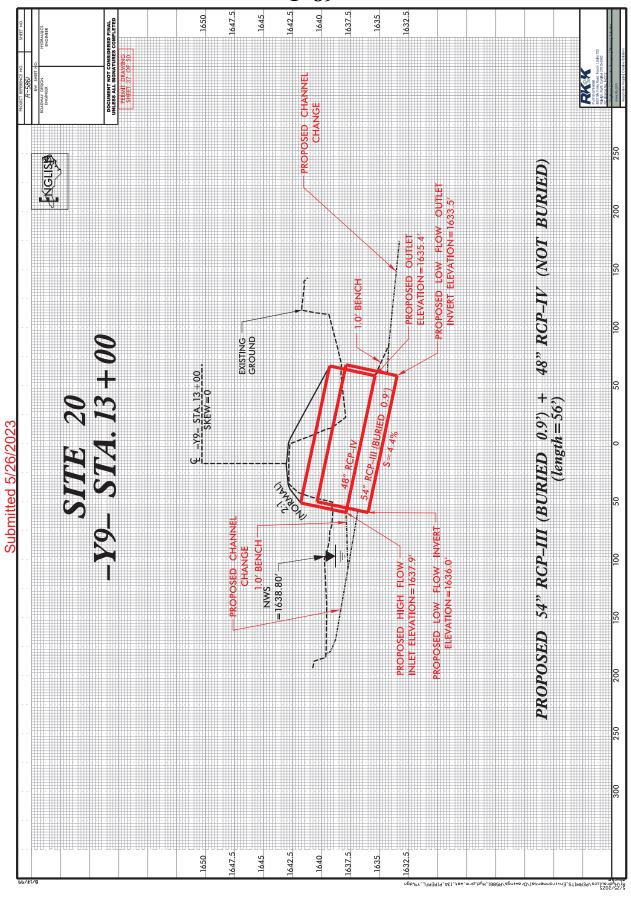


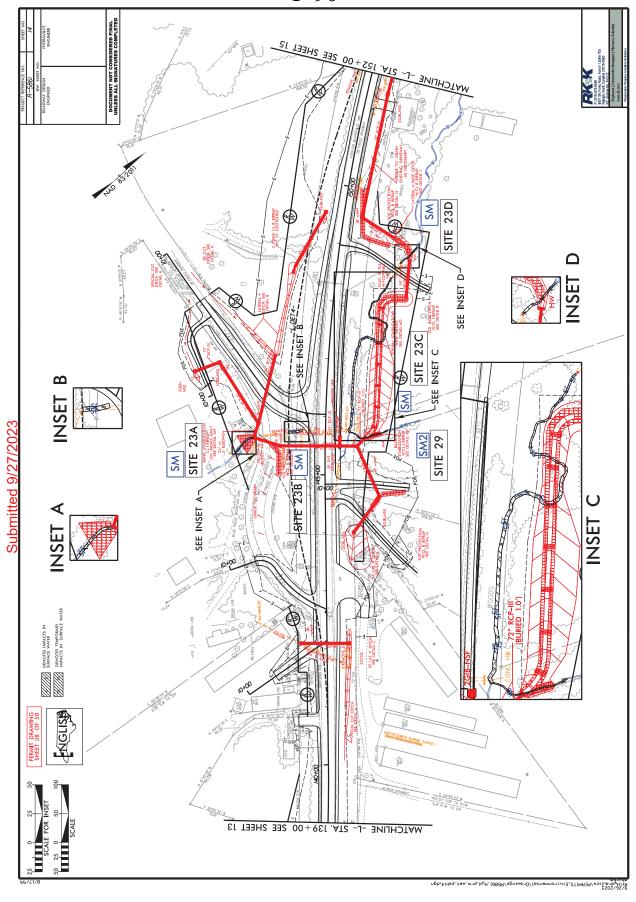


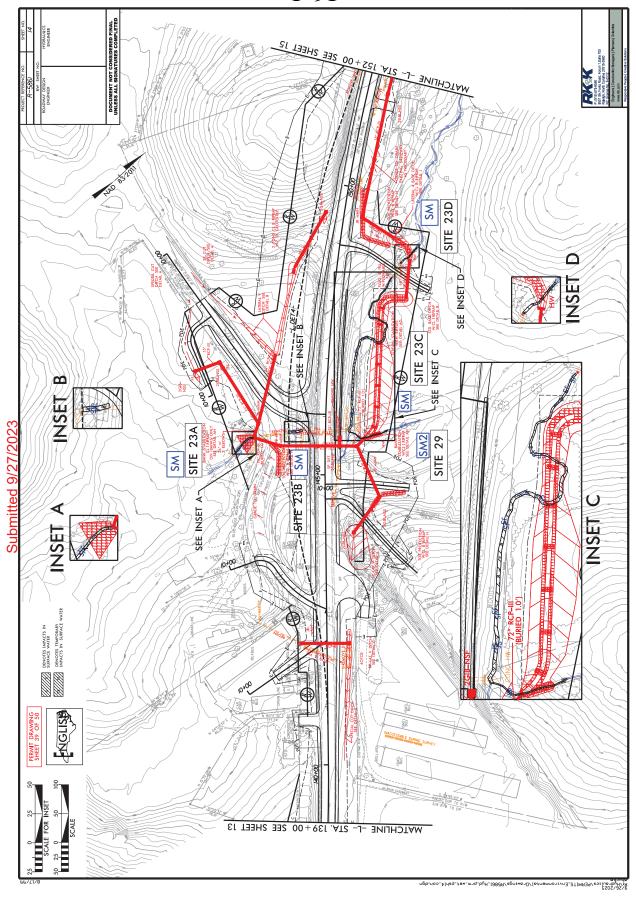


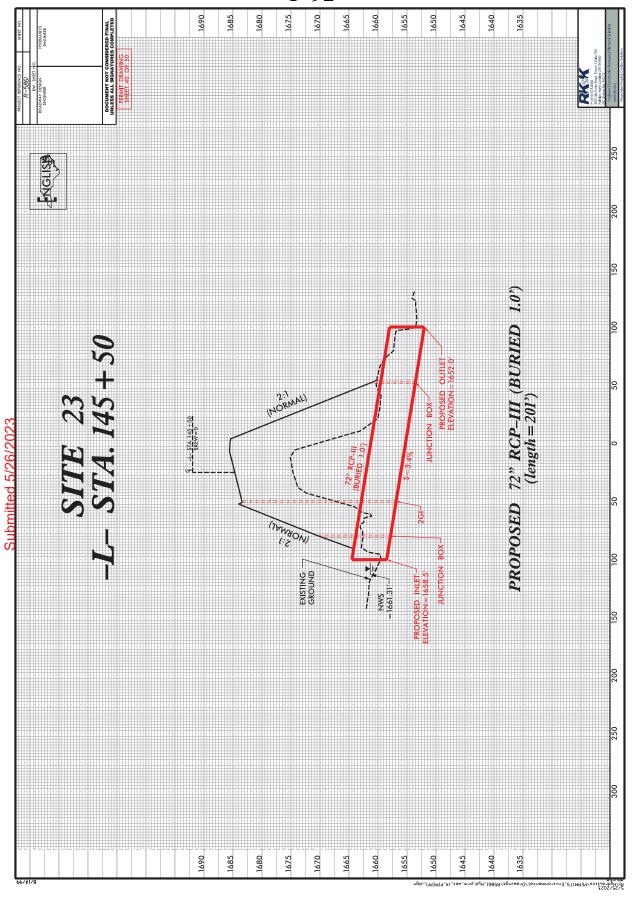


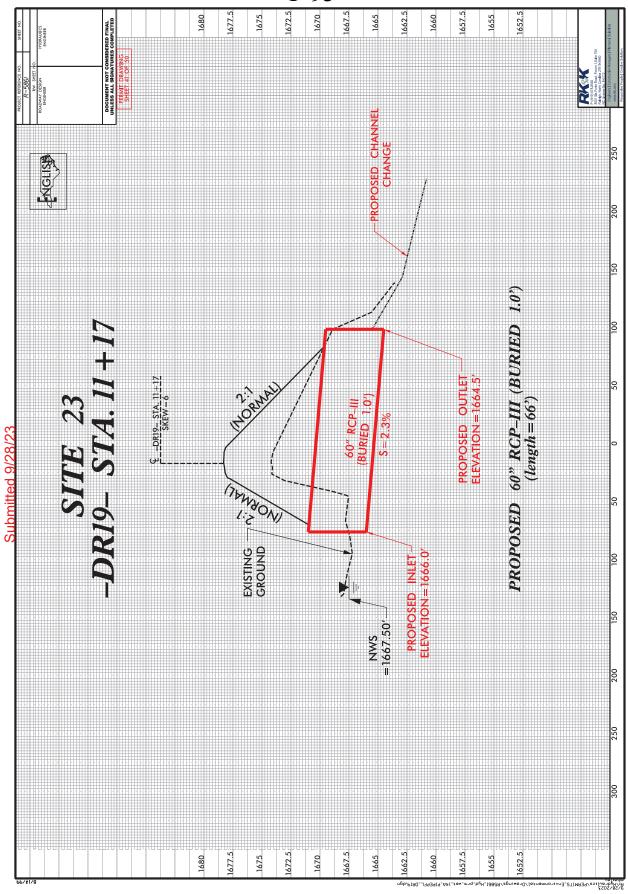


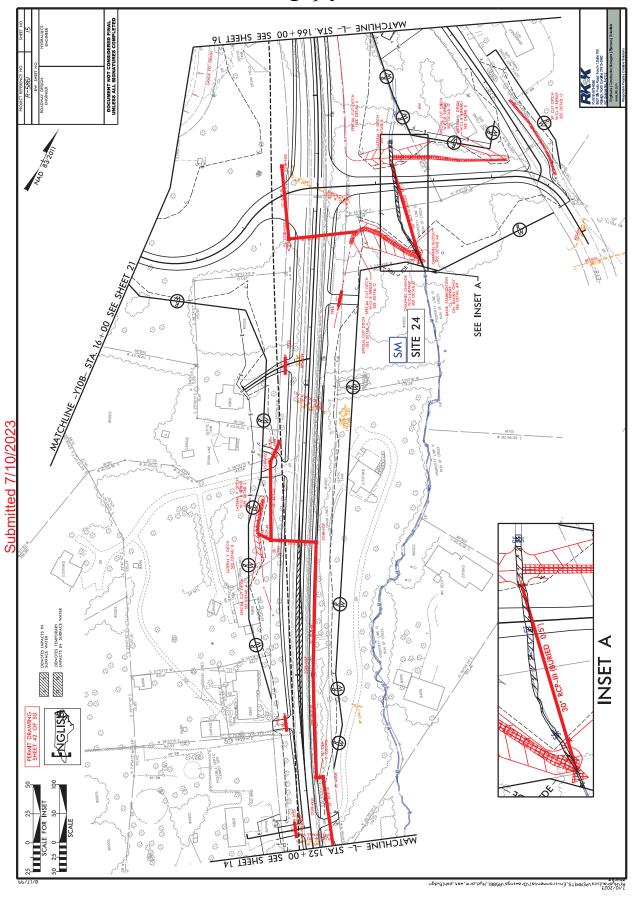


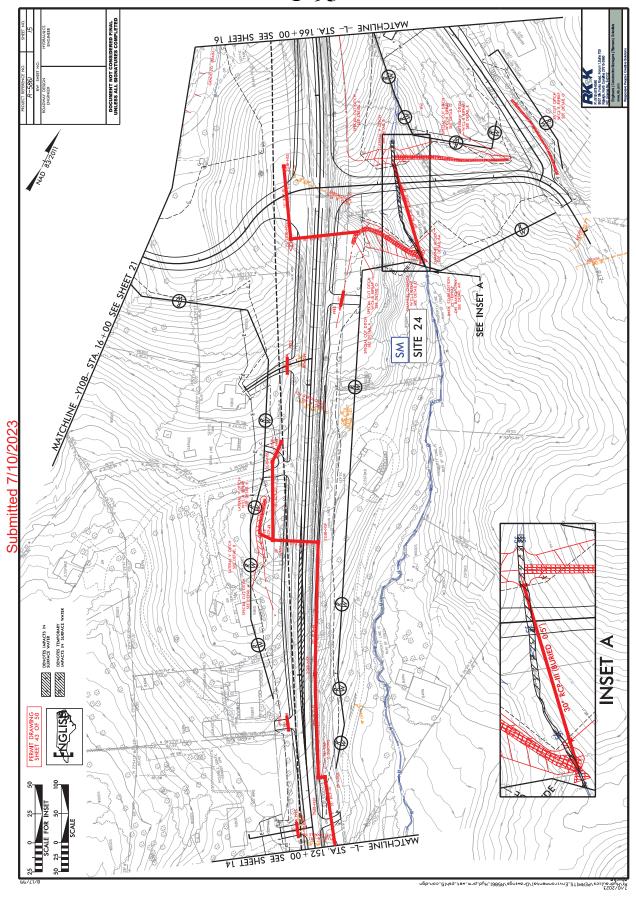


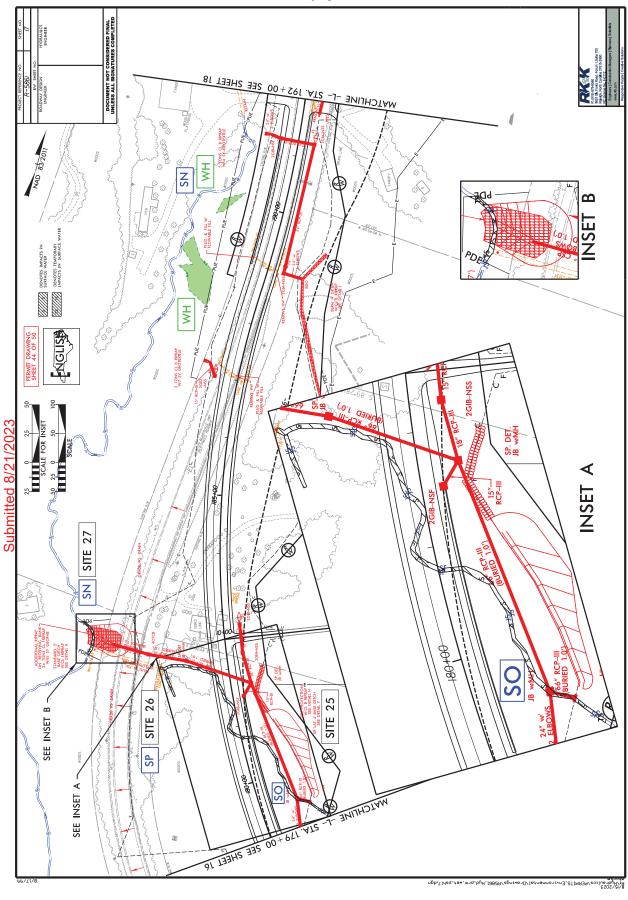


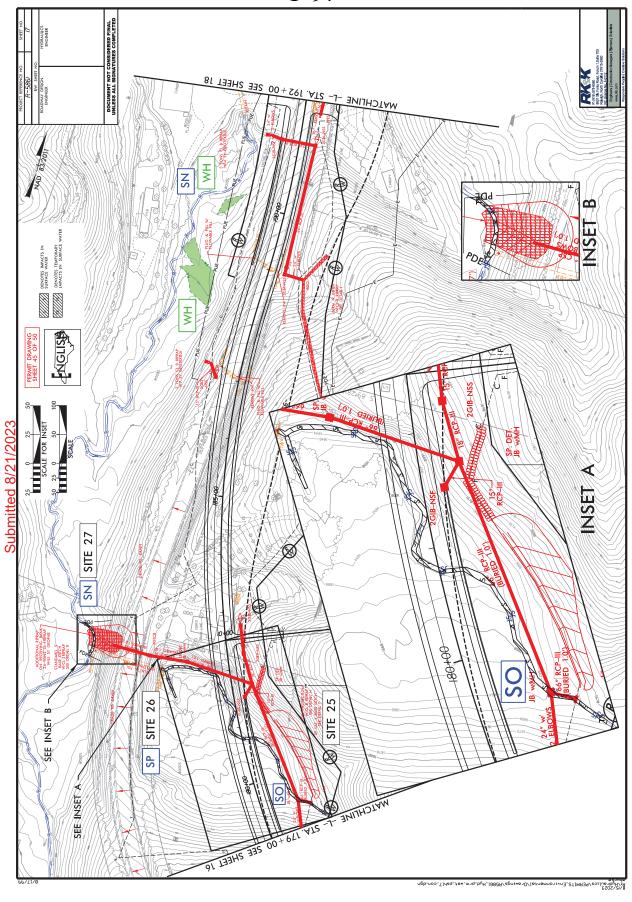


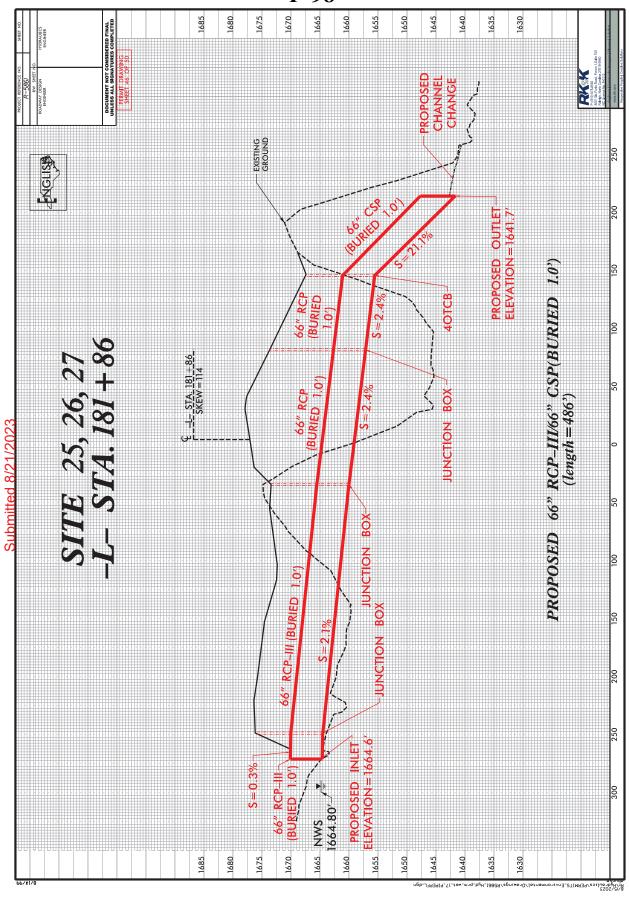


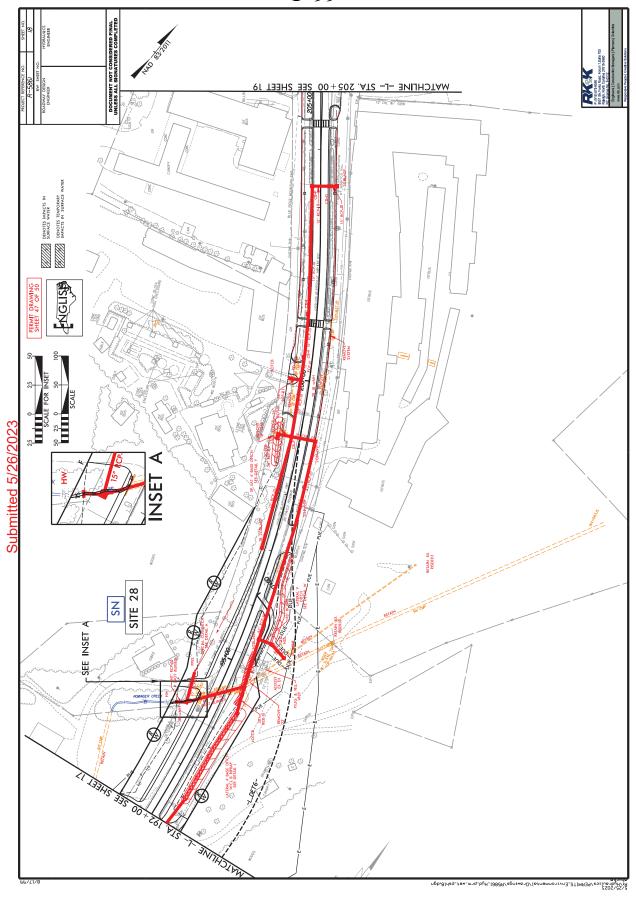


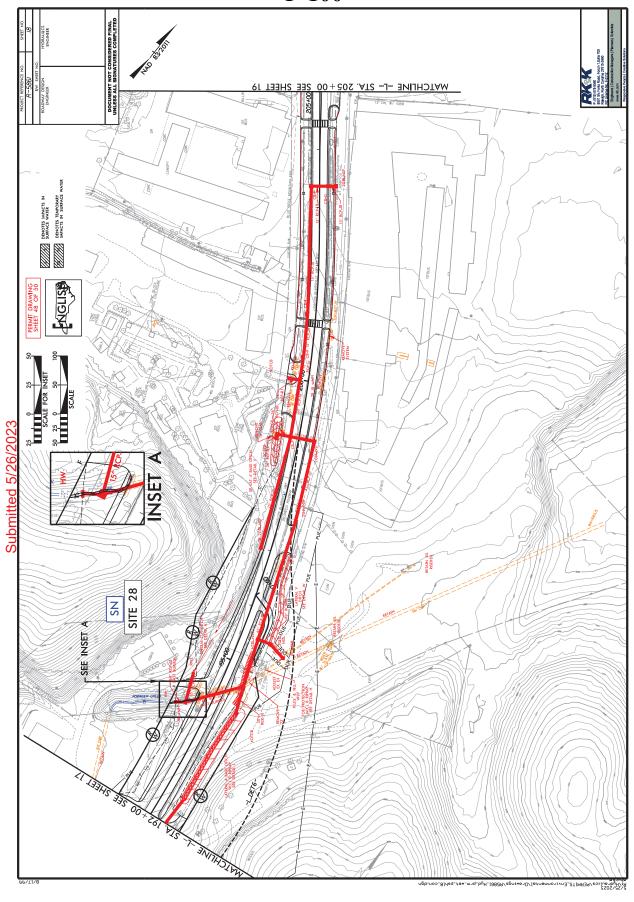


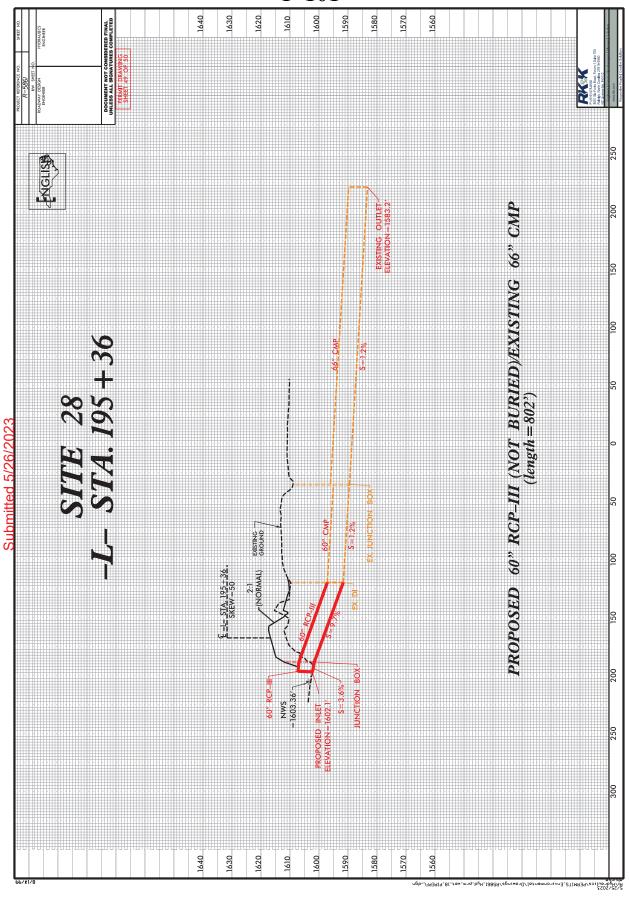












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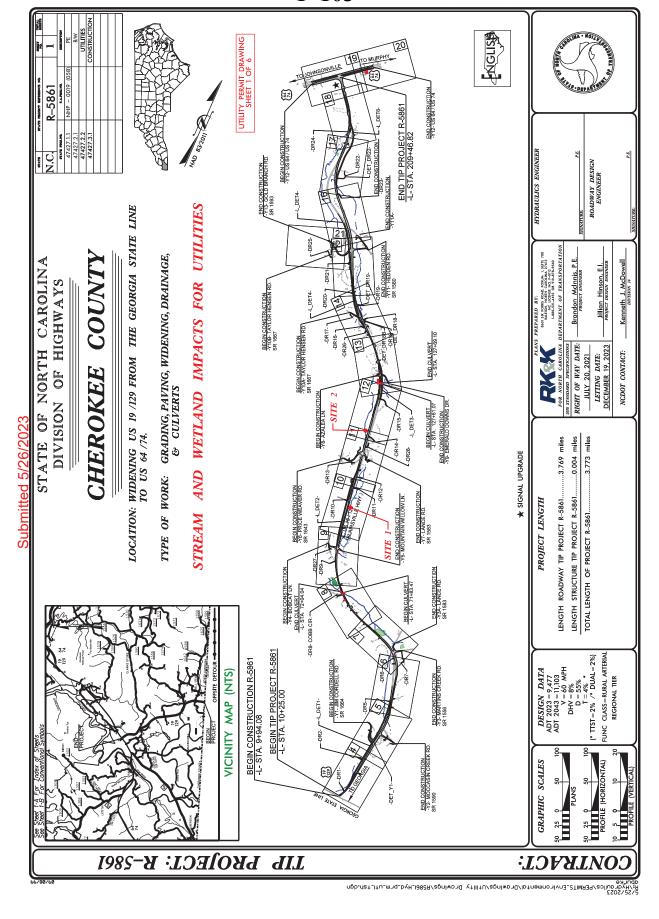
						)						
			Permanent	Temp.	Excavation	Excavation Mechanized	Hand	Permanent	Temp.	Existing Channel	Existing Channel	Natural
Site No.	Station (From/To)	Structure Size / Type	Fill In Wetlands (ac)	Fill In Wetlands (ac)	in Wetlands (ac)	Clearing in Wetlands (ac)	in Wetlands (ac)	SW impacts (ac)		Impacts Permanent (ft)		Stream Design (ft)
4	-DR1- 10+39 to 10+50	CHANNEL CHANGE - SA						< 0.01	< 0.01	140	10	
m	-L- 13+32 to 13+51	66" RCP- SA						< 0.01	< 0.01	53	18	
2 5	-L- 12+98 to 17+15	CHANNEL RELOCATION- SA2 1 3						0.05	< 0.01	403	131	
7 R	-L- 33+29 to 33+77	48" RCP - SB						× 0.0 ×	× 0.0 ×	20	10	
8	-L- 33+71 to 34+55	ROADWAY FILL - WA	90.0								2	
4	-L- 35+36 to 35+86	ROADWAY FILL - WA	0.01									
2	-L- 36+00 to 37+15	18" CSP- WA 1	0.04									
9	-Y3- 12+11 to 12+70	ROADWAY FILL - WB	0.02			0.02						
7	-L- 51+13 to 51+76	66" W.S.P - SB						< 0.01	< 0.01	72	15	
$^{\dagger}$		ROADWAY FILL - SB						< 0.01		48		
ω σ	-L- 54+00 to 54+50	BANK STABILIZATION - SC	0			200		< 0.01	< 0.01	17	40	
, ç	-L- 50+20 to 50+85	A2".WS P - SD	0.02			Gn'n		100		12		
	20.00.00.00.00	DS -: I.S. TANK STANKS						10.0	× 0.01	14	10	
11	-I - 70+69 to 73+14	(2) 8'x8' RCBC & 72" W.S.P SC						> 0.01	200	25	2	
T		BANK STABILIZATION (RT) - SC						0.01	< 0.01	69	10	
T		STRUCTURE STABILIZATION (LT) - SC						< 0.01	< 0.01	48	10	
0.1	-L- 73+06 to 73+35	ROADWAY FILL - SE						< 0.01		52		
13	-L- 74+77 to 74+93	ROADWAY FILL- WC	0.01			0.03						
14A	-L- 80+75 to 81+22	CHANNEL CHANGE - SF							< 0.01		53	
14B	-L- 82+18 to 82+31	66" W.S.P SF						< 0.01		36		
15	-L- 82+18 to 82+31	54" RCP - SG						< 0.01	< 0.01	21	12	
16A	-L- 93+58 to 93+89	BANK STABILIZATION - SF						< 0.01	< 0.01	13	20	
16B	-L- 95+75 to 95+97	BANK STABILIZATION - SF						< 0.01	< 0.01	2	15	
٦,		ROADWAY FILL - WE				< 0.01					!	
160	-DR11- 11+15 to 11+43	ROADWAY FILL - SF						0.01	< 0.01	77	12	
1	-DK11-11+15 to 11+48	ROADWAY FILL - PB						000	L0:0 >			
ç	-DK12- 10+89	ROCK FILL IN POND - PB	200			000		0.03	0.03			
_	-DR12-10+01 t0 11+43	ROADWAY FILL - WE	0.0			0.0			0.01			
194	-1 - 110+57 to 114+40	BANK STABII IZATION - SI						< 0.01	V 0 0 4	10	16	
:		ROADWAY FILL - SI						0.04		374	2	
19B	-L- 120+10 to 120+50	BANK STABILIZATION - SI						< 0.01	< 0.01	19	29	
20A	-L- 127+44 to 127+79	8'x9' RCBC - SJ						< 0.01	< 0.01	65	65	
20B	-L- 127+38 to 127+98	8'x9' RCBC - SJ						0.01		69		
П		CHANNEL CHANGE - SJ						< 0.01		40		
								0.11				
20C	-Y9-13+00	CHANNEL CHANGE - SJ						0.01	< 0.01	81	7	
51	-L- 126+63 to 127+38	8'x9' RCBC - SL 2						< 0.01	0.01	82	128	
22	-Y8-11+00 RT	BANK STABILIZATION - SK						< 0.01	< 0.01	12	2	
Τ.		36" RCP - SK, WG	< 0.01			< 0.01		< 0.01	< 0.01	20	9 :	
23A	-L- 145+41 to 145+63	BANK STABILIZATION - SM						< 0.01	< 0.01	53	18	
n c	-Y10A-13+94 to 13+72	CHANNEL BELOCATION SM <sup>4</sup>						1.0.0 >		253		
230	-L- 143+73 to 146+52	60" BCP - SM						V.UZ	> 0.01	20	10	
24	-Y11-11+27 to 11+75	30" RCP - SM						0.02	< 0.01	203	10	
t		BANK STABILIZATION - SM						< 0.01	< 0.01	10	8	
2	-L- 179+25 to 182+19	66" RCP - SO						0.04	< 0.01	417	29	
26	-L- 181+68 to 182+19	ROADWAY FILL - SP						< 0.01		48		
27	-L- 182+50 to 183+00	BANK STABILIZATION - SN						< 0.01	< 0.01	36	31	
28	-L- 193+85 to 194+25	60" RCP - SM						< 0.01	< 0.01	20	11	
29	-L- 145+63 RT	ROADWAY FILL - SM2						< 0.01	< 0.01	58	12	
'OTALS	S*:		0.17			0.10		0.42	0.11	3247	849	0

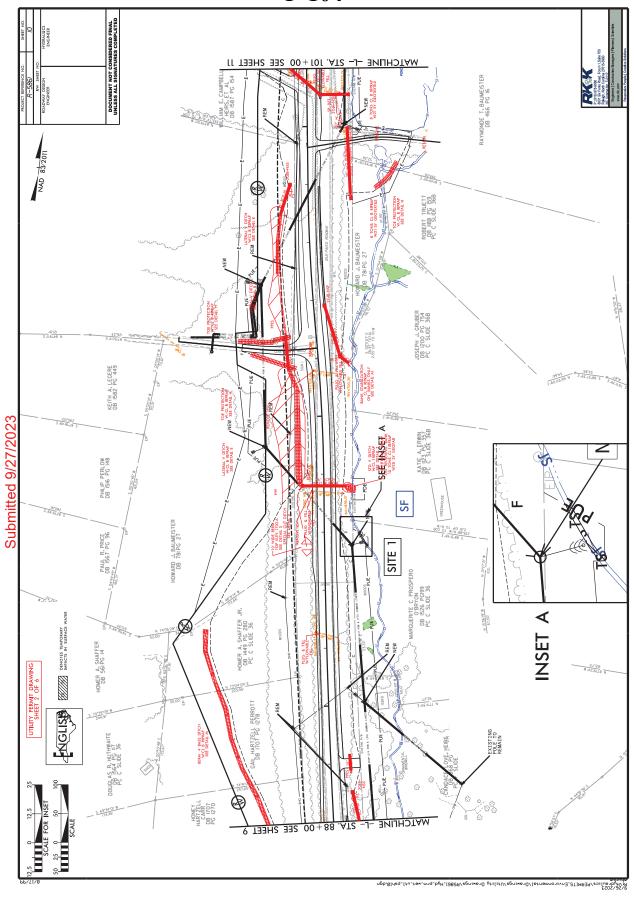
1. Additional temporary stream impacts due to proposed detour drainage on -L\_DET1-, upon road completion; pipe and riprap will be renoved and stream will be restored to original state.

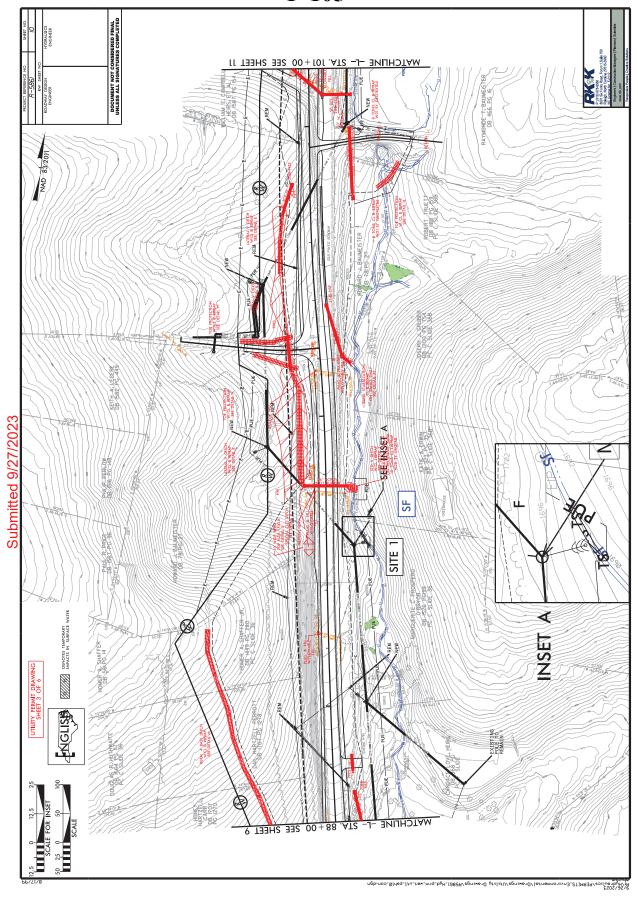
Additional temporary stream impacts due to proposed detour drainage on -L\_DET3-, upon road completion; channel change w/ riprap will be renoved and stream will be restored to original state.

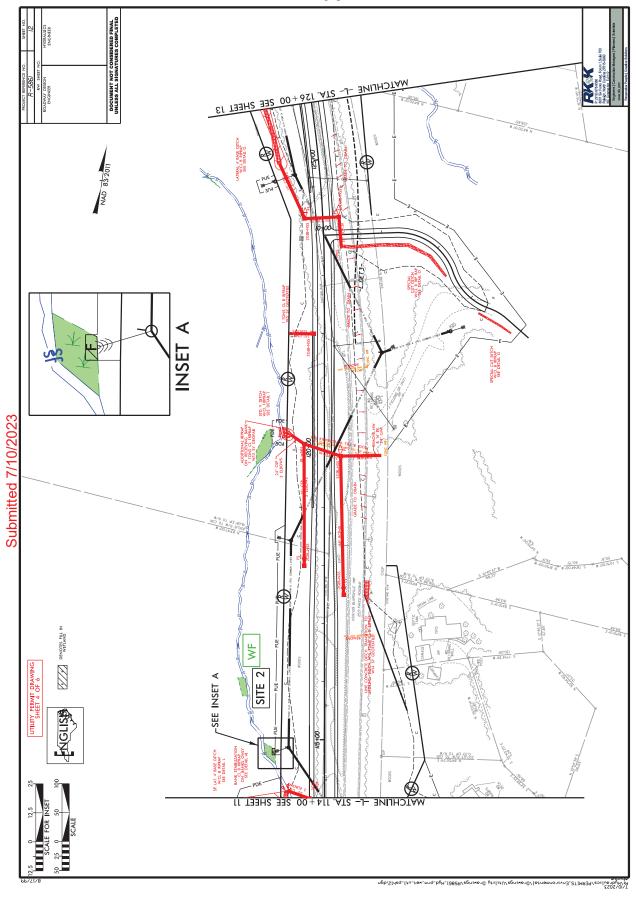
3. Due to sinuosity loss in the channel relocation, original stream length-303' and channel relocation (with rifles) length-253'.

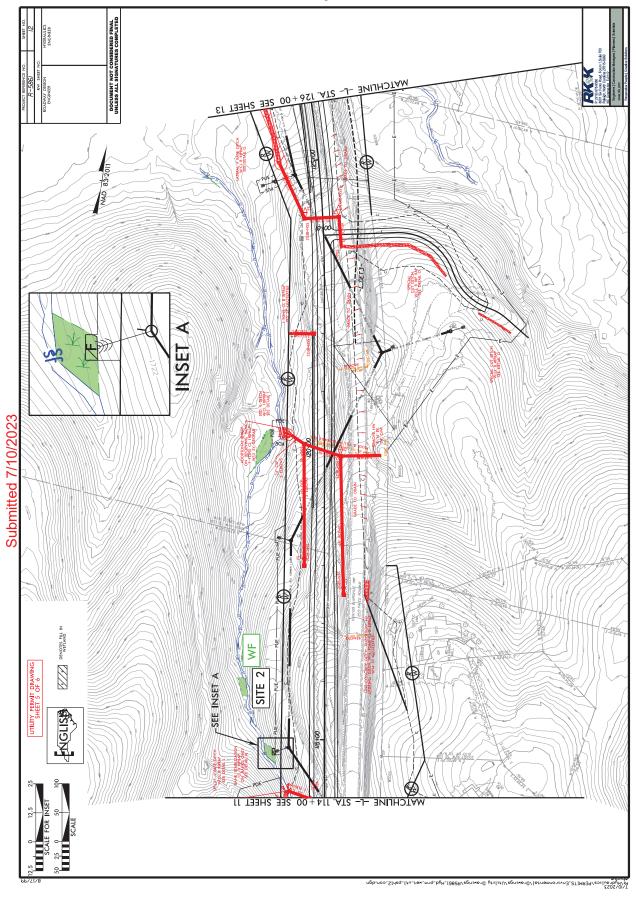
NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
SEPTEMBER 2023
CHEROKEE











		S	man	itted	2/5	Submitted 5/26/2023	23					
			WETLAN	D AND SI Wet	URACE W	'ATER IMP. Acts	ACTS SUI	MMARY FF	ROM UTIL Surface	ITIES WATER IM	PACTS	
Site No.	Station (From/To)	Structure Size / Type	Permanent Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation in Wetlands (ac)	Permanent         Temp.         Excavation         Mechanized         Clearing         Permanent         Temp.         Channel         Existing         Existing           Fill In         in         Clearing         in         SW         Impacts         Impacts </th <th>Hand Clearing in Wetlands (ac)</th> <th>Permanent SW impacts (ac)</th> <th>Temp. SW impacts (ac)</th> <th>Existing Channel Impacts Permanent (ft)</th> <th>Existing Channel Impacts Temp. (ft)</th> <th>Natural Stream Design (ft)</th>	Hand Clearing in Wetlands (ac)	Permanent SW impacts (ac)	Temp. SW impacts (ac)	Existing Channel Impacts Permanent (ft)	Existing Channel Impacts Temp. (ft)	Natural Stream Design (ft)
1	-L- 92+75 to 93+00 -L- 114+74 to 114+85	GUY WIRE (O/H POW LINE) GUY WIRE (O/H POW LINE)	< 0.01						< 0.01		28	
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_1	TOTALS*:		< 0.01						< 0.01	0	28	0
_ (	*Rounded totals are sum of actual impacts	tual impacts										
,,	NO LESS:								NC DEF	NC DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS MAY 2023 CHEROKEE	IENT OF TRANSPO ION OF HIGHWAY MAY 2023 CHEROKEE	RTATION
										-S	861	
vised 2018 Feb	eb								SHEET	9	OF	9

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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	0000700000-N	SP	FIELD OFFICE	Lump Sum	L.S.	
0004	0001000000-E	200	CLEARING & GRUBBING ACRE(S)	Lump Sum	L.S.	
0005	0008000000-E	200	SUPPLEMENTARY CLEARING & GRUBBING	3 ACR		
0006	0015000000-N	205	SEALING ABANDONED WELLS	6 EA		
0007	0022000000-E	225	UNCLASSIFIED EXCAVATION	1,197,000 CY		
8000	0036000000-E	225	UNDERCUT EXCAVATION	11,530 CY		
0009	0134000000-E	240	DRAINAGE DITCH EXCAVATION	15,980 CY		
0010	0141000000-E	240	BERM DITCH CONSTRUCTION	2,600 LF		
0011	0156000000-E	250	REMOVAL OF EXISTING ASPHALT PAVEMENT	72,520 SY		
0012	0177000000-E	250	BREAKING OF EXISTING ASPHALT PAVEMENT	11,000 SY		
0013	0194000000-E	265	SELECT GRANULAR MATERIAL, CLASS III	4,000 CY		
0014	0196000000-E	270	GEOTEXTILE FOR SOIL STABILIZATION	10,112 SY		
0015	0199000000-E	SP	TEMPORARY SHORING	30,394 SF		
0016	0223000000-E	275	ROCK PLATING	125 SY		
0017	0225000000-E	SP	REINFORCED SOIL SLOPES	1,500 SY		

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County.	CHEROKEE					
Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0018	0234000000-E	SP	GENERIC GRADING ITEM COMPOST BLANKET	250 CY		
0019	0241000000-E	SP	GENERIC GRADING ITEM GEOCELLS	1,500 SY		
0020	0255000000-E	SP	GENERIC GRADING ITEM HAULING AND DISPOSAL OF PETROLEUM CONTAMINATED SOIL	50 TON		
0021	0318000000-E	300	FOUNDATION CONDITIONING MATERIAL, MINOR STRUCTURES	2,170 TON		
0022	0320000000-E	300	FOUNDATION CONDITIONING GEOTEXTILE	6,800 SY		
0023	0335200000-E	305	15" DRAINAGE PIPE	4,068 LF		
0024	0335300000-E	305	18" DRAINAGE PIPE	1,960 LF		
0025	0335400000-E	305	24" DRAINAGE PIPE	1,628 LF		
0026	0335500000-E	305	30" DRAINAGE PIPE	456 LF		
0027	0335600000-E	305	36" DRAINAGE PIPE	228 LF		
0028	0335800000-E	305	48" DRAINAGE PIPE	88 LF		
0029	0335850000-E	305	**" DRAINAGE PIPE ELBOWS (15")	24 EA		
0030	0335850000-E	305	**" DRAINAGE PIPE ELBOWS (18")	14 EA		
0031	0335850000-E	305	**" DRAINAGE PIPE ELBOWS (24")	22 EA		
0032	0335850000-E	305	**" DRAINAGE PIPE ELBOWS (30")	8 EA		
0033	0335850000-E	305	**" DRAINAGE PIPE ELBOWS (36")	4 EA		
0034	0366000000-E	310	15" RC PIPE CULVERTS, CLASS III	2,908 LF		

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County:	CHEROKEE					
Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0035	0372000000-E	310	18" RC PIPE CULVERTS, CLASS III	2,220 LF		
0036	0378000000-E	310	24" RC PIPE CULVERTS, CLASS III	1,872 LF		
0037	0384000000-E	310	30" RC PIPE CULVERTS, CLASS III	624 LF		
0038	0390000000-E	310	36" RC PIPE CULVERTS, CLASS III	276 LF		
0039	0396000000-E	310	42" RC PIPE CULVERTS, CLASS III	532 LF		
0040	0402000000-E	310	48" RC PIPE CULVERTS, CLASS III	776 LF		
0041	0408000000-E	310	54" RC PIPE CULVERTS, CLASS III	184 LF		
0042	0414000000-E	310	60" RC PIPE CULVERTS, CLASS III	272 LF		
0043	0420000000-E	310	66" RC PIPE CULVERTS, CLASS III	504 LF		
0044	0426000000-E	310	72" RC PIPE CULVERTS, CLASS III	208 LF		
0045	0448000000-E	310	****" RC PIPE CULVERTS, CLASS IV (48")	60 LF		
0046	0448000000-E	310	****" RC PIPE CULVERTS, CLASS IV (66")	56 LF		
0047	0448200000-E	310	15" RC PIPE CULVERTS, CLASS IV	408 LF		
0048	0448300000-E	310	18" RC PIPE CULVERTS, CLASS IV	108 LF		
0049	0448500000-E	310	30" RC PIPE CULVERTS, CLASS IV	64 LF		
0050	0448600000-E	310	36" RC PIPE CULVERTS, CLASS IV	700 LF		
0051	0453000000-E	310	**" PIPE END SECTION (15")	16 EA		

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Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0052	0453000000-E	310	**" PIPE END SECTION (18")	2 EA		
0053	0453000000-E	310	**" PIPE END SECTION (24")	3 EA		
0054	0576000000-E	310	**" CS PIPE CULVERTS, *****" THICK (54", 0.109")	84 LF		
 0055	0576000000-E	310	**" CS PIPE CULVERTS, *****" THICK (60", 0.138")	36 LF		
0056	0576000000-E	310	**" CS PIPE CULVERTS, *****" THICK (66", 0.138")	68 LF		
 0057	0636000000-E	310	**" CS PIPE ELBOWS, *****" THICK (54", 0.109")	2 EA		
0058	0636000000-E	310	**" CS PIPE ELBOWS, *****" THICK (60", 0.138")	2 EA		
0059	0636000000-E	310	**" CS PIPE ELBOWS, *****" THICK (66", 0.138")	2 EA		
0060	0973100000-E	330	**" WELDED STEEL PIPE, ****" THICK, GRADE B IN SOIL (36", 0.500")	70 LF		
 0061	0973100000-E	330	**" WELDED STEEL PIPE, ****" THICK, GRADE B IN SOIL (42", 0.625")	40 LF		
0062	0973100000-E	330	**" WELDED STEEL PIPE, ****" THICK, GRADE B IN SOIL (66", 1.000")	200 LF		
0063	0973100000-E	330	**" WELDED STEEL PIPE, ****" THICK, GRADE B IN SOIL (72", 1.000")	116 LF		
0064	0973300000-E	330	**" WELDED STEEL PIPE, ****" THICK, GRADE B NOT IN SOIL (36", 0.500")	70 LF		
 0065	0973300000-E	330	**" WELDED STEEL PIPE, ****" THICK, GRADE B NOT IN SOIL (42", 0.625")	40 LF		
 0066	0973300000-E	330	**" WELDED STEEL PIPE, ****" THICK, GRADE B NOT IN SOIL (66", 1.000")	200 LF		

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County:	CHEROKEE					
Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0067	0973300000-E	330	**" WELDED STEEL PIPE, ****" THICK, GRADE B NOT IN SOIL (72", 1.000")	116 LF		
0068	0995000000-E	340	PIPE REMOVAL	6,251 LF		
0069	1011000000-N	500	FINE GRADING	Lump Sum	L.S.	
0070	1077000000-E	SP	#57 STONE	20 TON		
0071	1099500000-E	505	SHALLOW UNDERCUT	1,000 CY		
0072	1099700000-E	505	CLASS IV SUBGRADE STABILIZATION	2,000 TON		
0073	1121000000-E	520	AGGREGATE BASE COURSE	16,920 TON		
0074	1220000000-E	545	INCIDENTAL STONE BASE	8,000 TON		
0075	1231000000-E	560	SHOULDER BORROW	1,400 CY		
0076	1297000000-E	607	MILLING ASPHALT PAVEMENT, ***" DEPTH (3")	13,910 SY		
0077	1308000000-E	607	MILLING ASPHALT PAVEMENT, ***" TO  *******" (0" TO 1-1/2")	1,510 SY		
0078	1330000000-E	607	INCIDENTAL MILLING	3,000 SY		
0079	1491000000-E	610	ASPHALT CONC BASE COURSE, TYPE B25.0C	34,910 TON		
080	1503000000-E	610	ASPHALT CONC INTERMEDIATE COURSE, TYPE I19.0C	22,450 TON		
0081	1523000000-E	610	ASPHALT CONC SURFACE COURSE, TYPE S9.5C	31,850 TON		
0082	1575000000-E	620	ASPHALT BINDER FOR PLANT MIX	4,530 TON		
0083	1693000000-E	654	ASPHALT PLANT MIX, PAVEMENT REPAIR	1,130 TON		

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County.	CHENOREE					
Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0084	2022000000-E	815	SUBDRAIN EXCAVATION	2,739.5 CY		
0085	2026000000-E	815	GEOTEXTILE FOR SUBSURFACE DRAINS	6,820 SY		
0086	2033000000-E	815	SUBDRAIN FINE AGGREGATE	336 CY		
0087	2036000000-E	815	SUBDRAIN COARSE AGGREGATE	1,145.8 CY		
0088	2044000000-E	815	6" PERFORATED SUBDRAIN PIPE	8,820 LF		
0089	2070000000-N	815	SUBDRAIN PIPE OUTLET	17 EA		
0090	2077000000-E	815	6" OUTLET PIPE	102 LF		
0091	2209000000-E	838	ENDWALLS	28 CY		
0092	2220000000-E	838	REINFORCED ENDWALLS	50 CY		
0093	2253000000-E	840	PIPE COLLARS	8.2 CY		
0094	2275000000-E	SP	FLOWABLE FILL	734.1 CY		
0095	2286000000-N	840	MASONRY DRAINAGE STRUCTURES	150 EA		
0096	2297000000-E	840	MASONRY DRAINAGE STRUCTURES	110 CY		
0097	2308000000-E	840	MASONRY DRAINAGE STRUCTURES	222.4 LF		
0098	2364000000-N	840	FRAME WITH TWO GRATES, STD 840.16	5 EA		
0099	2366000000-N	840	FRAME WITH TWO GRATES, STD 840.24	68 EA		
0100	2367000000-N	840	FRAME WITH TWO GRATES, STD 840.29	25 EA		

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Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0101	2374000000-N	840	FRAME WITH GRATE & HOOD, STD 840.03, TYPE ** (E)	1 EA		
0102	2374000000-N	840	FRAME WITH GRATE & HOOD, STD 840.03, TYPE ** (F)	7 EA		
0103	2374000000-N	840	FRAME WITH GRATE & HOOD, STD 840.03, TYPE ** (G)	3 EA		
0104	2396000000-N	840	FRAME WITH COVER, STD 840.54	31 EA		
0105	2451000000-N	852	CONCRETE TRANSITIONAL SECTION FOR DROP INLET	5 EA		
0106	2473000000-N	SP	GENERIC DRAINAGE ITEM BICYCLE SAFE STEEL FRAME AND GRATE	8 EA		
0107	2535000000-E	846	**" X **" CONCRETE CURB (8" X 12")	1,220 LF		
0108	2549000000-E	846	2'-6" CONCRETE CURB & GUTTER	2,550 LF		
0109	2556000000-E	846	SHOULDER BERM GUTTER	5,360 LF		
0110	2577000000-E	846	CONCRETE EXPRESSWAY GUTTER	405 LF		
0111	2580000000-E	846	CONCRETE VALLEY GUTTER	90 LF		
0112	2612000000-E	848	6" CONCRETE DRIVEWAY	300 SY		
0113	2619000000-E	850	4" CONCRETE PAVED DITCH	200 SY		
 0114	2655000000-E	852	5" MONOLITHIC CONCRETE ISLANDS (KEYED IN)	300 SY		
 0116	2800000000-N	858	ADJUSTMENT OF CATCH BASINS	1 EA		
0117	2815000000-N	858	ADJUSTMENT OF DROP INLETS	3 EA		

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Line		0	Decembries	0	Unit Coot	A
Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0118	283000000-N	858	ADJUSTMENT OF MANHOLES	1 EA		
0119	2938000000-N	859	CONVERT EXISTING DROP INLET TO JUNCTION BOX WITH MANHOLE	1 EA		
0120	2995000000-N	SP	GENERIC DRAINAGE ITEM CONVERT JB TO OPEN THROAT CATCH BASIN	1 EA		
0121	3030000000-E	862	STEEL BEAM GUARDRAIL	10,875 LF		
0122	3045000000-E	862	STEEL BEAM GUARDRAIL, SHOP CURVED	525 LF		
0123	3105000000-N	862	STEEL BEAM GUARDRAIL TERMINAL SECTIONS	6 EA		
0124	3150000000-N	862	ADDITIONAL GUARDRAIL POSTS	10 EA		
0125	3195000000-N	862	GUARDRAIL END UNITS, TYPE AT-1	3 EA		
0126	3287000000-N	SP	GUARDRAIL END UNITS, TYPE TL-3	50 EA		
0127	3288000000-N	SP	GUARDRAIL END UNITS, TYPE TL-2	1 EA		
0128	3345000000-E	864	REMOVE & RESET EXISTING GUARDRAIL	875 LF		
0129	3360000000-E	863	REMOVE EXISTING GUARDRAIL	12,611 LF		
0130	3380000000-E	862	TEMPORARY STEEL BEAM GUARDRAIL	6,262.5 LF		
0131	3382000000-E	862	TEMPORARY STEEL BEAM GUARDRAIL (SHOP CURVED)	75 LF		
0132	3387000000-N	SP	TEMPORARY GUARDRAIL ANCHOR UNITS, TYPE ************************************	2 EA		
0133	3389150000-N	SP	TEMPORARY GUARDRAIL END UNITS, TYPE ***** (TL-3)	24 EA		

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County:	CHEROKEE					
Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0134	3436000000-N	862	GENERIC GUARDRAIL ITEM TEMPORARY GUARDRAIL END UNITS, TYPE AT-1	1 EA		
0135	3436000000-N	862	GENERIC GUARDRAIL ITEM TEMPORARY GUARDRAIL END UNITS, TYPE CAT-1	1 EA		
0136	3524000000-E	SP	VINYL COATED CHAIN LINK FENCE, **" FABRIC (60")	1,430 LF		
0137	3539000000-E	866	METAL LINE POSTS FOR **" CHAIN LINK FENCE (60")	120 EA		
0138	3545000000-E	866	METAL TERMINAL POSTS FOR **" CHAIN LINK FENCE (60")	14 EA		
0139	3628000000-E	876	RIP RAP, CLASS I	3,115 TON		
0140	3635000000-E	876	RIP RAP, CLASS II	110 TON		
0141	3649000000-E	876	RIP RAP, CLASS B	9,650 TON		
0142	3656000000-E	876	GEOTEXTILE FOR DRAINAGE	27,295 SY		
0143	4072000000-E	903	SUPPORTS, 3-LB STEEL U-CHANNEL	1,975 LF		
0144	4096000000-N	904	SIGN ERECTION, TYPE D	5 EA		
0145	4102000000-N	904	SIGN ERECTION, TYPE E	111 EA		
0146	4108000000-N	904	SIGN ERECTION, TYPE F	9 EA		
0147	4116100000-N	904	SIGN ERECTION, RELOCATE TYPE **** (GROUND MOUNTED) (D)	1 EA		
0148	4116100000-N	904	SIGN ERECTION, RELOCATE TYPE **** (GROUND MOUNTED) (E)	2 EA		
0149	4155000000-N	907	DISPOSAL OF SIGN SYSTEM, U- CHANNEL	70 EA		

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Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0150	4192000000-N	907	DISPOSAL OF SUPPORT, U-CHANNEL	3 EA		
0151	436000000-N	SP	GENERIC SIGNING ITEM DISPOSAL OF FLASHER SYSTEM	2 EA		
0152	4360000000-N	SP	GENERIC SIGNING ITEM RECTANGULAR RAPID FLASHING BEACON ASSEMBLY	8 EA		
0153	440000000-E	1110	WORK ZONE SIGNS (STATIONARY)	2,767 SF		
0154	4405000000-E	1110	WORK ZONE SIGNS (PORTABLE)	256 SF		
0155	4410000000-E	1110	WORK ZONE SIGNS (BARRICADE MOUNTED)	613 SF		
0156	4415000000-N	1115	FLASHING ARROW BOARD	2 EA		
0157	4420000000-N	1120	PORTABLE CHANGEABLE MESSAGE SIGN	2 EA		
0158	443000000-N	1130	DRUMS	760 EA		
0159	4435000000-N	1135	CONES	50 EA		
0160	4445000000-E	1145	BARRICADES (TYPE III)	792 LF		
0161	4455000000-N	1150	FLAGGER	720 DAY		
0162	4465000000-N	1160	TEMPORARY CRASH CUSHIONS	4 EA		
0163	4470000000-N	1160	REMOVE & RESET TEMPORARY CRASH CUSHION	6 EA		
0164	448000000-N	1165	TMA	2 EA		
0165	4485000000-E	1170	PORTABLE CONCRETE BARRIER	4,350 LF		
0166	4490000000-E	1170	PORTABLE CONCRETE BARRIER (ANCHORED)	250 LF		
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Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0167	4500000000-E	1170	REMOVE AND RESET PORTABLE CONCRETE BARRIER	4,550 LF		
0168	4510000000-N	1190	LAW ENFORCEMENT	160 HR		
0169	4516000000-N	1180	SKINNY DRUM	1,000 EA		
0170	4650000000-N	1251	TEMPORARY RAISED PAVEMENT MARKERS	905 EA		
0171	4685000000-E	1205	THERMOPLASTIC PAVEMENT MARKING LINES (4", 90 MILS)	15,386 LF		
0172	4688000000-E	1205	THERMOPLASTIC PAVEMENT MARKING LINES (6", 90 MILS)	100,172 LF		
0173	4700000000-E	1205	THERMOPLASTIC PAVEMENT MARKING LINES (12", 90 MILS)	1,576 LF		
0174	4709000000-E	1205	THERMOPLASTIC PAVEMENT MARKING LINES (24", 90 MILS)	562 LF		
0175	4725000000-E	1205	THERMOPLASTIC PAVEMENT MARKING SYMBOL (90 MILS)	105 EA		
0176	4810000000-E	1205	PAINT PAVEMENT MARKING LINES (4")	19,066 LF		
0177	4815000000-E	1205	PAINT PAVEMENT MARKING LINES (6")	366,209 LF		
0178	4825000000-E	1205	PAINT PAVEMENT MARKING LINES (12")	1,928 LF		
0179	4835000000-E	1205	PAINT PAVEMENT MARKING LINES (24")	860 LF		
0180	4845000000-N	1205	PAINT PAVEMENT MARKING SYMBOL	72 EA		
0181	4850000000-E	1205	REMOVAL OF PAVEMENT MARKING LINES (4")	170 LF		
0182	4855000000-E	1205	REMOVAL OF PAVEMENT MARKING LINES (6")	95,950 LF		
0183	4860000000-E	1205	REMOVAL OF PAVEMENT MARKING LINES (8")	18 LF		

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County:	CHEROKEE					
Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0184	4865000000-E	1205	REMOVAL OF PAVEMENT MARKING LINES (12")	96 LF		
0185	4870000000-E	1205	REMOVAL OF PAVEMENT MARKING LINES (24")	165 LF		
0186	4875000000-N	1205	REMOVAL OF PAVEMENT MARKING SYMBOLS & CHARACTERS	5 EA		
0187	4905100000-N	SP	NON-CAST IRON SNOWPLOWABLE PAVEMENT MARKER	692 EA		
0188	4935000000-N	1267	FLEXIBLE DELINEATORS (CRYSTAL)	4 EA		
0189	5325600000-E	1510	6" WATER LINE	25 LF		
0190	5326000000-E	1510	10" WATER LINE	1,444 LF		
0191	5326200000-E	1510	12" WATER LINE	105 LF		
0192	5329000000-E	1510	DUCTILE IRON WATER PIPE FITTINGS	4,880 LB		
0193	5540000000-E	1515	6" VALVE	4 EA		
0194	5552000000-E	1515	10" VALVE	3 EA		
0195	5572000000-E	1515	10" TAPPING SLEEVE & VALVE	2 EA		
0196	5648000000-N	1515	RELOCATE WATER METER	3 EA		
0197	5666000000-N	1515	FIRE HYDRANT	3 EA		
0198	5673000000-E	1515	FIRE HYDRANT LEG	39 LF		
0199	5686500000-E	1515	WATER SERVICE LINE	30 LF		
0200	5691300000-E	1520	8" SANITARY GRAVITY SEWER	1,558 LF		

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County.	CHEKOKEE					
Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0201	5709000000-E	1520	**" FORCE MAIN SEWER (3")	603 LF		
0202	5768000000-N	1520	SANITARY SEWER CLEAN-OUT	4 EA		
0203	5768500000-E	1520	SEWER SERVICE LINE	182 LF		
0204	5769000000-E	1520	DUCTILE IRON SEWER PIPE FITTINGS	2,100 LB		
0205	5775000000-E	1525	4' DIA UTILITY MANHOLE	13 EA		
0206	5781000000-E	1525	UTILITY MANHOLE WALL 4' DIA	59 LF		
0207	5815500000-N	1530	REMOVE FIRE HYDRANT	3 EA		
0208	5816000000-N	1530	ABANDON UTILITY MANHOLE	7 EA		
0209	5835700000-E	1540	16" ENCASEMENT PIPE	234 LF		
0210	5835900000-E	1540	20" ENCASEMENT PIPE	79 LF		
0211	600000000-E	1605	TEMPORARY SILT FENCE	123,575 LF		
0212	6006000000-E	1610	STONE FOR EROSION CONTROL, CLASS A	5,900 TON		
0213	6009000000-E	1610	STONE FOR EROSION CONTROL, CLASS B	22,080 TON		
0214	6012000000-E	1610	SEDIMENT CONTROL STONE	11,885 TON		
0215	6015000000-E	1615	TEMPORARY MULCHING	224.5 ACR		
0216	6018000000-E	1620	SEED FOR TEMPORARY SEEDING	8,600 LB		
0217	6021000000-E	1620	FERTILIZER FOR TEMPORARY SEEDING	43.5 TON		

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County:	CHEROKEE					
Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0218	6024000000-E	1622	TEMPORARY SLOPE DRAINS	8,865 LF		
 0219	6029000000-E	SP	SAFETY FENCE	5,000 LF		
0220	6030000000-E	1630	SILT EXCAVATION	73,530 CY		
0221	6036000000-E	1631	MATTING FOR EROSION CONTROL	500,335 SY		
0222	6037000000-E	SP	COIR FIBER MAT	4,155 SY		
0223	6038000000-E	SP	PERMANENT SOIL REINFORCEMENT MAT	17,585 SY		
0224	6042000000-E	1632	1/4" HARDWARE CLOTH	12,230 LF		
 0225	6045000000-E	SP	**" TEMPORARY PIPE (24")	85 LF		
0226	6045000000-E	SP	**" TEMPORARY PIPE (36")	210 LF		
0227	6045000000-E	SP	**" TEMPORARY PIPE (66")	40 LF		
0228	6069000000-E	1638	STILLING BASINS	278 CY		
0229	6070000000-N	1639	SPECIAL STILLING BASINS	10 EA		
0230	6071012000-E	SP	COIR FIBER WATTLE	6,400 LF		
0231	6071013000-E	SP	WATTLE BARRIER	16,772 LF		
0232	6071020000-E	SP	POLYACRYLAMIDE (PAM)	10,945 LB		
0233	6071030000-E	1640	COIR FIBER BAFFLE	10,000 LF		
0234	6071050000-E	SP	**" SKIMMER (1-1/2")	6 EA		

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Item Number	Sec #	Description	Quantity	Unit Cost	Amount
6071050000-E	SP	**" SKIMMER (2")	5 EA		
6071050000-E	SP	**" SKIMMER (2-1/2")	2 EA		
6084000000-E	1660	SEEDING & MULCHING	147 ACR		
6087000000-E	1660	MOWING	171 ACR		
6090000000-E	1661	SEED FOR REPAIR SEEDING	2,250 LB		
6093000000-E	1661	FERTILIZER FOR REPAIR SEEDING	7.25 TON		
6096000000-E	1662	SEED FOR SUPPLEMENTAL SEEDING	3,600 LB		
6108000000-E	1665	FERTILIZER TOPDRESSING	107.75 TON		
6111000000-E	SP	IMPERVIOUS DIKE	1,228 LF		
6114500000-N	1667	SPECIALIZED HAND MOWING	200 MHR		
6114800000-N	SP	MANUAL LITTER REMOVAL	95 MHR		
6114900000-E	SP	LITTER DISPOSAL	7 TON		
6117000000-N	SP	RESPONSE FOR EROSION CONTROL	150 EA		
6117500000-N	SP	CONCRETE WASHOUT STRUCTURE	20 EA		
6120000000-E	SP	CULVERT DIVERSION CHANNEL	410 CY		
6132000000-N	SP	GENERIC EROSION CONTROL ITEM FABRIC INSERT INLET PROTECTION DEVICE	10 EA		
6132000000-N	SP	GENERIC EROSION CONTROL ITEM FABRIC INSERT INLET PROTECTION DEVICE CLEANOUT	30 EA		
	6071050000-E 6071050000-E 6084000000-E 6087000000-E 6093000000-E 6096000000-E 6111000000-E 6114500000-N 6114800000-N 6117500000-N 6117500000-N	# 6071050000-E SP 6071050000-E SP 6084000000-E 1660 6087000000-E 1661 6093000000-E 1661 6096000000-E 1665 6111000000-E SP 6114500000-N SP 6117500000-N SP 6120000000-E SP	6071050000-E SP	6071050000-E SP "SKIMMER" 5 EA 6071050000-E SP "SKIMMER" 2 EA 6084000000-E 1660 SEEDING & MULCHING 1477 6087000000-E 1660 MOWING 1771 6090000000-E 1661 SEED FOR REPAIR SEEDING 2,250 LB 6093000000-E 1661 FERTILIZER FOR REPAIR SEEDING 7,25 TON 6096000000-E 1662 SEED FOR SUPPLEMENTAL SEEDING 1800 6096000000-E 1665 FERTILIZER TOPDRESSING 107,75 TON 6111000000-E SP IMPERVIOUS DIKE 1,228 6114500000-N SP MANUAL LITTER REMOVAL 95 6114900000-E SP LITTER DISPOSAL 7 TON 6117000000-N SP RESPONSE FOR EROSION CONTROL 6117000000-N SP CONCRETE WASHOUT STRUCTURE 20 EA 61120000000-N SP GENERIC EROSION CHANNEL 410 CY 6132000000-N SP GENERIC EROSION CONTROL ITEM FABRIC INSERT INLET PROTECTION EA 6132000000-N SP GENERIC EROSION CONTROL ITEM FABRIC INSERT INLET PROTECTION EA	6071050000-E SP CYNMMER 5 5 EA  6071050000-E SP CYNMMER 2 EA  6084000000-E 1660 SEEDING & MULCHING 147 ACCR  6087000000-E 1660 MOWING 171 ACCR  6087000000-E 1661 SEED FOR REPAIR SEEDING 2,250 LB  6093000000-E 1661 FERTILIZER FOR REPAIR SEEDING 7,25 TON  6096000000-E 1662 SEED FOR SUPPLEMENTAL SEEDING 107.75 TON  6096000000-E 1665 FERTILIZER TOPDRESSING 107.75 TON  6111000000-E SP IMPERVIOUS DIKE 1,228 LF  6114500000-N SP MANUAL LITTER REMOVAL 95 MHR  6114900000-E SP LITTER DISPOSAL 7 TON  611700000-N SP RESPONSE FOR EROSION CONTROL  6117000000-N SP CONCRETE WASHOUT STRUCTURE 20 EA  61120000000-R SP GENERIC EROSION CHANNEL 410 CYC  6132000000-N SP GENERIC EROSION CONTROL ITEM FABRIC INSERT INLET PROTECTION EA  6132000000-N SP GENERIC EROSION CONTROL TEM FABRIC INSERT INLET PROTECTION EA  6132000000-N SP GENERIC EROSION CONTROL TEM FABRIC INSERT INLET PROTECTION EA  6132000000-N SP GENERIC EROSION CONTROL TITEM FABRIC INSERT INLET PROTECTION EA  6132000000-N SP GENERIC EROSION CONTROL TITEM FABRIC INSERT INLET PROTECTION EA  6132000000-N SP GENERIC EROSION CONTROL TITEM FABRIC INSERT INLET PROTECTION EA  6132000000-N SP GENERIC EROSION CONTROL TITEM FABRIC INSERT INLET PROTECTION EA  6132000000-N SP GENERIC EROSION CONTROL TITEM FABRIC INSERT INLET PROTECTION EA  6132000000-N SP GENERIC EROSION CONTROL TITEM FABRIC INSERT INLET PROTECTION EA  6132000000-N SP GENERIC EROSION CONTROL TITEM FABRIC INSERT INLET PROTECTION EA  6132000000-N SP GENERIC EROSION CONTROL TITEM FABRIC INSERT INLET PROTECTION EA  6132000000-N SP GENERIC EROSION CONTROL TITEM FABRIC INSERT INLET PROTECTION EA  6132000000-N SP GENERIC EROSION CONTROL TITEM FABRIC INSERT INLET PROTECTION EA  6132000000-N SP GENERIC EROSION CONTROL TITEM FABRIC INSERT INLET PROTECTION EA  6132000000-N SP GENERIC EROSION CONTROL TITEM FABRIC INSERT INLET PROTECTION EA  6132000000-N SP GENERIC EROSION CONTROL TITEM FABRIC INSERT INLET PROTECTION EA  6132000000-N SP GENERIC EROSION CONTROL TITEM FABRIC INSERT INLET PROTECTION EA  611-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1

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Item Number	Sec	Description			
	#	Description	Quantity	Unit Cost	Amount
7060000000-E	1705	SIGNAL CABLE	3,175 LF		
7120000000-E	1705	VEHICLE SIGNAL HEAD (12", 3 SECTION)	15 EA		
7132000000-E	1705	VEHICLE SIGNAL HEAD (12", 4 SECTION)	3 EA		
7180000000-N	1706	BACKPLATE	18 EA		
7264000000-E	1710	MESSENGER CABLE (3/8")	1,150 LF		
7300000000-E	1715	UNPAVED TRENCHING (********) (1, 2")	750 LF		
7301000000-E	1715	DIRECTIONAL DRILL (********) (1, 2")	250 LF		
7324000000-N	1716	JUNCTION BOX (STANDARD SIZE)	7 EA		
7348000000-N	1716	JUNCTION BOX (OVER-SIZED, HEAVY DUTY)	2 EA		
7360000000-N	1720	WOOD POLE	2 EA		
7372000000-N	1721	GUY ASSEMBLY	6 EA		
7408000000-E	1722	1" RISER WITH WEATHERHEAD	1 EA		
7420000000-E	1722	2" RISER WITH WEATHERHEAD	3 EA		
7444000000-E	1725	INDUCTIVE LOOP SAWCUT	800 LF		
7456000000-E	1726	LEAD-IN CABLE (************) (14-2)	6,300 LF		
7481000000-N	SP	SITE SURVEY	1 EA		
7481240000-N	SP	CAMERA WITHOUT INTERNAL LOOP EMULATOR PROCESSING UNIT	3 EA		
	7120000000-E 7132000000-E 7180000000-E 7180000000-E 7300000000-E 7301000000-E 7324000000-N 7348000000-N 7372000000-N 7408000000-E 742000000-E 7444000000-E 7456000000-E	712000000-E 1705  7132000000-E 1705  7180000000-N 1706  726400000-E 1710  730000000-E 1715  7301000000-E 1715  7324000000-N 1716  7348000000-N 1716  737200000-N 1720  7372000000-N 1721  740800000-E 1722  742000000-E 1725  7444000000-E 1725  7456000000-E 1726	712000000-E 1705 VEHICLE SIGNAL HEAD (12", 3 SECTION)  7132000000-E 1705 VEHICLE SIGNAL HEAD (12", 4 SECTION)  7264000000-N 1706 BACKPLATE  7264000000-E 1710 MESSENGER CABLE (3/8")  7300000000-E 1715 UNPAVED TRENCHING (""""")  7301000000-E 1715 DIRECTIONAL DRILL ("""")  7324000000-N 1716 JUNCTION BOX (STANDARD SIZE)  7348000000-N 1716 JUNCTION BOX (OVER-SIZED, HEAVY DUTY)  7360000000-N 1720 WOOD POLE  7372000000-N 1721 GUY ASSEMBLY  7408000000-E 1722 1" RISER WITH WEATHERHEAD  742000000-E 1725 INDUCTIVE LOOP SAWCUT  7456000000-E 1726 LEAD-IN CABLE (""""")  7481000000-N SP SITE SURVEY	Teach   Teac	Transmission

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County:	CHEROKEE

Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
0269	7481260000-N	SP	EXTERNAL LOOP EMULATOR PROCESSING UNIT	1 EA		
0270	7576000000-N	SP	METAL STRAIN SIGNAL POLE	4 EA		
0271	7613000000-N	SP	SOIL TEST	4 EA		
0272	7614100000-E	SP	DRILLED PIER FOUNDATION	32 CY		
0273	7636000000-N	1745	SIGN FOR SIGNALS	2 EA		
 0274	7684000000-N	1750	SIGNAL CABINET FOUNDATION	1 EA		
 0275	7696000000-N	1751	CONTROLLERS WITH CABINET (***********************************) (2070LX BASE MTD)	1 EA		
0276	7744000000-N	1751	DETECTOR CARD (TYPE 170)	7 EA		
 0277	7901000000-N	1753	CABINET BASE EXTENDER	1 EA		
0278	7980000000-N	SP	GENERIC SIGNAL ITEM LUMINAIRE ARM FOR TEMPORARY VIDEO SYSTEM	1 EA		
			CULVERT ITEMS			
0279	8126000000-N	414	CULVERT EXCAVATION, STA ****** (127+65.00 -L-)	Lump Sum	L.S.	
0280	8126000000-N	414	CULVERT EXCAVATION, STA ***** (71+92.10 -L-)	Lump Sum	L.S.	
0281	8133000000-E	414	FOUNDATION CONDITIONING MATERIAL, BOX CULVERT	753 TON		
0282	8196000000-E	420	CLASS A CONCRETE (CULVERT)	356.5 CY		
0283	8245000000-E	425	REINFORCING STEEL (CULVERT)	63,271 LB		

Dec 13, 2023 2:56 PM ITEMIZED PROPOSAL FOR CONTRACT NO. C204887

County: CHEROKEE

Line #	Item Number	Sec #	Description	Quantity	Unit Cost	Amount
			WALL ITEMS			
0284	8802010000-E	SP	SOIL NAIL RETAINING WALLS	3,130 SF		
0285	8802015100-N		SOIL NAIL VERIFICATION TESTS	2 EA		
0286	8802015110-N		SOIL NAIL PROOF TESTS	6 EA		

1456/Dec13/Q3203774/D1058583865210/E285

Total Amount Of Bid For Entire Project :

# Vendor 1 of 2: WRIGHT BROTHERS CONSTRUCTION COMPANY INC (3762)

Call Order 008 (Proposal: C204887)

Bid Checksum: AC3522393D

Time Total: \$0.00

**Bid Total:** \$67,160,518.63

**Items Total:** \$67,160,518.63

# **Bid Information**

**Proposal County:** CHEROKEE **Vendor Address:** P.O. Box 437

CHARLESTON, TN, 37310

Signature Check: Stephen Daryl Wright

Time Bid Received: December 19, 2023 01:55 PM

**Amendment Count:** 1

**Bidding Errors:** 

None.

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DBE GOAL SET: 5% DBE GOAL OBT: 5.09%

# Vendor 1 of 2: WRIGHT BROTHERS CONSTRUCTION COMPANY INC (3762)

Call Order 008 (Proposal: C204887)

# **Bid Bond Information**

Projects: Bond Maximum:
Counties: State of Incorporation:

**Bond ID:** SNC12152793 **Agency Execution Date:** 12/15/2023 07

Paid by Check: No Surety Name: Surety2000

**Bond Percent:** 5% **Bond Agency Name:** Liberty Mutual Insurance

Company

NCDOT Page 70 of 81

Contract ID: C204887

Call: 008

Letting: L231219 North Carolina Department of Transportation 12/19/2023 02:00:00 PM

#### DBE Load Information

Letting ID: L231219 **DBE GOAL SET: 5%** Letting Date: 12/19/2023 DBE GOAL OBT: 5.09%

Call Order: 008

Contract ID: C204887

Project: 474270147427014742701

Bid Total: \$67,160,518.63

DBE Goal: 5.00% (\$3,358,025.93)

Vendor ID: 3762

Vendor Name: Wright Brothers Construction Company, Inc.

DBE Entered: 5.09% (\$3,418,442.00)

Vendor ID	DBE Name	Is Supplier?	City/	State	Goods/Service	Amount
10544	BATEMAN TRUCKING COMPANY	False	P.O. ANDRE		SubContractor Committed	•

Errors: No Check: AC3522393D Amendment Count: 1

Page 2

North Carolina Department of Transportation 3762 - Wright Brothers Construction Company,

Contract ID: C204887

Call: 008

Letting: L231219 12/19/2023 02:00:00 PM

BondID: SNC12152793

Surety Registry Agency: Surety2000

Verified?: 1

Surety Agency: Liberty Mutual Insurance Company

Bond Execution Date: 12/15/2023 07:47:43 PM

Errors: No Check: AC3522393D Page 6 Amendment Count: 1

Line Number	Item Number	Quantity	Unit	Unit Price	Extension Price
Section 0001 ROADWAY ITEMS					
0001	0000100000-N MOBILIZATION	1.000	LS	\$3,200,000.0000	\$3,200,000.00
0002	0000400000-N CONSTRUCTION	1.000 SURVEYING	LS	\$450,000.0000	\$450,000.00
0003	0000700000-N FIELD OFFICE	1.000	LS	\$275,000.0000	\$275,000.00
0004	0001000000-E CLEARING & G	1 RUBBING ACRE	LS (S)	\$4,216,200.0000	\$4,216,200.00
0005	0008000000-E SUPPLEMENTAR	3.000 Y CLEARING & GR		\$28,100.0000	\$84,300.00
0006	0015000000-N SEALING ABAN		EA	\$3,380.0000	\$20,280.00
0007	0022000000-E UNCLASSIFIED	1197000.000 EXCAVATION	СҮ	\$10.7000	\$12,807,900.00
0008	0036000000-E UNDERCUT EXC	11530.000 AVATION	СҮ	\$18.4000	\$212,152.00
0009	0134000000-E DRAINAGE DIT	15980.000 CH EXCAVATION	СУ	\$22.2000	\$354,756.00
0010	0141000000-E BERM DITCH C	2600.000 ONSTRUCTION	LF	\$7.0000	\$18,200.00
0011		72520.000 XISTING ASPHALT		\$7.3500	\$533,022.00
0012		11000.000 EXISTING ASPHAL		\$2.3000	\$25,300.00
0013	0194000000-E SELECT GRANU	4000.000 LAR MATERIAL, CI		\$97.0000	\$388,000.00
0014	0196000000-E GEOTEXTILE F	10112.000 OR SOIL STABILI		\$1.6000	\$16,179.20
0015	0199000000-E TEMPORARY SH	30394.000 ORING	SF	\$62.7500	\$1,907,223.50
0016	0223000000-E ROCK PLATING		SY	\$78.2500	\$9,781.25
0017	0225000000-E REINFORCED S		SY	\$228.0000	\$342,000.00
0018	0234000000-E GENERIC GRAD	250.000 ING ITEM COMPOS		\$69.0000	\$17,250.00
0019	0241000000-E GENERIC GRAD	1500.000 ING ITEM GEOCEL		\$59.7500	\$89,625.00
0020	0255000000-E GENERIC GRAD	50.000 ING ITEM HAULING		\$159.0000 L OF PETROLEUM CONTAMINA	\$7,950.00 ATED SOIL
0021	0318000000-E FOUNDATION C	2170.000 ONDITIONING MATE		\$52.0000 STRUCTURES	\$112,840.00
0022	0320000000-E FOUNDATION C	6800.000 ONDITIONING GEO		\$2.4000	\$16,320.00
0023	0335200000-E 15" DRAINAGE	4068.000	LF	\$99.0000	\$402,732.00

12/19/2023 02:	00:00 PM 3/62 - Wright Brothers Construction Compan	У,	Call: 008
0024	0335300000-E 1960.000 LF 18" DRAINAGE PIPE	\$113.0000	\$221,480.00
0025	0335400000-E 1628.000 LF 24" DRAINAGE PIPE	\$133.0000	\$216,524.00
0026	0335500000-E 456.000 LF 30" DRAINAGE PIPE	\$164.0000	\$74,784.00
0027	0335600000-E 228.000 LF 36" DRAINAGE PIPE	\$194.0000	\$44,232.00
0028	0335800000-E 88.000 LF 48" DRAINAGE PIPE	\$302.0000	\$26,576.00
0029	0335850000-E 24.000 EA **" DRAINAGE PIPE ELBOWS (15")	\$1,170.0000	\$28,080.00
0030	0335850000-E 14.000 EA **" DRAINAGE PIPE ELBOWS (18")	\$1,220.0000	\$17,080.00
0031	0335850000-E 22.000 EA **" DRAINAGE PIPE ELBOWS (24")	\$1,510.0000	\$33,220.00
0032	0335850000-E 8.000 EA **" DRAINAGE PIPE ELBOWS (30")	\$2,070.0000	\$16,560.00
0033	0335850000-E 4.000 EA **" DRAINAGE PIPE ELBOWS (36")	\$2,320.0000	\$9,280.00
0034	0366000000-E 2908.000 LF 15" RC PIPE CULVERTS, CLASS III	\$92.2500	\$268,263.00
0035	0372000000-E 2220.000 LF 18" RC PIPE CULVERTS, CLASS III	\$100.0000	\$222,000.00
0036	0378000000-E 1872.000 LF 24" RC PIPE CULVERTS, CLASS III	\$123.0000	\$230,256.00
0037	0384000000-E 624.000 LF 30" RC PIPE CULVERTS, CLASS III	\$170.0000	\$106,080.00
0038	039000000-E 276.000 LF 36" RC PIPE CULVERTS, CLASS III	\$209.0000	\$57,684.00
0039	0396000000-E 532.000 LF 42" RC PIPE CULVERTS, CLASS III	\$249.0000	\$132,468.00
0040	0402000000-E 776.000 LF 48" RC PIPE CULVERTS, CLASS III	\$373.0000	\$289,448.00
0041	0408000000-E 184.000 LF 54" RC PIPE CULVERTS, CLASS III	\$540.0000	\$99,360.00
0042	0414000000-E 272.000 LF 60" RC PIPE CULVERTS, CLASS III	\$620.0000	\$168,640.00
0043	0420000000-E 504.000 LF 66" RC PIPE CULVERTS, CLASS III	\$850.0000	\$428,400.00
0044	0426000000-E 208.000 LF 72" RC PIPE CULVERTS, CLASS III	\$940.0000	\$195,520.00
0045	0448000000-E 60.000 LF ****" RC PIPE CULVERTS, CLASS IV (48")	\$421.0000	\$25,260.00
0046	0448000000-E 56.000 LF ****" RC PIPE CULVERTS, CLASS IV (66")	\$960.0000	\$53,760.00
0047	0448200000-E 408.000 LF 15" RC PIPE CULVERTS, CLASS IV	\$96.0000	\$39,168.00
0048	0448300000-E 108.000 LF	\$106.0000	\$11,448.00

	18" RC PIPE CULVERTS, CLASS IV	
0049	0448500000-E 64.000 LF \$189.0000 30" RC PIPE CULVERTS, CLASS IV	\$12,096.00
0050	0448600000-E 700.000 LF \$234.0000 36" RC PIPE CULVERTS, CLASS IV	\$163,800.00
0051	0453000000-E 16.000 EA \$1,290.0000 **" PIPE END SECTION (15")	\$20,640.00
0052	0453000000-E 2.000 EA \$1,580.0000 **" PIPE END SECTION (18")	\$3,160.00
0053	045300000-E 3.000 EA \$1,780.0000 **" PIPE END SECTION (24")	\$5,340.00
0054	0576000000-E 84.000 LF \$377.0000 **" CS PIPE CULVERTS, *****" THICK (54", 0.109")	\$31,668.00
0055	0576000000-E 36.000 LF \$435.0000 **" CS PIPE CULVERTS, *****" THICK (60", 0.138")	\$15,660.00
0056	0576000000-E 68.000 LF \$496.0000 **" CS PIPE CULVERTS, *****" THICK (66", 0.138")	\$33,728.00
0057	0636000000-E 2.000 EA \$5,770.0000 **" CS PIPE ELBOWS, *****" THICK (54", 0.109")	\$11,540.00
0058	0636000000-E 2.000 EA \$6,880.0000 **" CS PIPE ELBOWS, *****" THICK (60", 0.138")	\$13,760.00
0059	0636000000-E 2.000 EA \$7,650.0000 **" CS PIPE ELBOWS, *****" THICK (66", 0.138")	\$15,300.00
0060	0973100000-E 70.000 LF \$840.0000 **" WELDED STEEL PIPE, ****" THICK, GRADE B IN SOIL (36", 0.500")	\$58,800.00
0061	0973100000-E 40.000 LF \$1,450.0000 **" WELDED STEEL PIPE, ****" THICK, GRADE B IN SOIL (42", 0.625")	\$58,000.00
0062	0973100000-E 200.000 LF \$2,010.0000 **" WELDED STEEL PIPE, ****" THICK, GRADE B IN SOIL (66", 1.000")	\$402,000.00
0063	0973100000-E 116.000 LF \$2,520.0000 **" WELDED STEEL PIPE, ****" THICK, GRADE B IN SOIL (72", 1.000")	\$292,320.00
0064	0973300000-E 70.000 LF \$3,300.0000 **" WELDED STEEL PIPE, ****" THICK, GRADE B NOT IN SOIL (36", 0.500"	\$231,000.00
0065	0973300000-E 40.000 LF \$3,540.0000 **" WELDED STEEL PIPE, ****" THICK, GRADE B NOT IN SOIL (42", 0.625"	•
0066	0973300000-E 200.000 LF \$3,550.0000 **" WELDED STEEL PIPE, ****" THICK, GRADE B NOT IN SOIL (66", 1.000"	•
0067	0973300000-E 116.000 LF \$3,560.0000 **" WELDED STEEL PIPE, ****" THICK, GRADE B NOT IN SOIL (72", 1.000"	
0068	0995000000-E 6251.000 LF \$25.7000 PIPE REMOVAL	\$160,650.70
0069	1011000000-N 1.000 LS \$825,000.0000 FINE GRADING	\$825,000.00
0070	1077000000-E 20.000 TON \$120.0000 #57 STONE	\$2,400.00
0071	1099500000-E 1000.000 CY \$25.9000 SHALLOW UNDERCUT	\$25,900.00
0072	1099700000-E 2000.000 TON \$36.5000 CLASS IV SUBGRADE STABILIZATION	\$73,000.00

12/19/2023 02.	00.00 FM 5702	WIIGHT BIOCHEIS CONSC	ruction company,	Cail. 000
0073	1121000000-E AGGREGATE BASI		\$45.5000	\$769,860.00
0074	1220000000-E INCIDENTAL STO		\$43.2500	\$346,000.00
0075	1231000000-E SHOULDER BORRO		\$27.0500	\$37,870.00
0076	1297000000-E MILLING ASPHAI	13910.000 SY LT PAVEMENT, ***" DE	\$7.0500 PTH (3")	\$98,065.50
0077	1308000000-E MILLING ASPHA		\$9.2500 *****" (0" TO 1-1/2")	\$13,967.50
0078	133000000-E INCIDENTAL MII	3000.000 SY LLING	\$22.5000	\$67,500.00
0079	1491000000-E ASPHALT CONC I	34910.000 TON BASE COURSE, TYPE B2		\$4,433,570.00
0800	1503000000-E ASPHALT CONC :	22450.000 TON INTERMEDIATE COURSE,	\$129.0000 TYPE I19.0C	\$2,896,050.00
0081		31850.000 TON SURFACE COURSE, TYPE	\$131.0000 \$9.5C	\$4,172,350.00
0082	1575000000-E ASPHALT BINDER	4530.000 TON R FOR PLANT MIX	\$890.0000	\$4,031,700.00
0083	1693000000-E ASPHALT PLANT	1130.000 TON MIX, PAVEMENT REPAI		\$339,000.00
0084	2022000000-E SUBDRAIN EXCAV		\$11.4500	\$31,367.28
0085	2026000000-E GEOTEXTILE FOR	6820.000 SY R SUBSURFACE DRAINS	\$7.2500	\$49,445.00
0086	2033000000-E SUBDRAIN FINE	336.000 CY AGGREGATE	\$104.0000	\$34,944.00
0087	2036000000-E SUBDRAIN COARS		\$106.0000	\$121,454.80
0088	2044000000-E 6" PERFORATED	8820.000 LF SUBDRAIN PIPE	\$11.2000	\$98,784.00
0089	2070000000-N SUBDRAIN PIPE	17.000 EA OUTLET	\$650.0000	\$11,050.00
0090	2077000000-E 6" OUTLET PIP	102.000 LF E	\$146.0000	\$14,892.00
0091	2209000000-E ENDWALLS	28.000 CY	\$1,980.0000	\$55,440.00
0092	2220000000-E REINFORCED ENI	50.000 CY	\$2,780.0000	\$139,000.00
0093	2253000000-E PIPE COLLARS	8.200 CY	\$2,290.0000	\$18,778.00
0094	2275000000-E FLOWABLE FILL	734.100 CY	\$500.0000	\$367,050.00
0095	2286000000-N MASONRY DRAINA	150.000 EA AGE STRUCTURES	\$3,610.0000	\$541,500.00
0096	2297000000-E MASONRY DRAIN	110.000 CY AGE STRUCTURES	\$1,370.0000	\$150,700.00
0097	2308000000-E	222.400 LF	\$530.0000	\$117,872.00

MASONRY	DRATNAGE	STRUCTURES

	MASONRY DRAINAGE STRUCTURES	
0098	2364000000-N 5.000 EA \$1,450.0000 FRAME WITH TWO GRATES, STD 840.16	\$7,250.00
0099	2366000000-N 68.000 EA \$1,390.0000 FRAME WITH TWO GRATES, STD 840.24	\$94,520.00
0100	2367000000-N 25.000 EA \$1,370.0000 FRAME WITH TWO GRATES, STD 840.29	\$34,250.00
0101	237400000-N 1.000 EA \$1,450.0000 FRAME WITH GRATE & HOOD, STD 840.03, TYPE ** (E)	\$1,450.00
0102	237400000-N 7.000 EA \$1,490.0000 FRAME WITH GRATE & HOOD, STD 840.03, TYPE ** (F)	\$10,430.00
0103	2374000000-N 3.000 EA \$1,490.0000 FRAME WITH GRATE & HOOD, STD 840.03, TYPE ** (G)	\$4,470.00
0104	239600000-N 31.000 EA \$1,140.0000 FRAME WITH COVER, STD 840.54	\$35,340.00
0105	2451000000-N 5.000 EA \$2,160.0000 CONCRETE TRANSITIONAL SECTION FOR DROP INLET	\$10,800.00
0106	247300000-N 8.000 EA \$4,250.0000 GENERIC DRAINAGE ITEM BICYCLE SAFE STEEL FRAME AND GRATE	\$34,000.00
0107	2535000000-E 1220.000 LF \$45.5000 **" X **" CONCRETE CURB (8" X 12")	\$55,510.00
0108	2549000000-E 2550.000 LF \$52.2500 2'-6" CONCRETE CURB & GUTTER	\$133,237.50
0109	2556000000-E 5360.000 LF \$63.7500 SHOULDER BERM GUTTER	\$341,700.00
0110	2577000000-E 405.000 LF \$93.2500 CONCRETE EXPRESSWAY GUTTER	\$37,766.25
0111	2580000000-E 90.000 LF \$114.0000 CONCRETE VALLEY GUTTER	\$10,260.00
0112	2612000000-E 300.000 SY \$131.0000 6" CONCRETE DRIVEWAY	\$39,300.00
0113	2619000000-E 200.000 SY \$125.0000 4" CONCRETE PAVED DITCH	\$25,000.00
0114	2655000000-E 300.000 SY \$142.0000 5" MONOLITHIC CONCRETE ISLANDS (KEYED IN)	\$42,600.00
0116	280000000-N 1.000 EA \$1,560.0000 ADJUSTMENT OF CATCH BASINS	\$1,560.00
0117	2815000000-N 3.000 EA \$1,560.0000 ADJUSTMENT OF DROP INLETS	\$4,680.00
0118	283000000-N 1.000 EA \$1,580.0000 ADJUSTMENT OF MANHOLES	\$1,580.00
0119	2938000000-N 1.000 EA \$2,310.0000 CONVERT EXISTING DROP INLET TO JUNCTION BOX WITH MANHOLE	\$2,310.00
0120	2995000000-N 1.000 EA \$2,780.0000 GENERIC DRAINAGE ITEM CONVERT JB TO OPEN THROAT CATCH BASIN	\$2,780.00
0121	303000000-E 10875.000 LF \$26.1500 STEEL BEAM GUARDRAIL	\$284,381.25
0122	3045000000-E 525.000 LF \$27.3000 STEEL BEAM GUARDRAIL, SHOP CURVED	\$14,332.50

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ADDITIONAL CUARDRAIL POSTS  319500000-N 3.000 EA 51,080.000 \$3,240.00 CUARDRAIL END UNITS, TYPE X-1  0126 328700000-N 50.000 EA \$3,640.0000 \$182,000.00 CUARDRAIL END UNITS, TYPE TL-1  0127 3288000000-N 1.000 EA \$3,580.0000 \$3,580.000 CUARDRAIL END UNITS, TYPE TL-2  0128 3345000000-R 855.000 IF \$7.9500 \$6,956.20  REMOVE & RESST EXISTING CUARDRAIL  0129 336000000-E \$626.500 IF \$6.8000 \$42,585.00  TEMPORARY STEL BEAM GUARDRAIL  0130 338000000-E \$626.500 IF \$6.8000 \$42,585.00  TEMPORARY STEL BEAM GUARDRAIL  0131 3387000000-E \$7.500.0 IF \$9.1000 \$682.50  TEMPORARY STEL BEAM GUARDRAIL (SHOP CURVED)  0132 3387000000-E \$7.000 IA \$970.0000 \$4,940.00  TEMPORARY STEL BEAM GUARDRAIL (SHOP CURVED)  0133 338750000-N 2.000 EA \$970.0000 \$4,940.00  TEMPORARY GUARDRAIL END UNITS, TYPE ***** (E-77)  0133 338750000-N 2.000 EA \$970.0000 \$4,900.00  TEMPORARY GUARDRAIL END UNITS, TYPE ***** (E-77)  0134 345600000-N 1.000 EA \$341.000  SMALL CUARDRAIL IFEM SEMPORARY CUARDRAIL END UNITS, TYPE ***** (TL-3)  0136 352400000-N 1.000 EA \$341.000 \$341.00  CEMERIC CUARDRAIL IFEM SEMPORARY CUARDRAIL END UNITS, TYPE AT-1  0136 352400000-N 1.000 EA \$341.000 \$341.00  CEMERIC CUARDRAIL IFEM SEMPORARY CUARDRAIL END UNITS, TYPE AT-1  0137 353900000-R 1.000 EA \$341.000 \$341.00  CEMERIC CUARDRAIL IFEM SEMPORARY CUARDRAIL END UNITS, TYPE AT-1  0138 35400000-R 1.000 EA \$341.000 \$341.00  0139 35400000-R 1.000 EA \$341.000 \$341.00  0130 355000000-R 1.000 EA \$340.000 \$341.00  0131 355000000-R 315.000 EA \$345.0000 \$341.00  0132 355000000-R 315.000 EA \$350.0000 \$340.000  0134 360000000-R 315.000 EA \$350.0000 \$340.000  0136 35000000-R 315.000 EA \$350.0000 \$340.000  0140 365000000-R 315.000 EA \$350.0000 \$340.000  0141 366900000-R 315.000 EA \$350.0000 \$340.000  0142 365000000-R 315.000 EA \$350.0000 \$340.000  0144 366900000-R 315.000 EA \$350.0000 \$340.000  0145 410200000-R 3750.000 EA \$350.0000 \$300.0000  0146 410800000-N 5.000 EA \$322.0000 \$3,180.0000  0146 410800000-N 5.000 EA \$322.0000 \$3,180.0000  0146 410800000-N 15.000 EA \$322.0000 \$3,00000  0146 410800000-N	12/19/2025 02.	00.00 FM 5702 WIIGHT	BIOCHEIS CONSCIUCCIO	ii company,	Cail. 000
ABDITIONAL GUARDRAIL POSTS   310500000-N   3.000 EA   \$1,080.0000   \$3,240.00	0123				\$511.50
SUARDBAIL FIND UNITS, TYPE MT-1	0124			\$62.5000	\$625.00
CUARDRAIL END UNITS, TYPE TL-2	0125			\$1,080.0000	\$3,240.00
GUARDRAIL END UNITS, TYPE TL-2	0126			\$3,640.0000	\$182,000.00
REMOVE & RESET EXISTING GUARDRAIL  0129	0127			\$3,580.0000	\$3,580.00
REMOVE EXISTING CUARDRAIL  0130 338000000-E 6262.500 LF 96.8000 \$42,585.00	0128			\$7.9500	\$6,956.25
TEMPORARY STEEL BEAM GUARDRAIL   \$9,1000   \$682.50	0129			\$1.1500	\$14,502.65
TEMPORARY STEEL BEAM GUARDRAIL (SHOP CURVED)  3387000000-N 2.000 EA 5970.0000 \$1,940.00  TEMPORARY GUARDRAIL ANCHOR UNITS, TYPE ************************************	0130			\$6.8000	\$42,585.00
TEMPORARY GUARDRAIL ANCHOR UNITS, TYPE ************************************	0131				\$682.50
TEMPORARY GUARDRAIL END UNITS, TYPE ***** (TL-3)  343600000-N 1.000 EA \$341.000 \$341.00  GENERIC GUARDRAIL ITEM TEMPORARY GUARDRAIL END UNITS, TYPE AT-1  0135 343600000-N 1.000 EA \$341.000 \$341.00  GENERIC GUARDRAIL ITEM TEMPORARY GUARDRAIL END UNITS, TYPE CAT-1  0136 352400000-E 1430.000 LF \$38.7500 \$55,412.50  VINYL COATED CHAIN LINK FENCE, **" FABRIC (60")  0137 353900000-E 120.000 EA \$136.0000 \$16,320.00  METAL LINE POSTS FOR **" CHAIN LINK FENCE (60")  0138 354500000-E 14.000 EA \$227.0000 \$3,178.00  METAL TERMINAL POSTS FOR **" CHAIN LINK FENCE (60")  0139 362800000-E 3115.000 TON \$75.2500 \$234,403.75  RIP RAP, CLASS II  0140 3635000000-E 110.000 TON \$90.2500 \$9,927.50  RIP RAP, CLASS II  0141 364900000-E 9650.000 TON \$116.0000 \$1,119,400.00  RIP RAP, CLASS B  0142 365000000-E 27295.000 SY \$3.8500 \$105,085.75  GEOTEXTILE FOR DRAINAGE  0143 407200000-E 1975.000 LF \$10.4500 \$20,638.75  SUPPORTS, 3-LB STEEL U-CHANNEL  0144 409600000-N 5.000 EA \$232.0000 \$1,160.00  SIGN ERECTION, TYPE D  0145 410800000-N 111.000 EA \$87.0000 \$9,657.00  SIGN ERECTION, TYPE D	0132	TEMPORARY GUARDRAIL	ANCHOR UNITS, TYPE	C ****** (B-77)	\$1,940.00
GENERIC GUARDRAIL ITEM TEMPORARY GUARDRAIL END UNITS, TYPE AT-1  0135 343600000-N 1.000 EA \$341.000 \$341.00 GENERIC GUARDRAIL ITEM TEMPORARY GUARDRAIL END UNITS, TYPE CAT-1  0136 352400000-E 1430.000 LF \$38.7500 \$55,412.50 VINYL COATED CHAIN LINK FENCE, **" FABRIC (60")  0137 353900000-E 120.000 EA \$136.0000 \$16,320.00 METAL LINE POSTS FOR **" CHAIN LINK FENCE (60")  0138 354500000-E 14.000 EA \$227.0000 \$3,178.00 METAL TERMINAL POSTS FOR **" CHAIN LINK FENCE (60")  0139 362800000-E 14.000 EA \$227.0000 \$3,178.00 METAL TERMINAL POSTS FOR **" CHAIN LINK FENCE (60")  0140 363500000-E 110.000 TON \$75.2500 \$234,403.75 RIP RAP, CLASS I  0141 364900000-E 10.000 TON \$90.2500 \$9,927.50 RIP RAP, CLASS B  0142 365000000-E 27295.000 TON \$116.0000 \$1,119,400.00 RIP RAP, CLASS B  0143 407200000-E 27295.000 SY \$3.8500 \$105,085.75 GEOTEXTILE FOR DRAINAGE  0144 409600000-N 5.000 EA \$232.0000 \$1,160.00 SIGN ERECTION, TYPE D  0145 410200000-N 111.000 EA \$87.0000 \$9,657.00 SIGN ERECTION, TYPE E	0133	3389150000-N TEMPORARY GUARDRAIL	24.000 EA END UNITS, TYPE **	\$2,050.0000 **** (TL-3)	\$49,200.00
GENERIC GUARDRAIL ITEM TEMPORARY GUARDRAIL END UNITS, TYPE CAT-1  0136	0134			·	\$341.00
VINYL COATED CHAIN LINK FENCE, **" FABRIC (60")  0137	0135				
METAL LINE POSTS FOR **" CHAIN LINK FENCE (60")  0138	0136				\$55,412.50
METAL TERMINAL POSTS FOR **" CHAIN LINK FENCE (60")  3628000000-E 3115.000 TON \$75.2500 \$234,403.75 RIP RAP, CLASS I  0140 363500000-E 110.000 TON \$90.2500 \$9,927.50 RIP RAP, CLASS II  0141 364900000-E 9650.000 TON \$116.0000 \$1,119,400.00 RIP RAP, CLASS B  0142 365600000-E 27295.000 SY \$3.8500 \$105,085.75 GEOTEXTILE FOR DRAINAGE  0143 407200000-E 1975.000 LF \$10.4500 \$20,638.75 SUPPORTS, 3-LB STEEL U-CHANNEL  0144 409600000-N 5.000 EA \$232.0000 \$1,160.00 SIGN ERECTION, TYPE D  0145 410200000-N 111.000 EA \$87.0000 \$9,657.00 SIGN ERECTION, TYPE E	0137				\$16,320.00
RIP RAP, CLASS I  0140 3635000000-E 110.000 TON \$90.2500 \$9,927.50 RIP RAP, CLASS II  0141 3649000000-E 9650.000 TON \$116.0000 \$1,119,400.00 RIP RAP, CLASS B  0142 3656000000-E 27295.000 SY \$3.8500 \$105,085.75 GEOTEXTILE FOR DRAINAGE  0143 4072000000-E 1975.000 LF \$10.4500 \$20,638.75 SUPPORTS, 3-LB STEEL U-CHANNEL  0144 4096000000-N 5.000 EA \$232.0000 \$1,160.00 SIGN ERECTION, TYPE D  0145 4102000000-N 111.000 EA \$87.0000 \$9,657.00 SIGN ERECTION, TYPE E	0138			·	\$3,178.00
RIP RAP, CLASS II  0141 364900000-E 9650.000 TON \$116.0000 \$1,119,400.00 RIP RAP, CLASS B  0142 365600000-E 27295.000 SY \$3.8500 \$105,085.75 GEOTEXTILE FOR DRAINAGE  0143 4072000000-E 1975.000 LF \$10.4500 \$20,638.75 SUPPORTS, 3-LB STEEL U-CHANNEL  0144 4096000000-N 5.000 EA \$232.0000 \$1,160.00 SIGN ERECTION, TYPE D  0145 410200000-N 111.000 EA \$87.0000 \$9,657.00 SIGN ERECTION, TYPE E  0146 410800000-N 9.000 EA \$232.0000 \$2,088.00 SIGN ERECTION, TYPE F	0139		115.000 TON	\$75.2500	\$234,403.75
RIP RAP, CLASS B  0142 365600000-E 27295.000 SY \$3.8500 \$105,085.75	0140		110.000 TON	\$90.2500	\$9,927.50
GEOTEXTILE FOR DRAINAGE  0143	0141		650.000 TON	\$116.0000	\$1,119,400.00
SUPPORTS, 3-LB STEEL U-CHANNEL  0144	0142			\$3.8500	\$105,085.75
0144 4096000000-N 5.000 EA \$232.0000 \$1,160.00 SIGN ERECTION, TYPE D  0145 4102000000-N 111.000 EA \$87.0000 \$9,657.00 SIGN ERECTION, TYPE E  0146 4108000000-N 9.000 EA \$232.0000 \$2,088.00 SIGN ERECTION, TYPE F	0143			\$10.4500	\$20,638.75
0145 4102000000-N 111.000 EA \$87.0000 \$9,657.00 SIGN ERECTION, TYPE E  0146 4108000000-N 9.000 EA \$232.0000 \$2,088.00 SIGN ERECTION, TYPE F	0144	4096000000-N	5.000 EA	\$232.0000	\$1,160.00
SIGN ERECTION, TYPE F	0145	4102000000-N	111.000 EA	\$87.0000	\$9,657.00
	0146	4108000000-N	9.000 EA	\$232.0000	\$2,088.00
	0147			\$406.0000	\$406.00

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(GROUND MOUNTED) (D)	SIGN ERECTION, RELOCATE TYPE ****	
\$174.0000 (GROUND MOUNTED) (E)	4116100000-N 2.000 EA SIGN ERECTION, RELOCATE TYPE ****	0148
\$2.3000	4155000000-N 70.000 EA DISPOSAL OF SIGN SYSTEM, U-CHANNE	0149
\$2.3000	4192000000-N 3.000 EA DISPOSAL OF SUPPORT, U-CHANNEL	0150
\$3,390.0000 LASHER SYSTEM	4360000000-N 2.000 EA GENERIC SIGNING ITEM DISPOSAL OF N	0151
\$14,100.0000 APID FLASHING BEACON ASSEMBLY	4360000000-N 8.000 EA GENERIC SIGNING ITEM RECTANGULAR F	0152
\$9.8000	4400000000-E 2767.000 SF WORK ZONE SIGNS (STATIONARY)	0153
\$30.0000	4405000000-E 256.000 SF WORK ZONE SIGNS (PORTABLE)	0154
\$11.4500	4410000000-E 613.000 SF WORK ZONE SIGNS (BARRICADE MOUNTED	0155
\$6,430.0000	4415000000-N 2.000 EA FLASHING ARROW BOARD	0156
\$23,600.0000	4420000000-N 2.000 EA PORTABLE CHANGEABLE MESSAGE SIGN	0157
\$65.5000	443000000-N 760.000 EA DRUMS	0158
\$31.7500	4435000000-N 50.000 EA CONES	0159
\$32.5000	4445000000-E 792.000 LF BARRICADES (TYPE III)	0160
\$457.0000	4455000000-N 720.000 DAY FLAGGER	0161
\$10,800.0000	4465000000-N 4.000 EA TEMPORARY CRASH CUSHIONS	0162
\$3,700.0000 HION	4470000000-N 6.000 EA REMOVE & RESET TEMPORARY CRASH CUS	0163
\$84,100.0000	4480000000-N 2.000 EA TMA	0164
\$58.5000	4485000000-E 4350.000 LF PORTABLE CONCRETE BARRIER	0165
\$82.0000	4490000000-E 250.000 LF PORTABLE CONCRETE BARRIER (ANCHOR	0166
\$9.7000 BARRIER	4500000000-E 4550.000 LF REMOVE AND RESET PORTABLE CONCRETE	0167
\$84.5000	4510000000-N 160.000 HR LAW ENFORCEMENT	0168
\$46.7500	4516000000-N 1000.000 EA SKINNY DRUM	0169
\$16.9500	4650000000-N 905.000 EA TEMPORARY RAISED PAVEMENT MARKERS	0170
\$2.1000	4685000000-E 15386.000 LF THERMOPLASTIC PAVEMENT MARKING LIN	0171
	\$174.0000 (GROUND MOUNTED) (E)  \$2.3000  \$2.3000  \$3,390.0000  \$14,100.0000 RAPID FLASHING BEACON ASSEMBLY \$9.8000  \$30.0000  \$11.4500  \$23,600.0000  \$23,600.0000  \$31.7500  \$32.5000  \$32.5000  \$3457.0000  \$10,800.0000  \$10,800.0000  \$3,700.0000  \$10,800.0000  \$2,3000000  \$3,700.0000  \$3,700.0000  \$3,700.0000  \$3,700.0000  \$4,100.0000  \$3,700.0000  \$3,700.0000  \$3,700.0000  \$3,700.0000  \$3,700.0000  \$3,700.0000  \$3,700.0000  \$3,700.0000  \$3,700.0000  \$3,700.0000  \$3,700.0000  \$3,700.0000  \$3,700.0000  \$3,700.0000  \$3,700.0000  \$3,700.0000  \$4,100.0000  \$3,700.0000  \$3,700.0000  \$4,100.0000  \$3,700.0000  \$3,700.0000  \$3,700.0000  \$3,700.0000  \$3,700.0000  \$3,700.0000  \$3,700.0000  \$3,700.0000  \$3,700.0000  \$3,700.0000  \$3,700.0000  \$3,700.0000  \$4,100.0000  \$3,700.0000  \$4,10	SIGN ERECTION, RELOCATE TYPE **** (GROUND MOUNTED) (E)  4155000000-N 70.000 EA \$2.3000 DISPOSAL OF SIGN SYSTEM, U-CHANNEL  4192000000-N 3.000 EA \$2.3000 DISPOSAL OF SUPPORT, U-CHANNEL  4360000000-N 2.000 EA \$3,390.0000 GENERIC SIGNING ITEM DISPOSAL OF FLASHER SYSTEM  4360000000-N 8.000 EA \$14,100.0000 GENERIC SIGNING ITEM RECTANGULAR RAPID FLASHING BEACON ASSEMBLY  440000000-E 276.000 SF \$9.8000 MORK ZONE SIGNS (STATIONARY)  440500000-E 256.000 SF \$30.0000 MORK ZONE SIGNS (STATIONARY)  441000000-E 613.000 SF \$1.4500 MORK ZONE SIGNS (BARRICADE MOUNTED)  4415000000-N 2.000 EA \$6,430.0000 FORTABLE CHANGEABLE MESSACE SIGN  442000000-N 760.000 EA \$65.5000 DEUMS  4435000000-N 760.000 EA \$31.7500 CONES  4445000000-N 760.000 EA \$31.7500 CONES  4445000000-N 720.000 DAY \$457.0000 FLAGGER  445000000-N 720.000 DAY \$457.0000 FLAGGER  4455000000-N 720.000 DAY \$457.0000 FLAGGER  4465000000-N 720.000 DAY \$457.0000 TEMPORARY CRASH CUSHIONS  4476000000-N 700.000 EA \$31.700.0000 TEMPORARY CRASH CUSHIONS  448000000-E \$350.000 LF \$58.5000 PORTABLE CONCRETE BARRIER  448000000-E \$450.000 LF \$58.5000 PORTABLE CONCRETE BARRIER  449000000-B \$450.000 LF \$82.0000 PORTABLE CONCRETE BARRIER  449000000-B \$150.000 LF \$82.0000 PORTABLE CONCRETE BARRIER  451000000-N 160.000 HR \$84.100.0000 REMOVE AND RESET PORTABLE CONCRETE BARRIER  451000000-N 160.000 HR \$84.5000 FORTABLE CONCRETE BARRIER  451000000-N 160.0

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0172	4688000000-E 100172.000 LF THERMOPLASTIC PAVEMENT MARKING LINES (6", 90 MILS		\$225,387.00
0173	470000000-E 1576.000 LF THERMOPLASTIC PAVEMENT MARKING LINES (12", 90 MIL:	\$8.3000	\$13,080.80
0174	4709000000-E 562.000 LF THERMOPLASTIC PAVEMENT MARKING LINES (24", 90 MIL:	\$18.6500 S)	\$10,481.30
0175	4725000000-E 105.000 EA THERMOPLASTIC PAVEMENT MARKING SYMBOL (90 MILS)	\$273.0000	\$28,665.00
0176	4810000000-E 19066.000 LF PAINT PAVEMENT MARKING LINES (4")	\$1.0500	\$20,019.30
0177	4815000000-E 366209.000 LF PAINT PAVEMENT MARKING LINES (6")	\$0.7000	\$256,346.30
0178	4825000000-E 1928.000 LF PAINT PAVEMENT MARKING LINES (12")	\$2.8500	\$5,494.80
0179	4835000000-E 860.000 LF PAINT PAVEMENT MARKING LINES (24")	\$6.0500	\$5,203.00
0180	4845000000-N 72.000 EA PAINT PAVEMENT MARKING SYMBOL	\$126.0000	\$9,072.00
0181	4850000000-E 170.000 LF REMOVAL OF PAVEMENT MARKING LINES (4")	\$1.4500	\$246.50
0182	4855000000-E 95950.000 LF REMOVAL OF PAVEMENT MARKING LINES (6")	\$0.8500	\$81,557.50
0183	4860000000-E 18.000 LF REMOVAL OF PAVEMENT MARKING LINES (8")	\$2.3000	\$41.40
0184	4865000000-E 96.000 LF REMOVAL OF PAVEMENT MARKING LINES (12")	\$3.4500	\$331.20
0185	4870000000-E 165.000 LF REMOVAL OF PAVEMENT MARKING LINES (24")	\$4.6000	\$759.00
0186	4875000000-N 5.000 EA REMOVAL OF PAVEMENT MARKING SYMBOLS & CHARACTERS	\$115.0000	\$575.00
0187	4905100000-N 692.000 EA NON-CAST IRON SNOWPLOWABLE PAVEMENT MARKER	\$54.2500	\$37,541.00
0188	4935000000-N 4.000 EA FLEXIBLE DELINEATORS (CRYSTAL)	\$84.5000	\$338.00
0189	5325600000-E 25.000 LF 6" WATER LINE	\$193.0000	\$4,825.00
0190	5326000000-E 1444.000 LF 10" WATER LINE	\$193.0000	\$278,692.00
0191	5326200000-E 105.000 LF 12" WATER LINE	\$193.0000	\$20,265.00
0192	5329000000-E 4880.000 LB  DUCTILE IRON WATER PIPE FITTINGS	\$28.4000	\$138,592.00
0193	554000000-E 4.000 EA 6" VALVE	\$3,070.0000	\$12,280.00
0194	5552000000-E 3.000 EA 10" VALVE	\$5,680.0000	\$17,040.00
0195	5572000000-E 2.000 EA 10" TAPPING SLEEVE & VALVE	\$19,300.0000	\$38,600.00
0196	5648000000-N 3.000 EA	\$2,840.0000	\$8,520.00

RELOCATE	WATER	METER
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	RELOCATE WATER METER		
0197	5666000000-N 3.000 EA FIRE HYDRANT	\$11,100.0000	\$33,300.00
0198	5673000000-E 39.000 LF FIRE HYDRANT LEG	\$193.0000	\$7,527.00
0199	5686500000-E 30.000 LF WATER SERVICE LINE	\$216.0000	\$6,480.00
0200	5691300000-E 1558.000 LF 8" SANITARY GRAVITY SEWER	\$284.0000	\$442,472.00
0201	5709000000-E 603.000 LF **" FORCE MAIN SEWER (3")	\$193.0000	\$116,379.00
0202	5768000000-N 4.000 EA SANITARY SEWER CLEAN-OUT	\$510.0000	\$2,040.00
0203	5768500000-E 182.000 LF SEWER SERVICE LINE	\$120.0000	\$21,840.00
0204	5769000000-E 2100.000 LB DUCTILE IRON SEWER PIPE FITTINGS	\$28.4000	\$59,640.00
0205	5775000000-E 13.000 EA 4' DIA UTILITY MANHOLE	\$7,960.0000	\$103,480.00
0206	5781000000-E 59.000 LF UTILITY MANHOLE WALL 4' DIA	\$313.0000	\$18,467.00
0207	5815500000-N 3.000 EA REMOVE FIRE HYDRANT	\$3,980.0000	\$11,940.00
0208	5816000000-N 7.000 EA ABANDON UTILITY MANHOLE	\$5,680.0000	\$39,760.00
0209	5835700000-E 234.000 LF 16" ENCASEMENT PIPE	\$374.0000	\$87,516.00
0210	5835900000-E 79.000 LF 20" ENCASEMENT PIPE	\$374.0000	\$29,546.00
0211	600000000-E 123575.000 LF TEMPORARY SILT FENCE	\$3.8500	\$475,763.75
0212	6006000000-E 5900.000 TON STONE FOR EROSION CONTROL, CLASS A	\$58.0000	\$342,200.00
0213	6009000000-E 22080.000 TON STONE FOR EROSION CONTROL, CLASS B	\$60.0000	\$1,324,800.00
0214	6012000000-E 11885.000 TON SEDIMENT CONTROL STONE	\$63.7500	\$757 <b>,</b> 668.75
0215	6015000000-E 224.500 ACR TEMPORARY MULCHING	\$2,070.0000	\$464,715.00
0216	6018000000-E 8600.000 LB SEED FOR TEMPORARY SEEDING	\$3.4500	\$29,670.00
0217	6021000000-E 43.500 TON FERTILIZER FOR TEMPORARY SEEDING	\$1,150.0000	\$50,025.00
0218	6024000000-E 8865.000 LF TEMPORARY SLOPE DRAINS	\$19.2000	\$170,208.00
0219	6029000000-E 5000.000 LF SAFETY FENCE	\$4.6000	\$23,000.00
0220	6030000000-E 73530.000 CY SILT EXCAVATION	\$0.0100	\$735.30

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12/19/2025 02.	.00.00 FM 5/02 Wright Broth	era construction comp	pany,	Cail. 000
0221	6036000000-E 500335.0 MATTING FOR EROSION CONTRO		\$1.9500	\$975 <b>,</b> 653.25
0222	6037000000-E 4155.0 COIR FIBER MAT	00 SY	\$6.9000	\$28,669.50
0223	6038000000-E 17585.0 PERMANENT SOIL REINFORCEM		\$4.6000	\$80,891.00
0224	6042000000-E 12230.0 1/4" HARDWARE CLOTH	00 LF	\$6.9000	\$84,387.00
0225	6045000000-E 85.0 **" TEMPORARY PIPE (24")	00 LF	\$84.7500	\$7,203.75
0226	6045000000-E 210.0 **" TEMPORARY PIPE (36")	00 LF	\$112.0000	\$23,520.00
0227	6045000000-E 40.0 **" TEMPORARY PIPE (66")	00 LF	\$260.0000	\$10,400.00
0228	6069000000-E 278.0 STILLING BASINS	00 CY	\$15.2000	\$4,225.60
0229	6070000000-N 10.0 SPECIAL STILLING BASINS	00 EA	\$441.0000	\$4,410.00
0230	6071012000-E 6400.0 COIR FIBER WATTLE	00 LF	\$10.3500	\$66,240.00
0231	6071013000-E 16772.0 WATTLE BARRIER	00 LF	\$12.6500	\$212,165.80
0232	6071020000-E 10945.0 POLYACRYLAMIDE (PAM)	00 LB	\$4.0000	\$43,780.00
0233	6071030000-E 10000.0 COIR FIBER BAFFLE	00 LF	\$9.2000	\$92,000.00
0234	6.0 6.0 **" SKIMMER (1-1/2")	00 EA	\$7,080.0000	\$42,480.00
0235	6071050000-E 5.0 **" SKIMMER (2")	00 EA	\$7,270.0000	\$36,350.00
0236	6071050000-E 2.0 **" SKIMMER (2-1/2")	00 EA	\$9,470.0000	\$18,940.00
0237	6084000000-E 147.0 SEEDING & MULCHING	00 ACR	\$3,560.0000	\$523,320.00
0238	6087000000-E 171.0 MOWING	00 ACR	\$344.0000	\$58,824.00
0239	6090000000-E 2250.0 SEED FOR REPAIR SEEDING	00 LB	\$4.6000	\$10,350.00
0240	6093000000-E 7.2 FERTILIZER FOR REPAIR SEE		\$1,840.0000	\$13,340.00
0241	6096000000-E 3600.0 SEED FOR SUPPLEMENTAL SEE		\$4.6000	\$16,560.00
0242	6108000000-E 107.7 FERTILIZER TOPDRESSING	50 TON	\$920.0000	\$99,130.00
0243	6111000000-E 1228.0 IMPERVIOUS DIKE	00 LF	\$284.0000	\$348,752.00
0244	6114500000-N 200.0 SPECIALIZED HAND MOWING	00 MHR	\$138.0000	\$27,600.00
0245	6114800000-N 95.0	00 MHR	\$138.0000	\$13,110.00

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0267

0268

0269

7481000000-N

7481240000-N

7481260000-N

SITE SURVEY

	MANUAL LITTER REMOVAL			
0246	6114900000-E 7.00 LITTER DISPOSAL	0 TON	\$344.0000	\$2,408.00
0247	6117000000-N 150.00 RESPONSE FOR EROSION CONTR		\$172.0000	\$25,800.00
0248	6117500000-N 20.00 CONCRETE WASHOUT STRUCTURE		\$1,610.0000	\$32,200.00
0249	6120000000-E 410.00 CULVERT DIVERSION CHANNEL	0 CY	\$142.0000	\$58,220.00
0250	6132000000-N 10.00 GENERIC EROSION CONTROL IT		\$390.0000 F INLET PROTECTION DEVICE	\$3,900.00
0251	6132000000-N 30.00 GENERIC EROSION CONTROL IT		\$390.0000 I INLET PROTECTION DEVICE	\$11,700.00 CLEANOUT
0252	7060000000-E 3175.00 SIGNAL CABLE	0 LF	\$3.9500	\$12,541.25
0253	7120000000-E 15.00 VEHICLE SIGNAL HEAD (12",		\$1,360.0000	\$20,400.00
0254	7132000000-E 3.00 VEHICLE SIGNAL HEAD (12",	0 EA 4 SECTION)	\$1,690.0000	\$5,070.00
0255	7180000000-N 18.00 BACKPLATE	0 EA	\$198.0000	\$3,564.00
0256	7264000000-E 1150.00 MESSENGER CABLE (3/8")	0 LF	\$7.9000	\$9,085.00
0257	7300000000-E 750.00 UNPAVED TRENCHING (******		\$39.5000	\$29,625.00
0258	7301000000-E 250.00 DIRECTIONAL DRILL (******		\$45.2500	\$11,312.50
0259	7324000000-N 7.00 JUNCTION BOX (STANDARD SIZ	0 EA E)	\$1,070.0000	\$7,490.00
0260	7348000000-N 2.00 JUNCTION BOX (OVER-SIZED,	0 EA HEAVY DUTY)	\$1,410.0000	\$2,820.00
0261	7360000000-N 2.00 WOOD POLE	0 EA	\$1,810.0000	\$3,620.00
0262	7372000000-N 6.00 GUY ASSEMBLY	0 EA	\$960.0000	\$5,760.00
0263	7408000000-E 1.00	0 EA	\$1,020.0000	\$1,020.00
0264	7420000000-E 3.00 2" RISER WITH WEATHERHEAD	0 EA	\$1,360.0000	\$4,080.00
0265	7444000000-E 800.00 INDUCTIVE LOOP SAWCUT	0 LF	\$18.0500	\$14,440.00
0266	7456000000-E 6300.00 LEAD-IN CABLE (*********		\$2.8000	\$17,640.00

Errors: No

1.000 EA

0000-N 3.000 EA \$13, CAMERA WITHOUT INTERNAL LOOP EMULATOR PROCESSING UNIT

1.000 EA

EXTERNAL LOOP EMULATOR PROCESSING UNIT

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\$1,580.00

\$39,000.00

\$1,980.00

\$1,580.0000

\$13,000.0000

\$1,980.0000

North Carolina Department of Transportation 3762 - Wright Brothers Construction Company,

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Contract ID: C204887
Call: 008

0270	7576000000-N METAL STRAIN S		\$18,100.0000	\$72,400.00
0271	7613000000-N SOIL TEST	4.000 EA	\$1,980.0000	\$7,920.00
0272	7614100000-E DRILLED PIER F	32.000 CY OUNDATION	\$1,920.0000	\$61,440.00
0273	7636000000-N SIGN FOR SIGNA	2.000 EA	\$395.0000	\$790.00
0274	7684000000-N SIGNAL CABINET	1.000 EA' FOUNDATION	\$2,260.0000	\$2,260.00
0275	7696000000-N CONTROLLERS WI	1.000 EA TH CABINET (**********	\$31,600.0000 ************) (2070LX BASE	
0276	7744000000-N DETECTOR CARD	7.000 EA (TYPE 170)	\$311.0000	\$2,177.00
0277	7901000000-N CABINET BASE E	1.000 EA	\$850.0000	\$850.00
0278	7980000000-N GENERIC SIGNAI	1.000 EA ITEM LUMINAIRE ARM FOR T	\$1,410.0000 EMPORARY VIDEO SYSTEM	\$1,410.00
Section 0001 To	otal			\$64,785,084.13
Costion 0002				
Section 0002 CULVERT ITEM	1S			
	8126000000-N	1.000 LS TION, STA ***** (127+65.	\$348,000.0000 00 -L-)	\$348,000.00
CULVERT ITEM	8126000000-N CULVERT EXCAVA 8126000000-N		00 -L-) \$189,000.0000	\$348,000.00
CULVERT ITEM	812600000-N CULVERT EXCAVA 8126000000-N CULVERT EXCAVA 8133000000-E	1.000 LS	\$189,000.0000 0 -L-) \$210.0000	
CULVERT ITEM 0279 0280	812600000-N CULVERT EXCAVA 8126000000-N CULVERT EXCAVA 8133000000-E	TION, STA ****** (127+65. 1.000 LS TION, STA ****** (71+92.1 753.000 TON IDITIONING MATERIAL, BOX C 356.500 CY	\$189,000.0000 0 -L-) \$210.0000	\$189,000.00
0279 0280 0281	8126000000-N CULVERT EXCAVA 8126000000-N CULVERT EXCAVA 8133000000-E FOUNDATION CON 81960000000-E	TION, STA ****** (127+65.  1.000 LS TION, STA ****** (71+92.1  753.000 TON  IDITIONING MATERIAL, BOX CO  356.500 CY  STE (CULVERT)  63271.000 LB	\$189,000.0000 0 -L-) \$210.0000 ULVERT	\$189,000.00 \$158,130.00
CULVERT ITEM 0279 0280 0281	812600000-N CULVERT EXCAVA  8126000000-N CULVERT EXCAVA  8133000000-E FOUNDATION CON  8196000000-E CLASS A CONCRE  8245000000-E REINFORCING ST	TION, STA ****** (127+65.  1.000 LS TION, STA ****** (71+92.1  753.000 TON  IDITIONING MATERIAL, BOX CO  356.500 CY  STE (CULVERT)  63271.000 LB	\$189,000.0000 0 -L-) \$210.0000 ULVERT \$2,050.0000	\$189,000.00 \$158,130.00 \$730,825.00
CULVERT ITEM 0279 0280 0281 0282	812600000-N CULVERT EXCAVA  8126000000-N CULVERT EXCAVA  8133000000-E FOUNDATION CON  8196000000-E CLASS A CONCRE  8245000000-E REINFORCING ST	TION, STA ****** (127+65.  1.000 LS TION, STA ****** (71+92.1  753.000 TON  IDITIONING MATERIAL, BOX CO  356.500 CY  STE (CULVERT)  63271.000 LB	\$189,000.0000 0 -L-) \$210.0000 ULVERT \$2,050.0000	\$189,000.00 \$158,130.00 \$730,825.00 \$284,719.50
CULVERT ITEM 0279  0280  0281  0282  0283  Section 0002 To	812600000-N CULVERT EXCAVA  8126000000-N CULVERT EXCAVA  8133000000-E FOUNDATION CON  8196000000-E CLASS A CONCRE  8245000000-E REINFORCING ST	1.000 LS 1.000 LS TION, STA ****** (71+92.1 753.000 TON IDITIONING MATERIAL, BOX CO 356.500 CY TE (CULVERT) 63271.000 LB PEEL (CULVERT)	\$189,000.0000 0 -L-) \$210.0000 ULVERT \$2,050.0000	\$189,000.00 \$158,130.00 \$730,825.00 \$284,719.50
CULVERT ITEM 0279  0280  0281  0282  0283  Section 0002 To  Section 0003  WALL ITEMS	812600000-N	1.000 LS 1.000 LS TION, STA ****** (71+92.1 753.000 TON IDITIONING MATERIAL, BOX CO 356.500 CY TE (CULVERT) 63271.000 LB PEEL (CULVERT)	\$189,000.0000 0 -L-) \$210.0000 ULVERT \$2,050.0000 \$4.5000	\$189,000.00 \$158,130.00 \$730,825.00 \$284,719.50 \$1,710,674.50
CULVERT ITEM 0279  0280  0281  0282  0283  Section 0002 To Section 0003 WALL ITEMS 0284	812600000-N	1.000 LS 1.000 LS 1.000 LS 1.000 TON 1.000 TON 1.000 TON 1.001 TON 1.001 TON 1.001 TON 1.001 TON 1.002 TON 1.003 TON 1.003 TON 1.003 TON 1.004 TON 1.005 TON 1.005 TON 1.006 TON 1.007 TON 1.007 TON 1.007 TON 1.008 TON	\$189,000.0000 0 -L-)  \$210.0000 ULVERT  \$2,050.0000  \$4.5000	\$189,000.00 \$158,130.00 \$730,825.00 \$284,719.50 \$1,710,674.50

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North Carolina Department of Transportation 3762 - Wright Brothers Construction Company,

Letting: L231219 12/19/2023 02:00:00 PM Contract ID: C204887 Call: 008

Item Total \$67,160,518.63

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#### ELECTRONIC BID SUBMISSION

By submitting this bid electronically, I hereby acknowledge that all requirements included in the hard copy proposal, addendum, amendments, plans, standard specifications, supplemental specifications and special provisions are part of the bid and contract. Further, I acknowledge that I have read, understand, accept, acknowledge and agree to comply with all statements in this electronic bid.

#### NON-COLLUSION, DEBARMENT AND GIFT BAN CERTIFICATION

The prequalified bidder declares (or certifies, verifies, or states) under penalty of perjury under the laws of the United States that neither he, nor any official, agent or employee has entered into any agreement, participated in any collusion, or otherwise taken any action which is in restraint of free competitive bidding in connection with any bid or contract, that the prequalified bidder has not been convicted of violating N.C.G.S. §133-24 within the last three years, and that the prequalified bidder intends to do the work with his own bonafide employees or subcontractors and will not bid for the benefit of another contractor.

By submitting this non-collusion, debarment and gift ban certification, the Contractor is attesting his status under penalty of perjury under the laws of the United States in accordance with the Debarment Certification attached, provided that the Debarment Certification also includes any required statements concerning exceptions that are applicable.

N.C.G.S. §133-32 and Executive Order 24 prohibit the offer to, or acceptance by, any State Employee of any gift from anyone with a contract with the State, or from any person seeking to do business with the State. By execution of any response in this procurement, you attest, for your entire organization and its employees or agents, that you are not aware that any such gift has been offered, accepted, or promised by any employees of your organization.

### DEBARMENT CERTIFICATION OF PREQUALIFIED BIDDER

Conditions for certification:

- 1. The prequalified bidder shall provide immediate written notice to the Department if at any time the bidder learns that his certification was erroneous when he submitted his debarment certification or explanation that is file with the Department, or has become erroneous because of changed circumstances.
- 2. The terms covered transaction, debarred, suspended, ineligible, lower tier

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covered transaction, participant, person, primary covered transaction, principal, proposal, and voluntarily excluded, as used in this provision, have the meanings set out in the Definitions and Coverage sections of the rules implementing Executive Order 12549. A copy of the Federal Rules requiring this certification and detailing the definitions and coverages may be obtained from the Contract Officer of the Department.

- 3. The prequalified bidder agrees by submitting this form, that he will not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in NCDOT contracts, unless authorized by the Department.
- 4. For Federal Aid projects, the prequalified bidder further agrees that by submitting this form he will include the Federal- Aid Provision titled Required Contract Provisions Federal-Aid Construction Contract (Form FHWA PR 1273) provided by the Department, without subsequent modification, in all lower tier covered transactions.
- 5. The prequalified bidder may rely upon a certification of a participant in a lower tier covered transaction that he is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless he knows that the certification is erroneous. The bidder may decide the method and frequency by which he will determine the eligibility of his subcontractors.
- 6. Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render in good faith the certification required by this provision. The knowledge and information of a participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.
- 7. Except as authorized in paragraph 6 herein, the Department may terminate any contract if the bidder knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available by the Federal Government.

#### DEBARMENT CERTIFICATION

The prequalified bidder certifies to the best of his knowledge and belief, that he and his principals:

- a. Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any Federal department or agency;
- b. Have not within a three-year period preceding this proposal been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or

Errors: No Check: AC3522393D Amendment Count: 1

commission of embezzlement, theft, forgery, bribery, falsification or destruction of records; making false statements; or receiving stolen property;

- c. Are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State or local) with commission of any of the offenses enumerated in paragraph b. of this certification; and
- d. Have not within a three-year period preceding this proposal had one or more public transactions (Federal, State or local) terminated for cause or default.
- e. Will submit a revised Debarment Certification immediately if his status changes and will show in his bid proposal an explanation for the change in status.

If the prequalified bidder cannot certify that he is not debarred, he shall provide an explanation with this submittal. An explanation will not necessarily result in denial of participation in a contract.

Failure to submit a non-collusion and debarment certification will result in the prequalified bidder's bid being considered non-responsive.

#### **EXPLANATION:**

\_\_\_\_\_\_

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### Award Limits on Multiple Projects

By answering YES to this statement, the bidder acknowleges that they are using the award limits on multiple projects? Yes  $\bigcirc$  No  $\bigcirc$ 

A bidder who desires to bid on more than one project on which bids are to be opened on the same date, and who also desires to avoid receiving an award of more projects than he is equipped to handle, may bid on any number of projects but may limit the total amount of work awarded to him on selected projects by completing the AWARD LIMITS ON MULTIPLE PROJECTS.

The Award Limits on Multiple Projects must be filled in on each project bid for which the Bidder desires protection.

It is the desire of the Bidder to be awarded contracts, the value of which

will not exceed a total of for those

projects indicated herein, for which bids will be opened on (MM/DD/YY)

The Award Limits shall apply to the following projects:

Contract Number County

It is agreed that if I am (we are) the low Bidder(s) on indicated projects, the total value of which is more than the above stipulated award limits, the Board of Transportation will award me (us) projects from among those indicated

North Carolina Department of Transportation 3762 - Wright Brothers Construction Company,

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that have a total value not to exceed the award limit and will result in the lowest total bids to the Department of Transportation.

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# DBE List Summary

Project: 4742701

Bid Total: 67,160,518.63 Business Name: Wright Brothers Construction

Company, Inc.

Bidder ID: 3762

Goal: 5.00% (3,358,025.93)

Total Entered: 5.09% (3,418,442.00)

ID	Name	Is Supplier? Item Count	Amount Is Complete?
10544	BATEMAN TRUCKING COMPANY	False 3	3,418,442.00 True

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Call: 008

Name: BATEMAN TRUCKING COMPANY ID: 10544

Address: P.O. Box 1108 ANDREWS, NC 28901

Used As: SubContractor DBE Items Total:\$3,418,442.00

#### Items for BATEMAN TRUCKING COMPANY

0001 ROADWAY ITEMS			
0079	1491000000-E 30000 TON ASPHALT CONC BASE COURSE, TYPE B25.0C	\$43.1600	\$1,294,800.00
0080	1503000000-E 22450.000 TON ASPHALT CONC INTERMEDIATE COURSE, TYPE I19.0C	\$38.9100	\$873,529.50
0081	1523000000-E 31850.000 TON ASPHALT CONC SURFACE COURSE, TYPE S9.5C	\$39.2500	\$1,250,112.50
Section 0001 Tota	al		\$3,418,442.00
Item Total			\$3,418,442.00

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THIS PROPOSAL CONTAINS THE FOLLOWING ERRORS/WARNINGS (IF ANY)

This Bid contains 1 amendment files

1 12/13/2023 DELETE ITEM

#### Electronic Bid Submission

By submitting this bid electronically, I hereby acknowledge that all requirements included in the hard copy proposal, addendum, amendments, plans, standard specifications, supplemental specifications and special provisions are part of the bid and contract. Further, I acknowledge that I have read, understand, accept, acknowledge and agree to comply with all statements in this electronic bid.

Check: AC3522393D
Amendment Count: 1

Letting: L231219 North Carolina Department of Transportation North Carolina Department of Transportation 12/19/2023 02:00:00 PM 3762 - Wright Brothers Construction Company, Contract ID: C204887 Call: 008

#### Attachments

Failure to complete and attach the Fuel Usage Factor Adjustment Form will result in using 2.90 gallons per ton as the Fuel Usage Factor for Diesel for the asphalt items included on the form. The contractor will not be permitted to change the option after the bids are submitted.

NOTE: The maximum upload limit is 5 MB. ☐ Verify

> Errors: No Check: AC3522393D Page 23 Amendment Count: 1

Line #	ItemNumber	Sec #	Description	Quantity Unit	Unit Bid Price	Amount Bid
			ROADWAY ITEMS	<del>-</del>		
0001	0000100000-N	800	MOBILIZATION	LUMP SUM	3,200,000.00	3,200,000.00
0002	0000400000-N	801	CONSTRUCTION SURVEYING	LUMP SUM	450,000.00	450,000.00
0003	0000700000-N	SP	FIELD OFFICE	LUMP SUM	275,000.00	275,000.00
0004	0001000000-E	200	CLEARING & GRUBBING ACRE(S)	LUMP SUM LS	4,216,200.00	4,216,200.00
0005	0008000000-E	200	SUPPLEMENTARY CLEARING & GRUBBING	3 ACR	28,100.00	84,300.00
0006	0015000000-N	205	SEALING ABANDONED WELLS	6 EA	3,380.00	20,280.00
0007	0022000000-E	225	UNCLASSIFIED EXCAVATION	1,197,000 CY	10.70	12,807,900.00
8000	0036000000-E	225	UNDERCUT EXCAVATION	11,530 CY	18.40	212,152.00
0009	0134000000-E	240	DRAINAGE DITCH EXCAVATION	15,980 CY	22.20	354,756.00
0010	0141000000-E	240	BERM DITCH CONSTRUCTION	2,600 LF	7.00	18,200.00
0011	0156000000-E	250	REMOVAL OF EXISTING ASPHALT PAVEMENT	72,520 SY	7.35	533,022.00
0012	0177000000-E	250	BREAKING OF EXISTING ASPHALT PAVEMENT	11,000 SY	2.30	25,300.00
0013	0194000000-E	265	SELECT GRANULAR MATERIAL, CLASS III	4,000 CY	97.00	388,000.00
0014	0196000000-E	270	GEOTEXTILE FOR SOIL STABILIZATION	10,112 SY	1.60	16,179.20
0015	0199000000-E	SP	TEMPORARY SHORING	30,394 SF	62.75	1,907,223.50
0016	0223000000-E	275	ROCK PLATING	125 SY	78.25	9,781.25
0017	0225000000-E	SP	REINFORCED SOIL SLOPES	1,500 SY	228.00	342,000.00
0018	0234000000-E	SP	GENERIC GRADING ITEM COMPOST BLANKET	250 CY	69.00	17,250.00
0019	0241000000-E	SP	GENERIC GRADING ITEM GEOCELLS	1,500 SY	59.75	89,625.00
0020	0255000000-E	SP	GENERIC GRADING ITEM HAULING AND DISPOSAL OF PETROLEUM CONTAMINATED SOIL	50 TON	159.00	7,950.00
0021	0318000000-E	300	FOUNDATION CONDITIONING MATERIAL, MINOR STRUCTURES	2,170 TON	52.00	112,840.00
0022	0320000000-E	300	FOUNDATION CONDITIONING GEOTEXTILE	6,800 SY	2.40	16,320.00

Line #	ItemNumber	Sec #	Description	Quantity Unit	Unit Bid Price	Amount Bid
0023	0335200000-E	305	15" DRAINAGE PIPE	4,068 LF	99.00	402,732.00
0024	0335300000-E	305	18" DRAINAGE PIPE	1,960 LF	113.00	221,480.00
0025	0335400000-E	305	24" DRAINAGE PIPE	1,628 LF	133.00	216,524.00
0026	0335500000-E	305	30" DRAINAGE PIPE	456 LF	164.00	74,784.00
0027	0335600000-E	305	36" DRAINAGE PIPE	228 LF	194.00	44,232.00
0028	0335800000-E	305	48" DRAINAGE PIPE	88 LF	302.00	26,576.00
0029	0335850000-E	305	**" DRAINAGE PIPE ELBOWS (15")	24 EA	1,170.00	28,080.00
0030	0335850000-E	305	**" DRAINAGE PIPE ELBOWS (18")	14 EA	1,220.00	17,080.00
0031	0335850000-E	305	**" DRAINAGE PIPE ELBOWS (24")	22 EA	1,510.00	33,220.00
0032	0335850000-E	305	**" DRAINAGE PIPE ELBOWS (30")	8 EA	2,070.00	16,560.00
0033	0335850000-E	305	**" DRAINAGE PIPE ELBOWS (36")	4 EA	2,320.00	9,280.00
0034	0366000000-E	310	15" RC PIPE CULVERTS, CLASS III	2,908 LF	92.25	268,263.00
0035	0372000000-E	310	18" RC PIPE CULVERTS, CLASS III	2,220 LF	100.00	222,000.00
0036	0378000000-E	310	24" RC PIPE CULVERTS, CLASS III	1,872 LF	123.00	230,256.00
0037	0384000000-E	310	30" RC PIPE CULVERTS, CLASS III	624 LF	170.00	106,080.00
0038	0390000000-E	310	36" RC PIPE CULVERTS, CLASS III	276 LF	209.00	57,684.00
0039	0396000000-E	310	42" RC PIPE CULVERTS, CLASS III	532 LF	249.00	132,468.00
0040	0402000000-E	310	48" RC PIPE CULVERTS, CLASS III	776 LF	373.00	289,448.00
0041	0408000000-E	310	54" RC PIPE CULVERTS, CLASS III	184 LF	540.00	99,360.00
0042	0414000000-E	310	60" RC PIPE CULVERTS, CLASS III	272 LF	620.00	168,640.00
0043	0420000000-E	310	66" RC PIPE CULVERTS, CLASS III	504 LF	850.00	428,400.00
0044	0426000000-E	310	72" RC PIPE CULVERTS, CLASS III	208 LF	940.00	195,520.00
0045	0448000000-E	310	****" RC PIPE CULVERTS, CLASS IV (48")	60 LF	421.00	25,260.00

Line #	ItemNumber	Sec #	Description	Quantity Unit	Unit Bid Price	Amount Bid
0046	0448000000-E	310	****" RC PIPE CULVERTS, CLASS IV (66")	56 LF	960.00	53,760.00
0047	0448200000-E	310	15" RC PIPE CULVERTS, CLASS IV	408 LF	96.00	39,168.00
0048	0448300000-E	310	18" RC PIPE CULVERTS, CLASS IV	108 LF	106.00	11,448.00
0049	0448500000-E	310	30" RC PIPE CULVERTS, CLASS IV	64 LF	189.00	12,096.00
0050	0448600000-E	310	36" RC PIPE CULVERTS, CLASS IV	700 LF	234.00	163,800.00
0051	0453000000-E	310	**" PIPE END SECTION (15")	16 EA	1,290.00	20,640.00
0052	0453000000-E	310	**" PIPE END SECTION (18")	2 EA	1,580.00	3,160.00
0053	0453000000-E	310	**" PIPE END SECTION (24")	3 EA	1,780.00	5,340.00
0054	0576000000-E	310	**" CS PIPE CULVERTS, *****" THICK (54", 0.109")	84 LF	377.00	31,668.00
0055	0576000000-E	310	**" CS PIPE CULVERTS, *****" THICK (60", 0.138")	36 LF	435.00	15,660.00
0056	0576000000-E	310	**" CS PIPE CULVERTS, *****" THICK (66", 0.138")	68 LF	496.00	33,728.00
0057	0636000000-E	310	**" CS PIPE ELBOWS, *****" THICK (54", 0.109")	2 EA	5,770.00	11,540.00
0058	0636000000-E	310	**" CS PIPE ELBOWS, *****" THICK (60", 0.138")	2 EA	6,880.00	13,760.00
0059	0636000000-E	310	**" CS PIPE ELBOWS, *****" THICK (66", 0.138")	2 EA	7,650.00	15,300.00
0060	0973100000-E	330	**" WELDED STEEL PIPE, ****" THICK, GRADE B IN SOIL (36", 0.500")	70 LF	840.00	58,800.00
0061	0973100000-E	330	**" WELDED STEEL PIPE, ****" THICK, GRADE B IN SOIL (42", 0.625")	40 LF	1,450.00	58,000.00
0062	0973100000-E	330	**" WELDED STEEL PIPE, ****" THICK, GRADE B IN SOIL (66", 1.000")	200 LF	2,010.00	402,000.00
0063	0973100000-E	330	**" WELDED STEEL PIPE, ****" THICK, GRADE B IN SOIL (72", 1.000")	116 LF	2,520.00	292,320.00
0064	0973300000-E	330	**" WELDED STEEL PIPE, ****" THICK, GRADE B NOT IN SOIL (36", 0.500")	70 LF	3,300.00	231,000.00
0065	0973300000-E	330	**" WELDED STEEL PIPE, ****" THICK, GRADE B NOT IN SOIL (42", 0.625")	40 LF	3,540.00	141,600.00

Amount Bid	Unit Bid Price	Quantity Unit	Description	Sec #	ItemNumber	Line #
710,000.00	3,550.00	200 LF	**" WELDED STEEL PIPE, ****" THICK, GRADE B NOT IN SOIL (66", 1.000")	330	0973300000-E	0066
412,960.00	3,560.00	116 LF	**" WELDED STEEL PIPE, ****" THICK, GRADE B NOT IN SOIL (72", 1.000")	330	0973300000-E	0067
160,650.70	25.70	6,251 LF	PIPE REMOVAL	340	0995000000-E	0068
825,000.00	825,000.00	LUMP SUM	FINE GRADING	500	1011000000-N	0069
2,400.00	120.00	20 TON	#57 STONE	SP	1077000000-E	0070
25,900.00	25.90	1,000 CY	SHALLOW UNDERCUT	505	1099500000-E	0071
73,000.00	36.50	2,000 TON	CLASS IV SUBGRADE STABILIZATION	505	1099700000-E	0072
769,860.00	45.50	16,920 TON	AGGREGATE BASE COURSE	520	1121000000-E	0073
346,000.00	43.25	8,000 TON	INCIDENTAL STONE BASE	545	1220000000-E	0074
37,870.00	27.05	1,400 CY	SHOULDER BORROW	560	1231000000-E	0075
98,065.50	7.05	13,910 SY	MILLING ASPHALT PAVEMENT, ***" DEPTH (3")	607	1297000000-E	0076
13,967.50	9.25	1,510 SY	MILLING ASPHALT PAVEMENT, ***" TO *******" (0" TO 1-1/2")	607	1308000000-E	0077
67,500.00	22.50	3,000 SY	INCIDENTAL MILLING	607	1330000000-E	0078
4,433,570.00	127.00	34,910 TON	ASPHALT CONC BASE COURSE, TYPE B25.0C	610	1491000000-E	0079
2,896,050.00	129.00	22,450 TON	ASPHALT CONC INTERMEDIATE COURSE, TYPE I19.0C	610	1503000000-E	0800
4,172,350.00	131.00	31,850 TON	ASPHALT CONC SURFACE COURSE, TYPE S9.5C	610	1523000000-E	0081
4,031,700.00	890.00	4,530 TON	ASPHALT BINDER FOR PLANT MIX	620	1575000000-E	0082
339,000.00	300.00	1,130 TON	ASPHALT PLANT MIX, PAVEMENT REPAIR	654	1693000000-E	0083
31,367.28	11.45	2,739.5 CY	SUBDRAIN EXCAVATION	815	2022000000-E	0084
49,445.00	7.25	6,820 SY	GEOTEXTILE FOR SUBSURFACE DRAINS	815	2026000000-E	0085
34,944.00	104.00	336 CY	SUBDRAIN FINE AGGREGATE	815	2033000000-E	0086

Lino	ItamNumbar	900	Contract Item Sheets For C20		Unit Bid	Amount
Line #	ItemNumber	Sec #	Description	Quantity Unit	Unit Bid Price	Amount Bid
0087	2036000000-E	815	SUBDRAIN COARSE AGGREGATE	1,145.8 CY	106.00	121,454.80
0088	2044000000-E	815	6" PERFORATED SUBDRAIN PIPE	8,820 LF	11.20	98,784.00
0089	2070000000-N	815	SUBDRAIN PIPE OUTLET	17 EA	650.00	11,050.00
0090	2077000000-E	815	6" OUTLET PIPE	102 LF	146.00	14,892.00
0091	2209000000-E	838	ENDWALLS	28 CY	1,980.00	55,440.00
0092	2220000000-E	838	REINFORCED ENDWALLS	50 CY	2,780.00	139,000.00
0093	2253000000-E	840	PIPE COLLARS	8.2 CY	2,290.00	18,778.00
0094	2275000000-E	SP	FLOWABLE FILL	734.1 CY	500.00	367,050.00
0095	2286000000-N	840	MASONRY DRAINAGE STRUCTURES	150 EA	3,610.00	541,500.00
0096	2297000000-E	840	MASONRY DRAINAGE STRUCTURES	110 CY	1,370.00	150,700.00
0097	2308000000-E	840	MASONRY DRAINAGE STRUCTURES	222.4 LF	530.00	117,872.00
0098	2364000000-N	840	FRAME WITH TWO GRATES, STD 840.16	5 EA	1,450.00	7,250.00
0099	2366000000-N	840	FRAME WITH TWO GRATES, STD 840.24	68 EA	1,390.00	94,520.00
0100	2367000000-N	840	FRAME WITH TWO GRATES, STD 840.29	25 EA	1,370.00	34,250.00
0101	2374000000-N	840	FRAME WITH GRATE & HOOD, STD 840.03, TYPE ** (E)	1 EA	1,450.00	1,450.00
0102	2374000000-N	840	FRAME WITH GRATE & HOOD, STD 840.03, TYPE ** (F)	7 EA	1,490.00	10,430.00
0103	2374000000-N	840	FRAME WITH GRATE & HOOD, STD 840.03, TYPE ** (G)	3 EA	1,490.00	4,470.00
0104	2396000000-N	840	FRAME WITH COVER, STD 840.54	31 EA	1,140.00	35,340.00
0105	2451000000-N	852	CONCRETE TRANSITIONAL SECTION FOR DROP INLET	5 EA	2,160.00	10,800.00
0106	2473000000-N	SP	GENERIC DRAINAGE ITEM BICYCLE SAFE STEEL FRAME AND GRATE	8 EA	4,250.00	34,000.00
0107	2535000000-E	846	**" X **" CONCRETE CURB (8" X 12")	1,220 LF	45.50	55,510.00

Line #	ItemNumber	Sec #	Description	Quantity Unit	Unit Bid Price	Amount Bid
0108	2549000000-E	846	2'-6" CONCRETE CURB & GUTTER	2,550 LF	52.25	133,237.50
0109	2556000000-E	846	SHOULDER BERM GUTTER	5,360 LF	63.75	341,700.00
0110	2577000000-E	846	CONCRETE EXPRESSWAY GUTTER	405 LF	93.25	37,766.25
0111	2580000000-E	846	CONCRETE VALLEY GUTTER	90 LF	114.00	10,260.00
0112	2612000000-E	848	6" CONCRETE DRIVEWAY	300 SY	131.00	39,300.00
0113	2619000000-E	850	4" CONCRETE PAVED DITCH	200 SY	125.00	25,000.00
0114	2655000000-E	852	5" MONOLITHIC CONCRETE ISLANDS (KEYED IN)	300 SY	142.00	42,600.00
0116	280000000-N	858	ADJUSTMENT OF CATCH BASINS	1 EA	1,560.00	1,560.00
0117	2815000000-N	858	ADJUSTMENT OF DROP INLETS	3 EA	1,560.00	4,680.00
0118	283000000-N	858	ADJUSTMENT OF MANHOLES	1 EA	1,580.00	1,580.00
0119	2938000000-N	859	CONVERT EXISTING DROP INLET TO JUNCTION BOX WITH MANHOLE	1 EA	2,310.00	2,310.00
0120	2995000000-N	SP	GENERIC DRAINAGE ITEM CONVERT JB TO OPEN THROAT CATCH BASIN	1 EA	2,780.00	2,780.00
0121	3030000000-E	862	STEEL BEAM GUARDRAIL	10,875 LF	26.15	284,381.25
0122	3045000000-E	862	STEEL BEAM GUARDRAIL, SHOP CURVED	525 LF	27.30	14,332.50
0123	3105000000-N	862	STEEL BEAM GUARDRAIL TERMINAL SECTIONS	6 EA	85.25	511.50
0124	3150000000-N	862	ADDITIONAL GUARDRAIL POSTS	10 EA	62.50	625.00
0125	3195000000-N	862	GUARDRAIL END UNITS, TYPE AT-1	3 EA	1,080.00	3,240.00
0126	3287000000-N	SP	GUARDRAIL END UNITS, TYPE TL-3	50 EA	3,640.00	182,000.00
0127	3288000000-N	SP	GUARDRAIL END UNITS, TYPE TL-2	1 EA	3,580.00	3,580.00
0128	3345000000-E	864	REMOVE & RESET EXISTING GUARDRAIL	875 LF	7.95	6,956.25
0129	3360000000-E	863	REMOVE EXISTING GUARDRAIL	12,611 LF	1.15	14,502.65
0130	3380000000-E	862	TEMPORARY STEEL BEAM GUARDRAIL	6,262.5 LF	6.80	42,585.00

	Contract Item Sheets For C204887							
Line #	ItemNumber	Sec #	Description	Quantity Unit	Unit Bid Price	Amount Bid		
0131	3382000000-E	862	TEMPORARY STEEL BEAM GUARDRAIL (SHOP CURVED)	75 LF	9.10	682.50		
0132	3387000000-N	SP	TEMPORARY GUARDRAIL ANCHOR UNITS, TYPE ******** (B-77)	2 EA	970.00	1,940.00		
0133	3389150000-N	SP	TEMPORARY GUARDRAIL END UNITS, TYPE ***** (TL-3)	24 EA	2,050.00	49,200.00		
0134	3436000000-N	862	GENERIC GUARDRAIL ITEM TEMPORARY GUARDRAIL END UNITS, TYPE AT-1	1 EA	341.00	341.00		
0135	3436000000-N	862	GENERIC GUARDRAIL ITEM TEMPORARY GUARDRAIL END UNITS, TYPE CAT-1	1 EA	341.00	341.00		
0136	3524000000-E	SP	VINYL COATED CHAIN LINK FENCE, **" FABRIC (60")	1,430 LF	38.75	55,412.50		
0137	3539000000-E	866	METAL LINE POSTS FOR **" CHAIN LINK FENCE (60")	120 EA	136.00	16,320.00		
0138	3545000000-E	866	METAL TERMINAL POSTS FOR **" CHAIN LINK FENCE (60")	14 EA	227.00	3,178.00		
0139	3628000000-E	876	RIP RAP, CLASS I	3,115 TON	75.25	234,403.75		
0140	3635000000-E	876	RIP RAP, CLASS II	110 TON	90.25	9,927.50		
0141	3649000000-E	876	RIP RAP, CLASS B	9,650 TON	116.00	1,119,400.00		
0142	3656000000-E	876	GEOTEXTILE FOR DRAINAGE	27,295 SY	3.85	105,085.75		
0143	4072000000-E	903	SUPPORTS, 3-LB STEEL U-CHANNEL	1,975 LF	10.45	20,638.75		
0144	4096000000-N	904	SIGN ERECTION, TYPE D	5 EA	232.00	1,160.00		
0145	4102000000-N	904	SIGN ERECTION, TYPE E	111 EA	87.00	9,657.00		
0146	4108000000-N	904	SIGN ERECTION, TYPE F	9 EA	232.00	2,088.00		
0147	4116100000-N	904	SIGN ERECTION, RELOCATE TYPE **** (GROUND MOUNTED) (D)	1 EA	406.00	406.00		
0148	4116100000-N	904	SIGN ERECTION, RELOCATE TYPE **** (GROUND MOUNTED) (E)	2 EA	174.00	348.00		

Line #	ItemNumber	Sec #	Description	Quantity Unit	Unit Bid Price	Amount Bid
0149	4155000000-N	907	DISPOSAL OF SIGN SYSTEM, U- CHANNEL	70 EA	2.30	161.00
0150	4192000000-N	907	DISPOSAL OF SUPPORT, U-CHANNEL	3 EA	2.30	6.90
0151	4360000000-N	SP	GENERIC SIGNING ITEM DISPOSAL OF FLASHER SYSTEM	2 EA	3,390.00	6,780.00
0152	436000000-N	SP	GENERIC SIGNING ITEM RECTANGULAR RAPID FLASHING BEACON ASSEMBLY	8 EA	14,100.00	112,800.00
0153	4400000000-E	1110	WORK ZONE SIGNS (STATIONARY)	2,767 SF	9.80	27,116.60
0154	4405000000-E	1110	WORK ZONE SIGNS (PORTABLE)	256 SF	30.00	7,680.00
0155	4410000000-E	1110	WORK ZONE SIGNS (BARRICADE MOUNTED)	613 SF	11.45	7,018.85
0156	4415000000-N	1115	FLASHING ARROW BOARD	2 EA	6,430.00	12,860.00
0157	4420000000-N	1120	PORTABLE CHANGEABLE MESSAGE SIGN	2 EA	23,600.00	47,200.00
0158	443000000-N	1130	DRUMS	760 EA	65.50	49,780.00
0159	4435000000-N	1135	CONES	50 EA	31.75	1,587.50
0160	4445000000-E	1145	BARRICADES (TYPE III)	792 LF	32.50	25,740.00
0161	4455000000-N	1150	FLAGGER	720 DAY	457.00	329,040.00
0162	4465000000-N	1160	TEMPORARY CRASH CUSHIONS	4 EA	10,800.00	43,200.00
0163	4470000000-N	1160	REMOVE & RESET TEMPORARY CRASH CUSHION	6 EA	3,700.00	22,200.00
0164	448000000-N	1165	TMA	2 EA	84,100.00	168,200.00
0165	4485000000-E	1170	PORTABLE CONCRETE BARRIER	4,350 LF	58.50	254,475.00
0166	4490000000-E	1170	PORTABLE CONCRETE BARRIER (ANCHORED)	250 LF	82.00	20,500.00
0167	4500000000-E	1170	REMOVE AND RESET PORTABLE CONCRETE BARRIER	4,550 LF	9.70	44,135.00
0168	4510000000-N	1190	LAW ENFORCEMENT	160 HR	84.50	13,520.00
0169	4516000000-N	1180	SKINNY DRUM	1,000 EA	46.75	46,750.00
0170	4650000000-N	1251	TEMPORARY RAISED PAVEMENT MARKERS	905 EA	16.95	15,339.75

Amount Bid	Unit Bid Price	Quantity Unit	Description	Sec #	ItemNumber	Line #
32,310.60	2.10	15,386 LF	THERMOPLASTIC PAVEMENT MARKING LINES (4", 90 MILS)	1205	4685000000-E	0171
225,387.00	2.25	100,172 LF	THERMOPLASTIC PAVEMENT MARKING LINES (6", 90 MILS)	1205	4688000000-E	0172
13,080.80	8.30	1,576 LF	THERMOPLASTIC PAVEMENT MARKING LINES (12", 90 MILS)	1205	4700000000-E	0173
10,481.30	18.65	562 LF	THERMOPLASTIC PAVEMENT MARKING LINES (24", 90 MILS)	1205	4709000000-E	0174
28,665.00	273.00	105 EA	THERMOPLASTIC PAVEMENT MARKING SYMBOL (90 MILS)	1205	4725000000-E	0175
20,019.30	1.05	19,066 LF	PAINT PAVEMENT MARKING LINES (4")	1205	4810000000-E	0176
256,346.30	0.70	366,209 LF	PAINT PAVEMENT MARKING LINES (6")	1205	4815000000-E	0177
5,494.80	2.85	1,928 LF	PAINT PAVEMENT MARKING LINES (12")	1205	4825000000-E	0178
5,203.00	6.05	860 LF	PAINT PAVEMENT MARKING LINES (24")	1205	4835000000-E	0179
9,072.00	126.00	72 EA	PAINT PAVEMENT MARKING SYMBOL	1205	4845000000-N	0180
246.50	1.45	170 LF	REMOVAL OF PAVEMENT MARKING LINES (4")	1205	4850000000-E	0181
81,557.50	0.85	95,950 LF	REMOVAL OF PAVEMENT MARKING LINES (6")	1205	4855000000-E	0182
41.40	2.30	18 LF	REMOVAL OF PAVEMENT MARKING LINES (8")	1205	4860000000-E	0183
331.20	3.45	96 LF	REMOVAL OF PAVEMENT MARKING LINES (12")	1205	4865000000-E	0184
759.00	4.60	165 LF	REMOVAL OF PAVEMENT MARKING LINES (24")	1205	4870000000-E	0185
575.00	115.00	5 EA	REMOVAL OF PAVEMENT MARKING SYMBOLS & CHARACTERS	1205	4875000000-N	0186
37,541.00	54.25	692 EA	NON-CAST IRON SNOWPLOWABLE PAVEMENT MARKER	SP	4905100000-N	0187
338.00	84.50	4 EA	FLEXIBLE DELINEATORS (CRYSTAL)	1267	4935000000-N	0188
4,825.00	193.00	25 LF	6" WATER LINE	1510	5325600000-E	0189
278,692.00	193.00	1,444 LF	10" WATER LINE	1510	5326000000-E	0190
20,265.00	193.00	105 LF	12" WATER LINE	1510	5326200000-E	0191
138,592.00	28.40	4,880 LB	DUCTILE IRON WATER PIPE FITTINGS	1510	5329000000-E	0192
12,280.00	3,070.00	4 EA	6" VALVE	1515	5540000000-E	0193

Line #	ItemNumber	Sec #	Description	Quantity Unit	Unit Bid Price	Amount Bid
0194	5552000000-E	1515	10" VALVE	3 EA	5,680.00	17,040.00
0195	5572000000-E	1515	10" TAPPING SLEEVE & VALVE	2 EA	19,300.00	38,600.00
0196	5648000000-N	1515	RELOCATE WATER METER	3 EA	2,840.00	8,520.00
0197	5666000000-N	1515	FIRE HYDRANT	3 EA	11,100.00	33,300.00
0198	5673000000-E	1515	FIRE HYDRANT LEG	39 LF	193.00	7,527.00
0199	5686500000-E	1515	WATER SERVICE LINE	30 LF	216.00	6,480.00
0200	5691300000-E	1520	8" SANITARY GRAVITY SEWER	1,558 LF	284.00	442,472.00
0201	5709000000-E	1520	**" FORCE MAIN SEWER (3")	603 LF	193.00	116,379.00
0202	5768000000-N	1520	SANITARY SEWER CLEAN-OUT	4 EA	510.00	2,040.00
0203	5768500000-E	1520	SEWER SERVICE LINE	182 LF	120.00	21,840.00
0204	5769000000-E	1520	DUCTILE IRON SEWER PIPE FITTINGS	2,100 LB	28.40	59,640.00
0205	5775000000-E	1525	4' DIA UTILITY MANHOLE	13 EA	7,960.00	103,480.00
0206	5781000000-E	1525	UTILITY MANHOLE WALL 4' DIA	59 LF	313.00	18,467.00
0207	5815500000-N	1530	REMOVE FIRE HYDRANT	3 EA	3,980.00	11,940.00
0208	5816000000-N	1530	ABANDON UTILITY MANHOLE	7 EA	5,680.00	39,760.00
0209	5835700000-E	1540	16" ENCASEMENT PIPE	234 LF	374.00	87,516.00
0210	5835900000-E	1540	20" ENCASEMENT PIPE	79 LF	374.00	29,546.00
0211	600000000-E	1605	TEMPORARY SILT FENCE	123,575 LF	3.85	475,763.75
0212	6006000000-E	1610	STONE FOR EROSION CONTROL, CLASS A	5,900 TON	58.00	342,200.00
0213	6009000000-E	1610	STONE FOR EROSION CONTROL, CLASS B	22,080 TON	60.00	1,324,800.00
0214	6012000000-E	1610	SEDIMENT CONTROL STONE	11,885 TON	63.75	757,668.75
0215	6015000000-E	1615	TEMPORARY MULCHING	224.5 ACR	2,070.00	464,715.00
0216	6018000000-E	1620	SEED FOR TEMPORARY SEEDING	8,600 LB	3.45	29,670.00

Line #	ItemNumber	Sec #	Description	Quantity Unit	Unit Bid Price	Amount Bid
0217	6021000000-E	1620	FERTILIZER FOR TEMPORARY SEEDING	43.5 TON	1,150.00	50,025.00
0218	6024000000-E	1622	TEMPORARY SLOPE DRAINS	8,865 LF	19.20	170,208.00
)219	6029000000-E	SP	SAFETY FENCE	5,000 LF	4.60	23,000.00
0220	6030000000-E	1630	SILT EXCAVATION	73,530 CY	0.01	735.30
0221	6036000000-E	1631	MATTING FOR EROSION CONTROL	500,335 SY	1.95	975,653.25
)222	6037000000-E	SP	COIR FIBER MAT	4,155 SY	6.90	28,669.50
0223	6038000000-E	SP	PERMANENT SOIL REINFORCEMENT MAT	17,585 SY	4.60	80,891.00
)224	6042000000-E	1632	1/4" HARDWARE CLOTH	12,230 LF	6.90	84,387.00
0225	6045000000-E	SP	**" TEMPORARY PIPE (24")	85 LF	84.75	7,203.75
0226	6045000000-E	SP	**" TEMPORARY PIPE (36")	210 LF	112.00	23,520.00
)227	6045000000-E	SP	**" TEMPORARY PIPE (66")	40 LF	260.00	10,400.00
0228	6069000000-E	1638	STILLING BASINS	278 CY	15.20	4,225.60
0229	6070000000-N	1639	SPECIAL STILLING BASINS	10 EA	441.00	4,410.00
0230	6071012000-E	SP	COIR FIBER WATTLE	6,400 LF	10.35	66,240.00
0231	6071013000-E	SP	WATTLE BARRIER	16,772 LF	12.65	212,165.80
0232	6071020000-E	SP	POLYACRYLAMIDE (PAM)	10,945 LB	4.00	43,780.00
0233	6071030000-E	1640	COIR FIBER BAFFLE	10,000 LF	9.20	92,000.00
0234	6071050000-E	SP	**" SKIMMER (1-1/2")	6 EA	7,080.00	42,480.00
0235	6071050000-E	SP	**" SKIMMER (2")	5 EA	7,270.00	36,350.00
0236	6071050000-E	SP	**" SKIMMER (2-1/2")	2 EA	9,470.00	18,940.00
0237	6084000000-E	1660	SEEDING & MULCHING	147 ACR	3,560.00	523,320.00
0238	6087000000-E	1660	MOWING	171 ACR	344.00	58,824.00
0239	6090000000-E	1661	SEED FOR REPAIR SEEDING	2,250 LB	4.60	10,350.00

Amount Bid	Unit Bid Price	Quantity Unit	Description	Sec #	ItemNumber	Line #
13,340.00	1,840.00	7.25 TON	FERTILIZER FOR REPAIR SEEDING	1661	6093000000-E	0240
16,560.00	4.60	3,600 LB	SEED FOR SUPPLEMENTAL SEEDING	1662	6096000000-E	0241
99,130.00	920.00	107.75 TON	FERTILIZER TOPDRESSING	1665	6108000000-E	0242
348,752.00	284.00	1,228 LF	IMPERVIOUS DIKE	SP	6111000000-E	0243
27,600.00	138.00	200 MHR	SPECIALIZED HAND MOWING	1667	6114500000-N	0244
13,110.00	138.00	95 MHR	MANUAL LITTER REMOVAL	SP	6114800000-N	0245
2,408.00	344.00	7 TON	LITTER DISPOSAL	SP	6114900000-E	0246
25,800.00	172.00	150 EA	RESPONSE FOR EROSION CONTROL	SP	6117000000-N	0247
32,200.00	1,610.00	20 EA	CONCRETE WASHOUT STRUCTURE	SP	6117500000-N	0248
58,220.00	142.00	410 CY	CULVERT DIVERSION CHANNEL	SP	6120000000-E	0249
3,900.00	390.00	10 EA	GENERIC EROSION CONTROL ITEM FABRIC INSERT INLET PROTECTION DEVICE	SP	6132000000-N	0250
11,700.00	390.00	30 EA	GENERIC EROSION CONTROL ITEM FABRIC INSERT INLET PROTECTION DEVICE CLEANOUT	SP	6132000000-N	0251
12,541.25	3.95	3,175 LF	SIGNAL CABLE	1705	7060000000-E	0252
20,400.00	1,360.00	15 EA	VEHICLE SIGNAL HEAD (12", 3 SECTION)	1705	7120000000-E	0253
5,070.00	1,690.00	3 EA	VEHICLE SIGNAL HEAD (12", 4 SECTION)	1705	7132000000-E	0254
3,564.00	198.00	18 EA	BACKPLATE	1706	7180000000-N	0255
9,085.00	7.90	1,150 LF	MESSENGER CABLE (3/8")	1710	7264000000-E	0256
29,625.00	39.50	750 LF	UNPAVED TRENCHING (********) (1, 2")	1715	7300000000-E	0257
11,312.50	45.25	250 LF	DIRECTIONAL DRILL (*********) (1, 2")	1715	7301000000-E	0258
7,490.00	1,070.00	7 EA	JUNCTION BOX (STANDARD SIZE)	1716	7324000000-N	0259
2,820.00	1,410.00	2 EA	JUNCTION BOX (OVER-SIZED, HEAVY DUTY)	1716	7348000000-N	0260
3,620.00	1,810.00	2 EA	WOOD POLE	1720	7360000000-N	0261

Line #	ItemNumber	Sec #	Description	Quantity Unit	Unit Bid Price	Amount Bid
0262	7372000000-N	1721	GUY ASSEMBLY	6 EA	960.00	5,760.00
0263	7408000000-E	1722	1" RISER WITH WEATHERHEAD	1 EA	1,020.00	1,020.00
0264	7420000000-E	1722	2" RISER WITH WEATHERHEAD	3 EA	1,360.00	4,080.00
0265	7444000000-E	1725	INDUCTIVE LOOP SAWCUT	800 LF	18.05	14,440.00
0266	7456000000-E	1726	LEAD-IN CABLE (**********) (14-2)	6,300 LF	2.80	17,640.00
0267	7481000000-N	SP	SITE SURVEY	1 EA	1,580.00	1,580.00
0268	7481240000-N	SP	CAMERA WITHOUT INTERNAL LOOP EMULATOR PROCESSING UNIT	3 EA	13,000.00	39,000.00
0269	7481260000-N	SP	EXTERNAL LOOP EMULATOR PROCESSING UNIT	1 EA	1,980.00	1,980.00
0270	7576000000-N	SP	METAL STRAIN SIGNAL POLE	4 EA	18,100.00	72,400.00
0271	7613000000-N	SP	SOIL TEST	4 EA	1,980.00	7,920.00
0272	7614100000-E	SP	DRILLED PIER FOUNDATION	32 CY	1,920.00	61,440.00
0273	7636000000-N	1745	SIGN FOR SIGNALS	2 EA	395.00	790.00
0274	7684000000-N	1750	SIGNAL CABINET FOUNDATION	1 EA	2,260.00	2,260.00
0275	7696000000-N	1751	CONTROLLERS WITH CABINET (************************************	1 EA	31,600.00	31,600.00
0276	7744000000-N	1751	DETECTOR CARD (TYPE 170)	7 EA	311.00	2,177.00
0277	7901000000-N	1753	CABINET BASE EXTENDER	1 EA	850.00	850.00
0278	7980000000-N	SP	GENERIC SIGNAL ITEM LUMINAIRE ARM FOR TEMPORARY VIDEO SYSTEM	1 EA	1,410.00	1,410.00

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Page	:	14	of	15
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Line #	ItemNumber	Sec #	Description	Quantity Unit	Unit Bid Price	Amount Bid
			CULVERT ITEMS			
0279	8126000000-N	414	CULVERT EXCAVATION, STA ****** (127+65.00 -L-)	LUMP SUM	348,000.00	348,000.00
0280	8126000000-N	414	CULVERT EXCAVATION, STA ****** (71+92.10 -L-)	LUMP SUM	189,000.00	189,000.00
0281	8133000000-E	414	FOUNDATION CONDITIONING MATERIAL, BOX CULVERT	753 TON	210.00	158,130.00
0282	8196000000-E	420	CLASS A CONCRETE (CULVERT)	356.5 CY	2,050.00	730,825.00
0283	8245000000-E	425	REINFORCING STEEL (CULVERT)	63,271 LB	4.50	284,719.50

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# North Carolina Department of Transportation Contract Item Sheets For C204887

Page: 15 of 15

Line #	ItemNumber	Sec #	Description	Quantity Unit	Unit Bid Price	Amount Bid
			WALL ITEMS			
0284	8802010000-E	SP	SOIL NAIL RETAINING WALLS	3,130 SF	208.00	651,040.00
0285	8802015100-N	SP	SOIL NAIL VERIFICATION TESTS	2 EA	2,810.00	5,620.00
0286	8802015110-N	SP	SOIL NAIL PROOF TESTS	6 EA	1,350.00	8,100.00
			TOTAL AN	MOUNT OF BID FOR ENT	IRE PROJECT	\$67,160,518.63

1432/Jan04/Q3203774/D1058583865210/E285

Contract Number	C204887
TIP Number	R-5861
Standard Specifications Year	2024
County and Route	Cherokee / US-19

# **2024** Bid Items Eligible for Steel Price Adjustment

Instructions: This form shall be completed in accordance with the Special Provision. If you choose to have Steel Price Adjustments applied to any of the items listed below, select the word "Yes" in the "Option" column corresponding to the item. The form must be signed, dated, and submitted to the Contract Engineer within the timeframe required by the Special Provision.

ontract Line Number	Item Number and Description	Category	Option (Yes or No)	
1210	3030000000-E - STEEL BEAM GUARDRAIL	4	No	
1220	3045000000-E - STEEL BEAM GUARDRAIL, SHOP CURVED	4	No	
1230	3105000000-N - STEEL BEAM GUARDRAIL TERMINAL SECTIONS	4	No	
1240	3150000000-N - ADDITIONAL GUARDRAIL POSTS	4	No	
1250	3195000000-N - GUARDRAIL END UNITS, TYPE AT-1	4	No	
1260	3287000000-N - GUARDRAIL END UNITS, TYPE TL-3	4	No	
1270	3288000000-N - GUARDRAIL END UNITS, TYPE TL-2	4	No	
1360	3524000000-E - VINYL COATED CHAIN LINK FENCE, **" FABRIC	5	No	
1370	3539000000-E - METAL LINE POSTS FOR **" CHAIN LINK FENCE	5	No	
1380	3545000000-E - METAL TERMINAL POSTS FOR **" CHAIN LINK FENCE	5	No	
1430	4072000000-E - SUPPORTS, 3-LB STEEL U-CHANNEL	5	No	
2090	5835700000-E - 16" ENCASEMENT PIPE	2	No	
2100	5835900000-E - 20" ENCASEMENT PIPE	2	No	
2700	7576000000-N - METAL STRAIN SIGNAL POLE	6	No	
2830	8245000000-E - REINFORCING STEEL (CULVERT)	1	No	
2840	8802010000-E - SOIL NAIL RETAINING WALLS	1	No	
			-	
PRINT NAME	Signature (Print and Sign Your Name)  1 Mitchell Simpson	Firm or 0	Corporation	
SIGN NAME	[ Math Sz		Wright Brothers Construction Company, Inc.	
	Date:		r Number	
	1/12/2024	3	762	

#### **EXECUTION OF CONTRACT** NON-COLLUSION, DEBARMENT AND GIFT BAN CERTIFICATION

#### CORPORATION

The Contractor declares (or certifies, verifies, or states) under penalty of perjury under the laws of the United States that neither he, nor any official, agent or employee has entered into any agreement, participated in any collusion, or otherwise taken any action which is in restraint of free competitive bidding in connection with this Contract, that the Contractor has not been convicted of violating N.C.G.S. § 133-24 within the last three years, and that the Contractor intends to do the work with its own bona fide employees or subcontractors and did not bid for the benefit of another contractor.

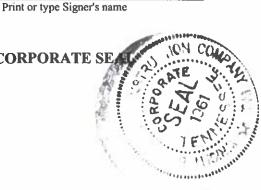
By submitting this Execution of Contract, Non-Collusion and Debarment Certification, the Contractor is certifying his status under penalty of perjury under the laws of the United States in accordance with the Debarment Certification attached, provided that the Debarment Certification also includes any required statements concerning exceptions that are applicable.

N.C.G.S. § 133-32 and Executive Order 24 prohibit the offer to, or acceptance by, any State Employee of any gift from anyone with a contract with the State, or from any person seeking to do business with the State. By execution of any response in this procurement, you attest, for your entire organization and its employees or agents, that you are not aware that any such gift has been offered, accepted, or promised by any employees of your organization.

SIGNATURE OF CO	ONTRACTOR
Wright Brothers Construction Co., Inc.	
Full name of Corp	poration
P.O. Box 437 / 1500 Lauderdale Memorial Hwy / 0	Charleston, TN 37310
Address as Prequ	nalified
Attest W. Ry	1. Martil Sin
Select appropriate title	President Vice President Assistant Vice President Select appropriate title
Penny W. Ragland / Secretary	J. Mitchell Simpson / Exec. Vice President

Print or type Signer's name

**CORPORATE SE** 



County Cherokee

#### **DEBARMENT CERTIFICATION**

#### Conditions for certification:

- The prequalified bidder shall provide immediate written notice to the Department if at any time the bidder learns that his certification was erroneous when he submitted his debarment certification or explanation filed with the Department, or has become erroneous because of changed circumstances.
- 2. The terms covered transaction, debarred, suspended, ineligible, lower tier covered transaction, participant, person, primary covered transaction, principal, proposal, and voluntarily excluded, as used in this provision, have the meanings set out in the Definitions and Coverage sections of the rules implementing Executive Order 12549. A copy of the Federal Rules requiring this certification and detailing the definitions and coverages may be obtained from the Contract Officer of the Department.
- 3. The prequalified bidder agrees by submitting this form, that he will not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in NCDOT contracts, unless authorized by the Department.
- 4. For Federal Aid projects, the prequalified bidder further agrees that by submitting this form he will include the Federal-Aid Provision titled Required Contract Provisions Federal-Aid Construction Contract (Form FHWA PR 1273) provided by the Department, without subsequent modification, in all lower tier covered transactions.
- 5. The prequalified bidder may rely upon a certification of a participant in a lower tier covered transaction that he is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless he knows that the certification is erroneous. The bidder may decide the method and frequency by which he will determine the eligibility of his subcontractors.
- 6. Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render in good faith the certification required by this provision. The knowledge and information of a participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.
- 7. Except as authorized in paragraph 6 herein, the Department may terminate any contract if the bidder knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available by the Federal Government.

Contract No.	C204887
County Che	

#### DEBARMENT CERTIFICATION

The prequalified bidder certifies to the best of his knowledge and belief, that he and his principals:

- a. Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any Federal department or agency;
- b. Have not within a three-year period preceding this proposal been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records; making false statements; or receiving stolen property;
- c. Are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State or local) with commission of any of the offenses enumerated in paragraph b. of this certification; and
- d. Have not within a three-year period preceding this proposal had one or more public transactions (Federal, State or local) terminated for cause or default.
- e. Will submit a revised Debarment Certification immediately if his status changes and will show in his bid proposal an explanation for the change in status.

If the prequalified bidder cannot certify that he is not debarred, he shall provide an explanation with this submittal. An explanation will not necessarily result in denial of participation in a contract.

Failure to submit a non-collusion and debarment certification will result in the prequalified bidder's bid being considered non-responsive.

Check here	if an	explanation	is attacl	hed to tl	his certific	ation.
	Check here	Check here if an	Check here if an explanation	Check here if an explanation is attack	Check here if an explanation is attached to the	Check here if an explanation is attached to this certific

County (ies): <u>Cherokee</u>
ACCEPTED BY THE DEPARTMENT OF TRANSPORTATION
DocuSigned by:
Ronald E. Davenport, Jr.
Contract Officer
01/19/2024
Date
Execution of Contract and Bonds Approved as to Form:
••
—DocuSigned by: Muanda Hdluy
Attorney General
01/19/2024 Date

C204887

Contract No.

Contract No. County

C204887

Rev 5-17-11

#### CONTRACT PAYMENT BOND

January 9, 2024 Date of Payment Bond Execution

Wright Brothers Construction Company, Inc. Name of Principal Contractor

**Liberty Mutual Insurance Company** Name of Surety:

Name of Contracting Body: North Carolina Department of Transportation

Raleigh, North Carolina

\$67,160,518.63 Amount of Bond:

C204887 Contract ID No.:

Cherokee County Name:

KNOW ALL MEN BY THESE PRESENTS, That we, the PRINCIPAL CONTRACTOR (hereafter, PRINCIPAL) and SURETY above named, are held and firmly bound unto the above named Contracting Body, hereinafter called the Contracting Body, in the penal sum of the amount stated above for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators, and successors, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH, that whereas the principal entered into a certain contract with the Contracting Body, numbered as shown above and hereto attached:

NOW THEREFORE, if the principal shall promptly make payment to all persons supplying labor and material in the prosecution of the work provided for in said contract, and any and all duly authorized modifications of said contract that may hereafter be made, notice of which modifications to the surety being hereby waived, then this obligation to be void; otherwise to remain in full force and virtue.

IN WITNESS WHEREOF, the above-bound parties have executed this instrument under their several seals on the date indicated above, the name and corporate seal of each corporate party being hereto affixed and these presents duly signed by its undersigned representative, pursuant to authority of its governing body.

Cherokee

Rev 5-17-11

### **CONTRACT PAYMENT BOND**

Affix Seal of Surety Company

# Liberty Mutual Insurance Company

Print or type Surety Company Name

Ву

Gicelle Pajon, Attorney-in-Fact

Print, stamp or type name of Attorney-in-Fact

Signature of Attorney-in-Fac

Signature of Witness

Camille M. Cruz

Print or type Signer's name

175 Berkeley Street, Boston, MA 02116

Address of Attorney-in-Fact

Rev 5-17-11

#### CONTRACT PAYMENT BOND

#### **CORPORATION**

SIGNATURE OF CONTRACTOR (Principal)

# Wright Brothers Construction Company, Inc.

Full name of Corporation

# P.O. Box 437, Charleston, TN 37310

Address as prequalified

President, Vice President, Assistant Vice President

Select appropriate title

Affix Corporate Seal

Attest

Signature of Secretary, Assistant Select appropriate title

Print or type Signer's name

Contract No.

C204887	
Cherokee	

Rev 5-17-11

#### CONTRACT PERFORMANCE BOND

Date of Performance Bond Execution:

Name of Principal Contractor:

Name of Surety:

Name of Contracting Body:

Amount of Bond:

Contract ID No.:

County Name:

Danuary 9, 2024

Wright Brothers Construction Company, Inc.

Liberty Mutual Insurance Company

North Carolina Department of Transportation

Raleigh, North Carolina

\$67,160,518.63

C204887

Cherokee

KNOW ALL MEN BY THESE PRESENTS, That we, the PRINCIPAL CONTRACTOR (hereafter, PRINCIPAL) and SURETY above named, are held and firmly bound unto the above named Contracting Body, hereinafter called the Contracting Body, in the penal sum of the amount stated above for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators, and successors, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH, that whereas the principal entered into a certain contract with the Contracting Body, numbered as shown above and hereto attached:

NOW THEREFORE, if the principal shall well and truly perform and fulfill all the undertakings, covenants, terms, conditions, and agreements of said contract during the original term of said contract and any extensions thereof that may be granted by the Contracting Body, with or without notice to the Surety, and during the life of any guaranty required under the contract, and shall also well and truly perform and fulfill all the undertakings, covenants, terms, conditions, and agreements of any and all duly authorized modifications of said contract that may hereafter be made, notice of which modifications to the surety being hereby waived, then this obligation to be void; otherwise to remain in full force and virtue.

IN WITNESS WHEREOF, the above-bound parties have executed this instrument under their several seals on the date indicated above, the name and corporate seal of each corporate party being hereto affixed and these presents duly signed by its undersigned representative, pursuant to authority of its governing body.

Cherokee

Rev 5-17-11

### **CONTRACT PERFORMANCE BOND**

Affix Seal of Surety Company

# **Liberty Mutual Insurance Company**

Print or type Surety Company Name

By Gicelle Pajon, Attorney-in-Fact
Print, stamp or type name of Attorney-in-Fact

Signature of Attorney-in-Fact

Signature of Witness

Camille M. Cruz

Print or type Signer's name

175 Berkeley Street, Boston, MA 02116

Address of Attorney-in-Fact

Rev 5-17-11

#### CONTRACT PERFORMANCE BOND

#### **CORPORATION**

SIGNATURE OF CONTRACTOR (Principal)

# Wright Brothers Construction Company, Inc.

Full name of Corporation

# P.O. Box 437, Charleston, TN 37310

Address as prequalified

Select appropriate title

Affix Corporate Seal

Attest

Signature of Secretary, Ass

Select appropriate title

Penny W. Rasland
Print or type Signer's name





This Power of Attorney limits the acts of those named herein, and they have no authority to bind the Company except in the manner and to the extent herein stated.

Liberty Mutual Insurance Company The Ohio Casualty Insurance Company West American Insurance Company

Certificate No: 8204866

For bond and/or Power of Attorney (POA) verification inquiries,

#### **POWER OF ATTORNEY**

KNOWN ALL PERSONS BY THESE PRESENTS: That The Ohio Casualty Insurance Company is a corporation duly organized under the laws of the State of New Hampshire, that
Liberty Multual Insurance Company is a corporation duly organized under the laws of the State of Massachusetts, and West American Insurance Company is a corporation duly
organized under the laws of the State of Indiana (herein collectively called the "Companies"), pursuant to and by authority herein set forth, does hereby name, constitute and appoint,
Girelle Paion

all of the city of Sunrise, state of Florida each individually if there be more than one named, its true and lawful attorney-in-fact to make, execute, seal, acknowledge and deliver, for and on its behalf as surety and as its act and deed, any and all undertakings, bonds, recognizances and other surety obligations, in pursuance of these presents and shall be as binding upon the Companies as if they have been duly signed by the president and attested by the secretary of the Companies in their own proper persons.

IN WITNESS WHEREOF, this Power of Attorney has been subscribed by an authorized officer or official of the Companies and the corporate seals of the Companies have been affixed thereto this 15th day of February, 2021.

1912 CONFORMATION OF THE PROPERTY OF THE PROPE

Liberty Mutual Insurance Company The Ohio Casualty Insurance Company West American Insurance Company

David M. Carey, Assistant Secretary

STATE OF PENNSYLVANIA COUNTY OF MONTGOMERY

On this 15th day of February, 2021, before me personally appeared David M. Carey, who acknowledged himself to be the Assistant Secretary of Liberty Mutual Insurance Company, The Ohio Casualty Company, and West American Insurance Company, and that he, as such, being authorized so to do, execute the foregoing instrument for the purposes therein contained by signing on behalf of the corporations by himself as a duly authorized officer.

IN WITNESS WHEREOF, I have hereunto subscribed my name and affixed my notarial seal at King of Prussia, Pennsylvania, on the day and year first above written.



Commonwealth of Pennsylvanie - Notary Seal Terese Pastella, Notary Public Montgomery County My commission expires March 28, 2025 Commission number 1126044

Member Pennsubrania Association of Notariae

By: Teresa Pastella

Teresa Pastella, Notary Public

This Power of Attorney is made and executed pursuant to and by authority of the following By-laws and Authorizations of The Ohio Casualty Insurance Company, Liberty Mutual Insurance Company, and West American Insurance Company which resolutions are now in full force and effect reading as follows:

ARTICLE IV - OFFICERS: Section 12. Power of Attorney.

Any officer or other official of the Corporation authorized for that purpose in writing by the Chairman or the President, and subject to such limitation as the Chairman or the President may prescribe, shall appoint such attorneys-in-fact, as may be necessary to act in behalf of the Corporation to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations. Such attorneys-in-fact, subject to the limitations set forth in their respective powers of attorney, shall have full power to bind the Corporation by their signature and execution of any such instruments and to attach thereto the seal of the Corporation. When so executed, such instruments shall be as binding as if signed by the President and attested to by the Secretary. Any power or authority granted to any representative or attorney-in-fact under the provisions of this article may be revoked at any time by the Board, the Chairman, the President or by the officer or officers granting such power or authority.

ARTICLE XIII - Execution of Contracts: Section 5. Surety Bonds and Undertakings.

Any officer of the Company authorized for that purpose in writing by the chairman or the president, and subject to such limitations as the chairman or the president may prescribe, shall appoint such attorneys in-fact, as may be necessary to act in behalf of the Company to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations. Such attorneys-in-fact, subject to the limitations set forth in their respective powers of attorney, shall have full power to bind the Company by their signature and execution of any such instruments and to attach thereto the seal of the Company. When so executed such instruments shall be as binding as if signed by the president and attested by the secretary.

Certificate of Designation - The President of the Company, acting pursuant to the Bylaws of the Company, authorizes David M. Carey, Assistant Secretary to appoint such attorneys-infact as may be necessary to act on behalf of the Company to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations.

Authorization – By unanimous consent of the Company's Board of Directors, the Company consents that facsimile or mechanically reproduced signature of any assistant secretary of the Company, wherever appearing upon a certified copy of any power of attorney issued by the Company in connection with surety bonds, shall be valid and binding upon the Company with the same force and effect as though manually affixed.

I, Renee C. Llewellyn, the undersigned, Assistant Secretary, of Liberty Mutual Insurance Company, The Ohio Casualty Insurance Company, and West American Insurance Company do hereby certify that this power of attorney executed by said Companies is in full force and effect and has not been revoked.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed the seals of said Companies this

9th day

January

1912

1919 CHAMPSTON

1991

By: Kenil Chilly
Renee C. Llewellyn, Assistant Secretary

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