

CITY OF GREENVILLE
SOUTH TAR RIVER GREENWAY, PHASE 3
CONTRACT PROPOSAL



TIP NUMBER: EB-5539

FEDERAL AID NO.: TCSP-0220(64)

WBS ELEMENT NO.: 45529.3.1

COUNTY: PITT

DESCRIPTION: CONSTRUCTION OF APPROXIMATELY 1.7 MILES OF GREENWAY. THE PROJECT INCLUDES GRADING, DRAINAGE, PAVING, CURB & GUTTER, TRAFFIC CONTROL, PAVEMENT MARKINGS, SIGNING, EROSION CONTROL, STRUCTURES, AND OTHER RELATED ITEMS SHOWN ON THE PLANS.

DATE OF ADVERTISEMENT: September 17, 2017

PRE-BID MEETING: September 26, 2017 at 10 AM

BID OPENING: October 19, 2017 at 10 AM

***** NOTICE *****

ALL BIDDERS SHALL COMPLY WITH ALL APPLICABLE LAWS REGULATING THE PRACTICE OF GENERAL CONTRACTING AS CONTAINED IN CHAPTER 87 OF THE GENERAL STATUTES OF NORTH CAROLINA. FOR CONTRACTS \$30,000 OR MORE, EXCEPT FOR CERTAIN SPECIALTY WORK AS DETERMINED BY THE LICENSING BOARD, BIDDERS ARE REQUIRED TO BECOME LICENSED BY THE NC LICENSING BOARD. NON-LICENSED BIDDERS ARE PERMITTED 60 DAYS AFTER BID OPENING TO OBTAIN PROPER LICENSING FOR THE TYPE OF PROJECT BEING LET. 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.

NAME OF BIDDER

ADDRESS OF BIDDER

RETURN BIDS TO: CITY OF GREENVILLE
ATTENTION: LYNN RAYNOR
PERSON'S TITLE: PROJECT MANAGER
PHYSICAL ADDRESS: 1500 BEATTY STREET, GREENVILLE, NC 27834

ALL BIDS MUST BE RECEIVED PRIOR TO THE DATE AND TIME LISTED ABOVE.

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APPENDIX

**NCDENR LAND QUALITY SECTION LETTER OF APPROVAL
USACE GENERAL PERMIT (SECTION 404)
NCDENR DWR 401 WATER QUALITY CERTIFICATION APPROVAL AND
NCDENR DWR TAR-PAMLICO RIPARIAN BUFFER IMPACT APPROVAL
NCDPS NO-RISE CERTIFICATION
PERMIT DRAWINGS
GREENWAY & STRUCTURE SUBSURFACE INVESTIGATION
STRUCTURE FOUNDATIONS AND GREENWAY TRAIL RECOMMENDATIONS
CSXT RAILROAD INSURANCE REQUIREMENTS
CSXT SPECIAL PROVISIONS
CSXT CONSTRUCTION SUBMISSION CRITERIA**

NOTICE TO BIDDERS

Sealed bids will be received by the City of Greenville, in the Public Works Department Conference Room, 1500 Beatty Street, Greenville, NC 27834 **October 19, 2017** at 10:00 AM, and immediately thereafter publicly opened and read, for constructing the following:

**EB-5539 – SOUTH TAR RIVER GREENWAY, PHASE 3
GREENVILLE, NORTH CAROLINA**

Bids for the complete project must be enclosed in a sealed envelope, addressed to the City of Greenville, and the outside of the envelope must be marked “Quotation For – EB-5539 South Tar River Greenway, Phase 3 to be opened at 10:00 AM on October 19, 2017” along with the Name, Address, and License Number of the Bidder. All bids must be made on blank forms provided and included in the bound document. The name, address, and license number of the Bidder must be plainly marked thereon.

EB-5539 - South Tar River Greenway, Phase 3 consists of the installation of stone base, asphalt paving, concrete sidewalks, drainage, curb ramps, grading, structures, utility adjustments, conduit, and associated appurtenances as described in these Contract Documents, Plans and Specifications.

The foregoing description shall not be construed as a complete description of all work required.

All bidders, at the time the bid proposal is submitted, shall be prequalified and listed on the NCDOT Directory of Transportation Firms. BIDS SUBMITTED BY CONTRACTORS WHO ARE NOT PREQUALIFIED BY THE NCDOT WILL NOT BE ACCEPTED AND WILL BE REJECTED WITHOUT FURTHER CONSIDERATION. These bids will not be considered for award by the City of Greenville and they will be returned to the bidder. Sub-contractors are required to be prequalified by the NCDOT prior to beginning work.

<https://partner.ncdot.gov/VendorDirectory/search.html?s=pbs&a=new>

Sales tax may be listed on the proposal, but as a separate item. No charge will be allowed for Federal Excise and Transportation tax, from which the City of Greenville is exempt.

Contractors are notified that legislative acts relating to licensing of contractors will be observed in receiving bids and awarding contracts. Firms submitting a proposal are attesting that no official or employee of the City of Greenville is directly or indirectly interested in this proposal for any reason or personal gain.

The complete examination and understanding of the construction plans, specifications, contract documents and site of the proposed work is necessary to properly submit a proposal. Plans and specifications are on file and may be examined at the City of Greenville, Public Works Department, the Carolinas AGC, Dodge Plan Room and the Hispanic Contractors Association in Raleigh and the Minority Contractors Resource Center in Durham during normal office hours after **September 20, 2017**. A CD with the Construction plans, Specifications and Documents may be obtained for no cost from the Engineering Division of Public Works, 1500 Beatty Street, Greenville, North Carolina, upon providing an application.

The Successful Bidder will be required to provide a **Performance and Payment Bond** in the total aggregate penal sum equal to the total Contract Sum to complete all work established in the plans and specifications.

A Pre-Bid Conference will be held at the City of Greenville's Public Works Department Main Conference Room, 1500 Beatty Street, Greenville, North Carolina on **September 26, 2017 at 10:00 AM.**

Project Contacts:

City of Greenville

Public Works Department

Engineering Division

1500 Beatty Street

P.O. Box 7207

Greenville, NC 27835-7207

Telephone: (252) 329-4467

Lynn Raynor, PE, City Engineer II

INSTRUCTIONS TO BIDDERS

PLEASE READ ALL INSTRUCTIONS CAREFULLY BEFORE PREPARING AND SUBMITTING YOUR BID.

Please read all instructions and applicable articles found in the **2012 NORTH CAROLINA DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES** available at the website listed below carefully before preparing and submitting your bid.

<http://www.ncdot.org/doh/preconstruct/ps/specifications/2012StdSpec.pdf>

All bids shall be prepared and submitted in accordance with the following requirements. Failure to comply with any requirement shall cause the bid to be considered irregular and shall be grounds for rejection of the bid.

1. The bid form furnished by CITY OF GREENVILLE with the proposal shall be used and shall not be altered in any manner. **DO NOT SEPARATE THE BID FORM FROM THE PROPOSAL FORMS!** Each bid proposal must be accompanied by all appropriate forms and documentation to be considered responsive.
2. All entries on the bid form, including signatures, shall be written in ink.
3. The Bidder shall submit a unit price for every item on the bid form. The unit prices for the various contract items shall be written in figures. *****Unit prices must be limited to TWO decimal places.*****
4. An amount bid shall be entered on the bid form for every item. The amount bid for each item shall be determined by multiplying each unit bid by the quantity for that item, and shall be written in figures in the "Amount Bid" column of the form.
5. The total amount bid shall be written in figures in the proper place on the bid form. The total amount shall be determined by adding the amounts bid for each item.
6. Changes in any entry shall be made by marking through the entry in ink and making the correct entry adjacent thereto in ink. A representative of the Bidder shall initial the change in ink. Do not use "White Out" or similar product to make corrections.
7. The bid shall be properly executed. All bids shall show the following information:
 - a. Name of individual, firm, corporation, partnership, or joint venture submitting bid.
 - b. Name of individual or representative submitting bid and position or title.
 - c. Name, signature, and position or title of witness.
 - d. Federal Identification Number
 - e. Contractor's License Number (If available)
8. Bids submitted by corporations shall bear the seal of the corporation.
9. The bid shall not contain any unauthorized additions, deletions, or conditional bids.

10. The bidder shall not add any provision reserving the right to accept or reject an award, or to enter into a contract pursuant to an award.

11. THE PROPOSAL WITH THE BID FORM STILL ATTACHED SHALL BE PLACED IN A SEALED ENVELOPE AND SHALL HAVE BEEN DELIVERED TO AND RECEIVED IN THE CITY OF GREENVILLE, 1500 BEATTY STREET, GREENVILLE, NC 27834 BY 10:00 AM ON, OCTOBER 19, 2017.

12. The sealed bid must display the following statement on the front of the sealed envelope:

“QUOTATION FOR – EB-5539: SOUTH TAR RIVER GREENWAY, PHASE 3 TO BE OPENED AT 10:00 AM ON, OCTOBER 19, 2017.”

13. If delivered by mail, the sealed envelope shall be placed in another sealed envelope and the outer envelope shall be addressed as follows:

**CITY OF GREENVILLE
Public Works Department Engineering Division
Attn: Lynn Raynor
1500 Beatty Street
Greenville, NC 27834
252-329-4467**

14. Each proposal shall indicate the full business name and address of the Bidder and shall be signed by him with the usual signature.

15. The bid proposal shall be accompanied by a Bid Bond or a Certified Check payable to the Owner in an amount equal to not less than five percent (5%) of the bid. If a Bidder is awarded the contract, but fails, refuses, or neglects to execute the contract within ten (10) days after receipt of written notice of award, then the amount of his Bond or check shall be paid to, or retained by the Owner as liquidated damages, although not as a penalty.

16. Each bidder shall make acknowledgement of receipt of all addendums in the space provided in the Bid Form.

17. Any inquires, requests for interpretation, technical questions, clarification, or additional information shall be submitted in writing to the City of Greenville. Questions can be emailed up until 24 hours before bid opening. Interpretations or clarifications considered necessary by City/Engineer in response to such questions will be issued by Addenda mailed or delivered to all parties recorded by City as having received the Bidding Documents. Questions received less than five (5) working days prior to the date for opening of Bids may not be answered. Only questions answered by formal written Addenda will be binding. Oral and other interpretations or clarifications will be without legal effect.

Addenda may also be issued to modify the Bidding Documents as deemed advisable by Owner or Engineer.

Questions shall include the Project name, and the person's name, firm, telephone number, and fax number. Questions may be emailed to the Project Manager at LRaynor@greenvillenc.gov or faxed to the Project Manager at 252-329-4535.

NCDOT STANDARD NOTES (Federal Aid)

(11/1/12)

- A. *NCDOT Standard Specifications* – The 2012 North Carolina Department of Transportation Standard Specifications for Roads and Structures, herein referred to as the ‘Standard Specifications’, and the 2012 Roadway Standard Drawings, shall apply to all portions of this project except as may be modified by this document.
- B. *Bidder Prequalification* - Bidders are required to be prequalified with NCDOT for their specific discipline. Contractors wishing to become prequalified may obtain information through the NCDOT website at:
<https://connect.ncdot.gov/business/Pages/default.aspx>
- C. *Disadvantaged Business Enterprise References* - Since this is a Federal-aid project with DBE participation, only those requirements and goals set forth by NCDOT Goal Setting Committee are applicable. References to any other requirements or to N.C. General Statute 143-128.2 shall not apply to this project. Refer to Special Provision SP1 G63.
- D. *Award of Contract* - The contract will be awarded to the lowest responsible, responsive bidder. Alternate items will not be considered in determining the low bidder and will only be evaluated after the award of the contract is made.
- E. *Contractor Licensing* – On all Federal-aid contracts, non-licensed contractors are permitted to submit bids, however they must be licensed prior to performing any work. Bidders are permitted 60 days, after bid opening, to become licensed by the North Carolina Licensing Board. If they fail to do so within 60 days, their bid will be considered non-responsive and will be rejected. 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).
- F. *Bonds* - Please note that all Bid Bonds, Payment Bonds, and Performance Bonds required for this project, shall be those found on the NCDOT website. The bonds are located at: <https://connect.ncdot.gov/municipalities/Pages/Bid-Proposals-for-LGA.aspx>

Bid Bonds (M-5):

<https://connect.ncdot.gov/municipalities/Bid%20Proposals%20for%20LGA%20Content/04%20Bid%20Bonds.doc>

Payment Bonds (M-6):

<https://connect.ncdot.gov/municipalities/Bid%20Proposals%20for%20LGA%20Content/05%20Payment%20Bonds.doc>

Performance Bonds (M-7):

<https://connect.ncdot.gov/municipalities/Bid%20Proposals%20for%20LGA%20Content/06%20Performance%20Bonds.doc>

- G. Liability Insurance – In addition to any insurance requirements as may be required by the LGA, the Contractor is obligated to comply with Article 107-15 of the *Standard Specifications* including the dollar limits set forth.
- H. Buy America – This project shall be governed by the Buy America requirements, for the use of domestic steel and iron products, as outlined in the *Standard Specifications* and Special Provision SP1 G120.
- I. Proprietary Items - When a proprietary (brand name) product, whether material, equipment or procedure, are specified in the plans or specifications, they are used only to denote the style, type, character, and quality desired of the product. They do not restrict the bidder from proposing other brands, makes, or manufacturers, which are determined to be of equal quality. The approval, or disapproval of those products, will be made by the Engineer prior to allowing those product(s) or material(s) to be incorporated into the work.
- J. Retainage by LGAs – The LGA for this contract will not retain any amount or percentage from progress payments or final estimates due the contractor.
- Retainage by Contractors – Contractors are NOT permitted to retain any amount or percentage from monies due their subcontractors or material suppliers on federally funded projects except as permitted by Subarticle 109-4(B) of the *Standard Specifications*.
- K. Traffic Control –The requirements of the *Manual on Uniform Traffic Control Devices (MUTCD) – FHWA*, as amended by the *NCDOT Supplement to MUTCD*, shall apply. Traffic Control, both vehicular and pedestrian, shall be maintained throughout the project as required by these specifications as modified by the project plans or special provisions.

CHANGES TO THE NCDOT 2012 STANDARD SPECIFICATIONS:

(11/1/12)

1. *Article 102-1* - Delete this section in its entirety.
2. *Subarticle 102-8(B) Electronic Bids* – Delete this section in its entirety.
3. *Subarticle 102-10* – In line 7 of the first paragraph on page 1-18, “60” days shall be modified to “90” days.
4. *Subarticle 102-12(A)-Paper Bids* – In line 5 the reference to “Contract Officer” shall be changed to “CITY or duly authorized agent”.
5. *Subarticle 102-12(B) Electronic Bids* – Delete this section in its entirety.
6. *Subarticle 103-2(B) Electronic Bids* – Delete this section in its entirety.
7. *Subarticle 103-3(A)-Criteria for Withdrawal of Bid* – Modify the reference “G.S.136-28.1” to “G.S.143-129.1”. In that same subarticle under (5), in the line 28, modify “State Contract Officer” to “CITY or duly authorized agent”.
8. *Article 103-7* - In the first sentence, modify “14” calendar days to “10” per G.S.143-129.
9. *Article 103-9* - In the first sentence, modify “14” calendar days to “10” per G.S.143-129.
10. *Article 105-9 Construction Stakes, lines and Grades* - The Municipality will not set the stakes, lines or grades for this project.
11. *Article 107-5* – In line 11, change the word “entity” to “municipality”.
12. *Article 108-2* – Add the following requirement to this article after line 16 on page 1-65, “The municipality may add additional requirements as noted in the bid proposal”.
13. *Article 108-3* – Change “Division Engineer” in line 18, to “CITY or duly authorized agent”.
14. *Article 108-4* – Change “Resident Engineer” in line 26 to “CITY or duly authorized agent”.
15. *Article 109-8* – Delete this article in its entirety. Fuel Price Adjustments will not apply to this project.
16. *Article-620-4* - Delete line 3 through 27 on page 6-39. Asphalt Price Adjustments will not apply to this project.

PROJECT SPECIAL PROVISIONS

GENERAL

CONTRACT TIME AND LIQUIDATED DAMAGES

(8-15-00) (Rev. 12-18-07)

108

SP1 G07 A

The date of availability for this contract is **the issued date of the Notice to Proceed**, 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 **180 days after ICT 1.**

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 **Five Hundred Dollars (\$500.00)** 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 **anticipated to be February 1, 2018.**

The completion date for this intermediate contract time is dependent on the base bid and alternates selected. The duration for the Base Bid- Phase 3A is **240 calendar days.** The additional duration added for the different alternates if selected are:

Alternate	Additional Calendar Days
Phase 3A – Alternate 1 – Replace Drainage Structure 0906	0 days
Phase 3A – Alternate 2 – Fairfax Trailhead	15 days
Phase 3A – Alternate 3 – White Street Trail Connection	15 days
Phase 3A – Alternate 4 – Precast Concrete Boardwalk with Metal Railing	0 days

Alternate	Additional Calendar Days
Phase 3A – Alternate 5 – Precast Concrete Boardwalk with Timber Railing	0 days
Phase 3B – Alternate 6	120 days
Phase 3B – Alternate 7 – Third Street Trail Connection	0 days
Phase 3B – Alternate 8 – Precast Concrete Boardwalk with Metal Railing	0 days
Phase 3B – Alternate 9 – Precast Concrete Boardwalk with Timber Railing	0 days

The liquidated damages for this intermediate contract time are **Seven-Hundred and Fifty Dollars (\$750.00)** 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 A

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 **Memorial Drive (US-13/NC-11)** during the following time restrictions:

DAY AND TIME RESTRICTIONS

Monday thru Friday 6:00 A.M. to 9:00 A.M. and 4:00 P.M. to 7:00 P.M.

In addition, the Contractor shall not close or narrow a lane of traffic on **Memorial Drive (US-13/NC-11)**, 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 A.M.** December 31st and **7:00 P.M.** January 2nd. If New Year's Day is on a Friday, Saturday, Sunday or Monday, then until **7:00 P.M.** the following Tuesday.
3. For **Easter**, between the hours of **6:00 A.M.** Thursday and **7:00 P.M.** Monday.
4. For **Memorial Day**, between the hours of **6:00 A.M.** Friday and **7:00 P.M.** Tuesday.

EB-5539 South Tar River Greenway, Phase 3

5. For **Independence Day**, between the hours of **6:00 A.M.** the day before Independence Day and **7:00 P.M.** the day after Independence Day.

If **Independence Day** is on a Friday, Saturday, Sunday or Monday, then between the hours of **6:00 A.M.** the Thursday before Independence Day and **7:00 P.M.** the Tuesday after Independence Day.

6. For **Labor Day**, between the hours of **6:00 A.M.** Friday and **7:00 P.M.** Tuesday.

7. For **Thanksgiving Day**, between the hours of **6:00 A.M.** Tuesday and **7:00 P.M.** Monday.

8. For **Christmas**, between the hours of **6:00 A.M.** the Friday before the week of Christmas Day and **7:00 P.M.** the following Tuesday after the week of Christmas Day.

The Contractor should review the City's Noise Ordinance

(<http://www.greenvillenc.gov/home/showdocument?id=6176>) which applies to construction operations. Within the noise ordinance construction operations are allowed from 7:00 a.m. to 9:00 p.m. for which building permits have been issued or construction operations not requiring permits; providing all equipment is operated in accord with the manufacturer's specifications and with all standard equipment manufacturers' mufflers and noise-reducing equipment in use and in proper operating condition. **Refer to the "Work Hour" special provision for approved working hours on this project which are more stringent than the noise ordinance.**

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 Dollars (\$ 200)** per hour.

PERMANENT VEGETATION ESTABLISHMENT

(2-16-12) (Rev. 10-15-13)

104

SP1 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 *2012 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 *2012 Standard Specifications*. No additional compensation will be made for maintenance and removal of temporary erosion control items.

NO MAJOR CONTRACT ITEMS:

(2-19-02) (Rev. 8-21-07)

104

SP1 G31

None of the items included in this contract will be major items.

SPECIALTY ITEMS:

(7-1-95)(Rev. 1-17-12)

108-6

SP1 G37

Items listed below will be the specialty items for this contract (see Article 108-6 of the *2012 Standard Specifications*).

Line #	Description
51-54	Signing
86-87	Lighting
58-62	Utility Construction
91-92	Structures

SCHEDULE OF ESTIMATED COMPLETION PROGRESS

(7-15-08) (Rev. 5-17-16)

108-2

SP1 G58

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

	<u>Fiscal Year</u>	<u>Progress (% of Dollar Value)</u>
2018	(7/01/17 - 6/30/18)	50% of Total Amount Bid
2019	(7/01/18 - 6/30/19)	50% of Total Amount Bid
2020	(7/01/19 - 6/30/20)	0% of Total Amount Bid

The Contractor shall also furnish his own progress schedule in accordance with Article 108-2 of the *2012 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 (LOCAL GOVERNMENT AGENCIES)

(10-16-07)(Rev.1-17-17)

102-15(J)

SP1 G63

Description

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

Definitions

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

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

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

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

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

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

Local Government Agencies (LGA) - The entity letting the contract.

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.

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.

Standard Specifications - The general term comprising all directions, provisions, and requirements contained or referred to in the *North Carolina Department of Transportation Standard Specifications for Roads and Structures* and any subsequent revisions or additions to such book.

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>

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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%20Forms/Joint%20Check%20Notification%20Form.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 amount listed at the time of bid.
<http://connect.ncdot.gov/letting/LetCentral/Letter%20of%20Intent%20to%20Perform%20as%20a%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%20Proposals%20for%20LGA%20Content/08%20DBE%20Subcontractors%20\(Federal\).docx](http://connect.ncdot.gov/municipalities/Bid%20Proposals%20for%20LGA%20Content/08%20DBE%20Subcontractors%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 **7 %**

- (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 **City of Greenville**.

Directory of Transportation Firms (Directory)

Real-time information is available about firms doing business with the NCDOT and firms that are certified through NCUCP in the Directory of Transportation Firms. Only firms identified

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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](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 all 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 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) *If the DBE goal is more than zero,*

- (1) 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.
- (2) 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. **City of Greenville** will not consider these bids for award and the proposal will be rejected.
- (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) *If the DBE goal is zero,* entries on the *Listing of DBE Subcontractors* are not required, 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

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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 or 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 NCDOT's form titled *Letter of Intent*.

The documentation shall be received in the office of the **City of Greenville** no later than 2:00 p.m. of the fifth calendar day following opening of bids, unless the fifth day falls on Saturday, Sunday or an official state holiday. In that situation, it is due in the office of the **City Engineer or duly authorized agent** 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 **City Engineer or duly authorized agent** no later than 2:00 p.m. on the eighth calendar day following opening of bids, unless the eighth day falls on Saturday, Sunday or an official state holiday. In that situation, it is due in the office of the **City Engineer or duly authorized agent** 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 **City of Greenville** documentation of adequate good faith efforts made to reach the DBE goal.

One complete set and **five (5)** copies of this information shall be received in the office of the **City Engineer or duly authorized agent** no later than 2:00 p.m. of the fifth calendar day following opening of bids, unless the fifth day falls on Saturday, Sunday or an official state holiday. In that situation, it is due in the office of the **City Engineer or duly authorized agent** no later than 10:00 a.m. on the next official state business day.

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.

City of Greenville 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 (2nd and 3rd 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, so as 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 NCDOT's Business Opportunity and Work Force Development Unit at DBE@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, **City of Greenville** 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, **City of Greenville** may view this, in conjunction with other factors, as evidence of the apparent successful bidder having made a good faith effort.

If **City of Greenville** does not award the contract to the apparent lowest responsive bidder, **City of Greenville** reserves the right to award the contract to the next lowest responsive bidder that can satisfy to **City of Greenville** 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 **City Engineer or duly authorized agent** 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 **City Engineer or duly authorized agent**. 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 NCDOT'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 not 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 **City of Greenville**. **City of**

Greenville'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, **City of Greenville** 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 firm (or an approved substitute DBE firm) to meet all or part of a contract goal requirement, the contractor shall not terminate the DBE 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. A DBE may only be terminated after receiving the **City Engineer or duly authorized agent's** written approval based upon a finding of good cause for the termination. The prime contractor must give the DBE firm five (5) calendar days to respond to the prime contractor's notice of termination and advise the prime contractor and the Department of the reasons, if any, why the firm objects to the proposed termination of its subcontract and why the Department should not approve the action.

All requests for replacement of a committed DBE firm shall be submitted to the **City Engineer or duly authorized agent** 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.

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 NCDOT after the SAF (*Subcontract Approval Form*) has been received by **City of Greenville**, **City of Greenville** 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 **City of Greenville** 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 **City Engineer or duly authorized agent** (see A herein for required documentation).

Changes in the Work

When the **City Engineer or duly authorized agent** 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 **City Engineer or duly authorized agent** 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 **City Engineer or duly authorized agent** 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 **City Engineer or duly authorized agent**.

When the **City Engineer or duly authorized agent** 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 **City Engineer or duly authorized agent**.

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. **City of Greenville** 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 **City Engineer or duly authorized agent** 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 **City Engineer or duly authorized agent** 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 **City Engineer or duly authorized agent** 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 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 **City Engineer or duly authorized agent** can request written verification of subcontractor payments.

The Contractor shall report the accounting of payments on the NCDOT's DBE-IS (*Subcontractor Payment Information*) with each invoice. Invoices will not be processed for payment until the DBE-IS is received.

Failure to Meet Contract Requirements

Failure to meet contract requirements in accordance with Subarticle 102-15(J) of the *2012 Standard Specifications* may be cause to disqualify the Contractor.

CERTIFICATION FOR FEDERAL-AID CONTRACTS

(3-21-90)

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:

(7-1-95)

102-14

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).

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.

CARGO PREFERENCE ACT:

(2-16-16)

Privately owned United States-flag commercial vessels transporting cargoes are subject to the Cargo Preference Act (CPA) of 1954 requirements and regulations found in 46 CFR 381.7. Contractors are directed to clause (b) of 46 CFR 381.7 as follows:

(b) Contractor and Subcontractor Clauses. "Use of United States-flag vessels: The contractor 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.

(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 Division of National Cargo, Office of Market Development, Maritime Administration, Washington, DC 20590.

(3) To insert the substance of the provisions of this clause in all subcontracts issued pursuant to this contract."

SUBSURFACE INFORMATION

(7-1-95)

450

SP1 G112 D

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

LOCATING EXISTING UNDERGROUND UTILITIES

(3-20-12)

105

SP1 G115

Revise the *2012 Standard Specifications* as follows:

Page 1-43, Article 105-8, line 28, after the first sentence, add the following:

Identify excavation locations by means of pre-marking with white paint, flags, or stakes or provide a specific written description of the location in the locate request.

VALUE ENGINEERING PROPOSAL:

(05-19-15)

104

SP01 G116

Revise the *2012 Standard Specifications* as follows:

Page 1-36, Subarticle 104-12(B) Evaluation of Proposals, lines 42-44, replace the fourth sentence of the second paragraph with the following:

Pending execution of a formal supplemental agreement implementing an approved VEP and transfer of final plans (hard copy and electronic) sealed by an engineer licensed in the State of North Carolina incorporating an approved VEP to the Resident Engineer and the State Value Management Engineer, the Contractor shall remain obligated to perform the work in accordance with the terms of the existing contract.

Page 1-37, Subarticle 104-12(D) Preliminary Review, lines 9-12, replace the first sentence of the first paragraph with the following:

Should the Contractor desire a preliminary review of a possible VEP, before expending considerable time and expense in full development, a copy of the Preliminary VEP shall be submitted to the Resident Engineer and the State Value Management Engineer at ValueManagementUnit@ncdot.gov.

Page 1-37, Subarticle 104-12(E) Final Proposal, lines 22-23, replace the first sentence of the first paragraph with the following:

A copy of the Final VEP shall be submitted by the Contractor to the Resident Engineer and the State Value Management Engineer at ValueManagementUnit@ncdot.gov.

Page 1-38, Subarticle 104-12(F) Modifications, lines 2-8, replace the first paragraph with the following:

To facilitate the preparation of revisions to contract drawings, the Contractor may purchase reproducible copies of drawings for his use through the Department's Value Management Unit.

The preparation of new design drawings by or for the Contractor shall be coordinated with the appropriate Design Branch through the State Value Management Engineer. The Contractor shall provide, at no charge to the Department, one set of reproducible drawings of the approved design needed to implement the VEP. Drawings (hard copy and electronic) which are sealed by an engineer licensed in the State of North Carolina shall be submitted to the State Value Management Engineer no later than ten (10) business days after acceptance of a VEP unless otherwise permitted.

Page 1-38, Subarticle 104-12(F) Modifications, line 17, add the following at the end of the third paragraph:

Supplemental agreements executed for design-bid-build contracts shall reflect any realized savings in the corresponding line items. Supplemental agreements executed for design-build contracts shall add one line item deducting the full savings from the total contract price and one line item crediting the Contractor with 50% of the total VEP savings.

Page 1-38, Subarticle 104-12(F) Modifications, lines 45-47, replace the eighth paragraph with the following:

Unless and until a supplemental agreement is executed and issued by the Department and final plans (hard copy and electronic) sealed by an engineer licensed in the State of North Carolina incorporating an approved VEP have been provided to the Resident Engineer and the State Value Management Engineer, the Contractor shall remain obligated to perform the work in accordance with the terms of the existing contract.

RESOURCE CONSERVATION AND ENVIRONMENTALLY SUSTAINABLE

PRACTICES

(5-21-13) (Rev. 5-19-15)

104-13

SP1 G118

In accordance with North Carolina Executive Order 156, NCGS 130A-309.14(3), and NCGS 136-28.8, it is the objective of the Department to aid in the reduction of materials that become a part of our solid waste stream, to divert materials from landfills, to find ways to recycle and reuse materials, to consider and minimize, where economically feasible, the environmental impacts associated with agency land use and acquisition, construction, maintenance and facility management for the benefit of the Citizens of North Carolina.

To achieve the mission of reducing environmental impacts across the state, the Department is committed to supporting the efforts to initiate, develop and use products and construction methods that incorporate the use of recycled, solid waste products and environmentally sustainable practices in accordance with Article 104-13 of the *Standard Specifications*.

Report the quantities of reused or recycled materials either incorporated in the project or diverted from landfills and any practice that minimizes the environmental impact on the project annually on the Project Construction Reuse and Recycling Reporting Form. The Project Construction Reuse and Recycling Reporting Form and a location tool for local recycling facilities are available at:

<http://connect.ncdot.gov/resources/Environmental/Pages/North-Carolina-Recycling-Locations.aspx>.

Submit the Project Construction Reuse and Recycling Reporting Form by August 1 annually to valuemanagementunit@ncdot.gov. For questions regarding the form or reporting, please contact the State Value Management Engineer at 919-707-4810.

DOMESTIC STEEL

(4-16-13)

106

SP1 G120

Revise the *2012 Standard Specifications* as follows:

Page 1-49, Subarticle 106-1(B) Domestic Steel, lines 2-7, replace the first paragraph with the following:

All steel and iron products that are permanently incorporated into this project shall be produced in the United States except minimal amounts of foreign steel and iron products may be used provided the combined material cost of the items involved does not exceed 0.1% of the total amount bid for the entire project or \$2,500, whichever is greater. If invoices showing the cost of the material are not provided, the amount of the bid item involving the foreign material will be used for calculations. This minimal amount of foreign produced steel and iron products permitted for use is not applicable to high strength fasteners. Domestically produced high strength fasteners are required.

TWELVE MONTH GUARANTEE – LGA Projects

(10-7-13)

108

SP1 G146

(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 **City of Greenville**. The Contractor will not be responsible for damage due to faulty design, normal wear and tear, for negligence on the part of **City of Greenville**, 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. **City of Greenville'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. **City of Greenville** 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 **City of Greenville** 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.

IRAN DIVESTMENT ACT:

(5-17-16)

SP01 G151

As a result of the Iran Divestment Act of 2015 (Act), Article 6E, N.C. General Statute § 147-86.55, the State Treasurer published the Final Divestment List (List) which includes the Final Divestment List-Iran, and the Parent and Subsidiary Guidance-Iran. These lists identify companies and persons engaged in investment activities in Iran and will be updated every 180 days. The List can be found at <https://www.nctreasurer.com/inside-the-department/OpenGovernment/Pages/Iran-Divestment-Act-Resources.aspx>

By submitting the Offer, the Contractor certifies that, as of the date of this bid, it is not on the then-current List created by the State Treasurer. The Contractor must notify the Department immediately if, at any time before the award of the contract, it is added to the List.

As an ongoing obligation, the Contractor must notify the Department immediately if, at any time during the contract term, it is added to the List. Consistent with § 147-86.59, the Contractor shall not contract with any person to perform a part of the work if, at the time the subcontract is signed, that person is on the then-current List.

During the term of the Contract, should the Department receive information that a person is in violation of the Act as stated above, the Department will offer the person an opportunity to respond and the Department will take action as appropriate and provided for by law, rule, or contract.

GIFTS FROM VENDORS AND CONTRACTORS

(12-15-09)

107-1

SP1 G152

By Executive Order 24, issued by Governor Perdue, and *N.C.G.S. § 133-32*, it is unlawful for any vendor or contractor (i.e. architect, bidder, contractor, construction manager, design professional, engineer, landlord, offeror, seller, subcontractor, supplier, or vendor), to make gifts or to give favors to any State employee of the Governor’s Cabinet Agencies (i.e. Administration, Commerce, Correction, Crime Control and Public Safety, Cultural Resources, Environment and Natural Resources, Health and Human Services, Juvenile Justice and Delinquency Prevention, Revenue, Transportation, and the Office of the Governor). This prohibition covers those vendors and contractors who:

- (A) Have a contract with a governmental agency; or
- (B) Have performed under such a contract within the past year; or

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(C) Anticipate bidding on such a contract in the future.

For additional information regarding the specific requirements and exemptions, vendors and contractors are encouraged to review Executive Order 24 and *N.C.G.S. § 133-32*.

Executive Order 24 also encouraged and invited other State Agencies to implement the requirements and prohibitions of the Executive Order to their agencies. Vendors and contractors should contact other State Agencies to determine if those agencies have adopted Executive Order 24.

LIABILITY INSURANCE

(5-20-14)

SP1 G160

Revise the *2012 Standard Specifications* as follows:

Page 1-60, Article 107-15 LIABILITY INSURANCE, line 16, add the following as the second sentence of the third paragraph:

Prior to beginning services, all contractors shall provide proof of coverage issued by a workers' compensation insurance carrier, or a certificate of compliance issued by the Department of Insurance for self-insured subcontractors, irrespective of whether having regularly in service fewer than three employees.

EROSION AND SEDIMENT CONTROL/STORMWATER CERTIFICATION

(1-16-07) (Rev 11-22-16)

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 of 0.5 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

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- (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-B Certified Designer on the erosion and sediment control/stormwater component of all reclamation plans and if applicable, the certification number of the Level III-A 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.

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- (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.

PROCEDURE FOR MONITORING BORROW PIT DISCHARGE

(2-20-07) (Rev. 3-20-13)

105-16, 230, 801

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.
- (D) Notify DWQ within 24 hours of any stream turbidity standard exceedances that are not brought into compliance.

During the Environmental Assessment required by Article 230-4 of the *2012 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 http://www.ncdot.gov/doh/operations/dp_chief_eng/roadside/fieldops/downloads/Files/TurbidityReductionOptionSheet.pdf to plan, design, construct, and maintain BMPs to address water quality standards. Tier I Methods include stilling basins which are standard compensatory

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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.

EMPLOYMENT

(11-15-11) (Rev. 1-17-12)

108, 102

SP1 G184

Revise the *2012 Standard Specifications* as follows:

Page 1-20, Subarticle 102-15(O), delete and replace with the following:

(O) Failure to restrict a former Department employee as prohibited by Article 108-5.

Page 1-65, Article 108-5 Character of Workmen, Methods, and Equipment, line 32, delete all of line 32, the first sentence of the second paragraph and the first word of the second sentence of the second paragraph.

STATE HIGHWAY ADMINISTRATOR TITLE CHANGE

(9-18-12)

SP1 G185

Revise the *2012 Standard Specifications* as follows:

Replace all references to “State Highway Administrator” with “Chief Engineer”.

SUBLETTING OF CONTRACT

(11-18-2014)

108-6

SP1 G186

Revise the *2012 Standard Specifications* as follows:

Page 1-66, Article 108-6 Subletting of Contract, line 37, add the following as the second sentence of the first paragraph:

All requests to sublet work shall be submitted within 30 days of the date of availability or prior to expiration of 20% of the contract time, whichever date is later, unless otherwise approved by the Engineer.

Page 1-67, Article 108-6 Subletting of Contract, line 7, add the following as the second sentence of the fourth paragraph:

Purchasing materials for subcontractors is not included in the percentage of work required to be performed by the Contractor. If the Contractor sublets items of work but elects to purchase material for the subcontractor, the value of the material purchased will be included in the total dollar amount considered to have been sublet.

MOBILIZATION

(09-15-15)

800

SP1 G194

Revise the *2012 Standard Specifications* as follows:

Page 8-1, Subarticle 800-2 Measurement and Payment, add the following:

For projects that have a delayed availability date of 90 calendar days or more after contract execution, the first mobilization payment may be for the verified actual cost of paid bond premiums. This payment will only be made upon request by the contractor with supporting documentation including invoice and proof of payment. This payment will be limited to 1% of the amount bid for the contract and the subsequent mobilization payment will be reduced by an equal amount to follow the payment schedule as shown above. In no case will more than 5% of the amount bid for the contract be paid before the last partial pay estimate.

NCDOT STANDARD SPECIAL PROVISIONS:

6/1/15

SP (Kimley-Horn and Associates, Inc.)

The following Special Provisions are policies and procedures of the North Carolina Department of Transportation. As a recipient of NCDOT Sponsored Federal-aid Highway Funds, City of Greenville and Contractor shall be committed to carrying out the responsibilities associated with these Special Provisions. Any conflict between the NCDOT Standard Specifications, these Special Provisions, and the project plans and specifications will be resolved by the Project Engineer in favor of the NCDOT Standards.

MATERIALS SAMPLING AND TESTING

04/27/16

SP (Kimley-Horn and Associates, Inc.)

The City will select an independent company for materials sampling and testing with a recognized and approved testing laboratory. The expense of such tests shall be borne by the City unless otherwise specified. No direct payment will be made for coordination of these tests as such costs will be considered incidental to other work being paid for by the various items in the contract.

The Contractor shall schedule and coordinate each test with City staff. The City will schedule actual test with the independent company. The City shall have the option to reject request for testing due to the Contractor's inadequate preparation of material or other reasonable causes determined by the City as necessary for the delay of testing. The Contractor shall notify the City 48 hours ahead of time of the scheduled test and shall supply all material to independent company for tests. The independent company will provide test results to the City. Any cost resulting from the City requiring recompaction or retesting of a previously compacted and tested fill shall be borne by the Contractor.

SURVEYING AND LAYOUT

05/04/16

SP (Kimley-Horn and Associates, Inc.)

Surveying and Layout for the construction of this project shall be the responsibility of the Contractor and shall be in accordance with NCDOT Manual for Construction Layout and Section 801 of the *2012 Standard Specifications*.

Prior to Certification of Substantial Completion the Contractor shall provide the Record Survey of as-built improvements as specified in the project.

INSURANCE AND INDEMNITY

6/1/15

SP (Kimley-Horn and Associates, Inc.)

To the fullest extent permitted by laws and regulations, the **Contractor** shall indemnify and hold harmless the **City** and its officials, agents, and employees from and against all claims, damages, losses, and expenses, direct, indirect, or consequential (including but not limited to fees and charges of engineers or architects, attorneys, and other professionals and costs related to court action or arbitration) arising out of or resulting from the performance of this Contract or the actions of the **Contractor** or its officials, employees, or contractors under this Contract or under the contracts entered into by the **Contractor** in connection with this Contract. This indemnification shall survive the termination of this agreement.

In addition, **Contractor** shall comply with the North Carolina Workers' Compensation Act and shall provide for the payment of workers' compensation to its employees in the manner and to the extent required by such Act. **Contractor** shall supply **City** with certification of insurance for workers' compensation coverage with North Carolina statutory limits.

Contractor shall maintain, at its expense, the following minimum insurance coverage:

General Liability with Combined Single Limit Bodily Injury and Property Damage not less than \$1,000,000 and Products and Completed Operations Liability not less than \$1,000,000.

Contractor agrees to furnish **City** proof of compliance with the insurance coverage requirements of this contract prior to commencing work. **City** and **NCDOT** shall be listed as insured parties on insurance form. **Contractor** shall furnish **City** a certificate of insurance from an insurance company, licensed to do business in the State of North Carolina and acceptable to **City** verifying the existence of any insurance coverage required by **City**. The certificate will provide for thirty (30) days advance notice in the event of termination or cancellation of coverage.

TAXES & LICENSES:

6/1/15

SP (Kimley-Horn and Associates, Inc.)

The Contractor will pay all sales, consumer, use and other similar taxes required by the law of the place where the project is performed. The Contractor shall provide along with each pay request a detailed list of all sales taxes paid along with a copy of all invoices, on forms approved

by the City, for all materials incorporated into this project and all consumable materials used in the construction of the project. The Contractor shall maintain on file for up to three (3) years a copy of all invoices and the list of sales tax paid on this project.

WORK HOURS:

5/12/16

SP (Kimley-Horn and Associates, Inc.)

The City standard work hours are Monday thru Friday 8:00 AM to 5:00 PM. No work shall commence outside of standard work hours, holidays, or during the weekend without written approval from the City Engineer or their authorized agent. Opportunity to work outside of standard hours are limited and require a request letter to be submitted at least 72 hours in advance of non-standard working hours.

If the Contractor requests work hours to commence on weekends, holidays, or exceed the standard 40 hour work week, the Contractor will be responsible for additional costs associated with CEI services. An hourly rate of \$100/hour/person (minimum of 4 hour) will be incurred by the Contractor and deducted from Contractor payment.

MAINTAINING ACCESS

6/1/15

SP (Kimley-Horn and Associates, Inc.)

Limitation of Operations

The Contractor shall control his operations and the operations of his subcontractors and all suppliers so as to provide for the free and unobstructed movement of traffic.

When the work requires the Contractor to conduct his operations in an area, which disrupts the public access, the work shall be coordinated with the Director of Public Works at least 48 hours prior to commencement of such work.

The Contractor shall not close an area until so authorized by the Director of Public Works and until the necessary temporary sign(s) is in place.

STORAGE OF MATERIALS

6/13/17

SP (Kimley-Horn and Associates, Inc.)

In addition to *Section 106-5 of the January 2012 North Carolina Department of Transportation Standards and Specifications for Roadways and Structures* the following shall also apply:

Private property shall not be used for storage purposes without written permission of the Owner or lessee of such property. This does not apply to excavated and/or waste material from the project that shall be regulated by reclamation plans development and approval. The Contractor shall make all arrangements and bear all expenses for the storage of materials on private property. Upon request, the Contractor shall furnish the Director of Public Works a copy of the property owner's permission.

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The Contractor shall restore the storage area to its original condition upon completion of the Project or at completion of using the private property. Such restorations shall be at no cost to the City. Prior to final payment being made, the Contractor shall submit a copy of the release from the private property owner of the storage area utilized for the Project.

USE OF PREMISES

6/1/15

SP (Kimley-Horn and Associates, Inc.)

The Contractor shall confine his equipment, storage of materials, and construction operations to the contract limits as shown on the Drawings or if no contract limits are shown, to the right-of-way shown and as prescribed by ordinances or permits or as may be directed by the City of Greenville and shall not unreasonably encumber the site or public rights of way with his materials and construction equipment.

The Contractor shall comply with all reasonable instructions of the City of Greenville and the ordinances and codes of the City of Greenville, regarding signs, advertising, traffic, fires, explosives, danger signals, and barricades.

WATER SUPPLY

5/25/15

SP (Kimley-Horn and Associates, Inc.)

The Contractor will be responsible for organizing a water source. No separate payment will be made for this work, and all associated costs will be considered incidental to other items in the contract.

BID EVALUATION:

06/15/17

SP (Kimley-Horn and Associates, Inc.)

It is the intent of these Contract Documents to:

Obtain Bids based upon Unit Prices that have been applied to the Bid Sheets in the Bid Form for Section 3A. This will be considered the Base Bid. If the lowest responsible Base Bid for Section 3A is within the available funds, the Contract will be awarded to the lowest responsible Base Bid Bidder.

Based on unit bid prices and the availability of funds to the City, the City may then elect to add alternate bid items along Section 3A, Phase 3B, and alternate bid items along Section 3B. Each alternate will be evaluated based on the total bid amount of the alternate and independent of the other alternates.

Phase 3B, and Alternate Bid items for Phases 3A and 3B are independent of the Base Bid and independent of each other.

EXECUTION OF CONTRACT

6/1/15

SP (City of Greenville)

In addition to *Section 103-7, 103-8 and 103-9 of the NCDOT 2012 Standard Specifications*, when the Owner gives a Notice of Award to the Successful Bidder, it will be accompanied by the required number of unsigned counterparts of the Agreement with all other written Contract

Documents attached. Within fifteen days thereafter Contractor shall sign and deliver the required number of counterparts of the Agreement and attached documents to the Owner with the required Bonds. Within ten days thereafter Owner shall deliver one fully signed counterpart to Contractor. Each counterpart is to be accompanied by a complete set of the Drawings with appropriate identification.

PRE-CONSTRUCTION CONFERENCE:

06/13/17

SP (Kimley-Horn and Associates, Inc.)

A pre-construction conference will be scheduled as soon as practical after award of the Contract. The Contractor shall attend the pre-construction conference with the prospective project superintendent, any anticipated major subcontractors, and major suppliers. The utility representatives should also be invited to the pre-construction conference. A proposed progress schedule in a form satisfactory to the Construction Manager and a statement of the anticipated monthly progress payments showing the percent of progress each month shall be submitted by the Contractor to the City. The Contractor shall also provide at least two (2) local telephone numbers that may be used to contact the Contractor or the Contractor's authorized representative in the event of an emergency after normal business hours.

SUBMITTALS AND SHOP DRAWINGS:

6/1/15

SP (Kimley-Horn and Associates, Inc.)

Unless otherwise specified herein, the Contractor shall submit shop drawings for construction materials for acceptance by the Engineer, prior to use of any material on the project site. Submittals shall be made for, but not limited to, the following items: asphalt, concrete, storm drainage, public utility, and structure products. The Contractor shall submit five (5) sets of shop drawings for each material to be reviewed by the Engineer. The Engineer shall have twenty-one (21) calendar days to complete the review. Upon review, notification will be provided to the City and the Contractor of acceptance, corrections needed, or rejection of the materials. No separate payment will be made for this work, and all associated costs will be considered incidental to other items in the contract.

REQUEST FOR INFORMATION (RFI) PROCEDURES

5/25/15

SP (Kimley-Horn and Associates, Inc.)

All requests for information need to be sent to the Engineer in writing. The Engineer will respond in a timely manner.

VIDEOTAPE AND PHOTOGRAPHS OF PROJECT SITE

06/13/17

SP (Kimley-Horn and Associates, Inc.)

The Contractor will videotape and photograph the project site in its entirety before construction begins, but not more than 60 days prior to construction. The recordings shall contain coverage of all surface features within the construction zone and adjoining properties. These features shall include, but not be limited to, all roadways, pavement, retention ponds, railroad tracks, curbs, driveways, sidewalks, culverts, headwalls, retaining walls, landscaping trees, visible utilities,

fences, structures, buildings, and other distinguishing features. Of particular concern, shall be the condition of existing vegetation, terrain, and structures and the existence or nonexistence of any faults, fractures, or defects. Appropriate audio and written narration will include location and description of property and physical features. The Contractor will provide two colored copies of the project tape in DVD format and two colored copies of photographs to the City for acceptance prior to commencement of work. The City will verify that the submitted video tape and photographs sufficiently document the existing conditions. If the Contractor begins work prior to the City accepting the documentation the Contractor assumes responsibility and costs to restore any damaged item within the project corridor to a City acceptable condition. The Contractor shall also provide videotape and photographs of the project site after substantial completion of the project. No separate payment will be made for this work, and all associated costs will be considered incidental to other items in the contract.

RULES OF MEDIATION

05/06/16

SP (City of Greenville)

All matters relating to this contract shall be governed by the laws of the State of North Carolina, without regard to its choice of law provisions, and venue for any action relating to this agreement shall be in Pitt County Civil Superior Court in Greenville, North Carolina.

RECORD SURVEY

5/25/15

SP (Kimley-Horn and Associates, Inc.)

Conduct a field record survey of as-built project improvements by an NC Registered Professional Land Surveyor and provide resulting data to the project Engineer in print and digital formats.

All mapped improvements shall be on an accurate graphical representation, neatly lettered, properly dimensioned and identified on a mylar reproducible tracing 22" x 34" in size at scale designated by the Engineer.

Identification and location of site improvements shall conform to the recommended standards of the North Carolina Licensing Board for Professional Engineers and Land Surveyors. Record Survey is to be provided by the Contractor.

- a. Limits: The subject property as defined by the Contract Documents.
- b. Control: Vertical control shall be based on the benchmarks on the site. Baselines shall be established in such a manner as to accurately locate spot elevations in a 50 foot minimum grid pattern. All top and toe slopes with centerline of draws and ditches shall be located.
- c. Improvements: All planimetric information shall be tied to the established grid. Contours shall be drawn at a 1 foot interval with spot elevations at high and low points. Within the area to be surveyed, locate all improvements and identify the following:
 - Finished trail grades.
 - Curbing, walks and paving.
 - Curb cuts and access drives.
 - Bridge/boardwalk location and deck, top of rail, and low chord elevations.
 - Storm drainage improvements (with invert elevations).
 - Sanitary Sewer improvements (with invert elevations).
 - Curb ramps.

Upon completion of record survey, submit in print and digital format to the Engineer for the Owner's record. No additional compensation will be provided for costs associated with this work as it is considered incidental to other work being performed under the contract.

BUILDING PERMIT

5/25/15

SP (City of Greenville)

The Contractor will be required to obtain a building permit from the City of Greenville. No separate payment will be made for this work, and all associated costs will be considered incidental to other items in the contract.

DRUG FREE WORKPLACE:

6/1/15

SP (Kimley-Horn and Associates, Inc.)

The Contractor is to provide and maintain a drug free workplace, including certification, in accordance with the Federal Drug Free Workplace Act of 1988 (40 CFR Part 32).

PROJECT SPECIAL PROVISIONS

ROADWAY

The *January 2012 North Carolina Department of Transportation Standards and Specifications for Roadways and Structures* (NCDOT Standard Specifications) shall apply on all portions of the project except as modified by this document. Where Special Provisions refer to particular items, materials, procedures, etc., the appropriate section of the Standard Specifications shall apply. The absence of a description or specification for any item shall automatically refer to the appropriate section of the Standard Specifications.

Specific City of Greenville requirements are generally supplemental to the NCDOT Standard Specifications and, when there is a conflict between City of Greenville standards and NCDOT Standard Specifications, the NCDOT Standard Specifications shall govern.

CLEARING AND GRUBBING - METHOD II

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

200

SP2 R02A

Perform clearing on this project to the limits established by Method "II" shown on Standard Drawing No. 200.02 of the *2012 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.

BURNING RESTRICTIONS:

(7-1-95)

200, 210, 215

SP2 R05

Open burning is not permitted on any portion of the right-of-way limits established for this project. Do not burn the clearing, grubbing or demolition debris designated for disposal and generated from the project at locations within the project limits, off the project limits or at any waste or borrow sites in this county. Dispose of the clearing, grubbing and demolition debris by means other than burning, according to state or local rules and regulations.

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 *2012 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*. If there is no pay item 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 *2012 Standard Specifications*.

SELECT GRANULAR MATERIAL:

(3-16-10) (Rev. 1-17-12)

265

SP2 R80

Revise the *2012 Standard Specifications* as follows:

Page 2-28, Article 265-2 MATERIALS, add the following:

Use only Class III select material for select granular material.

Page 2-28, Article 265-4 MEASUREMENT AND PAYMENT, lines 13-30, replace all occurrences of *Select Granular Material* with *Select Granular Material, Class III*.

Page 2-28, Article 265-4 MEASUREMENT AND PAYMENT, after line 31, delete the pay item and replace with the following:

Payment will be made under:

Pay Item
Select Granular Material, Class III

Pay Unit
Cubic Yard

PIPE INSTALLATION

(11-20-12) (Rev. 8-18-15)

300

SP3 R01

Revise the *2012 Standard Specifications* as follows:

Page 3-1, Article 300-2, Materials, line 15, in the materials table, replace “Flowable Fill” and “Geotextiles” with the following:

Item	Section
Flowable Fill, Excavatable	1000-6
Grout, Type 2	1003
Geotextiles, Type 4	1056

Page 3-1, Article 300-2, Materials, lines 23-24, replace sentence with the following:

Provide foundation conditioning geotextile and geotextile to wrap pipe joints in accordance with Section 1056 for Type 4 geotextile.

Page 3-3, Subarticle 300-6(A), Rigid Pipe, line 2, in the first paragraph, replace “an approved non-shrink grout.” with “grout.” and line 4, in the second paragraph, replace “filtration geotextile” with “geotextile”.

Page 3-3, Article 300-7, Backfilling, lines 37-38, in the first and second sentences of the fifth paragraph, replace “Excavatable flowable fill” with “Flowable fill”.

FLOWABLE FILL:

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

300, 340, 450, 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 *2012 Standard Specifications*.

Item	Section
Flowable Fill	1000-6

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 Item	Pay Unit
Flowable Fill	Cubic Yard

AGGREGATE BASE COURSE:

(11-18-14)	520	SP5 R14
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Revise the *2012 Standard Specifications* as follows:

Page 5-10, Article 520-5 HAULING AND PLACING AGGREGATE BASE MATERIAL, add the following sentence to the end of the first paragraph starting on line 21:

In addition, as approved by the Engineer, place by end dumping aggregate on approved sandy subgrade soils to provide a working platform and reduce wheel rutting of the subgrade. When allowed, end dumping will be limited to a uniformly spread thickness of 2 to 3 inches prior to placing the remaining aggregate thickness with a mechanical spreader.

ASPHALT PAVEMENTS - SUPERPAVE

(6-19-12) (Rev. 8-16-16)

605, 609, 610, 650

SP6 R01

Revise the 2012 *Standard Specifications* as follows:

Page 6-3, Article 605-7, APPLICATION RATES AND TEMPERATURES, replace this article, including Table 605-1, with the following:

Apply tack coat uniformly across the existing surface at target application rates shown in Table 605-1.

TABLE 605-1 APPLICATION RATES FOR TACK COAT	
Existing Surface	Target Rate (gal/sy)
	Emulsified Asphalt
New Asphalt	0.04 ± 0.01
Oxidized or Milled Asphalt	0.06 ± 0.01
Concrete	0.08 ± 0.01

Apply tack coat at a temperature within the ranges shown in Table 605-2. Tack coat shall not be overheated during storage, transport or at application.

TABLE 605-2 APPLICATION TEMPERATURE FOR TACK COAT	
Asphalt Material	Temperature Range
Asphalt Binder, Grade PG 64-22	350 - 400°F
Emulsified Asphalt, Grade RS-1H	130 - 160°F
Emulsified Asphalt, Grade CRS-1	130 - 160°F
Emulsified Asphalt, Grade CRS-1H	130 - 160°F
Emulsified Asphalt, Grade HFMS-1	130 - 160°F
Emulsified Asphalt, Grade CRS-2	130 - 160°F

Page 6-6, Subarticle 607-5(A), Milled Asphalt Pavement, line 25, add the following to the end of the paragraph:

Areas to be paid under these items include mainline, turn lanes, shoulders, and other areas milled in conjunction with the mainline 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 42-48, replace the paragraph with the following:

Incidental Milling to be paid will be the actual number of square yards of surface milled where the Contractor is required to mill butt joints, irregular areas and intersections milled as a separate operation from mainline milling and re-mill areas that are not due to the Contractor's negligence whose length is less than 100 feet. Measurement will be made as provided in Subarticle 607-5(A) for each cut the Contractor is directed to perform. Where the Contractor elects to make

multiple cuts to achieve the final depth, no additional measurement will be made. Compensation will be made at the contract unit price per square yard for *Incidental Milling*.

Page 6-7, Article 609-3, FIELD VERIFICATION OF MIXTURE AND JOB MIX FORMULA ADJUSTMENTS, lines 35-37, delete the second sentence of the second paragraph.

Page 6-18, Article 610-1 DESCRIPTION, lines 40-41, delete the last sentence of the last paragraph.

Page 6-19, Subarticle 610-3(A), Mix Design-General, line 5, add the following as the first paragraph:

Warm mix asphalt (WMA) is allowed for use at the Contractor’s option in accordance with the NCDOT Approved Products List for WMA Technologies available at:

<https://connect.ncdot.gov/resources/Materials/MaterialsResources/Warm%20Mix%20Asphalt%20Approved%20List.pdf>

Page 6-20, Subarticle 610-3(C), Job Mix Formula (JMF), lines 47-48, replace the last sentence of the third paragraph with the following:

The JMF mix temperature shall be within the ranges shown in Table 610-1 unless otherwise approved.

Page 6-21, Subarticle 610-3(C) Job Mix Formula (JMF), replace Table 610-1 with the following:

TABLE 610-1	
MIXING TEMPERATURE AT THE ASPHALT PLANT	
Binder Grade	JMF Mix Temperature
PG 58-28; PG 64-22	250 - 290°F
PG 70-22	275- 305°F
PG 76-22	300- 325°F

Page 6-21, Subarticle 610-3(C) Job Mix Formula (JMF), lines 1-2, in the first sentence of the first paragraph, delete “and compaction”. Lines 4-7, delete the second paragraph and replace with the following:

When RAS is used, the JMF mix temperature shall be established at 275°F or higher.

Page 6-22, Article 610-4, WEATHER, TEMPERATURE AND SEASONAL LIMITATIONS FOR PRODUCING AND PLACING ASPHALT MIXTURES, lines 15-17, replace the second sentence of the first paragraph with the following:

Do not place asphalt material when the air or surface temperatures, measured at the location of the paving operation away from artificial heat, do not meet Table 610-5.

Page 6-23, Article 610-4, WEATHER, TEMPERATURE AND SEASONAL LIMITATIONS FOR PRODUCING AND PLACING ASPHALT MIXTURES, replace Table 610-5 with the following:

Asphalt Concrete Mix Type	Minimum Surface and Air Temperature
B25.0B, C	35°F
I19.0B, C, D	35°F
SF9.5A, S9.5B	40°F ^A
S9.5C, S12.5C	45°F ^A
S9.5D, S12.5D	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 6-23, Subarticle 610-5(A), General, lines 33-34, replace the last sentence of the third paragraph with the following:

Produce the mixture at the asphalt plant within ± 25 °F of the JMF mix temperature. The temperature of the mixture, when discharged from the mixer, shall not exceed 350°F.

Page 6-26, Article 610-7, HAULING OF ASPHALT MIXTURE, lines 22-23, in the fourth sentence of the first paragraph replace “so as to overlap the top of the truck bed and” with “to”. Line 28, in the last paragraph, replace “+15 °F to -25 °F of the specified JMF temperature.” with “ ± 25 °F of the specified JMF mix temperature.”

Page 6-26, Article 610-8, SPREADING AND FINISHING, line 34, add the following new paragraph:

As referenced in Section 9.6.3 of the *HMA/QMS Manual*, use the automatic screed controls on the paver to control the longitudinal profile. Where approved by the Engineer, the Contractor has the option to use either a fixed or mobile string line.

Page 6-29, Article 610-13, FINAL SURFACE TESTING AND ACCEPTANCE, line 39, add the following after the first sentence in the first paragraph:

Smoothness acceptance testing using the inertial profiler is not required on ramps, loops and turn lanes.

Page 6-30, Subarticle 610-13(A), Option 1 – Inertial Profiler, lines 15-16, replace the fourth sentence of the fourth paragraph with the following:

The interval at which relative profile elevations are reported shall be 2”.

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Page 6-30, Subarticle 610-13(A), Option 1 – Inertial Profiler, lines 25-28, replace the ninth paragraph with the following:

Operate the profiler at any speed as per the manufacturer’s recommendations to collect valid data.

Page 6-30, Subarticle 610-13(A), Option 1 – Inertial Profiler, lines 30-31, delete the third sentence of the tenth paragraph.

Page 6-31, Subarticle 610-13(A), Option 1 – Inertial Profiler, lines 11-13, replace the first sentence of the third paragraph with the following:

After testing, transfer the profile data from the profiler portable computer’s hard drive to a write once storage media (Flash drive, USB, DVD-R or CD-R) or electronic media approved by the Engineer.

Page 6-31, Subarticle 610-13(A), Option 1 – Inertial Profiler, lines 17-18, replace the first sentence of the fourth paragraph with the following:

Submit a report with the documentation and electronic data of the evaluation for each section to the Engineer within 10 days after completion of the smoothness testing. The report shall be in the tabular format for each 0.10 segment or a portion thereof with a summary of the MRI values and the localized roughness areas including corresponding project station numbers or acceptable reference points. Calculate the pay adjustments for all segments in accordance with the formulas in Sections (1) and (2) shown below. The Engineer shall review and approval all pay adjustments unless corrective action is required.

Page 6-31, Subarticle 610-13(A)(1), Acceptance for New Construction, lines 36-37, replace the third paragraph with the following:

The price adjustment will apply to each 0.10-mile section or prorated for a portion thereof, based on the Mean Roughness Index (MRI), the average IRI values from both wheel paths.

Page 6-32, Subarticle 610-13(A)(2), Localized Roughness, lines 12-16, replace the first paragraph with the following:

Areas of localized roughness shall be identified through the “Smoothness Assurance Module (SAM)” provided in the ProVAL software. Use the SAM report to optimize repair strategies by analyzing the measurements from profiles collected using inertial profilers. The ride quality threshold for localized roughness shall be 165 in/mile for any sections that are 15 ft. to 100 ft. in length at the continuous short interval of 25 ft. Submit a continuous roughness report to identify each section with project station numbers or reference points outside the threshold and identify all localized roughness, with the signature of the Operator included with the submitted IRI trace and electronic files.

Page 6-32, Subarticle 610-13(A)(2), Localized Roughness, line 21, add the following new paragraph:

If the Engineer does not require corrective action, the pay adjustment for each area of localized roughness shall be based on the following formula:

$$PA = (165 - LR\#) 5$$

Where:

- PA = Pay Adjustment (dollars)
- LR# = The Localized Roughness number determined from SAM report for the ride quality threshold

Page 6-41, Subarticle 650-3(B), Mix Design Criteria, replace Table 650-1 with the following:

TABLE 650-1 OGAFC GRADATION CRITERIA			
Grading Requirements	Total Percent Passing		
<i>Sieve Size (mm)</i>	<i>Type FC-1</i>	<i>Type FC-1 Modified</i>	<i>Type FC-2 Modified</i>
19.0	-	-	100
12.5	100	100	80 - 100
9.50	75 - 100	75 - 100	55 - 80
4.75	25 - 45	25 - 45	15 - 30
2.36	5 - 15	5 - 15	5 - 15
0.075	1.0 - 3.0	1.0 - 3.0	2.0 - 4.0

ASPHALT BINDER CONTENT OF ASPHALT PLANT MIXES:

(11-21-00) (Rev. 7-17-12)

609

SP6 R15

The approximate asphalt binder content of the asphalt concrete plant mixtures used on this project will be as follows:

Asphalt Concrete Base Course	Type B 25.0__	4.4%
Asphalt Concrete Intermediate Course	Type I 19.0__	4.8%
Asphalt Concrete Surface Course	Type S 4.75A	6.8%
Asphalt Concrete Surface Course	Type SA-1	6.8%
Asphalt Concrete Surface Course	Type SF 9.5A	6.7%
Asphalt Concrete Surface Course	Type S 9.5__	6.0%
Asphalt Concrete Surface Course	Type S 12.5__	5.6%

The actual asphalt binder content will be established during construction by the Engineer within

FINAL SURFACE TESTING NOT REQUIRED:

(5-18-04) (Rev. 2-16-16)

610

SP6 R45

Final surface testing is not required on this project in accordance with Section 610-13, *Final Surface Testing and Acceptance*.

CONVERT EXISTING CATCH BASIN TO JUNCTION BOX WITH MH:

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

840, 859

SP8 R50

At the proper phase of construction, convert the existing Catch Basin at locations indicated in the plans or where directed, to Junction Box with Manhole in accordance with the details in the plans and the applicable requirements of Sections 840 and 859 of the *2012 Standard Specifications*.

Convert Existing Catch Basin to Junction Box with MH 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	Pay Unit
Convert Existing Catch Basin to Junction Box with MH	Each

CONVERT EXISTING DROP INLET TO JUNCTION BOX WITH MH:

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

840, 859

SP8 R50

At the proper phase of construction, convert the existing Drop Inlet at locations indicated in the plans or where directed, to Junction Box with Manhole in accordance with the details in the plans and the applicable requirements of Sections 840 and 859 of the *2012 Standard Specifications*.

Convert Existing Drop Inlet to Junction Box with MH 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	Pay Unit
Convert Existing Drop Inlet to Junction Box with MH	Each

PREFORMED SCOUR HOLE WITH LEVEL SPREADER APRON:

(10-15-02) (Rev. 10-20-09)

410

SP8 R105

Description

Construct and maintain preformed scour holes with spreader aprons at the locations shown on the plans and in accordance with the details in the plans. Work includes excavation, shaping and maintaining the hole and apron, furnishing and placing filter fabric, rip rap (class as specified in the plans) and permanent soil reinforcement matting.

Materials

Item	Section
Plain Rip Rap	1042
Filter Fabric	1056

The permanent soil reinforcement matting shall be 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	Test Method	Value Unit
Light Penetration	ASTM D6567	9 %
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 %
Resiliency	ASTM D1777	>70 %
UV Stability *	ASTM 4355	≥80 %
Porosity (Permanent Net)	ECTC Guidelines	≥85 %
Maximum Permissible Shear Stress (Vegetated)	Performance Bench Test	≥8.0 lb/ft ²
Maximum Allowable Velocity (Vegetated)	Performance Bench Test	≥16.0 ft/s

*ASTM D1682 Tensile Strength and % strength retention of material after 1,000 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

All areas to be protected with the mat shall be brought to final grade and seeded in accordance with Section 1660 of the *2012 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

Preformed Scour Holes with Level Spreader Aprons will be measured and paid as the actual number incorporated into the completed and accepted work. Such price and payment will be full compensation for all work covered by this provision.

Payment will be made under:

Pay Item	Pay Unit
Preformed Scour Hole with Level Spreader Aprons	Each

DETECTABLE WARNINGS FOR PROPOSED CURB RAMPS:

(6-15-10) (Rev. 8-16-11)
6/1/15

848

SP8 R126
Kimley-Horn and Associates, Inc.

Description

Construct detectable warnings consisting of integrated raised truncated domes on proposed concrete curb ramps in accordance with the *2012 Standard Specifications*, plan details, the requirements of the *28 CFR Part 36 ADA Standards for Accessible Design* and this provision.

Materials

Detectable warning for proposed curb ramps shall consist of integrated raised truncated domes. The description, size and spacing shall conform to Section 848 of the *2012 Standard Specifications*.

Use material for detectable warning systems as shown herein. Material and coating specifications must be stated in the Manufacturers Type 3 Certification and all Detectable Warning systems must be on the NCDOT Approved Products List.

Install detectable warnings created from one of the following materials: precast concrete blocks or bricks, clay paving brick, gray or ductile iron castings, mild steel, stainless steel, and engineered plastics, rubber or composite tile. Only one material type for detectable warning will be permitted per project, unless otherwise approved by the Engineer.

(A) Detectable Warnings shall consist of a base with integrated raised truncated domes, and when constructed of precast concrete they shall conform to the material requirements of Article 848-2 of the *2012 Standard Specifications*.

(B) Detectable Warnings shall consist of a base with integrated raised truncated domes, and may be comprised of other materials including, but not limited, to clay paving brick, gray iron or ductile iron castings, mild steel, stainless steel, and engineered plastics, rubber or composite tile, which are cast into the concrete of the curb ramps. The material shall have an integral color throughout the thickness of the material. The detectable warning shall include fasteners or anchors for attachment in the concrete and shall be furnished as a system from the manufacturer.

Prior to installation, the Contractor shall submit to the Engineer assembling instructions from the manufacturer for each type of system used in accordance with Article 105-2 of the *2012 Standard Specifications*. The system shall be furnished as a kit containing all consumable materials and consumable tools, required for the application. They shall be capable of being affixed to or anchored in the concrete curb ramp, including green concrete (concrete that has set but not appreciably hardened). The system shall be solvent free and contain no volatile organic compounds (VOC). The static coefficient of friction shall be 0.8 or greater when measured on top of the truncated domes and when measured between the domes in accordance with ASTM C1028 (dry and wet). The system shall be resistant to deterioration due to exposure to sunlight, water, salt or adverse weather conditions and impervious to degradation by motor fuels, lubricants and antifreeze.

(C) When steel or gray iron or ductile iron casting products are provided, only products that meet the requirements of Subarticle 106-1(B) of the *2012 Standard Specifications* may be used. Submit to the Engineer a Type 6 Certification, catalog cuts and installation procedures at least 30 days prior to installation for all.

Construction Methods

(A) Prior to placing detectable warnings in proposed concrete curb ramps, adjust the existing subgrade to the proper grade and in accordance with Article 848-3 of the *2012 Standard Specifications*.

(B) Install all detectable warning in proposed concrete curb ramps in accordance with the manufacturer's recommendations.

Measurement and Payment

Detectable Warnings installed for construction of proposed curb ramps will not be paid for separately. Such payment will be included in the price bid for *Concrete Curb Ramp (NCDOT)* and *Concrete Multi-Use Path Curb Ramp*.

STREET SIGNS AND MARKERS AND ROUTE MARKERS

(7-1-95)

900

SP9 R02

Move any existing street signs, markers, and route markers out of the construction limits of the project and install the street signs and markers and route markers so that they will be visible to the traveling public if there is sufficient right of way for these signs and markers outside of the construction limits.

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Near the completion of the project and when so directed by the Engineer, move the signs and markers and install them in their proper location in regard to the finished pavement of the project.

Stockpile any signs or markers that cannot be relocated due to lack of right of way, or any signs and markers that will no longer be applicable after the construction of the project, at locations directed by the Engineer for removal by others.

The Contractor shall be responsible to the owners for any damage to any street signs and markers or route markers during the above described operations.

No direct payment will be made for relocating, reinstalling, and/or stockpiling the street signs and markers and route markers as such work shall be considered incidental to other work being paid for by the various items in the contract.

MATERIALS

(2-21-12) (Rev. 11-22-16)

1000, 1002, 1005, 1016, 1018, 1024, 1050, 1074, 1078, 1080, 1081, 1086, 1084, 1087, 1092

SP10 R01

Revise the *2012 Standard Specifications* as follows:

Page 10-1, Article 1000-1, DESCRIPTION, lines 9-10, replace the last sentence of the first paragraph with the following:

Type IL, IP, IS or IT blended cement may be used instead of Portland cement.

Page 10-1, Article 1000-1, DESCRIPTION, line 14, add the following:

If any change is made to the mix design, submit a new mix design (with the exception of an approved pozzolan source change).

If any major change is made to the mix design, also submit new test results showing the mix design conforms to the criteria. Define a major change to the mix design as:

- (1) A source change in coarse aggregate, fine aggregate or cement.
- (2) A pozzolan class or type change (e.g. Class F fly ash to Class C fly ash).
- (3) A quantitative change in coarse aggregate (applies to an increase or decrease greater than 5%), fine aggregate (applies to an increase or decrease greater than 5%), water (applies to an increase only), cement (applies to a decrease only), or pozzolan (applies to an increase or decrease greater than 5%).

Use materials which do not produce a mottled appearance through rusting or other staining of the finished concrete surface.

Page 10-1, Article 1000-2, MATERIALS, line 16; Page 10-8, Subarticle 1000-7(A), Materials, line 8; and Page 10-18, Article 1002-2, MATERIALS, line 9, add the following to the table of item references:

Item	Section
Type IL Blended Cement	1024-1

Page 10-1, Subarticle 1000-3(A), Composition and Design, lines 25-27, replace the second paragraph with the following:

Fly ash may be substituted for cement in the mix design up to 30% at a rate of 1.0 lb of fly ash to each pound of cement replaced.

Page 10-2, Subarticle 1000-3(A), Composition and Design, lines 12-21, delete the third paragraph through the sixth paragraph beginning with “If any change is made to the mix design, submit...” through “...(applies to a decrease only).”

Page 10-5, Table 1000-1, REQUIREMENTS FOR CONCRETE, replace with the following:

TABLE 1000-1 REQUIREMENTS FOR CONCRETE											
Class of Concrete	Min. Comp. Strength at 28 days	Maximum Water-Cement Ratio				Consistency Max. Slump		Cement Content			
		Air-Entrained Concrete		Non Air-Entrained Concrete		Vibrated	Non-Vibrated	Vibrated		Non-Vibrated	
		Rounded Aggregate	Angular Aggregate	Rounded Aggregate	Angular Aggregate			Min.	Max.	Min.	Max.
<i>Units</i>	<i>psi</i>					<i>inch</i>	<i>inch</i>	<i>lb/cy</i>	<i>lb/cy</i>	<i>lb/cy</i>	<i>lb/cy</i>
AA	4,500	0.381	0.426	-	-	3.5	-	639	715	-	-
AA Slip Form	4,500	0.381	0.426	-	-	1.5	-	639	715	-	-
Drilled Pier	4,500	-	-	0.450	0.450	-	5-7 dry 7-9 wet	-	-	640	800
A	3,000	0.488	0.532	0.550	0.594	3.5	4	564	-	602	-
B	2,500	0.488	0.567	0.559	0.630	1.5 machine-placed 2.5 hand-placed	4	508	-	545	-
Sand Light-weight	4,500	-	0.420	-	-	4	-	715	-	-	-
Latex Modified	3,000 7 day	0.400	0.400	-	-	6	-	658	-	-	-
Flowable Fill excavatable	150 max. at 56 days	as needed	as needed	as needed	as needed	-	Flow-able	-	-	40	100
Flowable Fill non-excavatable	125	as needed	as needed	as needed	as needed	-	Flow-able	-	-	100	as needed
Pavement	4,500 design, field 650 flexural, design only	0.559	0.559	-	-	1.5 slip form 3.0 hand place	-	526	-	-	-
Precast	See Table 1077-1	as needed	as needed	-	-	6	as needed	as needed	as needed	as needed	as needed
Prestress	per contract	See Table 1078-1	See Table 1078-1	-	-	8	-	564	as needed	-	-

Page 10-6, Subarticle 1000-4(I), Use of Fly Ash, lines 36-2, replace the first paragraph with the following:

Fly ash may be substituted for cement in the mix design up to 30% at a rate of 1.0 lb of fly ash to each pound of cement replaced. Use Table 1000-1 to determine the maximum allowable water-cementitious material (cement + fly ash) ratio for the classes of concrete listed.

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Page 10-7, Table 1000-3, MAXIMUM WATER-CEMENTITIOUS MATERIAL RATIO, delete the table.

Page 10-7, Article 1000-5, HIGH EARLY STRENGTH PORTLAND CEMENT CONCRETE, lines 30-31, delete the second sentence of the third paragraph.

Page 10-19, Article 1002-3, SHOTCRETE FOR TEMPORARY SUPPORT OF EXCAVATIONS, line 30, add the following at the end of Section 1002:

(H) Handling and Storing Test Panels

Notify the Area Materials Engineer when preconstruction or production test panels are made within 24 hours of shooting the panels. Field cure and protect test panels from damage in accordance with ASTM C1140 until the Department transports panels to the Materials and Tests Regional Laboratory for coring.

Page 10-23, Table 1005-1, AGGREGATE GRADATION-COARSE AGGREGATE, replace with the following:

**TABLE 1005-1
 AGGREGATE GRADATION - COARSE AGGREGATE**

Std. Size #	Percentage of Total by Weight Passing														Remarks
	2"	1 1/2"	1"	3/4"	1/2"	3/8"	#4	#8	#10	#16	#40	#200			
4	100	90-100	20-55	0-15	-	0-5	-	-	-	-	-	A	Asphalt Plant Mix		
467M	100	95-100	-	35-70	-	0-30	0-5	-	-	-	-	A	Asphalt Plant Mix		
5	-	100	90-100	20-55	0-10	0-5	-	-	-	-	-	A	AST, Sediment Control Stone		
57	-	100	95-100	-	25-60	-	0-10	0-5	-	-	-	A	AST, Structural Concrete, Shoulder Drain Stone, Sediment Control Stone		
57M	-	100	95-100	-	25-45	-	0-10	0-5	-	-	-	A	AST, Concrete Pavement		
6M	-	-	100	90-100	20-55	0-20	0-8	-	-	-	-	A	AST		
67	-	-	100	90-100	-	20-55	0-10	0-5	-	-	-	A	Asphalt Plant Mix, AST, Structural Concrete		
78M	-	-	-	100	98-100	75-100	20-45	0-15	-	-	-	A	Asphalt Plant Mix, AST, Structural Concrete, Weep		
14M	-	-	-	-	100	98-100	35-70	5-20	-	0-8	-	A	Asphalt Plant Mix, AST, Structural Concrete, Weep		
9M	-	-	-	-	100	98-100	85-100	10-40	-	0-10	-	A	AST		
ABC	-	100	75-97	-	55-80	-	35-55	-	25-45	-	14-30	4-12B	Aggregate Base Course, Aggregate Stabilization		
ABC(M)	-	100	75-100	-	45-79	-	20-40	-	0-25	-	-	0-12B	Maintenance Stabilization		
Light-weight ^C	-	-	-	-	100	80-100	5-40	0-20	-	0-10	-	0-2.5	AST		

- A. See Subarticle 1005-4(A).
- B. See Subarticle 1005-4(B).
- C. For Lightweight Aggregate used in Structural Concrete, see Subarticle 1014-2(E)(6).

Page 10-39, Article 1016-3, CLASSIFICATIONS , lines 27-32, replace with the following:

Select material is clean, unweathered durable, blasted rock material obtained from an approved source. While no specific gradation is required, the below criteria will be used to evaluate the materials for visual acceptance by the Engineer:

- (A) At least 50% of the rock has a diameter of from 1.5 ft to 3 ft,
- (B) 30% of the rock ranges in size from 2” to 1.5 ft in diameter, and
- (C) Not more than 20% of the rock is less than 2” in diameter. No rippable rock will be permitted.

Page 10-40, Tables 1018-1 and 1018-2, PIEDMONT, WESTERN AND COASTAL AREA CRITERIA FOR ACCEPTANCE OF BORROW MATERIAL, under second column in both tables, replace second row with the following:

Acceptable, but not to be used in the top 3 ft of embankment or backfill

Page 10-46, Article 1024-1, PORTLAND CEMENT, line 33, add the following as the ninth paragraph:

Use Type IL blended cement that meets AASHTO M 240, except that the limestone content is limited to between 5 and 12% by weight and the constituents shall be interground. Class F fly ash can replace a portion of Type IL blended cement and shall be replaced as outlined in Subarticle 1000-4(I) for Portland cement. For mixes that contain cement with alkali content between 0.6% and 1.0% and for mixes that contain a reactive aggregate documented by the Department, use a pozzolan in the amount shown in Table 1024-1.

Page 10-46, Table 1024-1, POZZOLANS FOR USE IN PORTLAND CEMENT CONCRETE, replace with the following:

TABLE 1024-1	
POZZOLANS FOR USE IN PORTLAND CEMENT CONCRETE	
Pozzolan	Rate
Class F Fly Ash	20% - 30% by weight of required cement content with 1.0 lb Class F fly ash per lb of cement replaced
Ground Granulated Blast Furnace Slag	35%-50% by weight of required cement content with 1.0 lb slag per lb of cement replaced
Microsilica	4%-8% by weight of required cement content with 1.0 lb microsilica per lb of cement replaced

Page 10-47, Subarticle 1024-3(B), Approved Sources, lines 16-18, replace the second sentence of the second paragraph with the following:

Tests shall be performed by AASHTO’s designated National Transportation Product Evaluation Program (NTPEP) laboratory for concrete admixture testing.

Page 10-65, Article 1050-1, GENERAL, line 41, replace the first sentence with the following:

All fencing material and accessories shall meet Section 106.

Page 10-115, Subarticle 1074-7(B), Gray Iron Castings, lines 10-11, replace the first two sentences with the following:

Supply gray iron castings meeting all facets of AASHTO M 306 excluding proof load. Proof load testing will only be required for new casting designs during the design process, and conformance to M306 loading (40,000 lb.) will be required only when noted on the design documents.

Page 10-126, Table 1078-1, REQUIREMENTS FOR CONCRETE, replace with the following:

TABLE 1078-1 REQUIREMENTS FOR CONCRETE		
Property	28 Day Design Compressive Strength 6,000 psi or less	28 Day Design Compressive Strength greater than 6,000 psi
Maximum Water/Cementitious Material Ratio	0.45	0.40
Maximum Slump without HRWR	3.5"	3.5"
Maximum Slump with HRWR	8"	8"
Air Content (upon discharge into forms)	5 + 2%	5 + 2%

Page 10-151, Article 1080-4, INSPECTION AND SAMPLING, lines 18-22, replace (B), (C) and (D) with the following:

- (B) At least 3 panels prepared as specified in 5.5.10 of AASHTO M 300, Bullet Hole Immersion Test.
- (C) At least 3 panels of 4"x6"x1/4" for the Elcometer Adhesion Pull Off Test, ASTM D4541.
- (D) A certified test report from an approved independent testing laboratory for the Salt Fog Resistance Test, Cyclic Weathering Resistance Test, and Bullet Hole Immersion Test as specified in AASHTO M 300.

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- (E) A certified test report from an approved independent testing laboratory that the product has been tested for slip coefficient and meets AASHTO M253, Class B.

Page 10-161, Subarticle 1081-1(A), Classifications, lines 29-33, delete first 3 sentences of the description for Type 2 and replace with the following:

Type 2 - A low-modulus, general-purpose adhesive used in epoxy mortar repairs. It may be used to patch spalled, cracked or broken concrete where vibration, shock or expansion and contraction are expected.

Page 10-162, Subarticle 1081-1(A), Classifications, lines 4-7, delete the second and third sentences of the description for Type 3A. **Lines 16-22,** delete Types 6A, 6B and 6C.

Page 10-162, Subarticle 1081-1(B), Requirements, lines 26-30, replace the second paragraph with the following:

For epoxy resin systems used for embedding dowel bars, threaded rods, rebar, anchor bolts and other fixtures in hardened concrete, the manufacturer shall submit test results showing that the bonding system will obtain 125% of the specified required yield strength of the fixture. Furnish certification that, for the particular bolt grade, diameter and embedment depth required, the anchor system will not fail by adhesive failure and that there is no movement of the anchor bolt. For certification and anchorage, use 3,000 psi as the minimum Portland cement concrete compressive strength used in this test. Use adhesives that meet Section 1081.

List the properties of the adhesive on the container and include density, minimum and maximum temperature application, setting time, shelf life, pot life, shear strength and compressive strength.

Page 10-163, Table 1081-1, PROPERTIES OF MIXED EPOXY RESIN SYSTEMS, replace with the following:

TABLE 1081-1 PROPERTIES OF MIXED EPOXY RESIN SYSTEMS							
Property	Type 1	Type 2	Type 3	Type 3A	Type 4A	Type 4B	Type 5
Viscosity-Poises at 77°F ± 2°F	Gel	10-30	25-75	Gel	40-150	40-150	1-6
Spindle No.	-	3	4	--	4	4	2
Speed (RPM)	-	20	20	--	10	10	50
Pot Life (Minutes)	20-50	30-60	20-50	5-50	40-80	40-80	20-60
Minimum Tensile Strength at 7 days (psi)	1,500	2,000	4,000	4,000	1,500	1,500	4,000
Tensile Elongation at 7 days (%)	30 min.	30 min.	2-5	2-5	5-15	5-15	2-5
Min. Compressive Strength of 2" mortar cubes at 24 hours	3,000 (Neat)	4,000-	6,000-	6,000 (Neat)	3,000	3,000	6,000
Min. Compressive Strength of 2" mortar cubes at 7 days	5,000 (Neat)	-	-	-	-	5,000	-
Maximum Water Absorption (%)	1.5	1.0	1.0	1.5	1.0	1.0	1.0
Min. Bond Strength Slant Shear Test at 14 days (psi)	1,500	1,500	2,000	2,000	1,500	1,500	1,500

Page 10-164, Subarticle 1081-1(E), Prequalification, lines 31-33, replace the second sentence of the first paragraph with the following:

Manufacturers choosing to supply material for Department jobs must submit an application through the Value Management Unit with the following information for each type and brand name:

Page 10-164, Subarticle 1081-1(E)(3), line 37, replace with the following:

- (3) Type of the material in accordance with Articles 1081-1 and 1081-4,

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Page 10-165, Subarticle 1081-1(E)(6), line 1, in the first sentence of the first paragraph replace “AASHTO M 237” with “the specifications”.

Page 10-165, Subarticle 1081-1(E), Prequalification, line 9-10, delete the second sentence of the last paragraph.

Page 10-165, Subarticle 1081-1(F), Acceptance, line 14, in the first sentence of the first paragraph replace “Type 1” with “Type 3”.

Page 10-169, Subarticle 1081-3(G), Anchor Bolt Adhesives, delete this subarticle.

Page 10-170, Article 1081-3, HOT BITUMEN, line 9, add the following at the end of Section 1081:

1081-4 EPOXY RESIN ADHESIVE FOR BONDING TRAFFIC MARKINGS

(A) General

This section covers epoxy resin adhesive for bonding traffic markers to pavement surfaces.

(B) Classification

The types of epoxies and their uses are as shown below:

Type I – Rapid Setting, High Viscosity, Epoxy Adhesive. This type of adhesive provides rapid adherence to traffic markers to the surface of pavement.

Type II – Standard Setting, High Viscosity, Epoxy Adhesive. This type of adhesive is recommended for adherence of traffic markers to pavement surfaces when rapid set is not required.

Type III – Rapid Setting, Low Viscosity, Water Resistant, Epoxy Adhesive. This type of rapid setting adhesive, due to its low viscosity, is appropriate only for use with embedded traffic markers.

Type IV – Standard Set Epoxy for Blade Deflecting-Type Plowable Markers.

(C) Requirements

Epoxies shall conform to the requirements set forth in AASHTO M 237.

(D) Prequalification

Refer to Subarticle 1081-1(E).

(E) Acceptance

Refer to Subarticle 1081-1(F).

Page 10-173, Article 1084-2, STEEL SHEET PILES, lines 37-38, replace first paragraph with the following:

Steel sheet piles detailed for permanent applications shall be hot rolled and meet ASTM A572 or ASTM A690 unless otherwise required by the plans. Steel sheet piles shall be coated as required by the plans. Galvanized sheet piles shall be coated in accordance with Section 1076. Metallized sheet piles shall be metallized in accordance to the Project Special Provision “Thermal Sprayed Coatings (Metallization)” with an 8 mil, 99.9% aluminum alloy coating and a 0.5 mil seal coating. Any portion of the metallized sheet piling encased in concrete shall

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receive a barrier coat. The barrier coat shall be an approved waterborne coating with a low-viscosity which readily absorbs into the pores of the aluminum thermal sprayed coating. The waterborne coating shall be applied at a spreading rate that results in a theoretical 1.5 mil dry film thickness. The manufacturer shall issue a letter of certification that the resin chemistry of the waterborne coating is compatible with the 99.9% aluminum thermal sprayed alloy and suitable for tidal water applications.

Page 10-174, Subarticle 1086-1(B)(1), Epoxy, lines 18-24, replace with the following:

The epoxy shall meet Article 1081-4.

The 2 types of epoxy adhesive which may be used are Type I, Rapid Setting, and Type II, Standard Setting. Use Type II when the pavement temperature is above 60°F or per the manufacturer's recommendations whichever is more stringent. Use Type I when the pavement temperature is between 50°F and 60°F or per the manufacturer's recommendations whichever is more stringent. Epoxy adhesive Type I, Cold Set, may be used to attach temporary pavement markers to the pavement surface when the pavement temperature is between 32°F and 50°F or per the manufacturer's recommendations whichever is more stringent.

Page 10-175, Subarticle 1086-2(E), Epoxy Adhesives, line 27, replace "Section 1081" with "Article 1081-4".

Page 10-177, Subarticle 1086-3(E), Epoxy Adhesives, line 22, replace "Section 1081" with "Article 1081-4".

Page 10-179, Subarticle 1087-4(A), Composition, lines 39-41, replace the third paragraph with the following:

All intermixed and drop-on glass beads shall not contain more than 75 ppm arsenic or 200 ppm lead.

Page 10-180, Subarticle 1087-4(B), Physical Characteristics, line 8, replace the second paragraph with the following:

All intermixed and drop-on glass beads shall comply with NCGS § 136-30.2 and 23 USC § 109(r).

Page 10-181, Subarticle 1087-7(A), Intermixed and Drop-on Glass Beads, line 24, add the following after the first paragraph:

Use X-ray Fluorescence for the normal sampling procedure for intermixed and drop-on beads, without crushing, to check for any levels of arsenic and lead. If any arsenic or lead is detected, the sample shall be crushed and repeat the test using X-ray Fluorescence. If the X-ray Fluorescence test shows more than a LOD of 5 ppm, test the beads using United States Environmental Protection Agency Method 6010B, 6010C or 3052 for no more than 75 ppm arsenic or 200 ppm lead.

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 *2012 Standard Specifications*.

Measurement and payment will be in accordance with Section 848 of the *2012 Standard Specifications*.

SELECT MATERIAL, CLASS III, TYPE 3

(1-17-12)

1016, 1044

SP10 R05

Revise the 2012 Standard Specifications as follows:

Page 10-39, Article 1016-3, CLASS III, add the following after line 14:

Type 3 Select Material

Type 3 select material is a natural or manufactured fine aggregate material meeting the following gradation requirements and as described in Sections 1005 and 1006:

Percentage of Total by Weight Passing							
3/8"	#4	#8	#16	#30	#50	#100	#200
100	95-100	65-100	35-95	15-75	5-35	0-25	0-8

Page 10-39, Article 1016-3, CLASS III, line 15, replace “either type” with “Type 1, Type 2 or Type 3”.

Page 10-62, Article 1044-1, line 36, delete the sentence and replace with the following:

Subdrain fine aggregate shall meet Class III select material, Type 1 or Type 3.

Page 10-63, Article 1044-2, line 2, delete the sentence and replace with the following:

Subdrain coarse aggregate shall meet Class V select material.

SHOULDER AND SLOPE BORROW

(3-19-13)

1019

SP10 R10

Use soil in accordance with Section 1019 of the *2012 Standard Specifications*. Use soil consisting of loose, friable, sandy material with a PI greater than 6 and less than 25 and a pH ranging from 5.5 to 7.0.

Soil with a pH ranging from 4.0 to 5.5 will be accepted without further testing if additional limestone is provided in accordance with the application rates shown in Table 1019-1A. Soil type is identified during the soil analysis. Soils with a pH above 7.0 require acidic amendments to be added. Submit proposed acidic amendments to the Engineer for review and approval. Soils with a pH below 4.0 or that do not meet the PI requirements shall not be used.

TABLE 1019-1A									
ADDITIONAL LIMESTONE APPLICATION RATE TO RAISE pH									
pH	TEST	Sandy	Soils	Silt	Loam	Soils	Clay	Loam	Soils
RESULT		Additional	Rate	Additional	Additional	Rate	Additional	Additional	Rate
		(lbs. / Acre)		(lbs. / Acre)			(lbs. / Acre)	(lbs. / Acre)	
4.0 - 4.4		1,000		4,000			6,000		
4.5 - 4.9		500		3,000			5,000		
5.0 - 5.4		NA		2,000			4,000		

Note: Limestone application rates shown in this table are in addition to the standard rate of 4000 lbs. / acre required for seeding and mulching.

No direct payment will be made for providing additional lime or acidic amendments for Ph adjustment.

GROUT PRODUCTION AND DELIVERY:

(3-17-15)

1003

SP10 R20

Revise the *2012 Standard Specifications* as follows:

Replace Section 1003 with the following:

**SECTION 1003
GROUT PRODUCTION AND DELIVERY**

1003-1 DESCRIPTION

This section addresses cement grout to be used for structures, foundations, retaining walls, concrete barriers, embankments, pavements and other applications in accordance with the contract. Produce non-metallic grout composed of Portland cement and water and at the Contractor's option or as required, aggregate and pozzolans. Include chemical admixtures as required or needed. Provide sand cement or neat cement grout as required. Define "sand cement grout" as grout with only fine aggregate and "neat cement grout" as grout without aggregate.

The types of grout with their typical uses are as shown below:

Type 1 – A cement grout with only a 3-day strength requirement and a fluid consistency that is typically used for filling subsurface voids.

Type 2 – A nonshrink grout with strength, height change and flow conforming to ASTM C1107 that is typically used for foundations, ground anchors and soil nails.

Type 3 – A nonshrink grout with high early strength and freeze-thaw durability requirements that is typically used in pile blockouts, grout pockets, shear keys, dowel holes and recesses for concrete barriers and structures.

Type 4 – A neat cement grout with low strength, a fluid consistency and high fly ash content that is typically used for slab jacking.

Type 5 – A low slump, low mobility sand cement grout with minimal strength that is typically used for compaction grouting.

1003-2 MATERIALS

Refer to Division 10.

Item	Section
Chemical Admixtures	1024-3
Fine Aggregate	1014-1
Fly Ash	1024-5
Ground Granulated Blast Furnace Slag	1024-6

Portland Cement	1024-1
Silica Fume	1024-7
Water	1024-4

Do not use grout that contains soluble chlorides or more than 1% soluble sulfate. At the Contractor’s option, use an approved packaged grout instead of the materials above except for water. Use packaged grouts that are on the NCDOT Approved Products List.

Use admixtures for grout that are on the NCDOT Approved Products List or other admixtures in accordance with Subarticle 1024-3(E) except do not use concrete additives or unclassified or other admixtures in Type 4 or 5 grout. Use Class F fly ash for Type 4 grout and Type II Portland cement for Type 5 grout.

Use well graded rounded aggregate with a gradation, liquid limit (LL) and plasticity index (PI) that meet Table 1003-1 for Type 5 grout. Fly ash may be substituted for a portion of the fines in the aggregate. Do not use any other pozzolans in Type 5 grout.

Gradation		Maximum Liquid Limit	Maximum Plasticity Index
Sieve Designation per AASHTO M 92	Percentage Passing (% by weight)		
3/8"	100	N/A	N/A
No. 4	70 – 95		
No. 8	50 – 90		
No. 16	30 – 80		
No. 30	25 – 70		
No. 50	20 – 50		
No. 100	15 – 40	25	10
No. 200	10 – 30		

1003-3 COMPOSITION AND DESIGN

When using an approved packaged grout, a grout mix design submittal is not required. Otherwise, submit proposed grout mix designs for each grout mix to be used in the work. Mixes for all grout shall be designed by a Certified Concrete Mix Design Technician or an Engineer licensed by the State of North Carolina. Mix proportions shall be determined by a testing laboratory approved by the Department. Base grout mix designs on laboratory trial batches that meet Table 1003-2 and this section. With permission, the Contractor may use a quantity of chemical admixture within the range shown on the current list of approved admixtures maintained by the Materials and Tests Unit.

Submit grout mix designs in terms of saturated surface dry weights on Materials and Tests Form 312U at least 35 days before proposed use. Adjust batch proportions to compensate for surface moisture contained in the aggregates at the time of batching. Changes in the saturated surface dry mix proportions will not be permitted unless revised grout mix designs have been submitted to the Engineer and approved.

Accompany Materials and Tests Form 312U with a listing of laboratory test results of compressive strength, density and flow or slump and if applicable, aggregate gradation, durability and height change. List the compressive strength of at least three 2" cubes at the age of 3 and 28 days.

The Engineer will review the grout mix design for compliance with the contract and notify the Contractor as to its acceptability. Do not use a grout mix until written notice has been received. Acceptance of the grout mix design or use of approved packaged grouts does not relieve the Contractor of his responsibility to furnish a product that meets the contract. Upon written request from the Contractor, a grout mix design accepted and used satisfactorily on any Department project may be accepted for use on other projects.

Perform laboratory tests in accordance with the following test procedures:

Property	Test Method
Aggregate Gradation ^A	AASHTO T 27
Compressive Strength	AASHTO T 106
Density (Unit Weight)	AASHTO T 121, AASHTO T 133 ^B , ANSI/API RP ^C 13B-1 ^B (Section 4, Mud Balance)
Durability	AASHTO T 161 ^D
Flow	ASTM C939 (Flow Cone)
Height Change	ASTM C1090 ^E
Slump	AASHTO T 119

Applicable to grout with aggregate.

Applicable to Neat Cement Grout.

American National Standards Institute/American Petroleum Institute Recommended Practice.

Procedure A (Rapid Freezing and Thawing in Water) required.

Moist room storage required.

1003-4 GROUT REQUIREMENTS

Provide grout types in accordance with the contract. Use grouts with properties that meet Table 1003-2. The compressive strength of the grout will be considered the average compressive strength test results of three 2" cubes at each age. Make cubes that meet AASHTO T 106 from the grout delivered for the work or mixed on-site. Make cubes at such frequencies as the Engineer may determine and cure them in accordance with AASHTO T 106.

TABLE 1003-2 GROUT REQUIREMENTS					
Type of Grout	Minimum Compressive Strength at		Height Change at 28 days	Flow^A/Slump^B	Minimum Durability Factor
	3 days	28 days			
1	3,000 psi	–	–	10 – 30 sec	–
2	Table 1 ^C			Fluid Consistency ^C	–
3	5,000 psi	–	0 – 0.2%	Per Accepted Grout Mix Design/ Approved Packaged Grout	80
4 ^D	600 psi	1,500 psi	–	10 – 26 sec	–
5	–	500 psi	–	1 – 3"	–

Applicable to Type 1 through 4 grouts.

Applicable to Type 5 grout.

ASTM C1107.

Use Type 4 grout with proportions by volume of 1 part cement and 3 parts fly ash.

1003-5 TEMPERATURE REQUIREMENTS

When using an approved packaged grout, follow the manufacturer’s instructions for grout and air temperature at the time of placement. Otherwise, the grout temperature at the time of placement shall be not less than 50°F nor more than 90°F. Do not place grout when the air temperature measured at the location of the grouting operation in the shade away from artificial heat is below 40°F.

1003-6 ELAPSED TIME FOR PLACING GROUT

Agitate grout continuously before placement. Regulate the delivery so the maximum interval between the placing of batches at the work site does not exceed 20 minutes. Place grout before exceeding the times in Table 1003-3. Measure the elapsed time as the time between adding the mixing water to the grout mix and placing the grout.

TABLE 1003-3 ELAPSED TIME FOR PLACING GROUT (with continuous agitation)		
Air or Grout Temperature, Whichever is Higher	Maximum Elapsed Time	
	No Retarding Admixture Used	Retarding Admixture Used
90°F or above	30 minutes	1 hr. 15 minutes
80°F through 89°F	45 minutes	1 hr. 30 minutes
79°F or below	60 minutes	1 hr. 45 minutes

1003-7 MIXING AND DELIVERY

Use grout free of any lumps and undispersed cement. When using an approved packaged grout, mix grout in accordance with the manufacturer’s instructions. Otherwise, comply with Articles 1000-8 through 1000-12 to the extent applicable for grout instead of concrete.

GEOSYNTHETICS

(2-16-16)

1056

SP10 R25

Revise the *2012 Standard Specifications* as follows:

Replace Section 1056 with the following:

**SECTION 1056
 GEOSYNTHETICS**

1056-1 DESCRIPTION

Provide geosynthetics for subsurface drainage, separation, stabilization, reinforcement, erosion control, filtration and other applications in accordance with the contract. Use geotextiles, geocomposite drains and geocells that are on the NCDOT Approved Products List. Prefabricated geocomposite drains include sheet, strip and vertical drains (PVDs), i.e., “wick drains” consisting of a geotextile attached to and/or encapsulating a plastic drainage core. Geocells are comprised of ultrasonically welded polymer strips that when expanded form a 3D honeycomb grid that is typically filled with material to support vegetation.

If necessary or required, hold geotextiles and sheet drains in place with new wire staples, i.e., “sod staples” that meet Subarticle 1060-8(D) or new anchor pins. Use steel anchor pins with a diameter of at least 3/16" and a length of at least 18" and with 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".

1056-2 HANDLING AND STORING

Load, transport, unload and store geosynthetics so geosynthetics are kept clean and free of damage. Label, ship and store geosynthetics in accordance with Section 7 of AASHTO M 288. Geosynthetics with defects, flaws, deterioration or damage will be rejected. Do not unwrap geosynthetics until just before installation. Do not leave geosynthetics exposed for more than 7 days before covering except for geosynthetics for temporary wall faces and erosion control.

1056-3 CERTIFICATIONS

Provide Type 1, Type 2 or Type 4 material certifications in accordance with Article 106-3 for geosynthetics. Define “minimum average roll value” (MARV) in accordance with ASTM D4439. Provide certifications with MARV for geosynthetic properties as required. Test geosynthetics using laboratories accredited by the Geosynthetic Accreditation Institute (GAI) to perform the required test methods. Sample geosynthetics in accordance with ASTM D4354.

1056-4 GEOTEXTILES

When required, sew geotextiles together in accordance with Article X1.1.4 of AASHTO M 288. Provide sewn seams with seam strengths meeting the required strengths for the geotextile type and class specified.

Provide geotextile types and classes in accordance with the contract. Geotextiles will be identified by the product name printed directly on the geotextile. When geotextiles are not marked with a product name or marked with only a manufacturing plant identification code, geotextiles will be identified by product labels attached to the geotextile wrapping. When identification is based on labels instead of markings, unwrap geotextiles just before use in the presence of the Engineer to confirm that the product labels on both ends of the outside of the geotextile outer wrapping match the labels affixed to both ends of the inside of the geotextile roll core. Partial geotextile rolls without the product name printed on the geotextile or product labels affixed to the geotextile roll core may not be used.

Use woven or nonwoven geotextiles with properties that meet Table 1056-1. Define “machine direction” (MD) and “cross-machine direction” (CD) in accordance with ASTM D4439.

TABLE 1056-1 GEOTEXTILE REQUIREMENTS						
Property	Requirement					Test Method
	Type 1	Type 2	Type 3^A	Type 4	Type 5^B	
<i>Typical Application</i>	<i>Shoulder Drains</i>	<i>Under Rip Rap</i>	<i>Silt Fence Fabric</i>	<i>Soil Stabilization</i>	<i>Temporary Walls</i>	
Elongation (MD & CD)	≥ 50%	≥ 50%	≤ 25%	< 50%	< 50%	ASTM D4632
Grab Strength (MD & CD)	Table 1 ^D , Class 3	Table 1 ^D , Class 1	100 lb ^C	Table 1 ^D , Class 3	–	ASTM D4632
Tear Strength (MD & CD)			–			ASTM D4533
Puncture Strength			–			ASTM D6241
Ultimate Tensile Strength (MD & CD)	–	–	–	–	2,400 lb/ft ^C (unless required otherwise in the contract)	ASTM D4595
Permittivity	Table 2 ^D , 15% to 50% <i>in Situ</i> Soil Passing 0.075 mm	Table 6 ^D , 15% to 50% <i>in Situ</i> Soil Passing 0.075mm	Table 7 ^D	Table 5 ^D	0.20 sec ^{-1.C}	ASTM D4491
Apparent Opening Size					0.60 mm ^E	ASTM D4751
UV Stability (Retained Strength)					70% ^C (after 500 hr of exposure)	ASTM D4355

- A. Minimum roll width of 36" required.
- B. Minimum roll width of 13 ft required.
- C. MARV per Article 1056-3.
- D. AASHTO M 288.
- E. Maximum average roll value.

1056-5 GEOCOMPOSITE DRAINS

Provide geocomposite drain types in accordance with the contract and with properties that meet Table 1056-2.

TABLE 1056-2 GEOCOMPOSITE DRAIN REQUIREMENTS				
Property	Requirement			Test Method
	Sheet Drain	Strip Drain	Wick Drain	
Width	≥ 12" (unless required otherwise in the contract)	12" ±1/4"	4" ±1/4"	N/A
In-Plane Flow Rate ^A (with gradient of 1.0 and 24-hour seating period)	6 gpm/ft @ applied normal compressive stress of 10 psi	15 gpm/ft @ applied normal compressive stress of 7.26 psi	1.5 gpm ^B @ applied normal compressive stress of 40 psi	ASTM D4716

A. MARV per Article 1056-3.

B. Per 4" drain width.

For sheet and strip drains, use accessories (e.g., pipe outlets, connectors, fittings, etc.) recommended by the Drain Manufacturer. Provide sheet and strip drains with Type 1 geotextiles heat bonded or glued to HDPE, polypropylene or high impact polystyrene drainage cores that meet Table 1056-3.

TABLE 1056-3 DRAINAGE CORE REQUIREMENTS			
Property	Requirement (MARV)		Test Method
	Sheet Drain	Strip Drain	
Thickness	1/4"	1"	ASTM D1777 or D5199
Compressive Strength	40 psi	30 psi	ASTM D6364

For wick drains with a geotextile wrapped around a corrugated drainage core and seamed to itself, use drainage cores with an ultimate tensile strength of at least 225 lb per 4" width in accordance with ASTM D4595 and geotextiles with properties that meet Table 1056-4.

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

A. 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 lb/ft in accordance with ASTM D4595 and geotextiles with a permittivity, AOS and UV stability that meet Table 1056-4.

1056-6 GEOCELLS

Geocells will be identified by product labels attached to the geocell wrapping. Unwrap geocells just before use in the presence of the Engineer. Previously opened geocell products will be rejected.

Manufacture geocells from virgin polyethylene resin with no more than 10% rework, also called “regrind”, materials. Use geocells made from textured and perforated HDPE strips with an open area of 10% to 20% and properties that meet Table 1056-5.

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

A. Environmental Stress Crack Resistance.

B. Minimum test period of 168 hr with a temperature change from 74°F to 130°F in 1-hour cycles.

C. US Army Corps of Engineers.

Provide geocell accessories (e.g., stakes, pins, clips, staples, rings, tendons, anchors, deadmen, etc.) recommended by the Geocell Manufacturer.

TEMPORARY SHORING:

(2-20-07) (Rev. 3-17-15)

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 ft 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. Define “reinforcement” as geotextile, geogrid, welded wire grid or metallic strip reinforcement.

Temporary geosynthetic walls consist of geotextile or geogrid reinforcement wrapped behind welded wire facing. Define “temporary geotextile wall” as a temporary geosynthetic wall with geotextile reinforcement and “temporary geogrid wall” as a temporary geosynthetic wall with geogrid 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 height below the grade in front of walls.

(E) Positive Protection

Define “unanchored or anchored portable concrete barrier” as portable concrete barrier (PCB) that meets Standard Drawing No. 1170.01 of the *2012 Roadway Standard Drawings*. Define “concrete barrier” as unanchored or anchored PCB or an approved equal. Define “temporary guardrail” as temporary steel beam guardrail that meets Standard Drawing No. 862.02 of the *2012 Roadway Standard Drawings*.

Materials

Refer to the *2012 Standard Specifications*.

Item	Section
Anchor Pins	1056-2
Concrete Barrier Materials	1170-2
Flowable Fill, Excavatable	1000-6
Geotextiles	1056
Grout	1003
Portland Cement Concrete	1000
Select Material	1016
Steel Beam Guardrail Materials	862-2
Steel Plates	1072-2
Steel Sheet Piles and H-Piles	1084
Untreated Timber	1082-2
Welded Wire Reinforcement	1070-3
Wire Staples	1060-8(D)

Provide Type 6 material certifications for shoring materials in accordance with Article 106-3 of the *2012 Standard Specifications*. Use Class IV select material (standard size No. ABC) for temporary guardrail. Use neat cement grout for Type 2 grout for ground anchors. Use Class A concrete that meets Article 450-2 of the *2012 Standard Specifications* or Type 1 grout for drilled-in piles. Provide untreated timber with a thickness of at least 3" and a bending stress of at least 1,000 psi 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" 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 *2012 Standard Specifications*. Splice bars in accordance with Article 1070-9 of the *2012 Standard Specifications*. Do not splice strands. Use bondbreakers, spacers

and centralizers that meet Article 6.3.5 of the *AASHTO LRFD Bridge Construction Specifications*.

(2) Helical Anchors

Use helical anchors with an ICC Evaluation Service, Inc. (ICC-ES) report. Helical anchors without an ICC-ES report may be approved at the discretion of the Engineer. 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 Reinforcement

Handle and store geogrids in accordance with Article 1056-2 of the *2012 Standard Specifications*. Define “machine direction” (MD) and “cross-machine direction” (CD) for geogrids in accordance with ASTM D4439.

Use geogrids with a roll width of at least 4 ft and an “approved” or “approved for provisional use” status code. The list of approved geogrids is available from: connect.ncdot.gov/resources/Materials/Pages/SoilsLaboratory.aspx

Provide geogrids for geogrid reinforcement with design strengths in accordance with the accepted submittals. Geogrids are typically approved for ultimate tensile strengths in the MD and CD or short-term design strengths for a 3-year design life in the MD 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 *2012 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 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 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 8 copies of working drawings and 3 copies of design calculations and a PDF copy of each for temporary shoring designs in accordance with Article 105-2 of the *2012 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.

Use a prequalified MSE Wall Design Consultant to design temporary walls. Provide temporary wall designs sealed by a Design Engineer approved as a Geotechnical Engineer (key person) for the MSE Wall Design Consultant. 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 elevations shown in the plans. Assume the following soil parameters for shoring backfill:

(a) Unit weight (γ) = 120 lb/cf;

(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 lb/sf.

(2) Traffic Surcharge

Design temporary shoring for a traffic surcharge of 250 lb/sf 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. For LRFD shoring designs, apply traffic (live load) surcharge in accordance with Figure C11.5.5-3 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 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 lb/ft applied 18" above top of shoring if concrete barrier is above and next to shoring or temporary guardrail is above and attached to shoring. For anchored shoring designs, apply traffic impact load as horizontal load (P_{HI}) in accordance with Figure 3.11.6.3-2(a) of the AASHTO LRFD specifications.

Extend cantilever, braced and anchored shoring at least 32" above top of shoring if shoring is designed for traffic impact. Otherwise, extend shoring at least 6" above top of shoring.

Design cantilever, braced and anchored shoring for a maximum deflection of 3" 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". 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 ft 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" 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" 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 ft, whichever is longer. Extend the reinforced zone at least 6" 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 reinforcement, use approved geogrid properties available from the website shown elsewhere in this provision. If the website does not list a short-term design strength for an approved geogrid, use a short-term design strength equal to the ultimate tensile strength divided by 3.5 for the geogrid reinforcement. 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 and temporary geogrid walls for an R_c of at least 0.8. For geogrid reinforcement with an R_c of less than 1.0, use a maximum horizontal clearance between geogrids of 3 ft 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" long legs. Locate geotextile or geogrid 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 ft back behind facing into shoring backfill.

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 and wire walls, retain shoring backfill at welded wire facing with retention geotextiles and extend geotextiles at least 3 ft 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, Bridge or Roadway 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 *2012 Standard Specifications* and Standard Drawing No. 1170.01 of the *2012 Roadway Standard Drawings*. Use temporary guardrail in accordance

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with Section 862 of the *2012 Standard Specifications* and Standard Drawing No. 862.01, 862.02 and 862.03 of the *2012 Roadway Standard Drawings*.

(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" of horizontal and vertical alignment shown in the accepted submittals, and
- (3) Shoring plumbness (batter) is not negative and within 2° 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 *2012 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 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 ft. Remove flowable fill and material in between H-piles as needed to install timber lagging. Position lagging with at least 3" 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) 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" between the 1 and 10 minute readings or less than 0.08" 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 2 copies 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.

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

Place reinforcement within 3" of locations shown in the plans and accepted submittals and in slight tension 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" 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 *2012 Standard Specifications*. Use only hand operated compaction equipment to compact backfill within 3 ft of welded wire facing. At a distance greater than 3 ft, compact shoring backfill with at least 4 passes of an 8 ton to 10 ton vibratory roller in a direction parallel to the wall face. Smooth wheeled or rubber tired rollers are also acceptable for compacting 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 geotextile or geogrid reinforcement is not permitted. Do not operate heavy equipment on reinforcement until it is covered with at least 8" 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 *2012 Standard Specifications*. Bench temporary walls into the sides of excavations where applicable. For temporary geosynthetic walls with top of wall within 5 ft 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.

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PCB will be measured and paid in accordance with Section 1170 of the *2012 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 *2012 Standard Specifications*.

Payment will be made under:

Pay Item Temporary Shoring	Pay Unit Square Foot
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TEMPORARY TRAFFIC CONTROL DEVICES

(1-17-12)	1105	SP11 R05
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Revise the *2012 Standard Specifications* as follows:

Page 11-5, Article 1105-6 Measurement and Payment, add the following paragraph after line 24:

Partial payments will be made on each payment estimate based on the following: 50% of the contract lump sum price bid will be paid on the first monthly estimate and the remaining 50% of the contract lump sum price bid will be paid on each subsequent estimate based on the percent of the project completed.

SANITARY SEWER:

(11-19-13)	1520	SP15 R20
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Revise the *2012 Standard Specifications* as follows:

Page 15-11, Article 1520-3(A)(2) Testing, line 5, replace the second paragraph with the following:

Test all 24" and smaller gravity sewer lines for leakage using infiltration, exfiltration, or air test. Perform visual inspection on gravity sewer lines larger than 24". Perform line and grade testing and deflection testing on all gravity sewer lines.

GREENWAYS AND MULTI-USE PATHS

(2-18-14)		Z-200
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Description

This special provision provides for revisions to the *2012 Standard Specifications* for work on a greenway or multi-use path not designed or intended to carry highway traffic.

Materials

Refer to the *2012 Standard Specifications* except as noted in these Special Provisions. Use materials on the NCDOT Approved Products List (APL) where applicable.

Construction Methods

Construct Greenway in accordance with the contract plans, *2012 Standard Specifications* except as noted below:

SECTION	ARTICLE	PAGE	REVISION
235: Embankments	235-3(C): Embankment Compaction	2-23	Delete first sentence and replace with the following: Compact each layer for its full width to a density equal to at least 90% of that obtained by compacting a sample of the material in accordance with AASHTO T 99 as modified by the Department.
500: Fine Grading Subgrade	500-2(C): Compaction of Subgrade	5-1	Delete first sentence and replace with the following: Compact all material to a depth of up to 8 inches below the finished surface of the subgrade to a density equal to at least 92% of that obtained by compacting a sample of the material in accordance with AASHTO T 99 as modified by the Department.
500: Fine Grading Subgrade	500-3: Tolerances	5-2	Delete Article 500-3 and replace with the following: A tolerance of plus or minus one inch from the established greenway grade will be permitted after the subgrade has been graded to a uniform surface.
505: Aggregate Subgrade	505-3: Construction Methods	5-8	Delete first paragraph and replace with the following: Perform shallow undercut up to 12 inches as necessary to remove unsuitable material. If necessary, install geotextile for soil stabilization in accordance with Article 270-3. Place Class III select material or Class IV subgrade stabilization (standard size no. ABC) by end dumping on geotextiles. Do not operate heavy equipment on geotextiles until geotextiles are covered with Class III or ABC. Compact ABC to 92% or to the highest density that can be reasonably attained.
520: Aggregate Base Course	520-7: Shaping and Compaction	5-11	Delete first sentence in second paragraph and replace with the following: For both nuclear and ring tests, compact each layer of the base to a density equal to at least 92% of that obtained by compacting a sample of the material in accordance with AASHTO T 180 as modified by the Department. Delete the third paragraph.
610: Asphalt Concrete Plant Mix Pavements	610-10: Density Requirements	6-28	Delete Article 610-10 and replace with the following: Compact the asphalt plant mix to at least 85% of the maximum specific gravity.

SECTION	ARTICLE	PAGE	REVISION
610: Asphalt Concrete Plant Mix Pavements	610-13: Final Surface Testing and Acceptance	6-29	Delete Article 610-13.
848: Concrete Sidewalks	848-3: Construction Methods	8-30	Delete second paragraph and replace with the following: Construct concrete greenway based on the typical sections in the plans. Place groove joints at a spacing equal to the width of the greenway. Transverse Expansion Joints are required every 40 feet.

PUBLIC ADVISORY:

06/13/17

SP (Kimley-Horn and Associates, Inc.)

Prior to the prosecution of sections of work, the Contractor shall provide a one-week advance written notice to all individuals, homeowners, business owners, utilities, and others along the line of construction who are within or immediately adjacent to the limits of disturbance shown on the plans that may be affected by any aspect of the work that is contemplated. Adjacent property owners should also be contacted in the event that they are affected by the work. Such notice may be delivered by door contact, door knob hanger, or letter and shall briefly describe the nature and estimated timetable of the work and shall provide any additional information or instructions that may be desirable or necessary. The Contractor shall notify those affected by the work that any items, i.e., bushes, trees, fences, etc. in the right-of-way or easement are subject to be removed. The Contractor will work with the individuals to allow them reasonable time to remove the items themselves or if they prefer, the Contractor may remove and lay aside the item for the owner to relocate. If the owner does not wish to salvage the item, the Contractor shall remove it and dispose of it offsite. The notice shall also include the name and telephone number of the Contractor's contact person for further information related to the project. **A proposed draft of the written notice shall be submitted by the Contractor to the Engineer for approval prior to the initiation of any work.** There will be no direct payment for the work covered by this provision. Payment at the contract unit prices for the various items in the contract will be full compensation for all work covered by this provision.

SAWING EXISTING PAVEMENT:

05/15/15

KIMLEY-HORN AND ASSOCIATES

Where it is necessary to construct curb or curb and gutter in locations where bituminous pavement and curb and gutter exists, the Contractor will be required to furnish a neat edge along the pavement retained by sawing a neat line approximately two inches deep, with a concrete saw, before breaking the adjacent asphalt pavement and curb and gutter away. There will be no direct payment for the work covered by this provision.

FLARED END SECTION:

05/15/15

SP (Kimley-Horn and Associates, Inc.)

Description

The Contractor shall furnish and install flared end sections at locations shown on the plans and in accordance with Divisions 3 and 10 of the *2012 Standard Specifications* and plan details. The work covered by this section includes, but is not limited to excavation, undercut, furnishing and installing flared end sections at locations and size called for in the contract documents and any incidentals to complete the installation.

Materials

The material of the flared end sections shall be consistent with the associated pipe.

Measurement and Payment

Flared End Sections will be paid for per each flared end section placed and accepted. All work and materials necessary to complete this work shall be incidental to this pay item.

Payment will be at the contract unit price for:

Pay Item	Unit
15" Flared End Section	Each
18" Flared End Section	Each
24" Flared End Section	Each

57 STONE:

6/1/15

SP (Kimley-Horn and Associates, Inc.)

Description

Place No. 57 Stone at the locations designated in the contract for stabilizing subgrade and as directed.

Materials

57 StoneSection 1005

Measurement and Payment

The quantity of No. 57 stone to be paid for will be the actual number of tons of No. 57 stone which has been incorporated into the work, or has been delivered to and stockpiled on the project as directed by the Engineer. No.57 stone that has been stockpiled will not be measured a second time. No.57 stone will be measured by being weighed in trucks on certified platform scales or other certified weighing devices.

Payment will be at the contract unit price for:

Pay Item	Pay Unit
# 57 Stone	Tons

EXTRA DEPTH DUAL 36” JUNCTION BOX:

05/15/15

KIMLEY-HORN AND ASSOCIATES

Description

The Contractor shall furnish and install Extra Depth Dual 36” Junction Box at the locations shown on the plans and in accordance with *Section 840* of the *2012 Standard Specifications* and plan details. The work covered by this section includes, but is not limited to excavation, providing protection of employees in excavation; hauling; disposal of materials; removing existing pipe and drainage structures at the site of the work; furnishing, transportation and placing foundation conditioning material, backfill material, subsurface drainage, concrete precast units, mortar, grout, reinforcing steel, hardware, castings and miscellaneous metal; fabrication; welding; and galvanizing to construct cast-in-place concrete, or precast concrete junction box with all necessary metal covers, frames, steps and other hardware, in accordance with the contract.

Measurement and Payment

Extra Depth Dual 36” Junction Box will be paid for per each junction box completed and accepted. All work and materials necessary to complete this work, unless noted otherwise, shall be incidental to this pay item.

Foundation Conditioning will be paid as provided in Article 300-9.

Frame with Cover, STD 840.54 will be paid as provided in Article 840-4.

Payment will be at the contract unit price for:

Pay Item	Unit
Extra Depth Dual 36” Junction Box	Each

REINFORCED CONCRETE SIDEWALK

4/27/16

SP (Kimley-Horn and Associates, Inc.)

Description

Reinforced concrete shall be installed for proposed multi-use path as shown in plans.

Materials

Reinforced concrete multi-use path shall be a minimum thickness of six inches (6”), constructed of Portland Cement Concrete, Class “A”, with #4 bars imbedded in the concrete. No other concrete material will be allowed. The concrete shall meet a minimum compressive strength of three thousand (3,000) psi at 28 days.

Use high, early strength concrete for all reinforced concrete areas identified. Provide high early strength concrete that meets the requirements of Article 1000-6 of the Standard Specifications.

Measurement and Payment

Measurement will be measured in square yards, measured along the surface of the completed and accepted work. This price includes, but is not limited to, excavating and backfilling, sawing existing pavement, furnishing and placing concrete, constructing and sealing joints, and furnishing and placing #4 bars.

The Engineer shall require any concrete that fails to meet the required compressive strength for Class “A” concrete after twenty-eight (28) days to be removed from any portion of a multi-use path and be replaced at the contractor’s expense.

Payment will be made under:

Pay Item	Unit
6” Reinforced Concrete Sidewalk.....	Square Yards
6” Reinforced Concrete Approach Slab	Square Yards

CONCRETE STEPS AND BUTTRESS WALLS:

4/27/16

SP (Kimley-Horn and Associates, Inc.)

Description

The Contractor shall furnish and install concrete steps and buttress walls at locations shown on the plans and in accordance with Divisions 4 and 10 of the *2012 Standard Specifications* and plan details.

Shop Drawing Submittals

The contractor shall submit signed and sealed shop drawings for concrete steps and buttress walls, which includes plan, elevation, sections, details, and attachments to other work specific to this project. All pertinent information such as geometries, member sizes, rebar placement, splice locations, metal handrail attachment, details, quantities and general notes shall be clearly specified on the drawings.

The Contractor shall submit six (6) sets of shop drawings for the concrete steps and buttress walls to the City. The shop drawings will be reviewed by the City and the Engineer.

Measurement and Payment

The concrete step tread will be measured and paid for in linear feet, accepted in place, measured along the length of the concrete tread as shown in the detail. The unit price shall be full compensation for all materials, fabrication, shipping, excavation, concrete, rebar, stone, labor and all other incidentals required to complete the installation of concrete steps.

The concrete buttress wall will be measured and paid in linear feet, accepted in place, along the surface of the concrete buttress wall as shown in plan details. The unit price shall be full

compensation for all materials, fabrication, shipping, excavation, concrete, rebar, stone, labor and all other incidentals required to complete the installation of concrete buttress walls.

Payment will be made under:

Pay Item	Pay Unit
Concrete Step Tread.....	Linear Feet
Concrete Buttress Wall	Linear Feet

METAL HANDRAIL

(5-5-15)

SP (Kimley-Horn and Associates, Inc.)

Description

The Contractor shall furnish and install a metal handrail at locations shown on the plans and details and in accordance with Division 10 of the *2012 Standard Specifications*. Furnish posts, rail bars, pipe fittings, hardware, paint, concrete, admixtures, forms, falsework and all other materials; galvanize; paint; fabricate and erect rail; and place, finish and cure concrete.

Construction Methods

Metal handrail shall be constructed and installed per detail in plans.

Measurement and Payment

Metal Handrail shall be measured and paid in units of linear feet for the metal handrail installed and accepted. The unit price will include all materials, excavation, concrete, and backfill required to complete the placement of metal handrail.

Payment will be made under:

Pay Item	Unit
Metal Handrail	Linear Feet

POST AND CABLE FENCE:

5/4/16

SP (Kimley-Horn and Associates, Inc.)

Description

This item consists of placement of wood post and stranded cable fence to protect greenway traffic from steep slopes and other obstacles. See plans for locations.

Wood Post

All wood for fence to be pressure treated yellow pine. Wood shall be Pressure Treated Southern Pine surface dry (S4S) with a moisture content of 19% or less, Grade No. 1. Anchor posts shall occur every 60' along the fence line maximum. See detail in plans. Anchor posts and end posts shall be embedded in concrete as shown in plan details. The concrete shall be placed in

accordance with the applicable requirements of Section 825 of the *2012 Standard Specifications*. All end and anchor posts are to receive 2 coats of water based sealant before installation.

Steel Cable

The cable shall be 3/8” Diameter Galvanized steel tensioned cable. Contractor is to submit sample and technical data sheet to designer or owner for approval prior to construction. Steel cable shall be anchored into posts using galvanized steel jaw and swage turnbuckle attached to galvanized steel threaded eye bolt, nut, and flat washer. Steel cable shall be installed in accordance with the details shown in the plans. Repair of galvanizing shall be in accordance with Section 1076 of the *2012 Standard Specifications*. This provision also includes tying the post and cable fence to the bridge railings. Such ties will be considered incidental to the post and cable fence.

Post and Cable Fence

The post and cable fence shall consist of Diameter Galvanized steel tensioned cable between two fixed wooden posts. Contractor will need to connect the cable in such a way as shown on the detail in the plans.

Measurement and Payment

The quantity of Wood Post and Stranded Cable Fence will be paid for at the contract unit price per linear foot for "Post and Cable Fence". The linear foot price shall be full compensation for furnishing and installing all labor, equipment, materials, excavation, concrete, backfill, and incidentals in accordance with the manufacturer’s specifications and/or plan detail.

Payment will be made under:

Pay Item	Unit
Post and Cable Fence	Linear Foot

BOLLARDS

05/04/16

SP (Kimley-Horn and Associates, Inc.)

Description

This item consists of placement of bollards to restrict vehicular traffic to greenways and pedestrian facilities at locations shown on the plans. Contractors have the option of using the following or an approved equal:

Bollard Warehouse, Inc.
P. O. Box 298
Batavia, IL 60510
888-290-6420

Belson Outdoors
111 North River Road
North Aurora, IL 60542
630-897-8489

TrafficGuard® Direct, Inc.
P.O. Box 201
Geneva, IL 60134-9946
877-727-7347

www.bollardwarehouse.com

www.belson.com

www.trafficguard.net

Materials and Construction Methods

Wood Bollards

Wood Bollards shall be constructed of treated timber and placed vertically in concrete as shown in the plans. The bollard shall be constructed to the details shown in the plans. The bollard shall be placed in concrete in accordance with the applicable requirements of Section 825 of the 2012 Standard Specifications.

Hinged Bollards

Hinged Bollards shall be fabricated from galvanized structural steel in accordance with the details shown in the plans. They shall be placed vertically in concrete in accordance with the applicable requirements of Section 825 of the Standard Specifications. All fabrication shall be completed prior to galvanization. Repair of galvanizing shall be in accordance with Section 1076 of the Standard Specifications.

Measurement and Payment

The quantity of bollards will be the actual number each of “Hinged Bollard”, “Wood Bollard” and “Steel Bollard” placed and accepted. The unit price will include all materials, excavation, concrete, and backfill required to complete the placement of each bollard.

Payment will be made under:

Pay Item	Unit
Hinged Bollard.....	Each
Wood Bollard.....	Each
Steel Bollard.....	Each

CHAIN LINK FENCE

06/14/17

SP (Kimley-Horn and Associates, Inc.).

Description

Install a new X” chain link fence in accordance with *Section 866 of the NCDOT 2012 Standard Specifications* at location and size indicated on the plans or where directed. The fence should match any adjacent or connecting fences. The work includes but is not limited to purchasing, shipping, hauling, and installing the new X” chain link fence.

Measurement and Payment

The quantity of standard X” Chain Link Fence will be paid for at the contract unit price per linear foot for "X” Chain Link Fence". The linear foot price shall be full compensation for furnishing and installing, all labor, equipment, materials, excavation, concrete, backfill, and incidentals in accordance with the manufacturer’s specifications and/or plan detail. Any fence

components unnecessarily damaged by the Contractor’s forces will be replaced at no additional cost to the project. All costs will be at the expense of the Contractor.

Payment will be made under:

Pay Item	Unit
72” Chain Link Fence	Linear Foot
96” Chain Link Fence	Linear Foot

REMOVE AND RESET CHAIN LINK FENCE GATE

04/27/16

SP (Kimley-Horn and Associates, Inc.)

Description

Remove and reset existing chain link fence gate as shown on the plans, or as directed by the Engineer and in accordance with this specification.

Construction Methods

Remove and reset the chain link fence gate in a condition that is equal to or better than before the gate is removed. Contractor shall replace any of the chain link fence or gate components unnecessarily damaged during gate recent at no expense to the City. All costs will be at the expense of the Contractor. Fill any void created by gate removal.

If the owner of the fence desires to repair, rebuild or renew the gate and agrees to furnish the materials without cost to the Contractor, then repair, rebuild, renew and reset such gate using the material furnished by the owner at no additional cost.

Measurement and Payment

Remove and Reset Gate will be measured and paid in units of each for the number of gates removed and reset.

Payment will be made under:

Pay Item	Unit
Remove and Reset Gate	Each

REMOVE AND RESET RIP RAP

(5-5-15)

SP (Kimley-Horn and Associates, Inc.)

Description

Remove and reset existing rip rap as shown on the plans, or as directed by the Engineer and in accordance with Section 876 of the *2012 Standard Specifications*.

Measurement and Payment

Remove and Reset Rip Rap will be measured and paid at the contract unit price per square yard of rip rap reset. The work will include the removal, temporary stock piling, filtration geotextile, wire staples, anchor pins, labor and all other incidentals required to complete the rest of rip rap.

Payment will be made under:

Pay Item	Unit
Remove and Reset Rip Rap	Square Yard

GREENWAY TRAIL SIGNS:

04/27/16

SP (Kimley-Horn and Associates, Inc.)

Description

This item consists of placing greenway trail signs at locations shown on the plans. Contractors have the option of using the following or an approved equal:




Rag Signs
 102 Portwatch Way, Unit C
 Wilmington, NC 28412
 910-793-9087
 rasigns@bellsouth.net
www.ragsings.com

SignWorks
 1412 S. Evans Street, Suite 102
 Greenville, NC 27834
 252-215-2220
<http://signworks.us/home.php>

Signs by Tomorrow
 112 Cardinal Dr, Suite 108
 Wilmington, NC 28405
 910-799-1111
 Wilmington@signsbytomorrow.com
www.signsbytomorrow.com

Sign Blade

Refer to details below and in the plans for sign dimensions. The following colors shall be used with the details:

-  Pantone – 296 C
-  Pantone – 314C
-  Pantone – 376C

Post

All posts shall be pressure treated wood. Refer to details for post dimensions.

Sign Hardware

All signs shall be fastened to the posts with tamper proof screws or flat head machine bolts at the top and bottom of the sign blade. Refer to details for specific sign hardware and location.

Measurement and Payment

The quantity of “Trail Head Sign “, “Single Sided Directional Sign”, and “Mile Marker Sign” will be measured and paid for as the actual number of signs erected and accepted. The unit price for “Trail Head Sign” and “Mile Marker Sign” includes both signs mounted on the one post. The unit price will include all labor, materials, signs, posts, bolts, concrete, backfill, and incidentals required to complete the erection of each sign. In areas where a sign is mounted to a post and cable fence, the extra wood post length will be incidental to the sign construction.

The quantity of signs, measured as discussed above, will be paid for at the contract unit price for:

Pay Item	Unit
Single Sided Directional Sign.....	Each
Trail Head Sign.....	Each
Mile Marker Sign	Each

ADJUST AIR RELEASE VALVE STRUCTURE

04/27/16

SP (Kimley-Horn and Associates, Inc.).

Description

Adjust air release valve structure that are impacted by the project. The work shall be done in accordance with Greenville Utilities Commission (GUC) Sanitary Sewer Use Regulations and Water and Wastewater Design Manual. The maximum allowable number of manhole ring and cover grade rings is two 4” lifts (totaling 8”). Contractor to verify existing condition to determine if manhole ring and cover grade rings can be utilized. Contractor to coordinate with GUC prior to ordering of materials to make adjustment.

Measurement and Payment

The quantity of adjusted air release valve structures will be paid for at the contract unit price per each air release valve structure satisfactorily adjusted. Such price includes, but is not limited to, excavation and backfilling, removal of a portion of the existing structure, brick masonry, mortar, grout, concrete, reinforcing steel, fittings, furnishing and haul materials.

Payment will be made under:

Pay Item	Unit
Adjust Air Release Valve Structure	Each

ADJUST CLEANOUT

6/1/15

SP (Kimley-Horn and Associates, Inc.).

Description

Adjust sanitary sewer cleanouts that are impacted by the project. The work shall be done in accordance with Section 1520 of the *2012 Standard Specifications*. Adjustment of cleanout will include replacement of PVC riser pipe from existing “Y” joint to proposed ground surface and replacement of cleanout cap. If the cleanout cap remains within the proposed trail, the cap shall be replaced with a load bearing top and should be adjusted to within ¼” of final grade. The sanitary sewer cleanout shall be completely encased in the proposed trail (12” min).

Measurement and Payment

The quantity of sanitary sewer cleanout adjustments will be paid for at the contract unit price per each cleanout satisfactorily adjusted. Such price includes, but is not limited to, excavation and backfilling, modifying existing connections, all required fittings, adjustment and/or re-adjustment to final grade, PVC riser pipe, cleanout cap and any incidentals necessary to complete the adjustment of the cleanout.

Payment will be made under:

Pay Item	Unit
Adjust Cleanout	Each

BYPASS PUMPING:

(04/27/16)

SP (Kimley-Horn and Associates, Inc.)

A bypass pumping plan shall be provided to the Engineer and Greenville Utilities Commission (GUC) personnel for review and approval at least 21 days prior to making any modifications to the existing sanitary sewer. The Contractor shall provide Bypass Pumping meeting the requirements of the current edition of the GUC Sanitary Sewer Use Regulations and Manual for the Construction of Water and Wastewater System and as listed in the plans. Pumps shall be sized to handle the flow requirements shown the plans. The Engineer and GUC personnel will determine if on site bypass pumps and equipment will be required during sanitary sewer modifications based on current flow conditions.

Payment will be made under:

Bypass Pumping	Each
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TREE ROOT PRUNING:

6/1/15

KIMLEY-HORN AND ASSOCIATES, INC

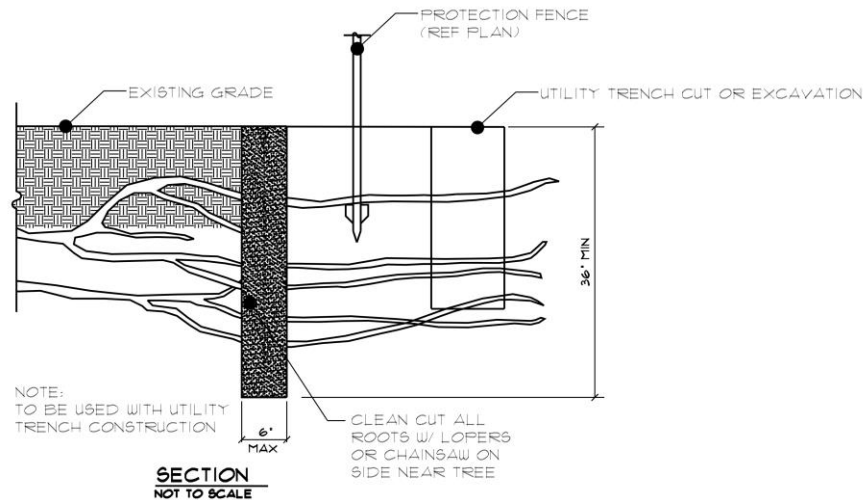
Description

Root Prune trees as indicated in the plans to prevent damage during construction. Trenching and excavation areas shall be determined and approved in the field by the Engineer. Any such area shown in the drip line of any tree and approved by the City shall use root pruning methodologies described herein.

Methodologies

A trencher that will turn a high RPM's is preferred. Trencher is to be approved by the Engineer and will be used to perform all root pruning operations. A minimum depth of three feet is required. Clean cut roots in trench or excavation area on tree side with loppers or chain saw after trenching is complete.

Detail



NOTE:
1. IF EXCAVATION CAUSES PRUNED ROOTS OVER 1 1/2" IN DIAMETER TO REMAIN EXPOSED FOR MORE THAN 24 HOURS, ROOTS ON TREE SIDE SHALL BE KEPT MOIST. BACKFILL WITH TOPSOIL, MOIST MULCH, OR DRAPE WITH WET BURLAP.
2. WHERE CONCRETE IS POURED ADJACENT TO PRUNED ROOTS HEAVY DUTY PLASTIC SHALL BE INSTALLED AGAINST THE TREE SIDE OF THE PRUNED ROOTS TO PREVENT UPTAKE (TOXIC TO TREE).

ROOT PRUNE

Materials

Includes but not limited to, tree protection fencing around trees, root pruning, etc.

Measurement and Payment

The quantity for Root Pruning will be paid for by each tree needing to be root pruned as shown in the plans or as directed by the City and accepted by the City.

Payment will be made under:

Pay Item	Unit
Root Prune	Each

TREE REMOVAL, PROTECTION AND TRIMMING

04/27/15

SP (Kimley-Horn and Associates, Inc.).

Tree removal during construction will not be permitted without prior approval from City. Following construction stakeout of the trail alignment, Contractor shall schedule a field meeting with the Engineer, Contractor Arborist and City Staff to review alignment, access routes, storage areas, tree protection, trimming, and all other work procedures and responsibilities prior to commencement of work. Notify participants at least ten working days before convening conference. No additional compensation will be provided for costs associated with this meeting as it is considered incidental to other work being performed under the contract.

Submittals

Certification: Contractor to provide certification from a qualified arborist that trees indicated to remain have been protected during construction according to recognized standards and that trees were promptly and properly treated and repaired when damaged.

Quality Assurance

Clearing Contractor Qualifications: Clearing contractor shall be an experienced tree service firm that has successfully completed tree protection, mulching, and trimming work similar to that required for this Project and that will assign an experienced, qualified arborist to Project site on a full-time basis during execution of the clearing operations.

Tree Pruning Standards: Comply with ANSI A300, "Trees, Shrubs, and Other Woody Plant Maintenance--Standard Practices," unless more stringent requirements are indicated.

Explanation of Tree Preservation Procedures

Tree canopy pruning is to compensate for root loss and damage.

Fertilization is to stimulate root systems to heal quickly and grow back in root-pruned areas. It also produces faster availability of food to a root system that is less efficient due to damage incurred.

Root pruning is to remove the roots with a trenching procedure that is less damaging to the roots than regular construction.

Mulching is to increase moisture – holding capacity and keep the temperature of the soil more constant. The rotting mulch is also good for the trees.

Tree Removal Penalties

Contractor shall only remove trees within staked construction limit unless specifically noted on plans. City approval must be obtained prior to the removal of any trees beyond these limits. Contractor shall be subject to a penalty of four hundred (\$400.00) dollars per tree or fifty (\$50.00) dollars per inch diameter at breast height (DBH) of the tree, whichever is greater, for any tree removal in violation of these specifications.

Compensation to the City for tree removal violations by the Contractor will be deducted from the Contractor's pay request application(s).

Tree Protection Sequence

The sequence of tree treatment and preservation measures shall be:

Tree Pruning.

Fertilization.

Root Pruning and Root Barriers.

Tree Protection Fencing.

Maintain and repair any fencing during site construction operations.

General Contractor's access to tree protection areas will be permitted only with approval of Engineer.

Perform any excavation or grading required within the fenced root zone areas by hand. This operation is to be supervised by the Engineer.

Limit required grading within the fenced tree root zone areas. All grading to be supervised by the Engineer.

Clear by hand designated trees, shrubs, vines and groundcover from protected root zone areas.

Fencing

Tree Protection Fencing: Fencing to be located in field by surveyor. Install fencing located as indicated or outside the drip line of trees to protect remaining vegetation from construction damage. Deviations from this must be approved by the Engineer.

The fencing shall be maintained in place until all construction operations in that particular area are complete. At completion, only light grading equipment such as small agricultural tractors shall be allowed on the plants' roots.

Do not store construction materials, debris, excavated material, or equipment within the fence line or root zone of existing trees. Do not permit vehicles or foot traffic within the drip line; prevent soil compaction over root systems. All underground utilities and drain lines shall be

routed outside of the tree protection zone. If lines must traverse the protection area, they shall be bored under the tree. If temporary haul or access roads must pass over the root area of trees to be retained, a road bed of 6 inches of mulch or gravel shall be created to protect the soil. The road bed material shall be replenished as necessary to maintain a 6-inch depth. Plants that die as a result of the Contractor's negligence shall be removed and replaced as directed by the Engineer at the Contractor's expense. The new plant shall be guaranteed for a year, planted in the proper season, and planted with approved arboricultural specifications.

Do not allow fires under or adjacent to remaining trees or other plants.

The Contractor will be required to cooperate with other contractors, utility companies and others needing access to the project site (as approved by the City) to complete the work.

Tree Pruning

Trees to be pruned shall include only trees affected by construction as designated. This item is to be coordinated with the Engineer in the field prior to any construction activity.

Contractor, using ISA Class II pruning techniques, shall perform pruning.

Pruning shall consist of the following methods:

Remove dead wood and broken limbs.

Remove cross branching where necessary.

Pruning Standards: Prune trees according to ANSI A300 as follows:

Type of Pruning: Standard pruning.

Type of Pruning: Hazard pruning.

Type of Pruning: Crown reduction.

Cut branches with sharp pruning instruments; do not break or chop.

Any grading, construction, demolition or other work that is expected to encounter tree roots must be monitored by the Contractor Arborist. Should injury to a tree occur during construction, it should be evaluated as soon as possible by the Contractor Arborist so that the appropriate treatments can be applied.

Tree Repair and Replacement

Promptly repair trees damaged by construction operations within 24 hours. Treat damaged trunks, limbs, and roots.

Contractor shall remove/trim any trees that have been damaged during construction. Contractor shall be responsible for any trees damaged during project by careless construction methods or damage above grade level by construction equipment. Contractor shall take extra care to minimize damage to existing trees in all cases.

Disposal of Waste Materials

Burning is not permitted.

Disposal: Remove excess excavated material, displaced trees, and excess chips and dispose of in accepted waste facility.

Fertilization

Only trees affected by the construction shall be treated.

Trees specified to receive fertilizer shall be treated between the months of September and December. Areas under aeration beds shall be fertilized prior to placement of aeration.

Preserve Tree Injectable Fertilizer Treatment.

Mix fertilizer with a dilution rate 1/3 more water than label instructions into a tank with agitation capability (15lbs. = 133 Gallons).

Mix Wetting Agent at a rate of 5 oz. Per 100 gallons of fertilizer solution into same tank with fertilizer. Agitate mix.

Inject the mixture with hydraulic injection system set at 100 to 150 psi into the upper 6-12 inches of soil with a soil probe. Inject at the rate of one third (1/3) gallon at each injection site.

Critical Root Zone areas shall be injected, where possible, in the Critical Root Zone area plus 2' beyond Critical Root Zone, but not beyond Root Prunes.

Fertilizer shall be installed prior to installation of any aeration systems.

Insecticide

Apply insecticide treatment as a soil drench on all preserve trees affected by construction. Apply per manufacturers recommendations. Operation is to occur after root pruning/fencing operation. Protection Zone areas shall be drenched, where possible, in the Critical Root Zone area plus 2' beyond Critical Root Zone, but not beyond Root Prunes.

Apply insecticide on all preserved Pines as recommended by manufacturer. Apply second application approximately one year after first application. Coordinate with local extension service for appropriate time to apply.

Measurement and Payment

“Trim Tree” will be measured and paid for per each City approved, completed and accepted. Such price and payment is considered full compensation for all tree canopy pruning, treatment, fertilization, insecticides, drainage fill, submittals, arborist, equipment, materials, labor, tools, and incidentals necessary to complete one tree satisfactorily.

The quantity of tree protection fencing will be paid for by other items in the contract.

Tree repair will be considered incidental to the applicable tree related item and no separate measurement or payment will be made.

Materials used to fill depressions will be considered incidental to the lump sum grading operation. When the Contractor is required to furnish borrow sources, material sources, or waste areas, or when the Engineer permits the Contractor to obtain borrow or deposit waste on any area within the right of way in lieu of borrow and waste areas which were to have been furnished by the Contractor, no measurement of clearing and grubbing will be made for such areas.

Work performed in cleaning up non-wooded areas between the construction limits and the limits of the project right of way or easements shown on the plans, work performed in the dressing up of areas between the construction limits and the clearing limits, and the removal of weeds, vines, plant stalks, loose rock, and small scattered trees, will be considered as a minor and incidental part of the work of clearing and grubbing.

Pay Item	Pay Unit
Trim Tree	Each

PRECAST CONCRETE WHEEL STOPS

(7/9/15)

SP (Kimley-Horn and Associates, Inc.).

Description

Install new Precast Concrete Wheel Stops in accordance with Site Details at locations indicated on the plans or where directed for vehicular parking. The work includes but is not limited to purchasing, shipping, hauling, and installing the new Precast Concrete Wheel Stops.

Submittals

1. Shop Drawings: Submit shop drawings, including installation details to concrete and asphalt pavement, for approval.
2. Product Data: Submit manufacturer's product data for Precast Concrete Wheel Stops and adhesive, for approval.

Quality Assurance

Precast Concrete Wheel Stops shall be manufactured for the intended purpose by a precast concrete manufacturer.

Materials

1. Precast Concrete Wheel Stops: Precast; 4,000 psi minimum compressive strength with steel reinforcing as shown in the Site Details.
 - a. Overall nominal dimensions: 72" long x 6" high x 9" wide with chamfered edges
2. Adhesive for bonding dowel to Precast Concrete Wheel Stop: As proposed by Contractor and approved by Engineer, suitable for application.

Installation

Precast Concrete Wheel Stops shall be securely attached to adjacent pavement with two dowels each embedded into precast holes in wheel stop. Attach dowel to wheel stop with approved adhesive. Anchor dowels into pavement as shown in the Site Details.

Measurement and Payment

The quantity of Precast Concrete Wheel Stops will be paid for at the contract unit price per each Precast Concrete Wheel Stop installed. The unit price shall be full compensation for furnishing and installing, all labor, equipment, materials, and incidentals in accordance with the manufacturer's specifications and/or plan detail.

Payment will be made under:

Pay Item	Unit
Precast Concrete Wheel Stop	Each

PROJECT SPECIAL PROVISIONS

UTILITIES

UTILITIES BY OTHERS:

General:

The following utility companies have facilities that will be in conflict with the construction of the project.

Greenville Utility Company (GUC) – Power

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 works listed herein will be done by the utility owner. All utilities are shown on the plans for the best available information.

The Contractor's attention is directed to Article 105.8 of the Standard Specifications.

PVC CONDUIT:

(04-21-15)

SP (Kimley-Horn and Associates, Inc.)

Description

Furnish and install conduits for underground installation in accordance with the plans and specifications. Locations on the plans are approximate, the Contractor shall coordinate the installation of the conduits with the Engineer. The conduits shall be capped and marked for future recovery. Furnish conduits for underground installation with backfill, graded stone, paved materials, miscellaneous fittings, and all necessary hardware.

Material

Provide Schedule 40 conduit in accordance with the plans. Use rigid PVC (polyvinyl chloride) heavy wall non-metallic conduit approved for above ground and underground use without concrete encasement in accordance with UL Standard 651 "Rigid Non-Metallic Conduit".

Furnish conduit plugs that provide a watertight barrier when installed in conduit. Furnish conduit plugs sized in accordance with conduit. Ensure conduit plugs provide a means to secure a pull line to the end of the plug. Provide removable and re-usable conduit plugs.

Provide green insulated number 14 AWG, THWN, stranded copper wire to serve as tracer wire.

Conduit and plugs should be in accordance with Section 1091 of the *2012 Standard Specifications*.

Construction Methods

Install conduits for all underground runs. Clean existing underground conduit that will be incorporated into a new system. If more than one conduit is required between the same points, install conduit in one trench using manufacturer’s spacers or as directed.

Install conduits at a minimum depth of 18” below furnished grade or as shown on the plans. In paved trench areas, except on concrete surfaces, neatly cut and replace with width of the trench with the pavement section as specified in the plans. On concrete surfaces, replace the entire joint of concrete unless otherwise directed.

Measurement and Payment

“PVC conduit” will be measured by actual linear foot of conduit that has been incorporated in the completed and accepted work. No measurement will be made for paved or unpaved trenching, excavation, backfill graded stone, paved materials in addition to the proposed pavement section, miscellaneous fittings, wyes, tees, elbows, caps, plugs, tracer wire, conduit sealer, markers, and/or coordination with utilities, as these will be considered incidental to the installation of conduit.

The quantity of PVC conduit will be measured as provided above and will be paid for at the contract unit price per linear foot as “2” PVC Conduit”.

Payment will be made under:

2” PVC Conduit Linear Feet

STREET LIGHT HANDHOLE:

(04-21-15)

SP (Kimley-Horn and Associates, Inc.)

Furnish and install hand holes (pull boxes) and junction boxes with covers, graded stone, grounding systems, and all necessary hardware as shown on the plans.

Refer to plan details for locations of hand holes. Contractor shall coordinate each handhole location with the City. Contractor shall provide hand holes for City. Sizes and Quazite box and cover product numbers are listed below. Provide the box and cover listed or equivalent as approved by the Engineer.

Enclosures, boxes and covers are required to conform to all test provisions of the most current ANSI/SCTE 77 “Specification for Underground Enclosure Integrity” for Tier15 applications. All covers are required to have the Tier level rating embossed on the surface. In no assembly can the cover design load exceed the design load of the box. All components in an assembly (box & cover) are manufactured using matched surface tooling. Independent third party verification or test reports stamped by a registered Professional Engineer certifying that all test provisions of this specification have been met are required with each submittal.

Conduits of separate owners shall not share hand hole access points. Where noted on the plans, provide and install a hand hole for each utility with conduits in a trench at access point locations. All hand holes furnished shall be approved by the Engineer and the utility owner. All handhole covers shall be Cement Gray as referenced by the Quazite product line or approved equivalent. All handhole lids shall be permanently imprinted with identification of the utility owner.

Hand Hole Type	Length (inches)	Width (inches)	Depth (inches)	Quazite Box Product No.	Quazite Cover Product No.	Cover Imprint
PG	13	24	18	PG1324BA18	PG1324HA0017	ELECTRIC

Payment will be made under:

Street Light HandholeEach

PROJECT SPECIAL PROVISIONS

EROSION CONTROL
ROADSIDE ENVIRONMENTAL UNIT

STABILIZATION REQUIREMENTS:

(3-11-16)

S-2

Stabilization for this project shall comply with the time frame guidelines as specified by the NCG-010000 general construction permit effective August 3, 2011 issued by the North Carolina Department of Environment and Natural Resources Division of Water Quality. 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:

(East Crimp)

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.

All Roadway Areas

March 1 - August 31		September 1 - February 28	
50#	Tall Fescue	50#	Tall Fescue
10#	Centipede	10#	Centipede
25#	Bermudagrass (hulled)	35#	Bermudagrass (unhulled)
500#	Fertilizer	500#	Fertilizer
4000#	Limestone	4000#	Limestone

Waste and Borrow Locations

March 1 - August 31		September 1 - February 28	
75#	Tall Fescue	75#	Tall Fescue
25#	Bermudagrass (hulled)	35#	Bermudagrass (unhulled)
500#	Fertilizer	500#	Fertilizer
4000#	Limestone	4000#	Limestone

Note: 50# of Bahiagrass may be substituted for either Centipede or Bermudagrass only upon Engineer's request.

Approved Tall Fescue Cultivars

06 Dust	Escalade	Justice	Scorpion
2 nd Millennium	Essential	Kalahari	Serengeti
3 rd Millennium	Evergreen 2		Shelby
Apache III	Falcon IV	Kitty Hawk 2000	Sheridan
Avenger	Falcon NG	Legitimate	Signia
Barlexas	Falcon V	Lexington	Silver Hawk
Barlexas II	Faith	LSD	Sliverstar
Bar Fa	Fat Cat	Magellan	Shenandoah Elite
Barrera	Festnova	Matador	Sidewinder
Barrington	Fidelity	Millennium SRP	Skyline
Barrobusto	Finelawn Elite	Monet	Solara
Barvado	Finelawn Xpress	Mustang 4	Southern Choice II
Biltmore	Finesse II	Ninja 2	Speedway
Bingo	Firebird	Ol' Glory	Spyder LS
Bizem	Firecracker LS	Olympic Gold	Sunset Gold
Blackwatch	Firenza	Padre	Taccoa
Blade Runner II	Five Point	Patagonia	Tanzania
Bonsai	Focus	Pedigree	Trio
Braveheart	Forte	Picasso	Tahoe II
Bravo	Garrison	Piedmont	Talladega
Bullseye	Gazelle II	Plantation	Tarheel
Cannavaro	Gold Medallion	Proseeds 5301	Terrano
Catalyst	Grande 3	Prospect	Titan Ltd
Cayenne	Greenbrooks	Pure Gold	Titanium LS
Cessane Rz	Greenkeeper	Quest	Tracer
Chipper	Gremlin	Raptor II	Traverse SRP
Cochise IV	Greystone	Rebel Exeda	Tulsa Time
Constitution	Guardian 21	Rebel Sentry	Turbo
Corgi	Guardian 41	Rebel IV	Turbo RZ
Corona	Hemi	Regiment II	Tuxedo RZ
Coyote	Honky Tonk	Regenerate	Ultimate
Darlington	Hot Rod	Rendition	Venture
Davinci	Hunter	Rhambler 2 SRP	Umbrella
Desire	Inferno	Rembrandt	Van Gogh
Dominion	Innovator	Reunion	Watchdog
Dynamic	Integrity	Riverside	Wolfpack II
Dynasty	Jaguar 3	RNP	Xtremegreen
Endeavor	Jamboree	Rocket	

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On cut and fill slopes 2:1 or steeper Centipede shall be applied at the rate of 5 pounds per acre and add 20# of Sericea Lespedeza from January 1 - December 31.

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.

All areas seeded and mulched shall be tacked with asphalt. Crimping of straw in lieu of asphalt tack shall not be allowed on this project.

CRIMPING STRAW MULCH:

Crimping shall be required on this project adjacent to any section of roadway where traffic is to be maintained or allowed during construction. In areas within six feet of the edge of pavement, straw is to be applied and then crimped. After the crimping operation is complete, an additional application of straw shall be applied and immediately tacked with a sufficient amount of undiluted emulsified asphalt.

Straw mulch shall be of sufficient length and quality to withstand the crimping operation.

Crimping equipment including power source shall be subject to the approval of the Engineer providing that maximum spacing of crimper blades shall not exceed 8".

NATIVE GRASS SEEDING AND MULCHING:

(East)

Native Grass Seeding and Mulching shall be performed on the disturbed areas of wetlands and riparian areas, and adjacent to Stream Relocation 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.

March 1 - August 31

September 1 - February 28

18#	Creeping Red Fescue	18#	Creeping Red Fescue
6#	Indiangrass	6#	Indiangrass
8#	Little Bluestem	8#	Little Bluestem
4#	Switchgrass	4#	Switchgrass
25#	Browntop Millet	35#	Rye Grain
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.

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.

Measurement and Payment

Native Grass *Seeding and Mulching* will be measured and paid for in accordance with Article 1660-8 of the *Standard Specifications*.

ENVIRONMENTALLY SENSITIVE AREAS:**Description**

This project is located in an *Environmentally Sensitive Area*. This designation requires special procedures to be used for clearing and grubbing, temporary stream crossings, and grading operations within the Environmentally Sensitive Areas identified on the plans and as designated by the Engineer. This also requires special procedures to be used for seeding and mulching and staged seeding within the project.

The Environmentally Sensitive Area shall be defined as a 50-foot buffer zone on both sides of the stream or depression measured from top of streambank or center of depression.

Construction Methods

Clearing and Grubbing

In areas identified as Environmentally Sensitive Areas, the Contractor may perform clearing operations, but not grubbing operations until immediately prior to beginning grading operations as described in Article 200-1 of the *Standard Specifications*. Only clearing operations (not grubbing) shall be allowed in this buffer zone until immediately prior to beginning grading operations. Erosion control devices shall be installed immediately following the clearing operation.

Grading

Once grading operations begin in identified Environmentally Sensitive Areas, work shall progress in a continuous manner until complete. All construction within these areas shall progress in a continuous manner such that each phase is complete and areas are permanently stabilized prior to beginning of next phase. Failure on the part of the Contractor to complete any phase of construction in a continuous manner in Environmentally Sensitive Areas will be just cause for the Engineer to direct the suspension of work in accordance with Article 108-7 of the *Standard Specifications*.

Temporary Stream Crossings

Any crossing of streams within the limits of this project shall be accomplished in accordance with the requirements of Subarticle 107-12 of the *Standard Specifications*.

Seeding and Mulching

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.

Seeding and mulching shall be performed on the areas disturbed by construction immediately following final grade establishment. No appreciable time shall lapse into the contract time without stabilization of slopes, ditches and other areas within the Environmentally Sensitive Areas.

Stage Seeding

The work covered by this section shall consist of the establishment of a vegetative cover on cut and fill slopes as grading progresses. Seeding and mulching shall be done in stages on cut and fill slopes that are greater than 20 feet in height measured along the slope, or greater than 2 acres in area. Each stage shall not exceed the limits stated above.

Additional payments will not be made for the requirements of this section, as the cost for this work shall be included in the contract unit prices for the work involved.

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.

WASTE AND BORROW SOURCES:

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.

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All offsite Staging Areas, Borrow and Waste sites shall be in accordance with “Borrow and Waste Site Reclamation Procedures for Contracted Projects” located at:

http://www.ncdot.gov/doh/operations/dp_chief_eng/roadside/fieldops/downloads/Files/ContractedReclamationProcedures.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.

SAFETY FENCE/TREE PROTECTION FENCE

5/25/15

SP (Kimley-Horn and Associates, Inc.)

Description

The work under this item shall consist of the protection of selected trees, shrubs, or other woody plants. Fencing shall encompass the plants or trees to the drip-line. Deviations from this must be approved by the Engineer.

Material

Tree Protection Fencing: Orange, UV resistant, high-tensile strength, poly barricade fabric; minimum 48” high, with 6’ metal posts, woven wire fence, (14.5 gauge, 6” mesh spacing), and all other accessories for a complete fence system.

Woven wire fence (Min. 14.5 gauge max. 6” mesh spacing)

Artic Vinyl Flagging, Color: International Orange.

6’ T-Bar Post

Rebar Caps. Brilliant Orange mushroom type.

Construction Methods

Protection fencing shall be installed prior to beginning any construction on this project. Before beginning work, the contractor shall meet with the City or duly authorized agent at the site to review all work procedures, access routes, storage areas, and tree protection measures. The fencing shall be maintained in place until all construction operations in that particular area are complete. Fences may not be relocated or removed without the written permission of the consultant. At completion, only light grading equipment such as small agricultural tractors shall be allowed on the plants' roots.

Do not store construction materials, debris, excavated material, or equipment within the fence line or root zone of existing trees. Do not permit vehicles or foot traffic within the drip line; prevent soil compaction over root systems. All underground utilities and drain lines shall be routed outside of the tree protection zone. If lines must traverse the protection area, they shall be bored under the tree. If temporary haul or access roads must pass over the root area of trees to be retained, a road bed of 6 inches of mulch or gravel shall be created to protect the soil. The road bed material shall be replenished as necessary to maintain a 6-inch depth.

Additional tree pruning required for clearance during construction must be performed by a qualified arborist and not by construction personnel. Any grading, construction, demolition or other work that is expected to encounter tree roots must be monitored by the consulting arborist. Any roots damaged during grading or construction shall be exposed to sound tissue and cut cleanly with a saw. Should injury to a tree occur during construction, it should be evaluated as soon as possible by the consultant so that the appropriate treatments can be applied.

Plants that die as a result of the Contractor’s negligence shall be removed and replaced as directed by the Engineer at the Contractor’s expense. The new plant shall be guaranteed for a year, planted in the proper season, and planted with approved arboricultural specifications.

Do not allow fires under or adjacent to remaining trees or other plants.

The Contractor will be required to cooperate with other contractors, utility companies and others needing access to the project site as (approved by the engineer) to complete the work.

Measurement and Payment

The quantity of tree protection fencing will be paid for at the contract unit price per linear foot for "Tree Protection Fence". Warning signs attached to the fence will be considered incidental to the fence.

Tree repair will be considered incidental to the applicable tree related item and no separate measurement or payment will be made

Payment will be made under:

Safety Fence/Tree Protection FenceLinear Foot

MUD MATS:

6/1/15

SP (Kimley-Horn And Associates, Inc.)

Description

Mud mats shall be utilized in wetland areas to minimize impacts during bridge and boardwalk construction, and shall meet the requirements as specified herein or approved equal. Shop drawing of mud mats should be submitted prior to installation.

Construction Methods

Several mud mats may be laid with overlap to provide access for bridge and boardwalk construction. A minimum overlap of 6-inches is required, or as recommended by the manufacturer. Mud mats shall be secured in place, as specified by the manufacturer. Mud mats shall be installed as stated in the *Boardwalk, Culvert and/or Bridge Erosion Control Phasing* note shown on the plans and in accordance with the details in the plans.

The mud mats shall be constructed and maintained to the satisfaction of the Engineer until the bridge and/or boardwalks are completed. Proper maintenance shall include, but not be limited to, the periodic replacement of torn or broken fabric mud mat and the proper removal of sediment from the mud mat surface.

The fabric mud mat shall meet the following minimum requirements or an approval equal shall be submitted.

Parameter	Test Procedure	Minimum Value
Grab Tensile Strength	ASTM D4632	800 lbs.
Trapezoidal Tearing Strength	ASTM D4533	600 lbs.
Puncture Resistance	ASTM D4833	300 lbs.
Mullen Burst	ASTM D3786	400 psi
Apparent Opening Size	ASTM D4751	0.212 mm
Constant Head Permittivity	ASTM D4491	20.16 g/m/ft ²
Wide Width Tensile	ASTM D4595	650 lbs./in
Material	Woven Geotextile	100% Polypropylene

Method of Measurement

The quantity of mud mats to be paid for shall be measured per linear foot of mud mat (not stone) along the surface of the ground over which mud mat is installed and accepted. Overlaps will not be included in the measurement, and will be considered as incidental to the work.

Basis of Payment

The quantity of mud mats, measured as provided above, shall be paid for per linear foot of “Mud Mats”. The linear foot price shall be full compensation for all work covered by this section including but not limited to shop drawings, hauling, purchasing, installation, approach stone, maintenance and removal of mud mat(s).

Payment will be made under:

Pay Item	Pay
Unit	
Mud Mat.....	Linear 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	Test Method	Value	Unit
Light Penetration	ASTM D6567	9	%
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	%
Resiliency	ASTM D1777	>70	%
UV Stability *	ASTM D4355	≥80	%
Porosity (Permanent Net)	ECTC Guidelines	≥85	%
Maximum Permissible Shear Stress (Vegetated)	Performance Bench Test	≥8.0	lb/ft ²
Maximum Allowable Velocity (Vegetated)	Performance Bench Test	≥16.0	ft/s

*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 Sub article 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 Item	Pay Unit
Permanent Soil Reinforcement Mat	Square Yard

WATTLE:

Description

Wattles are tubular products consisting of excelsior fibers encased in synthetic netting. Wattles are used on slopes or channels to intercept runoff and act as a velocity break. 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 wattles, matting installation, and removing wattles.

Materials

Wattle shall meet the following specifications:

100% Curled Wood (Excelsior) Fibers Minimum Diameter	12 in.
Minimum Density	2.5 lb/ft ³ +/-
10% Net Material	Synthetic
Net Openings	1 in. x 1 in.
Net Configuration	Totally Encased
Minimum Weight	20 lb. +/- 10% per 10 ft. length

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.

Construction Methods

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 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.

The Contractor shall maintain the 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

Wattle 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 *Wattle*.

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.

Payment will be made under:

Pay Item	Pay Unit
Wattle	Linear Foot

CONCRETE WASHOUT STRUCTURE:

Description

Concrete washout structures are watertight enclosures constructed above or below grade to contain concrete waste on construction sites. Concrete waste can include concrete waste water from washing out ready-mix trucks, drums, pumps, or other equipment. Concrete waste also includes concrete slurries from concrete saw cutting, coring, grinding, grooving operations, or hydro-concrete demolition. Concrete washouts must prevent the discharge of concrete waste materials to storm drainage systems, surface waters, wetlands, and buffers. Work for above grade washout structures includes gathering high cohesive and low infiltration soil to construct an above grade earthen berm basin. Work also includes preparing a rock and debris free soil base inside this earthen basin, installing a geomembrane liner in the basin, and then placing sandbags along the entire polypropylene liner basin perimeter. Work for below grade washout structures includes preparing a rock and debris free soil base, excavation of a basin with non-vertical side slopes, installing a geomembrane liner in the basin, and then placing sandbags along the entire polypropylene liner excavation perimeter. Construct a gravel pad with Class A stone and a geotextile under liner to provide a defined access path to the concrete washout structures. Install safety fence around the perimeter of the concrete washout structures.

Materials

Item	Section
Borrow Material	1018
Stone for Erosion Control, Class A	1042
Geotextile for Drainage, Type 2	1056

The geomembrane basin liner shall meet the following minimum physical properties for low permeability, polypropylene or polyethylene geomembranes:

Property	Test Method	Value	Unit
Thickness, nominal		10	mil
Weight		0.04	lbs./ft ²
*1" Tensile Strength	ASTM D-751	52	lbf.
Elongation at Break	ASTM D-751	600	%
*Grab Tensile	ASTM D-751	70	lbf.
*Trapezoid Tear	ASTM D-4533	55	lbf.
Hydrostatic Resistance	ASTM D-751	70	lb./in ²
Water Vapor Transmission Rate	ASTM E-96 Procedure B	0.03	gal/100in ² /day
Perm Rating	ASTM E-96 Procedure B	0.066	U.S. Perms

***Tests are an average of diagonal directions.**

Safety Fence shall meet the specifications as provided elsewhere in this contract.

Construction Methods

Above Grade Structures

Assemble high cohesive and low infiltration soil to build an enclosed earthen berm for an above grade concrete washout basin in accordance with the details and as directed. Construct the height, length, and width of the earthen berm according to the detail. Slope the interior and exterior walls of the earthen berm at 1:1 and then compact to provide structural stability and contain concrete washout liquids and solid materials until evaporation, curing, extraction, or final removal.

The geomembrane liner will be of sufficient width and length so there will be no seams. Install the geomembrane lining by overlaying it in the basin to completely cover any exposed soil to create a water tight concrete washout basin. Extend the geomembrane lining from inside the basin floor, up the earth slope of the basin and extend, overlay, and wrap outside the earthen berm. Trench the toe of the geomembrane lining into an eight inch depth trench and then backfill and tamper with soil.

Below Grade Structures

Excavate an area for concrete washout in accordance with the details and as directed. Excavate to a minimum depth of 3 feet. Slope the interior walls of the excavated area at 1:1 and then compact to provide structural stability and contain concrete washout liquids and solid materials until evaporation, curing, extraction, or final removal.

The geomembrane liner will be of sufficient width and length so there will be no seams. Install the geomembrane lining by overlaying it in the excavated area to completely cover any exposed soil to create a watertight impoundment. Extend the geomembrane lining from the excavation floor, up the interior slope of the excavated basin and beyond the outside perimeter of the excavation.

Prepare the soil base to be free of rocks or other debris that may cause holes or tears in the geomembrane lining.

Install safety fence around the perimeter of the concrete washout structures in accordance with the *Safety Fence* special provision.

Construct a stone gravel pad with Class A stone (or other approved aggregate material) and a geotextile liner to provide a defined access path to the concrete washout structure. Construct the stone gravel pad according to *Roadway Standard Drawings* No. 1607.01 and Section 1607 of the *Standard Specifications*. Post a sign with the words “Concrete Washout” in close proximity of the concrete washout area, so it is clearly visible to site personnel.

The construction details for the above grade and below grade concrete washout structures can be found on the following web page link:

http://www.ncdot.gov/doh/operations/dp_chief_eng/roadside/soil_water/details/

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 (i.e. tears in geomembrane liner, missing sand bags) and maintain for effectiveness.

Remove the concrete washout structures and sign upon project completion. If appropriate and possible, reuse the geomembrane liner, the sandbags, orange safety fence, the Class A stone, and the geotextile. Otherwise, properly dispose of items. Grade the earth material to match the existing contours and permanently seed and mulch area.

Measurement and Payment

Concrete Washout Structure will be measured and paid for by counting the actual number of washout structures installed and maintained on the project. Such price and payment will be full compensation for all work including but not limited to furnishing materials, construction, maintenance and removal of concrete washout structures, grading and seeding and mulching area. The provisions of Article 104-5 of the *Standard Specifications* will not apply to this item of work.

Payment will be made under:

Pay Item	Pay Unit
Concrete Washout Structure	Each

PROJECT SPECIAL PROVISIONS

STRUCTURES

FALSEWORK AND FORMWORK:

(4-5-12)

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

A. 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.

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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. Submit the number of copies as called for by the contract.

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. Screenshot 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 1/2" from the edge of the top flange. Hanger hardware and rods must have a minimum safe working load of 6,000 lbs.

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 3/4”.

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.

1. 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.

Table 2.2 - Wind Pressure Values

Height Zone feet above ground	Pressure, lb/ft ² for Indicated Wind Velocity, mph				
	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	30	35	40	45
over 100	30	35	40	45	50

2. 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		

B. 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.

A. 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.

B. 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.

CRANE SAFETY

(8-15-05)

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 regulations (OSHA).

Submit all items listed below to the Engineer prior to beginning crane operations involving critical lifts. A critical lift is defined as any lift that exceeds 75 percent of the manufacturer's crane chart capacity for the radius at which the load will be lifted or requires the use of more than one crane. 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

Competent Person: 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.

Riggers: 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.

Crane Inspections: Inspection records for all cranes shall be current and readily accessible for review upon request.

Certifications: By July 1, 2006, crane operators performing critical lifts shall be certified by NC CCO (National Commission for the Certification of Crane Operators), or satisfactorily complete the Carolinas AGC's Professional Crane Operator's Proficiency Program. Other approved nationally accredited programs will be considered upon request. All crane operators shall also have a current CDL medical card. Submit a list of anticipated critical lifts and corresponding crane operator(s). Include current certification for the type of crane operated (small hydraulic, large hydraulic, small lattice, large lattice) and medical evaluations for each operator.

GROUT FOR STRUCTURES

(9-30-11)

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, or decks. Mix and place grout in accordance with the manufacturer's recommendations, the applicable sections of the Standard Specifications and this provision.

MATERIAL REQUIREMENTS

Use a Department approved pre-packaged, non-shrink, non-metallic grout. Contact the Materials and Tests Unit for a list of approved pre-packaged grouts and consult the manufacturer to determine if the pre-packaged grout selected is suitable for the required application.

When using an approved pre-packaged grout, a grout mix design submittal is not required.

The grout shall be free of soluble chlorides and contain less than one percent soluble sulfate. Supply water in compliance with Article 1024-4 of the Standard Specifications.

Aggregate may be added to the mix only where recommended or permitted by the manufacturer and Engineer. The quantity and gradation of the aggregate shall be in accordance with the manufacturer's recommendations.

Admixtures, if approved by the Department, shall be used in accordance with the manufacturer's recommendations. The manufacture date shall be clearly stamped on each container. Admixtures with an expired shelf life shall not be used.

The Engineer reserves the right to reject material based on unsatisfactory performance.

Initial setting time shall not be less than 10 minutes when tested in accordance with ASTM C266.

Test the expansion and shrinkage of the grout in accordance with ASTM C1090. The grout shall expand no more than 0.2% and shall exhibit no shrinkage. Furnish a Type 4 material certification showing results of tests conducted to determine the properties listed in the Standard Specifications and to assure the material is non-shrink.

Unless required elsewhere in the contract the compressive strength at 3 days shall be at least 5000 psi. Compressive strength in the laboratory shall be determined in accordance with ASTM C109 except the test mix shall contain only water and the dry manufactured material. Compressive strength in the field will be determined by molding and testing 4" x 8" cylinders in accordance with AASHTO T22. Construction loading and traffic loading shall not be allowed until the 3 day compressive strength is achieved.

When tested in accordance with ASTM C666, Procedure A, the durability factor of the grout shall not be less than 80.

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.

Do not place grout if the grout temperature is less than 50°F or more than 90°F or if the air temperature measured at the location of the grouting operation in the shade away from artificial heat is below 45°F.

Provide grout at a rate that permits proper handling, placing and finishing in accordance with the manufacturer's recommendations unless directed otherwise by the Engineer. Use grout free of any lumps and undispersed cement. Agitate grout continuously before placement.

Control grout delivery so the interval between placing batches in the same component does not exceed 20 minutes.

The Engineer will determine the locations to sample grout and the number and type of samples collected for field and laboratory testing. The compressive strength of the grout will be considered the average compressive strength test results of 3 cube or 2 cylinder specimens at 28 days.

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.

MECHANICALLY STABILIZED EARTH RETAINING WALLS:

(3-17-15)

SP (Kimley-Horn and Associates, Inc.)

GENERAL

Construct mechanically stabilized earth (MSE) retaining walls consisting of steel or geosynthetic reinforcement in the reinforced zone connected to vertical facing elements. Use precast concrete panels for vertical facing elements and coarse aggregate in the reinforced zone unless noted otherwise in the plans. Provide reinforced concrete coping as required. Design and construct MSE retaining walls based on actual elevations and wall dimensions in accordance with the contract and accepted submittals. Use a prequalified MSE Wall Installer to construct MSE retaining walls.

Define “reinforcement” as steel or geosynthetic reinforcement and “geosynthetics” as geosynthetic grids (geogrids) or strips (geostrips). Define “aggregate” as coarse or fine aggregate. Define “panel” as a precast concrete panel and “coping” as precast or cast-in-place concrete coping.

Define “MSE wall” as a mechanically stabilized earth retaining wall and “MSE Wall Vendor” as the vendor supplying the chosen MSE wall system. Define “MSE panel wall” as an MSE wall with panels and “MSE segmental wall” as an MSE wall with segmental retaining wall (SRW) units. Define “abutment wall” as an MSE wall with bridge foundations in any portion of the reinforced zone or an MSE wall connected to an abutment wall. Even if bridge foundations only penetrate a small part of the reinforced zone, the entire MSE wall is considered an abutment wall.

Use an approved MSE wall system in accordance with the plans and any NCDOT restrictions or exceptions for the chosen system. Value engineering proposals for other MSE wall systems will not be considered. Do not use MSE wall systems with an “approved for provisional use” status for abutment walls or MSE walls subject to scour, walls with design heights greater than 35 ft or walls supporting or adjacent to railroads or interstate highways. The list of approved MSE wall systems with approval status is available from:

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

MATERIALS

Refer to the Standard Specifications.

Item	Section
Aggregate	1014
Anchor Pins	1056-2
Curing Agents	1026
Epoxy, Type 3A	1081
Geotextiles, Type 2	1056
Grout, Type 3	1003
Joint Materials	1028
Portland Cement Concrete, Class A	1000
Precast Retaining Wall Coping	1077
Reinforcing Steel	1070
Retaining Wall Panels	1077
Segmental Retaining Wall Units	1040-4
Shoulder Drain Materials	816-2
Wire Staples	1060-8(D)

Provide Type 2 geotextile for filtration and separation geotextiles. Use Class A concrete for cast-in-place coping, leveling concrete and pads.

Use panels and SRW units from producers approved by the Department and licensed by the MSE Wall Vendor. Unless required otherwise in the contract, produce panels with a smooth flat final finish that meets Article 1077-11 of the *Standard Specifications*. Accurately locate and secure reinforcement connectors in panels and maintain required concrete cover. Produce panels within 1/4" of the panel dimensions shown in the accepted submittals.

Damaged panels or SRW units with excessive discoloration, chips or cracks as determined by the Engineer will be rejected. Do not damage reinforcement connection devices or mechanisms in handling or storing panels and SRW units.

Store steel materials on blocking at least 12" above the ground and protect it at all times from damage; and when placing in the work make sure it is free from dirt, dust, loose mill scale, loose rust, paint, oil or other foreign materials. Handle and store geosynthetics in accordance with Article 1056-2 of the *Standard Specifications*. Load, transport, unload and store MSE wall materials so materials are kept clean and free of damage. Bent, damaged or defective materials will be rejected.

A. Aggregate

Use standard size No. 57, 57M, 67 or 78M that meets Table 1005-1 of the *Standard Specifications* for coarse aggregate except do not use No. 57 or 57M stone in the reinforced zone of MSE walls with geosynthetic reinforcement or connectors. Use the following for fine aggregate:

1. Standard size No. 1S, 2S, 2MS or 4S that meets Table 1005-2 of the *Standard Specifications* or
2. Gradation that meets Class III, Type 3 select material in accordance with Article 1016-3 of the *Standard Specifications*.

Fine aggregate is exempt from mortar strength in Subarticle 1014-1(E) of the *Standard Specifications*. Use fine aggregate with a maximum organic content of 1.0%. Provide aggregate with electrochemical properties that meet the following requirements:

AGGREGATE ELECTROCHEMICAL REQUIREMENTS					
Aggregate Type	Reinforcement or Connector Material	pH	Resistivity	Chlorides	Sulfates
Coarse	Steel	Not Required			
Fine	Steel	5 – 10	$\geq 3,000 \Omega \cdot \text{cm}$	$\leq 100 \text{ ppm}$	$\leq 200 \text{ ppm}$
Coarse or Fine	Polyester Type (PET) Geogrid	5 – 8	N/A*	N/A*	N/A*
Coarse or Fine	Geostrip or Polyolefin Geogrid	4.5 – 9	N/A*	N/A*	N/A*

* Resistivity, chlorides and sulfates are not applicable to geosynthetics.

Use aggregate from a source that meets the *Mechanically Stabilized Earth Wall Aggregate Sampling and Testing Procedures*. Perform pH tests for coarse aggregate in accordance with Materials and Tests (M&T) Unit Chemical Procedure C-Elec. Perform organic content tests for fine aggregate in accordance with AASHTO T 267 instead of Subarticle 1014-1(D) of the *Standard Specifications*. Perform electrochemical tests for fine aggregate in accordance with the following test procedures:

Property	Test Method
pH	AASHTO T 289
Resistivity	AASHTO T 288
Chlorides	AASHTO T 291
Sulfates	AASHTO T 290

B. Reinforcement

Provide steel or geosynthetic reinforcement supplied by the MSE Wall Vendor or a manufacturer approved or licensed by the vendor. Use reinforcement approved for the chosen MSE wall system. The list of approved reinforcement for each MSE wall system is available from the website shown elsewhere in this provision.

Steel Reinforcement

Provide Type 1 material certifications in accordance with Article 106-3 of the *Standard Specifications* for steel reinforcement. Use welded wire grid reinforcement (“mesh”, “mats” and “ladders”) that meet Article 1070-3 of the

Standard Specifications and metallic strip reinforcement (“straps”) that meet ASTM A572 or A1011. Galvanize steel reinforcement in accordance with Section 1076 of the *Standard Specifications*.

Geosynthetic Reinforcement

Define “machine direction” (MD) for geosynthetics in accordance with ASTM D4439. Provide Type 1 material certifications for geosynthetic strengths in the MD in accordance with Article 1056-3 of the *Standard Specifications*. Test geosynthetics in accordance with ASTM D6637.

C. Bearing Pads

For MSE panel walls, use bearing pads that meet Section 3.6.1.a of the *FHWA Design and Construction of Mechanically Stabilized Earth Walls and Reinforced Soil Slopes – Volume I* (Publication No. FHWA-NHI-10-024). Provide bearing pads with thicknesses that meet the following:

BEARING PAD THICKNESS	
Facing Area per Panel (A)	Minimum Pad Thickness After Compression (based on 2 times panel weight above pads)
$A \leq 30$ sf	1/2"
$30 \text{ sf} < A \leq 75$ sf	3/4"

D. Miscellaneous Components

Miscellaneous components may include connectors (e.g., anchors, bars, clamps, pins, plates, ties, etc.), fasteners (e.g., bolts, nuts, washers, etc.) and any other MSE wall components not included above. Galvanize steel components in accordance with Section 1076 of the *Standard Specifications*. Provide miscellaneous components approved for the chosen MSE wall system. The list of approved miscellaneous components for each MSE wall system is available from the website shown elsewhere in this provision.

PRECONSTRUCTION REQUIREMENTS

A. MSE Wall Surveys

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

B. MSE Wall Designs

For MSE wall designs, submit working drawings and design calculations at least 30 days before the preconstruction meeting. Note name and NCDOT ID number of the panel or SRW unit production facility on the working drawings. Do not begin MSE wall construction until a design submittal is accepted.

Use a prequalified MSE Wall Design Consultant to design MSE walls. Provide designs sealed by a Design Engineer approved as a Geotechnical Engineer (key person) for the MSE Wall Design Consultant.

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

Use the simplified method for determining maximum reinforcement loads and design parameters approved for the chosen MSE wall system or default values in accordance with the AASHTO LRFD specifications. Design steel components including reinforcement and connectors for the design life noted in the plans and aggregate type in the reinforced zone. Use corrosion loss rates for galvanizing in accordance with the AASHTO LRFD specifications for nonaggressive backfill and carbon steel corrosion rates in accordance with the following:

CARBON STEEL CORROSION RATES	
Aggregate Type (in reinforced zone)	Corrosion Loss Rate (after zinc depletion)
Coarse	0.47 mil/year
Fine (except abutment walls)	0.58 mil/year
Fine (abutment walls)	0.70 mil/year

For geosynthetic reinforcement and connectors, use approved geosynthetic properties for the design life noted in the plans and aggregate type in the reinforced zone.

When noted in the plans, design MSE walls for a live load (traffic) surcharge of 250 lb/sf in accordance with Figure C11.5.6-3(b) of the AASHTO LRFD specifications. For steel beam guardrail with 8 ft posts or concrete barrier rail above MSE walls, analyze top 2 reinforcement layers for traffic impact loads in accordance with Section 7.2 of the FHWA MSE wall manual shown elsewhere in this provision except use the following for geosynthetic reinforcement rupture:

$$\phi T_{al} R_c \geq T_{max} + (T_I / RF_{CR})$$

Where,

- ϕ = resistance factor for tensile resistance in accordance with Section 7.2.1 of the FHWA MSE wall manual,
- T_{al} = long-term geosynthetic design strength approved for chosen MSE wall system,
- R_c = reinforcement coverage ratio = 1 for continuous geosynthetic reinforcement,
- T_{max} = factored static load in accordance with Section 7.2 of the FHWA MSE wall manual,
- T_I = factored impact load in accordance with Section 7.2 of the FHWA MSE wall manual and
- RF_{CR} = creep reduction factor approved for chosen MSE wall system.

If existing or future obstructions such as foundations, guardrail, fence or handrail posts, moment slabs, pavements, pipes, inlets or utilities will interfere with reinforcement, maintain a clearance of at least 3" between obstructions and reinforcement unless otherwise approved. Locate reinforcement layers so all of reinforcement length is within 3" of corresponding connection elevations.

Use 6" thick cast-in-place unreinforced concrete leveling pads beneath panels and SRW units that are continuous at steps and extend at least 6" in front of and behind bottom row of panels or SRW units. Unless required otherwise in the plans, embed top of leveling pads in accordance with the following requirements:

EMBEDMENT REQUIREMENTS		
Front Slope¹ (H:V)	Minimum Embedment Depth² (whichever is greater)	
6:1 or flatter (except abutment walls)	H/20	1 ft for H ≤ 10 ft 2 ft for H > 10 ft
6:1 or flatter (abutment walls)	H/10	2 ft
> 6:1 to < 3:1	H/10	2 ft
3:1 to 2:1	H/7	2 ft

1. Front slope is as shown in the plans.
2. Define "H" as the maximum design height plus embedment per wall with the design height and embedment as shown in the plans.

When noted in the plans, locate a continuous aggregate shoulder drain along the base of the reinforced zone behind the aggregate. Provide wall drainage systems consisting of drains and outlet components in accordance with Standard Drawing No. 816.02 of the *Roadway Standard Drawings*.

For MSE panel walls, cover joints at back of panels with filtration geotextiles at least 12" wide. If the approval of the chosen MSE wall system does not require a minimum number of bearing pads, provide the number of pads in accordance with the following:

NUMBER OF BEARING PADS		
Facing Area per Panel (A)	Maximum Wall Height Above Horizontal Panel Joint	Minimum Number of Pads per Horizontal Panel Joint
A ≤ 30 sf	25 ft	2
	35 ft ¹	3
30 sf < A ≤ 75 sf	25 ft	3
	35 ft ¹	4

1. Additional bearing pads per horizontal panel joint may be required for wall heights above joints greater than 35 ft.

For MSE segmental walls, coarse aggregate is required in any SRW unit core spaces and between and behind SRW units for a horizontal distance of at least 18". Separation geotextiles are required between the aggregate and overlying fill or pavement sections except when concrete pavement, full depth asphalt or cement treated base is placed directly on aggregate. When noted in the plans, separation geotextiles are also required at the back of the reinforced zone between the aggregate and backfill or natural ground. Unless required otherwise in the plans, use reinforced concrete coping at top of walls that meets the following requirements:

1. Coping dimensions as shown in the plans,
2. At the Contractor's option, coping that is precast or cast-in-place concrete for MSE panel walls unless cast-in-place coping is required as shown in the plans,
3. Cast-in-place concrete coping for MSE segmental walls and
4. At the Contractor's option and when shown in the plans, cast-in-place concrete coping that extends down back of panels or SRW units or connects to panels or SRW units with dowels.

For MSE segmental walls with dowels, attach dowels to top courses of SRW units in accordance with the following:

1. Set dowels in core spaces of SRW units filled with grout instead of coarse aggregate or
2. Embed adhesively anchored dowels in holes of solid SRW units with epoxy.

For MSE panel walls with coping, connect cast-in-place concrete coping or leveling concrete for precast concrete coping to top row of panels with dowels cast into panels. When concrete barrier rail is required above MSE walls, use concrete barrier rail with moment slab as shown in the plans.

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

leveling pads, panels or SRW units, coping, bin walls, slip joints, etc. If necessary, include details on working drawings for concrete barrier rail with moment slab, reinforcement splices if allowed for the chosen MSE wall system, reinforcement connected to end bent caps and obstructions extending through walls or interfering with reinforcement, leveling pads, barriers or moment slabs. Submit design calculations for each wall section with different surcharge loads, geometry or material parameters. At least one analysis is required for each wall section with different reinforcement lengths. When designing MSE walls with computer software other than MSEW, use MSEW, version 3.0 with update 14.93 or later, manufactured by ADAMA Engineering, Inc. to verify the design. At least one MSEW analysis is required per 100 ft of wall length with at least one analysis for the wall section with the longest reinforcement. Submit electronic MSEW input files and PDF output files with design calculations.

C. Preconstruction Meeting

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

CORROSION MONITORING

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

SITE ASSISTANCE

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

CONSTRUCTION METHODS

Control drainage during construction in the vicinity of MSE walls. Direct run off away from MSE walls, aggregate and backfill. Contain and maintain aggregate and backfill and protect material from erosion. Excavate as necessary for MSE walls in accordance with the accepted submittals. If applicable and at the Contractor's option, use temporary shoring for wall construction instead of temporary slopes to construct MSE walls. Define "temporary shoring for wall construction" as temporary shoring not shown in the plans or required by the Engineer including shoring for OSHA reasons or the Contractor's convenience.

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

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

Construct cast-in-place concrete leveling pads at elevations and with dimensions shown in the accepted submittals and in accordance with Section 420 of the *Standard Specifications*. Cure leveling pads at least 24 hours before placing panels or SRW units.

Erect and support panels and stack SRW units so the final wall position is as shown in the accepted submittals. Stagger SRW units to create a running bond by centering SRW units over joints in the row below as shown in the accepted submittals. Space bearing pads in horizontal panel joints as shown in the accepted submittals and cover all panel joints with filtration geotextiles as shown in the accepted submittals. Attach filtration geotextiles to back of panels with adhesives, tapes or other approved methods.

Construct MSE walls with the following tolerances:

- A. SRW units are level from front to back and between units when checked with a 4 foot long level,
- B. Vertical joint widths are 1/4" maximum for SRW units and 3/4", $\pm 1/4$ " for panels,
- C. Final wall face is within 3/4" of horizontal and vertical alignment shown in the accepted submittals when measured along a 10 foot straightedge and
- D. Final wall plumbness (batter) is not negative (wall face leaning forward) and within 0.5° of vertical unless otherwise approved.

Place reinforcement at locations and elevations shown in the accepted submittals and within 3" of corresponding connection elevations. Install reinforcement with the direction shown in the accepted submittals. Place reinforcement in slight tension free of kinks, folds, wrinkles or creases. Reinforcement may be spliced once per reinforcement length if shown in the accepted submittals. Use reinforcement pieces at least 6 ft long. Contact the Engineer when unanticipated existing or future obstructions such as foundations, guardrail, fence or handrail posts, pavements, pipes, inlets or utilities will interfere with reinforcement. To avoid obstructions, deflect, skew or modify reinforcement as shown in the accepted submittals.

Place aggregate in the reinforced zone in 8" to 10" thick lifts. Compact fine aggregate in accordance with Subarticle 235-3(C) of the *Standard Specifications*. Use only hand operated compaction equipment to compact aggregate within 3 feet of panels or SRW units. At a distance greater than 3 feet, compact aggregate with at least 4 passes of an 8 ton to 10 ton vibratory roller in a direction parallel to the wall face. Smooth wheeled or rubber tired rollers are also acceptable for compacting aggregate. Do not use sheepsfoot, grid rollers or other types of compaction equipment with feet. Do not displace or damage reinforcement when placing and compacting

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aggregate. End dumping directly on geosynthetics is not permitted. Do not operate heavy equipment on reinforcement until it is covered with at least 8" of aggregate. Replace any damaged reinforcement to the satisfaction of the Engineer.

Backfill for MSE walls outside the reinforced zone in accordance with Article 410-8 of the *Standard Specifications*. If a drain is required, install wall drainage systems as shown in the accepted submittals and in accordance with Section 816 of the *Standard Specifications*.

Install dowels as necessary for SRW units and place and construct coping and leveling concrete as shown in the accepted submittals. Construct leveling concrete in accordance with Section 420 of the *Standard Specifications*. Construct cast-in-place concrete coping in accordance with Subarticle 452-3(C) of the *Standard Specifications*. When single faced precast concrete barrier is required in front of and against MSE walls, stop coping just above barrier so coping does not interfere with placing barrier up against wall faces.

When separation geotextiles are required, overlap adjacent geotextiles at least 18" and hold separation geotextiles in place with wire staples or anchor pins as needed. Seal joints above and behind MSE walls between coping and concrete slope protection with silicone sealant.

MEASUREMENT AND PAYMENT

Retaining Wall #1 - 30+20.94 -L1- will be measured and paid in square feet. MSE walls will be measured as the square feet of wall face area with the pay height equal to the difference between top of wall and *final grade as shown in the retaining wall envelope*. Define "top of wall" as top of coping or top of panels or SRW units for MSE walls without coping.

The contract unit price for *Retaining Wall #1 - 30+20.94 -L1-* will be full compensation for providing designs, submittals, labor, tools, equipment and MSE wall materials, excavating, backfilling, hauling and removing excavated materials and supplying site assistance, leveling pads, panels, SRW units, reinforcement, aggregate, wall drainage systems, geotextiles, bearing pads, coping, miscellaneous components and any incidentals necessary to construct MSE walls. The contract unit price for *Retaining Wall #1 - 30+20.94 -L1-* will also be full compensation for anti-graffiti coating specified in the 'Application of Bridge Coating' special provision

No separate payment will be made for temporary shoring for wall construction. Temporary shoring for wall construction will be incidental to the contract unit price for *Retaining Wall #1 - 30+20.94 -L1-*.

The contract unit price for *Retaining Wall #1 - 30+20.94 -L1-* does not include the cost for ditches, fences, handrails, barrier or guardrail associated with MSE walls as these items will be paid for elsewhere in the contract.

Where it is necessary to provide backfill material behind the reinforced zone from sources other than excavated areas or borrow sources used in connection with other work in the contract, payment for furnishing and hauling such backfill material will be paid as extra work in accordance with Article 104-7 of the *Standard Specifications*. Placing and compacting such backfill material is not considered extra work but is incidental to the work being performed.

Payment will be made under:

Pay Item

Retaining Wall #1 - 30+20.94 -L1-

Pay Unit

Square Foot

SOLDIER PILE RETAINING WALLS:

(3-17-15)

SP (Kimley-Horn and Associates, Inc.)

GENERAL

Construct soldier pile retaining walls consisting of driven or drilled-in steel H-piles with either precast concrete panels in between piles or a cast-in-place reinforced concrete face attached to front of piles unless required otherwise in the plans. Timber lagging is typically used for temporary support of excavations during construction. Provide cast-in-place reinforced concrete coping as required. Design and construct soldier pile retaining walls based on actual elevations and wall dimensions in accordance with the contract and accepted submittals. Use a prequalified Cantilever Wall Contractor to construct soldier pile retaining walls. Define “soldier pile wall” as a soldier pile retaining wall. Define “panel” as a precast concrete panel and “concrete facing” as a cast-in-place reinforced concrete face. Define “pile” as a steel H-pile and “coping” as cast-in-place concrete coping.

MATERIALS

Refer to the Standard Specifications.

Item	Section
Anchor Pins	1056-2
Curing Agents	1026
Flowable Fill, Excavatable	1000-6
Geosynthetics	1056
Joint Materials	1028
Masonry	1040
Grout, Type 1	1003
Portland Cement Concrete	1000
Reinforcing Steel	1070
Retaining Wall Panels	1077
Select Material, Class VI	1016
Shoulder Drain Materials	816-2
Steel H-Piles	1084-1
Untreated Timber	1082-2
Welded Stud Shear Connectors	1072-6
Wire Staples	1060-8(D)

Provide Type 2 geotextile for separation geotextiles and Class VI select material (standard size No. 57 stone) for leveling pads and backfilling. Use Class A concrete for concrete facing and coping and Class A concrete that meets Article 450-2 of the *Standard Specifications* for drilled-in piles. Use untreated timber with a thickness of at least 3" and a bending stress of at least 1,000 psi for timber lagging.

Unless required otherwise in the contract, produce panels with a smooth flat final finish that meets Article 1077-11 of the *Standard Specifications*. When noted in the plans, produce panels with an exposed aggregate finish that meets Article 1077-12 of the *Standard Specifications*. Produce panels within 1/4" of the panel dimensions shown in the accepted submittals. Damaged panels with excessive discoloration, chips or cracks as determined by the Engineer will be rejected.

For soldier pile walls with panels, galvanize piles in accordance with Section 1076 of the *Standard Specifications*. When noted in the plans, paint galvanized piles in accordance with Article 442-12 of the *Standard Specifications*. Apply the following system to paint galvanized piles gray with waterborne paints that meet Article 1080-11 of the *Standard Specifications*. For painting galvanized piles other colors, contact the Materials and Tests (M&T) Unit for an appropriate paint system.

GRAY PAINT SYSTEM FOR GALVANIZED PILES			
Coat	Color	Dry/Wet Film Thickness (Mils)	
		Min.	Max.
Intermediate	Brown	3.0 DFT	5.0 DFT
Stripe	White	4.0 WFT	7.0 WFT
Topcoat	Gray	2.0 DFT	4.0 DFT
Total		5.0 DFT	9.0 DFT

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 soldier pile wall materials so materials are kept clean and free of damage. Bent, damaged or defective materials will be rejected.

PRECONSTRUCTION REQUIREMENTS

A. Soldier Pile Wall Surveys

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

B. Soldier Pile Wall Designs

For soldier pile wall designs, submit working drawings and design calculations at least 30 days before the preconstruction meeting. Do not begin soldier pile wall construction until a design submittal is accepted.

Use a prequalified Cantilever Wall Design Consultant to design soldier pile walls. Provide designs sealed by a Design Engineer approved as a Geotechnical Engineer (key person) for the Cantilever Wall Design Consultant.

Design soldier pile walls in accordance with the plans and Article 11.8 of the *AASHTO LRFD Bridge Design Specifications* unless otherwise required. Design soldier pile walls for seismic if walls are located in seismic zone 2 based on Figure 2-1 of the *Structure Design Manual*. Design soldier pile walls for a maximum deflection of 2" or 1.5% of H, whichever is less, with H as shown in the plans.

When noted in the plans, design soldier pile walls for a live load (traffic) surcharge of 250 lb/sf in accordance with Article 11.5.6 of the AASHTO LRFD specifications. For steel beam guardrail with 8 foot posts above soldier pile walls, analyze walls for a horizontal load (P_{HI}) 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 soldier pile walls, analyze walls for a P_{HI} of 500 lb/ft of wall in accordance with Figure 3.11.6.3-2(a).

When a rock mass shear strength (S_m) is noted in the plans, analyze piles using the equation shown in Figure 3.11.5.6-2 of the AASHTO LRFD specifications to calculate the passive resistance of the rock ($\overline{P_p}$). Use a maximum H-pile spacing of 10 ft. At the Contractor's option, use driven or drilled-in piles for soldier pile walls with concrete facing unless otherwise required. For soldier pile walls with panels, use drilled-in piles unless noted otherwise in the plans. Use concrete or grout for embedded portions of drilled-in piles. Install drilled-in piles by excavating holes with diameters that will result in at least 3" of clearance all around piles.

Provide temporary support of excavations for excavations more than 4 ft deep and timber lagging in accordance with the *AASHTO Guide Design Specifications for Bridge Temporary Works*. At the Contractor's option and when noted in the plans, provide temporary slopes instead of temporary support of excavations. Do not extend temporary slopes outside right-of-way or easement limits. Except for fill sections or when using temporary slopes, backfill voids behind panels, lagging and piles with No. 57 stone. Place separation geotextile between No. 57 stone and overlying fill or pavement sections except when concrete pavement, full depth asphalt or cement treated base is placed directly on stone.

At the Contractor's option, use panels or concrete facing unless required otherwise in the plans. Design panels and concrete facing in accordance with the plans and Section 5 of the *AASHTO LRFD Bridge Design Specifications*. Provide reinforcing steel of sufficient density to satisfy Article 5.7.3.4 of the AASHTO LRFD specifications. Use panels or concrete facing with the dimensions shown in the plans and attach facing to front of H-piles with welded stud shear connectors.

Use No. 57 stone for aggregate leveling pads. Use 6" thick leveling pads beneath panels and concrete facing. Unless required otherwise in the plans, embed top of leveling pads at least 12" below bottom of walls shown in the plans.

Provide wall drainage systems consisting of geocomposite drain strips, drains and outlet

components. Place drain strips with a horizontal spacing of no more than 10 feet and center strips between adjacent piles. Attach drain strips to front of timber lagging or back of panels or concrete facing and connect strips to leveling pads. Locate a continuous aggregate shoulder drain along the base of panels or concrete facing in front of piles and leveling pads. Provide drains and outlet components in accordance with Standard Drawing No. 816.02 of the *Roadway Standard Drawings*.

Unless required otherwise in the plans, use cast-in-place reinforced concrete coping at top of soldier pile walls with panels. Use coping dimensions shown in the plans and at the Contractor's option, connect coping to panels with dowels or extend coping down back of panels. When concrete barrier rail is required above soldier pile walls, use concrete barrier rail with moment slab as shown in the plans.

Submit working drawings and design calculations for acceptance in accordance with Article 105-2 of the *Standard Specifications*. Submit working drawings showing plan views, wall profiles with pile locations, typical sections and details of piles, drainage, temporary support, leveling pads, panels and concrete facing. If necessary, include details on working drawings for coping, concrete barrier rail with moment slab and obstructions extending through walls or interfering with piles, barriers or moment slabs. Submit design calculations including deflection calculations for each wall section with different surcharge loads, geometry or material parameters. Include analysis of temporary conditions in design calculations. When designing soldier pile walls with computer software, a hand calculation is required for the tallest wall section.

C. Soldier Pile Wall Construction Plan

Submit a PDF copy of a soldier pile wall construction plan at least 30 days before the preconstruction meeting. Do not begin soldier pile wall construction until the construction plan submittal is accepted. Provide project specific information in the soldier pile wall construction plan including a detailed construction sequence. For driven piles, submit proposed pile driving methods and equipment in accordance with Subarticle 450-3(D)(2) of the *Standard Specifications*. For drilled-in piles, submit installation details including drilling equipment and methods for stabilizing and filling holes. Provide details in the construction plan of excavations including temporary support and any other information shown in the plans or requested by the Engineer.

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

D. Preconstruction Meeting

Before starting soldier pile wall construction, hold a preconstruction meeting to discuss the construction and inspection of the soldier pile walls. If this meeting occurs before all soldier pile wall submittals have been accepted, additional preconstruction meetings may be required before beginning construction of soldier pile walls without accepted submittals. The Engineer, Contractor and Cantilever Wall Contractor Superintendent will attend the preconstruction meeting.

CONSTRUCTION METHODS

Control drainage during construction in the vicinity of soldier pile walls. Direct run off away from soldier pile walls and areas above and behind walls. Contain and maintain No. 57 stone and backfill and protect material from erosion.

Notify the Engineer before blasting in the vicinity of soldier pile walls. Perform blasting in accordance with the contract. Unless required otherwise in the plans, install foundations located behind soldier pile walls before beginning wall construction if the horizontal distance to the closest foundation is less than the height of the tallest wall section.

Install soldier pile walls in accordance with the accepted submittals and as directed. Do not excavate behind soldier pile walls unless a temporary slope is shown in the accepted submittals. If overexcavation occurs and is not approved, repair walls with an approved method and a revised soldier pile wall design or construction plan may be required.

A. Piles

If a temporary slope is shown in the accepted submittals, excavate the slope before installing piles. Otherwise, install piles before excavating for soldier pile walls. Weld stud shear connectors to piles in accordance with Article 1072-6 of the *Standard Specifications*.

Install piles within 1" of horizontal and vertical alignment shown in the accepted submittals and with no negative batter (piles leaning forward). Minimize alignment variations between piles for soldier pile walls with concrete facing since variations can result in thicker concrete facing in some locations in order to provide the minimum required facing thickness elsewhere. Locate piles so the minimum required concrete facing thickness, if applicable, and roadway clearances are maintained for variable pile alignments.

Install piles to the required elevations in accordance with Subarticles 450-3(D) and 450-3(E) of the *Standard Specifications*. Piles may be installed with a vibratory hammer as approved by the Engineer. Do not splice piles. If necessary, cut off piles at elevations shown in the accepted submittals along a plane normal to the pile axis.

Use pile excavation to install drilled-in piles. If over excavation occurs, fill to required elevations with No. 57 stone before setting piles. After filling holes with concrete or 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 required penetration. When this occurs, a revised soldier pile wall design or construction plan submittal may be required. When a minimum pile penetration into rock is noted in the plans, rock is as determined by the Engineer.

B. Excavation

If a temporary slope is shown in the accepted submittals, excavate the slope as shown. Otherwise, excavate in front of piles from the top down in accordance with the accepted submittals. Excavate in staged horizontal lifts with a maximum height of 5 ft. Use timber lagging or an alternate approved method for temporary support of excavations in accordance with the accepted submittals.

Install temporary support within 24 hours of excavating each lift unless otherwise approved. The installation 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 soldier pile 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 soldier pile wall design or construction plan may be required.

Remove flowable fill and material in between piles as necessary to install timber lagging. Position lagging with at least 3" of contact in the horizontal direction between the lagging and pile flanges. Do not excavate the next lift until temporary support for the current lift is accepted.

C. Wall Drainage Systems

Install wall drainage systems as shown in the accepted submittals and in accordance with Section 816 of the *Standard Specifications*. Place geocomposite drain strips with the geotextile side facing away from wall faces. Secure drain strips so strips are in continuous contact with surfaces to which they are attached and allow for full flow the entire height of soldier pile walls. Discontinuous drain strips are not allowed. If splices are needed, overlap drain strips at least 12" so flow is not impeded. Connect drain strips to leveling pads by embedding strip ends at least 4" into No. 57 stone.

D. Leveling Pads, Panels, Coping 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.

Set panels against pile flanges as shown in the accepted submittals. Position panels with at least 2" of contact in the horizontal direction between the panels and pile flanges. If contact cannot be maintained, remove panels, fill gaps with joint filler and reset panels. Securely support panels until enough No. 57 stone or backfill is placed to hold panels in place.

Construct coping as shown in the accepted submittals and Subarticle 452-3(C) of the *Standard Specifications*. When single faced precast concrete barrier is required in front of and against soldier pile walls, stop coping just above barrier so coping does not interfere with placing barrier up against wall faces.

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 soldier pile walls with approved brick to concrete type anchors in accordance with the manufacturer's instructions. Space anchors no more than 16" apart in the vertical direction and no more than 32" apart in the horizontal direction with each row of anchors staggered 16" from the row above and below.

Seal joints above and behind soldier pile walls between coping or concrete facing and concrete slope protection with silicone sealant.

E. Backfill

For fill sections or if a temporary slope is shown in the accepted submittals, backfill behind piles, panels and concrete facing in accordance with Article 410-8 of the *Standard Specifications*. Otherwise, backfill voids behind panels, lagging and piles with No. 57 stone as shown in the accepted submittals. Ensure all voids between panels and lagging and between piles, lagging and excavation faces are filled with No. 57 stone. Compact stone to the satisfaction of the Engineer. When separation geotextiles are required, overlap adjacent geotextiles at least 18" and hold separation geotextiles in place with wire staples or anchor pins as needed.

F. Pile Coatings

For soldier pile walls with panels, clean exposed galvanized or painted surfaces of piles with a 2,500 psi pressure washer after wall construction is complete. Repair galvanized surfaces that are exposed and damaged in accordance with Article 1076-7 of the *Standard Specifications*. Repair painted surfaces that are exposed and damaged by applying 4.0 to 7.0 mils wet film thickness of a topcoat to damaged areas with brushes or rollers. Use the same paint for damaged areas that was used for the topcoat when painting piles initially. Feather or taper topcoats in damaged areas to be level with surrounding areas.

MEASUREMENT AND PAYMENT

Retaining Wall #2 - 111+10.00 -L4- will be measured and paid in square feet. Soldier pile 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 final grade as shown in the retaining wall envelope.

Define “top of wall” as top of coping or top of panels or concrete facing for soldier pile walls without coping.

The contract unit price for *Retaining Wall #2 - 111+10.00 –L4–* will be full compensation for providing designs, submittals, labor, tools, equipment and soldier pile wall materials, installing piles, excavating, backfilling, hauling and removing excavated materials and supplying temporary support of excavations, wall drainage systems, leveling pads, panels, concrete facing, No. 57 stone, geotextiles and any incidentals necessary to construct soldier pile walls. The contract unit price for *Retaining Wall #2 - 111+10.00 –L4–* will also be full compensation for coping, pile coatings and brick veneers, if required. No additional payment will be made and no extension of completion date or time will be allowed for repairing over excavations or unstable excavations or thicker concrete facing. The contract unit price for *Retaining Wall #2 - 111+10.00 –L4–* will also be full compensation for anti-graffiti coating specified in the ‘Application of Bridge Coating’ special provision.

The contract unit price for *Retaining Wall #2 - 111+10.00 –L4–* does not include the cost for ditches, fences, handrails, barrier or guardrail associated with soldier pile walls as these items will be paid for elsewhere in the contract.

Where it is necessary to provide backfill material behind soldier pile walls from sources other than excavated areas or borrow sources used in connection with other work in the contract, payment for furnishing and hauling such backfill material will be paid as extra work in accordance with Article 104-7 of the *Standard Specifications*. Placing and compacting such backfill material is not considered extra work but is incidental to the work being performed.

Payment will be made under:

Pay Item	Pay Unit
Retaining Wall #2 - 111+10.00 –L4–	Square Foot

PILE SUPPORTED SLAB AT STA 124+30.56 -L4-
5/3/17

(SPECIAL)
SP (Kimley-Horn and Associates, Inc.)

1.0 GENERAL

1.1 SCOPE

These specifications are for the Pile Supported Slab shown in the drawings and shall be regarded as minimum standards for construction.

All materials, construction, and fabrication shall meet the requirements of the drawings, this special provision, and the current edition of the North Carolina Department of Transportation Standard Specifications for roads and Structures.

1.2 GEOMETRY

1.2.1 The structure is a mild reinforced cast-in-place concrete slab that is supported by steel piles. The top surface of the slab serves as the greenway surface. Cast-in-place concrete stem act as a retaining wall.

1.3 TEMPORARY SHORING

1.3.1 Existing gabion wall on the southeast side of the existing railroad bride shall be removed and a temporary shoring wall shall be installed to allow for construction of the Pile Supported Slab. Temporary shoring wall shall be a soldier pile wall with the first pile driven a minimum of 12'-6" from the centerline of the existing railroad bridge and 2'-6" from the edge of the existing bridge walkway.

The existing gabion baskets on the southwest side of the railroad will serve as temporary shoring.

1.4 PERMANENT SHORING UNDER EXISTING BRIDGE

1.4.1 Permanent shoring under the existing bridge is required for protection of the existing abutment during construction. To avoid damage to existing abutment during removal, it is recommended that this shoring remain in place after construction is completed.

1.5 ANTI-GRAFFITI COATING

1.5.1 Anti-graffiti coating shall be applied to the vertical stem of the Pile Supported Slab in accordance with the Application of Anti-Graffiti Coating Special Provision.

1.6 SUBMITTALS

1.6.1 Product Data: For each type of product used. Include construction details, material descriptions, and dimensions of individual components for the Pile Supported Slab.

1.6.2 Shop Drawings: For the Pile Supported Slab. Include plans, elevations, sections, details, and attachments to other work specific to this project. The contractor shall submit shop drawings for the Pile Supported Slab to the City. The shop drawings will be reviewed by the City and the Engineer.

1.6.3 Temporary/Permanent Shoring: contractor's engineer shall design both locations of temporary shoring. Plans and calculations shall be signed and sealed by a licensed professional engineer registered in North Carolina. All shoring shall be submitted to and approved by CSXT prior to installation.

1.7 QUALITY ASSURANCE

The contractor shall be responsible for protecting the Pile Supported Slab components from damage during storage, handling, installation, and subsequent construction operations. Damage to the Pile Supported Slab and existing railroad bridge shall be grounds for rejection of the work.

1.8 COORDINATION

Reference drawings for notes on existing conditions. During each step of construction, the integrity of the existing railroad bridge shall be monitored.

2.0 MATERIALS

Unless noted otherwise all materials shall be in accordance with the NCDOT Standard Specifications.

2.1 Concrete: Class A

2.2 Reinforcing Steel: ASTM A615 Grade 60

2.3 Steel Piles: For Piles, see Section 450 of the Standard Specifications.

3.0 PILE DRIVING PLAN

Contractor shall be responsible for complete a pile driving plan for the construction of the piles for the Pile Supported Slab. See notes on drawings for requirements of the pile driving plan. Payment for the pile driving plan shall be incidental to the Pile Supported Slab and no additional payment will be made.

4.0 BASIS OF PAYMENT

The Pile Supported Slab, pile driving plan, anti-graffiti coating, rip rap, utility location, and all related components as described on the drawings, in this Special Provision, and referenced NCDOT Standard Specifications and Special Provisions will be paid for at the contract lump sum price with the exception of temporary shoring which will be paid for separately. Such price and payment will be full compensation for all work covered by this Special Provision, the drawings, and applicable parts of the NCDOT Standard Specifications and Special Provisions and will include, but not be limited to, furnishing all engineering, labor, materials, equipment, delivery, and other incidentals necessary to complete this work.

Payment will be made under:

Pile Supported Slab STA.124+30.56 -L4-_____ Lump Sum

PREFABRICATED PEDESTRIAN BRIDGE

6/1/15

(SPECIAL)
SP (Kimley-Horn and Associates, Inc.)

GENERAL

SCOPE

These specifications are for a fully engineered clear span bridge superstructure of steel construction and cast-in-place concrete end bents and shall be regarded as minimum standards for design and construction.

QUALIFIED SUPPLIERS

The successful bidder is required to identify the intended bridge supplier within 7 days of receiving their award letter.

As of the project bid letting date, the bridge supplier shall be listed as “Approved for Provisional Use” on the NCDOT Approved Product List under the “Pedestrian Bridges” Product Category. Only those bridge suppliers that meet the above requirement will be allowed to provide the bridge on this project. Any bridge supplier that is not approved, as indicated above, on the bid letting date, will not be allowed to provide the bridge

GENERAL FEATURES OF DESIGN

SPAN

Bridge shall be the span(s) at the length(s) as shown on the drawings.

WIDTH

Bridge width shall be as shown on the drawings.

BRIDGE SYSTEM TYPE

The bridge shall be designed as a pratt truss system for which the manufacturer has been approved.

MEMBER COMPONENTS

All members of the vertical trusses shall be fabricated from structural steel shapes or square or rectangular steel tubing.

Unless the fastenings are specifically designed to provide adequate lateral support to the top flange of open shape members (w-shapes and channels), a minimum of one stiffener shall be provided in each member at every attachment to another member.

ATTACHMENTS

A. Pedestrian/ Bicycle Railing

The bridge shall be provided with a continuous pedestrian/ bicycle railing on each side of the bridge. Design the vertical and/ or horizontal members of this railing to meet all geometric and loading requirements for pedestrian and bicycle bridge rails, as outlined in Section 13.10 of the latest edition of AASHTO "LRFD Bridge Design Specifications," except as modified in this provision. For bridges with only pedestrian traffic, the height of the top of the rail system shall be 42" above the bridge deck. For bridges with pedestrian and bicycle traffic, the height of the top of the rail system shall be 54" above the bridge deck, unless otherwise allowed by the NCDOT Bicycle and Pedestrian Division.

As a minimum, three rails shall be provided:

- A top rail at the height indicated above.
- A bottom rail mounted at a height adequate to provide a 2" gap between the bottom of the rail and the top of the deck.
- A rail at mid-height between the top and bottom rails.

The presence of fencing or mesh, typically used as protective screening for overpass structures, shall not eliminate rail requirements.

B. Handrail

The bridge shall be provided with continuous handrails on each side of the bridge. Handrails shall be provided with a minimum 1-1/2" knuckle space between the railing and the truss verticals and diagonals, fencing, or other portions of the rail assembly. The rails shall be located 36" above the deck surface. The handrails shall be secure and shall not rotate in their fittings. The mounting of the handrails shall be such that the completed handrail and supports are capable of withstanding standard AASHTO loadings. The handrail shall deflect no more than 1/4" under this loading. The end of the railing shall be capped with a flush end cap.

Handrail attachment brackets shall be of steel, matching the bridge superstructure.

CAMBER

The bridge shall have a vertical camber dimension at midspan equal to 100% of the full dead load deflection.

SUBSTRUCTURE

Bridge end bents shall be cast-in-place reinforced concrete supported on piles as detailed in the drawings.

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Prefabricated steel pedestrian bridge end bent details shall be coordinated with the prefabricated steel pedestrian bridge drawings, to be provided by the prefabricated steel pedestrian bridge manufacturer. Construction of end bents shall not begin until superstructure shop drawings are approved and all conflicts resolved.

The top surface of the end bent caps, except at bridge seat build-ups, shall be sloped transversely from fill face to back face at a minimum rate of 2%.

The top surface of the end bent caps shall be cured in accordance with NCDOT Standard Specifications, except that the membrane curing compound method shall not be used.

Backwall shall be placed before applying the epoxy protective coating.

ENGINEERING

Structural design of the bridge structure shall be performed by or under the direct supervision of a licensed Professional Engineer and done in accordance with recognized engineering practices and principles. The engineer shall be licensed to practice in North Carolina.

Unless indicated otherwise, pedestrian bridge design shall be in accordance with all requirements of AASHTO "LRFD Guide Specifications for Design of Pedestrian Bridges." More specific requirements are listed below.

DESIGN LOADS

Design loads, pedestrian, vehicular, wind, and combinations shall be in accordance with the AASHTO "LRFD Guide Specifications for Design of Pedestrian Bridges."

DESIGN LIMITATIONS

A. Design Limitations

Deflections, vibrations, fatigue, and other design details shall adhere to AASHTO requirements.

B. Minimum Thickness of Metal

The minimum thickness of all structural steel members shall be ¼" nominal and be in accordance with the AISC Manual of Steel Construction's "Standard Mill Practice Guidelines." For ASTM A500 and ASTM A847 tubing, the section properties used for design shall be per the Steel Tube Institute of North America's Hollow Structure Sections "Dimension and Section Properties."

GOVERNING DESIGN CODES/ REFERENCES

Structural Members shall be designed in accordance with recognized engineering practices and principles as follows:

A. Structural Steel Allowable Stresses

American Association of State Highway and Transportation Officials (AASHTO)

Allowable Design Stresses shall be in accordance with the AASHTO “LRFD Bridge Design Specifications,” latest addition.

B. Welded Connections

American National Standards Institute/ American Welding Society (ANSI/ AWS)

All welded connections shall be checked, when within applicable limits, for the limiting failure modes outlined in the latest ANSI/ AWS D1.1 Structural Welding Code.

When outside the “validity range” defined in these design guidelines, the following limit states or failure modes must be checked:

- Chord face plastification
- Punching shear (through main member face)
- Material failure
 - Tension failure of the web member
 - Local buckling of a compression web member
- Weld failure
 - Allowable stress based on “effective lengths”
 - “Ultimate” capacity
- Local buckling of a main member face
- Main member failure:
 - Web or sidewall yielding
 - Web or sidewall crippling
 - Web or sidewall buckling
 - Overall shear failure

All tubular joints shall be plain unstiffened joints (made without the use of reinforcing plates) except as follows:

- Floor beams hung below the lower chord of the structure may be constructed with or without stiffener (or gusset) plates, as required by design.
- Floor beams that frame directly into the truss verticals (H-section bridges) may be designed with or without end stiffening plates as required by design.
- Where chords, end floor beams, and, in high profiles, the top end struts weld to the end verticals, the end verticals (or connections) may require stiffening to transfer the forces from these members into the end vertical.
- Truss vertical to chord connections.

NOTE: The effects of fabrication tolerances shall be accounted for in the design of the structure. Special attention shall be given to the actual fit-up gap at welded truss joints.

C. Welded Splices

American National Standards Institute/ American Welding Society (ANSI/ AWS) and American Institute of Steel Construction (AISC)

No welded field splices will be allowed.

If shop welded splices are necessary, their locations shall be indicated on the submitted shop drawings. A welded splice for the top chord should not be located in the same bay as a welded splice for the bottom chord. Splice weld details shall be provided on the shop drawings.

D. Bolted Splices

American Institute of Steel Construction (AISC)

Bolted field splices shall be located on the bridge to produce a bridge that can be economically shipped and erected. Splices along the length of the bridge (in chords and diagonals) shall be placed at the approximately mid-point of a bay (between two panel points). Splices across the width of the bridge (in floor beams and wind braces) may be used, when necessary, to keep the overall structure width within reasonable limits for shipping. Tension on the splice bolts shall be calibrated using direct tension indicator washers (DTIs) in accordance with Article 440-8 of the NCDOT Standard Specifications.

MATERIALS AND INSPECTION

Unless noted otherwise, all materials, construction, and inspection shall be in accordance with Section 1072 of the NCDOT Standard Specifications.

Within seven (7) days after receiving award of the winning project bid, the fabricator shall notify the NCDOT Materials and Test Unit (919-733-7411) to allow for communication between the fabricator and Materials and Tests regarding certification, material sampling and testing, and other items stated in Section 1072 of the NCDOT Standard Specifications.

STEEL

A. Steel

Unless noted otherwise, bridges shall be fabricated from steel meeting requirements of AASHTO M270 Grade 36. Such steel bridges shall be provided with a corrosion protection measure (painting, galvanizing, metalizing). Such corrosion protection shall be indicated on the drawings and shall be in accordance with the NCDOT Standard Specifications.

B. Weathering Steel

As desired and indicated on the project drawings, bridges shall be fabricated from high-strength, low-alloy, atmospheric corrosion resistant ASTM A847 cold-formed, welded square and rectangular tubing and/ or atmospheric corrosion resistant ASTM A588, ASTM A242, and ASTM A606 plate and structural steel shapes ($F_y = 50,000$ psi). The minimum corrosion index of the atmospheric corrosion resistant steel, as determined in accordance with ASTM G101, shall be 6.0.

After fabrication, weathering steel shall be shop cleaned to a SSPC SP-6 finish.

HIGH-STRENGTH BOLTS, NUTS, AND WASHERS

Bolts, nuts, and washers shall be in accordance with Section 1072-5(F) of the NCDOT Standard Specifications.

DIRECT TENSION INDICATOR WASHERS (DTIS)

DTIs shall be in accordance with Section 1072-4(C)(4)(c) of the NCDOT Standard Specifications.

METAL STAY-IN-PLACE FORMS

If necessary for a cast-in-place concrete deck, the prefabricated pedestrian bridge shall come equipped with galvanized metal stay-in-place forms to accommodate a reinforced concrete deck. The forms shall be designed and fabricated to conform to Section 420-3 of the NCDOT Standard Specifications

CONCRETE

- A. Bents and Deck: Class A concrete, per NCDOT Standard Specifications
- B. Reinforcing Steel: Per Section 1070 of the NCDOT Standard Specifications

BEARING PADS

Minimum 50 durometer hardness, conforming to NCDOT standard Specifications and Special Provisions.

SUBMITTALS

SUBMITTAL DRAWINGS

Schematic drawings and diagrams for the bridge superstructure and substructure shall be submitted to the City for their review after receipt of order. Submittal drawings shall be unique drawings, prepared to illustrate the specific portion of the work to be done. All relative design information such as member sizes, bridge reactions, and general notes shall be clearly specified on the drawings. Drawings shall have cross referenced details and sheet numbers. All drawings

shall be signed and sealed by a Professional Engineer who is licensed as outlined in the “Engineering” section of this specification.

STRUCTURAL CALCULATIONS

Structural calculations for the bridge superstructure and substructure shall be submitted by the bridge manufacturer and reviewed by NCDOT Structures Management Unit. All calculations shall be signed and sealed by a Professional Engineer who is licensed as outlined in the “Engineering” section of this specification. The calculations shall include all design information necessary to determine the structural adequacy of the bridge. The calculations shall include, but are not limited to, the following:

- All AASHTO allowable stress checks for axial, bending, and shear forces in the critical member of each truss member type (i.e., top chord, bottom chord, floor beam, etc.).
- Checks for the critical connection failure modes for each truss member type (i.e., diagonal, floor beam, etc.). Special attention shall be given to all welded tube-on-tube connections.
- All bolted splice connections.
- Main truss deflection checks.
- U-Frame stiffness checks (used to determine “K” factors for out-of-plane buckling of the top chord) for all half through or “pony” truss bridges.
- Deck design.
- Cast-in-place concrete bridge end bents.

NOTE: The analysis and design of triangulated truss bridges shall account for moments induced in members due to joint fixity where applicable. Moments due to both truss deflection and joint eccentricity must be considered.

FABRICATION

GENERAL REQUIREMENTS

A. Drain Holes

Weep/ drain holes shall be provided in all tubular bridge members, for drainage at their lowest point, unless such members are free-draining, open-ended.

B. Welds

Special attention shall be given to developing sufficient weld throats on tubular members. Fillet weld details shall be in accordance with AWS D1.1, Section 3.9 (See AWS Figure 3.2). Unless determined otherwise by testing, the loss factor “Z” for heel welds shall be in accordance with AWS Table 2.8. Fillet welds that run onto the radius of a tube shall be built up to obtain the full throat thickness. The maximum root openings of fillet welds shall not exceed 3/16” in conformance with AWS D1.1, Section 5.22. Weld size or

effective throat dimensions shall be increased in accordance with this same section when applicable (i.e., fit-up gaps > 1/16”).

The fabricator shall have verified that the thickness of partial joint penetration groove welds (primarily matched edge welds or the flare-bevel-groove welds on underhung floor beams) shall be obtainable with their fit-up and weld procedures. Matched edge welds shall be "flushed" out when required, to obtain the full throat or branch member wall thickness.

For full penetration butt welds of tubular members, the backing material shall be fabricated prior to installation in the tube, so as to be continuous around the full tube perimeter, including corners. Backing may be of four types:

- A "box" welded up from four (4) plates.
- Two "channel" sections, bent to fit the inside radius of the tube, welded together with full penetration welds.
- A smaller tube section that slides inside the spliced tube.
- A solid plate cut to fit the inside radius of the tube.

Corners of the "box" backing, made from four plates, shall be welded and ground to match the inside corner radii of the chords. The solid plate option shall require a weep hole either in the chord wall above the "high side" of the plate or in the plate itself. In all types of backing, the minimum fit-up tolerances for the backing must be maintained at the corners of the tubes, as well as across the "flats."

WELD INSPECTION AND TESTING

All welds shall be visually inspected.

A minimum ten percent (10%) of all fillet welds shall be tested by Magnetic Particle Testing (MT).

All (100%) full penetration welds shall be subject to Radiographic Testing (RT).

Welding inspection and testing shall be subject to the requirements of AWS D1.1 or AWS 1.5, whichever is applicable and more stringent.

Also, please refer to Section 1072 of the NCDOT Standard Specifications.

QUALITY CERTIFICATION

Bridge shall be fabricated by a fabricator that is currently certified by the American Institute of Steel Construction to have the personnel, organization, experience, capability, and commitment to produce fabricated structural steel for the category "Simple Steel Bridges," as set forth in then AISC Certification Program. Quality control shall be in accordance with procedures outlined for AISC certification.

DELIVERY AND ERECTION

Delivery is made to a location nearest the site that is easily accessible to normal over-the-road tractor-trailer equipment. All trucks delivering bridge materials will need to be unloaded at the time of arrival.

The manufacturer will provide detailed, written instruction in the proper lifting procedures and splicing procedures (if required). The method and sequence of erection shall be the responsibility of the Contractor, unless specifically directed by the manufacturer in such matters.

The bridge manufacturer shall provide written inspection and maintenance procedures to be followed by the bridge owner.

FOUNDATIONS

Unless specified otherwise, the bridge manufacturer shall determine the number, location and layout, diameter, minimum grade, finish, and embedment of all anchor bolts. The anchor bolts shall be designed, by the bridge manufacturer, to resist all horizontal and uplift forces to be transferred by the superstructure to the supporting foundations. Engineering design of the bridge supporting foundations (abutment, pier, bracket, and/or footings) shall be the responsibility of the foundation engineer. The contractor shall provide all material (including anchor bolts) for the construction of the bridge supporting foundations. The contractor shall install anchor bolts in accordance with the bridge manufacturer's anchor bolt plans and requirements.

Information as to bridge support reactions and anchor bolt locations and requirements shall be furnished by the bridge manufacturer after receipt of order and after the bridge design is complete.

WARRANTY

The bridge manufacture shall warrant their steel structure(s) to be free of design, material, and workmanship defects for a period of ten (10) years from the date of delivery.

This warranty shall not cover defects in the bridge caused by abuse, misuse, overloading, accident, improper maintenance, alteration, or any other cause not the result of defective materials or workmanship.

This warranty shall be void unless owner's maintenance records can be supplied. Such records shall indicate compliance with minimum guidelines specified in the inspection and maintenance procedures.

Repair or replacement shall be the exclusive remedy for defects under this warranty. The bridge manufacturer shall not be liable for any consequential or incidental damages for breach of any express or implied warranty on their structures.

BASIS OF PAYMENT

The prefabricated steel Pratt truss bridge superstructure, cast-in-place concrete substructure, piles, bearing pads, anchor bolts, approach railings, approach slabs, approach fills and all related components as described on the drawings, in this Special Provision, and referenced NCDOT Standard Specifications and Special Provisions will be paid for at the contract lump sum price. Such price and payment will be full compensation for all work covered by this Special Provision, the drawings, and applicable parts of the NCDOT Standard Specifications and Special Provisions and will include, but not be limited to, furnishing all engineering, labor, materials, equipment, delivery, and other incidentals necessary to complete this work.

Payment will be made under:

Pedestrian Bridge - 52+89.00 –L2– Lump Sum

PRECAST CONCRETE BOARDWALK

6/1/15

SP (Kimley-Horn and Associates, Inc.)

PART 1 - GENERAL

1.1 SUMMARY:

These specifications are for a precast concrete boardwalk and shall be regarded as minimum standards for this project. These specifications are based upon products designed and supplied by:

PermaTrak North America LLC
16607 Riverstone Way
Suite 200
Charlotte, NC 28277
Ph: 980-229-3036
Fax: 704-541-3675
www.permatrak.com

This item shall also include the design, specification, and construction of a foundation system to support the proposed boardwalk system.

1.2 ALTERNATE REQUIREMENTS:

Alternates are allowed provided that the following minimum standards and these "Precast Concrete Boardwalk" specifications are met.

- A. "Minimum Standards" as outlined in section 1.3 below must be met.
- B. A drawing of the precast boardwalk system (including tread layout, structural details designed for the design loads shown on the contract documents, foundation design and layout) must be submitted 1 week before the bid date and signed and sealed by a Professional Engineer.

- C. Submittal must meet the requirements set forth in section 1.6.A.

1.3 MINIMUM STANDARDS:

The selected boardwalk shall have the following minimum characteristics:

- A. Walking surface (treads) shall be made of precast concrete, and supported by precast concrete beams. Where applicable, edges of treads will receive precast concrete curbs.
- B. Walking surface (finish) of top surface of treads shall have a formliner finish with one of PermaTrak's standard textures (sandblast, broom or timber). Texture must be integral with the concrete and shall not be an applied post pour wearing surface. Owner and Engineer to approve finish during Mock -Up review.
- C. Precast concrete treads shall be structural load bearing elements and shall interlock with one another via a "tongue and groove" connection.
- D. All precast shall consist of integrally colored concrete in a color selected by the owner from one of PermaTrak's "standard colors". Owner and Engineer to approve color during Mock -Up review.
- E. DESIGN LOADS:
1. Dead Loads: Self-weight of structure.
 2. Live Loads: Pedestrian load shall not be considered to act concurrently with vehicular load. The dynamic load allowance need not be considered for vehicular load.
 - a. Pedestrian Live Load = 90 psf
 - b. Vehicular Live Load = AASHTO H-5-44 (Bridge, BW #1, and BW #2)
AASHTO H-10-44 (BW #3 and BW #4)
 3. Railing Loads: Per AASHTO.
 4. Wind Loads: Per AASHTO.
 5. Water Loads: Per AASHTO.
 6. Temperature: Per AASHTO/NCDOT.
 7. Seismic: Per AASHTO.
 8. Load Combinations: Per AASHTO.
- F. Treads shall maintain a "boardwalk appearance", specifically meaning each tread shall have a width: length ratio ranging from a minimum of 3:1 to a maximum of 14:1. Width is defined as the tread dimension perpendicular to the normal direction of travel. Length is defined as the tread dimension measured in the direction of travel.
- G. Tread width shall be as noted on the contract drawings. Alignment should follow the horizontal and vertical alignment shown on the contract drawings.

- H. Connectors for curbs (if applicable) to treads shall not be visible to boardwalk users while viewed from the top of the walkway.
- I. Precast concrete boardwalk structure shall be founded on timber piles similar to timber boardwalk. See Timber Boardwalk Special Provision for timber piles.

1.4 QUALITY ASSURANCE

- A. The contractor performing the installation of the pile foundations shall have installed piles of size and length similar to those shown on the drawings for a minimum of three (3) years prior to the bid date for this project. The contractor shall submit a list containing at least three (3) projects completed in the last three (3) years on which the contractor has installed piles of a size and length similar to those shown on the drawings. The list of projects shall contain names and phone numbers of owner's representatives who can verify the Contractor's participation on those projects.
- B. Manufacturer Qualifications: Not less than 10 years experience in the actual production of precast products as described below.
 - 1. Components shall be factory fabricated and engineered by single entity.
 - 2. Precaster for the boardwalk shall have on site color mixing facilities and shall use dyes for color pigmentation.
 - 3. Precaster shall have a minimum of 3 years experience in the production of above ground precast products or boardwalk structures.
 - 4. Precaster must be certified by PCI or NPCA.
- C. Installer Qualifications: Firm with 3 years experience in installation of systems similar in complexity to those required for this Project.
- D. Mock-Up: Provide a mock-up for evaluation of the boardwalk showing the surface preparation techniques and application workmanship.
 - 1. Finish areas designated by Engineer.
 - 2. Do not proceed with remaining work until mock-up is accepted by Owner and Engineer.
 - 3. Refinish mock-up area as required to produce acceptable work.

1.5 DESIGN

- A. The designer of the boardwalk and foundation system (designer) shall be a qualified registered Professional Engineer licensed in the State of North Carolina and experienced in the design of concrete structures and supporting foundation systems.
- B. GEOTECHNICAL INFORMATION AND SOIL INVESTIGATION
 - 1. A geotechnical investigation report has been prepared for this project and is available for reference. The report was produced by Falcon Engineering, dated May 12, 2015.

2. The geotechnical investigation report and contract drawings do not include foundation recommendations for timber piles supporting precast concrete boardwalk. If this bid alternate is chosen, the Contractor shall hire a Geotechnical Engineer to provide the foundation recommendations for these structures.
- C. DESIGN CRITERIA: The design of the boardwalk and foundation shall comply with the current edition of the applicable provisions of the following specifications and documents:
1. AASHTO LRFD Guide Specification for the Design of Pedestrian Bridges.
 2. North Carolina Department of Transportation Bicycle Facilities Planning and Design Guidelines.
 3. North Carolina Department of Transportation Structure Design Manual.
 4. North Carolina Department of Transportation Standard Specifications for Roads and Bridges, and Special Provisions.
 5. AASHTO LRFD Bridge Design Specifications.
 6. American Concrete Institute Building Code for Structural Concrete and Commentary.
 7. Railings shall be suitable for pedestrian and bicycle traffic and shall be a minimum of 54-inches above the tread / deck surface.
 8. Railings structural requirements:
 - a. Handrail and railing assemblies and attachments shall resist the applicable loads as specified in the above referenced provisions and documents.
 9. In addition to the dead loads of the system, the structure shall be designed for the live loads defined in Section 1.3 E above

1.6 SUBMISSIONS:

Prior to the start of fabrication or construction, the Contractor shall submit to the Engineer a design package, which shall include, but is not limited to, the following:

- A. PRELIMINARY SUBMISSIONS: Prior to the start of fabrication or construction, the Contractor shall submit to the Engineer a design package, which shall include but not limited to the following:
1. DETAILED DRAWINGS:
 - a. REGISTRATION / SEAL: Sealed by a licensed Professional Engineer (North Carolina).
 - b. PLAN VIEW: Full plan view of the boardwalk and foundation system drawn to scale. The plan view must reflect the proposed horizontal alignment as shown on the design drawings.
 - c. ELEVATION VIEW: Full elevation view of the boardwalk, railing and foundation system drawn to scale which reflect the actual vertical

alignment. Elevation views shall indicate the elevation at the top and bottom of the boardwalk and foundation system components, horizontal and vertical break points, and location of the finished grade.

- d. DETAILS: Details of all boardwalk, railing, and foundation system components and their connections such as the length, size and where changes occur; connections; etc.
- e. FOUNDATION: Detailed layout drawings for location of all foundation system components, including working points with coordinates for survey stakeout.
- f. CODE REFERENCE: Design parameters used along with AASHTO references.

2. DESIGN COMPUTATIONS: computations shall:

- a. Be stamped by a licensed Professional Engineer in the state of North Carolina.
- b. Computations shall clearly refer to the applicable NCDOT or AASHTO provisions.
- c. Documentation of computer programs including all design parameters.

3. CONSTRUCTION SPECIFICATIONS:

- a. Construction methods specific to the boardwalk vendor chosen. Submittal requirements such as certification, quality and acceptance/rejection criteria shall be included. Details on connection of boardwalk units and foundation system such that assurance of uniform load transfer shall be checked.

B. FINAL SUBMISSION: Once a boardwalk and foundation system design has been reviewed and accepted by the Owner, the Contractor shall submit the final drawings. The designer of the boardwalk and foundation system is responsible for the review of any drawings prepared for fabrication. One set of all approved shop drawings shall be submitted to the Engineer's permanent records.

C. SUBMITTALS: Product Data: Submit Manufacturer's technical product data for railing components and accessories.

Manufacturer to supply submittal drawings for approval to include the following:

- 1. Section-thru details.
- 2. Mounting methods.
- 3. Typical Elevations.
- 4. Key plan layout.

D. SHOP DRAWINGS: Shop drawing showing actual field conditions and true elevation and location supplied after field verification.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Store products in manufacturer's unopened packaging until ready for installation.
- B. Field Measurements: Where handrails and railings are indicated to fit to other construction, check actual dimensions of other construction by accurate field measurements before fabrication; show recorded measurements on final shop drawings:
 - 1. Where field measurements cannot be made without delaying the railing fabrication and delivery, obtain guaranteed dimensions in writing by the Contractor and proceed with fabrication of products so as not to delay fabrication, delivery and installation.
- C. Coordinate fabrication and delivery schedule of handrails with construction progress and sequence to avoid delay of railing installation.

1.8 WARRANTY:

- A. Contractor will be responsible for installation defects associated with the boardwalk and abutment components, foundation system, and railings for a period of 12 calendar months from the date of final acceptance by the Owner.
- B. Boardwalk manufacturer shall warranty all precast concrete components against defects in material and workmanship for a period of ten years.

PART 2 - PRODUCTS

2.1 PRECAST CONCRETE:

Shall conform to the following:

- A. The minimum compressive strength of the concrete shall be 4000 psi measured at 28 days.
- B. All precast concrete components shall be air entrained composed of Portland cement, fine and course aggregates, admixtures and water. The air-entraining feature may be obtained by the use of either an air entraining Portland cement or an air entraining admixture. The entrained air-content shall be not less than four percent or more than seven percent.

2.2 TIMBER PILES

- A. Refer to Timber Boardwalk Special Provision for timber piles.

2.3 INSTALLATION

- A. Installation of the precast concrete boardwalk system and abutments, if applicable, shall be performed in accordance to the approved drawings and manufacturers installation instructions. Boardwalk manufacturer shall provide a field representative to review

installation instructions with the Contractor and Engineer and to certify that the installation has been performed according to the approved drawings and manufacturer's instructions.

PART 3 - METHOD OF MEASUREMENT AND BASIS OF PAYMENT

3.1 METHOD OF MEASUREMENT

The quantity for Precast Concrete Boardwalk to be paid for shall be measured on lump sum basis. No separate measurement will be made.

3.2 BASIS OF PAYMENT

A. Bid Alternate

As a substitution alternate the contractor shall furnish and install Precast Concrete Boardwalk with metal railings in lieu of Timber Boardwalk for Boardwalks #1, 2, 3, and 4.

The Precast Concrete Boardwalk with metal railing and all related components as described on the drawings, and in this Special Provision will be paid for at the contract lump sum price per Structure. Such price and payment will be full compensation for all work covered by the drawings and this Special Provision, and will include, but not be limited to, furnishing all engineering, labor, materials, equipment, delivery, and other incidentals necessary to complete this work.

B. Bid Alternate

As a substitution alternate the contractor shall furnish and install Precast Concrete Boardwalk with timber railings in lieu of Timber Boardwalk for Boardwalks #1, 2, 3, and 4.

The Precast Concrete Boardwalk with timber railing and all related components as described on the drawings, and in this Special Provision will be paid for at the contract lump sum price per Structure. Such price and payment will be full compensation for all work covered by the drawings and this Special Provision, and will include, but not be limited to, furnishing all engineering, labor, materials, equipment, delivery, and other incidentals necessary to complete this work.

C. Payment will be made under:

Bid Alternate: Precast Concrete Boardwalk with Metal Railing

- a. Precast Concrete Boardwalk #1 with Metal Railing - 26+82.00 -L1-__Lump Sum
- b. Precast Concrete Boardwalk #2 with Metal Railing - 28+50.94 -L1-__Lump Sum
- c. Precast Concrete Boardwalk #3 with Metal Railing - 116+51.14 -L4-__Lump Sum
- d. Precast Concrete Boardwalk #4 with Metal Railing - 118+36.00 -L4-__Lump Sum

Bid Alternate: Precast Concrete Boardwalk with Timber Railing

- a. Precast Concrete Boardwalk #1 with Timber Railing - 26+82.00 -L1-__Lump Sum
- b. Precast Concrete Boardwalk #2 with Timber Railing - 28+50.94 -L1-__Lump Sum
- c. Precast Concrete Boardwalk #3 with Timber Railing - 116+51.14 -L4-__Lump Sum
- d. Precast Concrete Boardwalk #4 with Timber Railing - 118+36.00 -L4-__Lump Sum

END SECTION

APPLICATION OF ANTI-GRAFFITI COATING

6/1/15

SP (Kimley-Horn and Associates, Inc.)

GENERAL

This work consists of preparing and cleaning concrete surfaces as well as furnishing and applying an anti-graffiti finish coating to the surfaces described herein. The anti-graffiti coating shall be applied to all surfaces indicated on the plans or as directed by the Engineer and shall be applied only after the surface preparation specified herein has been completed, inspected and approved by the Engineer.

Alternate coating methods may be submitted for review and approval.

MATERIALS

The anti-graffiti finish coating must be designed specifically for damp, uncured concrete. A copy of the manufacturer's Materials Safety Data Sheet and a copy of the manufacturer's printed instructions shall be presented to the Engineer at the time of delivery.

After application, the anti-graffiti coating shall be dry to the touch within 1 hour and shall achieve a final cure within 3 hours.

The color of the anti-graffiti coating shall be clear after full cure.

EB-5539 South Tar River Greenway, Phase 3

Provide one gallon of graffiti remover, thinners, dryers and all necessary components recommended by the manufacturer to the North Carolina Department of Transportation Materials and Tests Unit, Chemical Testing Engineer.

SURFACE PREPARATION

Prepare concrete surfaces in accordance with Section 420-17(B) and Section 442-12 of the Standard Specifications, respectively, or the manufacturer's recommendations, whichever is more restrictive. All surfaces to be coated shall be free of efflorescence, dirt, oil, curing compounds, release agents and other deleterious substances prior to the application of the coating.

Concrete curing compounds and release agents must be removed. Water blasting will be allowed; however, the blasting operation must not remove or damage the concrete.

Prior to application of the coating, all concrete surfaces to be coated shall be sprayed with water. If the water soaks into the concrete surfaces, the coating may be applied once all surfaces dry. If the water beads up and is repelled, the surfaces require further cleaning before application of the coating.

APPLICATION

The coating application, including equipment used, shall be in accordance with the manufacturer's recommendations. The coating shall be applied by qualified personnel with previous experience similar to the work outlined in the contract plans.

The material shall be thoroughly mixed in its original container and shall not be thinned.

Apply the anti-graffiti coating by brush, roller or airless spray when the ambient temperature is between 45° F and 90° F, and the surface temperature is between 50° F and 100° F. Ensure the surface is clean and dry before applying the anti-graffiti coating.

FINISHED PRODUCT

The minimum dry film thickness of the anti-graffiti coating shall be 2.0 mils.

BASIS OF PAYMENT

Anti-graffiti coating shall be applied to the face of each new retaining wall and vertical stem of the pile supported slab. Price and payment shall be full compensation for surface preparation, furnishing and applying the materials, labor, equipment and any incidentals necessary to complete this work.

Payment for the anti-graffiti coating will be made under the pay item for each retaining wall or pile supported slab structure and no separate payment will be made for the anti-graffiti coating.

TIMBER BOARDWALK

6/1/15

SP (Kimley-Horn and Associates, Inc.)

GENERAL

This section includes timber boardwalk superstructure, substructure, and timber approach railings.

All engineering, materials, construction, and fabrication shall meet the requirements of the drawings, this special provision, and the current edition of the North Carolina Department of Transportation Standard Specifications for Roads and Structures.

PERFORMANCE REQUIREMENTS

A. Structural Performance: The timber boardwalk, substructure, and foundations shall withstand the effects of gravity loads and the following loads and stresses within limits and under conditions indicated according to current edition of the AASHTO LRFD Guide Specification for the Design of Pedestrian Bridges, AASHTO LRFD Bridge Design Specifications, and the North Carolina Department of Transportation Structure Design Manual, at a minimum:

1. Dead Loads: Self-weight of superstructure.
2. Live Loads: Pedestrian load shall not be considered to act concurrently with vehicular load. The dynamic load allowance need not be considered for vehicular load.
 - a. Pedestrian Live Load = 90 psf
 - b. Vehicular Live Load:
H5 (Bridge, Boardwalk #1, and Boardwalk #2)
H10 (Boardwalk #3, and Boardwalk #4)
3. Railing Loads: Per AASHTO.
4. Seismic Loads: Per AASHTO.
5. Wind Loads: Per AASHTO.
6. Water Loads: Per AASHTO.
7. Temperature Loads: Per AASHTO/NCDOT.
8. Load Combinations: Per AASHTO.
9. Deflection Limits: Design framing system to withstand service loads without deflections greater than the following:

Floor system members (stringers): Vehicular and/or pedestrian loads = $\text{Span}/425$.
10. Vibration Limits: Per AASHTO.

B. Geometry:

1. Span:
 - a. Timber boardwalk has four sections as indicated on the drawings. Total length is measured along -L1-, or -L4-.

1. Boardwalk #1:
 - a) Begin Boardwalk STA. 26+82.00 -L1-
 - b) End Boardwalk STA. 27+85.87 -L1-
 - c) Total Length = 103.87'
 2. Boardwalk #2:
 - a) Begin Boardwalk STA. 28+50.94 -L1-
 - b) End Boardwalk STA. 30+20.94 -L1-
 - c) Total Length = 170.00'
 3. Boardwalk #3:
 - a) Begin Boardwalk STA. 116+51.14 -L4-
 - b) End Boardwalk STA. 116+71.14 -L4-
 - c) Total Length = 20.00'
 4. Boardwalk #4:
 - a) Begin Boardwalk STA. 118+36.00 -L4-
 - b) End Boardwalk STA. 118+56.00 -L4-
 - c) Total Length = 20.00'
- b. End bents and bents shall be laid out based on the superstructure requirements and the end bent timber wings shall catch the trail fill slopes.
2. Width:
 - a. The boardwalk width shall be 10'-0" for Boardwalk #1 and Boardwalk #2 and shall be measured from the inside face of safety railing elements.
 - b. The boardwalk width shall be 12'-0" for Boardwalk #3 and Boardwalk #4 and shall be measured from the inside face of safety railing elements.
 3. Boardwalk System Type:
 - a. The boardwalk shall be designed with timber according to typical section provided in the drawings and the following items:
 - 1) The boardwalk shall be designed utilizing stringers placed between cap beams.
 - 2) The boardwalk deck shall be timber. The maximum opening between decking members shall be 1/8". Each decking member shall be installed bark side up to prevent cupping.
 - 3) The top of the safety rail system or guardrail elements shall not be less than 54 inches above the deck (measured from the high point of the walking/riding surface). The safety system shall extend the full length of the boardwalk.
 - b. Substructure:

- 1) End bents and interior bents shall be a timber cap beam supported on timber piles. The piles shall have a minimum tip elevation below any stream scour to provide stability.
 - 2) For foundation recommendations and design information refer to the drawings and the Falcon Engineering Geotechnical Report dated May 12, 2015.
4. Railings:
- a. The safety railing system shall be placed on the structure to a minimum height of 54 inches above the deck surface. The railings shall be per the details provided on the drawings. The safety rail shall be designed to accommodate the required loads per AASHTO.
 - b. Timber approach railings shall be provided at each corner of the boardwalk. Approach railings shall be 8'-0" long, skewed at 15 degrees, and be 54 inches above the trail surface (measured from the high point of the walking/riding surface). Approach railings shall match the aesthetics of the timber boardwalk. The approach railings shall be per the details provided on the drawings. The safety rail shall be designed to accommodate the required loads per AASHTO.
5. Elevations:
- a. The bridge bent elevations shall be determined by the contractor's engineer such that the top of deck elevations meet the grade point elevations shown on the drawings.

SUBMITTALS

- A. Product Data: For each type of product used. Include construction details, material descriptions, dimensions of individual components for the timber boardwalk, substructure, and foundations.
- B. Shop Drawings: For the timber boardwalk superstructure, substructure, and foundations. Include drawings, elevations, sections, details, and attachments to other work specific to this project. All pertinent design information such as geometries, member sizes, bridge reactions, details, and general notes shall be clearly specified on the drawings. All drawings shall be signed and sealed by a Professional Engineer who is licensed to practice in the State of North Carolina.

The Contractor shall submit shop drawings for the timber boardwalk superstructure, substructure, and foundations to the City. The shop drawings will be reviewed by the City and the Engineer.

- C. Structural Calculations: For the timber boardwalk superstructure, substructure, and foundations. The calculations shall include all design information necessary to determine the structural adequacy of the boardwalk superstructure, substructure and foundations, and to demonstrate conformance with the current AASHTO code. All structural calculations shall be submitted to the City/Engineer for their review. All calculations shall be signed and sealed by a Professional Engineer who is licensed to practice in the State of North Carolina, and shall include the following, at a minimum:

EB-5539 South Tar River Greenway, Phase 3

1. Design calculations for the individual stringers and decking.
2. Stringer deflection checks.
3. Design calculations for individual railing components.
4. Design calculations for all required connections.
5. Design calculations for bridge substructure including cap beam and piling straps/lag bolts that connect the cap beam to the pile.
6. Design calculations for foundations. Foundation should be designed for the actual dead and live load acting on the boardwalk.

D. Qualification Data: For qualified contractor and Professional Engineer.

E. Product Test Reports: For the following:

1. Bolts, nuts, washers, fasteners, and connectors including mechanical properties and chemical analysis.

QUALITY ASSURANCE

A. Contractor Qualifications: A qualified contractor who is approved by NCDOT for such work.

B. Comply with current edition of the applicable provisions of the following specifications and documents:

1. AASHTO LRFD Bridge Design Specifications.
2. AASHTO LRFD Guide Specification for the Design of Pedestrian Bridges.
3. NCDOT North Carolina Bicycle Facilities Planning and Design Guidelines.
4. North Carolina Department of Transportation Structure Design Manual.
5. North Carolina Department of Transportation Standard Specifications and Special Provisions.

C. Pre-installation Conference: Conduct conference at Project Site prior to commencing construction to timber boardwalk.

D. The contractor shall be responsible for protecting the boardwalk components from damage during storage, handling, installation, and subsequent construction operations. Damage to the boardwalk components shall be grounds for rejection of the work.

COORDINATION

Coordinate installation of anchorage items to be embedded in or attached to other construction without delaying the work.

PRODUCTS

MATERIALS

- A. All piling, structural framing, decking, nailers, and pedestrian rail components shall be Pressure Treated Southern Pine surface dry (S4S) with a moisture content of 19% or less, meeting the requirements of Section 1082 of the NCDOT Standard Specifications, minimum grade shall be No. 1 dense for lumber 2” and 4” thick. Lumber 5” and thicker shall be minimum grade dense structural 65.
- B. Timber and lumber shall be treated with waterborne preservatives (CCA or ACQ) in accordance with AWWA Standard U1, Commodity Specification A, to the requirements of the following use categories:
 - 1. Piles: UC4C
 - 2. Backwalls, wingwalls, cap beams and stringers: UC4B
 - 3. Decking, pedestrian railing components, all other lumber: UC3B
- C. All fasteners, connectors and bolts shall be hot-dip galvanized and conform to ASTM A325, with nuts conforming to ASTM A563 and washers conforming to ASTM F436, unless noted otherwise.
- D. All saw cuts, bolts holes, and other holes shall be treated with appropriate preservative solution prior to installing bolts.

APPROACH RAILINGS

Timber approach railings shall be provided at each corner of the structure, as shown in the drawings. Approach railings shall be 8’-0” long, skewed at 15 degrees, and be 54 inches above the trail surface (measured from the high point of the walking/riding surface).

INSTALLATION

Construction of the boardwalk shall be performed so as to not allow debris to fall into the water.

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

METHOD OF MEASUREMENT

The quantity for Timber Boardwalk to be paid for shall be measured on lump sum basis per Structure. No separate measurement will be made.

BASIS OF PAYMENT

The Timber Boardwalk, approach railings, approach slabs, approach fills and all related components as described on the drawings, in this Special Provision, and referenced NCDOT Standard Specifications and Special Provisions will be paid for at the contract lump sum price for Timber Boardwalk. Such price and payment will be full compensation for all work covered by this Special Provision, the drawings, and applicable parts of the NCDOT Standard Specifications and Special Provisions and will include, but not be limited to, furnishing all labor, materials, equipment, delivery, and other incidentals necessary to complete this work.

Payment will be made under:

Timber Boardwalk #1 - 26+82.00 -L1-	_____	Lump Sum
Timber Boardwalk #2 - 28+50.94 -L1-	_____	Lump Sum
Timber Boardwalk #3 - 116+51.14 -L4-	_____	Lump Sum
Timber Boardwalk #4 - 118+36.00 -L4-	_____	Lump Sum

END OF SECTION

TIMBER CANOPIES

2/15/17

(SPECIAL)
SP (Kimley-Horn and Associates, Inc.)

1.0 GENERAL

1.1 SCOPE

These specifications are for four Timber Canopy structures that are mounted to the Pile Supported Slab show in the drawings and shall be regarded as minimum standards for construction.

All engineering, materials, construction, and fabrication shall meet the requirements of the drawings, this special provision, the current edition of the National Design Specifications for Wood Construction.

1.2 PERFORMANCE REQUIREMENTS

1.2.1 The pre-fabricated wood trusses shall withstand the effects of gravity loads and the following loads and under conditions indicated according the 2012 North Carolina Building Code, Minimum Design Loads for buildings and Other Structures (ASCE 7-05), and National Design Specification for Wood Construction (NDS 2010):

1. Dead Load: self-weight
2. Roof Live Load = 20 PSF
3. Ground Snow Load = 10 PSF
4. Wind Load:

- a. Basic Design Wind Velocity = 110 MPH
- b. Occupancy Classification Category – II
- c. Exposure Category = C
- d. Open Roof System
- e. All building components and cladding engineering by the component manufacturer's engineer for wind loads determined per the North Carolina State Building Code with the information provide above.

5. Future Loads: unless specifically noted, there are no provisions made for future floor, roofs, or other loads

1.3 GEOMETRY

Timber Canopies shall be the height, width(s) at the length(s) as shown on the drawings.

- Canopy 1: Station 124+24.05 -L4-
- Canopy 2: Station 124+34.06 -L4-
- Canopy 3: Station 124+60.18 -L4-
- Canopy 4: Station 124+70.18 -L4-

1.4 MEMBER COMPONENTS

Timber Canopies shall consist of timber columns with timber beams supporting pre-fabricated wood trusses. The roof shall be constructed with plywood sheathing and metal shingles.

1.5 ATTACHMENTS

Timber Canopy columns shall be attached to the pile supported slab per the connection details shown in the drawings. All post installed anchors shall be installed per manufacturer's recommendations.

1.6 SUBMITTAL DRAWINGS

1.6.1 Product Data: For each type of product used. Include construction details, material descriptions, and dimensions of individual components for the timber canopies.

1.6.2 Shop Drawings: For the timber canopies. Include drawings, elevations, sections, details, and attachments to other work specific to this project. The contractor shall submit shop drawings for the timber canopies to the City. The shop drawings will be reviewed by the City and the Engineer. Submit shop drawings for all trusses. Shop drawings shall indicate placement of framing member with type, size, number, location, and spacing. Shop drawings shall also indicated supplement bracing, splices, bridges, accessories and detail required for proper installation.

Shop drawings shall be prepared under the supervision of and signed and sealed by a registered professional engineer licensed in the state of North Carolina.

1.6.3 Structural Calculations: submit calculations for all trusses and their connections that are signed and sealed by a registered professional engineer licensed in the state of North Carolina.

1.7 QUALITY ASSURANCE

The contractor shall be responsible for protecting the timber canopy components from damage during storage, handling, installation, and subsequent construction operations. Damage to the timber canopies shall be grounds for rejection of the work.

1.8 COORDINATION

Timber Canopies shall be located at the specific location indicated on the drawings.

2.0 MATERIALS

Unless noted otherwise, all materials, construction, and inspection shall be in accordance with the latest edition of the National Design Specification for Wood Construction.

2.1 TIMBER

All columns, structural framing, and miscellaneous components shall be Pressure Treated Southern Pine surface dry (S4S) with a moisture content of 19% or less, Grade No. 1.

Timber and lumber shall be treated with waterborne preservatives (CCA or ACQ) in accordance with AWPA Standard U1, Commodity Specifications A, to the requirements of the following use categories:

Columns and beams: UC4B

All other lumber: UC3B

2.2 PRE-FABRICATED WOOD TRUSSES

All lumber in the pre-fabricated wood trusses shall conform to the latest edition of the National Design Specification for Wood Construction and TPI Design Specifications for Metal Plate Connected Wood Trusses.

Trusses shall be Southern Pine (PS20) graded to NFPA rules with maximum moisture content of 19% and minimum of Grade No. 2.

2.3 PLYWOOD

All plywood shall conform to U.S. product standard PS 1-95.

2.4 HIGH-STRENGTH BOLTS, NUTS, AND WASHERS

Bolts, nuts, and washers shall be in accordance with the National Design Specification for Wood Construction.

2.5 POST INSTALLED ANCHORS

All post installed anchors indicated on the drawings shall be installed per manufacture's recommendations.

3.0 BASIS OF PAYMENT

The Timber Canopies and all related components as described on the drawings, in this Special Provision, and referenced NCDOT Standard Specifications and Special Provisions will be paid for at the contract lump sum price. Such price and payment will be full compensation for all work covered by this Special Provision, the drawings, and applicable parts of the NCDOT Standard Specifications and Special Provisions and will include, but not be limited to, furnishing all engineering, labor, materials, equipment, delivery, and other incidentals necessary to complete this work including the chain link fence mounted to retaining wall stem.

Payment will be made under:

Timber Canopies _____ Lump Sum

WATER REPELLENTS

7/25/16

(SPECIAL)

SP (Kimley-Horn and Associates, Inc.)

PART 1 - GENERAL

1.1 SUMMARY

A. Scope:

1. These specifications are for waterproof sealant shown in the drawings and shall be regarded as minimum standards for construction.
2. All materials, construction, and fabrication shall meet the requirements of the drawings, this special provision, and the current edition of the Norther Carolina Department of Transportation Standard Specification for roads and Structures.

B. Section includes penetrating water-repellent for the following horizontal surfaces:

1. Exposed surface of existing concrete slab

1.2 BASIS OF PAYMENT

- A. Cleaning of the concrete surface to remove any substance that might interfere with the sealer and coating applications, testing the surface to see if it is sufficiently dry according to the manufacturer's written instructions, testing for pH level according to the manufacturer's written instructions, and application of penetrating silane sealer will be paid for in the contract lump sum price for the Pile Supported Slab and no separate payment will be made.

1.3 SUBMITTALS

- A. Product Data: For each type of product indicated.
 - 1. Include manufacturer's printed statement of VOC content.
 - 2. Include manufacturer's recommended number of coats for each type of substrate and spreading rate for each separate coat.
 - 3. Include manufacturer's specifications, surface preparation and application instructions, recommendations for water repellents for each surface to be treated, and protection and cleaning instructions. Include data substantiating that materials are recommended by manufacturer for applications indicated and comply with requirements.
- B. Qualification Data: Signed by Manufacturer certifying that the Applicator complies with requirements.
- C. Certification by water repellent manufacturer that products supplied complies with local regulations controlling use of VOCs.

1.4 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Manufacturer shall employ factory-trained technical representatives who are available for consultation and Project-site inspection and assistance at no additional cost.
- B. Applicator Qualifications: Engage an experienced applicator who employs only persons trained and approved by water repellent manufacturer for application of manufacturer's products.
- C. Preinstallation Conference: Conduct conference at Project site.

1.5 PROJECT CONDITIONS

- A. Limitations: Proceed with application only when the following existing and forecasted weather and substrate conditions permit water repellents to be applied according to manufacturers' written instructions and warranty requirements:

1. Concrete surfaces and mortar have cured for not less than 28 days.
2. Ambient temperature is above 40 deg F (4.4 deg C) and below 100 deg F (37.8 deg C) and will remain so for 24 hours.
3. Substrate is not frozen and substrate-surface temperature is above 40 deg F (4.4 deg C) and below 100 deg F (37.8 deg C).
4. Rain or snow is not predicted within 24 hours.
5. Not less than 24 hours have passed since surfaces were last wet.
6. Windy conditions do not exist that might cause water repellent to be blown onto vegetation or surfaces not intended to be treated.

1.6 WARRANTY

- A. General Warranty: The special warranty specified in this Article shall not deprive the Owner of other rights the Owner may have under other provisions of the Project Documents and shall be in addition to, and run concurrent with, other warranties made by the Contractor under requirements of the Project Documents.
- B. Special Penetrating Water Repellent Warranty: Submit a written warranty, executed by the applicator and water repellent manufacturer, covering materials and labor, agreeing to repair or replace materials that fail to provide water repellency within the specified warranty period. Warranty does not include deterioration or failure of sealer due to unusual weather phenomena, failure of prepared and treated substrate outside Contractor's control, formation of new joints and cracks in excess of 1/16 inch (1.5 mm) wide, fire, vandalism, or abuse by maintenance equipment.
 1. Warranty Period: 5 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PENETRATING WATER REPELLENTS

- A. Material Requirements:
 1. Absorption: Minimum 90% reduction of absorption after 24 hours in comparison of treated and untreated specimens
 - a. Concrete Unit Masonry: ASTM C 140
 - b. Hardened Concrete: ASTM C 642
 2. Water-Vapor Transmission: Maximum 10% reduction in rate of vapor transmission in comparison of treated and untreated specimens, per ASTM E 96.
 3. Durability: Maximum 5% loss of water repellency after 2500 hours of weathering in comparison to specimens before weathers, per ASTM G 53
 4. Chloride-Ion Intrusion in Concrete: Transportation Research Board, National Research Council's NCHRP Report 244, Series II tests.
 - a. Reduction of Water Absorption: 80%

- b. Reduction in Chloride Content: 85%
- B. Silane, Penetrating Water Repellent: Clear, containing 100 percent solids of alkyltrialkoxysilanes; with no solvent carrier; and with 400 g/L or less of VOCs.
 - 1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
 - a. MasterProtect H 1000; Master Builders Solutions
 - b. Protectosil BHN or CIT; Evonik Industries
 - c. Euclid Baracade Silane 100; The Euclid Chemical Company.
 - d. Klereseal 9100-S; Pecora Corporation.
 - e. Sikaguard 705 L: Sika Corporation, Construction Product Division.
 - f. Iso-Flex 618-100 CRS; LymTal International, Inc.
 - g. Any manufacturer approved by the Engineer as a provider of an equal product and equal or better service.
 - 2. Specified products should be applied at a rate not to exceed 125 sq. ft/gal.
- C. VOC-Complying Water Repellents: Products complying with local regulations controlling use of VOCs, as certified by manufacturer.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Applicator present, for compliance with requirements and conditions affecting performance of the Work.
 - 1. Verify that surfaces are clean and dry according to water-repellent manufacturer's requirements.
 - 2. Inspect for previously applied treatments that may inhibit penetration or performance of water repellents.
 - 3. Verify that there is no efflorescence or other removable residues that would be trapped beneath the application of water repellent.
 - 4. Verify that required repairs are complete, cured, and dry before applying water repellent.
- B. Test pH level according to water-repellent manufacturer's written instructions to ensure chemical bond to silica-containing or siliceous minerals.
- C. Test Application: Before performing water-repellent work, including bulk purchase and delivery of products, prepare a small application in an unobtrusive location and in a manner approved by Engineer to demonstrate the final effect (visual, physical, and chemical) of planned application. Proceed with work only after Engineer approves test application or as otherwise directed.

1. Revisions of planned application, if any, as requested by Engineer, will be by Change Order if they constitute a departure from requirements of Project Documents at the time of contracting.
- D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Cleaning: Before application of water repellent, clean substrate of substances that could impair penetration or performance of product according to water-repellent manufacturer's written instructions.
1. Concrete: Remove oil, curing compounds, laitance, and other substances that inhibit penetration or performance of water repellents according to ASTM E 1857.
 2. Use shot blasting or as required per manufacturer's recommendations.
- B. Protect adjoining work, including mortar and sealant bond surfaces, from spillage or blow-over of water repellent. Cover adjoining and nearby surfaces of aluminum and glass if there is the possibility of water repellent being deposited on surfaces. Cover live vegetation.
- C. Coordination with Sealants: Do not apply water repellent until sealants for joints adjacent to surfaces receiving water-repellent treatment have been installed and cured.
1. Water-repellent work may precede sealant application only if sealant adhesion and compatibility have been tested and verified using substrate, water repellent, and sealant materials identical to those used in the work.

3.3 APPLICATION

- A. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect the substrate before application of water repellent and to instruct Applicator on the product and application method to be used.
- B. Install 3 trial sections of each type of sealer to verify treated surface is not glazing as result of sealer application. If application of sealer causes glazing at trial section, Contractor shall contact sealer manufacturer to obtain written recommendations for solving problem.
- C. Apply a heavy-saturation coating of water repellent, on surfaces indicated for treatment, using 15 psi- (103 kPa-) pressure spray with a fan-type spray nozzle to the point of saturation. Apply coating in dual passes of uniform, overlapping strokes. Remove excess material; do not allow material to puddle beyond saturation. Comply with manufacturer's written instructions for application procedure unless otherwise indicated.

3.4 FIELD QUALITY CONTROL

- A. Testing of Water-Repellent: Contractor reserves the right to invoke the following procedure at any time and as often as Contractor deems necessary during the period when water repellent is being applied:
 - 1. Contractor shall engage a qualified testing agency to sample water-repellent being used. Samples of material delivered to Project site will be taken, identified, sealed, and certified in presence of Contractor.
 - 2. Testing agency will perform tests for compliance of water-repellent with product requirements.

3.5 CLEANING

- A. Immediately clean water repellent from adjoining surfaces and surfaces soiled or damaged by water-repellent application as work progresses. Correct damage to work of other trades caused by water-repellent application, as approved by Engineer.
- B. Comply with manufacturer's written cleaning instructions.

PROJECT SPECIAL PROVISION

(10-18-95) (Rev. 3-21-17)

Z-1

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.

PERMIT

AUTHORITY GRANTING THE PERMIT

Water Quality (401)	Division of Environmental Management, DEQ State of North Carolina
Buffer Certification	Division of Environmental Management, DEQ State of North Carolina
Erosion Control	Department of Energy, Mineral, and Land Resources, DENR, State of North Carolina

The Contractor shall comply with all applicable permit conditions during construction of this project. Those conditions marked by * are the responsibility of the Department and the Contractor has no responsibility in accomplishing those conditions.

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 *2012 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.

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(E) of the *2012 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:

<u>Restricted Noxious Weed</u>	<u>Limitations per Lb. Of Seed</u>	<u>Restricted Noxious Weed</u>	<u>Limitations per Lb. of Seed</u>
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) | Bermudagrass |
| Kobe Lespedeza | 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

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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
Crownvetch
Pensacola Bahiagrass
Creeping Red Fescue

Japanese Millet
Reed Canary Grass
Zoysia

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

(1-17-12) (Rev. 04-21-15)

Z-4

Revise the *2012 Standard Specifications* as follows:

Division 2

Page 2-7, line 31, Article 215-2 Construction Methods, replace “Article 107-26” with “Article 107-25”.

Page 2-17, Article 226-3, Measurement and Payment, line 2, delete “pipe culverts,”.

Page 2-20, Subarticle 230-4(B), Contractor Furnished Sources, change references as follows: **Line 1**, replace “(4) Buffer Zone” with “(c) Buffer Zone”; **Line 12**, replace “(5) Evaluation for Potential Wetlands and Endangered Species” with “(d) Evaluation for Potential Wetlands and Endangered Species”; and **Line 33**, replace “(6) Approval” with “(4) Approval”.

Division 3

Page 3-1, after line 15, Article 300-2 Materials, replace “1032-9(F)” with “1032-6(F)”.

Division 4

Page 4-77, line 27, Subarticle 452-3(C) Concrete Coping, replace “sheet pile” with “reinforcement”.

Division 6

Page 6-7, line 31, Article 609-3 Field Verification of Mixture and Job Mix Formula Adjustments, replace “30” with “45”.

Page 6-10, line 42, Subarticle 609-6(C)(2), replace “Subarticle 609-6(E)” with “Subarticle 609-6(D)”.

Page 6-11, Table 609-1 Control Limits, replace “Max. Spec. Limit” for the Target Source of $P_{0.075}/P_{be}$ Ratio with “1.0”.

Page 6-40, Article 650-2 Materials, replace “Subarticle 1012-1(F)” with “Subarticle 1012-1(E)”

Division 7

Page 7-1, Article 700-3, CONCRETE HAULING EQUIPMENT, line 33, replace “competition” with “completion”.

Division 8

EB-5539 South Tar River Greenway, Phase 3

Page 8-23, line 10, Article 838-2 Materials, replace “Portland Cement Concrete, Class B” with “Portland Cement Concrete, Class A”.

Division 10

Page 10-166, Article 1081-3 Hot Bitumen, replace “Table 1081-16” with “Table 1081-2”, replace “Table 1081-17” with “Table 1081-3”, and replace “Table 1081-18” with “Table 1081-4”.

Division 12

Page 12-7, Table 1205-3, add “FOR THERMOPLASTIC” to the end of the title.

Page 12-8, Subarticle 1205-5(B), line 13, replace “Table 1205-2” with “Table 1205-4”.

Page 12-8, Table 1205-4 and 1205-5, replace “THERMOPLASTIC” in the title of these tables with “POLYUREA”.

Page 12-9, Subarticle 1205-6(B), line 21, replace “Table 1205-4” with “Table 1205-6”.

Page 12-11, Subarticle 1205-8(C), line 25, replace “Table 1205-5” with “Table 1205-7”.

Division 15

Page 15-4, Subarticle 1505-3(F) Backfilling, line 26, replace “Subarticle 235-4(C)” with “Subarticle 235-3(C)”.

Page 15-6, Subarticle 1510-3(B), after line 21, replace the allowable leakage formula with the following: $W = LD\sqrt{P} \div 148,000$

Page 15-6, Subarticle 1510-3(B), line 32, delete “may be performed concurrently or” and replace with “shall be performed”.

Page 15-17, Subarticle 1540-3(E), line 27, delete “Type 1”.

Division 17

Page 17-26, line 42, Subarticle 1731-3(D) Termination and Splicing within Interconnect Center, delete this subarticle.

Revise the *2012 Roadway Standard Drawings* as follows:

1633.01 Sheet 1 of 1, English Standard Drawing for Matting Installation, replace “1633.01” with “1631.01”.

STANDARD SPECIAL PROVISION

PLANT AND PEST QUARANTINES

(Imported Fire Ant, Gypsy Moth, Witchweed, And Other Noxious Weeds)

(3-18-03) (Rev. 12-20-16)

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 <http://www.ncagr.gov/plantindustry/> 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, or other noxious weeds.

STANDARD SPECIAL PROVISION

AWARD OF CONTRACT

(6-28-77)(Rev 2/16/2015)

Z-6

“The North Carolina Department of Transportation, in accordance with the provisions of *Title VI of the Civil Rights Act of 1964* (78 Stat. 252) and the Regulations of the Department of Transportation (*49 C.F.R., Part 21*), issued pursuant to such act, hereby notifies all bidders that it will affirmatively insure that the contract entered into pursuant to this advertisement will be awarded to the lowest responsible bidder without discrimination on the ground of race, color, or national origin”.

TITLE VI AND NONDISCRIMINATION

I. Title VI Assurance

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:

(1) Compliance with Regulations: The contractor shall comply with the Regulation relative to nondiscrimination in Federally-assisted programs of the Department of Transportation (hereinafter, "DOT") Title 49, Code of Federal Regulations, Part 21, as they may be amended from time to time, (hereinafter referred to as the Regulations), which are herein incorporated by reference and made a part of this contract.

(2) 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 either directly or indirectly in the discrimination prohibited by section 21.5 of the Regulations, including employment practices when the contract covers a program set forth in Appendix B of the Regulations.

(3) 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 Regulations relative to nondiscrimination on the grounds of race, color, or national origin.

(4) Information and Reports: The contractor shall provide all information and reports required by the Regulations or 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 North Carolina Department of Transportation (NCDOT) or the Federal Highway Administration (FHWA) to be pertinent to ascertain compliance with such Regulations, orders and instructions. Where any information required of a contractor is in the exclusive possession of another who fails or refuses to furnish this information the contractor shall so certify to the NCDOT, or the FHWA as appropriate, and shall set forth what efforts it has made to obtain the information.

(5) Sanctions for Noncompliance: In the event of the contractor's noncompliance with the nondiscrimination provisions of this contract, the NCDOT shall impose such contract sanctions as it or the FHWA may determine to be appropriate, including, but not limited to:

- (a) Withholding of payments to the contractor under the contract until the contractor complies, and/or
- (b) Cancellation, termination or suspension of the contract, in whole or in part.

(6) Incorporation of Provisions: The contractor shall include the provisions of paragraphs (1) through (6) in every subcontract, including procurements of materials and leases of equipment, unless exempt by the Regulations, or directives issued pursuant thereto.

The contractor shall take such action with respect to any subcontractor procurement as the NCDOT or the FHWA may direct as a means of enforcing such provisions including sanctions for noncompliance: provided, however, that, in the event a contractor becomes involved in, or is threatened with, litigation with a subcontractor or supplier as a result of such direction, the contractor may request the NCDOT to enter into such litigation to protect the interests of the NCDOT, and, in addition, the contractor may request the United States to enter into such litigation to protect the interests of the United States.

II. Title VI Nondiscrimination Program

Title VI of the 1964 Civil Rights Act, 42 U.S.C. 2000d, provides that: “No person in the United States shall, on the grounds of race, color, or national origin, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving Federal financial assistance.” The broader application of nondiscrimination law is found in other statutes, executive orders, and regulations (see Section III, Pertinent Nondiscrimination Authorities), which provide additional protections based on age, sex, disability and religion. In addition, the 1987 Civil Rights Restoration Act extends nondiscrimination coverage to all programs and activities of federal-aid recipients and contractors, including those that are not federally-funded.

Nondiscrimination Assurance

The North Carolina Department of Transportation (NCDOT) hereby gives assurance that no person shall on the ground of race, color, national origin, sex, age, and disability, be excluded from participation in, be denied the benefits of, or be otherwise subjected to discrimination under any program or activity conducted by the recipient, as provided by Title VI of the Civil Rights Act of 1964, the Civil Rights Restoration Act of 1987, and any other related Civil Rights authorities, whether those programs and activities are federally funded or not.

Obligation

During the performance of this contract, the Contractor and its subcontractors are responsible for complying with NCDOT’s Title VI Program. The Contractor must ensure that NCDOT’s Notice of Nondiscrimination is posted in conspicuous locations accessible to all employees and subcontractors on the jobsite, along with the Contractor’s own Equal Employment Opportunity (EEO) Policy Statement. The Contractor shall physically incorporate this “**TITLE VI AND NONDISCRIMINATION**” language, in its entirety, into all its subcontracts on federally-assisted and state-funded NCDOT-owned projects, and ensure its inclusion by subcontractors into all subsequent lower tier subcontracts. The Contractor and its subcontractors shall also physically incorporate the **FHWA-1273**, in its entirety, into all subcontracts and subsequent lower tier subcontracts on Federal-aid highway construction contracts only. The Contractor is also responsible for making its subcontractors aware of NCDOT’s Discrimination Complaints Process, as follows:

FILING OF COMPLAINTS

1. **Applicability** – These complaint procedures apply to the beneficiaries of the NCDOT’s programs, activities, and services, including, but not limited to, members of the public, contractors, subcontractors, consultants, and other sub-recipients of federal and state funds.
2. **Eligibility** – Any person or class of persons who believes he/she has been subjected to discrimination or retaliation prohibited by any of the Civil Rights authorities, based upon race, color, sex, age, national origin, or disability, may file a written complaint with NCDOT's Civil Rights office. The law prohibits intimidation or retaliation of any sort. The complaint may be filed by the affected individual or a representative, and must be in writing.
3. **Time Limits and Filing Options** – A complaint must be filed no later than 180 calendar days after the following:
 - The date of the alleged act of discrimination; or
 - The date when the person(s) became aware of the alleged discrimination; or
 - 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 other discrimination complaints may be submitted to the following entities:

- **North Carolina Department of Transportation**, Office of Equal Opportunity & Workforce Services (EOWS), External Civil Rights Section, 1511 Mail Service Center, Raleigh, NC 27699-1511; 919-508-1808 or toll free 800-522-0453
- **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

Federal Highway Administration, North Carolina Division Office, 310 New Bern Avenue, Suite 410, Raleigh, NC 27601, 919-747-7010

Federal Highway Administration, Office of Civil Rights, 1200 New Jersey Avenue, SE, 8th Floor, E81-314, Washington, DC 20590, 202-366-0693 / 366-0752

Federal Transit Administration, Office of Civil Rights, ATTN: Title VI Program Coordinator, East Bldg. 5th Floor – TCR, 1200 New Jersey Avenue, SE, Washington, DC 20590

Federal Aviation Administration, Office of Civil Rights, 800 Independence Avenue, SW, Washington, DC 20591, 202-267-3258

- **US Department of Justice**, Special Litigation Section, Civil Rights Division, 950 Pennsylvania Avenue, NW, Washington, DC 20530, 202-514-6255 or toll free 877-218-5228

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 EOWS at the phone number above 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, sex, age, or disability. The term “basis” refers to the complainant’s membership in a protected group category. Contact this office to receive a Discrimination Complaint Form

Protected Categories	Definition	Examples	Applicable Statutes and Regulations	
			FHWA	FTA
Race	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	Title VI of the Civil Rights Act of 1964; 49 CFR Part 21; Circular 4702.1B
Color	Color of skin, including shade of skin within a racial group	Black, White, brown, yellow, etc.		
National Origin	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	Women and Men	1973 Federal-Aid Highway Act	Title IX of the Education Amendments of 1972
Age	Persons of any age	21 year old person	Age Discrimination Act of 1975	
Disability	Physical or mental impairment, permanent or temporary, or perceived.	Blind, alcoholic, paraplegic, epileptic, diabetic, arthritic	Section 504 of the Rehabilitation Act of 1973; Americans with Disabilities Act of 1990	

III. 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:

- 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.
- 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);

- Federal-Aid Highway Act of 1973, (23 U.S.C. § 324 *et seq.*), (prohibits discrimination on the basis of sex);
- 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;
- The Age Discrimination Act of 1975, as amended, (42 U.S.C. § 6101 *et seq.*), (prohibits discrimination on the basis of age);
- 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);
- 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);
- 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;
- The Federal Aviation Administration’s Non-discrimination statute (49 U.S.C. § 47123) (prohibits discrimination on the basis of race, color, national origin, and sex);
- Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, which ensures discrimination 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;
- 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);
- 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.*).
- 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);
- 49 CFR Part 26, regulation to ensure nondiscrimination in the award and administration of DOT-assisted contracts in the Department's highway, transit, and airport financial assistance programs, as regards the use of Disadvantaged Business Enterprises (DBEs);
- Form FHWA-1273, “Required Contract Provisions,” a collection of contract provisions and proposal notices that are generally applicable to *all Federal-aid construction projects* and must be made a part of, and physically incorporated into, *all federally-assisted contracts*, as well as appropriate subcontracts and purchase orders, particularly Sections II (Nondiscrimination) and III (Nonsegregated Facilities).

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 or 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
Wayne County
Wilson County

Area 025 23.5%

Columbus County
Duplin County
Onslow County
Pender County

Area 026 33.5%

Bladen County
Hoke County
Richmond County
Robeson County
Sampson County
Scotland County

Area 027 24.7%

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

Area 029 15.7%

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

Area 0480 8.5%

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

Area 5720 26.6%

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

Area 1300 16.2%

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

Pitt County

Goals for Female

Participation in Each Trade

(Statewide) 6.9%

STANDARD SPECIAL PROVISION

REQUIRED CONTRACT PROVISIONS FEDERAL - AID CONSTRUCTION CONTRACTS

FHWA - 1273 Electronic Version - May 1, 2012

Z-8

- I. General
- II. Nondiscrimination
- III. Nonsegregated 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. Compliance with Governmentwide Suspension and Debarment Requirements
- XI. Certification Regarding Use of Contract Funds for Lobbying

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 (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).

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.

Form FHWA-1273 must be included in all Federal-aid design-build 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). 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 bid proposal or request for proposal 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).
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.
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. The term Federal-aid highway does not include roadways functionally classified as local roads or rural minor collectors.

II. NONDISCRIMINATION

The provisions of this section related to 23 CFR Part 230 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 60, 29 CFR 1625-1627, Title 23 USC Section 140, the Rehabilitation Act of 1973, as amended (29 USC 794), Title VI of the Civil Rights Act of 1964, as amended, 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 60, and 29 CFR 1625-1627. The contracting agency and the FHWA have the authority and the responsibility to ensure compliance with Title 23 USC Section 140, the Rehabilitation Act of 1973, as amended (29 USC 794), and Title VI of the Civil Rights Act of 1964, as amended, 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 230, 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 (28 CFR 35, 29 CFR 1630, 29 CFR 1625-1627, 41 CFR 60 and 49 CFR 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 35 and 29 CFR 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.
- 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, 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 who 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.
 - 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, national origin, age or disability. The following procedures shall be followed:
 - a. The contractor will conduct periodic inspections of project sites to insure 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. **Pitts:** 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. 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, 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, 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 Disabilities Act and all rules and regulations established there under. 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, 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 and 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. **Assurance Required by 49 CFR 26.13(b):**
 - a. The requirements of 49 CFR Part 26 and the State DOT's U.S. DOT-approved DBE program are incorporated by reference.
 - b. The contractor 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 contractor to 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 contracting agency deems appropriate.
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 non-minority 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 \$10,000 or more.

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, 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). The requirements apply to all projects located within the right-of-way of a roadway that is functionally classified as Federal-aid highway. This excludes roadways functionally classified as local roads or rural minor collectors, which are exempt. Contracting agencies may elect to apply these requirements to other projects.

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

- a. All laborers and mechanics employed or working upon the site of the work, 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 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.

Contributions made or costs reasonably anticipated for bona fide fringe benefits under section 1(b)(2) of the Davis-Bacon Act on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of paragraph 1.d. 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 shall be paid the appropriate wage rate and fringe benefits on the wage determination for the classification of work actually performed, without regard to skill, except as provided in 29 CFR 5.5(a)(4). 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 classification and wage rates conformed under paragraph 1.b. of this section) and the Davis-Bacon poster (WH-1321) shall 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. (1) The contracting officer shall 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 shall be classified in conformance with the wage determination. The contracting officer shall approve an additional classification and wage rate and fringe benefits therefore 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 utilized 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) 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 shall be sent by the contracting officer to the Administrator of the Wage and Hour Division, Employment Standards Administration, U.S. Department of Labor, Washington, DC 20210. 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.
 - (3) 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 shall refer the questions, including the views of all interested parties and the recommendation of the contracting officer, to the Wage and Hour Administrator for determination. The Wage and Hour 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.
 - (4) The wage rate (including fringe benefits where appropriate) determined pursuant to paragraphs 1.b.(2) or 1.b.(3) of this section, shall 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.
- c. 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 shall either pay the benefit as stated in the wage determination or shall pay another bona fide fringe benefit or an hourly cash equivalent thereof.
 - d. 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, 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.
2. **Withholding.** The contracting agency shall upon its own action or upon written request of an authorized representative of the Department of Labor, withhold or cause to be withheld from the contractor under this contract, or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to Davis-Bacon prevailing wage requirements, which is held by the same prime contractor, so much of the accrued payments or advances as may be considered necessary to pay laborers and mechanics, including apprentices, trainees, and helpers, employed by the contractor or any subcontractor the full amount of wages required by the contract. In the event of failure to pay any laborer or mechanic, including any apprentice, trainee, or helper, employed or working on the site of the work, all or part of the wages required by the contract, the contracting agency may, 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.
 3. **Payrolls and basic records**
 - a. Payrolls and basic records relating thereto shall be maintained by the contractor during the course of the work and preserved for a period of three years thereafter for all laborers and mechanics working at the site of the work. Such records shall contain the name, address, and social security number of each such worker, his or her correct classification, 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 section 1(b)(2)(B) of the Davis-Bacon Act), daily and weekly number of hours worked, deductions made and actual wages paid. Whenever the Secretary of Labor has found under 29 CFR 5.5(a)(1)(iv) 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 section 1(b)(2)(B) of the Davis-Bacon Act, the contractor shall 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. Contractors employing apprentices or trainees under approved programs shall maintain written evidence of the registration of apprenticeship programs and certification of trainee programs, the registration of the apprentices and trainees, and the ratios and wage rates prescribed in the applicable programs.
 - b. (1) The contractor shall submit weekly for each week in which any contract work is performed a copy of all payrolls to the contracting agency. The payrolls submitted shall set out accurately and completely all of the information required to be maintained under 29 CFR 5.5(a)(3)(i), except that full social security numbers and home addresses shall not be included on weekly transmittals. Instead the

payrolls shall only need to include an individually identifying number for each employee (e.g. , the last four digits of the employee's social security number). The required weekly payroll information may be submitted in any form desired. Optional Form WH-347 is available for this purpose from the Wage and Hour Division Web site at <http://www.dol.gov/esa/whd/forms/wh347instr.htm> or its successor site. The prime contractor is responsible for the submission of copies of payrolls by all subcontractors. Contractors and subcontractors shall maintain the full social security number and current address of each covered worker, and shall provide them upon request to the contracting agency for transmission to the State DOT, the FHWA or the Wage and Hour Division of the Department of Labor for purposes of an investigation or audit of compliance with prevailing wage requirements. It is not a violation of this section for a prime contractor to require a subcontractor to provide addresses and social security numbers to the prime contractor for its own records, without weekly submission to the contracting agency.

- (2) Each payroll submitted shall be accompanied by a "Statement of Compliance," signed by the contractor or subcontractor or his or her agent who pays or supervises the payment of the persons employed under the contract and shall certify the following:
 - (i) That the payroll for the payroll period contains the information required to be provided under §5.5 (a)(3)(ii) of Regulations, 29 CFR part 5, the appropriate information is being maintained under §5.5 (a)(3)(i) of Regulations, 29 CFR part 5, and that such information is correct and complete;
 - (ii) That each laborer or mechanic (including each helper, apprentice, and trainee) employed 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 Regulations, 29 CFR part 3;
 - (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 of work performed, as specified in the applicable wage determination incorporated into the contract.
 - (3) The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH-347 shall satisfy the requirement for submission of the "Statement of Compliance" required by paragraph 3.b.(2) of this section.
 - (4) The falsification of any of the above certifications may subject the contractor or subcontractor to civil or criminal prosecution under section 1001 of title 18 and section 231 of title 31 of the United States Code.
- c. The contractor or subcontractor shall make the records required under paragraph 3.a. of this section available for inspection, copying, or transcription by authorized representatives of the contracting agency, the State DOT, the FHWA, or the Department of Labor, and shall permit such representatives to interview employees during working hours on the job. If the contractor or subcontractor fails to submit the required records or to make them available, the FHWA may, after written notice to the contractor, the contracting agency or the State DOT, 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 may be grounds for debarment action pursuant to 29 CFR 5.12.
- 4. Apprentices and trainees**
- a. Apprentices (programs of the USDOL). Apprentices will be permitted to work at less than the predetermined rate for the work they performed 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 Training, Employer and Labor Services, or with a State Apprenticeship Agency recognized by the Office, or if a person is employed in his or her first 90 days of probationary employment as an apprentice in such an apprenticeship program, who is not individually registered in the program, but who has been certified by the Office of Apprenticeship Training, Employer and Labor Services or a State Apprenticeship Agency (where appropriate) to be eligible for probationary employment as an apprentice.
- The allowable ratio of apprentices to journeymen on the job site in any craft classification shall not be greater than the ratio permitted to the contractor as to the entire work force under the registered program. Any worker listed on a payroll at an apprentice wage rate, who is not registered or otherwise employed as stated above, shall 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 the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. Where a contractor is performing construction on a project in a locality other than that in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyman's hourly rate) specified in the contractor's or subcontractor's registered program shall be observed.
- Every apprentice must be paid at not less than the rate specified in the registered program for the apprentice's level of progress, expressed as a percentage of the journeymen hourly rate specified in the applicable wage determination. Apprentices shall 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, fringes shall be paid in accordance with that determination.
- In the event the Office of Apprenticeship Training, Employer and Labor Services, or a State Apprenticeship Agency recognized by the Office, withdraws approval of an apprenticeship program, the contractor will no longer be permitted to utilize apprentices at less than the applicable predetermined rate for the work performed until an acceptable program is approved.
- b. Trainees (programs of the USDOL). Except as provided in 29 CFR 5.16, trainees will not be permitted to work at less than the predetermined rate for the work performed unless they are employed pursuant to and individually registered in a program which has received prior approval, evidenced by formal certification by the U.S. Department of Labor, Employment and Training Administration.
- The ratio of trainees to journeymen on the job site shall not be greater than permitted under the plan approved by the Employment and Training Administration.
- Every trainee must be paid at not less than the rate specified in the approved program for the trainee's level of progress, expressed as a percentage of the journeyman hourly rate specified in the applicable wage determination. Trainees shall be paid fringe benefits in accordance with the provisions of the trainee program. If the trainee program does not mention fringe benefits, trainees shall be paid the full amount of fringe benefits listed on the wage determination unless the Administrator of the Wage and Hour Division determines that there is an apprenticeship program associated with the corresponding journeyman wage rate on the wage determination which provides for less than full fringe benefits for apprentices. Any employee listed on the payroll at a trainee rate who is not registered and participating in a training plan approved by the Employment and Training Administration shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any trainee performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed.

In the event the Employment and Training Administration withdraws approval of a training program, the contractor will no longer be permitted to utilize trainees at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

- c. Equal employment opportunity. The utilization of apprentices, trainees and journeymen under this part shall be in conformity with the equal employment opportunity requirements of Executive Order 11246, as amended, and 29 CFR part 30.
 - d. 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. 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 journeymen 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.
 6. **Subcontracts.** The contractor or subcontractor shall insert Form FHWA-1273 in any subcontracts and also require the subcontractors to include Form FHWA-1273 in any lower tier subcontracts. The prime contractor shall be responsible for the compliance by any subcontractor or lower tier subcontractor with all the contract clauses in 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.
 9. **Disputes concerning labor standards.** 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 he or she) 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 section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).
 - b. No part of this contract shall be subcontracted to any person or firm ineligible for award of a Government contract by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).
 - c. The penalty for making false statements is prescribed in the U.S. Criminal Code, 18 U.S.C. 1001.

V. CONTRACT WORK HOURS AND SAFETY STANDARDS ACT

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 watchmen 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.
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. 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 watchmen and guards, employed in violation of the clause set forth in paragraph (1.) of this section, in the sum of \$10 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.
3. **Withholding for unpaid wages and liquidated damages.** The FHWA or the contracting agency shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld, from any moneys payable on account of work performed by the contractor or subcontractor under any such contract or 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, which is held by the same prime contractor, such sums as may be determined to be necessary to satisfy any liabilities of such contractor or subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in paragraph (2.) of this section.
4. **Subcontracts.** The contractor or subcontractor shall insert in any subcontracts the clauses set forth in paragraph (1.) through (4.) of this section and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with the clauses set forth in paragraphs (1.) through (4.) of this section.

VI. SUBLETTING OR ASSIGNING THE CONTRACT

This provision is applicable to all Federal-aid construction contracts on the National Highway System.

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" 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:

- (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.
2. 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. 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.
 5. The 30% self-performance requirement of paragraph (1) is not applicable to design-build contracts; however, contracting agencies may establish their own self-performance requirements.

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 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.
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 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).
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 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 1, 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

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts.

By submission of this bid/proposal or the execution of this contract, or subcontract, as appropriate, the bidder, proposer, Federal-aid construction contractor, or subcontractor, as appropriate, will be deemed to have stipulated as follows:

1. That any person who is or will be utilized in the performance of this contract is not prohibited from receiving an award due to a violation of Section 508 of the Clean Water Act or Section 306 of the Clean Air Act.
2. That the contractor agrees to include or cause to be included the requirements of paragraph (1) of this Section X in every subcontract, and further agrees to take such action as the contracting agency may direct as a means of enforcing such requirements.

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.

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.
- 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.
- 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.
- 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 and 1200. "First Tier Covered Transactions" refers to any covered transaction between a grantee or subgrantee 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 grantee or subgrantee 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.
- 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.
- 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. 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 Excluded Parties List System website (<https://www.epls.gov/>), which is compiled by the General Services Administration.
- 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. 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) 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;
 - (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; 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.
- b. Where the prospective participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

2. 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)

- a. By signing and submitting this proposal, the prospective lower tier 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.
- 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 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 grantee or subgrantee of Federal funds and a participant (such as the prime or general contractor). "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 grantee or subgrantee 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.
- 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.
- 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 Excluded Parties List System website (<https://www.epls.gov/>), which is compiled by the General Services Administration.
- 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.

* * * * *

Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion--Lower Tier Participants:

1. The prospective lower tier participant certifies, by submission of this proposal, that neither it nor its principals is presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participating in covered transactions by any Federal department or agency.
2. Where the prospective lower tier participant is unable to certify to any of the statements in this certification, such prospective participant shall 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 20).

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.

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

NAME CHANGE FOR NCDENR

(1-19-16)

Z-11

Wherever in the 2012 Standard Specifications, Project Special Provisions, Standard Special Provisions, Permits or Plans that reference is made to “NCDENR” or “North Carolina Department of Environment and Natural Resources”, replace with “NCDEQ” or North Carolina Department of Environmental Quality” respectively, as the case may be.

STANDARD SPECIAL PROVISION
MINIMUM WAGES
GENERAL DECISION NC170103 01/06/2017 NC103

Z-103

Date: January 6, 2017

General Decision Number: NC170103 01/06/2017 NC103

Superseded General Decision Numbers: NC20160103

State: North Carolina

Construction Type: HIGHWAY

COUNTIES:

Brunswick	Greene	Onslow
Cumberland	Hoke	Pender
Currituck	Johnston	Pitt
Edgecombe	Nash	Wake
Franklin	New Hanover	Wayne

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: Under Executive Order (EO) 13658, an hourly minimum wage of \$10.20 for calendar year 2017 that 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, 2015. If this contract is covered by the EO, the contractor must pay all workers in any classification listed on this wage determination at least \$10.20 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract for calendar year 2017. The EO minimum wage rate will be adjusted annually. Additional information on contractor requirements and worker protections under the EO is available at www.dol.gov/whd/govcontracts.

Modification Number
0

Publication Date
01/06/2017

SUNC2014-005 11/17/2014

	Rates	Fringes
BLASTER	21.04	
CARPENTER	13.72	
CEMENT MASON/CONCRETE FINISHER	14.48	
ELECTRICIAN		
Electrician	17.97	
Telecommunications Technician	16.79	.63
IRONWORKER	16.02	
LABORER		
Asphalt Raker and Spreader	12.46	
Asphalt Screed/Jackman	14.33	
Carpenter Tender	12.88	

	Rates	Fringes
Cement Mason/Concrete Finisher Tender	12.54	
Common or General	10.20	
Guardrail/Fence Installer	12.87	
Pipelayer	12.17	
Traffic Signal/Lighting Installer	14.89	
PAINTER		
Bridge	24.57	
POWER EQUIPMENT OPERATORS		
Asphalt Broom Tractor	11.85	
Bulldozer Fine	17.04	
Bulldozer Rough	14.34	
Concrete Grinder/Groover	20.34	2.30
Crane Boom Trucks	20.54	
Crane Other	20.08	
Crane Rough/All-Terrain	20.67	
Drill Operator Rock	14.38	
Drill Operator Structure	21.14	
Excavator Fine	16.60	
Excavator Rough	14.00	
Grader/Blade Fine	18.47	
Grader/Blade Rough	14.62	
Loader 2 Cubic Yards or Less	13.76	
Loader Greater Than 2 Cubic Yards	14.14	
Material Transfer Vehicle (Shuttle Buggy)	15.18	
Mechanic	17.55	
Milling Machine	15.36	
Off-Road Hauler/Water Tanker	11.36	
Oiler/Greaser	13.55	
Pavement Marking Equipment	12.11	
Paver Asphalt	15.59	
Paver Concrete	18.20	
Roller Asphalt Breakdown	12.45	
Roller Asphalt Finish	13.85	
Roller Other	11.36	
Scraper Finish	12.71	
Scraper Rough	11.35	
Slip Form Machine	16.50	
Tack Truck/Distributor Operator	14.52	
TRUCK DRIVER		
GVWR of 26,000 Lbs or Less	11.12	
GVWR of 26,000 Lbs or Greater	12.37	

Welders – Receive rate prescribed for craft performing operation to which welding is incidental.

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 www.dol.gov/whd/govcontracts.

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 Regional Office for the area in which the survey was conducted because those Regional Offices have responsibility for the Davis-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

FORMS

BID FORM (City Greenville)

PROJECT IDENTIFICATION: EB-5539 SOUTH TAR RIVER GREENWAY, PHASE 3
(SECTION A)
GREENVILLE, NORTH CAROLINA

THIS BID IS SUBMITTED TO: CITY OF GREENVILLE PUBLIC WORKS
DEPARTMENT
1500 BEATTY STREET
GREENVILLE, NORTH CAROLINA

1. The undersigned BIDDER proposes and agrees, if this Bid is accepted, to enter into an agreement with OWNER in the form included in the Contract Documents to perform and furnish all Work as specified or indicated in the Contract Documents for the Bid Price and within the Bid Times indicated in this Bid and in accordance with the other terms and conditions of the Contract Documents.
2. BIDDER accepts all of the terms and conditions of the Advertisement or Invitation to Bid and Instructions to Bidders, including without limitation those dealing with the disposition of Bid security. This Bid will remain subject to acceptance for ninety days after the day of Bid opening. BIDDER will sign and deliver the required number of counterparts of the Agreement with the Bonds and other documents required by the Bidding Requirements within ten days after the date of the OWNER'S Notice of Award.
3. In submitting this Bid, BIDDER represents, as more fully set forth in the Agreement, that:
 - a. BIDDER has examined and carefully studied the Bidding Documents, and the following Addenda receipt of all, which is hereby acknowledged: (List Addenda by Addendum Number and Date)

<u>Addendum Number</u>	<u>Date</u>
_____	_____
_____	_____
_____	_____

- b. BIDDER has visited the site and become familiar with and is satisfied as to the general, local, and site conditions that may affect cost, progress, performance and furnishing of Work.
 - c. BIDDER is familiar with and is satisfied as to all federal, state and local Laws and Regulations that may affect cost, progress, performance and furnishing of Work.
 - d. BIDDER has carefully studied all reports of exploration and tests of subsurface conditions at or contiguous to the site and all drawings of physical conditions in or relating to existing surface or subsurface structures at or contiguous to the site (Except Underground Facilities) which may

be available as stated in Article 102-7 of the NCDOT Standard Specifications for Roads and Structures (2012 edition). BIDDER acknowledges that such reports and drawings are not Contract Documents and may not be complete for BIDDER'S purposes. BIDDER acknowledges that OWNER and Engineer do not assume responsibility for the accuracy or completeness of information and data shown or indicated in the Bidding Documents with respect to Underground Facilities at or contiguous to the site. BIDDER has obtained and carefully studied (or assumes responsibility for not having done so) all such additional or supplementary examinations, investigations, explorations, tests studies and data concerning conditions (surface, subsurface and Underground Facilities) at or contiguous to the site or otherwise which may affect cost progress, performance or furnishing of the Work or which relate to any aspect of the means, methods, techniques, sequences and procedures of construction to be employed by BIDDER and safety precautions and programs incident thereto. BIDDER does not consider that any additional examinations, investigations, explorations, tests, studies or data are necessary for the determination of this Bid for performance and furnishing of the Work in accordance with the times, price, and other terms and conditions of the Contract Documents.

- e. BIDDER is aware of the general nature of Work to be performance by Owner and others at the site that relates to Work for which this Bid is submitted as indicated in the Contract Documents.
 - f. BIDDER has correlated the information know to BIDDER, information and observations obtained from visits to the site, reports and drawings identified in the Contract Documents and all additional examination, investigation, explorations, tests, studies and data with the Contract Documents.
 - g. BIDDER has given ENGINEER written notice of all conflicts, errors, ambiguities or discrepancies that BIDDER has discovered in the Contract Documents and the written resolution thereof by ENGINEER is acceptable to BIDDER, and the Contract Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performing and furnishing the Work for which this Bid is submitted.
 - h. This Bid is genuine and not made in the interest of or on behalf of any undisclosed person, firm or corporation and is not submitted in conformity with any agreement or rules of any group, association, organization or corporation; BIDDER has not directly or indirectly induced or solicited any other BIDDER to submit a false or sham Bid; BIDDER has not sought by collusion to obtain for itself any advantages over any other BIDDER or over OWNER.
4. BIDDER will complete the Work in accordance with the Contract Documents for the following unit price(s):

All specified cash allowances are included in the price(s) set forth.

5. BIDDER acknowledges that quantities for unit prices work are not guaranteed and final payment will be based on actual quantities determined as provided in the Contract Documents. BIDDER agrees that the Work will be completed and ready for final payment in accordance

with the Contract Documents on or before the dates or number of calendar days indicated in the Agreement.

6. BIDDER accepts the provisions of the Agreement as to liquidated damages in the event of failure to complete the Work within the times specified in the Agreement.
7. The following documents are attached to and make a condition of this Bid:

Required Bid Security in the form of Bid Bond or Certified Check

8. Terms used in this Bid which are defined in the General Conditions or Instructions will have the meanings indicated in the General Conditions or Instructions.

SUBMITTED on the ____ day of _____, 201__.

By _____ being a _____
Contractor's firm name Sole Proprietorship, Corporation, Limited Liability
Company, Partnership, Joint Venture

State Contractor License No. _____

BY: _____

TITLE: _____
(Owner, Partner, or Corporate President or Vice-President only)

ADDRESS: _____

ATTEST: _____

TITLE: _____ (SEAL)
(Corporate Secretary or Assistant Secretary Only)

**EB-5539 SOUTH TAR RIVER GREENWAY, PHASE 3A & B
 BID SHEET**

**CITY OF GREENVILLE, NORTH CAROLINA
 1500 BEATTY STREET, GREENVILLE, NC 27834**

BID OPENING: OCTOBER 19, 2017 AT 10 AM

BASE BID – PHASE 3A						
Line Item	Sec No	Pay Item	Quantity	Unit	Price	Amount
1	800	Mobilization	1	LS		
2	801	Construction Surveying	1	LS		
3	226	Grading	1	LS		
4	226	Supplementary Clearing and Grubbing	0.5	ACR		
5	226	Undercut Excavation	2690	CY		
6	265	Select Granular Material	3175	CY		
7	270	Geotextile for Soil Stabilization	3660	SY		
8	SP	Temporary Shoring	250	SF		
9	300	Foundation Conditioning Material, Minor Structures	50	TON		
10	300	Foundation Conditioning Geotextile	130	SY		
11	310	15" RC Pipe Culverts, Class IV	112	LF		
12	310	18" RC Pipe Culverts, Class IV	106	LF		
13	310	24" RC Pipe Culverts, Class IV	32	LF		
14	310	36" RC Pipe Culverts, Class IV	56	LF		
15	310	18" Pipe End Section	2	EA		
16	310	18" CS Pipe Culverts, 0.064" Thick	20	LF		
17	310	24" CS Pipe Culverts, 0.064" Thick	56	LF		
18	SP	15" Flared End Section	1	EA		
19	SP	18" Flared End Section	3	EA		
20	340	Pipe Removal	120	LF		
21	SP	#57 Stone	100	TON		
22	520	Aggregate Base Course	2850	TON		

BASE BID – PHASE 3A						
Line Item	Sec No	Pay Item	Quantity	Unit	Price	Amount
23	545	Incidental Stone Base	50	TON		
24	610	Asphalt Concrete Intermediate Course, Type I19.0B	17	TON		
25	610	Asphalt Concrete Surface Course, Type S9.5B	15	TON		
26	610	Asphalt Concrete Surface Course, Type SF9.5A	370	TON		
27	620	Asphalt Binder for Plant Mix	27	TON		
28	816	Shoulder Drain	140	LF		
29	816	4" Shoulder Drain Pipe	140	LF		
30	816	4" Outlet Pipe for Shoulder Drains	50	LF		
31	816	Concrete Pad for Shoulder Drain Pipe Outlet	2	EA		
32	838	Endwalls	9	CY		
33	SP	Flowable Fill	10	CY		
34	840	Masonry Drainage Structures	9	EA		
35	840	Masonry Drainage Structures	12	LF		
36	840	Frame with Grate, STD 840.03, Type E and F	4	EA		
37	840	Frame with Cover, STD 840.54	6	EA		
38	SP	Extra Depth Dual 36" Junction Box	1	EA		
39	846	2'-0" Concrete Curb & Gutter	505	LF		
40	848	4" Concrete Sidewalk	5	SY		
41	SP	6" Reinforced Concrete Sidewalk	25	SY		
42	SP	6" Reinforced Concrete Approach Slab	45	SY		
43	848	Concrete Curb Ramp (NCDOT)	1	EA		
44	848	6" Concrete Driveway	130	SY		
45	SP	Concrete Step Tread	4	LF		
46	SP	Metal Hand Rail	75	LF		
47	SP	Post and Cable Fence	140	LF		

BASE BID – PHASE 3A						
Line Item	Sec No	Pay Item	Quantity	Unit	Price	Amount
48	SP	Wood Bollard	43	EA		
49	858	Adjustment of Manholes	2	EA		
50	859	Convert Existing Catch Basin to Junction Box with MH	1	EA		
51	SP	96" Chain Link Fence	290	LF		
52	876	Rip Rap, Class B	74	TON		
53	SP	Remove and Reset Rip Rap	70	SY		
54	876	Geotextile for Drainage	1070	SY		
55	901	Contractor Furnished, Type E Sign	52	SF		
56	903	Supports, 3-LB Steel U-Channel	255	LF		
57	904	Sign Erection, Type E	17	EA		
58	SP	Trailhead/Entrance Sign	1	EA		
59	SP	Mile Marker Sign	1	EA		
60	1105	Temporary Traffic Control	1	LS		
61	SP	Adjust Cleanout	2	EA		
62	1520	16" Sanitary Gravity Sewer	20	LF		
63	1520	20" Sanitary Gravity Sewer	60	LF		
64	SP	Bypass Pumping	2	EA		
65	SP	Root Prune	4	EA		
66	SP	Trim Tree	2	EA		
67	1605	Temporary Silt Fence	6300	LF		
68	1610	Stone for Erosion Control, Class A	375	TON		
69	1610	Stone for Erosion Control, Class B	50	TON		
70	1610	Sediment Control Stone	100	TON		
71	1615	Temporary Mulching	4	ACR		
72	1620	Seed for Temporary Seeding	250	LB		

BASE BID – PHASE 3A						
Line Item	Sec No	Pay Item	Quantity	Unit	Price	Amount
73	1620	Fertilizer for Temporary Seeding	2	TON		
74	SP	Safety Fence/Tree Protection Fence	3880	LF		
75	1631	Matting for Erosion Control	3000	SY		
76	SP	Mud Mat	100	LF		
77	SP	Permanent Soil Reinforcement Mat	25	SY		
78	1632	1/4" Hardware Cloth	380	LF		
79	SP	Wattle	40	LF		
80	1660	Seeding & Mulching	6	ACR		
81	1660	Mowing	3	ACR		
82	1661	Seed for Repair Seeding	250	LB		
83	1661	Fertilizer for Repair Seeding	0.25	TON		
84	1662	Seed for Supplemental Seeding	150	LB		
85	1665	Fertilizer Topdressing	3.00	TON		
86	SP	Response for Erosion Control	40	EA		
87	SP	Concrete Washout Structure	2	EA		
88	SP	2" PVC Conduit	8220	LF		
89	SP	Street Light Handhole	17	EA		
90	SP	Timber Boardwalk #3 - 116+51.14 -L4-	1	LS		
91	SP	Timber Boardwalk #4 - 118+36.00 -L4-	1	LS		
92	SP	Retaining Wall #2 - 111+10.00 -L4-	900	SF		
93	SP	Pile Supported Slab - 124+30.56 -L4-	1	LS		
94	SP	Timber Canopies	1	LS		

PHASE 3A TOTAL BASE BID: \$ _____

BID SUBMITTED BY: _____

Contractor/Date

PHASE 3A - ALTERNATE BID 1 – REPLACE DRAINAGE STRUCTURE 0906						
Line Item	Sec No	Pay Item	Quantity	Unit	Price	Amount
1	840	Masonry Drainage Structures	1	EA		
2	840	Masonry Drainage Structures	2	LF		
3	840	Frame with Cover, STD 840.54	1	EA		

PHASE 3A - ALTERNATE BID 1: \$ _____

BID SUBMITTED BY: _____

Contractor/Date

PHASE 3A - ALTERNATE BID 2- FAIRFAX AVE. TRAILHEAD						
Line Item	Sec No	Pay Item	Quantity	Unit	Price	Amount
1	800	Mobilization	1			
2	801	Construction Surveying	1			
3	226	Grading	1			
4	520	Aggregate Base Course	145			
5	610	Asphalt Concrete Surface Course, Type S9.5B	100			
6	620	Asphalt Binder for Plant Mix	10			
7	846	2'-0" Concrete Curb & Gutter	465			
8	846	Concrete Valley Curb	70			
9	846	18" Concrete Ribbon Curb	50			
10	SP	Precast Concrete Wheel Stops	6			
11	846	4" Concrete Sidewalk	90			
12	848	Concrete Curb Ramp (NCDOT)	2			
13	SP	Metal Hand Rail	105			
14	901	Contractor Furnished, Type E Sign	12			
15	903	Supports, 3-LB Steel U-Channel	28			

PHASE 3A - ALTERNATE BID 2- FAIRFAX AVE TRAILHEAD						
Line Item	Sec No	Pay Item	Quantity	Unit	Price	Amount
16	904	Sign Erection, Type E	2	EA		
17	SP	Single Sided Directional Sign	1	EA		
18	SP	Trailhead/Entrance Sign	1	EA		
19	1205	Thermoplastic Pavement Marking Lines, 4", 120 mils	410	LF		
20	1205	Thermoplastic Pavement Marking Lines, 24", 120 mils	15	LF		
21	1205	Thermoplastic Pavement Marking Symbols	3	EA		
22	1615	Temporary Mulching	0.3	ACR		
23	1660	Seeding & Mulching	0.3	ACR		

PHASE 3A - ALTERNATE BID 2: \$ _____

BID SUBMITTED BY: _____

Contractor/Date

PHASE 3A - ALTERNATE BID 3- WHITE STREET TRAIL CONNECTION						
Line Item	Sec No	Pay Item	Quantity	Unit	Price	Amount
1	800	Mobilization	1	LS		
2	801	Construction Surveying	1	LS		
3	226	Grading	1	LS		
4	846	4" Concrete Sidewalk	45	SY		
5	SP	Concrete Step Tread	330	LF		
6	SP	Concrete Buttress Wall	151	LF		
7	SP	Metal Hand Rail	151	LF		
8	SP	Single Sided Directional Sign	2	EA		
9	1520	16" Sanitary Gravity Sewer	20	LF		
10	SP	Bypass Pumping	1	EA		
11	SP	Safety Fence/Tree Protection Fence	275	LF		
12	1615	Temporary Mulching	0.1	ACR		
13	1660	Seeding & Mulching	0.1	ACR		

PHASE 3A - ALTERNATE BID 3: \$ _____

BID SUBMITTED BY: _____
 Contractor/Date

PHASE 3A - ALTERNATE BID 4- PRECAST CONCRETE BOARDWALK WITH METAL RAILING						
Line Item	Sec No	Pay Item	Quantity	Unit	Price	Amount
1	SP	Precast Concrete Boardwalk #3 with Metal Railing - 116+51.14 -L4-	1	LS		
2	SP	Precast Concrete Boardwalk #4 with Metal Railing- 118+36.00 -L4-	1	LS		

PHASE 3A - ALTERNATE BID 4: \$ _____

BID SUBMITTED BY: _____
 Contractor/Date

PHASE 3A - ALTERNATE BID 5- PRECAST CONCRETE BOARDWALK WITH TIMBER RAILING						
Line Item	Sec No	Pay Item	Quantity	Unit	Price	Amount
1	SP	Precast Concrete Boardwalk #3 with Timber Railing - 116+51.14 -L4-	1	LS		
2	SP	Precast Concrete Boardwalk #4 with Timber Railing- 118+36.00 -L4-	1	LS		

PHASE 3A - ALTERNATE BID 5: \$ _____

BID SUBMITTED BY: _____
 Contractor/Date

PHASE 3B – ALTERNATE 6						
Line Item	Sec No	Pay Item	Quantity	Unit	Price	Amount
1	800	Mobilization	1	LS		
2	801	Construction Surveying	1	LS		
3	226	Grading	1	LS		
4	226	Supplementary Clearing and Grubbing	0.5	ACR		
5	226	Undercut Excavation	2560	CY		
6	265	Select Granular Material	3075	CY		
7	270	Geotextile for Soil Stabilization	3840	SY		
8	300	Foundation Conditioning Material, Minor Structures	20	TON		
9	300	Foundation Conditioning Geotextile	50	SY		
10	310	15" RC Pipe Culverts, Class IV	36	LF		
11	310	18" RC Pipe Culverts, Class IV	66	LF		
12	310	24" RC Pipe Culverts, Class IV	28	LF		
13	SP	18" Flared End Section	4	EA		
14	SP	24" Flared End Section	2	EA		
15	SP	#57 Stone	100	TON		

PHASE 3B – ALTERNATE 6						
Line Item	Sec No	Pay Item	Quantity	Unit	Price	Amount
16	462	6" Slope Protection	70	SY		
17	520	Aggregate Base Course	2550	TON		
18	545	Incidental Stone Base	50	TON		
19	610	Asphalt Concrete Intermediate Course, Type I19.0B	3	TON		
20	610	Asphalt Concrete Surface Course, Type S9.5B	5	TON		
21	610	Asphalt Concrete Surface Course, Type SF9.5A	330	TON		
22	620	Asphalt Binder for Plant Mix	23	TON		
23	816	Shoulder Drain	720	LF		
24	816	4" Shoulder Drain Pipe	720	LF		
25	816	4" Outlet Pipe for Shoulder Drains	50	LF		
26	816	Concrete Pad for Shoulder Drain Pipe Outlet	2	EA		
27	840	Masonry Drainage Structures	2	EA		
28	840	Masonry Drainage Structures	2	LF		
29	840	Frame with Grate, STD 840.24	1	EA		
30	840	Frame with Two Grates, STD 840.16	1	EA		
31	846	2'-0" Concrete Curb & Gutter	20	LF		
32	848	4" Concrete Sidewalk	10	SY		
33	SP	6" Reinforced Concrete Sidewalk	585	SY		
34	SP	6" Reinforced Concrete Approach Slab	70	SY		
35	848	Concrete Multi-Use Path Curb Ramp	1	EA		
36	SP	Post and Cable Fence	1370	LF		
37	SP	Hinged Bollard	2	EA		
38	SP	Wood Bollard	77	EA		
39	859	Convert Existing Drop Inlet to Junction Box with MH	1	EA		
40	SP	72" Chain Link Fence	80	LF		

PHASE 3B – ALTERNATE 6						
Line Item	Sec No	Pay Item	Quantity	Unit	Price	Amount
41	867	Chain Link Fence Reset	650	LF		
42	SP	Remove and Reset Gate	1	EA		
43	876	Rip Rap, Class II	123	TON		
44	876	Rip Rap, Class B	13	TON		
45	SP	Remove and Reset Rip Rap	90	SY		
46	876	Geotextile for Drainage	1490	SY		
47	SP	Preformed Scour Hole with Level Spreader Apron	1	EA		
48	901	Contractor Furnished, Type E Sign	41	SF		
49	903	Supports, 3-LB Steel U-Channel	240	LF		
50	904	Sign Erection, Type E	16	EA		
51	SP	Trailhead/Entrance Sign	1	EA		
52	SP	Mile Marker Sign	2	EA		
53	1205	Thermoplastic Pavement Marking Lines, 4", 120 mils	25	LF		
54	SP	Adjust Air Release Valve Structure	1	EA		
55	1605	Temporary Silt Fence	9000	LF		
56	1610	Stone for Erosion Control, Class A	475	TON		
57	1610	Stone for Erosion Control, Class B	100	TON		
58	1610	Sediment Control Stone	175	TON		
59	1615	Temporary Mulching	3	ACR		
60	1620	Seed for Temporary Seeding	250	LB		
61	1620	Fertilizer for Temporary Seeding	0.50	TON		
62	SP	Safety Fence/Tree Protection Fence	1450	LF		
63	1631	Matting for Erosion Control	1800	SY		
64	SP	Mud Mat	400	LF		
65	SP	Permanent Soil Reinforcement Mat	139	SY		

PHASE 3B – ALTERNATE 6						
Line Item	Sec No	Pay Item	Quantity	Unit	Price	Amount
66	1632	1/4" Hardware Cloth	265	LF		
67	1639	Special Stilling Basins	4	EA		
68	1660	Seeding & Mulching	5	ACR		
69	1660	Mowing	3	ACR		
70	1661	Seed for Repair Seeding	250	LB		
71	1661	Fertilizer for Repair Seeding	0.25	TON		
72	1662	Seed for Supplemental Seeding	150	LB		
73	1665	Fertilizer Topdressing	3.00	TON		
74	SP	Response for Erosion Control	35	EA		
75	SP	Concrete Washout Structure	2	EA		
76	1715	Directional Drill Polyethylene Conduit, 2 (2" Conduit)	405	LF		
77	SP	2" PVC Conduit	8120	LF		
78	SP	Street Light Handhole	20	EA		
79	SP	Timber Boardwalk #1 - 26+82.00 -L1-	1	LS		
80	SP	Timber Boardwalk #2 - 28+50.94 -L1-	1	LS		
81	SP	Pedestrian Bridge - 52+89.00 -L2-	1	LS		
82	SP	Retaining Wall #1 - 30+20.94 -L1-	4290	SF		

PHASE 3B - ALTERNATE BID 6: \$ _____

BID SUBMITTED BY: _____
 Contractor/Date

PHASE 3B - ALTERNATE BID 7- THIRD STREET TRAIL CONNECTION						
Line Item	Sec No	Pay Item	Quantity	Unit	Price	Amount
1	800	Mobilization	1	LS		
2	801	Construction Surveying	1	LS		
3	226	Grading	1	LS		
4	310	18" RC Pipe Culverts, Class IV	24	LF		
5	SP	18" Flared End Section	2	EA		
6	520	Aggregate Base Course	45	TON		
7	660	Asphalt Surface Treatment, Mat Coat, #6M Stone	120	SY		
8	SP	Single Sided Directional Sign	1	EA		
9	SP	Trailhead/Entrance Sign	1	EA		
10	SP	Hinged Bollard	1	EA		
11	SP	Wood Bollard	2	EA		
12	876	Rip Rap, Class B	3	TON		
13	876	Geotextile for Drainage	8	SY		
14	1605	Temporary Silt Fence	275	LF		
15	1615	Temporary Mulching	0.1	ACR		
16	SP	Mud Mat	50	LF		
17	1660	Seeding & Mulching	0.1	ACR		

PHASE 3B - ALTERNATE BID 7: \$ _____

BID SUBMITTED BY: _____

Contractor/Date

PHASE 3B - ALTERNATE BID 8- PRECAST CONCRETE BOARDWALK WITH METAL RAILING						
Line Item	Sec No	Pay Item	Quantity	Unit	Price	Amount
1	SP	Precast Concrete Boardwalk #1 with Metal Railing - 26+82.00 -L1-	1	LS		
2	SP	Precast Concrete Boardwalk #2 with Metal Railing - 28+50.94 -L1-	1	LS		

PHASE 3B - ALTERNATE BID 8: \$ _____

BID SUBMITTED BY: _____
 Contractor/Date

PHASE 3B - ALTERNATE BID 9- PRECAST CONCRETE BOARDWALK WITH TIMBER RAILING						
Line Item	Sec No	Pay Item	Quantity	Unit	Price	Amount
1	SP	Precast Concrete Boardwalk #1 with Timber Railing - 26+82.00 -L1-	1	LS		
2	SP	Precast Concrete Boardwalk #2 with Timber Railing - 28+50.94 -L1-	1	LS		

PHASE 3B - ALTERNATE BID 9: \$ _____

BID SUBMITTED BY: _____
 Contractor/Date

DEBARMENT CERTIFICATION OF BIDDERS
EXECUTION OF BID

NON-COLLUSION AFFIDAVIT, DEBARMENT CERTIFICATION AND GIFT BAN CERTIFICATION

CORPORATION

The person executing the bid, on behalf of the Bidder, being duly sworn, solemnly swears (or affirms) that neither he, nor any official, agent or employee of the bidder 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 bidder has not been convicted of violating *N.C.G.S. § 133-24* within the last three years, and that the Bidder intends to do the work with its own bonafide employees or subcontractors and is not bidding for the benefit of another contractor.

In addition, execution of this bid in the proper manner also constitutes the Bidder's certification of 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 CONTRACTOR

Full name of Corporation

Address as Prequalified

Attest _____
Secretary/Assistant Secretary
Select appropriate title

By _____
President/Vice President/Assistant Vice President
Select appropriate title

Print or type Signer's name

Print or type Signer's name

CORPORATE SEAL

AFFIDAVIT MUST BE NOTARIZED

Subscribed and sworn to before me this the

_____ day of _____ 20__.

NOTARY SEAL

Signature of Notary Public

of _____ County

State of _____

My Commission Expires: _____

EXECUTION OF BID
NON-COLLUSION AFFIDAVIT, DEBARMENT CERTIFICATION AND GIFT BAN CERTIFICATION

PARTNERSHIP

The person executing the bid, on behalf of the Bidder, being duly sworn, solemnly swears (or affirms) that neither he, nor any official, agent or employee of the bidder 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 bidder has not been convicted of violating *N.C.G.S. § 133-24* within the last three years, and that the Bidder intends to do the work with its own bonafide employees or subcontractors and is not bidding for the benefit of another contractor.

In addition, execution of this bid in the proper manner also constitutes the Bidder's certification of 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 CONTRACTOR

Full Name of Partnership

Address as Prequalified

Signature of Witness

By

Signature of Partner

Print or type Signer's name

Print or type Signer's name

AFFIDAVIT MUST BE NOTARIZED

Subscribed and sworn to before me this the _____
_____ day of _____ 20__.

NOTARY SEAL

Signature of Notary Public

of _____ County

State of _____

My Commission Expires: _____

EXECUTION OF BID
NON-COLLUSION AFFIDAVIT, DEBARMENT CERTIFICATION AND GIFT BAN CERTIFICATION

LIMITED LIABILITY COMPANY

The person executing the bid, on behalf of the Bidder, being duly sworn, solemnly swears (or affirms) that neither he, nor any official, agent or employee of the bidder 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 bidder has not been convicted of violating *N.C.G.S. § 133-24* within the last three years, and that the Bidder intends to do the work with its own bonafide employees or subcontractors and is not bidding for the benefit of another contractor.

In addition, execution of this bid in the proper manner also constitutes the Bidder's certification of 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 CONTRACTOR

_____ Full Name of Firm

_____ Address as Prequalified

_____ Signature of Witness

_____ Signature of Member/Manager/Authorized Agent
Select appropriate title

_____ Print or type Signer's name

_____ Print or type Signer's Name

AFFIDAVIT MUST BE NOTARIZED

Subscribed and sworn to before me this the

NOTARY SEAL

_____ day of _____ 20__.

_____ Signature of Notary Public

of _____ County

State of _____

My Commission Expires: _____

**EXECUTION OF BID
NON-COLLUSION AFFIDAVIT, DEBARMENT CERTIFICATION AND GIFT BAN
CERTIFICATION**

JOINT VENTURE (2) or (3)

The person executing the bid, on behalf of the Bidder, being duly sworn, solemnly swears (or affirms) that neither he, nor any official, agent or employee of the bidder 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 bidder has not been convicted of violating N.C.G.S. § 133-24 within the last three years, and that the Bidder intends to do the work with its own bonafide employees or subcontractors and is not bidding for the benefit of another contractor.

In addition, execution of this bid in the proper manner also constitutes the Bidder's certification of 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 CONTRACTOR

Instructions: **2 Joint Venturers** Fill in lines (1), (2) and (3) and execute. **3 Joint Venturers** Fill in lines (1), (2), (3) and (4) and execute. On Line (1), fill in the name of the Joint Venture Company. On Line (2), fill in the name of one of the joint venturers and execute below in the appropriate manner. On Line (3), print or type the name of the other joint venturer and execute below in the appropriate manner. On Line (4), fill in the name of the third joint venturer, if applicable and execute below in the appropriate manner.

(1) _____
Name of Joint Venture

(2) _____
Name of Contractor

Address as Prequalified

Signature of Witness or Attest By Signature of Contractor

Print or type Signer's name Print or type Signer's name

If Corporation, affix Corporate Seal and

(3) _____
Name of Contractor

Address as Prequalified

Signature of Witness or Attest By Signature of Contractor

Print or type Signer's name Print or type Signer's name

If Corporation, affix Corporate Seal and

(4) _____
Name of Contractor (for 3 Joint Venture only)

Address as Prequalified

Signature of Witness or Attest By Signature of Contractor

Print or type Signer's name Print or type Signer's name

If Corporation, affix Corporate Seal

NOTARY SEAL
Affidavit must be notarized for Line (2)
Subscribed and sworn to before me this
_____ day of _____ 20____

Signature of Notary Public
of _____ County
State of _____
My Commission Expires: _____

NOTARY SEAL
Affidavit must be notarized for Line (3)
Subscribed and sworn to before me this
_____ day of _____ 20____

Signature of Notary Public
of _____ County
State of _____
My Commission Expires: _____

NOTARY SEAL
Affidavit must be notarized for Line (4)
Subscribed and sworn to before me this
_____ day of _____ 20____

Signature of Notary Public
of _____ County
State of _____
My Commission Expires: _____

EXECUTION OF BID
NON-COLLUSION AFFIDAVIT, DEBARMENT CERTIFICATION AND GIFT BAN CERTIFICATION

INDIVIDUAL DOING BUSINESS UNDER A FIRM NAME

The person executing the bid, on behalf of the Bidder, being duly sworn, solemnly swears (or affirms) that neither he, nor any official, agent or employee of the bidder 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 bidder has not been convicted of violating *N.C.G.S. § 133-24* within the last three years, and that the Bidder intends to do the work with its own bonafide employees or subcontractors and is not bidding for the benefit of another contractor.

In addition, execution of this bid in the proper manner also constitutes the Bidder's certification of 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 CONTRACTOR

Name of Contractor

_____ Individual name

Trading and doing business as

_____ Full name of Firm

_____ Address as Prequalified

_____ Signature of Witness

_____ Signature of Contractor, Individually

_____ Print or type Signer's name

_____ Print or type Signer's name

AFFIDAVIT MUST BE NOTARIZED

Subscribed and sworn to before me this the

NOTARY SEAL

_____ day of _____ 20__.

_____ Signature of Notary Public

of _____ County

State of _____

My Commission Expires: _____

EXECUTION OF BID
NON-COLLUSION AFFIDAVIT, DEBARMENT CERTIFICATION AND GIFT BAN CERTIFICATION

INDIVIDUAL DOING BUSINESS IN HIS OWN NAME

The person executing the bid, on behalf of the Bidder, being duly sworn, solemnly swears (or affirms) that neither he, nor any official, agent or employee of the bidder 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 bidder has not been convicted of violating *N.C.G.S. § 133-24* within the last three years, and that the Bidder intends to do the work with its own bonafide employees or subcontractors and is not bidding for the benefit of another contractor.

In addition, execution of this bid in the proper manner also constitutes the Bidder's certification of 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 CONTRACTOR

Name of Contractor _____
Print or type Individual name

Address as Prequalified

Signature of Contractor, Individually

Print or type Signer's Name

Signature of Witness

Print or type Signer's name

AFFIDAVIT MUST BE NOTARIZED

Subscribed and sworn to before me this the _____
_____ day of _____ 20__.

NOTARY SEAL

Signature of Notary Public

of _____ County

State of _____

My Commission Expires: _____

DEBARMENT CERTIFICATION

Conditions for certification:

1. The prequalified bidder shall provide immediate written notice to the Municipality if at any time the bidder learns that his certification was erroneous when he submitted his debarment certification or explanation filed with the Municipality, 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 Municipality project representative.
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 Municipal contracts, unless authorized by the Municipality.
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 Municipality, 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 Municipality 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 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 affidavit and debarment certification will result in the prequalified bidder's bid being considered non-responsive.

Check here if an explanation is attached to this certification.

LISTING OF DBE SUBCONTRACTORS			Sheet _____	of _____
Firm Name and Address	Item No.	Item Description	* Agreed upon Unit Price	** Dollar Volume of Item
Name Address				
Name Address				
Name Address				
Name Address				
Name Address				
Name Address				
Name Address				

* The Dollar Volume shown in this column shall be the Actual Price Agreed Upon by the Prime Contractor and the DBE subcontractor, and these prices will be used to determine the percentage of the DBE participation in the contract.

** Dollar Volume of DBE Subcontractor Percentage of Total Contract Bid Price:

If firm is a Material Supplier Only, show Dollar Volume as 60% of Agreed Upon Amount from Letter of Intent.

If firm is a Manufacturer, show Dollar Volume as 100% of Agreed Upon Amount from Letter of Intent.

LISTING OF DBE SUBCONTRACTORS			Sheet _____	of _____
Firm Name and Address	Item No.	Item Description	* Agreed upon Unit Price	** Dollar Volume of Item
Name Address				
Name Address				
Name Address				
Name Address				
Name Address				
Name Address				

* The Dollar Volume shown in this column shall be the Actual Price Agreed Upon by the Prime Contractor and the DBE subcontractor, and these prices will be used to determine the percentage of the DBE participation in the contract.

**** Dollar Volume of DBE Subcontractor**
\$ _____
Percentage of Total Contract Bid Price
_____ %

** Dollar Volume of DBE Subcontractor Percentage of Total Contract Bid Price:
If firm is a Material Supplier Only, show Dollar Volume as 60% of Agreed Upon Amount from Letter of Intent.
If firm is a Manufacturer, show Dollar Volume as 100% of Agreed Upon Amount from Letter of Intent.

Contract No. EB-5539
County Pitt

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**STATE OF NORTH CAROLINA
CITY OF GREENVILLE**

BID BOND

Principal: _____
Name of Principal Contractor

Surety: _____
Name of Surety

Contract Number: _____ County: _____

Date of Bid: _____

KNOW ALL MEN BY THESE PRESENTS, That we, the PRINCIPAL CONTRACTOR (hereafter, PRINCIPAL) and SURETY above named, are held and firmly bound unto the **CITY OF GREENVILLE** in the full and just sum of five (5) percent of the total amount bid by the Principal for the project 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.

NOW, THEREFORE, the condition of this obligation is: the Principal shall not withdraw its bid within sixty (60) days after the opening of the bids, or within such other time period as may be provided in the proposal, and if the **CITY OF GREENVILLE** shall award a contract to the Principal, the Principal shall, within fourteen (14) calendar days after written notice of award is received by him, provide bonds with good and sufficient surety, as required for the faithful performance of the contract and for the protection of all persons supplying labor, material, and equipment for the prosecution of the work. In the event the Principal requests permission to withdraw his bid due to mistake in accordance with the provisions of Article 103-3 of the *Standard Specifications for Roads and Structures*, the conditions and obligations of this Bid Bond shall remain in full force and effect until the **CITY OF GREENVILLE** makes a final determination to either allow the bid to be withdrawn or to proceed with award of the contract. In the event a determination is made to award the contract, the Principal shall have fourteen (14) calendar days to comply with the requirements set forth above. In the event the Principal withdraws its bid after bids are opened except as provided in Article 103-3, or after award of the contract has been made fails to execute such additional documents as may be required and to provide the required bonds within the time period specified above, then the amount of the bid bond shall be immediately paid to the **CITY OF GREENVILLE** as liquidated damages.

IN TESTIMONY WHEREOF, the Principal and Surety have caused these presents to be duly signed and sealed.

This the _____ day of _____, 20 _____

Surety

By _____
General Agent or Attorney-in-Fact Signature

Seal of Surety

Print or type Signer's Name

BID BOND
CORPORATION

SIGNATURE OF CONTRACTOR (Principal)

Full name of Corporation

Address as prequalified

By _____
Signature of **President, Vice President, Assistant Vice President**
Select appropriate title

Print or type Signer's name

Affix Corporate Seal

Attest _____
Signature of **Secretary, Assistant Secretary**
Select appropriate title

Print or type Signer's name

Contract No. EB-5539
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BID BOND
LIMITED LIABILITY COMPANY

SIGNATURE OF CONTRACTOR (Principal)

Name of Contractor

Full name of Firm

Address as prequalified

**Signature of Member/
Manager/Authorized Agent**

Individually

Print or type Signer's name

BID BOND

INDIVIDUAL DOING BUSINESS UNDER A FIRM NAME

SIGNATURE OF CONTRACTOR (Principal)

Name of Contractor

Individual Name

Trading and doing business as

Full name of Firm

Address as prequalified

Signature of Contractor

Individually

Print or type Signer's name

Signature of Witness

Print or type Signer's name

Contract No. EB-5539
County Pitt

Rev. 4-19-11

BID BOND

INDIVIDUAL DOING BUSINESS IN HIS OWN NAME

SIGNATURE OF CONTRACTOR (Principal)

Name of Contractor _____
Print or type Individual Name

Address as prequalified

Signature of Contractor _____
Individually

Print or type Signer's name

Signature of Witness

Print or type Signer's name

Contract No. EB-5539
County Pitt

Rev. 4-19-11

BID BOND

PARTNERSHIP

SIGNATURE OF CONTRACTOR (Principal)

Full name of Partnership

Address as prequalified

By _____
Signature of Partner

Print or type Signer's name

Signature of Witness

Print or type Signer's name

Contract No. EB-5539
County Pitt

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BID BOND

Attach certified copy of Power of Attorney to this sheet

AGREEMENT (City Greenville)

THIS AGREEMENT is dated as of the ____ day of _____ in the year **201** by and between the **City of Greenville, NC** (hereinafter called OWNER) and _____ (hereinafter called CONTRACTOR). OWNER and CONTRACTOR, in consideration of the mutual covenants hereinafter set forth, agree as follows:

Article 1. WORK.

CONTRACTOR shall complete all Work as specified or indicated in the Contract Documents. The Work is generally described as follows:

EB-5539- South Tar River Greenway, Phase 3

Article 2. ENGINEER.

The Project has been designed by the City of Greenville, Public Works Department, who is hereinafter called ENGINEER and who is to act as OWNER'S representative, assume all duties and responsibilities and have the rights and authority assigned to ENGINEER in the Contract Documents in connection with completion of the Work in accordance with the Contract Documents.

Once the Notice of Award has been issued, the OWNER may assume all or part of the responsibilities of the ENGINEER and RESIDENT PROJECT REPRESENTATIVE.

Article 3. CONTRACT TIMES.

3.1 The Work will be completed and ready for final payment in accordance with the Contract Documents-within the times specified below:

Total Contract Completion Time Base Bid – 365 Calendar Days

The Contract Times shall commence to run on the day indicated in the Notice to Proceed, said day being the Date of Availability as defined in Article 101-3 of NCDOT Standard Specifications for Roads and Structures. This Notice to Proceed may be given at any time within 30 days of the Effective Date of the Agreement.

3.2 Liquidated Damages. OWNER and CONTRACTOR recognize that time is of the essence of this Agreement and the OWNER will suffer financial loss if the Work is not completed within the times specified in the BID, plus any extensions thereof allowed in accordance with Article 108-10 of the NCDOT Standard Specifications for Roads and Structures. They also recognize the delays, expense and difficulties involved in proving the actual loss suffered by OWNER if the Work is not completed on time. Accordingly, instead of requiring any such proof, OWNER and CONTRACTOR agree that as liquidated damages for delay (but not as a penalty) CONTRACTOR shall pay OWNER Three Hundred Dollars (\$300.00) for each day that expires after the time specified in paragraph 3.1.

Article 4. CONTRACT PRICE.

OWNER shall pay CONTRACTOR for completion of the Work in accordance with the Contract Documents an amount in current funds equal to the sum of the amounts determined pursuant to paragraphs 4.1 and 4.2 below:

4.1 For all Work other than Unit Price Work, a Lump Sum as shown in the BID.

All specific cash allowances are included in the BID.

plus

4.2 For all Unit Price Work, an amount equal to the sum of the established unit price for each separately identified item of Unit Price Work times the estimated quantity of that item as indicated in the BID.

As provided in Article 102-5 of the NCDOT Standard Specifications for Roads and Structures estimated quantities are not guaranteed, and determinations of actual quantities and classification are to be made by ENGINEER as provided in Article 109-1 of the NCDOT Standard Specifications for Roads and Structures.

4.3 This contract includes EB-5539- South Tar River Greenway, Phase 3.

Article 5. PAYMENT PROCEDURES.

CONTRACTOR shall submit Applications for Payment in accordance with Section 109 of the NCDOT Standard Specifications for Roads and Structures. Applications for Payment will be processed by ENGINEER as provided in the Contract Documents.

5.1 Progress Payments. OWNER shall make progress payments on account of the Contract Price on the basis of CONTRACTOR's Applications for Payment as recommended by ENGINEER, on or about the 25th day of each month during construction as provided in paragraph 5.1.1. All such payments will be measured by the schedule of values established in accordance with the Contract Documents (and in the case of Unit Price Work based on the number of units completed) or, in the event there is no schedule of values, as provided in the Contract Documents.

5.1.1. Progress payments will be made, less the aggregate of payments previously made and less such amounts as ENGINEER shall determine, or OWNER may withhold, in accordance with Section 109 of NCDOT Standard Specifications for Roads and Structures.

5.2 Final Payment. Upon final completion and acceptance of the Work in accordance with the Contract Documents, OWNER shall pay the remainder of the Contract Price as recommended by ENGINEER as provided in Article 109-9 of the NCDOT Standard Specifications for Roads and Structures.

Article 6. INTEREST.

Pursuant to paragraph 143-134.1, General Statutes of North Carolina, the balance due prime Contractors shall be paid in full within 45 days after respective prime contracts have been accepted by Engineer and Owner, or occupied by Owner and used for the purpose for which the project was constructed, whichever occurs first. Provided, however, that whenever Engineer determines that delay in completion of the project in accordance with terms of the Drawings and Specifications is the fault of Contractor, the project may be occupied and used for the purposes for which it was constructed without payment of any interest on amounts withheld past the 45 day limit. No payment shall be delayed because of the failure of another prime Contractor on such project to complete his contract. Should final payment to any prime Contractor beyond

the date such contracts have been declared to be completed by Engineer, accepted by Owner, or occupied by Owner and used for the purposes for which the project was constructed, be delayed by more than 45 days, said prime Contractor shall be paid interest, beginning on the 46th day, at the rate of twelve percent per annum on such unpaid balance as may be due. Where a conditional acceptance of a contract exists, and where Owner is retaining a reasonable sum pending correction of such conditions, interest on such reasonable sum shall not apply.

Article 7. CONTRACTOR'S REPRESENTATIONS.

In order to induce OWNER to enter into this Agreement CONTRACTOR makes the following representations:

7.1 CONTRACTOR has examined and carefully studied the Contract Documents (including the Addenda listed in paragraph 8) and the other related data identified in the Bidding Documents including "technical data."

7.2 CONTRACTOR has visited the site and become familiar with and is satisfied as to the general, local and site conditions that may affect cost, progress, performance or furnishing of the Work.

7.3 CONTRACTOR is familiar with and is satisfied as to all federal, state and local Laws and Regulations that may affect cost, progress, performance and furnishing of the Work.

7.4 CONTRACTOR has carefully studied all reports of explorations and tests of subsurface conditions at or contiguous to the site and all drawings of physical conditions in or relating to existing surface or subsurface structures at or contiguous to the site (except Underground Facilities) which may be available as stated in Article 102-7 of the NCDOT Standard Specifications for Roads and Structures. CONTRACTOR acknowledges that such reports and drawings are not Contract Documents and may not be complete for CONTRACTOR's purposes. CONTRACTOR acknowledges that OWNER and ENGINEER do not assume responsibility for the accuracy or completeness of information and data shown or indicated in the Contract Documents with respect to Underground Facilities at or contiguous to the site. CONTRACTOR has obtained and carefully studied (or assumes responsibility for having done so) all such additional supplementary examinations, investigations, explorations, tests, studies and data concerning conditions (surface, subsurface and Underground Facilities) at or contiguous to the site or otherwise which may affect cost, progress, performance or furnishing of the Work or which relate to any aspect of the means, methods, techniques, sequences and procedures of construction to be employed by CONTRACTOR and safety precautions and programs incident thereto. CONTRACTOR does not consider that any additional examinations, investigations, explorations, tests, studies or data are necessary for the performance and furnishing of the Work at the Contract Price, within the Contract Times and in accordance with the other terms and conditions of the Contract Documents.

7.5 CONTRACTOR is aware of the general nature of work to be performed by OWNER and others at the site that relates to the Work as indicated in the Contract Documents.

7.6 CONTRACTOR has correlated the information known to CONTRACTOR, information and observations obtained from visits to the site, reports and drawings identified in the Contract Documents and all additional examinations, investigations, explorations, tests, studies and data with the Contract Documents.

7.7 CONTRACTOR has given ENGINEER written notice of all conflicts, errors, ambiguities or discrepancies that CONTRACTOR has discovered in the Contract Documents and the written resolution thereof by ENGINEER is acceptable to CONTRACTOR, and the Contract Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performance and furnishing of the Work.

Article 8. CONTRACT DOCUMENTS.

The Contract Documents, which comprise the entire agreement between OWNER and CONTRACTOR concerning the Work, consist of the following:

- 8.1 This Agreement (pages F-36 to F-41, inclusive).
- 8.2 Exhibits to this Agreement:
 - a. Certificate of Insurance (F-42)
 - b. Geotechnical Report dated May 12, 2015 (available for review at the City of Greenville).
- 8.3 Performance, Payment, and other Bonds (pages F-44 to F-61, inclusive).
- 8.4 Notice to Proceed (page F-65, inclusive).
- 8.5 Specifications bearing the title South Tar River Greenway - Phase 3 and consisting of divisions as listed in table of contents thereof.
- 8.6 Drawings consisting of 99 sheets, inclusive with each sheet bearing the following general title: **South Tar River Greenway, Phase 3 (EB-5539)**.
- 8.7 Addenda numbers (N/A) inclusive.
- 8.8 CONTRACTOR's Bid Form (pages F-2 to F-17, inclusive).
- 8.9 Disadvantaged Business Enterprise documentation submitted by CONTRACTOR with the Bid Proposal (pages 18-31).
- 8.10. The following which may be delivered or issued after the Effective Date of the Agreement and are not attached hereto: All Written Amendments and other documents amending, modifying or supplementing the Contract Documents pursuant to Section 104 of the NCDOT Standard Specifications for Roads and Structures.
- 8.11 NCDOT Standard Specifications for Roads and Structures (2012 edition)(not attached).

The documents listed in paragraphs 8.2 et seq. above are attached to this Agreement (except as expressly noted otherwise above).

There are no Contract Documents other than those listed above in this Article 8. The Contract Documents may only be amended, modified or supplemented as provided in Section 104 of the NCDOT Standard Specifications for Roads and Structures.

Article 9. MISCELLANEOUS.

9.1. Terms used in this Agreement, which are defined in Article 101-3 of the NCDOT Standard Specifications for Roads and Structures will have the meanings indicated in the Article 101-3 of the NCDOT Standard Specifications for Roads and Structures .

9.2. No assignment by a party hereto of any rights under or interests in the Contract Documents will be binding on another party hereto without the written consent of the party sought to be bound; and, specifically but without limitation, moneys that may become due and moneys that are due may not be assigned without such consent (except to the extent that the effect of this restriction may be limited by law), and unless

specifically stated to the contrary in any written consent to an assignment no assignment will release or discharge the assignor from any duty or responsibility under the Contract Documents.

9.3. OWNER and CONTRACTOR each binds itself, their partner, successors, assigns and legal representatives to the other party hereto, their partner, successors, assigns and legal representatives in respect to all covenants, agreements and obligations contained in the Contract Documents.

9.4 Any provision or part of the Contract Documents held to be void or unenforceable under any Law or Regulation shall be deemed stricken, and all remaining provisions shall continue to be valid and binding upon OWNER and CONTRACTOR, who agree that the Contract Documents shall be reformed to replace such stricken provision or part thereof with a valid and enforceable provision that comes as close as possible to expressing the intention of the stricken provision.

IN WITNESS WHEREOF, OWNER and CONTRACTOR have signed this Agreement in triplicate. One counterpart each has been delivered to OWNER, CONTRACTOR and ENGINEER. All portions of the Contract Documents have been signed, initialed or identified by OWNER and CONTRACTOR or identified by ENGINEER on their behalf.

This Agreement will be effective on _____ (which is the Effective Date of the Agreement).

CITY OF GREENVILLE

BY _____

BY _____

NAME _____

NAME _____

TITLE MAYOR _____

TITLE _____

(CORPORATE SEAL)

(CORPORATE SEAL)

Attest _____

Attest _____

TITLE CITY CLERK _____

TITLE _____

Address for giving notices

Address for giving notices

PO Box 7207

Greenville, NC 27835-7207

License No. _____

Employer Identification Number _____

APPROVED AS TO FORM

David A. Holec, City Attorney

PRE AUDIT CERTIFICATION

This instrument has been pre-audited in the manner required by the Local Government Budget and Fiscal Control Act.

Bernita Demery, Director of Financial Services

Account number(s) _____

Project Code (if applicable) _____

CERTIFICATE OF INSURANCE

Attach certificate of insurance to this sheet

NOTICE OF AWARD (CITY OF GREENVILLE)

To: _____ From: City of Greenville
(Owner) 1500 Beatty Street
Greenville, North Carolina 27834

PROJECT: **EB-5539 SOUTH TAR RIVER GREENWAY, PHASE 3**

CONTRACT AMOUNT: \$ _____

You are hereby notified the City of Greenville has accepted your Bid dated _____ for the above described project. The Project name must be cited on all Invoices and/or Payment Request.

You are required to execute the formal contract with the City of Greenville and to furnish any required Bonds and Insurance Certificates within **ten (10) days** from the date of delivery of the Notice to you.

If you fail to execute said contract and to furnish any required Bonds and Certificates within **ten (10) days** from the delivery of this Notice, the City of Greenville will be entitled to consider all your rights arising out of their acceptance of your Bid as abandoned and to award the work covered by the contract to another contractor, to re-advertise the Project, or otherwise dispose thereof as the City of Greenville sees fit.

You are required to acknowledge and return to the Owner a copy of this Notice of Award.

Dated this _____ day _____, 20__.

Owner: City of Greenville

BY: _____
Scott P. M. Godefroy, PE
City Engineer

ACCEPTANCE OF NOTICE

Receipt of the above NOTICE OF AWARD is hereby acknowledged:

By: _____ Signature: _____
(Print name)

Title: _____ Company: _____

This the _____ day of _____, 201__.

Contract No. EB-5539
County Pitt

Rev. 11-1-12

CITY OF GREENVILLE

CONTRACT PAYMENT BOND

Date of Payment Bond Execution _____

Name of Principal Contractor _____

Name of Surety: _____

Name of Contracting Body: _____

Amount of Bond: _____

Contract ID No.: _____

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.

Contract No. EB-5539
County Pitt

Rev. 11-1-12

CONTRACT PAYMENT BOND

Affix Seal of Surety Company

Print or type Surety Company Name

By

Print, stamp or type name of Attorney-in-Fact

Signature of Attorney-in-Fact

Signature of Witness

Print or type Signer's name

Address of Attorney-in-Fact

CONTRACT PAYMENT BOND
CORPORATION

SIGNATURE OF CONTRACTOR (Principal)

Full name of Corporation

Address as prequalified

By _____
Signature of **President, Vice President, Assistant Vice President**
Select appropriate title

Print or type Signer's name

Affix Corporate Seal

Attest _____
Signature of **Secretary, Assistant Secretary**
Select appropriate title

Print or type Signer's name

Contract No. EB-5539
County Pitt

Rev. 4-19-11

CONTRACT PAYMENT BOND
LIMITED LIABILITY COMPANY

SIGNATURE OF CONTRACTOR (Principal)

Name of Contractor

Full name of Firm

Address as prequalified

By:

Signature of Member, Manager, Authorized Agent
Select appropriate title

Print or type Signer's name

CONTRACT PAYMENT BOND

INDIVIDUAL DOING BUSINESS UNDER A FIRM NAME

SIGNATURE OF CONTRACTOR (Principal)

Name of Contractor

Individual Name

Trading and doing business as

Full name of Firm

Address as prequalified

Signature of Contractor

Individually

Print or type Signer's name

Signature of Witness

Print or type Signer's name

Contract No. EB-5539
County Pitt

Rev. 4-19-11

CONTRACT PAYMENT BOND

INDIVIDUAL DOING BUSINESS IN HIS OWN NAME

SIGNATURE OF CONTRACTOR (Principal)

Name of Contractor _____
Print or type Individual name

Address as prequalified

Signature of Contractor _____
Individually

Print or type Signer's name

Signature of Witness

Print or type Signer's name

Contract No. EB-5539
County Pitt

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CONTRACT PAYMENT BOND
PARTNERSHIP

SIGNATURE OF CONTRACTOR (Principal)

Full name of Partnership

Address as prequalified

By _____
Signature of Partner

Print or type Signer's name

Signature of Witness

Print or type Signer's name

Contract No. EB-5539
County Pitt

Rev. 4-19-11

CONTRACT PAYMENT BOND

Attach certified copy of Power of Attorney to this sheet

CITY OF GREENVILLE

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: _____

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.

Contract No. EB-5539
County Pitt

Rev. 11-1-12

CONTRACT PERFORMANCE BOND

Affix Seal of Surety Company

Print or type Surety Company Name

By

Print, stamp or type name of Attorney-in-Fact

Signature of Attorney-in-Fact

Signature of Witness

Print or type Signer's name

Address of Attorney-in-Fact

CONTRACT PERFORMANCE BOND
CORPORATION

SIGNATURE OF CONTRACTOR (Principal)

Full name of Corporation

Address as prequalified

By _____
Signature of **President, Vice President, Assistant Vice President**
Select appropriate title

Print or type Signer's name

Affix Corporate Seal

Attest _____
Signature of **Secretary, Assistant Secretary**
Select appropriate title

Print or type Signer's name

Contract No. EB-5539
County Pitt

Rev. 4-19-11

CONTRACT PERFORMANCE BOND
LIMITED LIABILITY COMPANY

SIGNATURE OF CONTRACTOR (Principal)

Name of Contractor

Full name of Firm

Address as prequalified

By:

Signature of Member, Manager, Authorized Agent
Select appropriate title

Print or type Signer's name

CONTRACT PERFORMANCE BOND

INDIVIDUAL DOING BUSINESS UNDER A FIRM NAME

SIGNATURE OF CONTRACTOR (Principal)

Name of Contractor

Individual Name

Trading and doing business as

Full name of Firm

Address as prequalified

Signature of Contractor

Individually

Print or type Signer's name

Signature of Witness

Print or type Signer's name

Contract No. EB-5539
County Pitt

Rev. 4-19-11

CONTRACT PERFORMANCE BOND
INDIVIDUAL DOING BUSINESS IN HIS OWN NAME

SIGNATURE OF CONTRACTOR (Principal)

Name of Contractor _____
Print or type Individual name

Address as prequalified

Signature of Contractor _____
Individually

Print or type Signer's name

Signature of Witness

Print or type Signer's name

Contract No. EB-5539
County Pitt

Rev. 4-19-11

CONTRACT PERFORMANCE BOND
PARTNERSHIP

SIGNATURE OF CONTRACTOR (Principal)

Full name of Partnership

Address as prequalified

By _____
Signature of Partner

Print or type Signer's name

Signature of Witness

Print or type Signer's name

Contract No. EB-5539
County Pitt

Rev. 4-19-11

CONTRACT PERFORMANCE BOND

Attach certified copy of Power of Attorney to this sheet

LETTER OF INTENT TO PERFORM AS A SUBCONTRACTOR

CONTRACT:	NAME OF BIDDER:
------------------	------------------------

The undersigned intends to perform work in connection with the above contract upon execution of the bid and subsequent award of contract by the Local Public Agency as:

Name of MBE/WBE/DBE Subcontractor _____

Address _____

City _____ State _____ Zip _____

Please check all that apply:
Minority Business Enterprise (MBE) ____
Women Business Enterprise (WBE) ____
Disadvantaged Business Enterprise (DBE) ____

The MBE /WBE /DBE status of the above named subcontractor is certified by the North Carolina Department of Transportation. The above named subcontractor is prepared to perform the described work listed on the attached MBE/WBE/DBE Commitment Items sheet, in connection with the above contract upon execution of the bid and subsequent award of contract by the Local Public Agency. The above named subcontractor is prepared to perform the described work at the estimated Commitment Total for Subcontractor Price identified on the MBE/WBE/DBE Commitment Items sheet and amount indicated below.

Commitment Total based on estimated Unit Prices and Quantities on the "attached" MBE/WBE/DBE Commitment Items sheet:

Amount \$ _____

The above named bidder and subcontractor mutually accepts the Commitment Total estimated for the Unit Prices and Quantities. This commitment total is based on estimated quantities only and most likely will vary up or down as the project is completed. Final compensation will be based on actual quantities of work performed and accepted during the pursuance of work. The above listed amount represents the entire dollar amount quoted based on these estimated quantities. No conversations, verbal agreements, and/or other forms of non-written representations shall serve to add, delete, or modify the terms as stated.

This document shall not serve in any manner as an actual subcontract between the two parties. A separate subcontractor agreement will describe in detail the contractual obligations of the bidder and the MBE/WBE/DBE subcontractor.

Affirmation

The above named MBE/ WBE/ DBE subcontractor affirms that it will perform the portion(s) of the contract for the estimated dollar value as stated above.

Name of MBE/ WBE/ DBE Subcontractor

Name of Bidder

Signature / Title

Signature / Title

Date

Date

**State of North Carolina
Department of Transportation
Subcontractor Payment Information**

Submit with Invoice To: Invoice Coordinator
North Carolina Department of Transportation
Division / Branch
Address
Raleigh, NC XXXXX-XXXX

Firm Invoice No. Reference _____
NCDOT PO / Contract Number _____
WBS No. (State Project No.) _____
Date of Invoice _____
Signed _____

Invoice Line Item Reference	Payer Name	Payer Federal Tax Id	Subcontractor /Subconsultant/ Material Supplier Name	Subcontractor /Subconsultant / Material Supplier Federal Tax Id	Amount Paid To Subcontractor / Subconsultant / Material Supplier This Invoice	Date Paid To Subcontractor / Subconsultant / Material Supplier This Invoice
_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____
Total Amount Paid to Subcontractor Firms					\$ _____	

NOTE: - These documents are scanned into our Fiscal program. Please do not highlight or shade the figures.

I certify that this information accurately reflects actual payments made and the dates the payments were made to Subcontractors/ Subconsultants/Material Suppliers on the above referenced project.

Signature _____ Title _____
Print Name _____ Date _____

**STATE OF NORTH CAROLINA
E-VERIFY AFFIDAVIT
CITY OF GREENVILLE**

NOW COMES Affiant, first being sworn, deposes and says as follows:

1. I have submitted a bid for contract or desire to enter into a contract with the City of Greenville;

2. As part of my duties and responsibilities pursuant to said bid and/or contract, I attest that I am aware of and in compliance with the requirements of E-Verify, Article 2 of Chapter 64 of the North Carolina General Statutes, to include (mark which applies):

After hiring an employee to work in the United States I verify the work authorization of said employee through E-Verify and retain the record of the verification of work authorization while the employee is employed and for one year thereafter; or

I employ less than twenty-five (25) employees in the State of North Carolina.

3. As part of my duties and responsibilities pursuant to said bid and/or contract, I attest that to the best of my knowledge any subcontractors employed as a part of this bid and/or contract are in compliance with the requirements of E-Verify, Article 2 of Chapter 64 of the North Carolina General Statutes, to include (mark which applies):

After hiring an employee to work in the United States the subcontractor verifies the work authorization of said employee through E-Verify and retain the record of the verification of work authorization while the employee is employed and for one year thereafter; or

Employ less than twenty-five (25) employees in the State of North Carolina.

Specify subcontractor: _____

This the _____ day of _____, 2015.

Affiant

Sworn to and subscribed before me, this the _____ day of _____, 2015.

[OFFICIAL SEAL]

_____, Notary Public

My Commission Expires: _____

NOTICE TO PROCEED (City of Greenville)

DATE:

TO:

PROJECT: **EB-5539 South Tar River Greenway, Phase 3**

Attached, please find a fully executed copy of the AGREEMENT dated You are hereby notified to commence WORK in accordance with the AGREEMENT on or before....., 201__ and you are to complete the WORK within 365 consecutive calendar days thereafter.

The date of **COMPLETION** of all WORK is.....

Pre-Construction Conference conducted on

Owner: City of Greenville
By: Scott P. M. Godefroy, PE
Signature: _____
Title: City Engineer

ACCEPTANCE OF NOTICE

Receipt of the above NOTICE TO PROCEED is hereby acknowledged by

this the _____ day of _____, 201__.

By _____
Signature _____
Title _____

**BASIS OF AGREEMENT BETWEEN
THE NORTH CAROLINA DEPARTMENT OF TRANSPORTATION AND CONTRACTOR**

1. The Contractor agrees to perform the work described in this Supplemental Agreement in consideration of the payment set out herein.
2. The terms and conditions of said contract are hereby ratified and remain in full force and effect except as modified by such Supplemental Agreement(s) as may heretofore have been entered into between the Department and the Contractor and as modified by this Supplemental Agreement.
3. All terms and conditions of this Supplemental Agreement are herein set out and there are no agreements relating thereto not expressed herein.
4. This Supplemental Agreement shall not constitute a release or waiver of any lawful claims that the Contractor has or may have against the Department under said contract pursuant to G.S. 136-29 except for the matters specifically covered herein.

In witness whereof, the Department and the Contractor have caused this Supplemental Agreement to be executed by their duty authorized representatives.

APPROVAL RECOMMENDED: BY: _____ <div style="text-align: center; font-size: small;">LOCAL GOVERNMENT AGENCY OFFICIAL</div> DATE: _____	CONTRACTOR: BY: _____ <div style="text-align: center; font-size: small;">AUTHORIZED REPRESENTATIVE</div> DATE: _____
APPROVAL RECOMMENDED: BY: _____ <div style="text-align: center; font-size: small;">NCDOT ENGINEER</div> DATE: _____	APPROVAL GRANTED: BY: _____ <div style="text-align: center; font-size: small;">NCDOT ENGINEER</div> DATE: _____

FORCE ACCOUNT DOCUMENTATION

Documentation of the authorized Force Account work shall be completed for all state and federally-funded projects.

APPROVAL GRANTED: BY: _____ <div style="text-align: center; font-size: small;">RESIDENT ENGINEER</div> DATE: _____	APPROVAL GRANTED: BY: _____ <div style="text-align: center; font-size: small;">DIVISION ENGINEER</div> DATE: _____
--	--

FOR CONSTRUCTION AND MATERIALS BRANCH USE ONLY

Approval of the Federal Highway Administration is is not requested.

APPROVED with the understanding that Federal participation in this work, the cost of which cannot be met from Federal aid funds provided for under the now effective project agreement, will be contingent upon additional Federal aid funds being made available for the project by a modified project agreement, to be executed prior to or at the final voucher stage.

APPROVED: FEDERAL HIGHWAY ADMINISTRATION	REVIEWED: CONSTRUCTION UNIT
BY: _____	BY: _____
DATE: _____	DATE: _____

COMMENTS

CHANGE ORDER

Date: _____

Agreement Date: _____

PROJECT: EB-5539: SOUTH TAR RIVER GREENWAY, PHASE 3 (SECTION A)

OWNER: City of Greenville, North Carolina

CONTRACTOR: _____

Changes and/or additions are hereby made to the Contract Documents as follows:

<u>PAYMENT SCHEDULE THIS CHANGE ORDER</u>	<u>COST CHANGE</u>
Additions	\$
Deductions	\$
Net Change This Change Order	<u>\$</u>

Change to Contract Time: _____ Days

Justification for Change Order:

Original Contract Price		\$
Contract Additions by Previous Change Orders	Add	\$
Contract Deductions by Previous Change Orders	Deduct	\$
Contract Change by this Change Order	Add/Deduct	\$
New Contract Price, including this Change Order		<u>\$</u>

Original Contract Completion Date _____
Net Change By Calendar Days _____
New Contract Completion Date _____

Accepted By Owner: City of Greenville

Date

Accepted By Contractor:

Date

Accepted By Engineer:

Date

CONTRACTOR'S SALES TAX REPORT

N. C. State and Local Sales Taxes Paid

OWNER:			Project:				
CONTRACTOR:			For Period:				
ADDRESS:			To:				
Vendor	Name of Address	Invoice Number	Date	Invoice Amount	N. C. Tax	County Tax	Name of County
TOTAL					\$	\$	

I, _____, certify that the foregoing statement of applicable sales taxes paid in connection with the referenced contract is true to the best of my knowledge and belief. This the _____ day of _____ 20____.

CORPORATE SEAL

(Signed) _____

(Title) _____

CONTRACTOR'S AFFIDAVIT
RELEASE OF LIEN AND WAIVER OF CLAIM

STATE OF: _____ COUNTY OF: _____

_____, _____
(Name) (Title)

_____, being first duly sworn deposes and says that:
(Contractor)

1. The undersigned is authorized to execute this Affidavit, Release of Lien and Waiver of Claim on behalf of the Contractor and has personal knowledge of all facts set forth herein;
2. This Affidavit, Release of Lien and Waiver of Claim is made concerning the construction of the following project:

Project Name: **EB-5539 South Tar River Greenway, Phase 3**

Project No.: _____

3. All payrolls, material bills, sales tax, social security tax, state and federal unemployment insurance, and all other liabilities and taxes owed by the Contractor and arising in any manner from the above-described project have been paid in full;
4. No liens or claims exists in favor of any supplier of materials or labor or in favor of any subcontractor furnishing materials or labor on the above-described project;
5. Notwithstanding the foregoing, if the City of Greenville or property of the City of Greenville is subject to any claim or lien which arises in any manner from the failure of the Contractor to pay any liability described above, the Contractor will indemnify and hold the City of Greenville harmless for any amount which the City of Greenville is required to pay to discharge such lien or settle such claim and further will pay the City of Greenville's expenses, costs, and attorney fees incurred in connection therewith;
6. All claims, suits, and proceedings of every name, description, or nature arising out of the above project against the City of Greenville, its officers, employees and agents have been settled;
7. The Contractor releases and waives any and all claims of every type and description, which the Contractor may have against the City of Greenville arising in any manner from the construction of the above-described project.

(Contractors Signature)

Sworn to and subscribed before me _____ this the ____ day of _____, 200_.

(Title)

(Date)

Notary Public
My Commission Expires _____ (Date)

APPENDIX



North Carolina Department of Environment and Natural Resources

Pat McCrory
Governor

Don Van der Vaart
Secretary

June 19, 2015

LETTER OF APPROVAL WITH GUIDELINES

City of Greenville
ATTN: Mr. Scott P. M. Godefroy, City Engineer
1500 Beatty Street
North Carolina 27834

RE: Erosion and Sedimentation Control Plan No.: Pitt-2015-002
Project Name: South Tar River Greenway, Phase 3
Location: Moye Boulevard County: Pitt
River Basin: Tar-Pamlico
Date Received by LQS: May 27, 2015
Acres Approved: 8.6 Project Type: New
Project Description: The construction of a ±10 foot wide greenway, approximately 1.6 miles long, from Moye Boulevard to Pitt Street.

Dear Sir:

This office has reviewed the subject erosion and sedimentation control plan. We find the plan to be acceptable and hereby issue this Letter of Approval. (Note: Attached is a list of guidelines and statutory requirements for conducting land disturbing activities.) This plan approval shall expire three (3) years following the date of approval, if no land-disturbing activity has been undertaken, as required by 15A NCAC 4B.0129, unless modified by other legislation.

Please be advised that 15A NCAC 4B.0118(a) requires that a copy of the approved erosion and sedimentation control plan be on file at the job site. Also, you should consider this letter as giving the Notice required by G.S. 113A-61.1(a) of our right of periodic inspection to ensure compliance with the approved plan.

North Carolina's Sedimentation Pollution Control Program is performance oriented, requiring protection of existing natural resources and adjoining properties through the use of reasonable and appropriate Best Management Practices throughout the duration of the project. If, following the commencement of this project, it is determined that the erosion and sedimentation control plan is inadequate to meet the requirements of the Sedimentation Pollution Control Act of 1973 (G.S. 113A-51 through 66), this office may require revisions to the plan and implementation of the revisions to ensure compliance with the Act.

Acceptance and approval of this plan is conditioned upon your compliance with Federal and State water quality laws, regulations and rules. In addition, local city or county ordinances or rules may also apply to this land-disturbing activity. This approval does not supersede any other permit or approval.

Division of Energy, Mineral, and Land Resources . Land Quality Section
Washington Regional Office

943 Washington Square Mall, Washington, North Carolina 27889 • Phone: 252-946-6481/ FAX: 252-975-3716

Internet: <http://portal.ncdenr.org/web/rl/land-quality>

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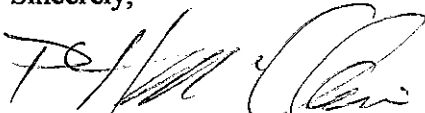
City of Greenville
ATTN: Mr. Scott P. M. Godefroy, City Engineer
June 19, 2015
Page 2

Please note that this approval is based in part on the accuracy of the information provided in the Financial Responsibility/Ownership Form, which you have submitted. You are required to file an amended form if there is any change in the information included on the form. NOTE: Neither this approval nor the financial responsibility/liability cited in it automatically transfer with a change in project ownership. In addition, 15A NCAC 4B.0127(c) requires that you notify this office of the proposed starting date for this project (using the enclosed Project Information Sheet). Please notify us if you plan to have a preconstruction conference.

Please be advised that a rule to protect and maintain existing buffers along watercourses in the Tar-Pamlico River Basin became effective on January 1, 2000. The Tar-Pamlico River Riparian Area Protection and Maintenance Rule (15A NCAC 2B.0259) applies to a 50 (horizontal) foot wide zone along all perennial and intermittent streams, lakes, ponds and estuaries in the Tar-Pamlico River basin. For more information about the riparian area rule, please contact the Division of Water Resources Wetland/401 Unit at 919-807-6300, or DWQ in our regional office at 252-946-6481.

Please be aware that your project will be covered by the enclosed NPDES General Stormwater Permit NCG010000 (Construction Activities). You should first become familiar with all of the requirements for compliance with the enclosed permit.

Sincerely,



Patrick H. McClain, PE
Regional Engineer

Enclosures

cc w/o enc: Cathy Murrell, PE, Kimley-Horn
Regional Supervisor, Division of Water Resources

1. **AS THE DECLARED RESPONSIBLE PARTY, YOUR LEGAL RESPONSIBILITY** is to understand the Act and comply with the following minimum requirements of the Act:
 - A. In the event of a conflict between the requirements of the Sedimentation Pollution Control Act, the submitted plan and/or the contract specifications, the more restrictive requirement shall prevail;
 - B. The land disturbing activity shall be conducted in accordance with the approved erosion and sedimentation control plan;
 - C. The **LATEST APPROVED** erosion and sediment control plan will be used during periodic unannounced inspections to determine compliance and a copy of the plan must be on file at the job site. If it is determined that the implemented plan is inadequate, this office may require the installation of additional measures and/or that the plan be revised to comply with state law.
 - D. All site revisions, including those required by other local, state or federal agencies, which affect site layout, drainage patterns, limits of disturbance and/or disturbed acreage must be submitted to this office for approval a minimum of 15 day prior implementing the revision;
 - E. Revisions exceeding the approved scope of this project without this office's prior approval of the plan showing the changes can be considered a violation. Failure to comply with any part of the approved plan or with any requirements of this program could result in appropriate legal action (civil or criminal) against the financially responsible party. Legal actions could include Stop Work Orders, the assessing of a civil penalty of up to \$5000 for the initial violation and/or a civil penalty of up to \$5000 per day for each day the site is out of compliance.
 - F. The **CERTIFICATE OF PLAN APPROVAL** must be posted at the primary entrance to the job site and remain until the site is permanently stabilized
 - G. In cases of natural disaster related changes to the proposed land disturbing activity, all appropriate actions and adequate measure installations may be performed to prevent sediment damage, prior to submitting and receiving approval of the revised plan. A revised plan must be submitted for approval as soon as possible, but no later than 15 days after all emergency actions have been performed;

- H. Erosion and sediment control measures or devices are to be constructed and/or installed to safely withstand the runoff resulting from a 10 year storm event (25 year storm event in High Quality Zones). The 10 year storm event is generally equivalent to a storm producing 6.5 - 7 inches in 24 hours or at the rate of 6.5 - 7 inches in 1 hour, depending on the location of the project within the region;
- I. No earthen material is to be brought on or removed from the project site, until the off-site borrow and/or disposal sites are identified as part of the erosion control plan. If an off-site borrow and/or disposal site is to be utilized, submit the name and identification number (E&SCP# or Mine Permit #), prior to use.
- J. A buffer zone, sufficient to restrain visible sedimentation within the 25% of the width closest to the land disturbance, must be provided and maintained between the land-disturbing activity and any adjacent property or watercourse.
- K. In order to comply with the intent of the Act, the scheduling of the land-disturbing activities is to be such that both the area of exposure and the time between the land disturbance and the providing of a ground cover is minimized.
- L. Unless a temporary, manufactured, lining material has been specified, a clean straw mulch must be applied, at the minimum rate of 2 tons/acre, to all seeded areas. The mulch must cover at least 75% of the seeded area after it is either tacked, with an acceptable tacking material, or crimped in place.
- M. New or affected cut or filled slopes must be at an angle that can be retained by vegetative cover or other adequate erosion-control devices or structures appropriate, **AND must be provided with a ground cover** sufficient to restrain erosion **within 21 calendar days of completion of any phase (rough or final) of grading (ANNUAL RYE GRASS IS NOT in the APPROVED seeding specifications NOR is it an ACCEPTABLE substitute for the providing of a temporary ground cover).**
- N. A **permanent ground cover**, sufficient to restrain erosion, **must be provided** within the shorter of 15 working or 90 calendar days (if in a High Quality Zone, the shorter of 15 working or 60 calendar days) after completion of construction or development on any portion of the tract (**ANNUAL RYE GRASS IS NOT in the APPROVED seeding specifications NOR is it an ACCEPTABLE substitute for the providing of a nurse cover for the permanent grass cover).**

Erosion and Sedimentation Control Plan No.: Pitt-2015-002

Project Name: South Tar River Greenway, Phase 3

June 19, 2015

Guidelines and Statutory Requirements

Page C

- O. All sediment and erosion control details for this project must conform to the standards as shown in the current Erosion & Sediment Control Planning and Design Manual; These details must be utilized for construction and incorporated in the plan. The Design Manual may be found on-line at: <http://portal.ncdenr.org/web/lr/publications>

- 2. Adequate and appropriate measures must be properly installed downstream, within the limits of disturbance, of any land disturbing activity to prevent sediment from leaving the limits of disturbance, entering existing drainage systems, impacting an on-site natural watercourse or adjoining property.

- 3. Given present workload and staffing level, we are unable to perform "on call" inspections as may be required within the Erosion Control Construction Sequence. Any delays related to these items are not the responsibility of this office. Although preconstruction meetings are encouraged, installation of devices and groundcover must be installed in critical areas and as per the approved plan. Inspections will occur periodically but are not required prior to initiation of any phase of the project.

**U.S. ARMY CORPS OF ENGINEERS
WILMINGTON DISTRICT**

Action Id. SAW-2013-00063 County: Pitt U.S.G.S. Quad: NC-GREENVILLE SW

GENERAL PERMIT (REGIONAL AND NATIONWIDE) VERIFICATION

Permittee: City of Greenville
Lynn Raynor
Address: 1500 Beatty Street
Greenville, NC, 27834
Telephone Number:

Size (acres)	<u>39.31 acres</u>	Nearest Town	<u>Greenville</u>
Nearest Waterway	<u>Schoolhouse Branch</u>	River Basin	<u>Lower Tar, North Carolina.</u>
USGS HUC	<u>3020103</u>	Coordinates	Latitude: <u>35.61792</u> Longitude: <u>-77.395209</u>

Location description: Proposed greenway starts at Move Blvd and connects to the existing greenway at Pitt Street (SR1611) in Greenville, Pitt County, North Carolina.

Description of projects area and activity: Applicant proposes to construct a 1.4 mile x 14' walking/bike path utilizing elevated boardwalks and prefabricated pedestrian bridges. Portions of the greenway will be on elevated earthen fill and paved with asphalt. 0.30 acres of permanent riparian riverine and 0.15 acres of temporary riparian riverine wetland impacts are authorized by this verification.

Applicable Law: Section 404 (Clean Water Act, 33 USC 1344)
 Section 10 (Rivers and Harbors Act, 33 USC 403)

Authorization: Regional General Permit Number or Nationwide Permit Number: NWP 14 Linear Transportation Projects.

SEE ATTACHED RGP or NWP GENERAL, REGIONAL AND 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 and attached information dated 03/27/2015. 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 authorization is modified, suspended or revoked. If, prior to the expiration date identified below, the nationwide 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 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 permit, will remain authorized provided the activity is completed within twelve months of the date of the nationwide 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 Quality (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 Washington, NC, at (252) 946-6481.

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 Thomas Steffens at 910-251-4615 or Thomas.A.Steffens@usace.army.mil.

SAW-2013-00063

STEFFENS.THOMAS.ANCRUM.1284706273

Corps Regulatory Official: ~~2015.05.04 17:21:54 -04'00'~~ Date: 05/05/2015
Expiration Date of Verification: 03/18/2017

Determination of Jurisdiction:

- A. Based on preliminary information, there appear to be waters of the US including wetlands within the above described project area. This preliminary determination is not an appealable action under the Regulatory Program Administrative Appeal Process (Reference 33 CFR Part 331).
- B. There are Navigable Waters of the United States within the above described project area subject to the permit requirements of Section 10 of the Rivers and Harbors Act and Section 404 of the Clean Water Act. Unless there is a change in the law or our published regulations, this determination may be relied upon for a period not to exceed five years from the date of this notification.
- C. There are waters of the US and/or wetlands within the above described project area subject to the permit requirements of Section 404 of the Clean Water Act (CWA)(33 USC § 1344). Unless there is a change in the law or our published regulations, this determination may be relied upon for a period not to exceed five years from the date of this notification.
- D. The jurisdictional areas within the above described project area have been identified under a previous action. Please reference jurisdictional determination issued 1/10/2013. Action ID: SAW-2013-00063.

Basis For Determination:

Remarks:

E. Attention USDA Program Participants

This delineation/determination has been conducted to identify the limits of Corps' Clean Water Act jurisdiction for the particular site identified in this request. The delineation/determination may not be valid for the wetland conservation provisions of the Food Security Act of 1985. If you or your tenant are USDA Program participants, or anticipate participation in USDA programs, you should request a certified wetland determination from the local office of the Natural Resources Conservation Service, prior to starting work.

F. Appeals Information (This information applies only to approved jurisdictional determinations as indicated in B and C above).

This correspondence constitutes an approved jurisdictional determination for the above described site. If you object to this determination, you may request an administrative appeal under Corps regulations at 33 CFR Part 331. Enclosed you will find a Notification of Appeal Process (NAP) fact sheet and request for appeal (RFA) form. If you request to appeal this determination you must submit a completed RFA form to the following address:

US Army Corps of Engineers
South Atlantic Division
Attn: Jason Steele, Review Officer
60 Forsyth Street SW, Room 10M15
Atlanta, Georgia 30303-8801
Phone: (404) 562-5137

In order for an RFA to be accepted by the Corps, the Corps must determine that it is complete, that it meets the criteria for appeal under 33 CFR part 331.5, and that it has been received by the Division Office within 60 days of the date of the NAP. Should you decide to submit an RFA form, it must be received at the above address by

It is not necessary to submit an RFA form to the Division Office if you do not object to the determination in this correspondence.

Corps Regulatory Official: STEFFENS.THOMAS.ANCRUM.1284706273

Thomas Steffens
2015.05.04 17:21:30 -04'00'

SAW-2013-00063

Date of JD: **05/05/2015**

Expiration Date of JD:

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 online at <http://regulatory.usacesurvey.com/>.

Copy furnished:

Agent: **Kimley-Horn & Associates, Inc.**
Address: **Jason Hartshorn**
3001 Weston Parkway
Cary, NC, 27513
Telephone Number:

Action ID Number: SAW-2013-00063

County: Pitt

Permittee: City of Greenville
Lynn Raynor

Project Name: EB-5539 City of Greenville South Tar River Greenway Phase 3 Tar River

Date Verification Issued: 05/05/2015 STEFFENS.THOMAS.ANCRUM.1284706273

Project Manager: Thomas Steffens 2015.05.04 17:21:11 -04'00'

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: Thomas Steffens
Washington Regulatory Field Office
2407 West 5th Street
Washington, North Carolina
27889

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.

Signature of Permittee

Date



North Carolina Department of Environment and Natural Resources

Pat McCrory
Governor

Donald R. van der Vaart
Secretary

May 8, 2015

DWR # 12-1055 V2
Pitt County

City of Greenville
Attn: Mr. Lynn Raynor
1500 Beatty Street
Greenville, NC 27834

**Subject: APPROVAL OF 401 WATER QUALITY CERTIFICATION WITH ADDITIONAL CONDITIONS
APPROVAL OF TAR-PAMLICO RIPARIAN BUFFER IMPACTS WITH ADDITIONAL CONDITIONS
South Tar River Greenway (Phase 3)**

Dear Mr. Raynor:

You have our approval for the impacts listed below for the purpose described in your application dated December 11, 2014 and received by the Division of Water Resources (Division) on January 6, 2015 and subsequent information on March 30, 2015. These impacts are covered by the attached Water Quality General Certification Number 3886, Tar-Pamlico River Riparian Buffer Rules, and the conditions listed below. This certification is associated with the use of Nationwide Permit Number 14 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.

This approval requires you to follow the conditions listed in the enclosed certification(s) or general permit and the following additional conditions:

1. The following impacts are hereby approved provided that all of the other specific and general conditions of the Certification are met. No other impacts are approved, including incidental impacts. [15A NCAC 02B .0506(b)(c) and 15A NCAC 02B .0233]

Type of Impact	Amount Approved (units) Permanent	Amount Approved (units) Temporary	Plan location/ Reference Attached
401/404 Wetlands	<i>Acre</i> s	<i>Acre</i> s	
Site 1 (WA)	0.00	0.03	Page 6 of 14 of PCN application received on January 6, 2015
Site 2 (WB)	0.0004	0.04	
Site 3 (WB)	0.05	0.004	
Site 5 (WE)	0.08	0.01	

Site 6 (WE)	0.008	0.005	Page 6 of 14 of PCN application received on January 6, 2015
Site 7 (WF)	0.002	0.003	
Site 8 (WG)	0.08	0.03	
Site 9 (WH)	0.005	0.003	
Site 10 (WI)	0.01	0.006	
Site 11 (WJ)	0.005	0.004	
Site 12 (WK)	0.06	0.005	
Total 401/404 Wetlands	0.3004	0.14	
Buffers	<i>Square Feet</i>	<i>Square Feet</i>	
Site 4	2,172 (Zone 1)	0 (Zone 1)	Page 8 of 14 of amended PCN application received on March 30, 2015
	1,833 (Zone 2)	0 (Zone 2)	
Site 12	4,170 (Zone 1)	0 (Zone 1)	
	13,226 (Zone 2)	0 (Zone 2)	
Site 13	479 (Zone 1)	0 (Zone 1)	
	3,944 (Zone 2)	0 (Zone 2)	
Site 14	5,918 (Zone 1)	0 (Zone 1)	
	5,209 (Zone 2)	0 (Zone 2)	
Site 16	223 (Zone 1)	0 (Zone 1)	
	979 (Zone 2)	0 (Zone 2)	
Site 17	0 (Zone 1)	0 (Zone 1)	
	167 (Zone 2)	0 (Zone 2)	
Total Buffers	13,109 (Zone 1) 29.071 (Zone 2)	0 (Zone 1) 0 (Zone 2)	

2. 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 the 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 approval letter and General Certification and is responsible for complying with all conditions. [15A NCAC 02B .0507(d)(2)]

3. If any erosion problems are observed in the surface waters downslope of the stormwater discharge points, then you shall immediately repair and correct the problem and prevent further damage and sediment discharge to the receiving surface waters. Please be aware that these repairs may require you to obtain a 404 Permit from the Corps and a 401 Certification from the Division. [15A NCAC 02H .0506(b)(5)]

4. Water Quality Certification

 The proposed project must comply with all the conditions of the General Water Quality Certification(s) 3886. [15A NCAC 02B .0507(c)]

5. Wetland Boundary Protective Fencing

The wetlands within 50 feet of areas of disturbance shall be clearly marked with orange warning fencing (or similar high visibility material) to protect the remaining wetlands onsite from being impacted. **This shall be done during the initial stage of construction.** 15A NCAC 02H .0506 (b)(2) and (c)(2) and 15A NCAC 02H .0507 (c)]

6. The turbidity standard of 50 NTUs (Nephelometric Turbidity Units) shall not be exceeded as described in 15 A NCAC 02B .0211 (k). Appropriate sediment and erosion control practices must be used to meet this standard. [15A NCAC 02B .0211 (k)]
7. The Permittee shall replant the vegetation within temporarily disturbed areas associated with this project in an "in kind" manner immediately following construction. (Example: Disturbed areas with pre-existing grassed lawns must be replanted with grass. Disturbed areas with pre-existing trees or woody vegetation must be replanted with trees and woody vegetation. Disturbed areas with pre-existing forest vegetation must be replanted with forest vegetation including at least two different native hardwood tree species at a density sufficient to provide 320 trees per acre at maturity. This density can usually be achieved by planting approximately 436 (10 x 10 spacing) to 681 (8 x 8 spacing) trees per acre.) Restoration of trees/shrubs/forest must be completed by the first subsequent planting season (November 1 through March 30). Note, if the tree plantings do not survive, they will need to be replaced such that the density is sufficient to provide 320 trees per acre at maturity. [15A NCAC 02H .0507 (c), 15A NCAC 02H .0506 (b)(3), and 15A NCAC 02B .0233 (6)]
8. All mechanized equipment operated near surface waters or wetlands will be regularly inspected and maintained to prevent contamination of waters and wetlands from fuels, lubricants, hydraulic fluids or other potential toxic chemicals. In the event of a hydrocarbon or chemical spill, the permittee/contractor shall immediately contact the Division of Water Quality, between the hours of 8 am to 5 pm at the Washington Regional Office at 252.946.6481 and after hours and on weekends call **(800) 858-0368**. Management of such spills shall comply with provisions of the North Carolina Oil Pollution and Hazardous Substances Control Act. [15A NCAC 02H .0506 (b)(3) and (c)(3), 15A NCAC 02B .0200 (3)(f), and GS 143 Article 21A]
9. Re Opener Clause

The City of Greenville and their authorized agents shall conduct their activities in a manner consistent with State water quality standards (including any requirements resulting from compliance with section 303(d) of the Clean Water Act) and any other appropriate requirements of State law and federal law. The City of Greenville shall require their contractors (and/or agents) to comply with all of the terms of this Certification, and shall provide each of their contractors (and/or agents) a copy of this Certification. A copy of this Certification shall be included in the construction contract and available on the job site at all times. If DWR 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, DWR may reevaluate and modify this certification to include conditions appropriate to assure compliance with such standards and requirements in accordance with 15A NCAC

- 2H.0507(d). Before modifying the certification, DWR shall notify the City of Greenville and the US Army Corps of Engineers, provide public notice in accordance with 15A NCAC 2H.0503 and provide opportunity for public hearing in accordance with 15A NCAC 2H.0504. Any new or revised conditions shall be provided to DWR in writing, shall be provided to the United States Army Corps of Engineers for reference in any permit issued pursuant to Section 404 of the Clean Water Act, and shall also become conditions of the 404 Permit for the project.
10. Upon completion of all work approved within the 401 Water Quality Certification or applicable Buffer Rules, any subsequent modifications, the applicant is required to return the attached certificate of completion to the 401 & Buffer Permitting Unit, NC Division of Water Resources, 1617 Mail Service Center, Raleigh, NC 27699-1650. [15A NCAC 02H .0507 (c)]
 11. The applicant and/or authorized agent shall provide a completed Certificate of Completion form to the Division within thirty (30) days of project completion (available at <http://portal.ncdenr.org/web/wq/swp/ws/401/certsandpermits/apply/forms>). [15A NCAC 02H .0506(b)(5)]
 12. Within 60 days of completion of construction, as-built drawings (which can be shown on an aerial or done as a survey) shall be submitted to both the Division of Water Quality, 401 & Buffer Permitting Unit, 1617 Mail Service Center, Raleigh NC 27699-1617 and to the Washington Regional Office. [15A NCAC 02H .0507 (c) and 15A NCAC 02H .0506 (b)(2) and (c)(2)]
 13. This approval and their conditions are final and binding unless contested. [G.S. 143-215.5]

These Certifications can be contested as provided in Articles 3 and 4 of General Statute 150B by filing a written petition for an administrative hearing to the Office of Administrative Hearings (hereby known as OAH). A petition form may be obtained from the OAH at <http://www.ncoah.com/> or by calling the OAH Clerk's Office at (919) 431-3000 for information.

Within **sixty (60) calendar days** of receipt of this notice, a petition must be filed with the OAH. A petition is considered filed when the original and one (1) copy along with any applicable OAH filing fee is received in the OAH during normal office hours (Monday through Friday between 8:00am and 5:00pm, excluding official state holidays).

The petition may be faxed to the OAH at (919) 431-3100, provided the original and one copy of the petition along with any applicable OAH filing fee is received by the OAH within five (5) business days following the faxed transmission.

Mailing address for the OAH:

If sending via US Postal Service:

If sending via delivery service (UPS, FedEx, etc.):

Office of Administrative Hearings
6714 Mail Service Center
Raleigh, NC 27699-6714

Office of Administrative Hearings
1711 New Hope Church Road
Raleigh, NC 27609-6285

One (1) copy of the petition must also be served to DENR:

Sam H. Hayes, General Counsel
Department of Environment and Natural Resources
1601 Mail Service Center
Raleigh, NC 27699-1601

This letter completes the review of the Division under section 401 of the Clean Water . Please contact Anthony Scarbraugh at 252-948-3924 or anthony.scarbraugh@ncdenr.gov if you have any questions or concerns.

Sincerely,



Robert Tankard, Assistant Regional Supervisor
Water Quality Regional Operations Section
Division of Water Resources, NCDENR

Enclosures: GC 3890
Certification of Completion

cc: Tom Steffens, USACE Washington Regulatory Field Office (via email)
DWR 401 & Buffer Permitting Unit (Laserfiche)
File
Pat McClain, DELMR WaRO (via email)
Jason Hartshorn, Kimley-Horn,
3001 Weston Parkway, Cary, NC 27513

Water Quality Certification No. 3886

**GENERAL CERTIFICATION FOR PROJECTS ELIGIBLE FOR U.S. ARMY CORPS OF
ENGINEERS NATIONWIDE PERMIT NUMBER 14 (LINEAR TRANSPORTATION PROJECTS)
AND REGIONAL GENERAL PERMIT 198200031 (WORK ASSOCIATED WITH BRIDGE
CONSTRUCTION, MAINTENANCE OR REPAIR CONDUCTED BY NCDOT OR OTHER
GOVERNMENT AGENCIES)
AND RIPARIAN AREA PROTECTION RULES (BUFFER RULES)**

Water Quality Certification Number 3886 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 Division of Water Quality (DWQ) Regulations in 15A NCAC 02H .0500 and 15A NCAC 02B .0200 for the discharge of fill material to waters and adjacent wetland areas or to wetland areas that are not a part of the surface tributary system to interstate waters or navigable waters of the United States (as described in 33 CFR 330 Appendix A (B) (14) of the Corps of Engineers regulations (Nationwide Permit No. 14 and Regional General Permit 198200031) and for the Riparian Area Protection Rules (Buffer Rules) in 15A NCAC 02B .0200.

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.

Any proposed fill or modification of wetlands and/or waters, including streams, under this General Certification requires application to, and written approval from the Division of Water Quality except for the single family lot exemption described below.

Activities meeting any one (1) of the following thresholds or circumstances require written approval for a 401 Water Quality Certification from the Division of Water Quality (the "Division"):

- a) Any temporary or permanent impacts to wetlands, open waters and/or streams, including stream relocations, except for construction of a driveway to a single family lot as long as the driveway involves *less than 25 feet* of temporary and/or permanent stream channel impacts, including any in-stream stabilization needed for the crossing; or
- b) Any impact associated with a high density project (as defined in Item (A)(iv) of the **401 Stormwater Requirements**) that is not subject to either a state stormwater program (such as, but not limited to, Coastal Counties, HQW, ORW or state-implemented Phase II NPDES) or a certified community's stormwater program; or
- c) Any impact associated with a Notice of Violation or an enforcement action for violation(s) of DWQ Wetland Rules (15A NCAC 02H .0500), Isolated Wetland Rules (15A NCAC 02H .1300), DWQ Surface Water or Wetland Standards, or Riparian Buffer Rules (15A NCAC 02B .0200); or
- d) Any impacts to streams and/or buffers in the Neuse, Tar-Pamlico, or Catawba River Basins or in the Randleman, Jordan or Goose Creek Watersheds (or any other basin or watershed with Riparian Area Protection Rules [Buffer Rules] in effect at the time of application) *unless* the activities are listed as "EXEMPT" from these rules or a Buffer Authorization Certificate is issued through N.C. Division of Coastal Management (DCM) delegation for "ALLOWABLE" activities.

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. If a project also requires a CAMA Permit, then one payment to both agencies shall be submitted and will be the higher of the two fees.

Activities included in this General Certification that do not meet one of the thresholds listed above do not require written approval from the Division as long as they comply with

Water Quality Certification No. 3886

the Conditions of Certification listed below. If any of these Conditions cannot be met, then written approval from the Division is required.

Conditions of Certification:

1. No Impacts Beyond those Authorized in the Written Approval or Beyond the Threshold of Use of this Certification

No waste, spoil, solids, or fill of any kind shall occur in wetlands, waters, or riparian areas beyond the footprint of the impacts depicted in the Pre-Construction Notification, as authorized in the written approval from the Division or beyond the thresholds established for use of this Certification without written authorization, including incidental impacts. All construction activities, including the design, installation, operation, and maintenance of sediment and erosion control Best Management Practices shall be performed so that no violations of state water quality standards, statutes, or rules occur. Approved plans and specifications for this project are incorporated by reference and are enforceable parts of this permit.

2. Standard Erosion and Sediment Control Practices

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 and if applicable, comply with the specific conditions and requirements of the NPDES Construction Stormwater Permit issued to the site:

- a. 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.
- b. 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*.
- c. Reclamation measures and implementation must comply with the reclamation in accordance with the requirements of the Sedimentation Pollution Control Act and the Mining Act of 1971.
- d. Sufficient materials required for stabilization and/or repair of erosion control measures and stormwater routing and treatment shall be on site at all times.
- e. If the project occurs in waters or watersheds classified as Primary Nursery Areas (PNAs), SA, WS-I, WS-II, High Quality (HQW), or Outstanding Resource (ORW) waters, then the sedimentation and erosion control designs must comply with the requirements set forth in 15A NCAC 04B .0124, *Design Standards in Sensitive Watersheds*.

Water Quality Certification No. 3886

3. No Sediment and Erosion Control Measures in Wetlands or Waters

Sediment and erosion control measures shall not be placed in wetlands or waters. Exceptions to this condition require application submittal to and written approval by the Division. If placement of sediment and erosion control devices in wetlands and waters is unavoidable, then design and placement of temporary erosion control measures shall not be conducted in a manner that may result in dis-equilibrium of wetlands, stream beds, or banks, adjacent to or upstream and downstream of the above structures. All sediment and erosion control devices shall be removed and the natural grade restored within two (2) months of the date that the Division of Land Resources (DLR) or locally delegated program has released the specific area within the project.

4. Construction Stormwater Permit NCG010000

An NPDES Construction Stormwater Permit is required for construction projects that disturb one (1) or more acres of land. This Permit allows stormwater to be discharged during land disturbing construction activities as stipulated in the conditions of the permit. If your 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. A copy of the general permit (NCG010000), inspection log sheets, and other information may be found at <http://portal.ncdenr.org/web/wq/ws/su/npdessw#tab-w>.

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.

5. Construction Moratoriums and Coordination

If activities must occur during periods of high biological activity (i.e. 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.

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) to lessen impacts on trout, anadromous fish, larval/post-larval fishes and crustaceans, or other aquatic species of concern shall be implemented. Exceptions to this condition require written approval by the resource agency responsible for the given moratorium.

Work within the twenty-five (25) designated trout counties or identified state or federal endangered or threatened species habitat shall be coordinated with the appropriate WRC, USFWS, NMFS, and/or DMF personnel.

6. Work in the Dry

All work in or adjacent to stream waters 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 submittal to and written approval by the Division.

Water Quality Certification No. 3886

7. Riparian Area Protection (Buffer) Rules

Activities located in the protected riparian areas (whether jurisdictional wetlands or not), within the Neuse, Tar-Pamlico, or Catawba River Basins or in the Randleman, Jordan, or Goose Creek Watersheds (or any other basin or watershed with buffer rules) shall be limited to "uses" identified within and constructed in accordance with 15A NCAC 02B .0233, .0259, .0243, .0250, .0267 and .0605, and shall be located, designed, constructed, and maintained to have minimal disturbance to protect water quality to the maximum extent practicable through the use of best management practices. All buffer rule requirements, including diffuse flow requirements, must be met.

8. If concrete is used during the 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 due to the potential for elevated pH and possible aquatic life/ fish kills.
9. Bridge deck drains shall not discharge directly into the stream. Stormwater shall be directed across the bridge and pre-treated through site-appropriate means (grassed swales, pre-formed scour holes, vegetated buffers, etc.) before entering the stream. Please refer to the most current version of *Stormwater Best Management Practices*. Exceptions to this condition require written approval by the Division.

10. Compensatory Mitigation

In accordance with 15A NCAC 02H .0506 (h), compensatory mitigation may be required for losses of equal to or greater than 150 linear feet of streams (intermittent and perennial) and/or equal to or greater than one (1) acre of wetlands. For linear public transportation projects, impacts equal to or exceeding 150 linear feet per stream shall require mitigation.

Buffer mitigation may be required for any project with Buffer Rules in effect at the time of application for activities classified as "Allowable with Mitigation" or "Prohibited" within the Table of Uses.

A determination of buffer, wetland, and stream mitigation requirements shall be made for any General Water Quality Certification for this Nationwide and/or Regional General Permit. Design and monitoring protocols shall follow the US Army Corps of Engineers Wilmington District *Stream Mitigation Guidelines* (April 2003) or its subsequent updates. Compensatory mitigation plans shall be submitted to the Division for written approval as required in those protocols. The mitigation plan must be implemented and/or constructed before any impacts occur on site. Alternatively, the Division will accept payment into an in-lieu fee program or a mitigation bank. In these cases, proof of payment shall be provided to the Division before any impacts occur on site.

Water Quality Certification No. 3886

11. Relocated stream designs should include the same dimensions, patterns, and profiles as the existing channel (or a stable reference reach if the existing channel is unstable), to the maximum extent practical. The new channel should be constructed in the dry and water shall not be turned into the new channel until the banks are stabilized. Vegetation used for bank stabilization shall be limited to native woody species, and should include establishment of a 30-foot wide wooded and an adjacent 20-foot wide vegetated buffer on both sides of the relocated channel to the maximum extent practical. A transitional phase incorporating appropriate erosion control matting materials and seedling establishment is allowable, however matting that incorporates plastic mesh and/or plastic twine shall not be used in wetlands, riparian buffers or floodplains as recommended by the North Carolina Sediment and Erosion Control Manual. Rip-rap, A-Jacks, concrete, gabions or other hard structures may be allowed if it is necessary to maintain the physical integrity of the stream; however, the applicant must provide written justification and any calculations used to determine the extent of rip-rap coverage. Please note that if the stream relocation is conducted as a stream restoration as defined in the US Army Corps of Engineers Wilmington District, April 2003 *Stream Mitigation Guidelines* (or its subsequent updates), the restored length may be used as compensatory mitigation for the impacts resulting from the relocation.

12. Stormwater Management Plan Requirements

All applications shall address stormwater management throughout the entire project area per the 401 Stormwater Requirements, referenced herein as "**Attachment A**" at the end of this Certification.

13. Placement of Culverts and Other Structures in Waters and Wetlands

Culverts required for this project 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. Existing stream dimensions (including the cross section dimensions, pattern, and longitudinal profile) must be maintained above and below locations of each culvert.

Placement of culverts and other structures in waters and streams must be 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 or equal to 48 inches, to allow low flow passage of water and aquatic life.

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 (rock ladders, crossvanes, etc). Notification to the Division including supporting documentation to include a location map of the culvert, culvert profile drawings, and slope calculations shall be provided to the Division 60 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 to the Division including supporting documentation such as, but not limited to, a location map of the culvert, geotechnical reports, photographs, etc shall be provided to the Division a minimum of 60 days prior to the installation of the culvert. If bedrock is discovered during construction, then the Division 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 submittal to, and written approval by, the Division of Water Quality, regardless of the total impacts to streams or wetlands from the project.

Water Quality Certification No. 3886

Installation of culverts in wetlands must ensure continuity of water movement and be designed to adequately accommodate high water or flood conditions. Additionally, when roadways, causeways, or other fill projects are constructed across FEMA-designated floodways or wetlands, openings such as culverts or bridges must 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 must be used where practicable instead of riprap or other bank hardening methods.

14. All temporary fill and culverts shall be removed and the impacted area returned to natural conditions within 60 days of the determination that the temporary impact is no longer necessary. The impacted areas shall be restored to original grade, including each stream's original cross sectional dimensions, plan form pattern, and longitudinal bed and bed profile, and the various sites shall be stabilized with natural woody vegetation (except for the approved maintenance areas) and restored to prevent erosion.
15. All temporary pipes/ culverts/ riprap pads etc, shall be installed in all streams 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* so as not to restrict stream flow or cause dis-equilibrium during use of this General Certification.
16. Any riprap 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 buried and/or "keyed in" 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.
17. Any rip-rap used for stream stabilization shall be of a size and density so as not to be able to be carried off by wave, current action, or stream flows and 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.
18. A one-time application of fertilizer to re-establish vegetation is allowed in disturbed areas including riparian buffers, but is restricted to no closer than 10 feet from top of bank of streams. Any fertilizer application must comply with all other Federal, State and Local regulations.
19. If this Water Quality Certification is used to access building sites, then all lots owned by the applicant must be buildable without additional impacts to streams or wetlands. The applicant is required to provide evidence that the lots are buildable without requiring additional impacts to wetlands, waters, or buffers if required to do so in writing by the Division. For road construction purposes, this Certification shall only be utilized from natural high ground to natural high ground.
20. Deed notifications or similar mechanisms shall be placed on all retained jurisdictional wetlands, waters, and protective buffers within the project boundaries in order to assure compliance for future wetland, water, and buffer impact. These mechanisms shall be put in place at the time of recording of the property or of individual lots, whichever is appropriate. A sample deed notification can be downloaded from the 401/Wetlands Unit web site at <http://portal.ncdenr.org/web/wq/swp/ws/401/certsandpermits/apply/forms>. The text of the sample deed notification may be modified as appropriate to suit to a specific project. Documentation of deed notifications shall be provided to the Division upon request.

Water Quality Certification No. 3886

21. If an environmental document is required under the National or State Environmental Policy Act (NEPA or 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.
22. In the twenty (20) coastal counties, the appropriate DWQ Regional Office must be contacted to determine if Coastal Stormwater Regulations will be required.
23. This General Certification does not relieve the applicant of the responsibility to obtain all other required Federal, State, or Local approvals.
24. The applicant/permittee 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 the Division 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 the Division may reevaluate and modify this General Water Quality Certification.
25. 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 the certificate of completion attached to the approval. One copy of the certificate shall be sent to the DWQ Central Office in Raleigh at 1650 Mail Service Center, Raleigh, NC, 27699-1650.
26. 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.
27. This certification grants permission to the director, an authorized representative of the Director, or DENR staff, upon the presentation of proper credentials, to enter the property during normal business hours.

This General Certification shall expire on the same day as the expiration date of the corresponding Nationwide 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.

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.

The Director of the North Carolina Division of Water Quality may require submission of a formal application for Individual Certification for any project in this category of activity if it is 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 wetland or downstream waters are precluded.

Water Quality Certification No. 3886

Public hearings may be held for specific applications or group of applications prior to a Certification decision if deemed in the public's best interest by the Director of the North Carolina Division of Water Quality.

Effective date: March 19, 2012

DIVISION OF WATER QUALITY

By

A handwritten signature in blue ink, appearing to read "Matt M. Wakild" followed by a flourish.

Charles Wakild, P.E.

Director

History Note: Water Quality Certification (WQC) Number 3886 issued March 12, 2012 replaces 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 issued May 1, 1992; WQC Number 2666 issued January 21, 1992; WQC Number 2177 issued November 5, 1987. This WQC is rescinded when the Corps of Engineers reauthorizes any of the corresponding Nationwide and/or Regional General Permits or when deemed appropriate by the Director of the Division of Water Quality.

Water Quality Certification No. 3886

Attachment A: 401 Stormwater Requirements

The requirements listed below shall be implemented in order to comply with Condition 12 of this General Certification. For the North Carolina Department of Transportation, compliance with NCDOT's Individual NPDES permit NCS000250 shall serve to satisfy the 401 and Isolated Wetland Stormwater Requirements.¹

- A. **Design and Implementation Requirements.** All projects, regardless of project area, amount of built-upon area or amount of jurisdictional impact, shall meet the following stormwater design requirements:
- i. **Non-Erosive Discharge to Streams and Wetlands.** Stormwater conveyances that discharge to streams and wetlands must discharge at a non-erosive velocity prior to entering the stream or wetland during the peak flow from the ten-year storm.²
 - ii. **Vegetated Setbacks.** A 30-foot wide vegetated setback must be maintained adjacent to streams, rivers and tidal waters in areas that are not subject to a state Riparian Area Protection Rule or other more stringent vegetated setback requirements. The width of the setback shall be measured horizontally from the normal pool elevation of impounded structures, the top-of-bank of streams and rivers, and the mean high waterline of tidal waters, perpendicular to shoreline. Vegetated setback and filters required by state rules or local governments may be met concurrently with this requirement and may contain coastal, isolated or 404 jurisdictional wetlands. Non-jurisdictional portions of the vegetated setback may be cleared and graded, but must be planted with and maintained in grass or other vegetative or plant material.³
 - iii. **Construction and Operation.** The stormwater management plan must be constructed and operational before any permanent building or other structure is occupied or utilized at the site. The stormwater management plan, including drainage patterns, must be maintained in perpetuity.⁴
 - iv. **Coordination with Other Stormwater Programs.** Projects that are subject to another Division of Water Quality (DWQ) stormwater program, including (but not limited to) the 20 Coastal Counties, HQW, ORW or state-implemented Phase II NPDES, or a Certified Community's stormwater management program, must be constructed and maintained in compliance with the approved stormwater management plan.⁵
 - v. **Stormwater Design Requirements for Projects Not Covered Under Item (iv).** Projects that are not subject to another DWQ stormwater program or a Certified Community's stormwater program shall meet all of the following requirements:
 - a. **Low Density.** A site is low density if all the following requirements are met:
 1. The development has a built upon area of twenty-four percent (24%) or less, considering both current and future development. When determining the amount of built upon area, coastal wetlands shall be included; however, ponds, lakes and rivers as specified in North Carolina's Schedule of Classifications shall be excluded. If a portion of project has a density greater than 24%, the higher density area must be located in an upland area and away from surface waters and drainageways to the maximum extent practicable.⁶
 2. All stormwater runoff from the built upon areas is transported primarily via vegetated conveyances designed in accordance with the most recent version of the *NC DWQ Stormwater Best Management Practices Manual*. Alternative designs may be approved if the applicant can show that the design provides

Water Quality Certification No. 3886

equal or better water quality protection than the practices specified in the manual. The project must not include a stormwater collection system (such as piped conveyances) as defined in 15A NCAC 02B .0202(60).⁷

- b. **High Density.** Projects that do not meet the Low Density requirements shall meet the following requirements:
1. Stormwater runoff from the entire site must be treated by structural stormwater controls (BMPs) that are designed to remove eighty-five percent (85%) of the average annual amount of Total Suspended Solids (TSS). Stormwater runoff that drains directly to Nutrient Sensitive Waters (NSW) must also be treated to remove thirty percent (30%) of Total Nitrogen (TN) and Total Phosphorus (TP).⁸
 2. All BMPs must be designed in accordance with the version of the *NC DWQ Stormwater Best Management Practices Manual* that is in place on the date of stormwater management plan submittal. Alternative designs may be approved if the applicant can show that the design provides equal or better water quality protection than the practices specified in the manual.⁹
 3. DWQ may add specific stormwater management requirements on a case-by-case basis in order to ensure that a proposed activity will not violate water quality standards.¹⁰
 4. DWQ may approve Low Impact Developments (LIDs) that meet the guidance set forth in the *Low Impact Development: A Guidebook for North Carolina*.¹¹
 5. Proposed new development undertaken by a local government solely as a public road project shall follow the requirements of the NC DOT BMP Toolbox rather than Items (1)-(4) above.¹²

B. **Submittal Requirements.** The submittal requirements listed below apply only to projects that require written authorization as indicated in the applicable General Certification as well as projects that require an Isolated Wetlands Permit. **Any required documentation shall be sent to the Wetlands, Buffers and Stormwater Compliance and Permitting Unit at 1650 Mail Service Center, Raleigh, NC 27699-1650.**

- i. **Projects that are Subject to Another DWQ Stormwater Program:** If the project is subject to another DWQ stormwater program, such as the 20 Coastal Counties, HQW, ORW or state-implemented Phase II NPDES, then the applicant shall submit a copy of the stormwater approval letter before any impacts occur on site.¹³
- ii. **Projects that are Subject to a Certified Community's Stormwater Program.** If the project is subject to a certified local government's stormwater program, then the applicant shall submit one set of approved stormwater management plan details and calculations with documentation of the local government's approval before any impacts occur on site.⁵
- iii. **Projects Not Covered Under Items (i) or (ii).** If the project is not subject to another DWQ Stormwater Program or a Certified Community's stormwater program, then it shall be reviewed and approved by the DWQ through the Water Quality Certification authorization process.
 - a. **Low Density.** For low density projects, the applicant shall submit two copies of the DWQ Low Density Supplement Form with all required items.¹³

Water Quality Certification No. 3886

- b. **High Density.** For high density projects, the applicant shall submit two copies of a DWQ BMP Supplement Form and all required items at the specified scales for each BMP that is proposed.¹³
- iv. **Phasing.** Stormwater management plans may be phased on a case-by-case basis, with the submittal of a final stormwater management plan per Items (i)-(iii) above required for the current phase and a conceptual stormwater management plan for the future phase(s). The stormwater management plan for each future phase must be approved by the appropriate entity before construction of that phase is commenced. The approved stormwater management plan for each future phase must be constructed and operational before any permanent building or other structure associated with that phase is occupied.¹⁴
- v. **Stormwater Management Plan Modifications.** The stormwater management plan may not be modified without prior written authorization from the entity that approved the plan. If the project is within a Certified Community, then the applicant shall submit one set of approved stormwater management plan details and calculations with documentation of the local government's approval for record-keeping purposes. If the project is subject to DWQ review, then the applicant shall submit two copies of the appropriate Supplement Forms per Item (iii) above for any BMPs that have been modified for DWQ's review and approval.¹⁵

¹ The stormwater requirement for 401 applications is codified in 15A NCAC 02H .0506(b)(5) and (c)(5).

² Non erosive discharge rates are required in SL 2008-211§2(b)(1). The 10-year design storm standard is codified in 15A NCAC 02H .1008(f)(2) and .1008(g)(1).

³ 30-foot vegetated setbacks are required in SL 2006-246§9(d), SL 2008-211§2(b), 15A NCAC 02H .1006(2)(c) and .1007(1)(a).

⁴ Construction and maintenance of the stormwater plan is necessary to satisfy 15A NCAC 02H .0506(b)(5).

⁵ Conveys application procedure to streamline the permitting process and reduce any unnecessary duplication in the review of stormwater management plans.

⁶ Low density built upon area thresholds are set in SL 2006-246§9(c) and SL 2008-211§2(b).

⁷ The requirement for low density development to use vegetated conveyances is codified in SL 2006-246§9(c), SL 2008-211§2(b), 15A NCAC 02H .1006(2)(b) and .1007(1)(a). The Stormwater BMP Manual is also referenced in 15A NCAC 02B .0265(3)(a) and .0277(4)(e).

⁸ 85% TSS removal is required in SL 2006-246§9(d), SL 2008-211§2(b), 15A NCAC 02H .1006(2)(c), 15A NCAC 02H .1007(1)(a). The 30% TN and TP removal requirements for NSW waters are set forth in 15A NCAC 02B .0232, 15A NCAC 02B .0257(a)(1), 15A NCAC 02B .0265(3)(a) and 15A NCAC 02B .0277(4).

⁹ The Stormwater BMP Manual is also referenced in 15A NCAC 02B .0265(3)(a) and .0277(4)(e).

¹⁰ The requirement for DWQ to ensure that water quality standards are protected before issuing a 401 certification is codified in 15A NCAC 02H .0506.

¹¹ The LID Toolbox is also referenced in 15A NCAC 02B .0277(4)(g).

¹² The term "public road project" is defined in 15A NCAC 02B .0265(3)(a).

¹³ Conveys application procedure to streamline the permitting process.

¹⁴ Phased development is addressed as a "common plan of development" in 15A NCAC 02H .1003(3).

¹⁵ Procedures for modifying stormwater plans are set forth in 15A NCAC 02H .1011.

Certification of Completion

DWR Project No.: _____ County: _____

Applicant: _____

Project Name: _____

Date of Issuance of Wetland Permit: _____

Certificate of Completion

Upon completion of all work approved within the **401 Water Quality Certification**, and any subsequent modifications, the applicant is required to return this certificate to the 401 and Buffer Permitting Unit, North Carolina Division of Water Resources, 1617 Mail Service Center, Raleigh, NC, 27699-1650. This form may be returned to DWR by the applicant, the applicant's authorized agent, or the project engineer. It is not necessary to send certificates from all of these.

Applicant's Certification

I, _____, hereby state that, to the best of my abilities, due care and diligence was used in the observation of the construction such that the construction was observed to be built within substantial compliance and intent of the **401 Water Quality Certification**, the approved plans and specifications, and other supporting materials.

Signature: _____ Date: _____

Agent's Certification

I, _____, hereby state that, to the best of my abilities, due care and diligence was used in the observation of the construction such that the construction was observed to be built within substantial compliance and intent of the **401 Water Quality Certification**, the approved plans and specifications, and other supporting materials.

Signature: _____ Date: _____

If this project was designed by a Certified Professional

I, _____, as a duly registered Professional _____ (i.e., Engineer, Landscape Architect, Surveyor, etc.) in the State of North Carolina, having been authorized to observe (periodically, weekly, full time) the construction of the project, for the Permittee hereby state that, to the best of my abilities, due care and diligence was used in the observation of the construction such that the construction was observed to be built within substantial compliance and intent of the **401 Water Quality Certification**, the approved plans and specifications, and other supporting materials.

Signature: _____ Registration No. _____ Date _____



North Carolina Department of Public Safety
Emergency Management

Pat McCrory, Governor
Frank L. Perry, Secretary

Michael A. Sprayberry, Director

December 9, 2014

Billy Lee Merrill, PLS, CFM
City of Greenville City Surveyor
1500 Beatty Street
Greenville, NC 27834

Subject: No-Rise Certification for South Tar River Greenway Phase 3

Dear Mr. Merrill:

The North Carolina Department of Public Safety Division of Emergency Management Risk Management National Flood Insurance Program (NCNFIP) staff has reviewed the Engineering No-Rise Analysis for the proposed greenway trail along the Tar River. The report was prepared by Kimley-Horn and Associates, Thomas M. Gray, P.E., dated November 25, 2014. The report was received in this office on December 4, 2014.

Based on the information provided, the NCNFIP review indicates the report meets the requirements of the Federal Emergency Management Agency's (FEMA) guidance for a no-rise certification. The NCNFIP finds no objection to the conclusion of no increase in base flood elevation or floodway elevation as contained in the report.

The No-Rise Certification Study is used to measure impacts due to the proposed development within the floodway. It should not be used to establish base flood elevations. A floodplain development permit will be required prior to starting work.

If you have any questions or concerns with the items herein, please feel free to contact Dan Brubaker at (919) 825-2300, by email at dan.brubaker@ncdps.gov or at the address shown on the footer of this document.

Sincerely,

Kenneth W. Ashe, P.E., CFM
Assistant Director
Risk Management

cc: John Gerber, NFIP State Coordinator
Dan Brubaker, NFIP Engineer

MAILING ADDRESS:
4218 Mail Service Center
Raleigh NC 27699-4218
www.ncem.org



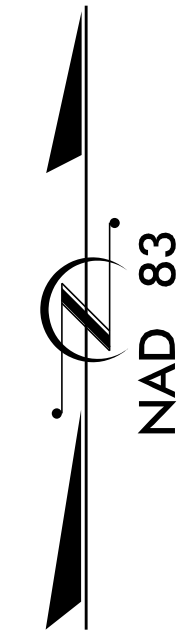
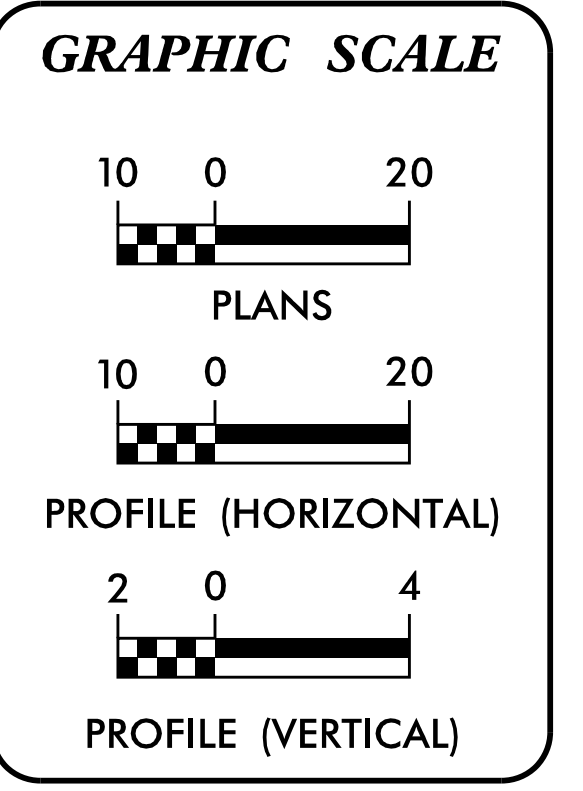
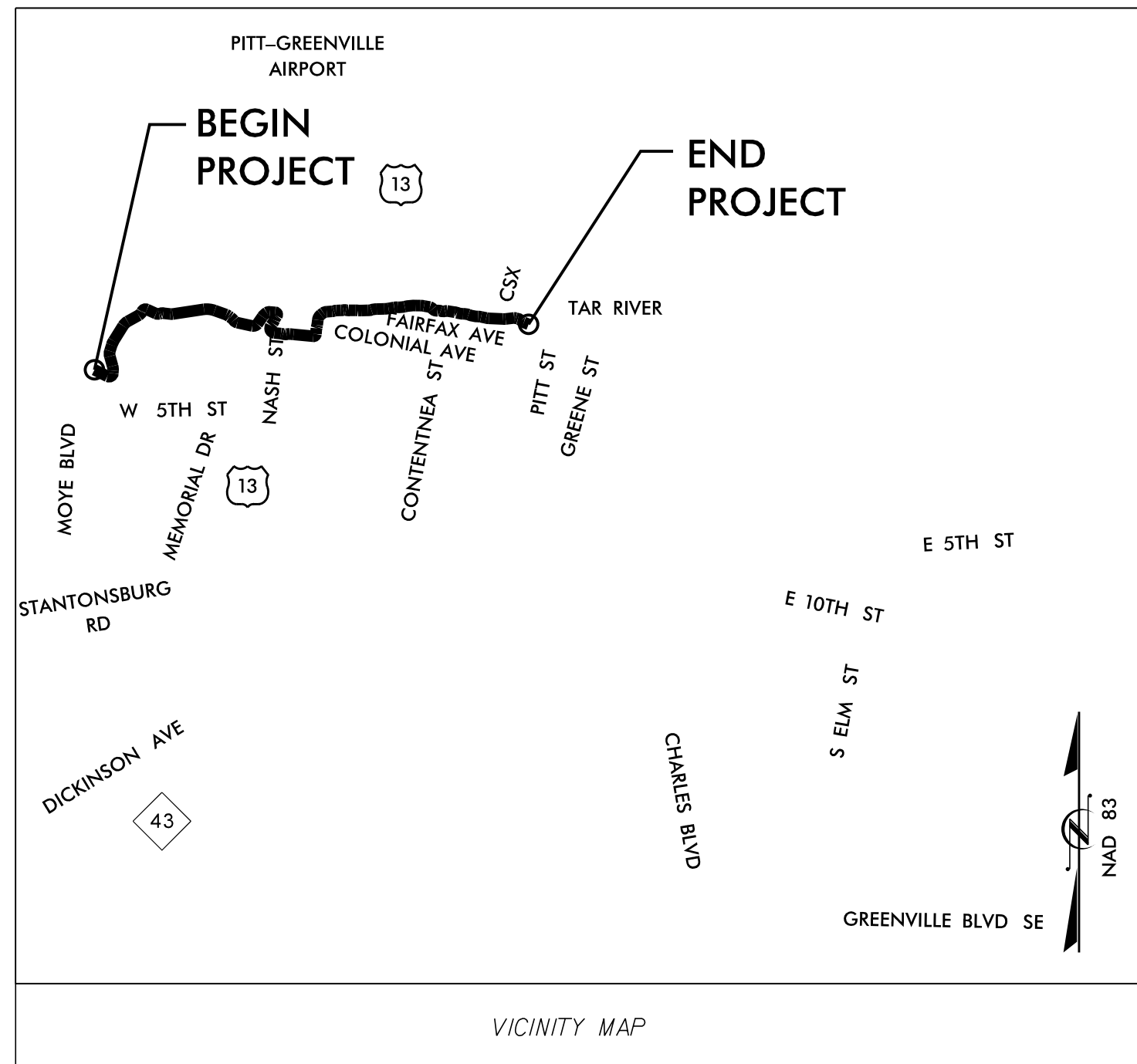
GTM OFFICE LOCATION:
4105 Reedy Creek Road
Raleigh, NC 27607
Telephone: (919) 825-2341
Fax: (919) 825-0408

CITY OF GREENVILLE

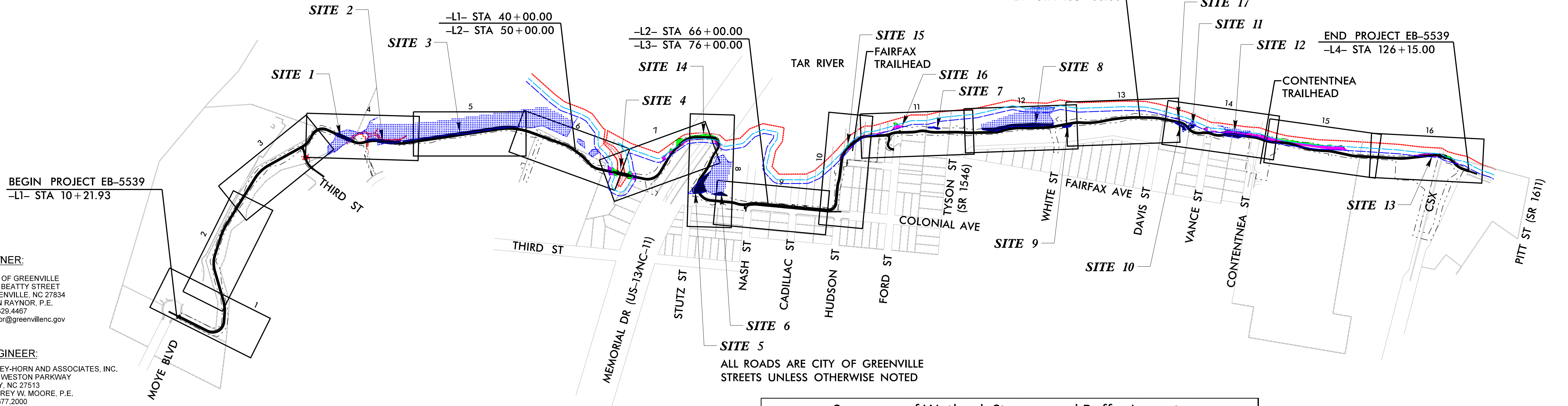
SOUTH TAR RIVER GREENWAY, PHASE 3 (EB-5539)

FROM MOYE BOULEVARD TO THE WESTERN TERMINUS OF
THE EXISTING SOUTH TAR RIVER GREENWAY NEAR PITT STREET

WETLAND, STREAM, AND BUFFER IMPACTS



INCOMPLETE PLANS
DO NOT USE FOR A.C. ACQUISITION
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



OWNER:
CITY OF GREENVILLE
1500 BEATTY STREET
GREENVILLE, NC 27834
LYNN RAYNOR, P.E.
252.329.4467
lraynor@greenvillenc.gov

ENGINEER:
KIMLEY-HORN AND ASSOCIATES, INC.
3001 WESTON PARKWAY
CARY, NC 27513
JEFFREY W. MOORE, P.E.
919.677.2000
jeff.moore@kimley-horn.com

SURVEYOR:
STEWART
421 FAYETTEVILLE STREET
SUITE 400
RALEIGH, NC 27601
FRANK MUNDY, PLS
919.380.8750
fmundy@stewart-eng.com

GEOTECHNICAL:
FALCON ENGINEERING, INC.
1210 TRINITY ROAD
SUITE 110
RALEIGH, NC 27607
CHRISTOPHER V. NORVILLE, P.E.
919.871.0800
cnorville@falconengineering.com

ALL ROADS ARE CITY OF GREENVILLE
STREETS UNLESS OTHERWISE NOTED



PREPARED IN THE OFFICE OF:

Kimley»Horn

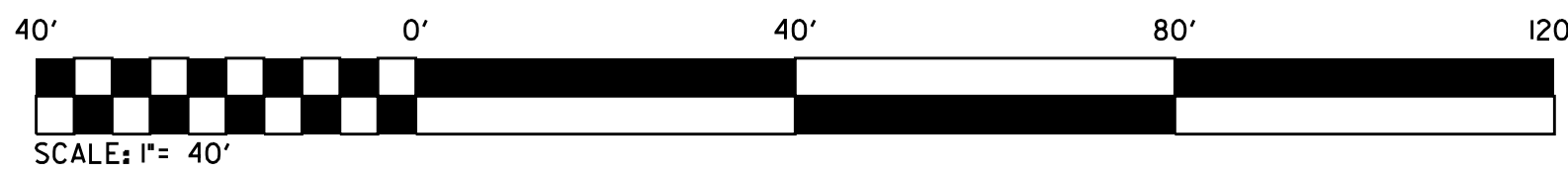
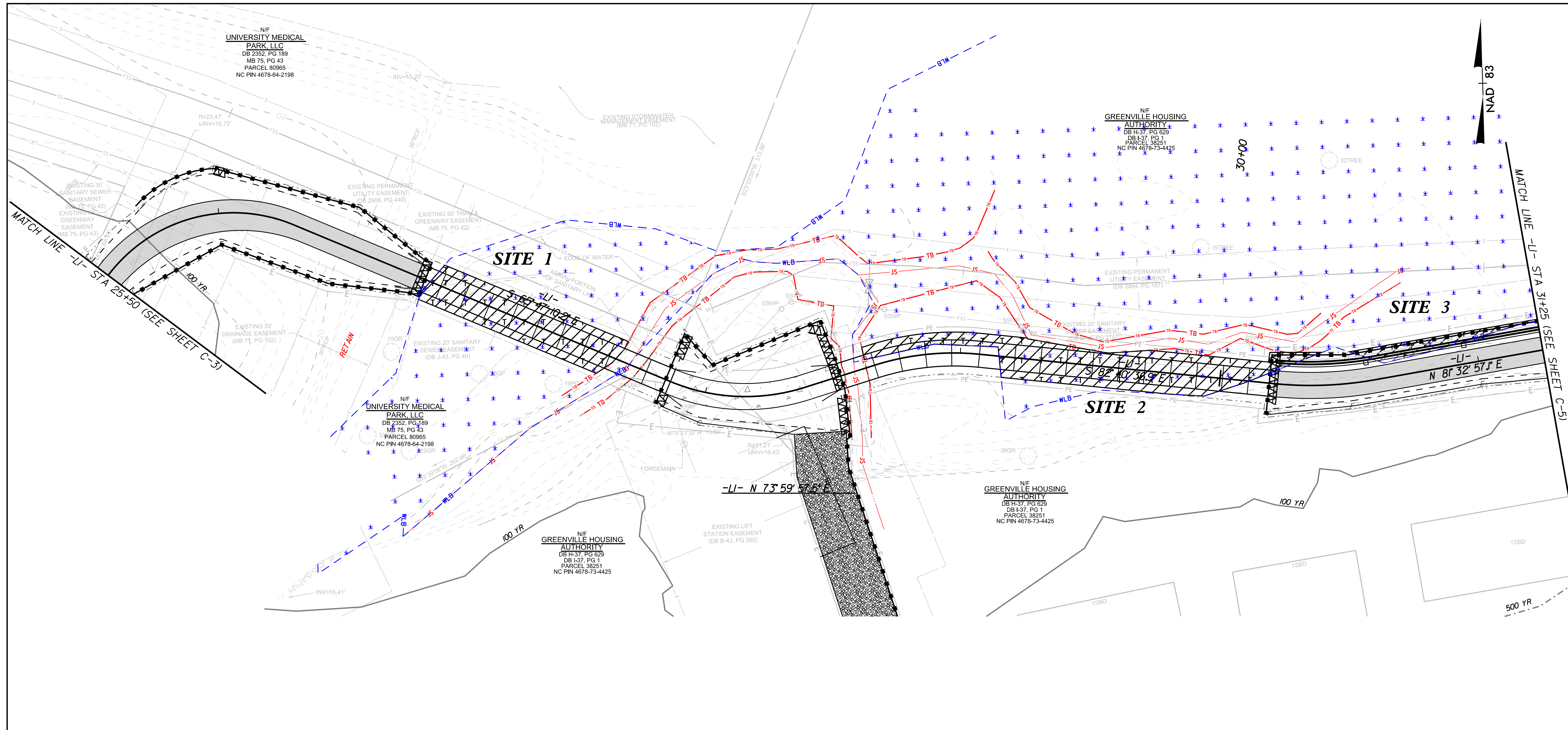
P.O. BOX 33068 - RALEIGH, NORTH CAROLINA 27636-3068
PHONE: (919) 677-2000 FAX: (919) 677-2050 PE NO. F-0102

Site #	Station	Temporary Wetland Impacts	Permanent Wetland Impacts	Temporary Stream Impacts	Permanent Stream Impacts	Buffer Zone 1 Impacts	Buffer Zone 2 Impacts
		[AC]	[AC]	[LF]	[LF]	[SF]	[SF]
1	-L1- 26+84.33 to 27+65.13	0.03	-	-	-	-	-
2	-L1- 28+63.52 to 30+39.76	0.04	<0.01	-	-	-	-
3	-L1- 30+51.11 to 36+63.85	<0.01	0.05	-	-	-	-
4	-L2- 52+05.18 to 53+62.51	-	-	-	-	1772	1611
5	-L2- 60+80.15 to 62+33.43	0.08	0.01	-	-	-	-
6	-L2- 63+02.31 to 63+77.69	<0.01	<0.01	-	-	-	-
7	-L3- 87+34.11 to 88+05.14	<0.01	<0.01	-	-	-	-
8	-L3- 90+27.98 to 94+10.67	0.03	0.08	-	-	-	-
9	-L3- 94+57.45 to 95+09.68	<0.01	<0.01	-	-	-	-
10	-L4- 109+85.58 to 110+69.85	<0.01	0.01	-	-	-	-
11	-L4- 110+60.43 to 110+91.39	<0.01	<0.01	-	-	-	5
12	-L4- 111+59.19 to 119+36.62	0.01	0.06	-	-	2444	13060
13	-L4- 122+91.04 to 125+47.32	-	-	-	-	479	3944
14	-L2- 55+55.10 to 59+42.80	-	-	-	-	3944	5209
15	-L3- 82+12.67 to 85+33.21	-	-	-	-	147	3895
16	-L3- 85+50.97 to 86+14.31	-	-	-	-	223	797
17	-L4- 109+77.99 to 110+24.54	-	-	-	-	-	167
Project Total		0.22	0.23	0	0	4216	14676

BARBARA LIPSCOMB
CITY MANAGER

ALLEN THOMAS
MAYOR

\$DATE\$ \$FILE\$



LEGEND	
TEMPORARY SILT FENCE (NCDOT STD 1605.01)	
LIMITS OF DISTURBANCE	

ENVIRONMENTAL FEATURES KEY		IMPACTS KEY SHEET & SUMMARY					
WETLAND		BUFFER ZONE 1 IMPACTS		TEMPORARY WETLAND IMPACTS		PERMANENT WETLAND IMPACTS	
STREAM		BUFFER ZONE 2 IMPACTS		TEMPORARY STREAM IMPACTS		PERMANENT STREAM IMPACTS	
	BUFFER ZONE 1 — BZ 1 —						
	BUFFER ZONE 2 — BZ 2 —						

NO.	REVISION	DATE	DRAWN BY	CHECKED BY
3				
2				
1				

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WETLAND, STREAM, AND BUFFER IMPACT SHEET

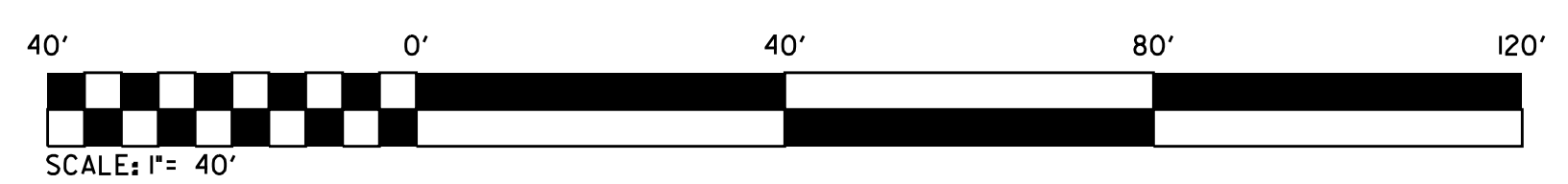
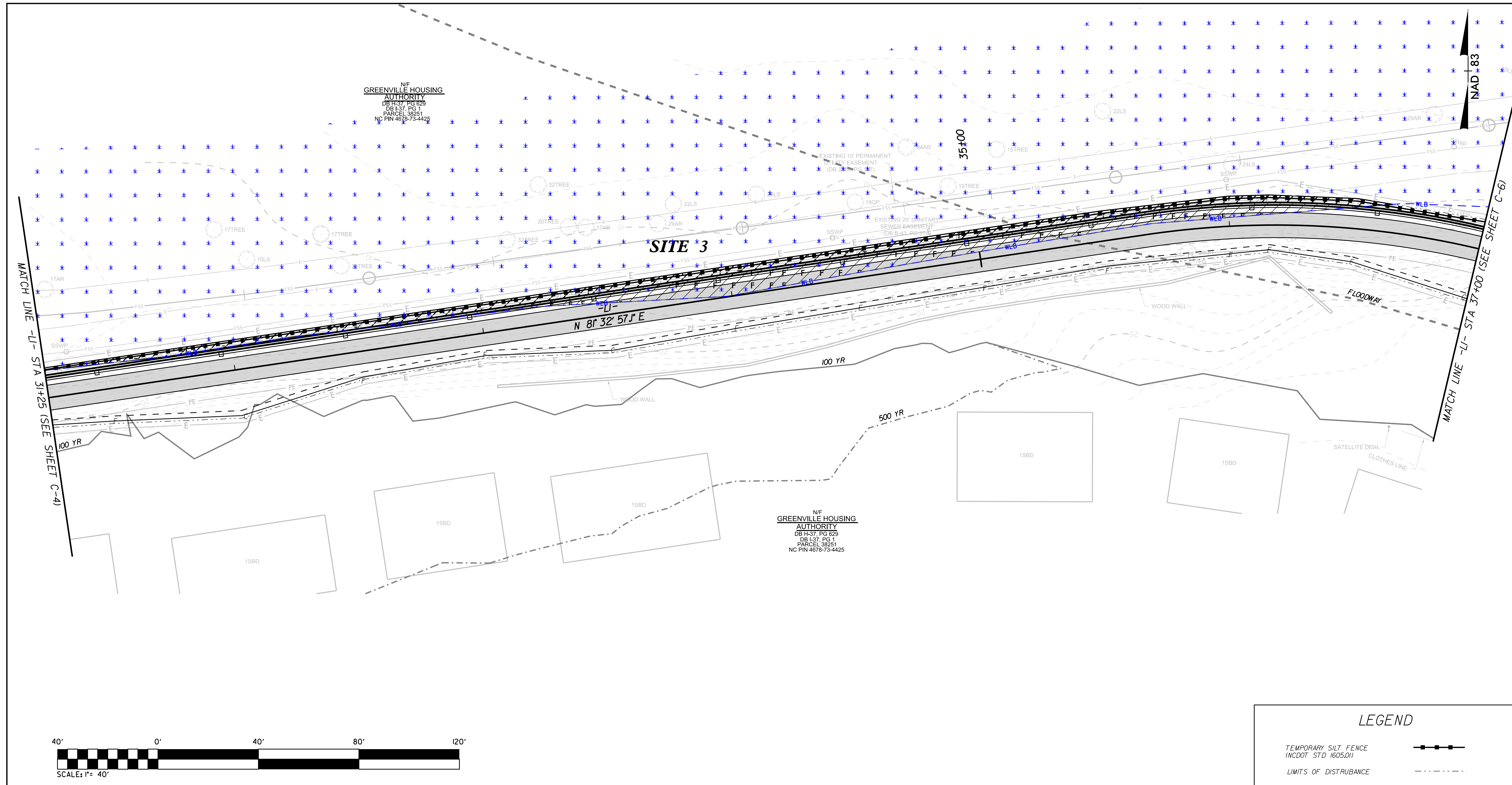
SITES 1, 2 & 3

PRELIMINARY
DO NOT USE FOR CONSTRUCTION

SCALE: AS NOTED

PROJECT: SOUTH TAR RIVER GREENWAY, PHASE 3 (EB-5539)

JOB NUMBER: 012654005 SHEET NUMBER: C-4



LEGEND	
TEMPORARY SILT FENCE (NCDOT STD 1605.D1)	
LIMITS OF DISTURBANCE	

ENVIRONMENTAL FEATURES KEY		IMPACTS KEY SHEET & SUMMARY		
WETLAND	BUFFER ZONE 1 — BZ 1 —	BUFFER ZONE 1 IMPACTS	TEMPORARY WETLAND IMPACTS	PERMANENT WETLAND IMPACTS
STREAM	BUFFER ZONE 2 — BZ 2 —	BUFFER ZONE 2 IMPACTS	TEMPORARY STREAM IMPACTS	PERMANENT STREAM IMPACTS

NO.	REVISION	DATE	DRAWN BY	CHECKED BY
3				
2				
1				

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WETLAND, STREAM, AND BUFFER IMPACT SHEET

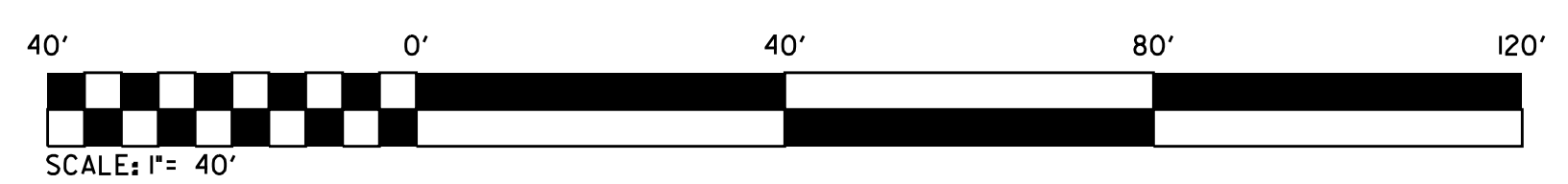
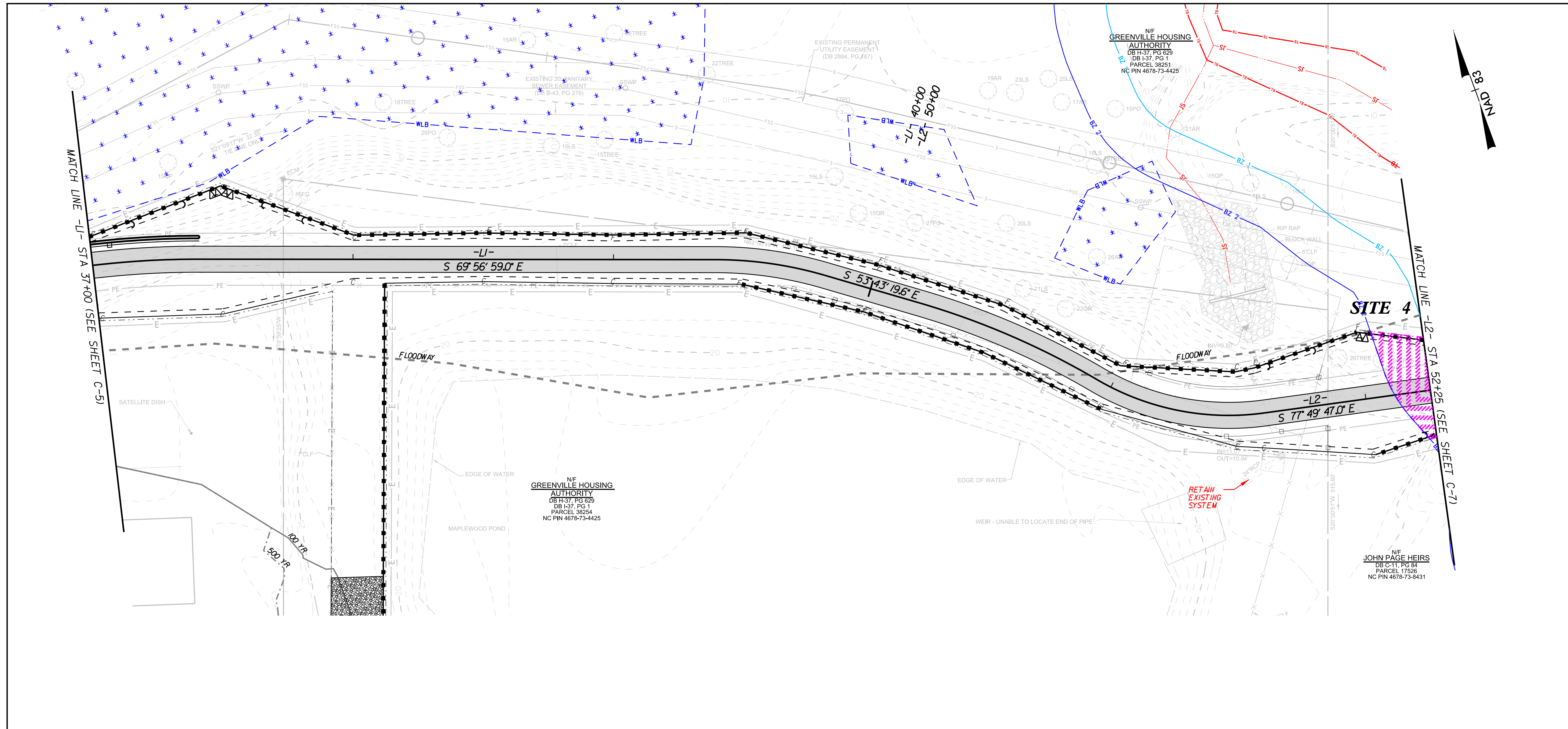
SITE 3

PRELIMINARY
DO NOT USE FOR CONSTRUCTION

SCALE: AS NOTED

PROJECT: SOUTH TAR RIVER GREENWAY, PHASE 3 (EB-5539)

JOB NUMBER: 012654005 SHEET NUMBER: C-5



LEGEND	
TEMPORARY SILT FENCE (NC DOT STD 1605.01)	
LIMITS OF DISTURBANCE	

ENVIRONMENTAL FEATURES KEY		IMPACTS KEY SHEET & SUMMARY						
WETLAND		BUFFER ZONE 1 — BZ 1 —	BUFFER ZONE 1 IMPACTS		TEMPORARY WETLAND IMPACTS		PERMANENT WETLAND IMPACTS	
STREAM		BUFFER ZONE 2 — BZ 2 —	BUFFER ZONE 2 IMPACTS		TEMPORARY STREAM IMPACTS		PERMANENT STREAM IMPACTS	

NO.	REVISION:	DATE:	DRAWN BY:	CHECKED BY:
3				
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1				

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WETLAND, STREAM, AND BUFFER IMPACT SHEET

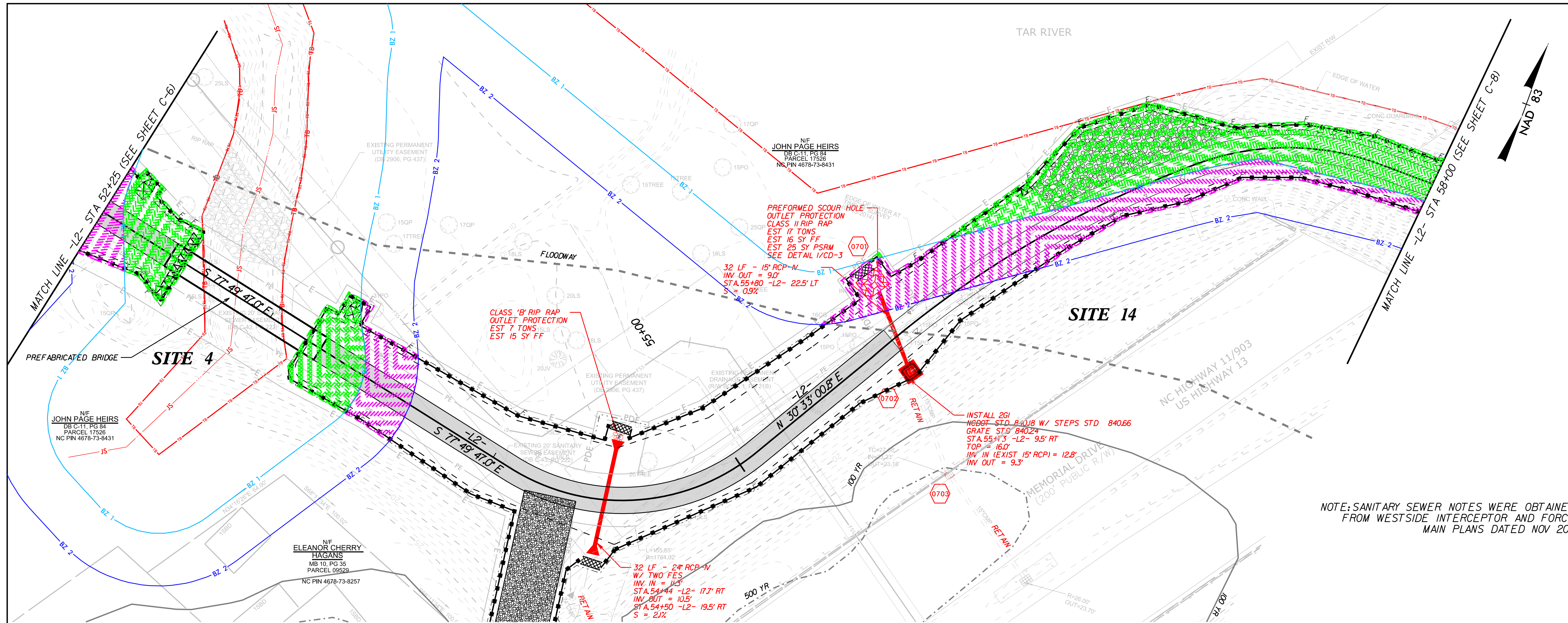
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SCALE: AS NOTED

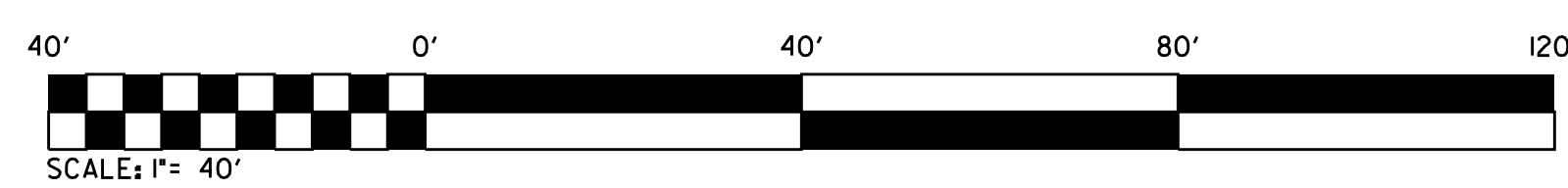
PRELIMINARY
DO NOT USE FOR CONSTRUCTION

PROJECT: SOUTH TAR RIVER GREENWAY, PHASE 3 (EB-5539)

JOB NUMBER: 012654005 SHEET NUMBER: C-6



NOTE: SANITARY SEWER NOTES WERE OBTAINED FROM WESTSIDE INTERCEPTOR AND FORCE MAIN PLANS DATED NOV 2011



LEGEND	
TEMPORARY SILT FENCE (NCDOT STD 1605.01)	
LIMITS OF DISTURBANCE	

ENVIRONMENTAL FEATURES KEY		IMPACTS KEY SHEET & SUMMARY					
WETLAND		BUFFER ZONE 1 IMPACTS		TEMPORARY WETLAND IMPACTS		PERMANENT WETLAND IMPACTS	
STREAM		BUFFER ZONE 2 IMPACTS		TEMPORARY STREAM IMPACTS		PERMANENT STREAM IMPACTS	
	BUFFER ZONE 1 — BZ 1 —						
	BUFFER ZONE 2 — BZ 2 —						

3				
2				
1				
NO.:	REVISION:	DATE:	DRAWN BY:	CHECKED BY:

PREPARED IN THE OFFICE OF:

Kimley»Horn

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 PHONE: (919) 677-2000 FAX: (919) 677-2050 PE NO. F-0102

WETLAND, STREAM, AND BUFFER IMPACT SHEET

SITES 4 & 14

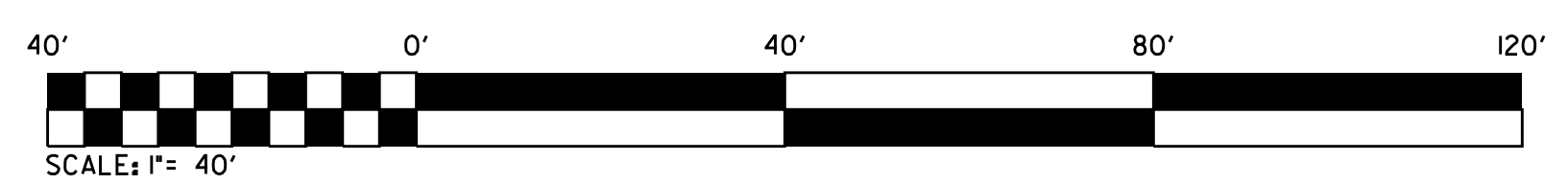
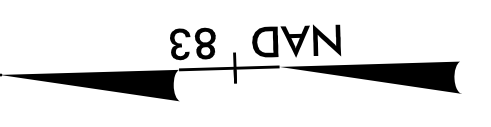
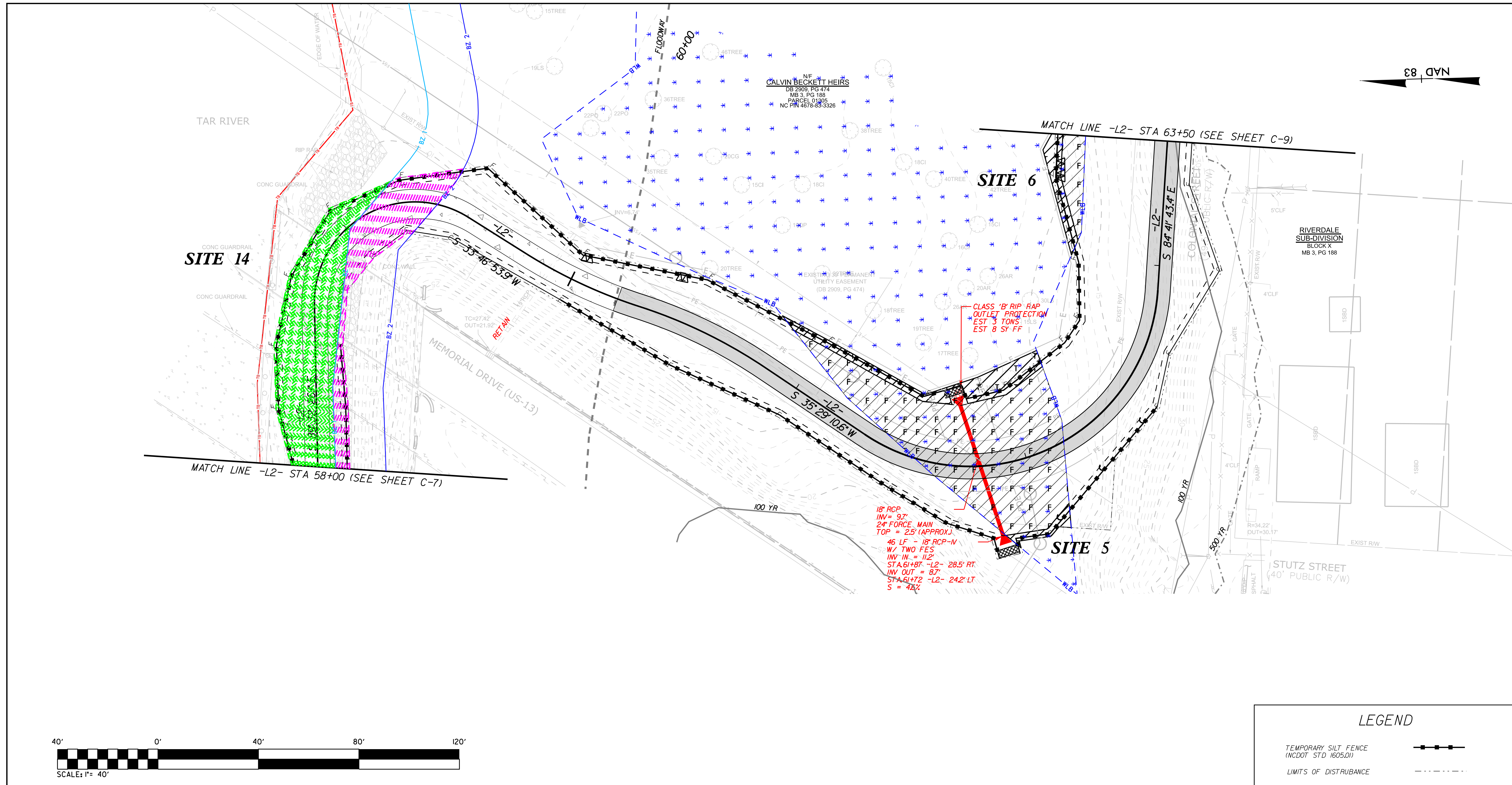
PRELIMINARY
DO NOT USE FOR CONSTRUCTION

SCALE: AS NOTED

PROJECT: SOUTH TAR RIVER GREENWAY, PHASE 3 (EB-5539)

JOB NUMBER: 012654005 SHEET NUMBER: C-7

SHEET NO.



LEGEND	
TEMPORARY SILT FENCE (NCDOT STD 1605.D1)	
LIMITS OF DISTURBANCE	

ENVIRONMENTAL FEATURES KEY		IMPACTS KEY SHEET & SUMMARY					
WETLAND		BUFFER ZONE 1 IMPACTS		TEMPORARY WETLAND IMPACTS		PERMANENT WETLAND IMPACTS	
STREAM		BUFFER ZONE 2 IMPACTS		TEMPORARY STREAM IMPACTS		PERMANENT STREAM IMPACTS	
	BUFFER ZONE 1 — BZ 1 —						
	BUFFER ZONE 2 — BZ 2 —						

NO.	REVISION:	DATE:	DRAWN BY:	CHECKED BY:
3				
2				
1				

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 PHONE: (919) 677-2000 FAX: (919) 677-2050 PE NO. F-0102

WETLAND, STREAM, AND BUFFER IMPACT SHEET

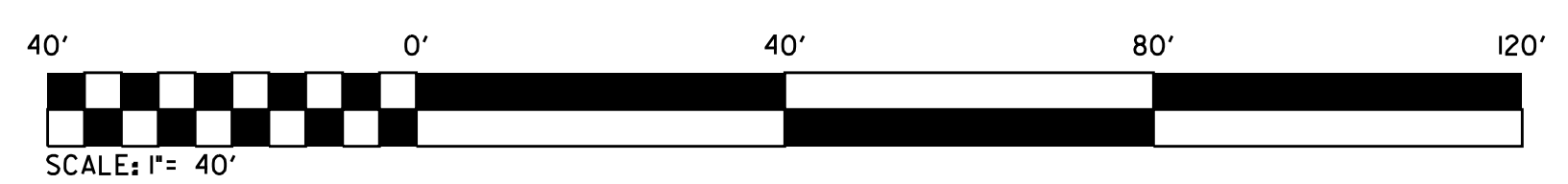
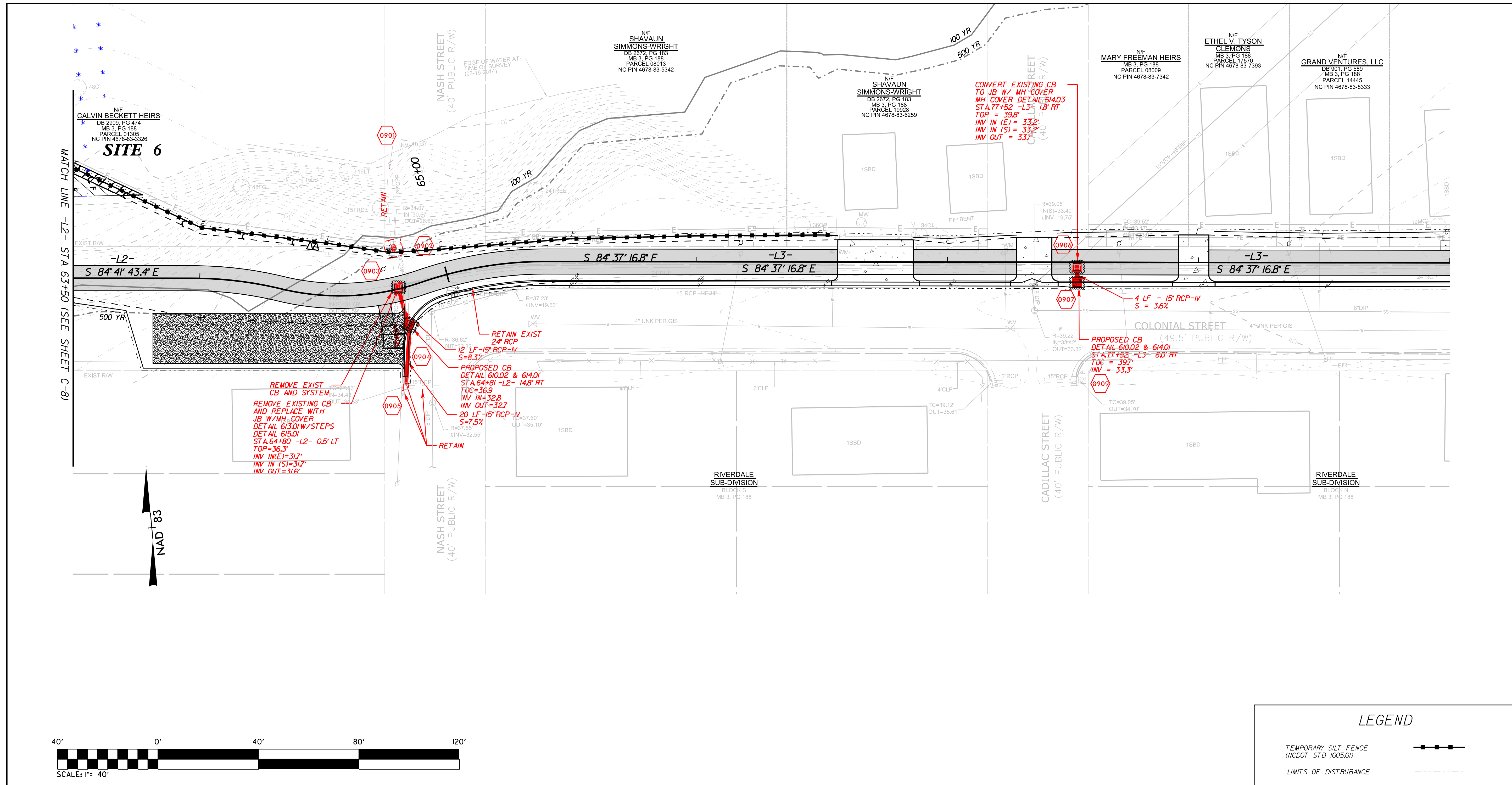
SITES 14, 5 & 6

PRELIMINARY
DO NOT USE FOR CONSTRUCTION

SCALE: AS NOTED

PROJECT: SOUTH TAR RIVER GREENWAY, PHASE 3 (EB-5539)

JOB NUMBER: 012654005 SHEET NUMBER: C-8



LEGEND	
TEMPORARY SILT FENCE (NCDOT STD 1605.01)	
LIMITS OF DISTURBANCE	

ENVIRONMENTAL FEATURES KEY		IMPACTS KEY SHEET & SUMMARY					
WETLAND		BUFFER ZONE 1 IMPACTS		TEMPORARY WETLAND IMPACTS		PERMANENT WETLAND IMPACTS	
STREAM		BUFFER ZONE 2 IMPACTS		TEMPORARY STREAM IMPACTS		PERMANENT STREAM IMPACTS	
	BUFFER ZONE 1 — BZ 1 —						
	BUFFER ZONE 2 — BZ 2 —						

3				
2				
1				
NO.:	REVISION:	DATE:	DRAWN BY:	CHECKED BY:

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WETLAND, STREAM, AND BUFFER IMPACT SHEET

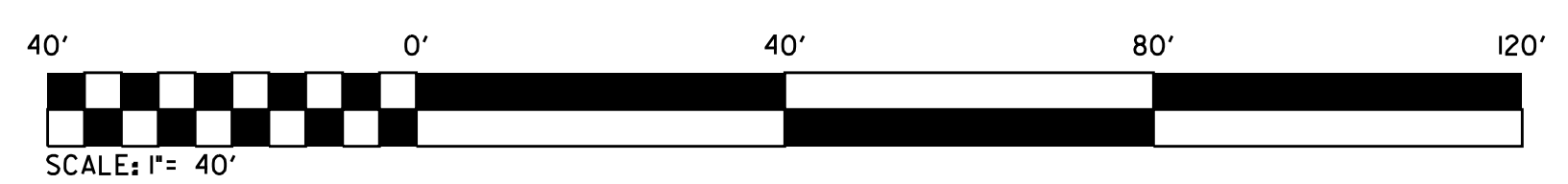
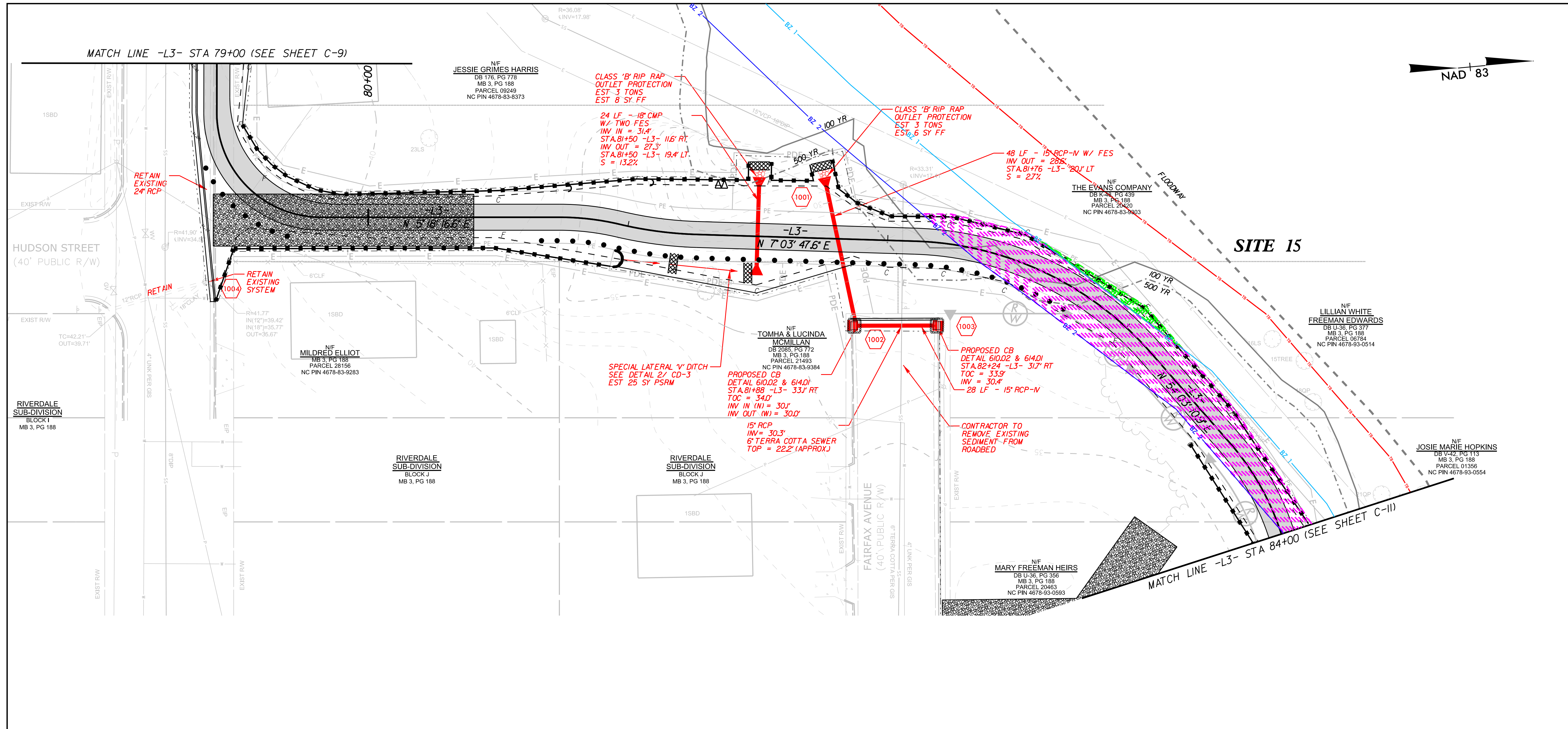
SITE 6

PRELIMINARY
DO NOT USE FOR CONSTRUCTION

SCALE: AS NOTED

PROJECT: SOUTH TAR RIVER GREENWAY, PHASE 3 (EB-5539)

JOB NUMBER: 012654005 SHEET NUMBER: C-9



LEGEND	
TEMPORARY SILT FENCE (NCDOT STD 1605.D1)	
LIMITS OF DISTURBANCE	

ENVIRONMENTAL FEATURES KEY		IMPACTS KEY SHEET & SUMMARY					
WETLAND		BUFFER ZONE 1 IMPACTS		TEMPORARY WETLAND IMPACTS		PERMANENT WETLAND IMPACTS	
STREAM		BUFFER ZONE 2 IMPACTS		TEMPORARY STREAM IMPACTS		PERMANENT STREAM IMPACTS	
	BUFFER ZONE 1 — BZ 1 —						
	BUFFER ZONE 2 — BZ 2 —						

3				
2				
1				
NO.:	REVISION:	DATE:	DRAWN BY:	CHECKED BY:

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WETLAND, STREAM, AND BUFFER IMPACT SHEET

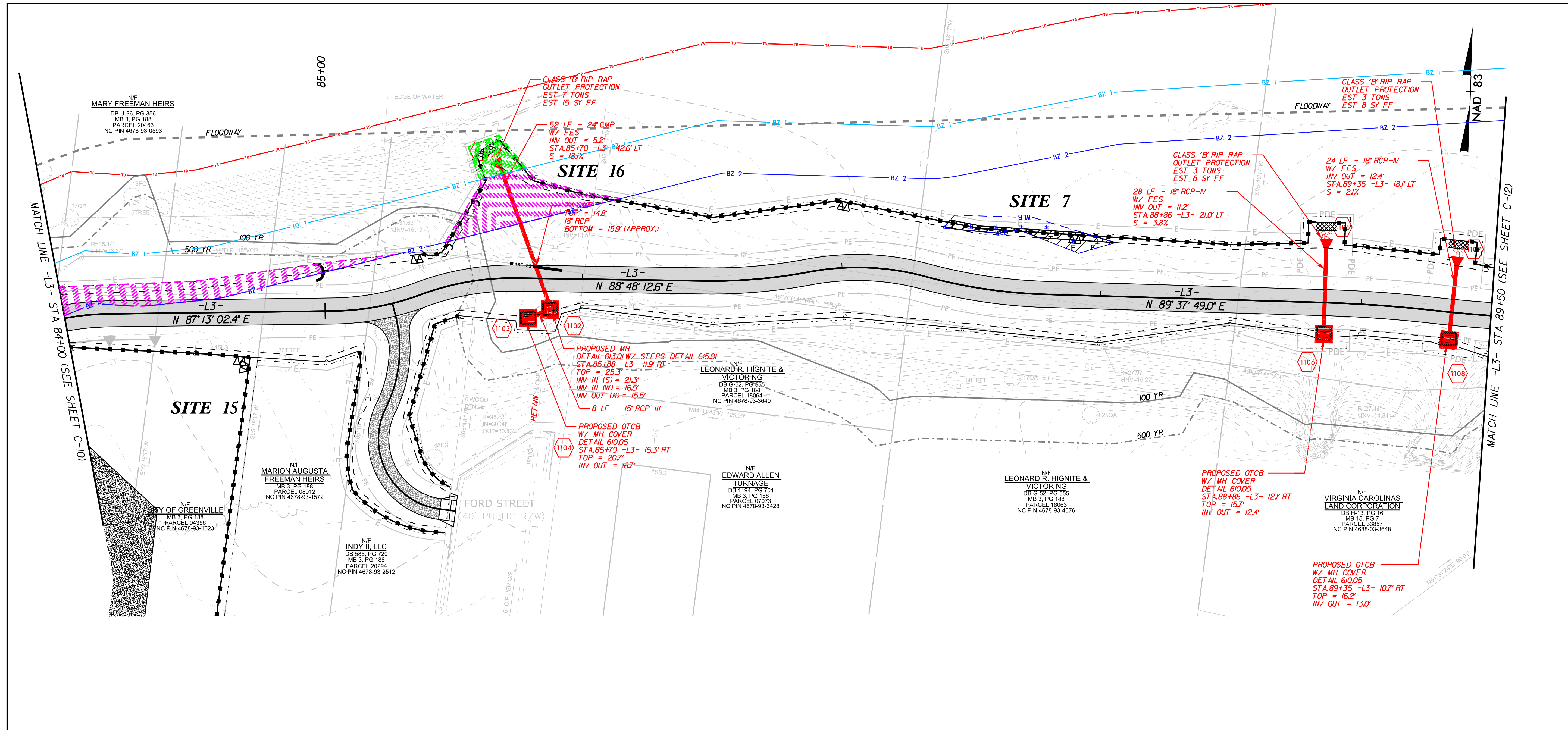
SITE 15

PRELIMINARY
DO NOT USE FOR CONSTRUCTION

SCALE: AS NOTED

PROJECT: SOUTH TAR RIVER GREENWAY, PHASE 3 (EB-5539)

JOB NUMBER: 012654005 SHEET NUMBER: C-10



ENVIRONMENTAL FEATURES KEY		IMPACTS KEY SHEET & SUMMARY			
WETLAND		BUFFER ZONE 1 IMPACTS		TEMPORARY WETLAND IMPACTS	
STREAM		BUFFER ZONE 2 IMPACTS		TEMPORARY STREAM IMPACTS	
	BUFFER ZONE 1 — BZ 1 —			PERMANENT WETLAND IMPACTS	
	BUFFER ZONE 2 — BZ 2 —			PERMANENT STREAM IMPACTS	

3				
2				
1				
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WETLAND, STREAM, AND BUFFER IMPACT SHEET

SITES 15, 16 & 7

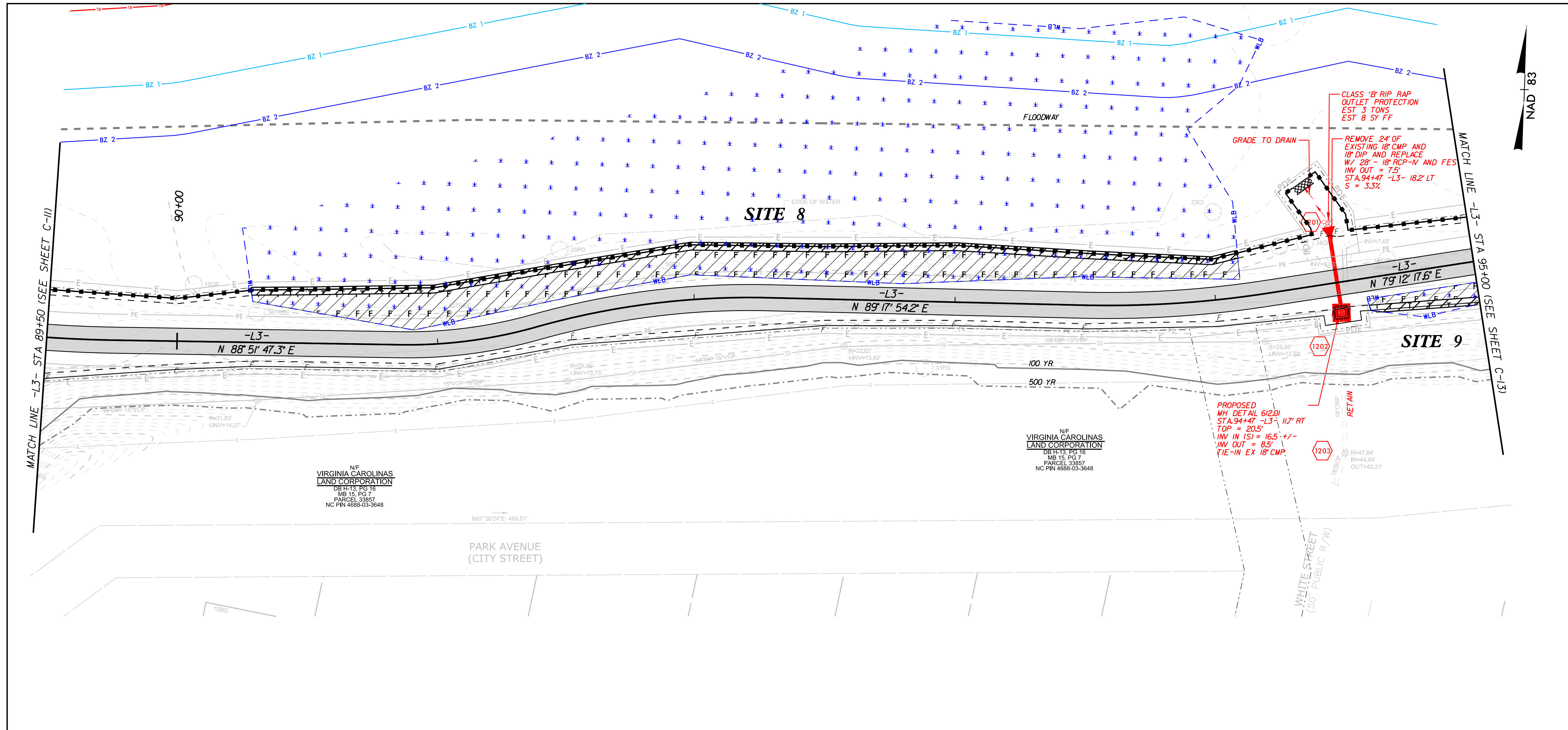
PRELIMINARY
DO NOT USE FOR CONSTRUCTION

SCALE: AS NOTED

PROJECT: SOUTH TAR RIVER GREENWAY, PHASE 3 (EB-5539)

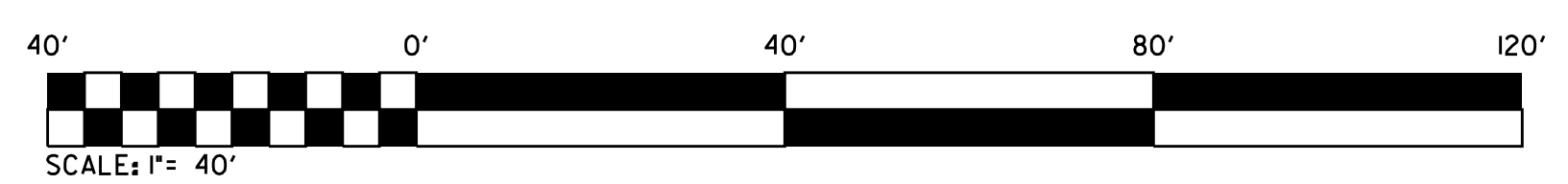
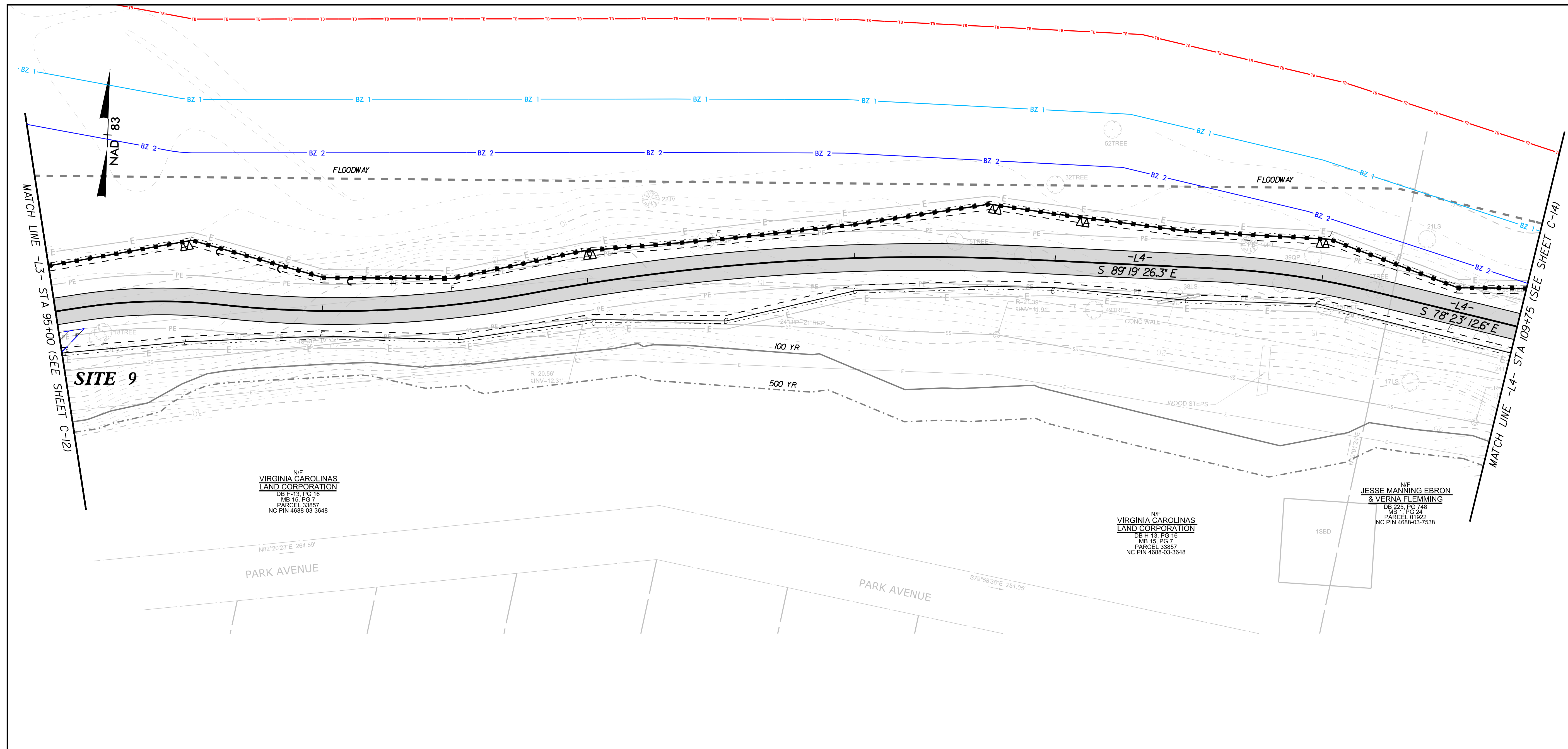
JOB NUMBER: 012654005 SHEET NUMBER: C-11

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ENVIRONMENTAL FEATURES KEY		IMPACTS KEY SHEET & SUMMARY	
WETLAND	BUFFER ZONE 1 — BZ 1 —	BUFFER ZONE 1 IMPACTS	TEMPORARY WETLAND IMPACTS
STREAM	BUFFER ZONE 2 — BZ 2 —	BUFFER ZONE 2 IMPACTS	TEMPORARY STREAM IMPACTS
			PERMANENT WETLAND IMPACTS
			PERMANENT STREAM IMPACTS

3 2 1 NO.: REVISION: DATE: DRAWN BY: CHECKED BY:	PREPARED IN THE OFFICE OF: Kimley»Horn P.O. BOX 33068 - RALEIGH, NORTH CAROLINA 27636-3068 PHONE: (919) 677-2000 FAX: (919) 677-2050 PE NO. F-0102	WETLAND, STREAM, AND BUFFER IMPACT SHEET SITES 8 & 9	SCALE: AS NOTED	PROJECT: SOUTH TAR RIVER GREENWAY, PHASE 3 (EB-5539)
			PRELIMINARY DO NOT USE FOR CONSTRUCTION	JOB NUMBER: 012654005 SHEET NUMBER: C-12



LEGEND	
TEMPORARY SILT FENCE (NC DOT STD 1605.01)	
LIMITS OF DISTURBANCE	

ENVIRONMENTAL FEATURES KEY		IMPACTS KEY SHEET & SUMMARY		
WETLAND	BUFFER ZONE 1 — BZ 1 —	BUFFER ZONE 1 IMPACTS	TEMPORARY WETLAND IMPACTS	PERMANENT WETLAND IMPACTS
STREAM	BUFFER ZONE 2 — BZ 2 —	BUFFER ZONE 2 IMPACTS	TEMPORARY STREAM IMPACTS	PERMANENT STREAM IMPACTS

NO.	REVISION	DATE	DRAWN BY	CHECKED BY
3				
2				
1				

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WETLAND, STREAM, AND BUFFER IMPACT SHEET

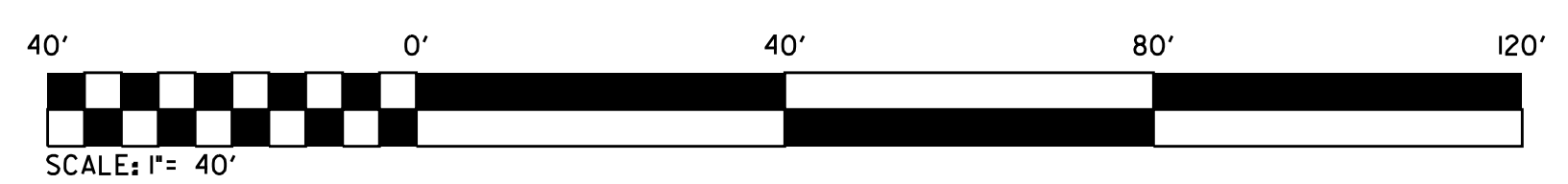
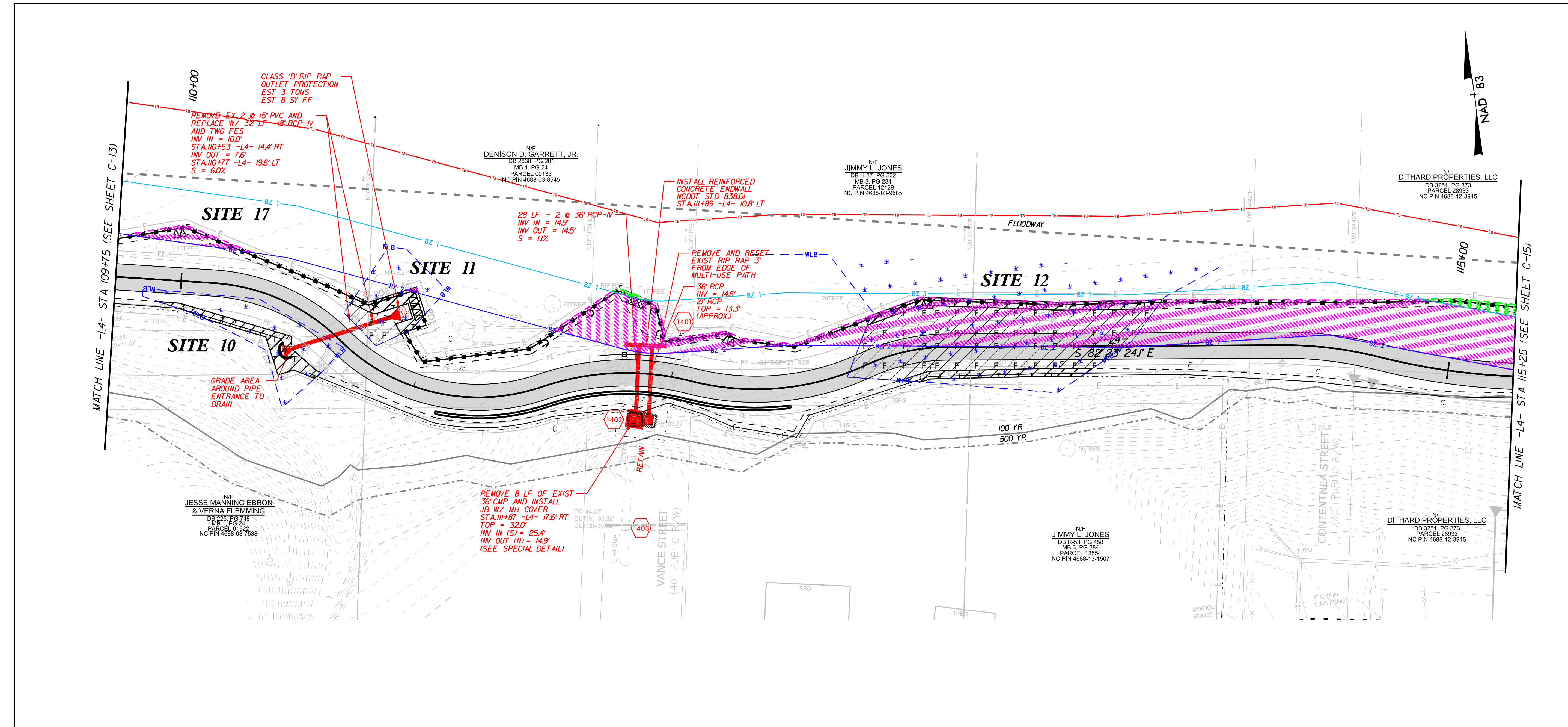
SITE 9

SCALE: AS NOTED

PRELIMINARY
DO NOT USE FOR CONSTRUCTION

PROJECT: SOUTH TAR RIVER GREENWAY, PHASE 3 (EB-5539)

JOB NUMBER: 012654005 SHEET NUMBER: C-13



LEGEND	
TEMPORARY SILT FENCE (NCDOT STD 1605.01)	
LIMITS OF DISTURBANCE	

ENVIRONMENTAL FEATURES KEY			IMPACTS KEY SHEET & SUMMARY					
WETLAND			BUFFER ZONE 1 IMPACTS		TEMPORARY WETLAND IMPACTS		PERMANENT WETLAND IMPACTS	
STREAM			BUFFER ZONE 2 IMPACTS		TEMPORARY STREAM IMPACTS		PERMANENT STREAM IMPACTS	
		BUFFER ZONE 1 — BZ 1 —						
		BUFFER ZONE 2 — BZ 2 —						

NO.	REVISION:	DATE:	DRAWN BY:	CHECKED BY:
3				
2				
1				

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WETLAND, STREAM, AND BUFFER IMPACT SHEET

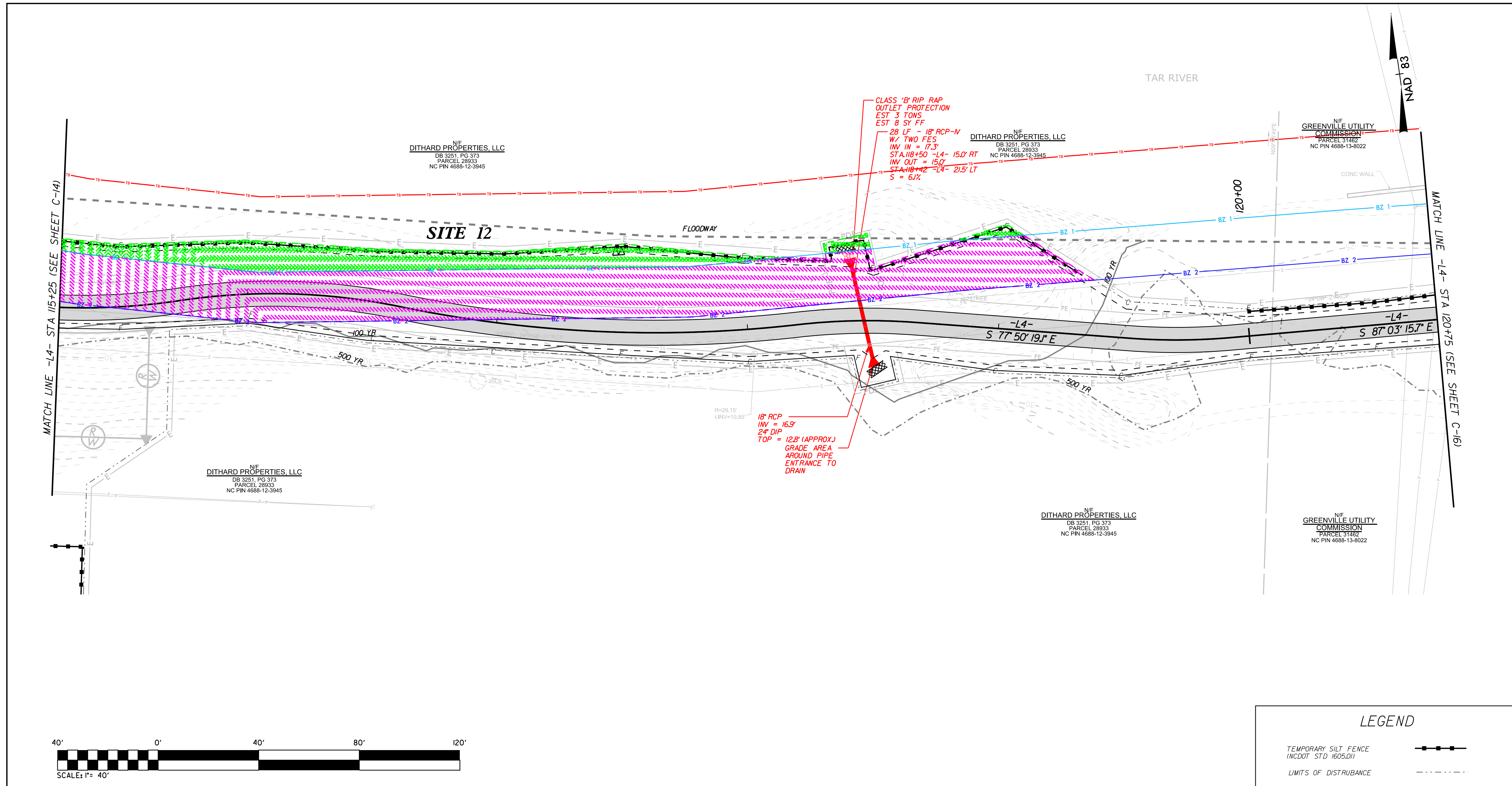
SITES 17, 10, 11, & 12

SCALE: AS NOTED

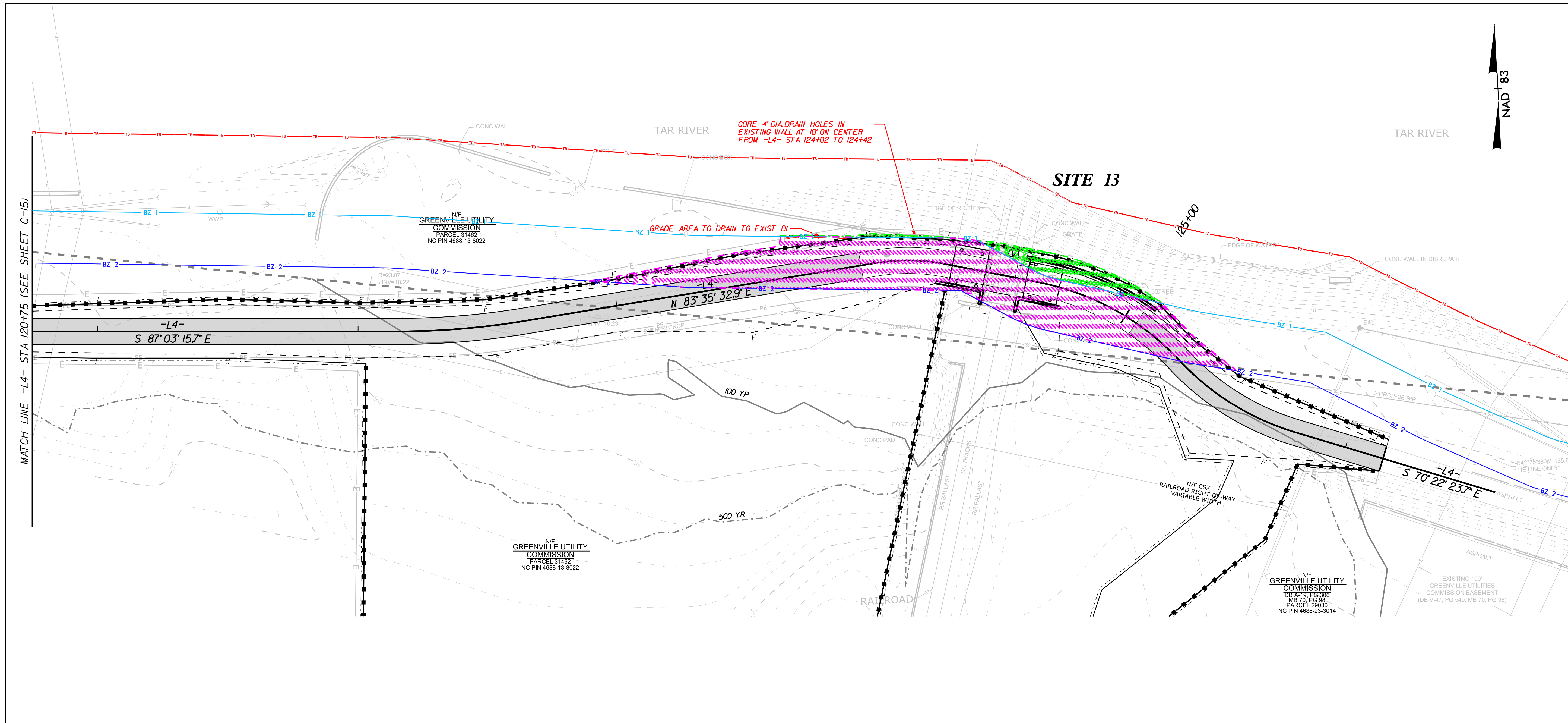
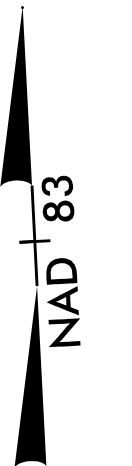
PRELIMINARY
DO NOT USE FOR CONSTRUCTION

PROJECT: SOUTH TAR RIVER GREENWAY, PHASE 3 (EB-5539)

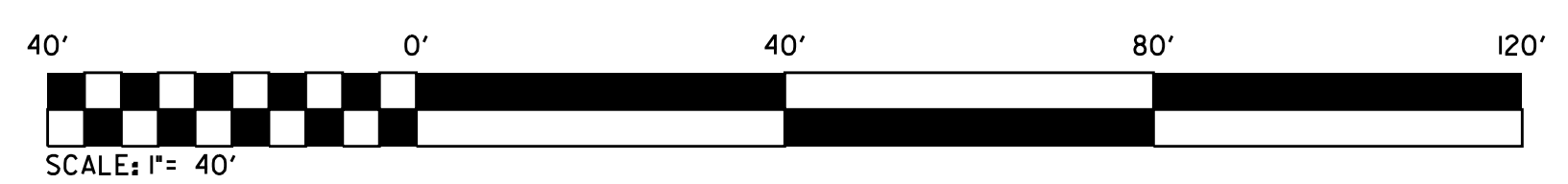
JOB NUMBER: 012654005 SHEET NUMBER: C-14



<p>3</p> <p>2</p> <p>1</p> <p>NO.: 1</p> <p>REVISION: C-14</p>		<p>DATE: _____</p> <p>DRAWN BY: _____</p> <p>CHECKED BY: _____</p>		<p>PREPARED IN THE OFFICE OF:</p> <p>Kimley»Horn</p> <p>P.O. BOX 33068 - RALEIGH, NORTH CAROLINA 27636-3068</p> <p>PHONE: (919) 677-2000 FAX: (919) 677-2050 PE NO. F-0102</p>		<p>WETLAND, STREAM, AND BUFFER IMPACT SHEET</p> <p>SITE 12</p>		<p>SCALE: AS NOTED</p> <p>PRELIMINARY DO NOT USE FOR CONSTRUCTION</p>		<p>PROJECT:</p> <p>SOUTH TAR RIVER GREENWAY, PHASE 3 (EB-5539)</p> <p>JOB NUMBER: 012654005 SHEET NUMBER: C-15</p>	
--	--	--	--	---	--	--	--	---	--	--	--



MATCH LINE -L4- STA 120+75 (SEE SHEET C-15)



LEGEND	
TEMPORARY SILT FENCE (NC DOT STD 1605.D1)	
LIMITS OF DISTURBANCE	

ENVIRONMENTAL FEATURES KEY		IMPACTS KEY SHEET & SUMMARY					
WETLAND		BUFFER ZONE 1 IMPACTS		TEMPORARY WETLAND IMPACTS		PERMANENT WETLAND IMPACTS	
STREAM		BUFFER ZONE 2 IMPACTS		TEMPORARY STREAM IMPACTS		PERMANENT STREAM IMPACTS	
	BUFFER ZONE 1 — BZ 1 —						
	BUFFER ZONE 2 — BZ 2 —						

NO.	REVISION:	DATE:	DRAWN BY:	CHECKED BY:
3				
2				
1				

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WETLAND, STREAM, AND BUFFER IMPACT SHEET

SITE 13

PRELIMINARY
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SCALE: AS NOTED

PROJECT: SOUTH TAR RIVER GREENWAY, PHASE 3 (EB-5539)

JOB NUMBER: 012654005 SHEET NUMBER: C-16

REFERENCE: EB-5539

PROJECT: N/A

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GEOTECHNICAL ENGINEERING UNIT

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	EB-5539	1	38

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1	TITLE SHEET
2	LEGEND
3	GEOTECHNICAL REPORT TEXT
4-8	SITE PLAN SHEETS
9-12	SUBSURFACE PROFILES
13-21	SUBSURFACE CROSS SECTIONS
22-35	BORING LOGS
36	SOIL TEST RESULTS

**GREENWAY & STRUCTURE
SUBSURFACE INVESTIGATION**

COUNTY PITT
PROJECT DESCRIPTION SOUTH TAR RIVER
GREENWAY - PHASE II

CAUTION NOTICE

THE SUBSURFACE INFORMATION AND THE SUBSURFACE INVESTIGATION ON WHICH IT IS BASED WERE MADE FOR THE PURPOSE OF STUDY, PLANNING AND DESIGN, AND NOT FOR CONSTRUCTION OR PAY PURPOSES. THE VARIOUS FIELD BORING LOGS, ROCK CORES AND SOIL TEST DATA AVAILABLE MAY BE REVIEWED OR INSPECTED IN RALEIGH BY CONTACTING THE N. C. DEPARTMENT OF TRANSPORTATION, GEOTECHNICAL ENGINEERING UNIT AT (919) 707-6850. THE SUBSURFACE PLANS AND REPORTS, FIELD BORING LOGS, ROCK CORES AND SOIL TEST DATA ARE NOT PART OF THE CONTRACT.

GENERAL SOIL AND ROCK STRATA DESCRIPTIONS AND INDICATED BOUNDARIES ARE BASED ON A GEOTECHNICAL INTERPRETATION OF ALL AVAILABLE SUBSURFACE DATA AND MAY NOT NECESSARILY REFLECT THE ACTUAL SUBSURFACE CONDITIONS BETWEEN BORINGS OR BETWEEN SAMPLED STRATA WITHIN THE BOREHOLE. THE LABORATORY SAMPLE DATA AND THE IN SITU (IN-PLACE) TEST DATA CAN BE RELIED ON ONLY TO THE DEGREE OF RELIABILITY INHERENT IN THE STANDARD TEST METHOD. THE OBSERVED WATER LEVELS OR SOIL MOISTURE CONDITIONS INDICATED IN THE SUBSURFACE INVESTIGATIONS ARE AS RECORDED AT THE TIME OF THE INVESTIGATION. THESE WATER LEVELS OR SOIL MOISTURE CONDITIONS MAY VARY CONSIDERABLY WITH TIME ACCORDING TO CLIMATIC CONDITIONS INCLUDING TEMPERATURES, PRECIPITATION AND WIND, AS WELL AS OTHER NON-CLIMATIC FACTORS.

THE BIDDER OR CONTRACTOR IS CAUTIONED THAT DETAILS SHOWN ON THE SUBSURFACE PLANS ARE PRELIMINARY ONLY AND IN MANY CASES THE FINAL DESIGN DETAILS ARE DIFFERENT. FOR BIDDING AND CONSTRUCTION PURPOSES, REFER TO THE CONSTRUCTION PLANS AND DOCUMENTS FOR FINAL DESIGN INFORMATION ON THIS PROJECT. THE DEPARTMENT DOES NOT WARRANT OR GUARANTEE THE SUFFICIENCY OR ACCURACY OF THE INVESTIGATION MADE, NOR THE INTERPRETATIONS MADE, OR OPINION OF THE DEPARTMENT AS TO THE TYPE OF MATERIALS AND CONDITIONS TO BE ENCOUNTERED. THE BIDDER OR CONTRACTOR IS CAUTIONED TO MAKE SUCH INDEPENDENT SUBSURFACE INVESTIGATIONS AS HE DEEMS NECESSARY TO SATISFY HIMSELF AS TO CONDITIONS TO BE ENCOUNTERED ON THE PROJECT. THE CONTRACTOR SHALL HAVE NO CLAIM FOR ADDITIONAL COMPENSATION OR FOR AN EXTENSION OF TIME FOR ANY REASON RESULTING FROM THE ACTUAL CONDITIONS ENCOUNTERED AT THE SITE DIFFERING FROM THOSE INDICATED IN THE SUBSURFACE INFORMATION.

- NOTES:
1. THE INFORMATION CONTAINED HEREIN IS NOT IMPLIED OR GUARANTEED BY THE N. C. DEPARTMENT OF TRANSPORTATION AS ACCURATE NOR IS IT CONSIDERED PART OF THE PLANS, SPECIFICATIONS OR CONTRACT FOR THE PROJECT.
 2. BY HAVING REQUESTED THIS INFORMATION, THE CONTRACTOR SPECIFICALLY WAIVES ANY CLAIMS FOR INCREASED COMPENSATION OR EXTENSION OF TIME BASED ON DIFFERENCES BETWEEN THE CONDITIONS INDICATED HEREIN AND THE ACTUAL CONDITIONS AT THE PROJECT SITE.

PERSONNEL

MID-ATLANTIC DRILLING

TRIGON EXPLORATION

FAISON, E. M.

INVESTIGATED BY EVANS, T. E.

DRAWN BY EVANS, T. E.

CHECKED BY HAMM, J. R.

SUBMITTED BY FALCON ENG.

DATE MAY 2015

SEAL
040788
05/12/2015
ENGINEER
THOMAS E. EVANS

SIGNATURE _____ DATE _____

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS

GEOTECHNICAL ENGINEERING UNIT

SUBSURFACE INVESTIGATION

SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS

SOIL DESCRIPTION		GRADATION		ROCK DESCRIPTION		TERMS AND DEFINITIONS																																																																																																																																																								
<p>SOIL IS CONSIDERED UNCONSOLIDATED, SEMI-CONSOLIDATED, OR WEATHERED EARTH MATERIALS THAT CAN BE PENETRATED WITH A CONTINUOUS FLIGHT POWER AUGER AND YIELD LESS THAN 100 BLOWS PER FOOT ACCORDING TO THE STANDARD PENETRATION TEST (AASHTO T 206, ASTM D1586). SOIL CLASSIFICATION IS BASED ON THE AASHTO SYSTEM. BASIC DESCRIPTIONS GENERALLY INCLUDE THE FOLLOWING: CONSISTENCY, COLOR, TEXTURE, MOISTURE, AASHTO CLASSIFICATION, AND OTHER PERTINENT FACTORS SUCH AS MINERALOGICAL COMPOSITION, ANGULARITY, STRUCTURE, PLASTICITY, ETC. FOR EXAMPLE, <i>VERY STIFF, GRAY, SILTY CLAY, MOIST WITH INTERBEDDED FINE SAND LAYERS, HIGHLY PLASTIC, A-7-6</i></p>		<p>WELL GRADED - INDICATES A GOOD REPRESENTATION OF PARTICLE SIZES FROM FINE TO COARSE. UNIFORMLY GRADED - INDICATES THAT SOIL PARTICLES ARE ALL APPROXIMATELY THE SAME SIZE. GAP-GRADED - INDICATES A MIXTURE OF UNIFORM PARTICLE SIZES OF TWO OR MORE SIZES.</p> <p style="text-align: center;">ANGULARITY OF GRAINS</p> <p>THE ANGULARITY OR ROUNDNESS OF SOIL GRAINS IS DESIGNATED BY THE TERMS: <u>ANGULAR</u>, <u>SUBANGULAR</u>, <u>SUBROUNDED</u>, OR <u>ROUNDED</u>.</p> <p style="text-align: center;">MINERALOGICAL COMPOSITION</p> <p>MINERAL NAMES SUCH AS QUARTZ, FELDSPAR, MICA, TALC, KAOLIN, ETC. ARE USED IN DESCRIPTIONS WHEN THEY ARE CONSIDERED OF SIGNIFICANCE.</p> <p style="text-align: center;">COMPRESSIBILITY</p> <table style="width: 100%;"> <tr> <td style="width: 50%;">SLIGHTLY COMPRESSIBLE</td> <td>LL < 31</td> </tr> <tr> <td>MODERATELY COMPRESSIBLE</td> <td>LL = 31 - 50</td> </tr> <tr> <td>HIGHLY COMPRESSIBLE</td> <td>LL > 50</td> </tr> </table> <p style="text-align: center;">PERCENTAGE OF MATERIAL</p> <table style="width: 100%;"> <thead> <tr> <th style="width: 33%;">ORGANIC MATERIAL</th> <th style="width: 33%;">GRANULAR SOILS</th> <th style="width: 33%;">SILT - CLAY SOILS</th> <th style="width: 33%;">OTHER MATERIAL</th> </tr> </thead> <tbody> <tr> <td>TRACE OF ORGANIC MATTER</td> <td>2 - 3%</td> <td>3 - 5%</td> <td>TRACE 1 - 10%</td> </tr> <tr> <td>LITTLE ORGANIC MATTER</td> <td>3 - 5%</td> <td>5 - 12%</td> <td>LITTLE 10 - 20%</td> </tr> <tr> <td>MODERATELY ORGANIC</td> <td>5 - 10%</td> <td>12 - 20%</td> <td>SOME 20 - 35%</td> </tr> <tr> <td>HIGHLY ORGANIC</td> <td>> 10%</td> <td>> 20%</td> <td>HIGHLY 35% AND ABOVE</td> </tr> </tbody> </table> <p style="text-align: center;">GROUND WATER</p> <ul style="list-style-type: none"> WATER LEVEL IN BORE HOLE IMMEDIATELY AFTER DRILLING STATIC WATER LEVEL AFTER 24 HOURS PERCHED WATER, SATURATED ZONE, OR WATER BEARING STRATA SPRING OR SEEP <p style="text-align: center;">MISCELLANEOUS SYMBOLS</p> <table style="width: 100%;"> <tr> <td style="width: 33%; vertical-align: top;"> <ul style="list-style-type: none"> ROADWAY EMBANKMENT (RE) WITH SOIL DESCRIPTION SOIL SYMBOL ARTIFICIAL FILL (AF) OTHER THAN ROADWAY EMBANKMENT INFERRERD SOIL BOUNDARY INFERRERD ROCK LINE ALLUVIAL SOIL BOUNDARY </td> <td style="width: 33%; vertical-align: top;"> <ul style="list-style-type: none"> DIP & DIP DIRECTION OF ROCK STRUCTURES SPT TEST BORING AUGER BORING CORE BORING MONITORING WELL PIEZOMETER INSTALLATION </td> <td style="width: 33%; vertical-align: top;"> <ul style="list-style-type: none"> SLOPE INDICATOR INSTALLATION CONE PENETROMETER TEST SOUNDING ROD TEST BORING WITH CORE SPT N-VALUE </td> </tr> </table>		SLIGHTLY COMPRESSIBLE	LL < 31	MODERATELY COMPRESSIBLE	LL = 31 - 50	HIGHLY COMPRESSIBLE	LL > 50	ORGANIC MATERIAL	GRANULAR SOILS	SILT - CLAY SOILS	OTHER MATERIAL	TRACE OF ORGANIC MATTER	2 - 3%	3 - 5%	TRACE 1 - 10%	LITTLE ORGANIC MATTER	3 - 5%	5 - 12%	LITTLE 10 - 20%	MODERATELY ORGANIC	5 - 10%	12 - 20%	SOME 20 - 35%	HIGHLY ORGANIC	> 10%	> 20%	HIGHLY 35% AND ABOVE	<ul style="list-style-type: none"> ROADWAY EMBANKMENT (RE) WITH SOIL DESCRIPTION SOIL SYMBOL ARTIFICIAL FILL (AF) OTHER THAN ROADWAY EMBANKMENT INFERRERD SOIL BOUNDARY INFERRERD ROCK LINE ALLUVIAL SOIL BOUNDARY 	<ul style="list-style-type: none"> DIP & DIP DIRECTION OF ROCK STRUCTURES SPT TEST BORING AUGER BORING CORE BORING MONITORING WELL PIEZOMETER INSTALLATION 	<ul style="list-style-type: none"> SLOPE INDICATOR INSTALLATION CONE PENETROMETER TEST SOUNDING ROD TEST BORING WITH CORE SPT N-VALUE 	<p>HARD ROCK IS NON-COASTAL PLAIN MATERIAL THAT WOULD YIELD SPT REFUSAL IF TESTED, AN INFERRERD ROCK LINE INDICATES THE LEVEL AT WHICH NON-COASTAL PLAIN MATERIAL WOULD YIELD SPT REFUSAL. 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MOTTLING IN SOILS USUALLY INDICATES POOR AERATION AND LACK OF GOOD DRAINAGE.</p> <p>PERCHED WATER - WATER MAINTAINED ABOVE THE NORMAL GROUND WATER LEVEL BY THE PRESENCE OF AN INTERVENING IMPERVIOUS STRATUM.</p> <p>RESIDUAL (RES.) SOIL - SOIL FORMED IN PLACE BY THE WEATHERING OF ROCK.</p> <p>ROCK QUALITY DESIGNATION (ROD) - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL LENGTH OF ROCK SEGMENTS EQUAL TO OR GREATER THAN 4 INCHES DIVIDED BY THE TOTAL LENGTH OF CORE RUN AND EXPRESSED AS A PERCENTAGE.</p> <p>SAPROLITE (SAP.) - RESIDUAL SOIL THAT RETAINS THE RELIC STRUCTURE OR FABRIC OF THE PARENT ROCK.</p> <p>SILL - AN INTRUSIVE BODY OF IGNEOUS ROCK OF APPROXIMATELY UNIFORM THICKNESS AND RELATIVELY THIN COMPARED WITH ITS LATERAL EXTENT, THAT HAS BEEN EMPLOYED PARALLEL TO THE BEDDING OR SCHISTOSITY OF THE INTRUDED ROCKS.</p> <p>SLICKENISED - POLISHED AND STRIATED SURFACE THAT RESULTS FROM FRICTION ALONG A FAULT OR SLIP PLANE.</p> <p>STANDARD PENETRATION TEST (PENETRATION RESISTANCE) (SPT) - NUMBER OF BLOWS (IN OR BPF) OF A 140 LB. HAMMER FALLING 30 INCHES REQUIRED TO PRODUCE A PENETRATION OF 1 FOOT INTO SOIL WITH A 2 INCH OUTSIDE DIAMETER SPLIT SPOON SAMPLER. 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Greenway Subsurface Investigation Report - Inventory

South Tar River Greenway – Phase II
Pitt County, North Carolina
TIP: EB-5539
Falcon Project No.: G12027.00

Prepared for:
Kimley-Horn & Associates, Inc.
3001 Weston Parkway
Cary, NC 27513

Submitted by:
Falcon Engineering, Inc.
1210 Trinity Road, Suite 110
Raleigh, North Carolina 27607
(919) 871-0800
www.falconengineers.com

May 12, 2015

PREFACE

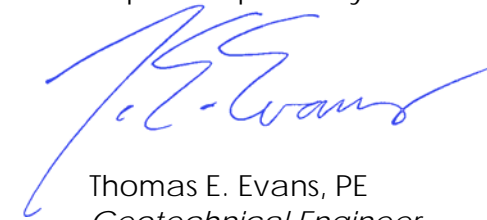
The initial roadway subsurface investigation was conducted in May, 2013 in general accordance with our Proposal to Provide Geotechnical Engineering Services, dated June 21, 2012 (Proposal No.: F2012-029R2). Additional investigation was conducted between late April 2015 and May 2015 in general accordance with our Proposal dated April 16, 2015 (Proposal No.: F2015-009). The recommendations provided in this report are based solely on our site reconnaissance, soil test borings and laboratory test data, engineering evaluation of these data, and generally accepted soil and foundation engineering practices and principles.

Evaluation of the subsurface conditions for the proposed new greenway trail consisted of drilling a total of seventeen (17) Standard Penetration Test (SPT) borings. Two (2) borings were drilled in the vicinity of the proposed bridge structure (one near each end bent). Five (5) borings were drilled in the vicinity of the boardwalks (one near each extremity of the longer boardwalks, one between the longer boardwalks, and one within the footprint of each of the smaller boardwalks). Nine (9) borings were drilled along the proposed greenway trail alignment and in the vicinity of proposed retaining walls. A total of ten (10) hand auger borings and four (4) rod soundings were performed in areas inaccessible by a drill rig. SPT Borings were performed using either a Diedrich D-25 rubber track mounted drill rig, or a CME-55 ATV-mounted rubber tire drill rig, both equipped with rotary drilling equipment and automatic hammers, in general accordance with the American Association of State Highway Transportation Officials (AASHTO T-206). Laboratory testing was performed on select samples as included in this report, in accordance with relevant AASHTO standards.

Falcon appreciates the opportunity to have provided our geotechnical engineering services for the above referenced project. If you have any questions concerning the contents of this report or need additional information, please do not hesitate to contact our office.

FALCON ENGINEERING, INC.

Report Prepared By:



Thomas E. Evans, PE
Geotechnical Engineer

Report Reviewed By:



Jeremy R. Hamm, PE
Geotechnical Engineering Manager



TIP: EB-5539
COUNTY: Pitt
DESCRIPTION: South Tar River Greenway – Phase II
SUBJECT: Greenway Subsurface Investigation – Inventory

PROJECT DESCRIPTION

The South Tar River Greenway – Phase II project as referenced within this report consists of the following:

- An approximately 1.7-mile long (8,765 Linear feet, LF) 10 foot wide, predominantly bituminous concrete paved multi-use “greenway” trail extending from the end of Moye Boulevard to tie into the existing asphalt pathway near the parking lot at the end of West First Street. The alignment traverses partially wooded areas approximately following an existing sewer easement through both undeveloped areas and residential/commercial areas along the Tar River. The alignment is broken into four (4) sections: -L1- (station 9+70.00 to 40+00.00), -L2- (stations 50+00.00 to 66+00.66), -L3- (stations 76+00.00 to 98+75.00) and -L4- (stations 108+00.00 to 126+15.00).

- Construction of four (4) stick-built boardwalk structures supported by timber piles:

<u>Station</u>	<u>Alignment</u>	<u>Width(ft)</u>	<u>Spans(ft)</u>
26+82 to 27+85.87	-L1-	10	10 - 16
28+50.94 to 30+20.94	-L1-	10	10 - 16
116+51 to 116+71	-L4-	12	10
118+36 to 118+56	-L4-	12	10

- Construction of an approximately 10-foot-wide, 67-foot-long, pre-fabricated steel bridge structure spanning a small tributary from stations -L2- 52+55.50 to 53+22.50.
- Construction of multiple retaining wall structures as follows:
 - Wall 1: from 30+20.94 to 37+40.98, 8’ LT -L1-, up to 8 feet tall
 - Wall 2: from 111+10 to 111+45, 7’ RT -L4-, up to 5 feet tall
 - Pile supported structural slab and tiered retaining wall system within CSX Railroad ROW between 124+25 and 125+08, left and right of -L4-, retaining existing railroad abutment.
 - New cast in place headwall for dual pipe outlet at station 111+88, 7 ft left -L4-.

AREAS OF SPECIAL GEOTECHNICAL INTEREST

Large rootballs and thick rootmat exceeding four inches should be expected in some areas throughout the site, particularly areas which are wooded or were minimally disturbed during previous clearing/grading operations. In addition, many trees have fallen throughout the alignment in recent years, likely leaving behind decaying root masses or voids which may or may not have since in-filled with sediments during flooding events. There are also many areas along the alignment that contain various debris, garbage and other dumped materials that will require removal prior to construction.

Shallow groundwater (less than 6 feet from existing grades) was encountered in the borings at the following locations:

<u>Station</u>	<u>Offset</u>
-L1- 12+58	2 ft LT
-L1- 22+51	14 ft LT
-L1- 26+69	8 ft RT
-L1- 28+23	1 ft RT
-L1- 30+22	11 ft LT
-L1- 32+11	16 ft LT
-L1- 33+29	3 ft LT
-L1- 34+92	5 ft LT
-L1- 35+38	15 ft LT
-L1- 37+38	24 ft LT
-L2- 52+49	10 ft LT
-L2- 53+02	20 ft LT
-L3- 92+87	CL
-L4- 111+20	6 ft LT
-L4- 112+26	3 ft LT
-L4- 116+54	3ft LT
-L4- 118+56	2 ft RT
-L4- 123+86	1 ft LT

Additionally, it should be noted that standing water and saturated surficial soils (indicating ground water at or very close to the ground surface) was observed at many locations on site. The following areas encountered loose/soft and wet soils which will likely require remediation prior to fill placement or paving (depending on final grades).

<u>Station</u>	<u>Depth</u>
-L1- 26+69	2 feet
-L1- 30+22	2 feet
-L1- 32+11	2 feet
-L1- 34+92	1 foot
-L1- 35+38	2 feet
-L2- 61+73	2 feet
-L4- 112+26	1 foot

PHYSIOGRAPHY AND GEOLOGY

The project site is in the western portion of the Coastal Plain Physiographic Province of North Carolina. According to *The Geologic Map of North Carolina* (1985), the project site is located in the Coastal Plain Physiographic Province. Specifically, the deposits in the area are noted to have formed during the Tertiary period and consist of Yorktown and Duplin Formations (**Tpy**). Yorktown consists of fossiliferous bluish gray clay with varying amounts of fine-grained sand and concentrated lenses of shell material.

The site generally follows along the southern bank of the Tar River. Topography generally slopes northward (toward the river) with relatively steep river banks to the north of the alignment, and sloping floodplain or artificial fill embankments to the south of the alignment. Various drainage features, soil berms (presumably for flood control) storm water BMPs, roadway/railroad embankments, and artificial fill terraces (built out toward the river along the backs of residential and commercial properties) lie along or within close proximity to the alignment. Other portions of the alignment traverse low lying, relatively flat areas which impound water seasonally or after significant precipitation.

SOIL PROPERTIES

Based on the results of our borings, subsurface conditions generally consist of artificial fill materials and recent alluvial deposits, underlain by undivided and Yorktown Formation

coastal plain deposits. Subsurface profiles and cross sections are included on pages 9 through 21 of this report, followed by individual boring logs for each test location.

A moderately to highly organic, wet to saturated, and typically soft/loose topsoil layer ranging from a few inches to 2 feet in thickness was encountered along the majority of the low-lying areas in and near the floodplain.

Artificial fill material encountered ranged from 1 to 15 feet of slightly silty, silty and clayey sand (A-3, A-2-4 and A-2-6) and sandy clay (A-6), with gravel, asphalt pieces, wood pieces, trace organics and other material.

The majority of the borings encountered recent alluvial materials at the ground surface, beneath organic surficial soils, or beneath artificial fills. These materials consisted of varying compositions of slightly silty to silty and clayey sands and muck (A-1-b, A-2-4, A-2-6, A-3) and fine sandy silts and clays (A-4, A-7), with thin alternating layers and varying amounts of organic materials.

Undivided Coastal Plain sediments were typically encountered immediately beneath alluvial soils or near ground surface. These materials consisted of slightly silty to silty and clayey sands (A-1-b, A-2-4, A-2-6, A-3), and fine sandy silts and fine sandy and silty clays (A-6, A-7) with wood pieces and gravel.

Beneath alluvial and/or undivided coastal plain sediments, Yorktown Formation Coastal Plain deposits were encountered, consisting of alternating layers of silty to slightly silty sands (A-2-4, A-3) and fine sandy silts and clays (A-4, A-6, A-7) with concentrated shells and plastic clay layers.

GROUNDWATER PROPERTIES

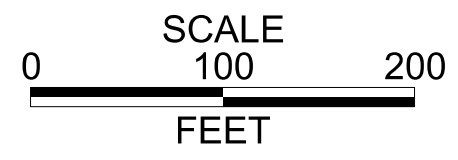
Groundwater measurements were obtained immediately after boring termination and in most cases after a waiting period of at least 24 hours. Groundwater was observed to be present approximately at the existing ground elevation in some borings, and up to 7 feet below existing ground in upland areas.

Evidence of inundation on a short-term and/or seasonal basis was observed throughout the low-lying areas of the site. Given the site's close proximity to the Tar River and its tributaries and floodplain, occasional inundation of the greenway should be expected after periods of intense rainfall.



NOTES:

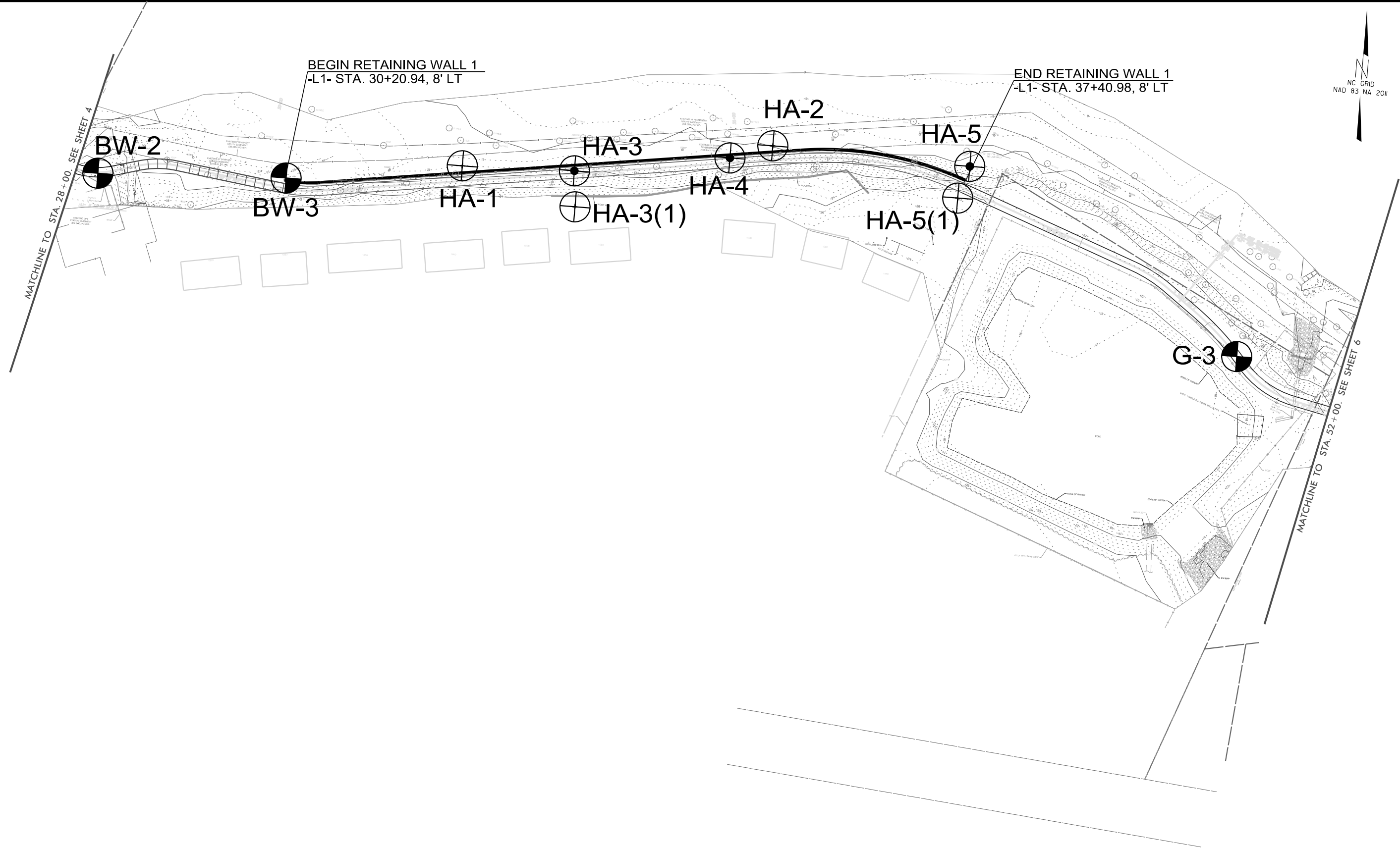
- PLANS ADOPTED FROM ELECTRONIC FILES RECEIVED FROM KIMLEY-HORN AND ASSOCIATES, DATED APRIL 22, 2015.




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1210 TRINITY ROAD, SUITE 110
RALEIGH, NC 27607
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FAX: 919.871.0803

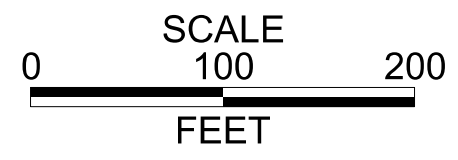
BORING LOCATION PLAN

SOUTH TAR RIVER GREENWAY - PH II
GREENVILLE, NORTH CAROLINA
NCDOT TIP No.: EB-5539
FALCON PROJECT No.: G12027.00



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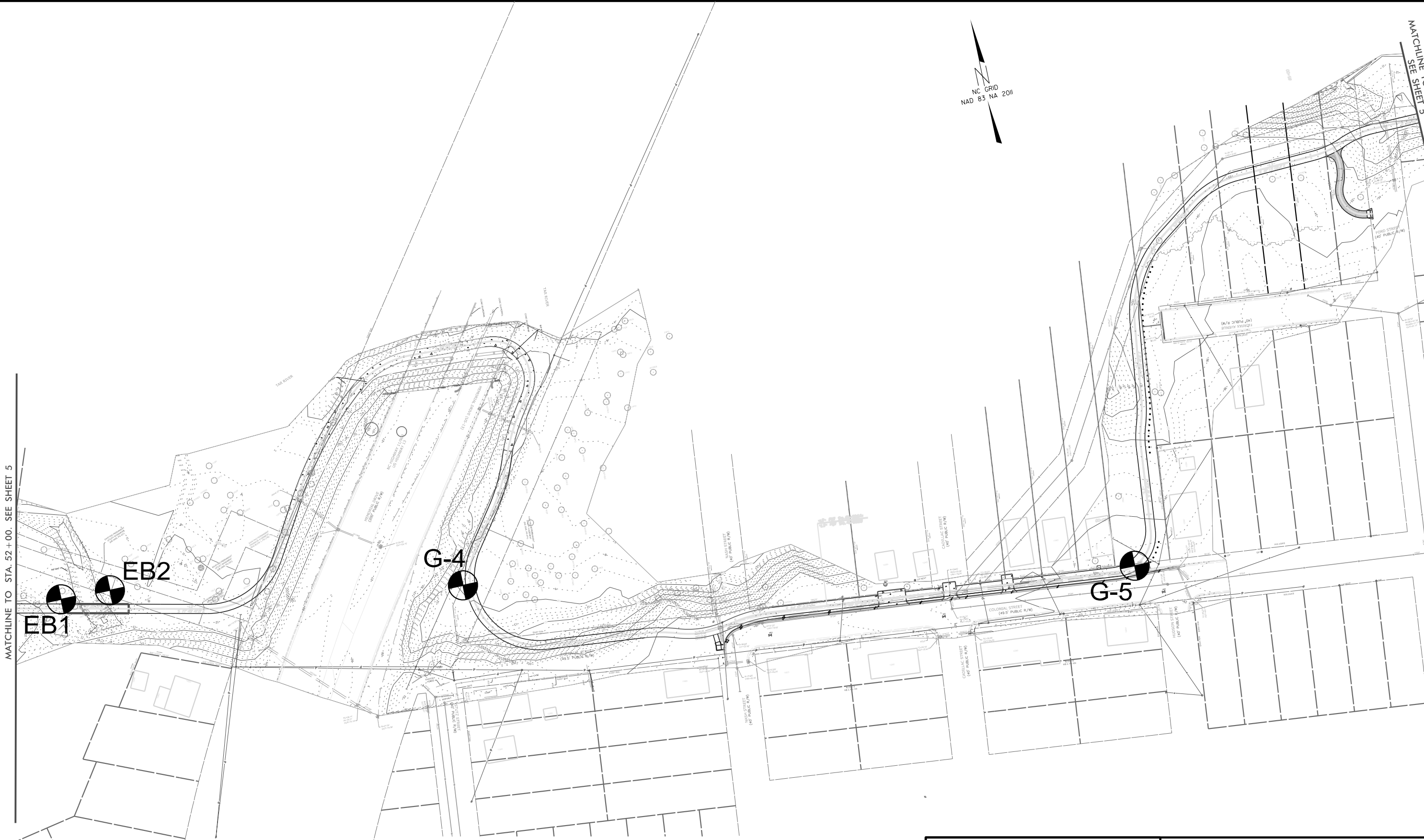
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BORING LOCATION PLAN

SOUTH TAR RIVER GREENWAY - PH II
GREENVILLE, NORTH CAROLINA
NCDOT TIP No.: EB-5539
FALCON PROJECT No.: G12027.00

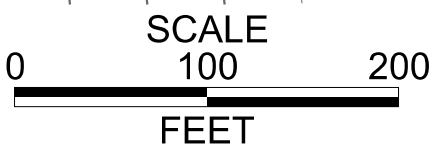


MATCHLINE TO STA. 52+00. SEE SHEET 5

MATCHLINE TO STA. 86+25. SEE SHEET 5

NOTES:

- PLANS ADOPTED FROM ELECTRONIC FILES RECEIVED FROM KIMLEY-HORN AND ASSOCIATES, DATED APRIL 22, 2015.



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BORING LOCATION PLAN

SOUTH TAR RIVER GREENWAY - PH II
GREENVILLE, NORTH CAROLINA
NCDOT TIP No.: EB-5539
FALCON PROJECT No.: G12027.00



MATCHLINE TO STA. 86+25. SEE SHEET 6

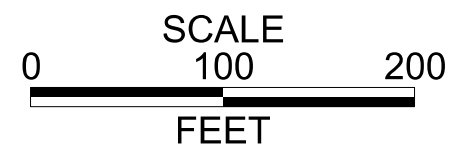
MATCHLINE TO STA. 111+00. SEE SHEET 8

G-6



NOTES:

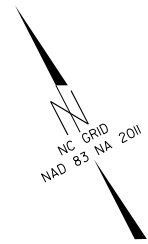
- PLANS ADOPTED FROM ELECTRONIC FILES RECEIVED FROM KIMLEY-HORN AND ASSOCIATES, DATED APRIL 22, 2015.




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BORING LOCATION PLAN

SOUTH TAR RIVER GREENWAY - PH II
GREENVILLE, NORTH CAROLINA
NCDOT TIP No.: EB-5539
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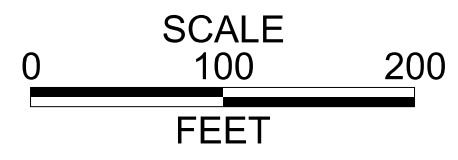
MATCHLINE TO STA. 111+00. SEE SHEET 7

END RETAINING WALL 2
-L4- STA. 112+50, 7' RT

BEGIN RETAINING WALL 2
-L4- STA. 111+10, 7' RT

NOTES:

- PLANS ADOPTED FROM ELECTRONIC FILES RECEIVED FROM KIMLEY-HORN AND ASSOCIATES, DATED APRIL 22, 2015.



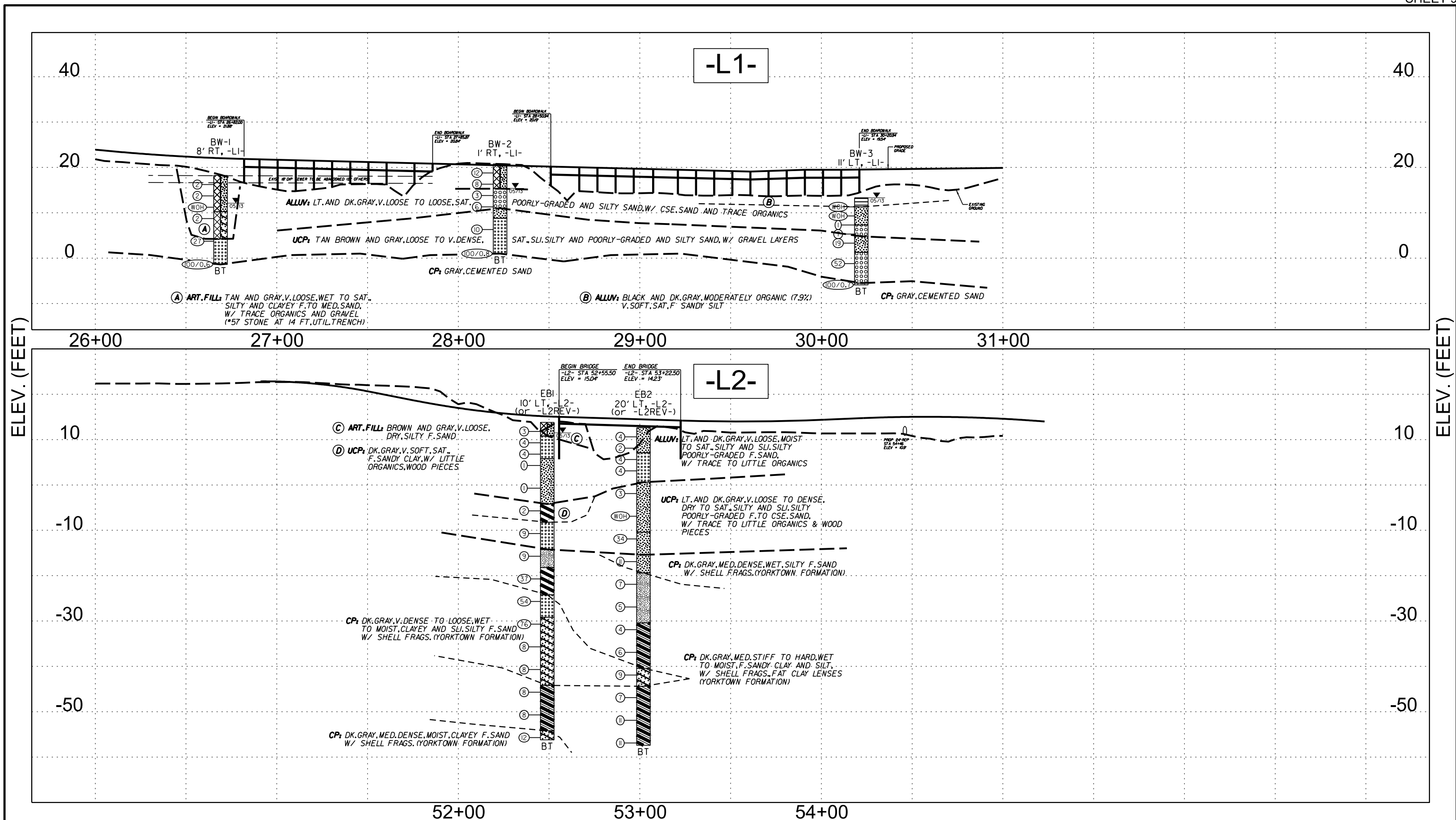
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BORING LOCATION PLAN

SOUTH TAR RIVER GREENWAY - PH II
GREENVILLE, NORTH CAROLINA
NCDOT TIP No.: EB-5539
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NOTES:

- GROUNDLINE PROFILES OF -L1- AND -L2- TAKEN FROM ELECTRONIC FILES RECEIVED FROM KIMLEY-HORN AND ASSOCIATES, DATED APRIL 2015.
- INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH PROJECTED ONTO THE PROFILE.
- BRIDGE SKEW: 90 DEGREES

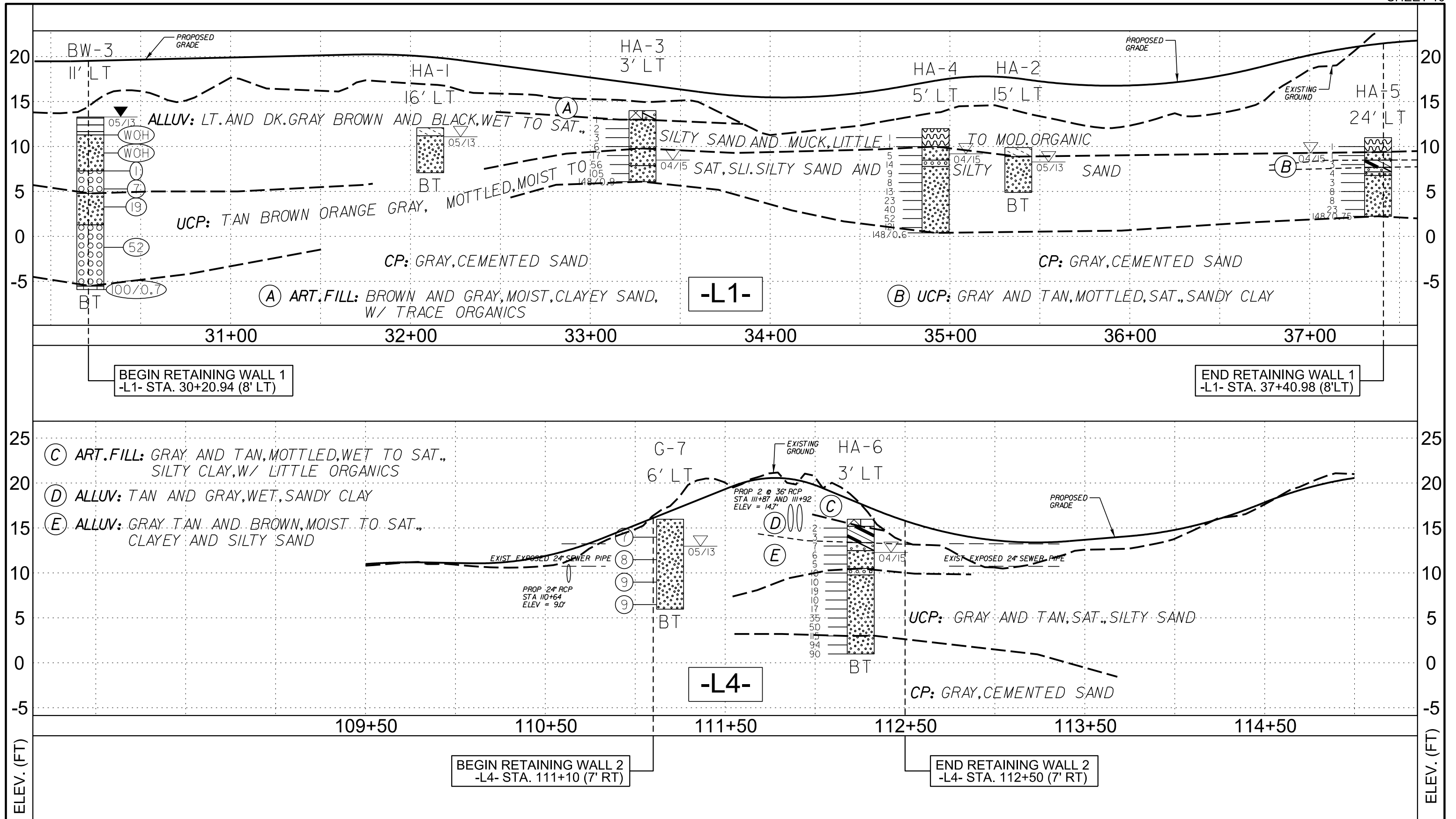
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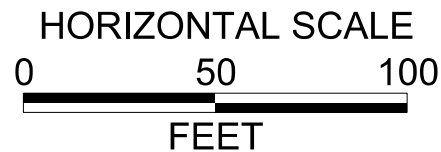
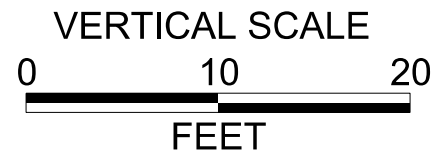
SUBSURFACE PROFILES

SOUTH TAR RIVER GREENWAY - PH II
GREENVILLE, NORTH CAROLINA
NCDOT TIP No.: EB-5539
FALCON PROJECT No.: G12027.00



NOTES:

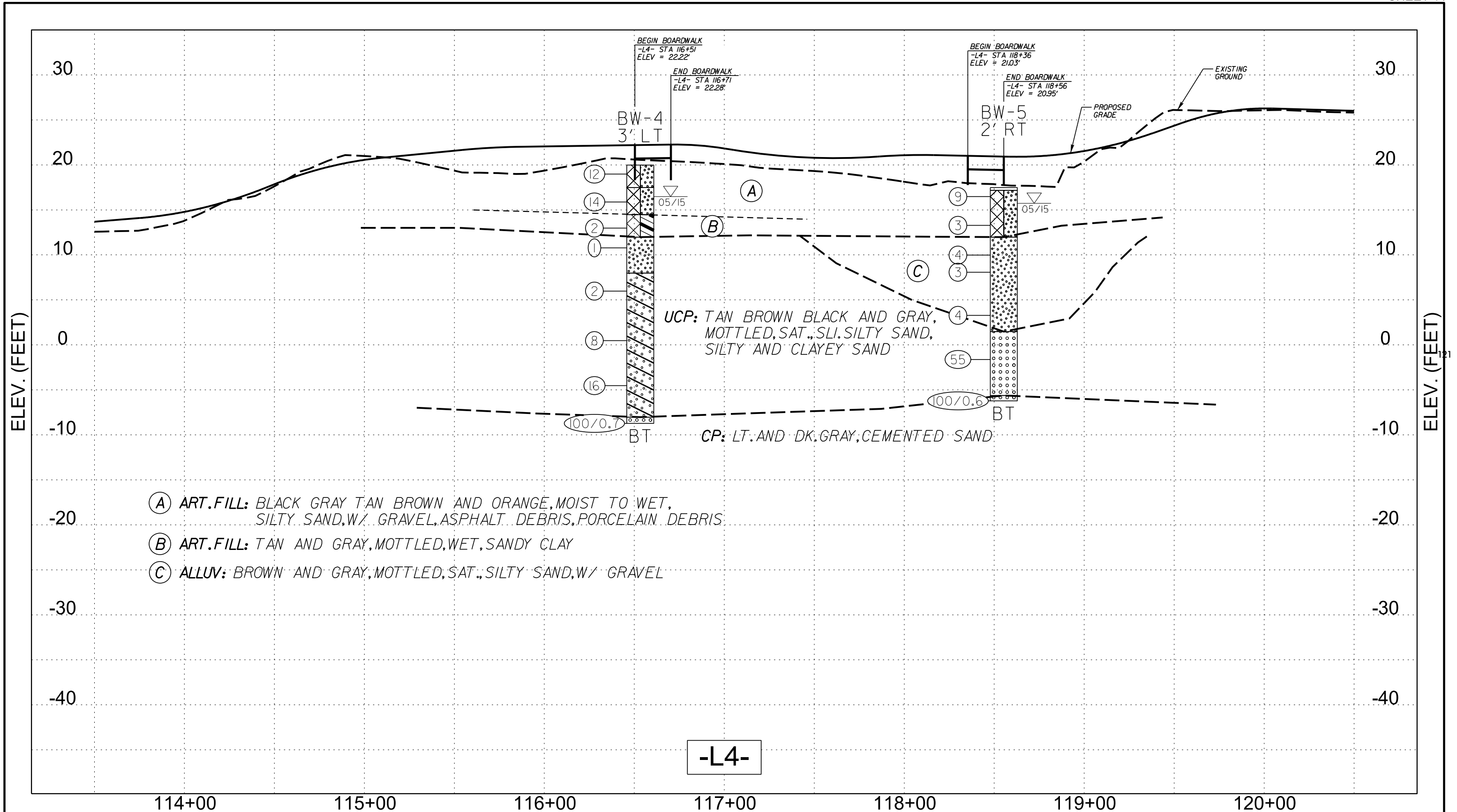
- CENTERLINE PROFILES OF -L1- AND -L4- TAKEN FROM ELECTRONIC FILES RECEIVED FROM KIMLEY-HORN AND ASSOCIATES, DATED APRIL 2015.
- INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH PROJECTED ONTO THE PROFILE.



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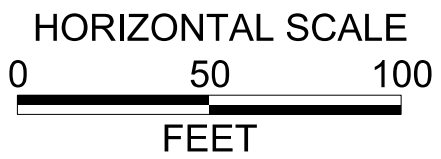
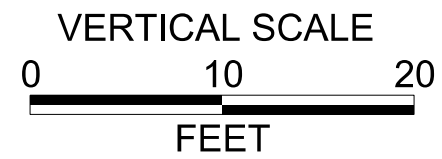
SUBSURFACE PROFILES

SOUTH TAR RIVER GREENWAY - PH II
GREENVILLE, NORTH CAROLINA
NCDOT TIP No.: EB-5539
FALCON PROJECT No.: G12027.00



NOTES:

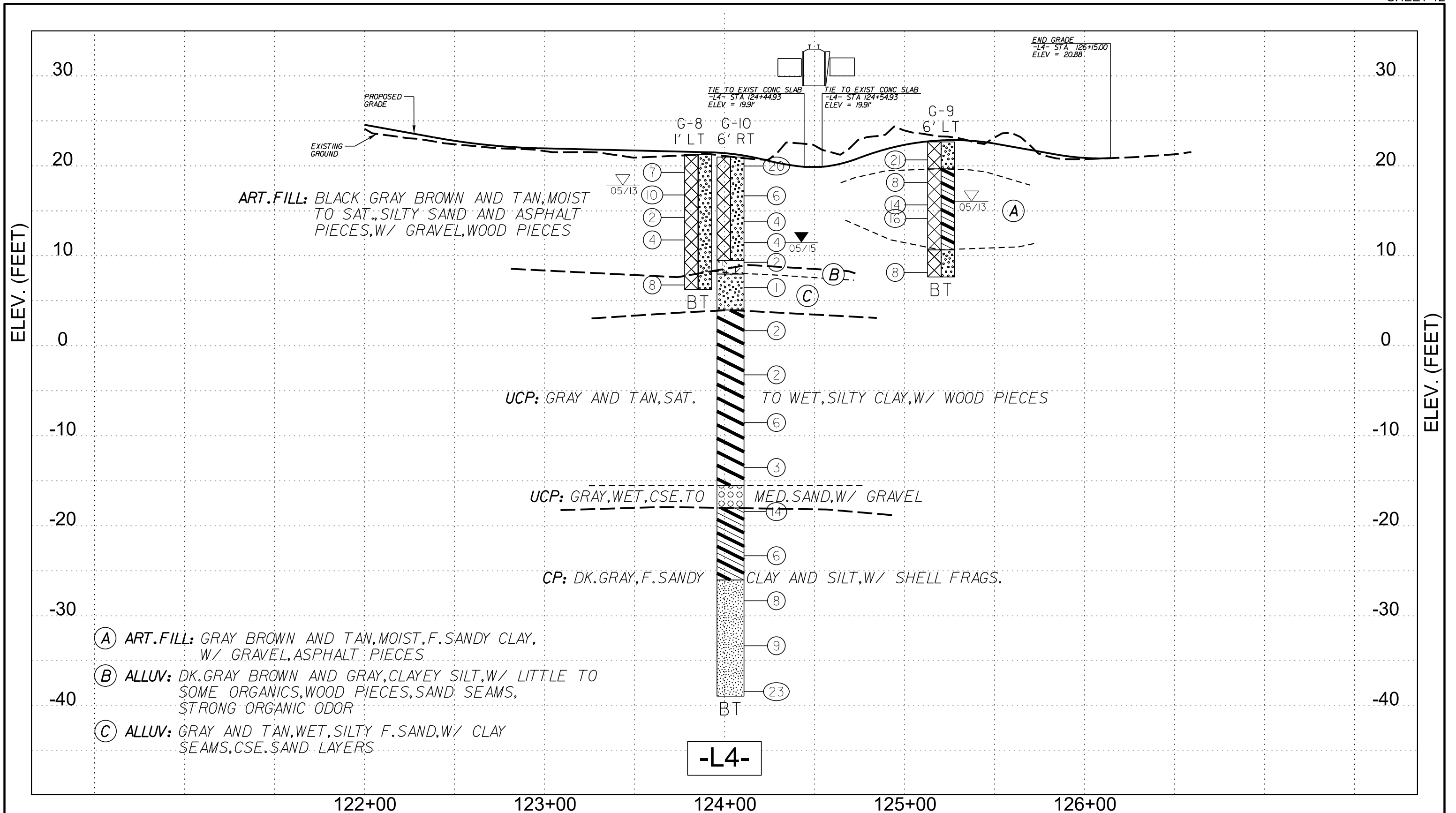
- CENTERLINE PROFILES OF -L4- TAKEN FROM ELECTRONIC FILES RECEIVED FROM KIMLEY-HORN AND ASSOCIATES, DATED APRIL 2015.
- INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH PROJECTED ONTO THE PROFILE.



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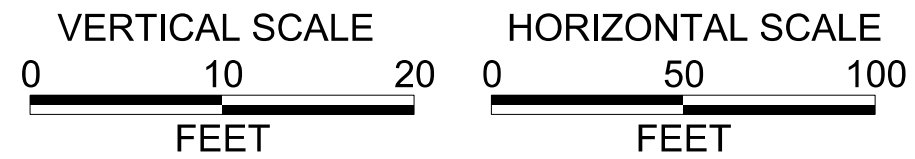
SUBSURFACE PROFILES

SOUTH TAR RIVER GREENWAY - PH II
GREENVILLE, NORTH CAROLINA
NCDOT TIP No.: EB-5539
FALCON PROJECT No.: G12027.00



NOTES:

- CENTERLINE PROFILES OF -L4- TAKEN FROM ELECTRONIC FILES RECEIVED FROM KIMLEY-HORN AND ASSOCIATES, DATED APRIL 2015.
- INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH PROJECTED ONTO THE PROFILE.



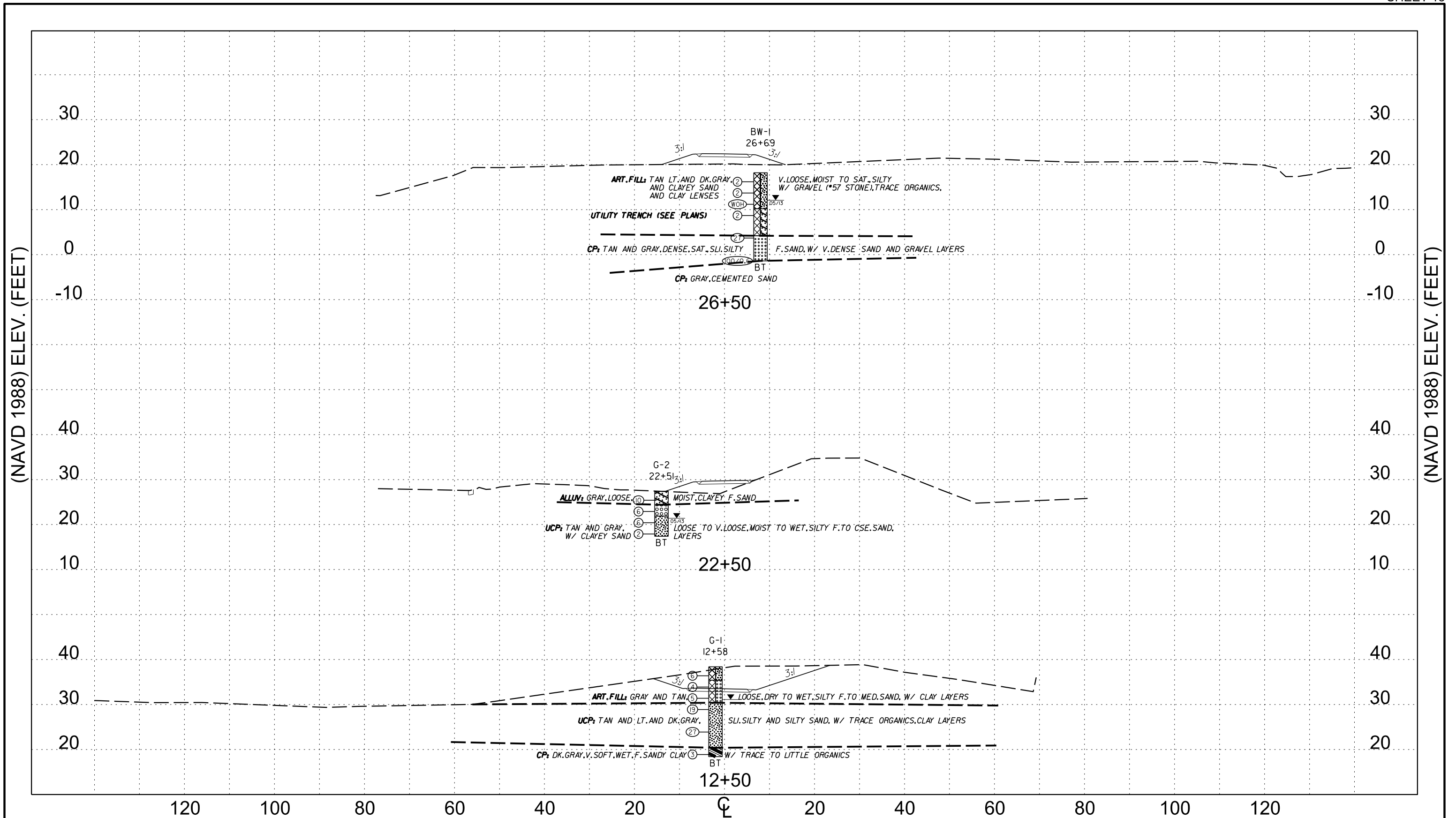
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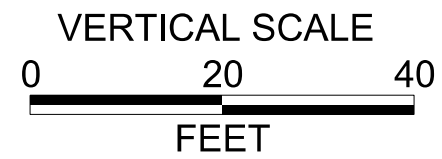
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SUBSURFACE PROFILES

SOUTH TAR RIVER GREENWAY - PH II
GREENVILLE, NORTH CAROLINA
NCDOT TIP No.: EB-5539
FALCON PROJECT No.: G12027.00



NOTES:
 • GROUNDLINE CROSS SECTIONS OF -L1- TAKEN FROM ELECTRONIC FILES RECEIVED FROM KIMLEY-HORN AND ASSOCIATES, DATED NOVEMBER 2014.
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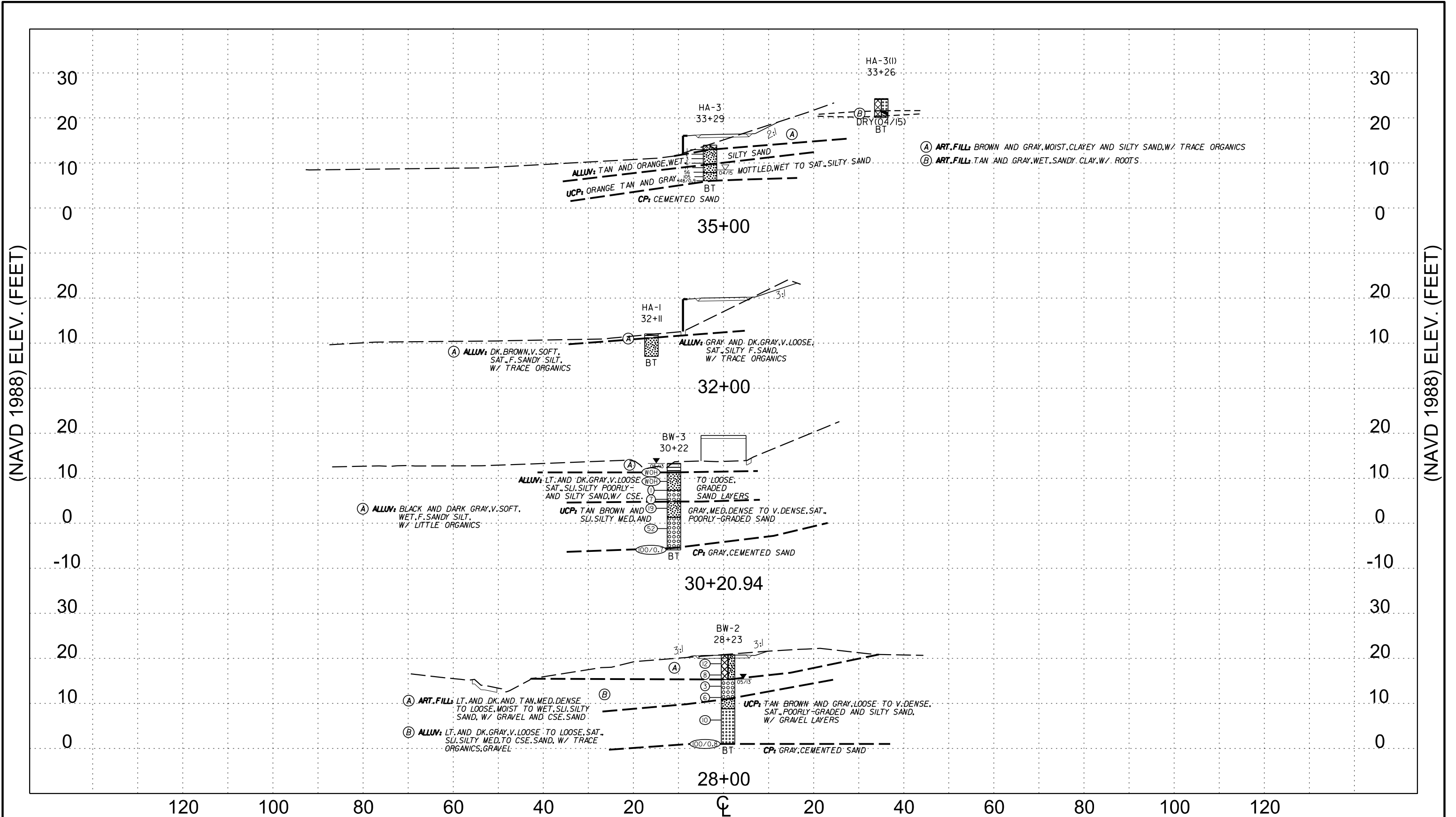
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SUBSURFACE CROSS SECTION -L1-

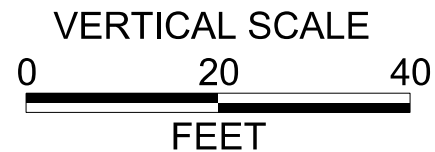
SOUTH TAR RIVER GREENWAY - PH II
 GREENVILLE, NORTH CAROLINA
 NCDOT TIP No.: EB-5539
 FALCON PROJECT No.: G12027.00



(NAVD 1988) ELEV. (FEET)

(NAVD 1988) ELEV. (FEET)

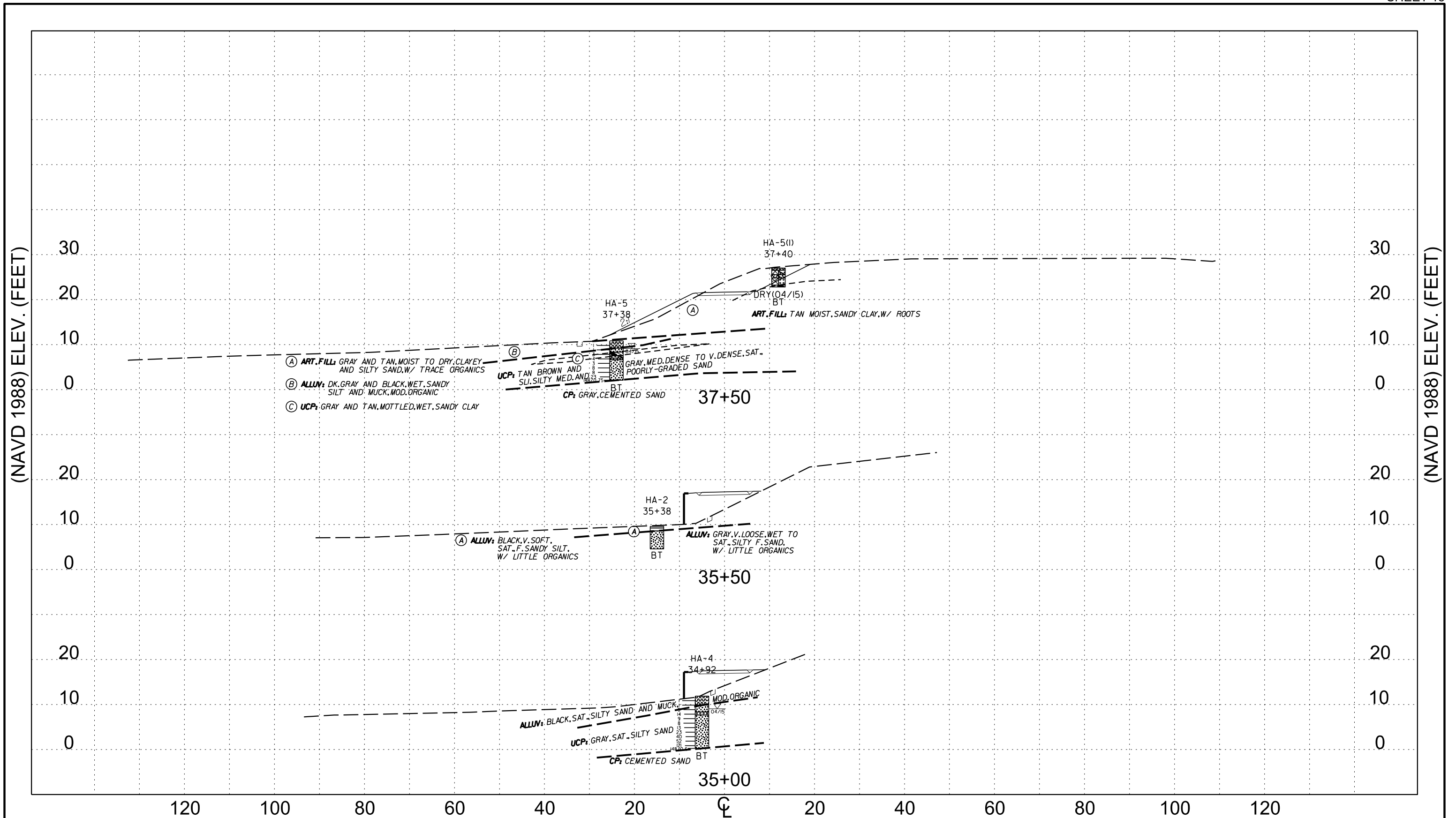
NOTES:
 • GROUNDLINE CROSS SECTIONS OF -L1- TAKEN FROM ELECTRONIC FILES RECEIVED FROM KIMLEY-HORN AND ASSOCIATES, DATED NOVEMBER 2014.
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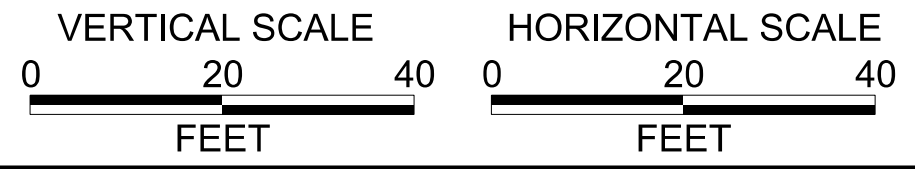
SUBSURFACE CROSS SECTION -L1-

SOUTH TAR RIVER GREENWAY - PH II
 GREENVILLE, NORTH CAROLINA
 NCDOT TIP No.: EB-5539
 FALCON PROJECT No.: G12027.00



NOTES:

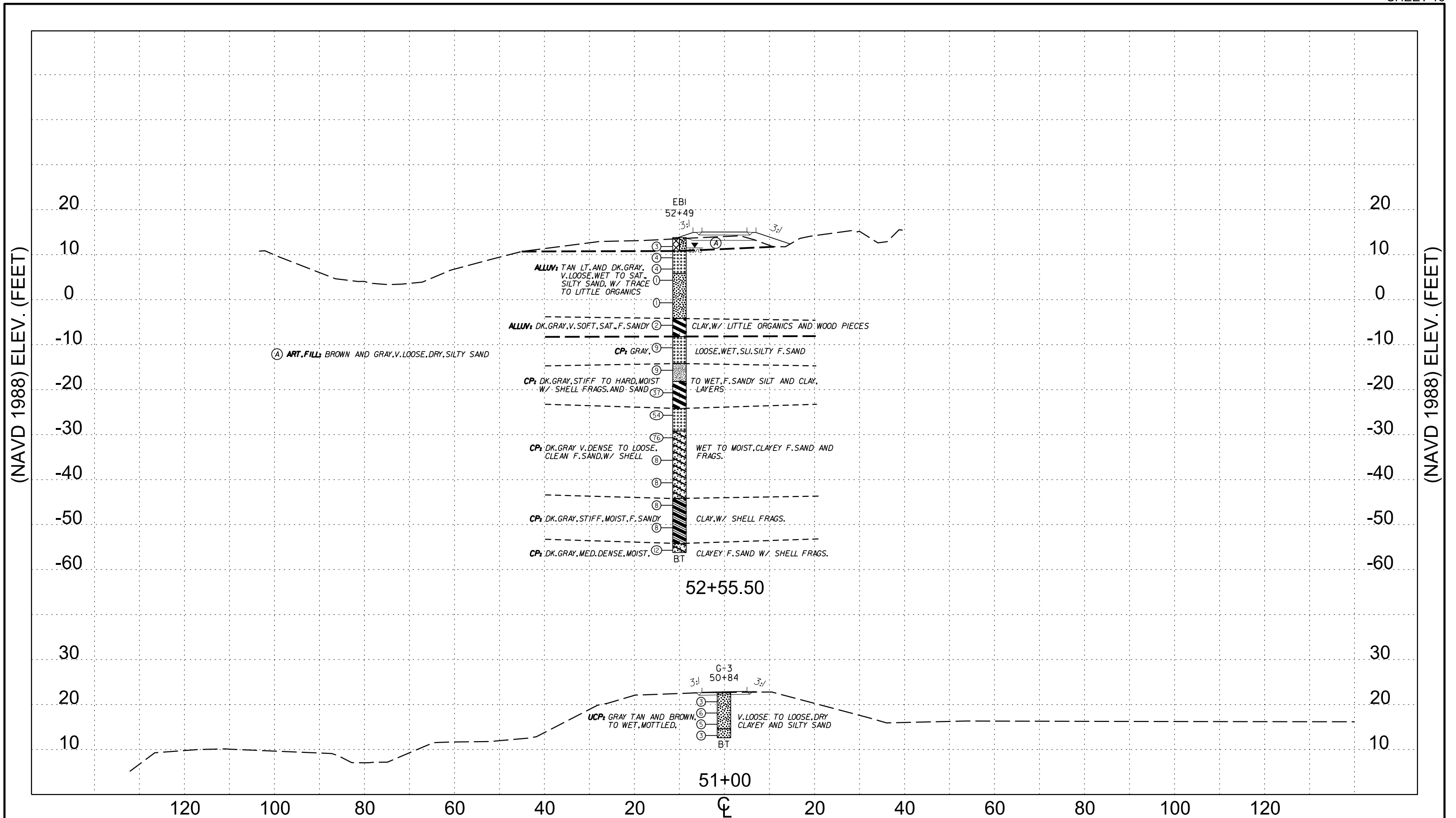
- GROUNDLINE CROSS SECTIONS OF -L1- TAKEN FROM ELECTRONIC FILES RECEIVED FROM KIMLEY-HORN AND ASSOCIATES, DATED NOVEMBER 2014.
- INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH PROJECTED ONTO THE PROFILE.



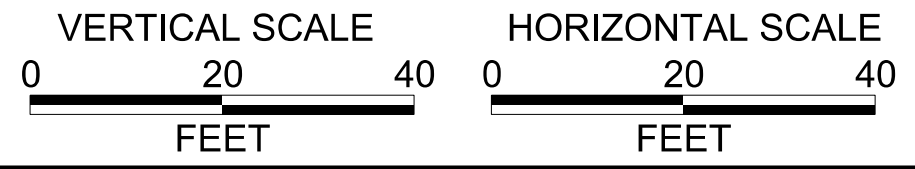
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SUBSURFACE CROSS SECTION -L1-

SOUTH TAR RIVER GREENWAY - PH II
GREENVILLE, NORTH CAROLINA
NCDOT TIP No.: EB-5539
FALCON PROJECT No.: G12027.00



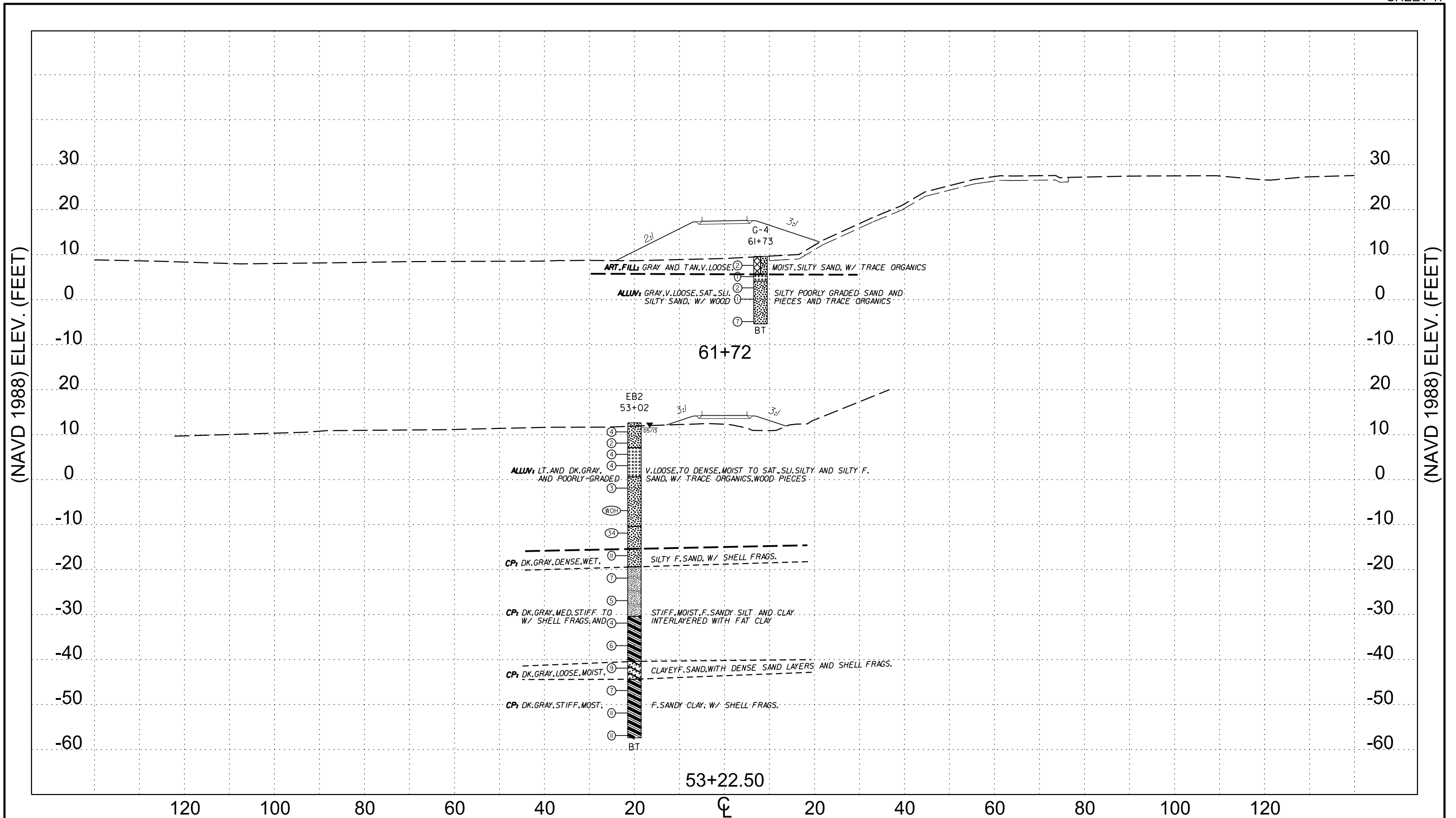
NOTES:
 • GROUNDLINE CROSS SECTIONS OF -L2REV- TAKEN FROM ELECTRONIC FILES RECEIVED FROM KIMLEY-HORN AND ASSOCIATES, DATED NOVEMBER 2014.
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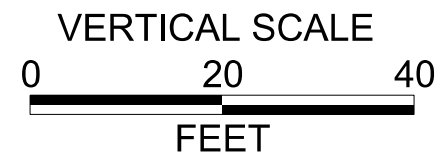
SUBSURFACE CROSS SECTION -L2-

SOUTH TAR RIVER GREENWAY - PH II
 GREENVILLE, NORTH CAROLINA
 NCDOT TIP No.: EB-5539
 FALCON PROJECT No.: G12027.00



NOTES:

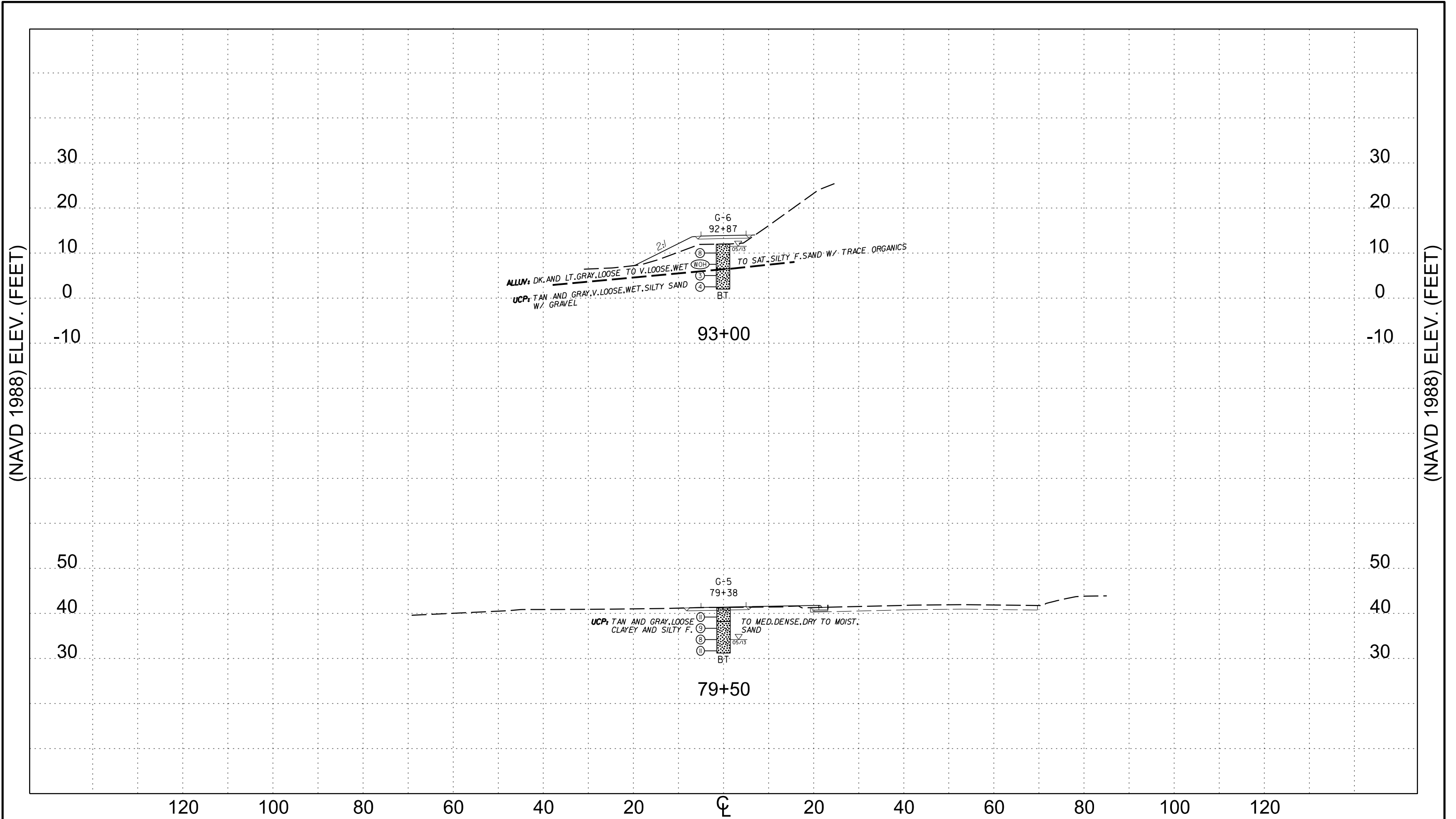
- GROUNDLINE CROSS SECTIONS OF -L2REV- TAKEN FROM ELECTRONIC FILES RECEIVED FROM KIMLEY-HORN AND ASSOCIATES, DATED NOVEMBER 2014.
- INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH PROJECTED ONTO THE PROFILE.



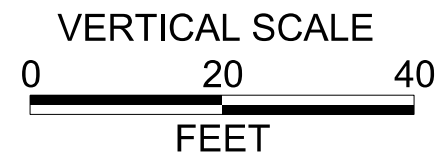
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SUBSURFACE CROSS SECTION -L2-

SOUTH TAR RIVER GREENWAY - PH II
GREENVILLE, NORTH CAROLINA
NCDOT TIP No.: EB-5539
FALCON PROJECT No.: G12027.00



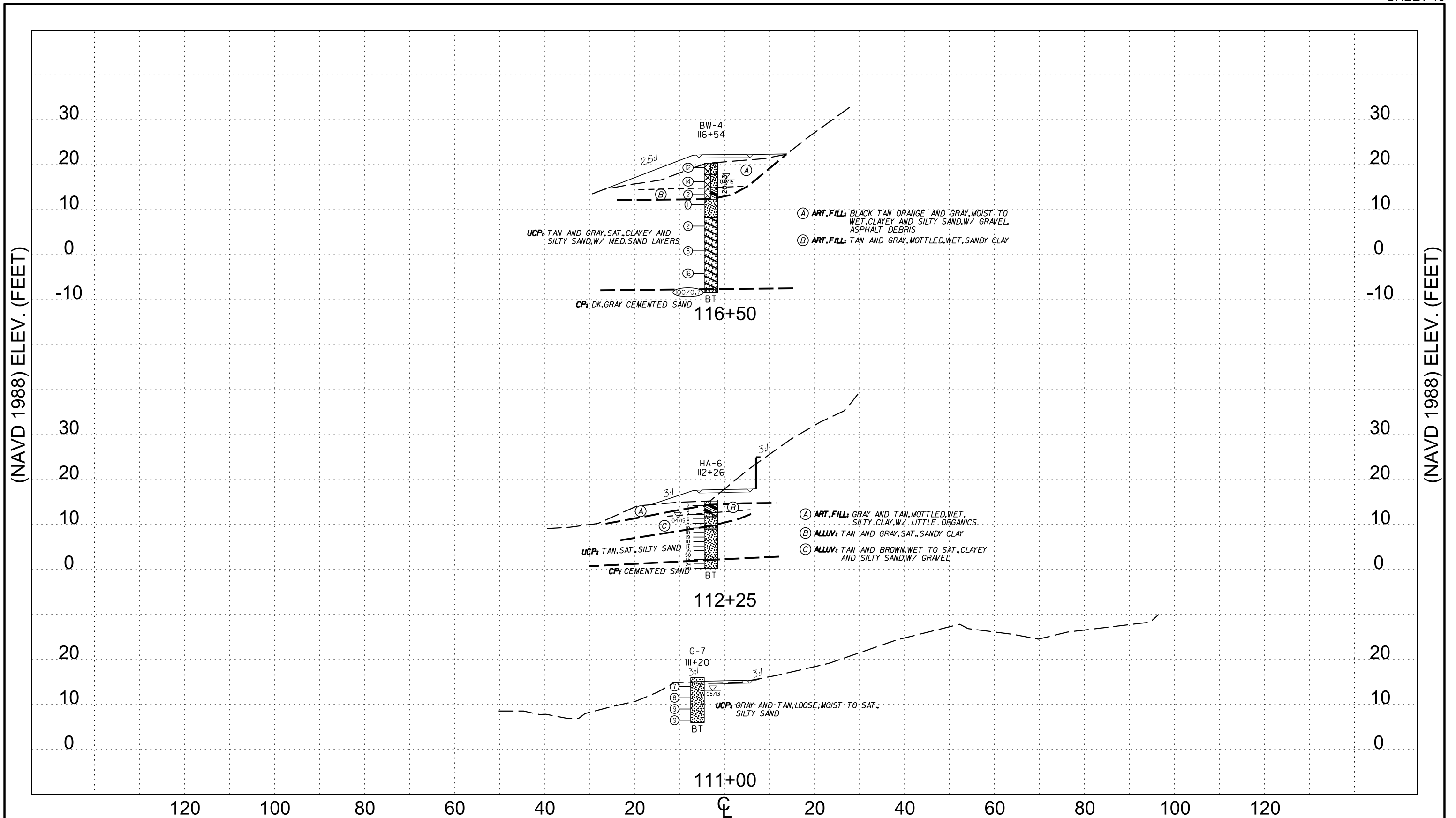
NOTES:
 • GROUNDLINE CROSS SECTIONS OF -L3- TAKEN FROM ELECTRONIC FILES RECEIVED FROM KIMLEY-HORN AND ASSOCIATES, DATED NOVEMBER 2014.
 • INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH PROJECTED ONTO THE PROFILE.



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SUBSURFACE CROSS SECTION -L3-

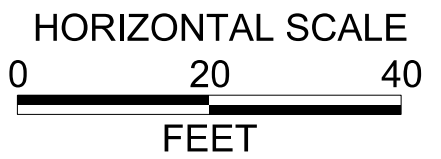
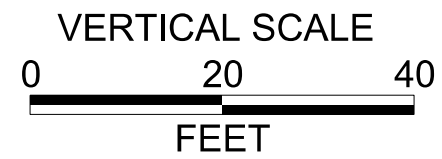
SOUTH TAR RIVER GREENWAY - PH II
 GREENVILLE, NORTH CAROLINA
 NCDOT TIP No.: EB-5539
 FALCON PROJECT No.: G12027.00



(NAVD 1988) ELEV. (FEET)

(NAVD 1988) ELEV. (FEET)

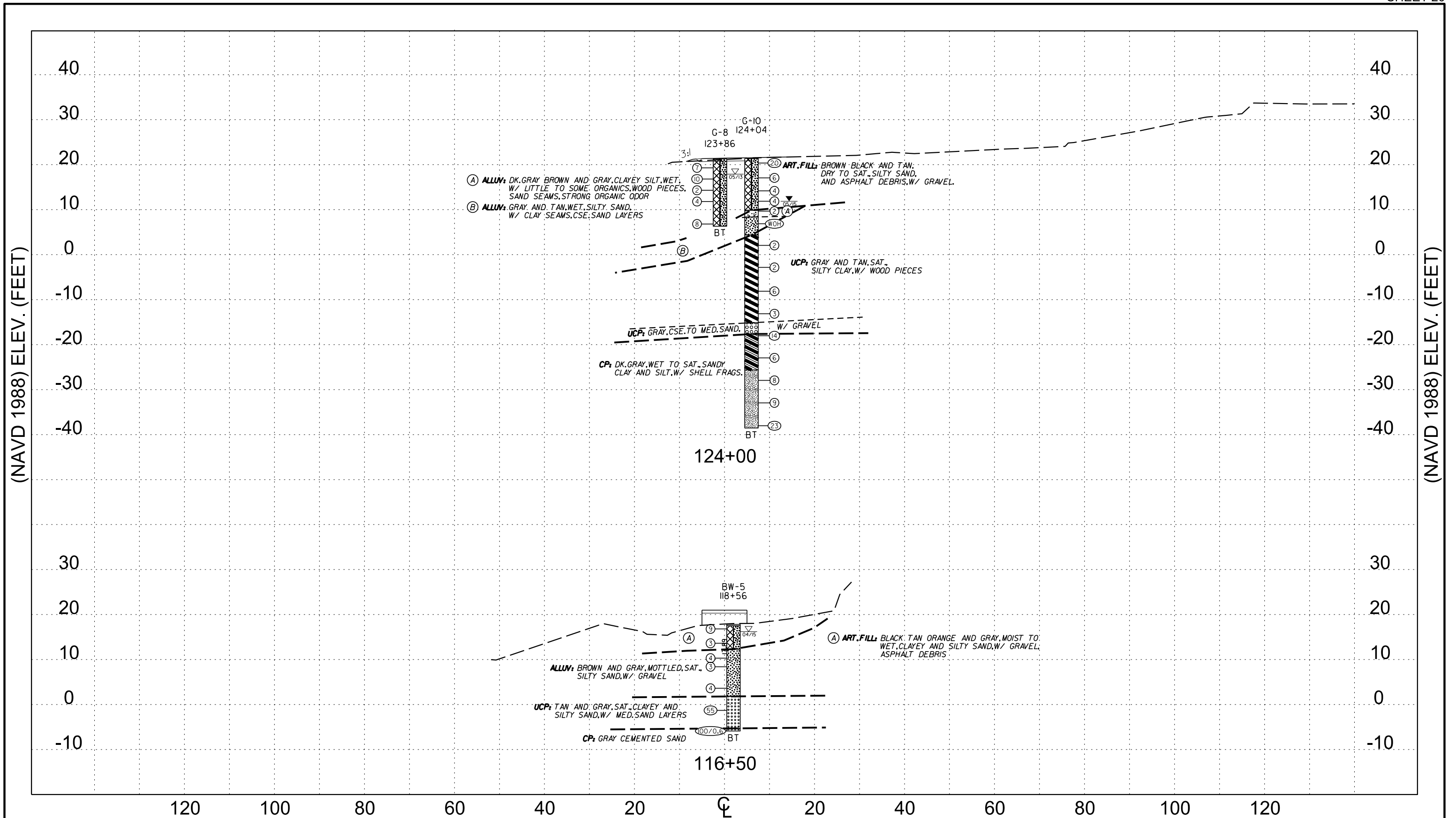
NOTES:
 • GROUNDLINE CROSS SECTIONS OF -L4- TAKEN FROM ELECTRONIC FILES RECEIVED FROM KIMLEY-HORN AND ASSOCIATES, DATED NOVEMBER 2014.
 • INFERRED STRATIGRAPHY IS DRAWN THROUGH THE BORINGS WITH BOTH PROJECTED ONTO THE PROFILE.



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SUBSURFACE CROSS SECTION -L4-

SOUTH TAR RIVER GREENWAY - PH II
 GREENVILLE, NORTH CAROLINA
 NCDOT TIP No.: EB-5539
 FALCON PROJECT No.: G12027.00

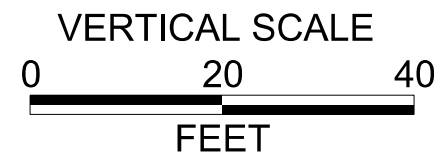


(NAVD 1988) ELEV. (FEET)

(NAVD 1988) ELEV. (FEET)

NOTES:

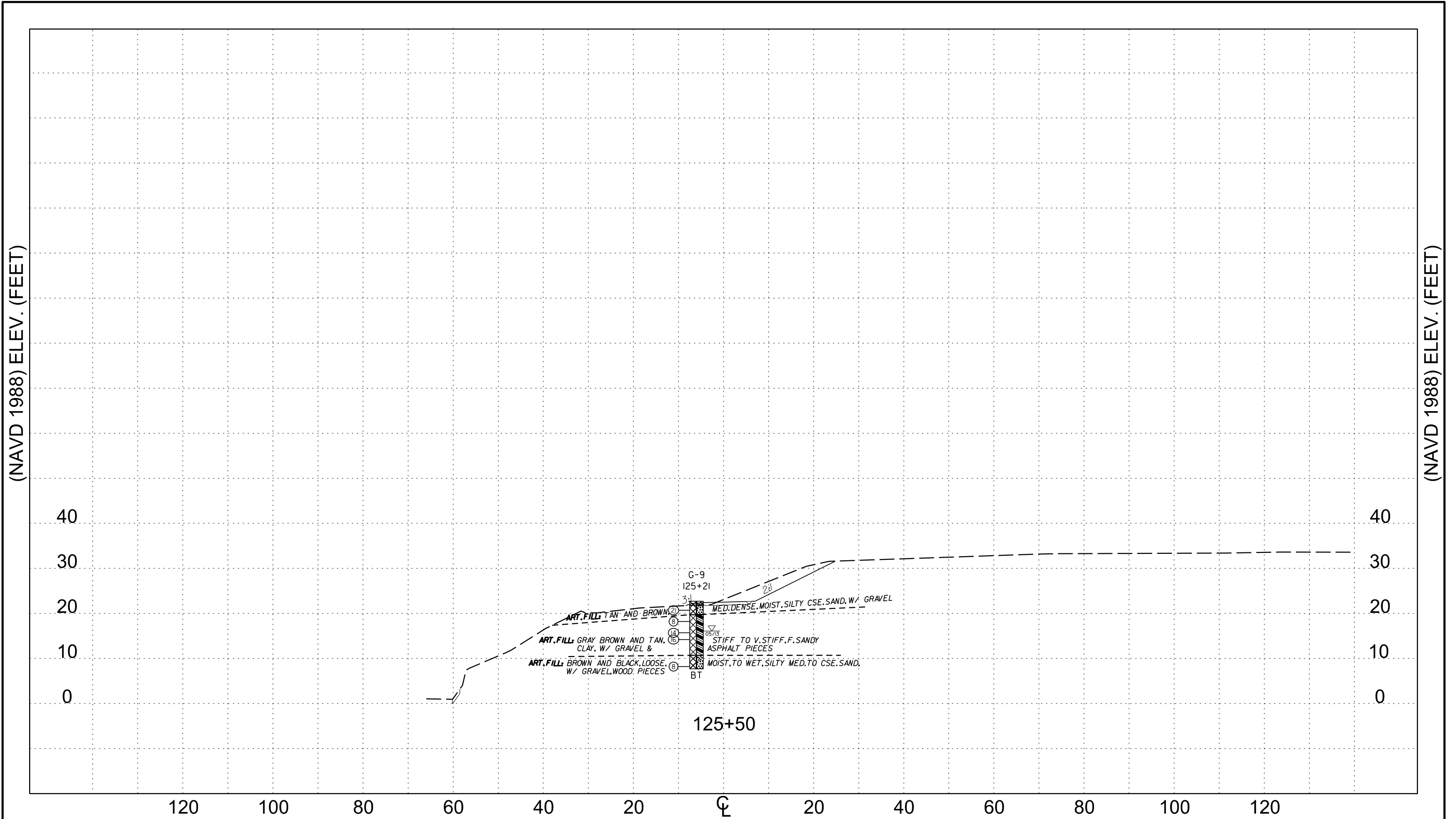
- GROUNDLINE CROSS SECTIONS OF -L4- TAKEN FROM ELECTRONIC FILES RECEIVED FROM KIMLEY-HORN AND ASSOCIATES, DATED NOVEMBER 2014.
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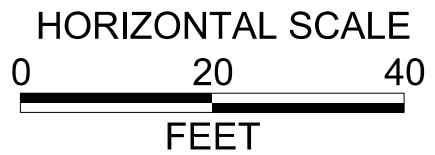
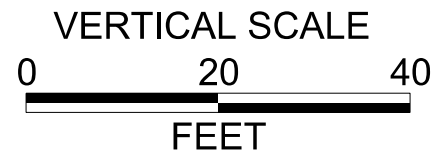
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SUBSURFACE CROSS SECTION -L4-

SOUTH TAR RIVER GREENWAY - PH II
GREENVILLE, NORTH CAROLINA
NCDOT TIP No.: EB-5539
FALCON PROJECT No.: G12027.00



NOTES:
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SUBSURFACE CROSS SECTION -L4-

SOUTH TAR RIVER GREENWAY - PH II
 GREENVILLE, NORTH CAROLINA
 NCDOT TIP No.: EB-5539
 FALCON PROJECT No.: G12027.00

WBS N/A		TIP EB-5539		COUNTY PITT		GEOLOGIST T. EVANS												
SITE DESCRIPTION SOUTH TAR RIVER GREENWAY - PHASE II							GROUND WTR (ft)											
BORING NO. G-1		STATION 12+58		OFFSET 2 ft LT		ALIGNMENT -L1-	0 HR. 5.3											
COLLAR ELEV. 38.4 ft		TOTAL DEPTH 20.0 ft		NORTHING 682,619		EASTING 2,475,709	24 HR. 7.3											
DRILL RIG/HAMMER EFF./DATE MID5125 D-25 75% 05/25/2012				DRILL METHOD Wash Boring		HAMMER TYPE Automatic												
DRILLER Contract Driller		START DATE 05/13/13		COMP. DATE 05/13/13		SURFACE WATER DEPTH N/A												
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG MOI	LOG	SOIL AND ROCK DESCRIPTION	ELEV. (ft)	DEPTH (ft)		
			0.5ft	0.5ft	0.5ft	0	25	50	75	100								
40															38.4	0.0	GROUND SURFACE: 1-2" TOPSOIL	
	37.4	1.0	4	4	2							SS-1	13%				ARTIFICIAL FILL GRAY AND TAN, SILTY F. SAND (A-2-4) W/ CLAY LAYERS	
	34.9	3.5	2	2	2							SS-2	14%				GRAY AND TAN, SLI. SILTY SAND (A-3) W/ CSE. SAND LAYERS	
	32.4	6.0	1	3	2													
	29.9	8.5	1	7	12												UNDIVIDED COASTAL PLAIN TAN AND GRAY, SLI. SILTY SAND (A-2-4) W/ CLAY LAYERS	
	24.9	13.5	18	12	15													
	19.9	18.5	1	1	2												COASTAL PLAIN DK. GRAY, F. SANDY CLAY (A-6) W/ TRACE TO LITTLE ORGANICS	
																		Boring Terminated at Elevation 18.4 ft
																		NOTE: WATER INTRODUCED TO BOREHOLE DURING DRILLING. 0-HR WATER LEVEL INDICATED MAY BE FALSELY HIGH

WBS N/A		TIP EB-5539		COUNTY PITT		GEOLOGIST T. EVANS												
SITE DESCRIPTION SOUTH TAR RIVER GREENWAY - PHASE II							GROUND WTR (ft)											
BORING NO. G-2		STATION 22+51		OFFSET 14 ft LT		ALIGNMENT -L1-	0 HR. 2.4											
COLLAR ELEV. 27.4 ft		TOTAL DEPTH 10.0 ft		NORTHING 683,513		EASTING 2,475,976	24 HR. 6.0											
DRILL RIG/HAMMER EFF./DATE MID5125 D-25 75% 05/25/2012				DRILL METHOD Wash Boring		HAMMER TYPE Automatic												
DRILLER Contract Driller		START DATE 05/13/13		COMP. DATE 05/13/13		SURFACE WATER DEPTH N/A												
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG MOI	LOG	SOIL AND ROCK DESCRIPTION	ELEV. (ft)	DEPTH (ft)		
			0.5ft	0.5ft	0.5ft	0	25	50	75	100								
															27.4	0.0	GROUND SURFACE: 1" TOPSOIL	
																		ALLUVIAL GRAY, SILTY F. SAND (A-2-4)
	26.4	1.0	4	5	5							SS-3	10%					
	23.9	3.5	4	4	2													UNDIVIDED COASTAL PLAIN TAN AND GRAY, SILTY MED. TO CSE. SAND (A-1-b) W/ CLAYEY SAND LAYERS
	21.4	6.0	3	3	3													GRAY AND TAN, SILTY F. SAND (A-2-4)
	18.9	8.5	3	1	1													
																		Boring Terminated at Elevation 17.4 ft
																		NOTE: WATER INTRODUCED TO BOREHOLE DURING DRILLING. 0-HR WATER LEVEL INDICATED MAY BE FALSELY HIGH

NCDOT BORE DOUBLE EB5539_GEO_GINT_GREENWAY.GPJ NC_DOT.GDT 4/29/15

WBS N/A	TIP EB-5539	COUNTY PITT	GEOLOGIST T. EVANS
SITE DESCRIPTION SOUTH TAR RIVER GREENWAY - PHASE II			GROUND WTR (ft)
BORING NO. BW-1	STATION 26+69	OFFSET 8 ft RT	ALIGNMENT -L1-
COLLAR ELEV. 18.2 ft	TOTAL DEPTH 19.6 ft	NORTHING 683,666	EASTING 2,476,324
DRILL RIG/HAMMER EFF./DATE MID5125 D-25 75% 05/25/2012		DRILL METHOD Wash Boring	HAMMER TYPE Automatic
DRILLER Contract Driller	START DATE 05/13/13	COMP. DATE 05/13/13	SURFACE WATER DEPTH N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100						
20																
	17.2	1.0	1	1	1									18.2	0.0	GROUND SURFACE: 2" TOPSOIL
	14.7	3.5	1	1	1											ARTIFICIAL FILL TAN AND GRAY, SILTY SAND (A-2-4) W/ TRACE ORGANICS
	12.2	6.0	WOH	WOH	WOH											
	9.7	8.5	1	1	1									10.2	8.0	GRAY AND TAN, CLAYEY F. SAND (A-2-6) W/ GRAVEL
	4.7	13.5	6	10	17									4.2	14.0	UNDIVIDED COASTAL PLAIN TAN AND GRAY, SLI. SILTY SAND (A-3) W/ GRAVEL LAYERS
	-0.3	18.5	17	75	25/0.1									-1.4	19.6	Boring Terminated at Elevation -1.4 ft

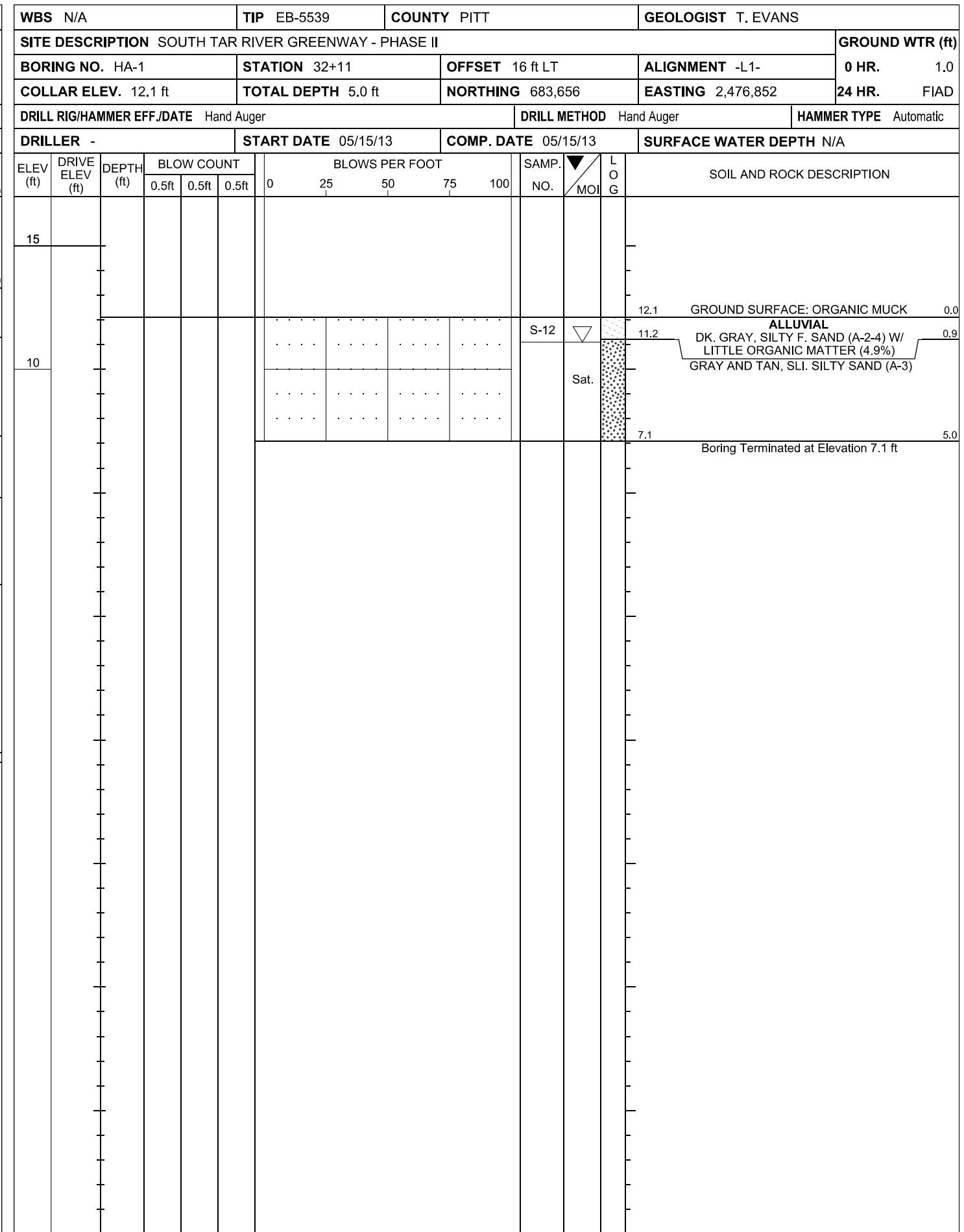
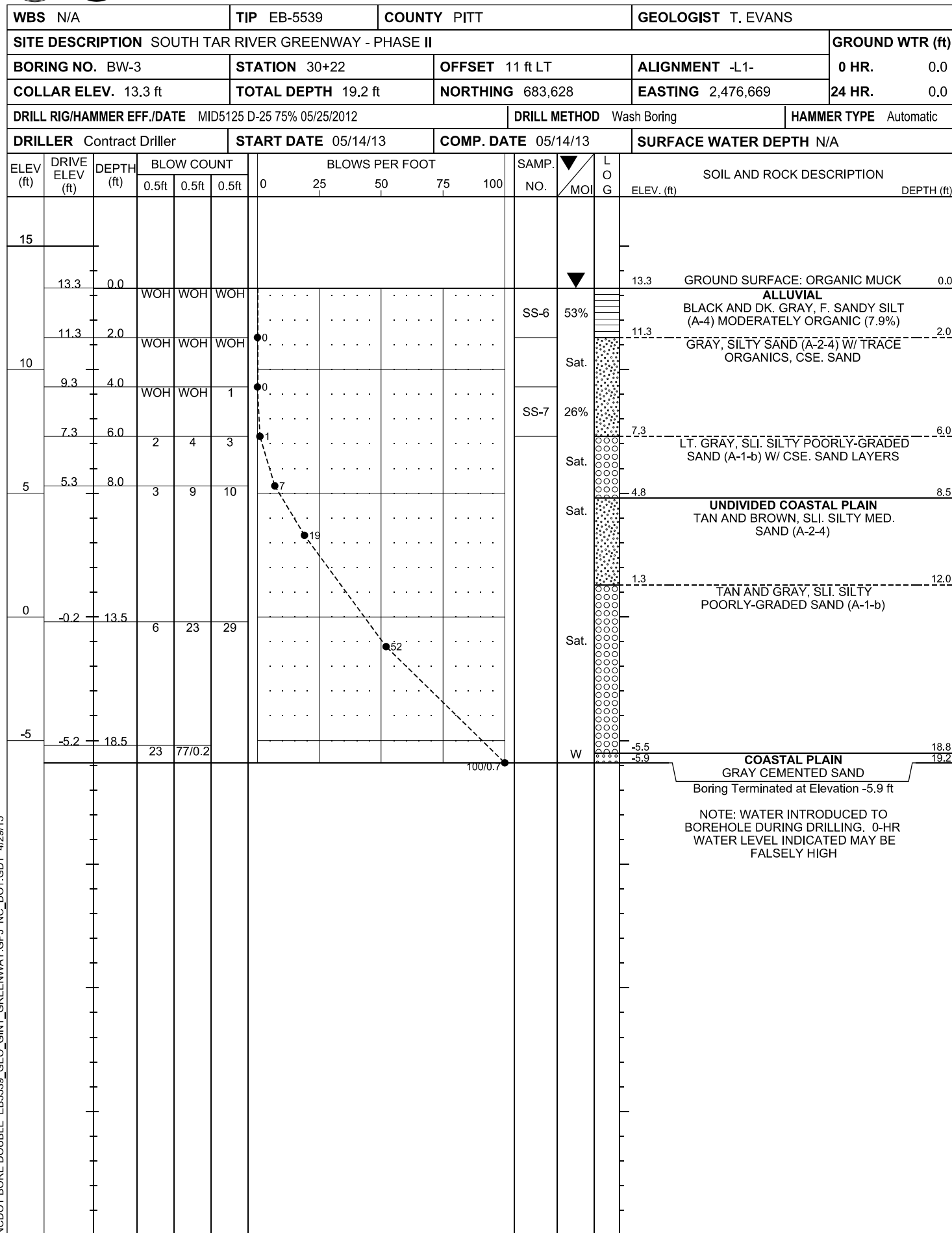
NOTE: WATER INTRODUCED TO BOREHOLE DURING DRILLING. 0-HR WATER LEVEL INDICATED MAY BE FALSELY HIGH

WBS N/A	TIP EB-5539	COUNTY PITT	GEOLOGIST T. EVANS
SITE DESCRIPTION SOUTH TAR RIVER GREENWAY - PHASE II			GROUND WTR (ft)
BORING NO. BW-2	STATION 28+23	OFFSET 1 ft RT	ALIGNMENT -L1-
COLLAR ELEV. 20.8 ft	TOTAL DEPTH 19.8 ft	NORTHING 683,617	EASTING 2,476,471
DRILL RIG/HAMMER EFF./DATE MID5125 D-25 75% 05/25/2012		DRILL METHOD Wash Boring	HAMMER TYPE Automatic
DRILLER Contract Driller	START DATE 05/13/13	COMP. DATE 05/13/13	SURFACE WATER DEPTH N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100						
														20.8	0.0	GROUND SURFACE: 4-5" GRAVEL
	19.8	1.0	5	6	6											ARTIFICIAL FILL DK. GRAY AND TAN, SLI. SILTY SAND (A-2-4) W/ GRAVEL, CSE. SAND LAYERS
	17.3	3.5	5	5	3											
	14.8	6.0	1	1	2									15.3	5.5	ALLUVIAL GRAY AND DK. GRAY, SLI. SILTY MED. TO CSE. SAND (A-1-b) W/ GRAVEL, TRACE ORGANICS (2.5%)
	12.3	8.5	2	3	3									11.0	9.8	UNDIVIDED COASTAL PLAIN TAN AND BROWN, SILTY SAND (A-2-4)
	7.3	13.5	4	4	6									8.8	12.0	TAN AND GRAY, POORLY-GRADED SAND (A-3) W/ GRAVEL LAYERS
	2.3	18.5	23	55	45/0.3									1.0	19.8	Boring Terminated at Elevation 1.0 ft

NOTE: WATER INTRODUCED TO BOREHOLE DURING DRILLING. 0-HR WATER LEVEL INDICATED MAY BE FALSELY HIGH

NC DOT BORE DOUBLE EB5539 GEO_GINT_GREENWAY.GPJ NC_DOT.GDT 4/29/15



WBS N/A		TIP EB-5539		COUNTY PITT		GEOLOGIST T. EVANS										
SITE DESCRIPTION SOUTH TAR RIVER GREENWAY - PHASE II							GROUND WTR (ft)									
BORING NO. HA-3		STATION 33+29		OFFSET 3 ft LT		ALIGNMENT -L1-										
COLLAR ELEV. 13.9 ft		TOTAL DEPTH 7.9 ft		NORTHING 683,660		EASTING 2,476,970										
DRILL RIG/HAMMER EFF./DATE Hand Auger		DRILL METHOD Hand Auger		HAMMER TYPE Automatic												
DRILLER -		START DATE 04/22/15		COMP. DATE 04/22/15		SURFACE WATER DEPTH N/A										
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG MOI	LOG SOIL AND ROCK DESCRIPTION	DEPTH (ft)		
			0.5ft	0.5ft	0.5ft	0	25	50	75	100						
15																
	14.0	0.0	-	0	1									14.0	GROUND SURFACE: 0" TOPSOIL	0.0
	13.0	1.0	-	1	1									13.0	ARTIFICIAL FILL BROWN AND GRAY, CLAYEY SAND (A-2-6) W/ TRACE ORGANICS	1.0
	12.0	2.0	-	1	2										ALLUVIAL TAN AND ORANGE, SILTY F. MED. SAND (A-2-4)	
	11.0	3.0	-	3	3											
10	10.0	4.0	-	8	9									9.8	UNDIVIDED COASTAL PLAIN ORANGE AND TAN TO GRAY, MOTTLED, SILTY F. TO MED. SAND (A-2-4)	4.2
	9.0	5.0	-	27	29									7.9	NO SAMPLES COLLECTED FROM 6.1 - 7.9 FT IN "FLOWING SANDS" SOUNDING ROD BLOWCOUNTS ONLY.	6.1
	8.0	6.0	-	52	53									6.1		
	7.0	7.0	-	74	74									6.1		
														148/0.9		

WBS N/A		TIP EB-5539		COUNTY PITT		GEOLOGIST T. EVANS										
SITE DESCRIPTION SOUTH TAR RIVER GREENWAY - PHASE II							GROUND WTR (ft)									
BORING NO. HA-3(1)		STATION 33+26		OFFSET 35 ft RT		ALIGNMENT -L1-										
COLLAR ELEV. 24.3 ft		TOTAL DEPTH 4.2 ft		NORTHING 683,623		EASTING 2,476,974										
DRILL RIG/HAMMER EFF./DATE Hand Auger		DRILL METHOD Hand Auger		HAMMER TYPE N/A												
DRILLER -		START DATE 04/30/15		COMP. DATE 04/30/15		SURFACE WATER DEPTH N/A										
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG MOI	LOG SOIL AND ROCK DESCRIPTION	DEPTH (ft)		
			0.5ft	0.5ft	0.5ft	0	25	50	75	100						
25																
														21.3	GROUND SURFACE: 2" TOPSOIL	0.0
															ARTIFICIAL FILL GRAY, SLI. SILTY SAND (A-3) W/ TRACE ORGANICS	2.7
														21.6	TAN AND GRAY, F. SANDY CLAY (A-6) W/ ROOTS	3.9
														20.4	TAN AND GRAY, SILTY F. SAND (A-2-4)	4.2
														20.1		
															Boring Terminated at Elevation 20.1 ft	

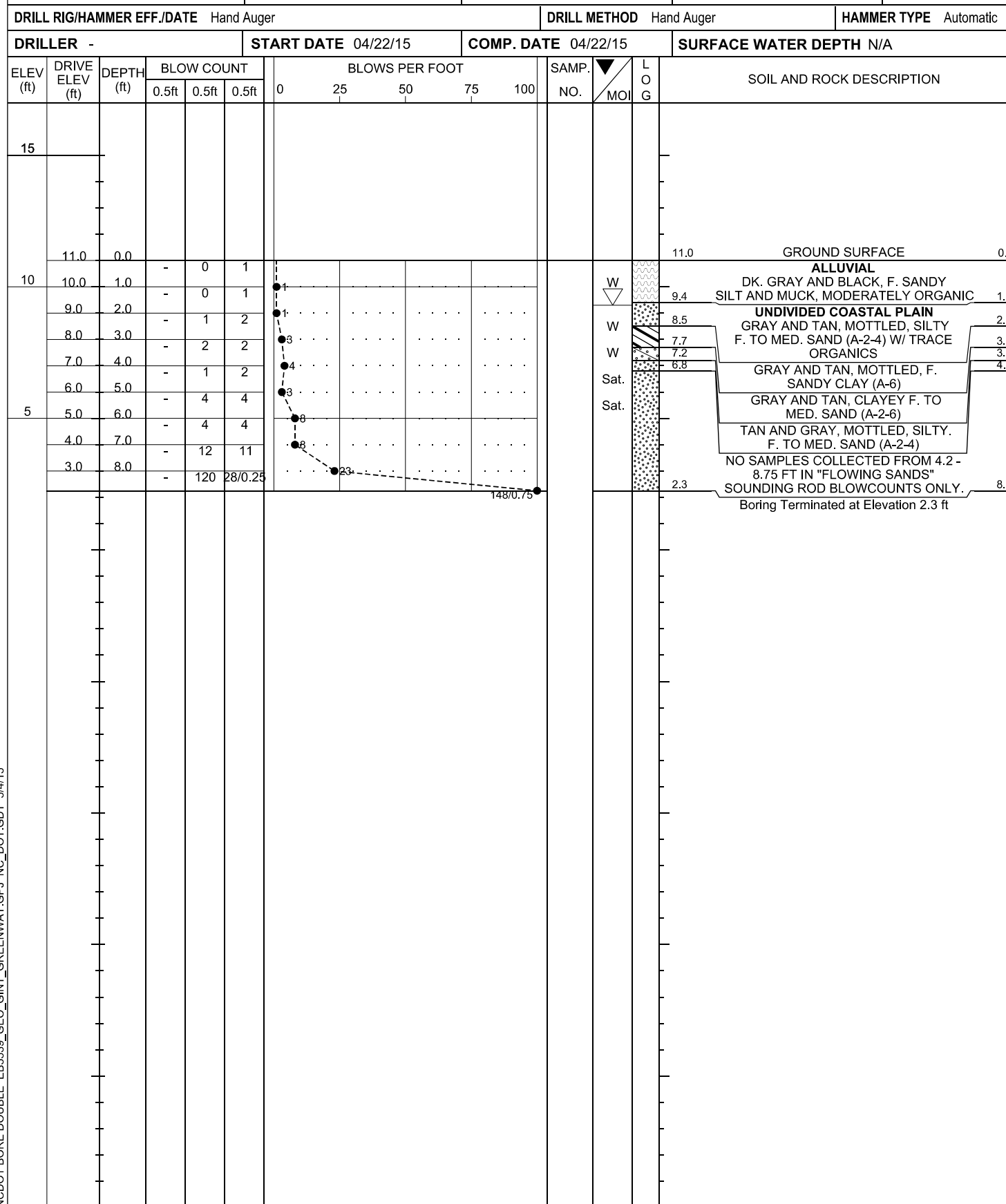
NCDOT BORE DOUBLE EB5539 GEO_GINT_GREENWAY.GPJ NC_DOT.GDT 4/29/15

WBS N/A		TIP EB-5539		COUNTY PITT		GEOLOGIST T. EVANS									
SITE DESCRIPTION SOUTH TAR RIVER GREENWAY - PHASE II							GROUND WTR (ft)								
BORING NO. HA-4		STATION 34+92		OFFSET 5 ft LT		ALIGNMENT -L1-									
COLLAR ELEV. 11.8 ft		TOTAL DEPTH 11.6 ft		NORTHING 683,687		EASTING 2,477,132									
DRILL RIG/HAMMER EFF./DATE Hand Auger		DRILL METHOD Hand Auger		HAMMER TYPE Automatic											
DRILLER -		START DATE 04/22/15		COMP. DATE 04/22/15		SURFACE WATER DEPTH N/A									
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100					
15															
	12.0	0.0	-	0	1										12.0 GROUND SURFACE: 2' ORGANIC MUCK 0.0
	11.0	1.0	-	0	1										
10	10.0	2.0	-	2	3										10.0 ALLUVIAL BLACK, SILTY F. SAND AND MUCK, MODERATELY ORGANIC 2.0
	9.0	3.0	-	7	7										
	8.0	4.0	-	4	5										
	7.0	5.0	-	4	4										
	6.0	6.0	-	6	7										
5	5.0	7.0	-	11	12										
	4.0	8.0	-	20	20										
	3.0	9.0	-	26	26										
	2.0	10.0	-	60	61										
	1.0	11.0	-	140	8/0.1										
															148/0.6
															0.4 Boring Terminated at Elevation 0.4 ft 11.6

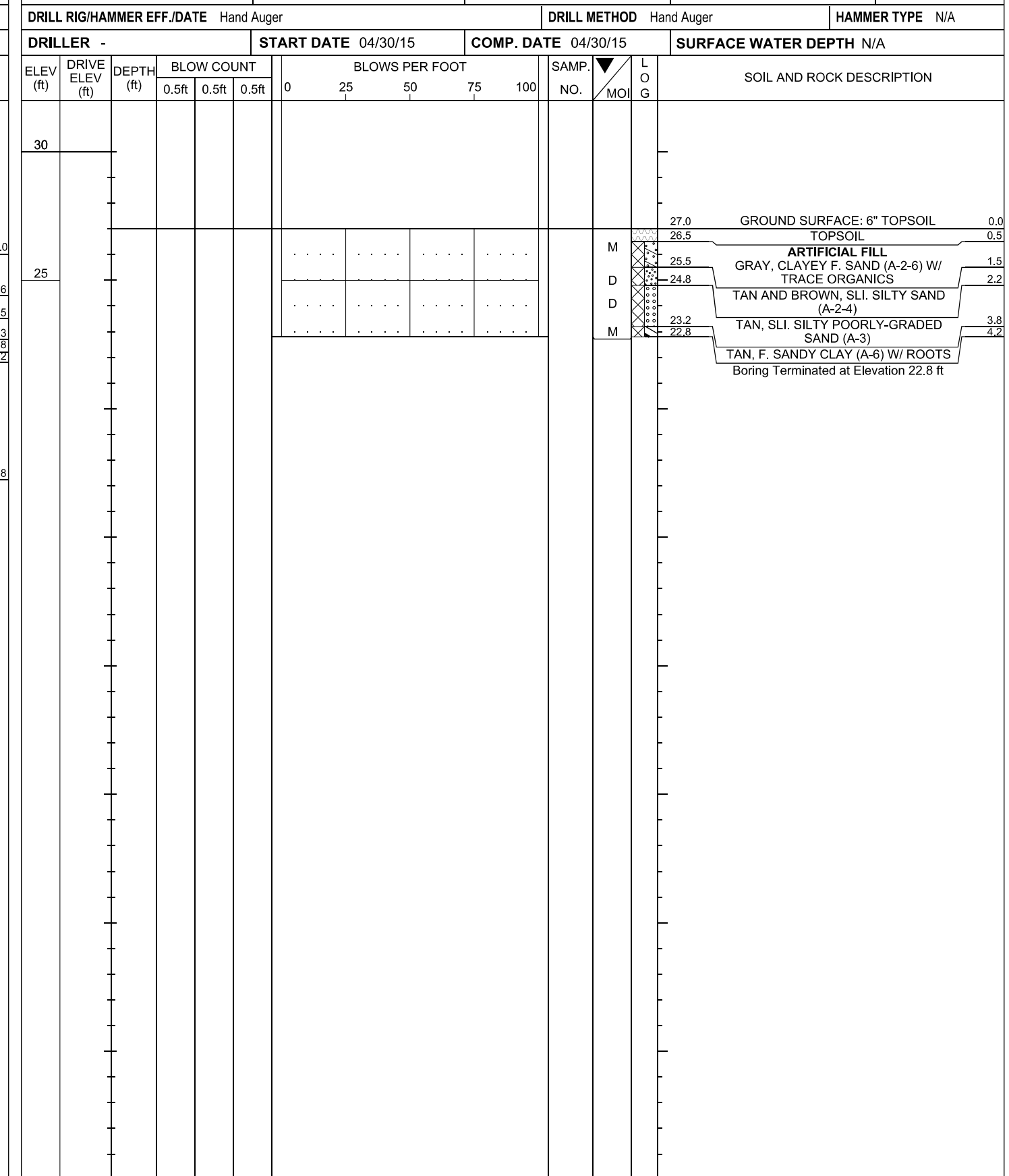
WBS N/A		TIP EB-5539		COUNTY PITT		GEOLOGIST T. EVANS									
SITE DESCRIPTION SOUTH TAR RIVER GREENWAY - PHASE II							GROUND WTR (ft)								
BORING NO. HA-2		STATION 35+38		OFFSET 15 ft LT		ALIGNMENT -L1-									
COLLAR ELEV. 9.9 ft		TOTAL DEPTH 5.0 ft		NORTHING 683,703		EASTING 2,477,176									
DRILL RIG/HAMMER EFF./DATE Hand Auger		DRILL METHOD Hand Auger		HAMMER TYPE Automatic											
DRILLER -		START DATE 05/15/13		COMP. DATE 05/15/13		SURFACE WATER DEPTH N/A									
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100					
10															
															9.9 GROUND SURFACE: ORGANIC MUCK 0.0
															8.9 ALLUVIAL DK. GRAY, SILTY F. SAND (A-2-4) MODERATELY ORGANIC (7.0%) 1.0
															UNDIVIDED COASTAL PLAIN GRAY AND TAN, SILTY MED. SAND (A-2-4)
5															4.9 Boring Terminated at Elevation 4.9 ft 5.0

NCDOT BORE DOUBLE EB5539_GEO_GINT_GREENWAY.GPJ NC_DOT.GDT 4/29/15

WBS N/A	TIP EB-5539	COUNTY PITT	GEOLOGIST T. EVANS
SITE DESCRIPTION SOUTH TAR RIVER GREENWAY - PHASE II			GROUND WTR (ft)
BORING NO. HA-5	STATION 37+38	OFFSET 24 ft LT	ALIGNMENT -L1-
COLLAR ELEV. 10.8 ft	TOTAL DEPTH 8.8 ft	NORTHING 683,698	EASTING 2,477,384
DRILL RIG/HAMMER EFF./DATE Hand Auger			DRILL METHOD Hand Auger
DRILLER -			HAMMER TYPE Automatic
START DATE 04/22/15		COMP. DATE 04/22/15	SURFACE WATER DEPTH N/A



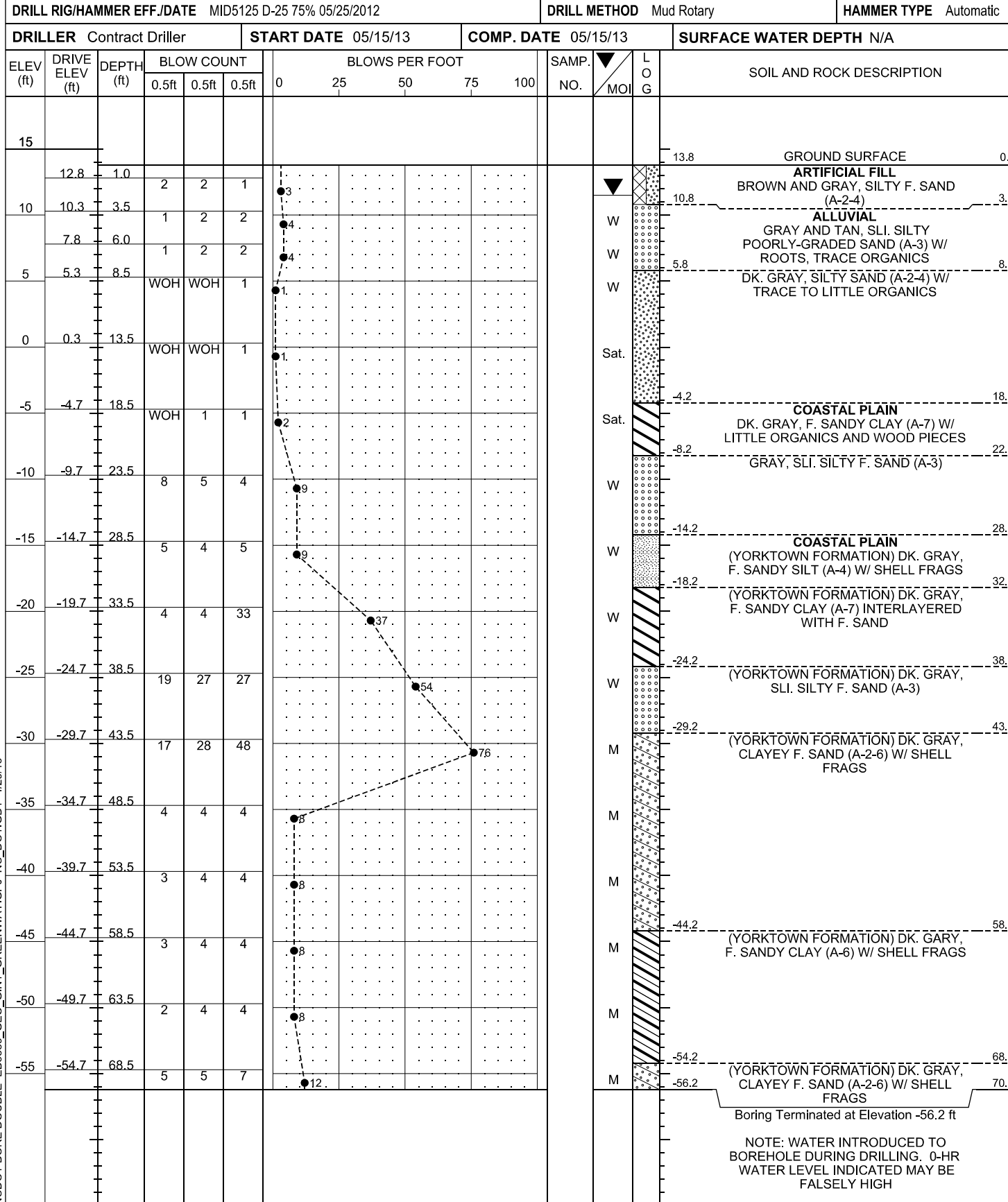
WBS N/A	TIP EB-5539	COUNTY PITT	GEOLOGIST T. EVANS
SITE DESCRIPTION SOUTH TAR RIVER GREENWAY - PHASE II			GROUND WTR (ft)
BORING NO. HA-5(1)	STATION 37+40	OFFSET 12 ft RT	ALIGNMENT -L1-
COLLAR ELEV. 27.0 ft	TOTAL DEPTH 4.2 ft	NORTHING 683,664	EASTING 2,477,374
DRILL RIG/HAMMER EFF./DATE Hand Auger			DRILL METHOD Hand Auger
DRILLER -			HAMMER TYPE N/A
START DATE 04/30/15		COMP. DATE 04/30/15	SURFACE WATER DEPTH N/A



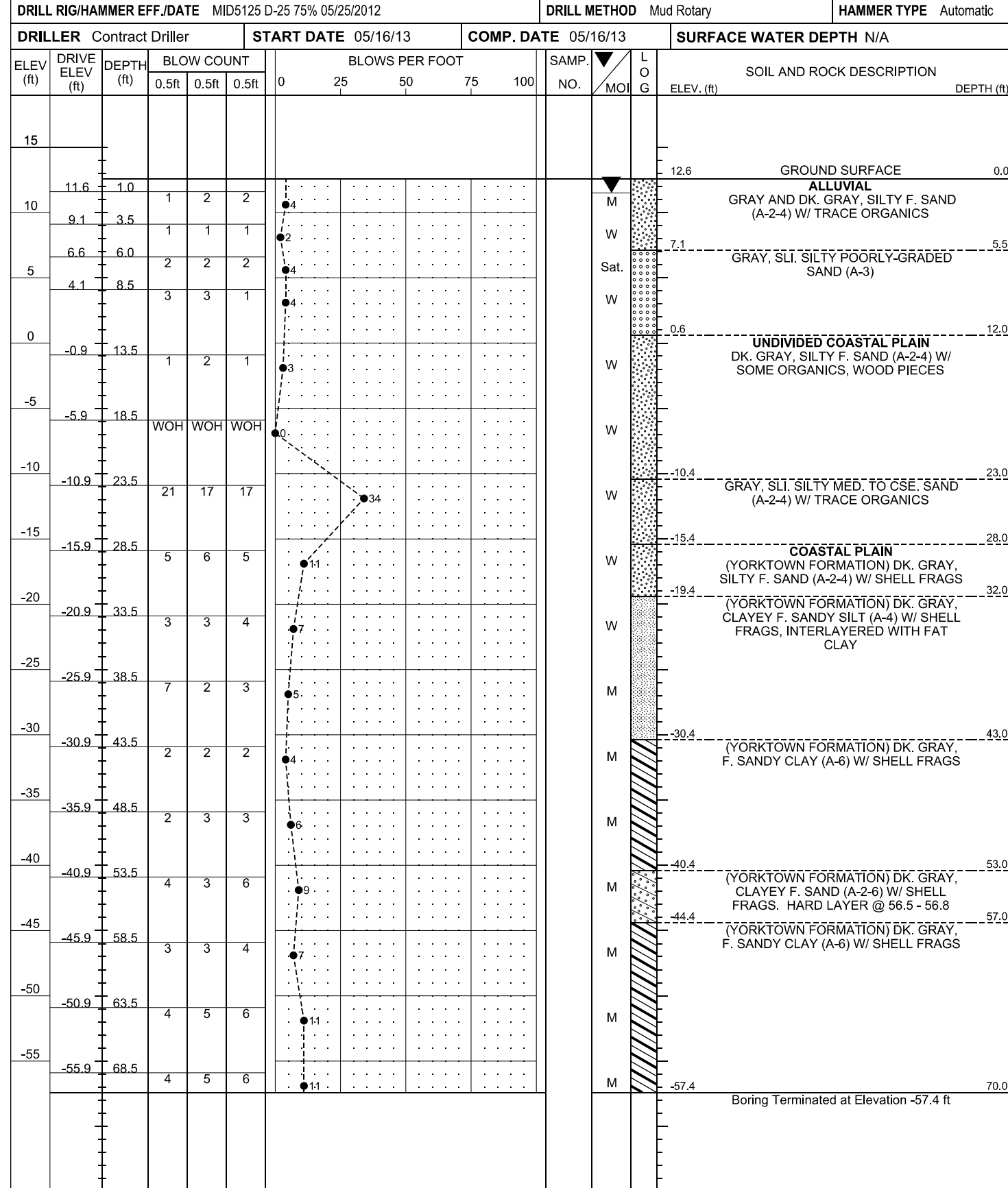
WBS		TIP		COUNTY		GEOLOGIST										
N/A		EB-5539		PITT		T. EVANS										
SITE DESCRIPTION							GROUND WTR (ft)									
SOUTH TAR RIVER GREENWAY - PHASE II							0 HR. Dry									
BORING NO.		STATION		OFFSET		ALIGNMENT										
G-3		50+84		CL		-L2-										
COLLAR ELEV.		TOTAL DEPTH		NORTHING		EASTING										
22.6 ft		10.0 ft		683,521		2,477,679										
DRILL RIG/HAMMER EFF./DATE				DRILL METHOD		HAMMER TYPE										
MID5125 D-25 75% 05/25/2012				Wash Boring		Automatic										
DRILLER		START DATE		COMP. DATE		SURFACE WATER DEPTH										
Contract Driller		05/15/13		05/15/13		N/A										
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION		
			0.5ft	0.5ft	0.5ft	0	25	50	75	100				ELEV. (ft)	DEPTH (ft)	
25																
															22.6	0.0
	21.6	1.0	WOH	1	2											
20																
	19.1	3.5		2	3											
	16.6	6.0		2	3											
15																
	14.1	8.5		2	1	2									14.6	8.0
															12.6	10.0
															Boring Terminated at Elevation 12.6 ft	

NCDOT BORE DOUBLE EB5539 GEO_GINT_GREENWAY.GPJ NC_DOT.GDT 4/29/15

WBS N/A	TIP EB-5539	COUNTY PITT	GEOLOGIST T. EVANS
SITE DESCRIPTION SOUTH TAR RIVER GREENWAY - PHASE II			GROUND WTR (ft)
BORING NO. EB1	STATION 52+49	OFFSET 10 ft LT	ALIGNMENT -L2-
COLLAR ELEV. 13.8 ft	TOTAL DEPTH 70.0 ft	NORTHING 683,471	EASTING 2,477,831
DRILL RIG/HAMMER EFF./DATE MID5125 D-25 75% 05/25/2012			DRILL METHOD Mud Rotary
DRILLER Contract Driller			HAMMER TYPE Automatic
START DATE 05/15/13		COMP. DATE 05/15/13	SURFACE WATER DEPTH N/A



WBS N/A	TIP EB-5539	COUNTY PITT	GEOLOGIST T. EVANS
SITE DESCRIPTION SOUTH TAR RIVER GREENWAY - PHASE II			GROUND WTR (ft)
BORING NO. EB2	STATION 53+02	OFFSET 20 ft LT	ALIGNMENT -L2-
COLLAR ELEV. 12.6 ft	TOTAL DEPTH 70.0 ft	NORTHING 683,469	EASTING 2,477,884
DRILL RIG/HAMMER EFF./DATE MID5125 D-25 75% 05/25/2012			DRILL METHOD Mud Rotary
DRILLER Contract Driller			HAMMER TYPE Automatic
START DATE 05/16/13		COMP. DATE 05/16/13	SURFACE WATER DEPTH N/A



NC DOT BORE DOUBLE EB5539 GEO_GINT_GREENWAY.GPJ NC_DOT.GDT 4/29/15

NOTE: WATER INTRODUCED TO BOREHOLE DURING DRILLING. 0-HR WATER LEVEL INDICATED MAY BE FALSELY HIGH

WBS N/A			TIP EB-5539		COUNTY PITT		GEOLOGIST T. EVANS								
SITE DESCRIPTION SOUTH TAR RIVER GREENWAY - PHASE II								GROUND WTR (ft)							
BORING NO. G-4			STATION 61+73		OFFSET 8 ft RT		ALIGNMENT -L2-								
COLLAR ELEV. 9.7 ft		TOTAL DEPTH 15.0 ft		NORTHING 683,394		EASTING 2,478,260		24 HR. N/A							
DRILL RIG/HAMMER EFF./DATE MID5125 D-25 75% 05/25/2012					DRILL METHOD Wash Boring		HAMMER TYPE Automatic								
DRILLER Contract Driller			START DATE 05/16/13		COMP. DATE 05/16/13		SURFACE WATER DEPTH N/A								
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION		
			0.5ft	0.5ft	0.5ft	0	25	50	75	100					
10															
	8.7	1.0	1	1	1									9.7	GROUND SURFACE: 0" TOPSOIL 0.0
	6.2	3.5	3	1	WOH										
5	3.7	6.0	WOH	1	1									5.7	ARTIFICIAL FILL GRAY AND TAN, SILTY SAND (A-2-4) W/ TRACE ORGANICS
	1.2	8.5	WOH	WOH	1									4.2	ALLUVIAL GRAY, SLI. SILTY POORLY-GRADED SAND (A-3) GRAY, SILTY SAND (A-2-4) W/ WOOD, TRACE ORGANICS
0															
	-3.8	13.5	WOH	2	5										
-5															
														-5.3	Boring Terminated at Elevation -5.3 ft 15.0

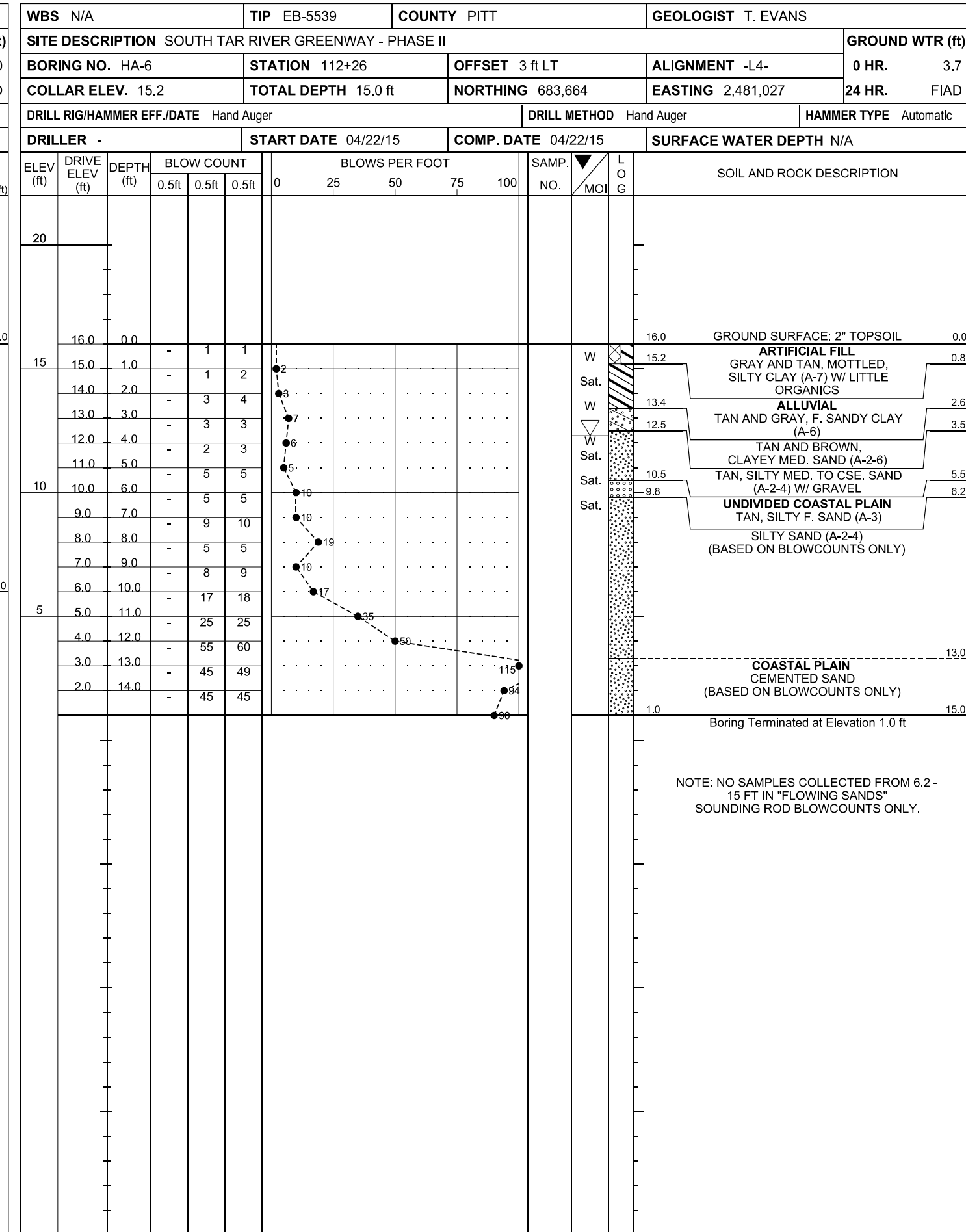
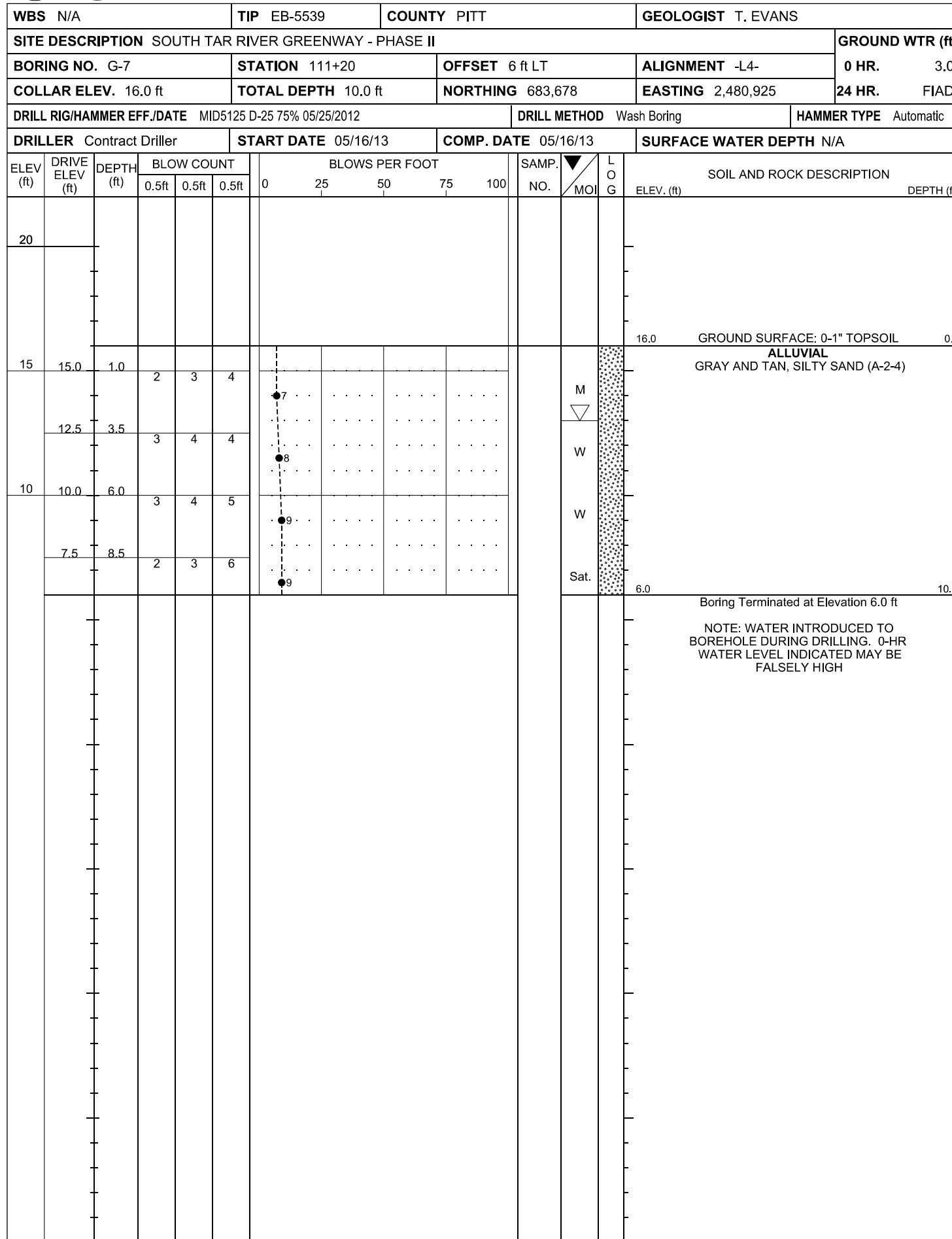
WBS N/A			TIP EB-5539		COUNTY PITT		GEOLOGIST T. EVANS								
SITE DESCRIPTION SOUTH TAR RIVER GREENWAY - PHASE II								GROUND WTR (ft)							
BORING NO. G-5			STATION 79+38		OFFSET CL		ALIGNMENT -L3-								
COLLAR ELEV. 41.2 ft		TOTAL DEPTH 10.0 ft		NORTHING 683,264		EASTING 2,478,980		24 HR. FIAD							
DRILL RIG/HAMMER EFF./DATE MID5125 D-25 75% 05/25/2012					DRILL METHOD Wash Boring		HAMMER TYPE Automatic								
DRILLER Contract Driller			START DATE 05/16/13		COMP. DATE 05/16/13		SURFACE WATER DEPTH N/A								
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION		
			0.5ft	0.5ft	0.5ft	0	25	50	75	100					
45															
	40.2	1.0	3	5	6									41.2	GROUND SURFACE: 2-3" TOPSOIL 0.0
40	37.7	3.5	4	4	5										UNDIVIDED COASTAL PLAIN TAN, SILTY F. SAND (A-2-4)
	35.2	6.0	3	4	4									38.2	GRAY AND TAN, SILTY F. SAND (A-2-4) 3.0
35	32.7	8.5	3	4	7										
														31.2	Boring Terminated at Elevation 31.2 ft
															NOTE: WATER INTRODUCED TO BOREHOLE DURING DRILLING. 0-HR WATER LEVEL INDICATED MAY BE FALSELY HIGH

NCDOT BORE DOUBLE EB5539 GEO_GINT_GREENWAY.GPJ NC_DOT.GDT 5/01/15

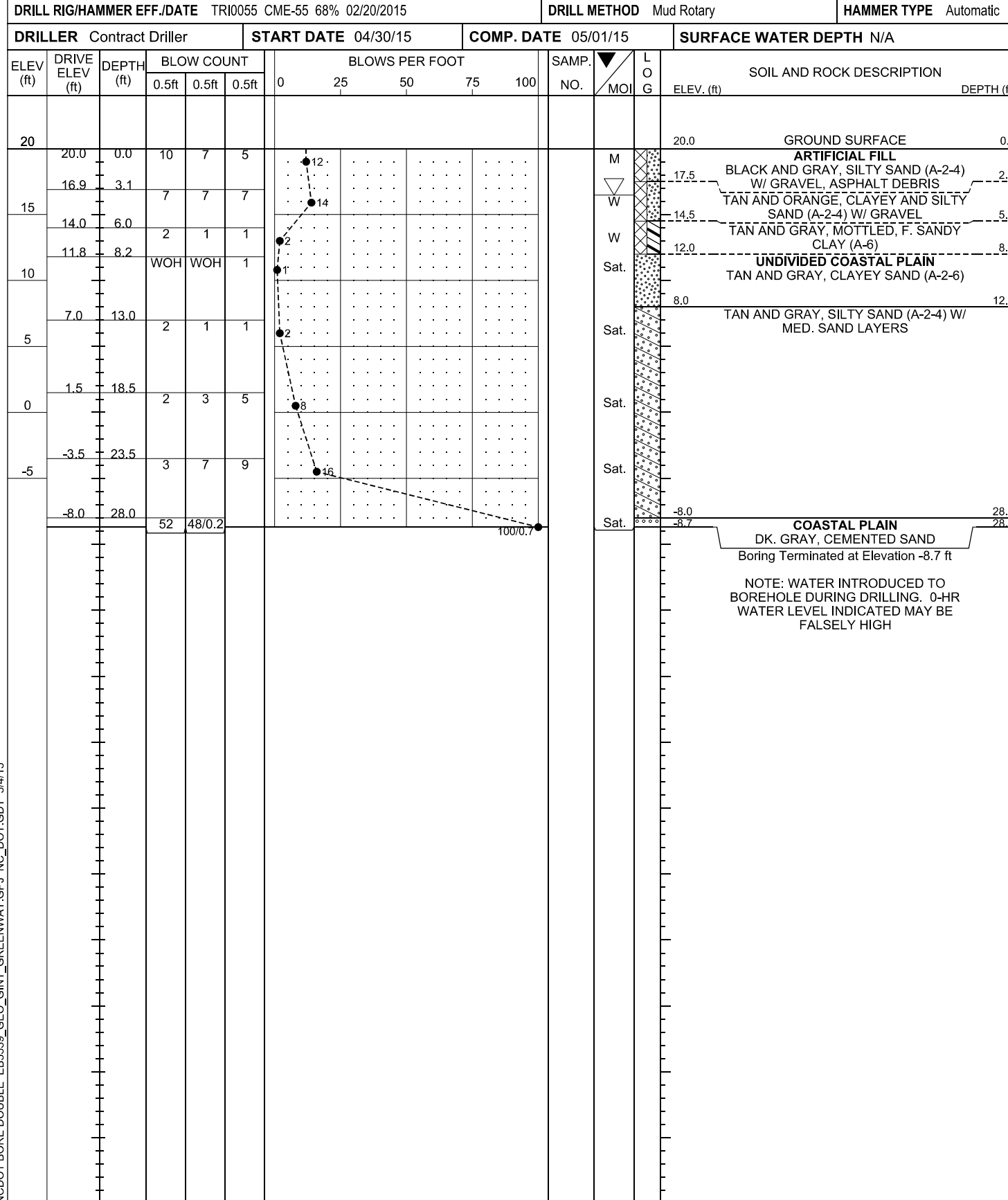
NCDOT BORE DOUBLE EB5539 GEO_GINT_GREENWAY.GPJ NC_DOT.GDT 4/29/15

WBS N/A		TIP EB-5539		COUNTY PITT		GEOLOGIST T. EVANS									
SITE DESCRIPTION SOUTH TAR RIVER GREENWAY - PHASE II							GROUND WTR (ft)								
BORING NO. G-6		STATION 92+87		OFFSET CL		ALIGNMENT -L3-	0 HR. 0.5								
COLLAR ELEV. 12.0 ft		TOTAL DEPTH 10.0 ft		NORTHING 683,699		EASTING 2,480,041	24 HR. FIAD								
DRILL RIG/HAMMER EFF./DATE MID5125 D-25 75% 05/25/2012				DRILL METHOD Wash Boring		HAMMER TYPE Automatic									
DRILLER Contract Driller		START DATE 05/16/13		COMP. DATE 05/16/13		SURFACE WATER DEPTH N/A									
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100					
15															
															12.0 GROUND SURFACE: 8" GRAVEL 0.0
	11.0	1.0	2	4	4										ALLUVIAL DK. GRAY AND GRAY, SILTY F. SAND (A-2-4) W/ TRACE ORGANICS
10															
	8.5	3.5	2	1	WOH										
	6.0	6.0	2	1	2										6.5 UNDIVIDED COASTAL PLAIN 5.5 TAN AND GRAY, SILTY SAND (A-2-4) W/ GRAVEL
5															
	3.5	8.5	1	2	2										
															2.0 Boring Terminated at Elevation 2.0 ft 10.0
NOTE: WATER INTRODUCED TO BOREHOLE DURING DRILLING. 0-HR WATER LEVEL INDICATED MAY BE FALSELY HIGH															

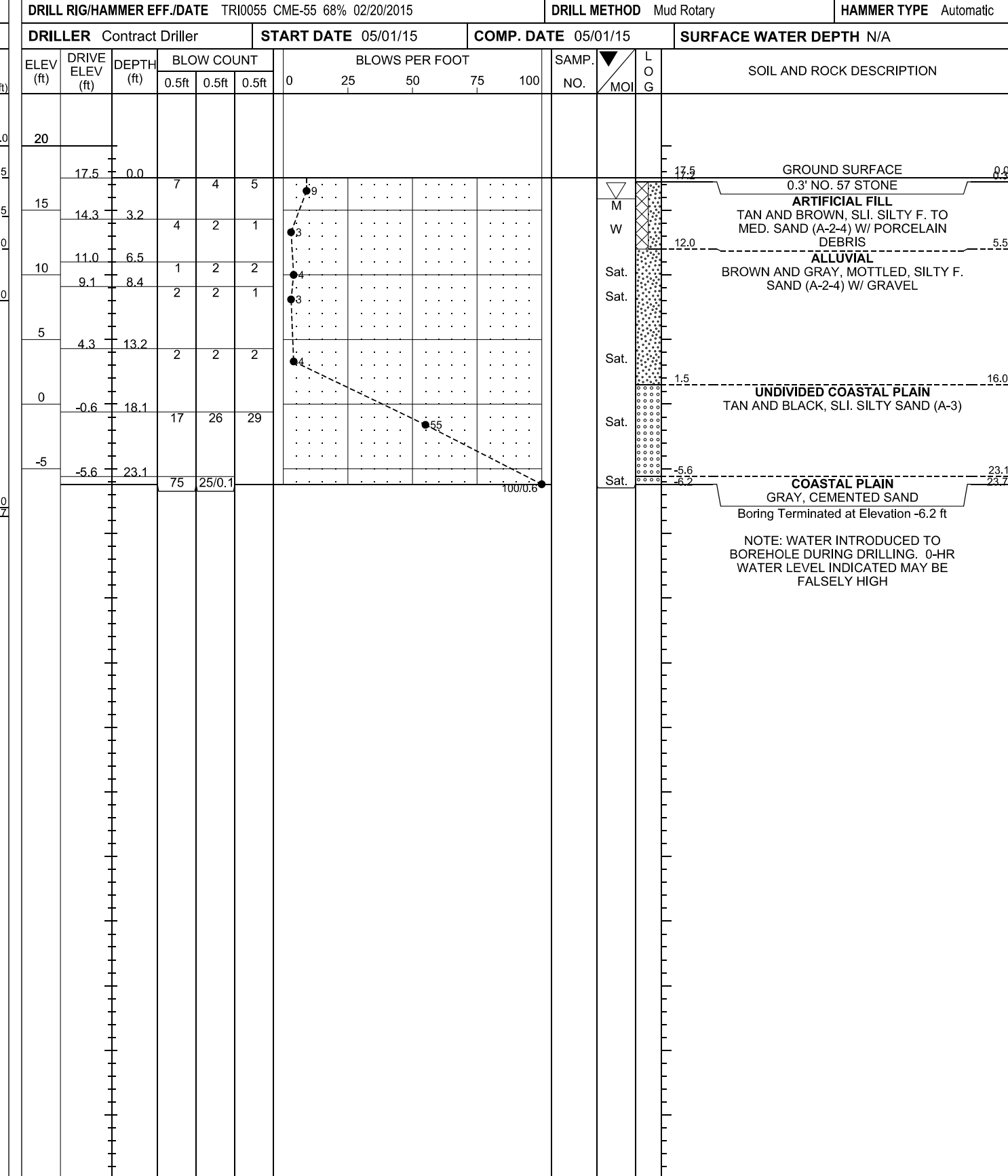
NCDOT BORE DOUBLE EB5539_GEO_GINT_GREENWAY.GPJ NC_DOT.GDT 4/29/15



WBS N/A	TIP EB-5539	COUNTY PITT	GEOLOGIST T. EVANS
SITE DESCRIPTION SOUTH TAR RIVER GREENWAY - PHASE II			GROUND WTR (ft)
BORING NO. BW-4	STATION 116+54	OFFSET 3 ft LT	ALIGNMENT -L4-
COLLAR ELEV. 20.3 ft	TOTAL DEPTH 28.7 ft	NORTHING 683,611	EASTING 2,481,449
DRILL RIG/HAMMER EFF./DATE TRI0055 CME-55 68% 02/20/2015		DRILL METHOD Mud Rotary	HAMMER TYPE Automatic
DRILLER Contract Driller	START DATE 04/30/15	COMP. DATE 05/01/15	SURFACE WATER DEPTH N/A



WBS N/A	TIP EB-5539	COUNTY PITT	GEOLOGIST T. EVANS
SITE DESCRIPTION SOUTH TAR RIVER GREENWAY - PHASE II			GROUND WTR (ft)
BORING NO. BW-5	STATION 118+56	OFFSET 2 ft RT	ALIGNMENT -L4-
COLLAR ELEV. 17.8 ft	TOTAL DEPTH 23.7 ft	NORTHING 683,572	EASTING 2,481,646
DRILL RIG/HAMMER EFF./DATE TRI0055 CME-55 68% 02/20/2015		DRILL METHOD Mud Rotary	HAMMER TYPE Automatic
DRILLER Contract Driller	START DATE 05/01/15	COMP. DATE 05/01/15	SURFACE WATER DEPTH N/A



NC DOT BORE DOUBLE EB5539 GEO_GINT_GREENWAY.GPJ NC_DOT.GDT 5/4/15

WBS N/A	TIP EB-5539	COUNTY PITT	GEOLOGIST T. EVANS	
SITE DESCRIPTION SOUTH TAR RIVER GREENWAY - PHASE II				GROUND WTR (ft)
BORING NO. G-8	STATION 123+86	OFFSET 1 ft LT	ALIGNMENT -L4-	0 HR. 3.4
COLLAR ELEV. 21.3 ft	TOTAL DEPTH 15.0 ft	NORTHING 683,553	EASTING 2,482,172	24 HR. FIAD

DRILL RIG/HAMMER EFF./DATE MID5125 D-25 75% 05/25/2012	DRILL METHOD Wash Boring	HAMMER TYPE Automatic
DRILLER Contract Driller	START DATE 05/16/13	COMP. DATE 05/16/13
SURFACE WATER DEPTH N/A		

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100						
25																
20.3	20.3	1.0	2	2	5							M		21.3	GROUND SURFACE: 3" TOPSOIL	0.0
17.8		3.5	3	4	6							M			ARTIFICIAL FILL GRAY BROWN AND TAN, SILTY SAND (A-2-4) W/ GRAVEL, ASPHALT PIECES	
15.3		6.0	2	1	1							M			VERY GRAVELLY LAYERS	
12.8		8.5	3	1	3							W				
7.8		13.5	8	5	3							Sat.				

Boring Terminated at Elevation 6.3 ft
NOTE: WATER INTRODUCED TO BOREHOLE DURING DRILLING. 0-HR WATER LEVEL INDICATED MAY BE FALSELY HIGH

WBS N/A	TIP EB-5539	COUNTY PITT	GEOLOGIST T. EVANS	
SITE DESCRIPTION SOUTH TAR RIVER GREENWAY - PHASE II				GROUND WTR (ft)
BORING NO. G-10	STATION 124+04	OFFSET 6 ft RT	ALIGNMENT -L4-	0 HR. N/A
COLLAR ELEV. 21.4 ft	TOTAL DEPTH 59.9 ft	NORTHING 683,548	EASTING 2,482,192	24 HR. 9.5 Caved

DRILL RIG/HAMMER EFF./DATE TRI0055 CME-55 68% 02/20/2015	DRILL METHOD Mud Rotary	HAMMER TYPE Automatic
DRILLER Contract Driller	START DATE 04/30/15	COMP. DATE 05/01/15
SURFACE WATER DEPTH N/A		

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION	DEPTH (ft)	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100						
25																
21.0	21.0	0.0	7	9	11									21.0	GROUND SURFACE	0.0
17.7		3.3	3	3	3							D			ARTIFICIAL FILL BLACK, SAND AND ASPHALT DEBRIS (A-2-4) W/ RED BALLS OF CLAY, GRAY SAND LAYERS @ 11'	
14.8		6.2	3	3	1							M				
12.5		8.5	2	2	2							M				
10.3		10.7	1	1	1							W				
7.5		13.5	1	1	WOH							W		9.5	ALLUVIAL DK. GRAY BROWN AND GRAY, CLAYEY SILT (A-5) W/ LITTLE TO SOME ORGANICS, WOOD PEICES, SAND SEAMS, STRONG ORGANIC ODOR	11.5
2.7		18.3	1	1	1							W		8.0	GRAY AND TAN, SILTY F. SAND (A-2-4) W/ CLAY SEAMS, CSE. SAND LAYERS	13.0
-2.2		23.2	1	1	1							Sat.		4.0	UNDIVIDED COASTAL PLAIN GRAY AND TAN, SILTY CLAY (A-7) W/ WOOD PEICES	17.0
-7.5		28.5	3	3	3							Sat.				
-12.5		33.5	WOH	WOH	3							Sat.				
-17.4		38.4	11	7	7							W		-15.5	GRAY, CSE. TO MED. SAND (A-1-b) W/ GRAVEL	36.5
-22.3		43.3	3	3	3							W		-18.0	COASTAL PLAIN DK. GRAY, F. SANDY CLAY (A-6) W/ SHELL FRAGS.	39.0
-27.3		48.3	4	4	4							W		-26.0	DK. GRAY, F. SANDY SILT (A-4) W/ SHELL FRAGS	47.0
-32.3		53.3	3	4	5							Sat.				
-37.4		58.4	5	9	14							Sat.				

Boring Terminated at Elevation -38.9 ft

NCDOT BORE DOUBLE EB5539_GEO_GINT_GREENWAY.GPJ_NC_DOT.GDT_5/4/15

WBS N/A		TIP EB-5539		COUNTY PITT		GEOLOGIST T. EVANS								
SITE DESCRIPTION SOUTH TAR RIVER GREENWAY - PHASE II							GROUND WTR (ft)							
BORING NO. G-9		STATION 125+21		OFFSET 6 ft LT		ALIGNMENT -L4-	0 HR. 6.6							
COLLAR ELEV. 22.7 ft		TOTAL DEPTH 15.0 ft		NORTHING 683,520		EASTING 2,482,301	24 HR. FIAD							
DRILL RIG/HAMMER EFF./DATE MID5125 D-25 75% 05/25/2012				DRILL METHOD Wash Boring		HAMMER TYPE Automatic								
DRILLER Contract Driller		START DATE 05/16/13		COMP. DATE 05/16/13		SURFACE WATER DEPTH N/A								
ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT			BLOWS PER FOOT					SAMP. NO.	LOG	SOIL AND ROCK DESCRIPTION	
			0.5ft	0.5ft	0.5ft	0	25	50	75	100				
25														
														22.7 GROUND SURFACE: 2-3" TOPSOIL 0.0
	21.7	1.0	22	14	7								M	ARTIFICIAL FILL TAN AND BROWN, SILTY CSE. SAND (A-2-4) W/ GRAVEL, ASPHALT PIECES
20														19.7 GRAY BROWN AND TAN, F. SANDY CLAY (A-6) W/ GRAVEL, ASPHALT PIECES 3.0
	19.2	3.5	6	3	5								M	
	16.7	6.0	7	5	9									
15														
	15.2	7.5	6	8	8								M	
10														
	9.2	13.5	8	4	4								M	10.7 BROWN AND BLACK, SILTY MED. TO CSE. SAND (A-2-4) W/ GRAVEL, WOOD PIECES 12.0
													M	7.7 Boring Terminated at Elevation 7.7 ft 15.0
														NOTE: WATER INTRODUCED TO BOREHOLE DURING DRILLING. 0-HR WATER LEVEL INDICATED MAY BE FALSELY HIGH

AASHTO SOIL CLASSIFICATION AND GRADATION SHEET

SOUTH TAR RIVER GREENWAY - PHASE II

PROJECT NO.: G12027.00, TIP NO.: EB-5539

GREENVILLE, NORTH CAROLINA

BORING #		SAMPLE #	TOTAL SAMPLE			Atterberg Limit Test Results			Natural Moisture Content	Organic Content
AASHTO Classification			PERCENT PASSING							
STATION	OFFSET (FEET)	DEPTH (FEET)	#10	#40	#200	LL	PL	PI	%	%
G-1		SS-1	98	77	24	16	NP	NP	12.8	-
A-2-4										
12+69	14' LT	1.0-2.5								
G-1		SS-2	98	81	9	19	NP	NP	14.4	0.6
A-3										
12+69	14' LT	3.5-5.0								
G-2		SS-3	100	70	14	19	NP	NP	10.3	-
A-2-4										
22+47	14' LT	1.0-2.5								
BW-1		SS-4	91	71	16	17	NP	NP	16.2	-
A-2-4										
26+57	CL	3.5-5.0								
BW-2		SS-5	81	46	10	19	NP	NP	29.3	2.5
A-1-b										
27+18	1' RT	6.0-7.5								
BW-3		SS-6	97	82	18	29	NP	NP	53.4	7.9
A-2-4										
30+18	8' LT	0-2.0								
BW-3		SS-7	98	71	18	18	NP	NP	26.1	-
A-2-4										
30+18	8' LT	4.0-6.0								
G-3		SS-8	97	75	25	30	NP	NP	26.3	-
A-2-4										
40+78	CL	3.5-5.0								
G-4		SS-9	98	73	12	22	NP	NP	23.1	-
A-2-4										
51+77	8' RT	1.0-2.5								
G-5		SS-10	99	97	31	29	22	7	17.9	-
A-2-4										
59+40	1' RT	1.0-2.5								
G-6		SS-11	80	76	15	21	NP	NP	19.7	-
A-2-4										
72+75	CL	1.0-2.5								
HA-1		S-12	99	85	21	22	NP	NP	40.0	4.9
A-2-4										
32+07	10' LT	0-1.0								
HA-2		S-13	-	-	-	-	-	-	54.6	7.0
N/A										
35+33	13' LT	0-1.0								



May 12, 2015

Mr. Jeff Moore, P.E.
Kimley-Horn & Associates, Inc.
3001 Weston Parkway
Cary, NC 27513

Project: EB-5539
County: Pitt County, North Carolina
Description: South Tar River Greenway – Phase II
Subject: Structure Foundations and Greenway Trail Recommendations

As authorized, Falcon Engineering Inc. (Falcon) has completed the Structure Foundation and Greenway Trail Recommendations for the above referenced project. Bridge and boardwalk foundation recommendations, notes on plans, and pay item quantities are included in this document for review, as well as structure loads which were used in our analysis. Our recommendations are based on the boring data collected at the site as contained in the Subsurface Investigation Report under separate cover. We understand construction will be in general compliance with NCDOT Standard Specifications and have prepared the following recommendations in accordance.

STRUCTURE RECOMMENDATIONS

Two (2) borings were performed near each end of the proposed prefabricated bridge structure, and five (5) borings were performed within the vicinity of the proposed boardwalk structures. Recommendations and pay item quantities for boardwalk and bridge foundations are attached to this document in NCDOT format and referencing NCDOT Standard Specifications.

A total of ten (10) borings were performed along the greenway trail alignment away from proposed bridge and boardwalk structures. Three (3) of these borings, in addition to seven (7) hand augers were performed in the vicinity of proposed retaining walls. We recommend retaining walls No. 1 and 2 be post-bid designed walls based on the information contained within these reports. Recommendations for the design of a new headwall structure for dual 36 inch diameter reinforced concrete pipe outlets and a pile supported structural slab and abutment retaining structure at the existing CSX Railroad bridge are provided in the structure recommendations attached. Design submittals should address the presence of any very loose/very soft, organic, or otherwise unstable soils at the wall locations.

Based on proposed cut/fill limits, existing grades, and existing subsurface conditions as described and depicted in our inventory report under separate cover, we recommend the following wall types. Recommended notes on plans are provided in the attached foundation recommendations.

- Segmental Block Retaining Wall (SRW) 8 feet left of centerline from approximately station 30+21 to 37+41. In order to provide global stability, loose/soft and organic materials should be undercut from beneath the wall and the entire reinforced section behind it. The undercut should extend to at least 2 feet in front of the wall face. Based on our borings, undercut depths are anticipated to be up to 3 feet at the beginning of the wall, tapering down quickly in depth to 1 to 2 feet for the majority of the wall alignment, and requiring little to no undercut as the wall comes up grade into an existing slope at the end. Provided undercut is performed as recommended, global stability should be adequate. However, we recommend the uppermost layer of reinforcement extend to the back of the 2 foot aggregate shoulder on the far side of the greenway to avoid cracking of the pavement above the reinforced zone / retained zone interface.
- Soldier pile and wood lagging or concrete panel wall 7 feet right of centerline from approximately station 111+10 to 112+50. Wall designs should address adequate pile embedment to retain the steep existing slope behind the wall. In addition, the pile spacing should be adequate to avoid conflicts with the existing dual storm drain pipe outlet and installation should be performed carefully so as to avoid damaging the existing drain pipes. Hard materials near elevation 3 feet may be difficult to penetrate without large and powerful drilling equipment. Wall designs should include close enough spacing to avoid installation of piles into this material or else the contractor should plan to provide adequate equipment to penetrate this material.
- Pile supported structural slab and cast-in-place tiered retaining wall system within CSR ROW from approximately station 124+25 to 125+08. Recommendations for pile foundations are also included in the attached foundation recommendations. The structure includes an integrated cantilever retaining wall right of centerline, and a short, integrated "turn-down" cantilever section left of centerline effectively forming minimal retainage.
- Cast-in-place headwall structure for dual pipe outlets at approximately station 111+87 and 111+92.

GREENWAY TRAIL RECOMMENDATIONS

Additionally, Falcon performed borings at select locations along the proposed greenway to investigate subsurface conditions for considerations regarding grading and fill placement, pavement construction and subgrade stability, and groundwater control. Some borings were performed in low-lying, seasonally inundated areas which were considered to be particularly likely to require remediation of unsuitable soils in order to give a general indication of typical subsurface conditions in such areas. Other borings were drilled in high areas and known fill areas in order to investigate the fill soils for quality as subgrade and for use as fill in other areas of the project. Borings G-1, BW-1, BW-2, EB1, G-4, G-8, and G-9 encountered artificial fills at the ground surface, underlain by alluvial and residual soils. The remaining borings encountered alluvial soils, generally in a loose/soft and wet condition, at the existing ground surface or just below rootmat/topsoil. Undivided and Yorktown Formation Coastal Plain soils were penetrated beneath the alluvial deposits in most of the borings.

Slope Stability Considerations

We recognize the project contains significant topographical challenges as steep existing slopes are present throughout the alignment. Tall slopes on the order of 1.5:1 are prevalent, and smaller slopes as steep as 1:1 are present on a more limited basis. No signs of global slope failures were observed during



Falcon’s site reconnaissance. However, global factors of safety for these steep slopes are generally anticipated to be low. Assessing global stability for all slopes throughout the entire alignment was beyond the scope of this report, however, general assessments of slope stability were considered and the following recommendations are provided to guide the design team selecting safe and stable slope inclinations along the alignment:

- All slopes should be constructed in accordance with NCDOT Standard Specifications including but not limited to benching of existing slopes, removal of any loose/soft materials at the toe of the slope and along the slope base and existing ground interface, and dressing of slopes with shoulder and slope borrow per Article 1019-2.
- In order to promote stability of existing steep slopes, grading of trails traversing side slopes should adhere to the following general recommendations:
 - New slopes should generally bench into, not out of, existing steep slopes. By removing driving force (cutting) from the middle or top of the slope, the existing global factor of safety will be improved. An earthwork neutral cross section (equal parts cut and fill) will have a negligible effect on existing factor of safety. New grades should never cut into the toe of an existing steep slope.
 - New slopes buttressing existing slopes (i.e. extending out from the existing slope toe effectively moving the toe outward) will improve global stability of the overall slope system.
 - Local stability of any newly created slopes as well as drainage of surface water flows should be addressed so as not to otherwise negatively affect the stability of the existing steep slopes.
- Preference should be given to using slopes of 3:1 or flatter wherever possible.
- 2:1 slopes on the order of up to 10 feet and 1.5:1 slopes on the order of up to 5 feet are likely to be stable provided they are not adjacent to exceedingly steep front slopes.
- Any slopes exceeding 3:1 should be treated with permanent erosion control matting and/or plated with rip-rap per NCDOT Specifications to promote local stability and avoid erosion stability problems.

Embankment and Subgrade Stability Considerations

The following areas encountered very loose/soft, wet, and/or organic soils which will likely require remediation prior to fill placement or paving.

<u>Alignment</u>	<u>Station</u>	<u>Depth</u>
-L1-	26+69	2 feet
-L1-	30+22	2 feet
-L1-	32+11	2 feet
-L1-	34+92	1 foot
-L1-	35+38	2 feet
-L2-	61+73	2 feet
-L4-	112+26	1 foot



Given the irregular and widely spaced nature of our borings, the areas discussed above should be considered representative of general conditions only, and not considered as part of a comprehensive subsurface investigation. We anticipate similar conditions will be encountered elsewhere in areas not investigated. Surface topography and drainage characteristics should be studied carefully in order to reasonably estimate the quantity of remediation needed due to such conditions, and significant contingency quantities included to address uncertainty in actual conditions to be encountered. In general, loose/soft, organic, or otherwise unstable soils should be removed to a depth of 2 to 3 feet beneath pavement subgrades or to more stable materials (whichever is less) and replaced with suitable soils. Backfill of undercuts not removing the entirety of loose/soft materials will likely require placement of NCDOT Type 4 Geotextile for Soil Stabilization prior to placement of soil material. Undercuts extending into groundwater will require the use of NCDOT Class III Select Granular Material as backfill up to one foot above the water level.

Some areas designated to receive fills will likely not adequately support construction equipment during grading and fill placement. Depending on presence of organics and the amount of separation between pavement subgrades and the existing grades, undercut and replacement may be required in order to create a stable, well compacted embankment and pavement subgrade.

In areas not containing organics, and with at least two to three feet of separation between proposed pavement subgrades and existing ground, we anticipate an initial bridge lift consisting of NCDOT Class III Select Granular Material placed otop of Type 4 Geotextile may provide an adequate working platform for relatively light grading and compaction equipment to construct the Greenway Trail. Prepared subgrades should be proof rolled in accordance with NCDOT Specifications, and any failing areas repaired accordingly by way of undercut, placement of NCDOT Type 4 Geotextile, and replacement with Select Granular Material (Class II or better), or moisture control and re-compaction depending on the level of repair needed, with subsequent proof rolling to demonstrate stability of the improved subgrade.

The amount or degree of remediation needed can likely be minimized by careful management of surface water flows and construction of shallow swales and ditches to encourage drainage in these areas well in advance of construction operations. Some loose/soft areas may be sufficiently remediated by re-compacting the surface materials in place prior to fill or pavement placement if satisfactory moisture conditions can be maintained.

Although the frequency of borings performed was not adequate to accurately assess the actual extent of undercut that may be needed to address embankment and subgrade stability, Falcon has performed a rough estimate of approximately 5,000 cubic yards (CY) of undercut excavation based on topographical features, mapped wetlands, and assumptions regarding depth and extent of soft materials based on the limited data collected. Although Type 4 Geotextile and Select Granular Material is not required for all undercuts, the areas identified in our estimates are generally soft, wet, and low-lying and the majority will also require these pay items in addition to undercutting. It should also be noted that a significant amount of trash and debris litters portions of the alignment, and some evidence of buried debris was noted in the borings. The extent of these materials is unknown, but if encountered at subgrades or in unclassified excavation, these materials should be excavated to the extent necessary for embankment, slope, or subgrade stability and disposed of properly.



Groundwater and Subgrade Moisture Considerations

We anticipate significant portions of the greenway trail will be occasionally inundated with flood waters. In addition, shallow groundwater at or just below the existing ground surface was observed at many locations on site. We generally recommend separation of at least 2 to 3 feet between pavement subgrades and groundwater be maintained throughout the project by adjusting vertical grades, or constructing drainage ditches or subsurface drains (per NCDOT Standard Drawing 815.02) with sufficient grade and outfall wherever feasible and cost effective. Rapid draining of inundated areas will be important for long term pavement stability. In addition to selection of vertical grades and incorporation of ditches and subsurface drains as discussed above, cross drains, cross slopes, and occasional regularly spaced relief ditches if possible would aid in maintenance of stable subgrades. However, we recognize topographical challenges, cost considerations, and relatively low serviceability needs for end use dictates a cost effective approach to pavement subgrade construction and stabilization.

In lieu of providing separation from groundwater, consideration should be given to utilizing a stronger pavement section and/or specified free draining subbase course in areas anticipated to be occasionally inundated or with very shallow groundwater. We understand a typical pavement section of 1.5 inches surface course overlying a 6 inch aggregate base is planned to be utilized for the project. In order to provide a more durable section in wetter areas, a thicker aggregate base of 10 inches should be considered to provide additional separation from more moisture-sensitive underlying soils. NCDOT Class II or Class III Select Granular Material would serve favorably in a subbase application to promote drainage and moisture resilience. The majority of site soils are relatively granular (sandy) in nature and anticipated to generally be less moisture sensitive than more fine-grained (silt/clay) materials. Therefore, particular attention should be focused on low-lying or wet areas to identify and remove any fine-grained soils from the upper 1 to 2 feet of pavement subgrades. These areas are considered in the quantities assessed elsewhere in this report. Taking into consideration the recommendations discussed in this section, the impact of groundwater and subsurface moisture on the longevity and serviceability of the proposed greenway trail pavements can be significantly reduced. However, these recommendations are provided with the understanding that the proposed greenway trail is only intended to accommodate occasional vehicular traffic travelling at slow speeds. The pavement should be expected to have a shorter life-span and more maintenance needs than a typical pavement in a more favorable location.



DISCUSSION OF ADDITIONAL SERVICES

Falcon appreciates the opportunity to have provided the Kimley-Horn with our investigation and design services on this project. Falcon would be pleased to provide continued services on this project such as assisting with interpretation and incorporation of these recommendations into the contract documents, selection of appropriate standard details or guidance on preparing non-standard details for retaining wall structures or other geotechnical items, providing consultation on quantity estimates and inclusion of special provisions and standard drawings, and construction inspection and testing services such as reviewing contractor submittals, observation of foundation construction, proof rolling, soft soil remediation, fill placement and compaction, and asphalt and concrete materials testing services. If you have any questions concerning the contents of this document or need additional information, please do not hesitate to contact our office.

Sincerely,



Jeremy R. Hamm, P.E.
Geotechnical Engineering Manager



Thomas E. Evans, P.E.
Geotechnical Engineer

Enclosures:

Retaining Wall Notes on Plans

Structure Foundation Recommendations, Notes on Plans, and Pay Item Quantities

Structure Load Combinations per Kimley-Horn



RETAINING WALL 1 NOTES ON PLANS:

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

USE AN MSE WALL SYSTEM WITH SEGMENTAL RETAINING WALL (SRW) UNITS THAT MEET ARTICLE 1040-4 OF THE STANDARD SPECIFICATIONS FOR RETAINING WALL NO. 1.

AT THE CONTRACTOR’S OPTION, USE FINE AGGREGATE IN THE REINFORCED ZONE OF RETAINING WALL NO. 1.

A SEPARATION GEOTEXTILE IS NOT REQUIRED AT THE BACK OF THE REINFORCED ZONE FOR RETAINING WALL NO. 1.

A DRAIN IS REQUIRED FOR RETAINING WALL NO. 1.

BEFORE BEGINNING MSE WALL DESIGN FOR RETAINING WALL NO. 1, SURVEY WALL LOCATION AND SUBMIT A REVISED WALL PROFILE VIEW (WALL ENVELOPE) FOR REVIEW. DO NOT START WALL DESIGN OR CONSTRUCTION UNTIL THE REVISED WALL ENVELOPE IS ACCEPTED.

DESIGN RETAINING WALL NO. 1 FOR THE FOLLOWING:

- 1) H = DESIGN HEIGHT + EMBEDMENT
- 2) DESIGN LIFE = 75 YEARS
- 3) MAXIMUM FACTORED VERTICAL PRESSURE ON FOUNDATION MATERIAL = 2,000 LB/SF
- 4) MINIMUM REINFORCEMENT LENGTH (L) = .7H OR 6 FT, WHICHEVER IS LONGER
- 5) MINIMUM REINFORCEMENT LENGTH (L) = 14 FT FOR FINAL LAYER OF REINFORCEMENT
- 6) MINIMUM EMBEDMENT ELEVATION = 10 FT OR DEPTH = 2 FT (WHICHEVER IS DEEPER)
- 7) REINFORCED ZONE AGGREGATE PARAMETERS:

AGGREGATE TYPE*	UNIT WEIGHT (γ) LB/CF	FRICTION ANGLE (ϕ) DEGREES	COHESION (c) LB/SF
COARSE	110	38	0
FINE	115	34	0
*SEE MSE RETAINING WALLS PROVISION FOR COARSE AND FINE AGGREGATE MATERIAL REQUIREMENTS.			

- 8) IN-SITU ASSUMED MATERIAL PARAMETERS:

MATERIAL TYPE	UNIT WEIGHT (γ) LB/CF	FRICTION ANGLE (ϕ) DEGREES	COHESION (c) LB/SF
BACKFILL	120	30	0
FOUNDATION	110	28	0

DESIGN RETAINING WALL NO. 1 FOR A LIVE LOAD (TRAFFIC) SURCHARGE.

EXISTING OR FUTURE OBSTRUCTIONS SUCH AS FOUNDATIONS, GUARDRAIL, FENCE OR HANDRAIL POSTS, PAVEMENTS, PIPES, INLETS OR UTILITIES WILL INTERFERE WITH REINFORCEMENT FOR RETAINING WALL NO. 1.

FOUNDATIONS FOR BOARDWALK SECTION 2 BENT 16 LOCATED AT STATION 30+20.94 MAY INTERFERE WITH REINFORCEMENT FOR RETAINING WALL NO. 1. SEE “FOUNDATION LAYOUT” SHEET FOR FOUNDATION LOCATIONS.

DO NOT PLACE LEVELING PAD CONCRETE, AGGREGATE OR REINFORCEMENT FOR RETAINING WALL NO. 1 UNTIL EXCAVATION DIMENSIONS AND FOUNDATION MATERIAL ARE APPROVED.



RETAINING WALL 2 NOTES ON PLANS:

FOR SOLDIER PILE RETAINING WALLS, SEE SOLDIER PILE RETAINING WALLS PROVISION.

DRILLED-IN H-PILES ARE REQUIRED FOR RETAINING WALL NO. 2.

BEFORE BEGINNING SOLDIER PILE WALL DESIGN FOR RETAINING WALL NO. 2, SURVEY WALL LOCATION AND SUBMIT A REVISED WALL PROFILE VIEW (WALL ENVELOPE) FOR REVIEW. DO NOT START WALL DESIGN OR CONSTRUCTION UNTIL THE REVISED WALL ENVELOPE IS ACCEPTED.

DESIGN RETAINING WALL NO. 2 FOR THE FOLLOWING:

- 1) $H = \text{DESIGN HEIGHT} + \text{WALL EMBEDMENT}$
- 2) DESIGN LIFE = 75 YEARS
- 3) MINIMUM WALL EMBEDMENT DEPTH = 1 FT
- 4) IN-SITU ASSUMED MATERIAL PARAMETERS ABOVE ELEVATION 10 FT:
UNIT WEIGHT, $\gamma = 105 \text{ LB/CF}$
FRICTION ANGLE, $\phi = 28 \text{ DEGREES}$
COHESION, $c = 0 \text{ LB/SF}$
- 5) IN-SITU ASSUMED MATERIAL PARAMETERS BELOW ELEVATION 10 FT:
UNIT WEIGHT, $\gamma = 115 \text{ LB/CF}$
FRICTION ANGLE, $\phi = 30 \text{ DEGREES}$
COHESION, $c = 0 \text{ LB/SF}$
- 6) IN-SITU ASSUMED MATERIAL PARAMETERS BELOW ELEVATION 3 FT:
UNIT WEIGHT, $\gamma = 125 \text{ LB/CF}$
FRICTION ANGLE, $\phi = 34 \text{ DEGREES}$
COHESION, $c = 0 \text{ LB/SF}$

DESIGN RETAINING WALL NO. 2 FOR PIPES EXTENDING UNDER THE WALL AS SHOWN. VERIFY PIPE LOCATION AND ELEVATION BEFORE BEGINNING SOLDIER PILE WALL DESIGN OR CONSTRUCTION.



HEADWALL STRUCTURE RECOMMENDED SOIL PARAMETERS:

- 1) MAXIMUM FACTORED VERTICAL PRESSURE ON FOUNDATION MATERIAL = 2,000 LB/SF
- 2) MINIMUM EMBEDMENT ELEVATION = 13 FT
- 3) IN-SITU ASSUMED MATERIAL PARAMETERS:

MATERIAL TYPE	UNIT WEIGHT (γ) LB/CF	FRICTION ANGLE (ϕ) DEGREES	COHESION (c) LB/SF
BACKFILL	120	30	0
FOUNDATION	110	28	0

PILE SUPPORTED STRUCTURE RECOMMENDED SOIL PARAMETERS:

- 1) MAXIMUM FACTORED VERTICAL PRESSURE ON FOUNDATION MATERIAL = N/A
- 2) SEE STRUCTURE FOUNDATION RECOMMENDATIONS FOR PILE RECOMMENDATIONS
- 3) IN-SITU ASSUMED MATERIAL PARAMETERS:

MATERIAL TYPE	UNIT WEIGHT (γ) LB/CF	FRICTION ANGLE (ϕ) DEGREES	COHESION (c) LB/SF
BACKFILL	120	30	0
FOUNDATION	N/A	N/A	N/A

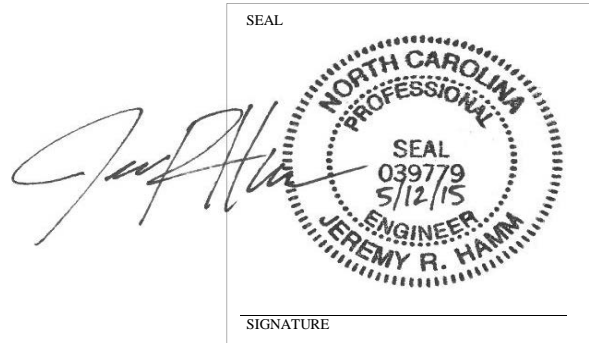


FOUNDATION RECOMMENDATIONS

WBS # _____
 T.I.P. NO. EB-5539
 COUNTY Pitt
 STATION Various

DESCRIPTION South Tar River Greenway - Phase II
Boardwalk Structures

	INITIALS	DATE
DESIGN	JRH	5/12/2015
CHECK	CVN	5/12/2015
APPROVAL		



	STATION	FOUNDATION TYPE	FACTORED RESISTANCE	MISCELLANEOUS DETAILS
BOARDWALK 1 (11 BENTS)	26+82.00 to 27+87.57 -L1-	Cap on 8" Diameter Timber Piles	8 tons/pile	Bottom of Cap Elev. = 18.6± to 17.5± ft Length of Pile = 20 ft Minimum Tip Elevation = 2 feet Number of Vertical Piles (Per Bent) = 2 Minimum Pile Spacing = 5' 0"
BOARDWALK 2 (16 BENTS)	28+50.94 to 30+20.94 -L2-	Cap on 8" Diameter Timber Piles	8 tons/pile	Average Bottom of Cap Elev. = 16.9± to 16.2± ft Length of Pile = 20 ft Minimum Tip Elevation = 2 feet Number of Vertical Piles (Per Bent) = 2 Minimum Pile Spacing = 5' 0"
BOARDWALK 3 (3 BENTS)	116+51.00 to 116+71.00 -L4-	Cap on 8" Diameter Timber Piles	6 tons/pile	Average Bottom of Cap Elev. = 19.2± ft Length of Pile = 30 ft Minimum Tip Elevation = 2 feet Number of Vertical Piles (Per Bent) = 2 Minimum Pile Spacing = 5' 0"
BOARDWALK 4 (3 BENTS)	118+36.00 to 118+56.00 -L4-	Cap on 8" Diameter Timber Piles	6 tons/pile	Average Bottom of Cap Elev. = 17.9± ft Length of Pile = 30 ft Minimum Tip Elevation = 2 feet Number of Vertical Piles (Per Bent) = 2 Minimum Pile Spacing = 5' 0"

FOUNDATION RECOMMENDATION NOTES ON PLANS

- For Piles, see Section 450 of the Standard Specifications.
- Piles at Section 1 Bents 1 through 11 are designed for a factored resistance of 8 tons per pile.
- Drive piles at Section 1 Bents 1 through 11 to a required driving resistance of 16 tons per pile.
- Piles at Section 2 Bents 1 through 16 are designed for a factored resistance of 8 tons per pile.
- Drive piles at Section 2 Bents 1 through 16 to a required driving resistance of 16 tons per pile.
- Piles at Section 3 Bents 1 through 3 are designed for a factored resistance of 6 tons per pile.
- Drive piles at Section 3 Bents 1 through 3 to a required driving resistance of 12 tons per pile.
- Piles at Section 4 Bents 1 through 3 are designed for a factored resistance of 6 tons per pile.
- Drive piles at Section 4 Bents 1 through 3 to a required driving resistance of 12 tons per pile.
- Install piles at all Bents to a tip elevation no higher than 2 feet.

FOUNDATION RECOMMENDATION COMMENTS

- The design scour elevation at all bents is approximately 12 feet.

PILE PAY ITEMS

(Revised 8/15/12)

WBS ELEMENT _____ - _____

DATE 5/12/2015

TIP NO. _____ EB-5539 _____

DESIGNED BY _____ JRH _____

COUNTY _____ Pitt _____

CHECKED BY _____ CVN _____

STATION _____ Various _____

DESCRIPTION _____ South Tar River Greenway - Phase II
 _____ Boardwalk Structures _____

NUMBER OF BENTS WITH PILES _____	}	Only required for "Predrilling for Piles" & "Pile Excavation" pay items
NUMBER OF PILES PER BENT _____		
NUMBER OF END BENTS WITH PILES _____		
NUMBER OF PILES PER END BENT _____		

Bent # or End Bent #	PILE PAY ITEM QUANTITIES						PDA Testing (per each)
	Steel Pile Points (yes/no)	Pipe Pile Plates (yes/no/maybe)	Predrilling For Piles (per linear ft)	Pile Redrives (per each)	*Pile Excavation (per linear ft)		
					In Soil	Not In Soil	
Section 1 (11 bents)							X
Section 2 (16 bents)							
Section 3 (3 Bents)							
Section 4 (3 Bents)							
TOTALS			0	0	0	0	0

Notes:

* Pile Excavation quantities shown should be included as a contingency only.

Blanks or "no" represent quantity of zero.

If steel pile points are required, calculate quantity of "Steel Pile Points" as equal to the number of steel piles.

If pipe pile plates are or may be required, calculate the quantity of "Pipe Pile Plates" as equal to the number of pipe piles.

Show quantity of "PDA Testing" on the plans as total only.

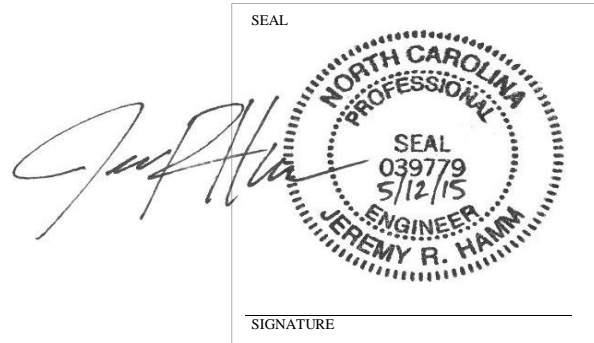
If quantity of "PDA Testing" is 3 or less, reference "Pile Driving Criteria" provision in PDA notes on plans and include "Pile Driving Criteria" provision in the contract.

FOUNDATION RECOMMENDATIONS

WBS # _____
 T.I.P. NO. EB-5539
 COUNTY Pitt
 STATION 52+55.50 -L2- to
53+22.50 -L2-

DESCRIPTION South Tar River Greenway - Phase II
Prefabricated Bridge Structure

	INITIALS	DATE
DESIGN	JRH	5/12/2015
CHECK	CVN	5/12/2015
APPROVAL		



	STATION	FOUNDATION TYPE	FACTORED RESISTANCE	MISCELLANEOUS DETAILS
END BENT 1	52+55.50 -L2-	Cap on HP 12x53 Steel Piles	20 tons/pile	Bottom of Cap Elev. = 12.1± ft Length of Pile = 45 ft Number of Vertical Piles = 2 Minimum Pile Spacing = 3' 0"
END BENT 2	53+22.50 -L2-	Cap on HP 12x53 Steel Piles	20 tons/pile	Bottom of Cap Elev. = 11.3± ft Length of Pile = 45 ft Number of Vertical Piles = 2 Minimum Pile Spacing = 3' 0"

FOUNDATION RECOMMENDATION NOTES ON PLANS

1. For Piles, see Section 450 of the Standard Specifications.
2. Piles at End Bent 1 are designed for a factored resistance of 20 tons per pile.
3. Drive piles at End Bent 1 to a required driving resistance of 30 tons per pile.
4. Piles at End Bent 2 are designed for a factored resistance of 20 tons per pile.
5. Drive piles at End Bent 2 to a required driving resistance of 30 tons per pile.

FOUNDATION RECOMMENDATION COMMENTS

PILE PAY ITEMS

(Revised 8/15/12)

WBS ELEMENT _____ - _____

DATE 5/12/2015

TIP NO. _____ EB-5539 _____

DESIGNED BY _____ JRH _____

COUNTY _____ Pitt _____

CHECKED BY _____ CVN _____

STATION _____ 52+55.50 -L2- to _____

DESCRIPTION _____ South Tar River Greenway - Phase II
 _____ Prefabricated Bridge Structure _____

NUMBER OF BENTS WITH PILES _____	}	Only required for "Predrilling for Piles" & "Pile Excavation" pay items
NUMBER OF PILES PER BENT _____		
NUMBER OF END BENTS WITH PILES _____		
NUMBER OF PILES PER END BENT _____		

Bent # or End Bent #	PILE PAY ITEM QUANTITIES						PDA Testing (per each)
	Steel Pile Points (yes/no)	Pipe Pile Plates (yes/no/maybe)	Predrilling For Piles (per linear ft)	Pile Redrives (per each)	*Pile Excavation (per linear ft)		
					In Soil	Not In Soil	
End Bent 1				2			X
End Bent 2				2			
TOTALS			0	4	0	0	

Notes:

* Pile Excavation quantities shown should be included as a contingency only.

Blanks or "no" represent quantity of zero.

If steel pile points are required, calculate quantity of "Steel Pile Points" as equal to the number of steel piles.

If pipe pile plates are or may be required, calculate the quantity of "Pipe Pile Plates" as equal to the number of pipe piles.

Show quantity of "PDA Testing" on the plans as total only.

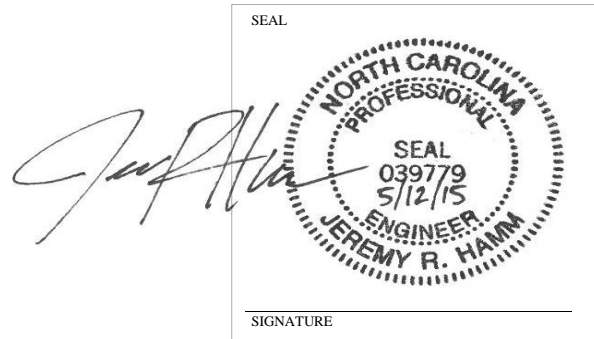
If quantity of "PDA Testing" is 3 or less, reference "Pile Driving Criteria" provision in PDA notes on plans and include "Pile Driving Criteria" provision in the contract.

FOUNDATION RECOMMENDATIONS

WBS # _____
 T.I.P. NO. EB-5539
 COUNTY Pitt
 STATION 124+28.31 -L4- to
125+05.31 -L4-

DESCRIPTION South Tar River Greenway - Phase II
Cast-in-Place Retaining Wall Structure on Piles

	INITIALS	DATE
DESIGN	JRH	5/12/2015
CHECK	CVN	5/12/2015
APPROVAL		



	STATION	FOUNDATION TYPE	FACTORED RESISTANCE	MISCELLANEOUS DETAILS
EARTH RETAINING PILE GROUPS (BENTS 1 THROUGH 4)	124+28.31 -L4- to 124+72.31 -L4-	Footing on HP 12x53 Steel Piles	37 tons/pile	Bottom of Cap Elev. = 19.2± ft Length of Pile = 55 ft Minimum Tip Elevation = -10 feet Number of Vertical Piles Per Bent = 2 Minimum Pile Spacing = 5' 0"
NON-EARTH RETAINING PILE GROUPS (BENTS 5 THROUGH 7)	124+83.31 -L4- to 125+05.31 -L4-	Footing on HP 12x53 Steel Piles	22 tons/pile	Bottom of Cap Elev. = 19.2± ft Length of Pile = 50 ft Minimum Tip Elevation = -10 feet Number of Vertical Piles Per Bent = 2 Minimum Pile Spacing = 5' 0"

FOUNDATION RECOMMENDATION NOTES ON PLANS

- For Piles, see Section 450 of the Standard Specifications.
- Steel H-pile points are required for steel H-piles at Bents 1 through 7. For steel pile points, see Section 450 of the Standard Specifications
- If necessary, predrill pile locations at Bents 1 through 7 to elevation 5 ft. with equipment that will result in a maximum predrilling diameter of 12". For predrilling for piles, see Section 450 of the Standard Specifications.

FOUNDATION RECOMMENDATION SPECIAL NOTES ON PLANS

- Piles at Bents 1 through 4 are designed for a factored resistance of 37 tons per pile.
- Drive piles at Bents 1 through 4 to a required driving resistance of 55 tons per pile.
- Piles at Bents 5 through 7 are designed for a factored resistance of 22 tons per pile.
- Drive piles at Bents 5 through 7 to a required driving resistance of 35 tons per pile.

FOUNDATION RECOMMENDATION COMMENTS

PILE PAY ITEMS

(Revised 8/15/12)

WBS ELEMENT _____ - _____

DATE 5/12/2015

TIP NO. _____ EB-5539 _____

DESIGNED BY JRH

COUNTY _____ Pitt _____

CHECKED BY CVN

STATION _____ 124+28.31 -L4- to _____

DESCRIPTION _____ South Tar River Greenway - Phase II
 _____ Cast-in-Place Retaining Wall Structure on Piles _____

NUMBER OF BENTS WITH PILES _____ 7 _____

NUMBER OF PILES PER BENT _____ 2 _____

NUMBER OF END BENTS WITH PILES _____ _____

NUMBER OF PILES PER END BENT _____ _____

Only required for "Predrilling
 for Piles" & "Pile
 Excavation" pay items

Bent # or End Bent #	PILE PAY ITEM QUANTITIES						PDA Testing (per each)
	Steel Pile Points (yes/no)	Pipe Pile Plates (yes/no/maybe)	Predrilling For Piles (per linear ft)	Pile Redrives (per each)	*Pile Excavation (per linear ft)		
					In Soil	Not In Soil	
Bent 1	yes		30				X
Bent 2	yes		30				
Bent 3	yes		30				
Bent 4	yes		30				
Bent 5	yes		30				
Bent 6	yes		30				
Bent 7	yes		30				
TOTALS			210	0	0	0	0

Notes:

* Pile Excavation quantities shown should be included as a contingency only.

Blanks or "no" represent quantity of zero.

If steel pile points are required, calculate quantity of "Steel Pile Points" as equal to the number of steel piles.

If pipe pile plates are or may be required, calculate the quantity of "Pipe Pile Plates" as equal to the number of pipe piles.

Show quantity of "PDA Testing" on the plans as total only.

If quantity of "PDA Testing" is 3 or less, reference "Pile Driving Criteria" provision in PDA notes on plans and include "Pile Driving Criteria" provision in the contract.

Boardwalk Bent (10' span)

Assumptions:

- 10' Typ. Span Timber Boardwalk
- Timber Bent Cap Supported on (2) Timber Piles
- Supports 1 Span of Timber Boardwalk

Dead load –

- 3 kips/bent (vertical)

Live Load –

- Uniform (Pedestrian) Live Load = 9 kips/bent (vertical)
- Vehicle (H-5) Load = 8 kips/bent (vertical)

Wind Load –

- Wind Load = 2.5 kips/bent (transverse)
- Vertical Wind Load (vertical) = -2 kips/bent (upward)
- Wind Uplift = -1.5 kips/pile (windward), -0.5 kips/pile (leeward) (vertical)
 - o Due to uplift wind being applied at ¼ point of bent cap

Ultimate (Factored) Loads:

	DC Factor	x	DC Load	+	LL Factor	x	LL Load	+	max[WA Factor	x	WA Load	+	WS Factor	x	WS Load]	=	
Strength I:																	
<i>Vertical</i>	1.25	x	3.00	+	1.75	x	9.00	+	1.00	x	0.00					=	19.5 kip/bent
<i>Transverse</i>	1.25	x	0.00	+	1.75	x	0.00	+	1.00	x	0.00					=	0.0 kip/bent
Strength IIIA: (Wind)																	
<i>Vertical</i>	0.90	x	3.00	+								1.40	x	-2.00	=		-0.1 kip/bent
<i>Transverse</i>	0.90	x	0.00	+								1.40	x	2.30	=		3.2 kip/bent
Strength IIIB: (Water)																	
<i>Vertical</i>	0.90	x	0.00						1.00	x	0.00					=	0.0 kip/bent
<i>Transverse</i>	0.90	x	0.00						1.00	x	0.00					=	0.0 kip/bent
Strength V:																	
<i>Vertical</i>	1.25	x	3.00	+	1.35	x	9.00	+	1.00	x	0.00	+	0.40	x	-2.00	=	15.9 kip/bent
<i>Transverse</i>	1.25	x	0.00	+	1.35	x	0.00	+	1.00	x	0.00	+	0.40	x	2.00	=	0.8 kip/bent

Boardwalk Bent (16' span)

Assumptions:

- 16' Max. Span Timber Boardwalk
- Timber Bent Cap Supported on (2) Timber Piles
- Supports 1 Span of Timber Boardwalk

Dead load –

- 5 kips/bent (vertical)

Live Load –

- Uniform (Pedestrian) Live Load = 14.5 kips/bent (vertical)
- Vehicle (H-5) Load = 8.25 kips/bent (vertical)

Wind Load –

- Wind Load = 3.8 kips/bent (transverse)
- Vertical Wind Load (vertical) = -3.2 kips/bent (upward)
- Wind Uplift = -2.4 kips/pile (windward), -0.8 kips/pile (leeward) (vertical)
 - o Due to uplift wind being applied at ¼ point of bent cap

Ultimate (Factored) Loads:

	DC Factor	x	DC Load	+	LL Factor	x	LL Load	+	max[WA Factor	x	WA Load	+	WS Factor	x	WS Load]	=
Strength I:																
<i>Vertical</i>	1.25	x	5.00	+	1.75	x	14.50	+	1.00	x	0.00					= 31.6 kip/bent
<i>Transverse</i>	1.25	x	0.00	+	1.75	x	0.00	+	1.00	x	0.00					= 0.0 kip/bent
Strength IIIA: (Wind)																
<i>Vertical</i>	0.90	x	5.00	+								1.40	x	-3.20	=	0.0 kip/bent
<i>Transverse</i>	0.90	x	0.00	+								1.40	x	3.80	=	5.3 kip/bent
Strength IIIB: (Water)																
<i>Vertical</i>	0.90	x	0.00	+					1.00	x	0.00					= 0.0 kip/bent
<i>Transverse</i>	0.90	x	0.00	+					1.00	x	0.00					= 0.0 kip/bent
Strength V:																
<i>Vertical</i>	1.25	x	5.00	+	1.35	x	14.50	+	1.00	x	0.00	+	0.40	x	-3.20	= 25.8 kip/bent
<i>Transverse</i>	1.25	x	0.00	+	1.35	x	0.00	+	1.00	x	0.00	+	0.40	x	3.80	= 1.5 kip/bent

Boardwalk Bent (10' span) (12'-0" width)

Assumptions:

- 10' Max. Span Timber Boardwalk
- Timber Bent Cap Supported on (2) Timber Piles
- Supports 1 Span of Timber Boardwalk

Dead load –

- 3 kips/bent (vertical)

Live Load –

- Uniform (Pedestrian) Live Load = 11.0 kips/bent (vertical)
- Vehicle (H-5) Load = 8.0 kips/bent (vertical)

Wind Load –

- Wind Load = 2.3 kips/bent (transverse)
- Vertical Wind Load (vertical) = -2.4 kips/bent (upward)
- Wind Uplift = -1.8 kips/pile (windward), -0.6 kips/pile (leeward) (vertical)
 - o Due to uplift wind being applied at ¼ point of bent cap

Ultimate (Factored) Loads:

	DC Factor	x	DC Load	+	LL Factor	x	LL Load	+	max[WA Factor	x	WA Load	+	WS Factor	x	WS Load]	=	
Strength I:																	
<i>Vertical</i>	1.25	x	3.00	+	1.75	x	11.00	+	1.00	x	0.00					= 23.0 kip/bent	
<i>Transverse</i>	1.25	x	0.00	+	1.75	x	0.00	+	1.00	x	0.00					= 0.0 kip/bent	
Strength IIIA: (Wind)																	
<i>Vertical</i>	0.90	x	5.00	+								1.40	x	-2.40	=	1.1 kip/bent	
<i>Transverse</i>	0.90	x	0.00	+								1.40	x	2.30	=	3.2 kip/bent	
Strength IIIB: (Water)																	
<i>Vertical</i>	0.90	x	0.00	+					1.00	x	0.00					= 0.0 kip/bent	
<i>Transverse</i>	0.90	x	0.00	+					1.00	x	0.00					= 0.0 kip/bent	
Strength V:																	
<i>Vertical</i>	1.25	x	3.00	+	1.35	x	11.00	+	1.00	x	0.00	+	0.40	x	-2.40	=	18.6 kip/bent
<i>Transverse</i>	1.25	x	0.00	+	1.35	x	0.00	+	1.00	x	0.00	+	0.40	x	2.30	=	0.9 kip/bent

Retaining Wall on Piles

Ultimate (Factored) Loads:

Strength I at Retaining Wall

Vertical = 37.0 tons/pile
Longitudinal = 7.0 tons/pile

Strength I at Greenway

Vertical = 22.0 tons/pile
Longitudinal = 0.0 tons/pile

INSURANCE REQUIREMENTS

I. Insurance Policies:

Agency and Contractor, if and to the extent that either is performing work on or about CSXT's property, shall procure and maintain the following insurance policies:

1. Commercial General Liability coverage at their sole cost and expense with limits of not less than \$5,000,000 in combined single limits for bodily injury and/or property damage per occurrence, and such policies shall name CSXT as an additional named insured. The policy shall not contain any exclusions for work completed within 50 feet of the railroad.
2. Statutory Worker's Compensation and Employers Liability Insurance with limits of not less than \$1,000,000, which insurance must contain a waiver of subrogation against CSXT and its affiliates (if permitted by state law).
3. Commercial automobile liability insurance with limits of not less than \$1,000,000 combined single limit for bodily injury and/or property damage per occurrence, and such policies shall name CSXT as an additional named insured. The policy shall not contain any exclusions for work completed within 50 feet of the railroad
4. Railroad protective liability insurance with limits of not less than \$5,000,000 combined single limit for bodily injury and/or property damage per occurrence and an aggregate annual limit of \$10,000,000, which insurance shall satisfy the following additional requirements:
 - a. The Railroad Protective Insurance Policy must be on the ISO/RIMA Form of Railroad Protective Insurance - Insurance Services Office (ISO) Form CG 00 35.
 - b. CSX Transportation must be the sole named insured on the Railroad Protective Insurance Policy.
 - c. Name and Address of Contractor and Agency must be shown on the Declarations page.
 - d. Description of operations must appear on the Declarations page and must match the Project description, including project or contract identification numbers.
 - e. Authorized endorsements must include the Pollution Exclusion Amendment - CG 28 31, unless using form CG 00 35 version 96 and later.

- f. Authorized endorsements may include:
 - (i). Broad Form Nuclear Exclusion - IL 00 21
 - (ii) 30-day Advance Notice of Non-renewal or cancellation
 - (iii) Required State Cancellation Endorsement
 - (iv) Quick Reference or Index - CL/IL 240

 - g. Authorized endorsements may not include:
 - (i) A Pollution Exclusion Endorsement except CG 28 31
 - (ii) A Punitive or Exemplary Damages Exclusion
 - (iii) A “Common Policy Conditions” Endorsement
 - (iv) Any endorsement that is not named in Section 4 (e) or (f) above.
 - (v) Policies that contain any type of deductible
5. All insurance companies must be A. M. Best rated A- and Class VII or better.
6. Such additional or different insurance as CSXT may require.

II. Additional Terms

1. Contractor must submit the original Railroad Protective Liability policy, Certificates of Insurance and all notices and correspondence regarding the insurance policies to:

Ricky Shephard
Manager - Insurance
CSX Transportation, Inc.
500 Water Street – C907
Jacksonville, FL 32202
904.359.1782 (Phone)
904.306.5325 (Fax)

Insurancedocuments@csx.com

2. Neither Agency nor Contractor may begin work on the Project until it has received CSXT’s written approval of the required insurance.

APPENDIX

CSX Transportation

CSXT SPECIAL PROVISIONS

Public Projects Group
Jacksonville, FL
Date Issued: May 9, 2011

CSXT SPECIAL PROVISIONS

AUTHORITY OF CSXT ENGINEER

The CSXT Representative shall have final authority in all matters affecting the safe maintenance of CSXT operations and CSXT property, and his or her approval shall be obtained by the Agency or its Contractor for methods of construction to avoid interference with CSXT operations and CSXT property and all other matters contemplated by the Agreement and these Special Provisions.

II. INTERFERENCE WITH CSXT OPERATIONS

A. Agency or its Contractor shall arrange and conduct its work so that there will be no interference with CSXT operations, including train, signal, telephone and telegraphic services, or damage to CSXT's property, or to poles, wires, and other facilities of tenants on CSXT's Property or right-of-way. Agency or its Contractor shall store materials so as to prevent trespassers from causing damage to trains, or CSXT Property. Whenever Work is likely to affect the operations or safety of trains, the method of doing such Work shall first be submitted to the CSXT Representative for approval, but such approval shall not relieve Agency or its Contractor from liability in connection with such Work.

B. If conditions arising from or in connection with the Project require that immediate and unusual provisions be made to protect train operation or CSXT's property, Agency or its Contractor shall make such provision. If the CSXT Representative determines that such provision is insufficient, CSXT may, at the expense of Agency or its Contractor, require or provide such provision as may be deemed necessary, or cause the Work to cease immediately.

III. NOTICE OF STARTING WORK. Agency or its Contractor shall not commence any work on CSXT Property or rights of-way until it has complied with the following conditions:

A. Notify CSXT in writing of the date that it intends to commence Work on the Project. Such notice must be received by CSXT at least ten business days in advance of the date Agency or its Contractor proposes to begin Work on CSXT property. The notice must refer to this Agreement by date. If flagging service is required, such notice shall be submitted at least thirty (30) business days in advance of the date scheduled to commence the Work.

B. Obtain authorization from the CSXT Representative to begin Work on CSXT property, such authorization to include an outline of specific conditions with which it must comply.

C. Obtain from CSXT the names, addresses and telephone numbers of CSXT's personnel who must receive notice under provisions in the Agreement. Where more than one individual is designated, the area of responsibility of each shall be specified.

IV. WORK FOR THE BENEFIT OF THE CONTRACTOR

A. No temporary or permanent changes to wire lines or other facilities (other than third party fiber optic cable transmission systems) on CSXT property that are considered necessary to the Work are anticipated or shown on the Plans. If any such changes are, or become, necessary in the opinion of CSXT or Agency, such changes will be covered by appropriate revisions to the Plans and by preparation of a force account estimate. Such force account estimate may be initiated by either CSXT or Agency, but must be approved by both CSXT and Agency. Agency or Contractor shall be responsible for arranging for the relocation of the third party fiber optic cable transmission systems, at no cost or expense to CSXT.

B. Should Agency or Contractor desire any changes in addition to the above, then it shall make separate arrangements with CSXT for such changes to be accomplished at the Agency or Contractor's expense.

V. HAUL ACROSS RAILROAD

A. If Agency or Contractor desires access across CSXT property or tracks at other than an existing and open public road crossing in or incident to construction of the Project, the Agency or Contractor must first obtain the permission of CSXT and shall execute a license agreement or right of entry satisfactory to CSXT, wherein Agency or Contractor agrees to bear all costs and liabilities related to such access.

B. Agency and Contractor shall not cross CSXT's property and tracks with vehicles or equipment of any kind or character, except at such crossing or crossings as may be permitted pursuant to this section.

VI. COOPERATION AND DELAYS

A. Agency or Contractor shall arrange a schedule with CSXT for accomplishing stage construction involving work by CSXT. In arranging its schedule, Agency or Contractor shall ascertain, from CSXT, the lead time required for assembling crews and materials and shall make due allowance therefor

B. Agency or Contractor may not charge any costs or submit any claims against CSXT for hindrance or delay caused by railroad traffic; work done by CSXT or other delay incident to or necessary for safe maintenance of railroad traffic; or for any delays due to compliance with these Special Provisions.

C. Agency and Contractor shall cooperate with others participating in the construction of the Project to the end that all work may be carried on to the best advantage.

D. Agency and Contractor understand and agree that CSXT does not assume any responsibility for work performed by others in connection the Project. Agency and Contractor further understand and agree that they shall have no claim whatsoever against CSXT for any inconvenience, delay or additional cost incurred by Agency or Contractor on account of operations by others.

VII. STORAGE OF MATERIALS AND EQUIPMENT

Agency and Contractor shall not store their materials or equipment on CSXT's property or where they may potentially interfere with CSXT's operations, unless Agency or Contractor has received CSXT Representative's prior written permission. Agency and Contractor understand and agree that CSXT will not be liable for any damage to such materials and equipment from any cause and that CSXT may move, or require Agency or Contractor to move, such material and equipment at Agency's or Contractor's sole expense. To minimize the possibility of damage to the railroad tracks resulting from the unauthorized use of equipment, all grading or other construction equipment that is left parked near the tracks unattended by watchmen shall be immobilized to the extent feasible so that it cannot be moved by unauthorized persons.

VIII. CONSTRUCTION PROCEDURES

A. General

1. Construction work on CSXT property shall be subject to CSXT's inspection and approval.
2. Construction work on CSXT property shall be in accord with CSXT's written outline of specific conditions and with these Special Provisions.
3. Contractor shall observe the terms and rules of the CSXT Safe Way manual, which Agency and Contractor shall be required to obtain from CSXT, and in accord with any other instructions furnished by CSXT or CSXT's Representative.

B. Blasting

1. Agency or Contractor shall obtain CSXT Representative's and Agency Representative's prior written approval for use of explosives on or adjacent to CSXT property. If permission for use of explosives is granted, Agency or Contractor must comply with the following:
 - a. Blasting shall be done with light charges under the direct supervision of a responsible officer or employee of Agency or Contractor.
 - b. Electric detonating fuses shall not be used because of the possibility of premature explosions resulting from operation of two-way train radios.
 - c. No blasting shall be done without the presence of an authorized representative of CSXT. At least 30 days' advance notice to CSXT Representative is required to arrange for the presence of an authorized CSXT representative and any flagging that CSXT may require.

d. Agency or Contractor must have at the Project site adequate equipment, labor and materials, and allow sufficient time, to (i) clean up (at Agency's expense) debris resulting from the blasting without any delay to trains; and (ii) correct (at Agency's expense) any track misalignment or other damage to CSXT's property resulting from the blasting, as directed by CSXT Representative, without delay to trains. If Agency's or Contractor's actions result in delay of any trains, including Amtrak passenger trains, Agency shall bear the entire cost thereof.

e. Agency and Contractor shall not store explosives on CSXT property.

2. CSXT Representative will:

a. Determine the approximate location of trains and advise Agency or Contractor of the approximate amount of time available for the blasting operation and clean-up.

b. Have the authority to order discontinuance of blasting if, in his or her opinion, blasting is too hazardous or is not in accord with these Special Provisions.

IX. MAINTENANCE OF DITCHES ADJACENT TO CSXT TRACKS

Agency or Contractor shall maintain all ditches and drainage structures free of silt or other obstructions that may result from their operations. Agency or Contractor shall provide erosion control measures during construction and use methods that accord with applicable state standard specifications for road and bridge construction, including either (1) silt fence; (2) hay or straw barrier; (3) berm or temporary ditches; (4) sediment basin; (5) aggregate checks; and (6) channel lining. All such maintenance and repair of damages due to Agency's or Contractor's operations shall be performed at Agency's expense.

X. FLAGGING / INSPECTION SERVICE

A. CSXT has sole authority to determine the need for flagging required to protect its operations and property. In general, flagging protection will be required whenever Agency or Contractor or their equipment are, or are likely to be, working within fifty (50) feet of live track or other track clearances specified by CSXT, or over tracks.

B. Agency shall reimburse CSXT directly for all costs of flagging that is required on account of construction within CSXT property shown in the Plans, or that is covered by an approved plan revision, supplemental agreement or change order.

C. Agency or Contractor shall give a minimum of 30 days' advance notice to CSXT Representative for anticipated need for flagging service. No work shall be undertaken until the flag person(s) is/are at the job site. If it is necessary for CSXT to advertise a flagging job for bid, it may take up to 90-days to obtain this service, and CSXT shall not be liable for the cost of delays attributable to obtaining such service.

D. CSXT shall have the right to assign an individual to the site of the Project to perform inspection service whenever, in the opinion of CSXT Representative, such inspection may be necessary. Agency shall reimburse CSXT for the costs incurred by CSXT for such inspection service. Inspection service shall not relieve Agency or Contractor from liability for its Work.

E. CSXT shall render invoices for, and Agency shall pay for, the actual pay rate of the flagpersons and inspectors used, plus standard additives, whether that amount is above or below the rate provided in the Estimate. If the rate of pay that is to be used for inspector or flagging service is changed before the work is started or during the progress of the work, whether by law or agreement between CSXT and its employees, or if the tax rates on labor are changed, bills will be rendered by CSXT and paid by Agency using the new rates. Agency and Contractor shall perform their operations that require flagging protection or inspection service in such a manner and sequence that the cost of such will be as economical as possible.

XI. UTILITY FACILITIES ON CSXT PROPERTY

Agency shall arrange, upon approval from CSXT, to have any utility facilities on or over CSXT Property changed as may be necessary to provide clearances for the proposed trackage.

XII. CLEAN-UP

Agency or Contractor, upon completion of the Project, shall remove from CSXT's Property any temporary grade crossings, any temporary erosion control measures used to control drainage, all machinery, equipment, surplus materials, falsework, rubbish, or temporary buildings belonging to Agency or Contractor. Agency or Contractor, upon completion of the Project, shall leave CSXT Property in neat condition, satisfactory to CSXT Representative.

XIII. FAILURE TO COMPLY

If Agency or Contractor violate or fail to comply with any of the requirements of these Special Provisions, (a) CSXT may require Agency and/or Contractor to vacate CSXT Property; and (b) CSXT may withhold monies due Agency and/or Contractor; (c) CSXT may require Agency to withhold monies due Contractor; and (d) CSXT may cure such failure and the Agency shall reimburse CSXT for the cost of curing such failure.

APPENDIX

CSX Transportation

CONSTRUCTION SUBMISSION CRITERIA

Public Projects Group
Jacksonville, FL
Date Issued: February 23, 2015

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INTRODUCTION

The intent of this document is to guide outside agencies and their Contractors when performing work on, over, or with potential to impact CSXT property (ROW). Work plans shall be submitted for review to the designated CSXT Engineering Representative for all work which presents the potential to affect CSXT property or operations; this document shall serve as a guide in preparing these work plans. All work shall be performed in a manner that does not adversely impact CSXT operations or safety; as such, the requirements of this document shall be strictly adhered to, in addition to all other applicable standards associated with the construction. Applicable standards include, but are not limited to, CSXT Standards and Special Provisions, CSXT Insurance Requirements, CSXT Pipeline Occupancy Criteria, as well as the governing local, county, state and federal requirements. It shall be noted that this document and all other CSXT standards are subject to change without notice, and future revisions will be made available at the CSXT website: www.csx.com.

I. DEFINITIONS

1. *Agency* – The project sponsor (i.e., State DOT, Local Agencies, Private Developer, etc.)
2. *AREMA* – American Railway Engineering and Maintenance-of-Way Association – the North American railroad industry standards group. The use of this term shall be in specific reference to the AREMA Manual for Railway Engineering.
3. *Construction Submission* – The Agency or its representative shall submit six (6) sets of plans, supporting calculations, and detailed means and methods procedures for the specific proposed activity. All plans, specifications, and supporting calculations shall be signed/sealed by a Professional Engineer as defined below.
4. *Controlled Demolition* – Removal of an existing structure or subcomponents in a manner that positively prevents any debris or material from falling, impacting, or otherwise affecting CSXT employees, equipment or property. Provisions shall be made to ensure that there is no impairment of railroad operations or CSXT's ability to access its property at all times.
5. *Contractor* – The Agency's representative retained to perform the project work.
6. *Engineer* – CSXT Engineering Representative or a GEC authorized to act on the behalf of CSXT.
7. *Flagman* – A qualified CSXT employee with the sole responsibility to direct or restrict movement of trains, at or through a specific location, to provide protection for workers.
8. *GEC* – General Engineering Consultant who has been authorized to act on the behalf of CSXT.
9. *Horizontal Clearance* – Distance measured perpendicularly from centerline of any track to the nearest obstruction at any elevation between TOR and the maximum vertical clearance of the track.
10. *Professional Engineer* – An engineer who is licensed in State or Commonwealth in which the project is to occur. All plans, specifications, and supporting calculations shall be prepared by the Licensed Professional Engineer and shall bear his/her seal and signature.
11. *Potential to Foul* – Work having the possibility of impacting CSXT property or operations; defined as one or more of the following:
 - a. Any activity where access onto CSXT property is required.
 - b. Any activity where work is being performed on CSXT ROW.
 - c. Any excavation work adjacent to CSXT tracks or facilities, within the Theoretical Railroad Live Load Influence Zone, or where the active earth pressure zone extends within the CSXT property limits.
 - d. The use of any equipment where, if tipped and laid flat in any direction (360 degrees) about its center pin, can encroach within twenty five feet (25'-0") of the nearest track centerline. This is based upon the proposed location of

- the equipment during use, and may be a function of the equipment boom length. Note that hoisting equipment with the potential to foul must satisfy the 150% factor of safety requirement for lifting capacities.
- e. Any work where the scatter of debris, or other materials has the potential to encroach within twenty five feet (25'-0") of the nearest track centerline.
 - f. Any work where significant vibration forces may be induced upon the track structure or existing structures located under, over, or adjacent to the track structure.
 - g. Any other work which poses the potential to disrupt rail operations, threaten the safety of railroad employees, or otherwise negatively impact railroad property, as determined by CSXT.
12. *ROW – Right of Way*; Refers to CSXT Right-of-Way as well as all CSXT property and facilities. This includes all aerial space within the property limits, and any underground facilities.
 13. *Submission Review Period* - a minimum of thirty (30) days in advance of start of work. Up to thirty (30) days will be required for the initial review response. Up to an additional thirty (30) days may be required to review any/all subsequent submissions or resubmission.
 14. *Theoretical Railroad Live Load Influence Zone* – A 1½ horizontal to 1 vertical theoretical slope line starting 18 inches (1'-6") below top of tie elevation and twelve feet (12'-0") from the centerline of the nearest track.
 15. *TOR – Top of Rail*. This is the base point for clearance measurements. It refers to the crown (top) of the steel rail; the point where train wheels bear on the steel rails.
 16. *Track Structure* – All load bearing elements which support the train. This includes, but is not limited to, the rail, ties, appurtenances, ballast, sub-ballast, embankment, retaining walls, and bridge structures.
 17. *Vertical Clearance* – Distance measured from TOR to the lowest obstruction within six feet (6'-0") of the track centerline, in either direction.

II. GENERAL SUBMISSION REQUIREMENTS

- A. A construction work plan is required to be submitted by the Agency or its Contractor, for review and acceptance, prior to accessing or performing any work with Potential to Foul.
- B. The Agency or its representative shall submit six (6) sets of plans, specifications, supporting calculations, and detailed means and methods procedures for the specific proposed work activity.
- C. Construction submissions shall include all information relevant to the work activity, and shall clearly and concisely explain the nature of the work, how it is being performed, and what measures are being taken to ensure that railroad property and operations are continuously maintained.
- D. All construction plans shall include a map of the work site, depicting the CSXT tracks, the CSXT right of way, proposed means of access, proposed locations for equipment and material staging (dimensioned from nearest track centerline), as well as all other relevant project information. An elevation drawing may also be necessary in order to depict clearances or other components of the work.
- E. Please note that CSXT will not provide pricing to individual contractors involved in bidding projects. Bidding contractors shall request information from the agency and not CSXT.
- F. The Contractor shall install a geotextile fabric ballast protection system to prevent construction or demolition debris and fines from fouling ballast. The geotextile ballast protection system shall be installed and maintained by the Contractor to the satisfaction of the Engineer.
- G. The Engineer shall be kept aware of the construction schedule. The Contractor shall provide timely communication to the Engineer when scheduling the work such that the Engineer may be present during the work. The Contractor's schedule shall not dictate the work plan review schedule, and flagging shall not be scheduled prior to receipt of an accepted work plan.

H. At any time during construction activities, the Engineer may require revisions to the previously approved procedures to address weather, site conditions or other circumstances that may create a potential hazard to rail operations or CSXT facilities. Such revisions may require immediate interruption or termination of ongoing activities until such time the issue is resolved to the Engineer's satisfaction. CSXT and its GEC shall not be responsible for any additional costs or time claims associated with such revisions.

I. Blasting will not be permitted to demolish a structure over or within CSXT's right-of-way. When blasting off of CSXT property but with Potential to Foul, vibration monitoring, track settlement surveying, and/or other protective measures may be required as determined by the Engineer.

J. Blasting is not permitted adjacent to CSXT right-of-way without written approval from the Chief Engineer, CSXT.

K. Mechanical and chemical means of rock removal must be explored before blasting is considered. If written permission for the use of explosives is granted, the Agency or Contractor must submit a work plan satisfying the following requirements:

1. Blasting shall be done with light charges under the direct supervision of a responsible officer or employee of the Agency or Contractor.
2. Electronic detonating fuses shall not be used because of the possibility of premature explosions resulting from operation of two-way train radios.
3. No blasting shall be done without the presence of an authorized representative of CSXT. Advance notice to the Engineer is required to arrange for the presence of an authorized CSXT representative and any flagging that CSXT may require.
4. Agency or Contractor must have at the project site adequate equipment, labor and materials, and allow sufficient time, to clean up debris resulting from the blasting and correct any misalignment of tracks or other damage to CSXT property resulting from the blasting. Any corrective measures required must be performed as directed by the Engineer at the Agency's or Contractor's expense without any delay to trains. If Agency's or Contractor's actions result in the delay of any trains including passenger trains, the Agency or Contractor shall bear the entire cost thereof.
5. The Agency or Contractor may not store explosives on CSXT property.
6. At any time during blasting activities, the Engineer may require revisions to the previously approved procedures to address weather, site conditions or other circumstances that may create a potential hazard to rail operations or CSXT facilities. Such revisions may require immediate interruption or termination of ongoing activities until such time the issue is resolved to the Engineer's satisfaction. CSXT and its GEC shall not be responsible for any additional costs or time claims associated with such revisions.

III. HOISTING OPERATIONS

A. All proposed hoisting operations with Potential to Foul shall be submitted in accordance with the following:

1. A plan view drawing shall depict the work site, the CSXT track(s), the proposed location(s) of the lifting equipment, as well as the proposed locations for picking, any intermediate staging, and setting the load(s). All locations shall be dimensioned from centerline of the nearest track. Crane locations shall also be dimensioned from a stationary point at the work site for field confirmation.
2. Computations showing the anticipated weight of all picks. Computations shall be made based upon the field-verified plans of the existing structure. Pick weights shall account for the weight of concrete rubble or other materials attached to the component being removed; this includes the weight of subsequent rigging devices/components. Rigging components shall be sized for the subsequent pick weight.
3. All lifting equipment, rigging devices, and other load bearing elements shall have a rated (safe lifting) capacity that is greater than or equal to 150% of the load it is carrying, as a factor of safety. Supporting calculations shall be furnished to verify the minimum capacity requirement is maintained for the duration of the hoisting operation.

4. Dynamic hoisting operations are prohibited when carrying a load with the Potential to Foul. Cranes or other lifting equipment shall remain stationary during lifting. (i.e., no moving picks).
5. For lifting equipment, the manufacturer's capacity charts, including crane, counterweight, maximum boom angle, and boom nomenclature is to be submitted.
6. A schematic rigging diagram must be provided to clearly call out each rigging component from crane hook to the material being hoisted. Copies of catalog or information sheets shall be provided to verify rigging weights and capacities.
7. For built-up rigging devices, the contractor shall submit the following:
 - i. Details of the device, calling out material types, sizes, connections and other properties.
 - ii. Load test certification documents and/or design computations bearing the seal and signature of a Professional Engineer. Load test shall be performed in the configuration of its intended use as part of the subject demolition procedure.
 - iii. Copies of the latest inspection reports of the rigging device. The device shall be inspected within one (1) calendar year of the proposed date for use.
8. A detail shall be provided showing the crane outrigger setup, including dimensions from adjacent slopes or facilities. The detail shall indicate requirements for bearing surface preparation, including material requirements and compaction efforts. As a minimum, outriggers and/or tracks shall bear on mats, positioned on level material with adequate bearing capacity.
9. A complete written narrative that describes the sequence of events, indicating the order of lifts and any repositioning or re-hitching of the crane(s).

IV. DEMOLITION PROCEDURE

- A. The Agency or its Contractor shall submit a detailed procedure for a controlled demolition of any structure on, over, or adjacent to the ROW. The controlled demolition procedure must be approved by the Engineer prior to beginning work on the project.
- B. Existing Condition of structure being demolished:
 1. The Contractor shall submit as-built plans for the structure(s) being demolished.
 2. If as-built plans are unavailable, the Contractor shall perform an investigation of the structure, including any foundations, substructures, etc. The field measurements are to be made under the supervision of the Professional Engineer submitting the demolition procedure. Findings shall be submitted as part of the demolition means and methods submittal for review by the Engineer.
 3. Any proposed method for temporary stabilization of the structure during the demolition shall be based on the existing plans or investigative findings, and submitted as part of the demolition means and methods for review by the Engineer.
- C. Demolition work plans shall include a schematic plan depicting the proposed locations of the following, at various stages of the demolition:
 1. All cranes and equipment, calling out the operating radii.
 2. All proposed access and staging locations with all dimensions referenced from the center line of the nearest track.
 3. Proposed locations for stockpiling material or locations for truck loading.
 4. The location, with relevant dimensions, of all tracks, other railroad facilities; wires, poles, adjacent structures, or buried utilities that could be affected, showing that the proposed lifts are clear of these obstructions.
 5. Note that no crane or equipment may be set on the CSXT rails or track structure and no material may be dropped on CSXT property.
- D. Demolition submittal shall also include the following information:
 1. All hoisting details, as dictated by Section III of this document.
 2. A time schedule for each of the various stages must be shown as well as a schedule for the entire lifting procedure. The proposed time frames for all critical subtasks (i.e., torch/saw cutting various portions of the superstructure or

substructure, dismantling splices, installing temporary bracing, etc.) shall be furnished so that the potential impact(s) to CSXT operations may be assessed and eliminated or minimized.

3. The names and experience of the key Contractor personnel involved in the operation shall be included in the Contractor's means and methods submission.
 4. Design and supporting calculations shall be prepared, signed, and sealed by the Professional Engineer for items including the temporary support of components or intermediate stages shall be submitted for review. A guardrail will be required to be installed in a track in the proximity of temporary bents or shoring towers, when located within twelve feet (12'-0") from the centerline of the track. The guardrail will be installed by CSXT forces, at the expense of the Agency or its contractor.
- E. Girders or girder systems shall be stable at all times during demolition. Temporary bracing shall be provided at the piers, abutments, or other locations to resist overturning and/or buckling of the member(s). The agency shall submit a design and details of the proposed temporary bracing system, for review by the Engineer. Lateral wind forces for the temporary conditions shall be considered in accordance with AREMA, Chapter 8, Section 28.6.2. The minimum lateral wind pressure shall be fifteen pounds per square foot (15 psf).
- F. Existing, obsolete, bridge piers shall be removed to a minimum of three feet (3'-0") below the finished grade, final ditch line invert, or as directed by the Engineer.
- G. A minimum quantity of twenty five (25) tons of CSXT approved granite track ballast may be required to be furnished and stockpiled on site by the Contractor, or as directed by the Engineer.
- H. The use of acetylene gas is prohibited for use on or over CSXT property. Torch cutting shall be performed utilizing other materials such as propane.
- I. CSXT's tracks, signals, structures, and other facilities shall be protected from damage during demolition of existing structure or replacement of deck slab.
- J. Demolition Debris Shield
1. On-track or ground-level debris shields (such as crane mats) are prohibited for use by CSXT.
 2. Demolition Debris Shield shall be installed prior to the demolition of the bridge deck or other relevant portions of the structure. The demolition debris shield shall be erected from the underside of the bridge over the track area to catch all falling debris. The debris shield shall not be the primary means of debris containment.
 - i. The demolition debris shield design and supporting calculations, all signed/sealed by a Professional Engineer, shall be submitted for review and acceptance.
 - ii. The demolition debris shield shall have a minimum design load of 50 pounds per square foot (50 psf) plus the weight of the equipment, debris, personnel, and all other loads.
 - iii. The Contractor shall verify the maximum particle size and quantity of the demolition debris generated during the procedure does not exceed the shield design loads. Shield design shall account for loads induced by particle impact; however the demolition procedure shall be such that impact forces are minimized. The debris shield shall not be the primary means of debris containment.
 - iv. The Contractor shall include installation/removal means and methods for the demolition debris shield as part of the proposed Controlled Demolition procedure submission.
 - v. The demolition debris shield shall provide twenty three feet (23'-0") minimum vertical clearance, or maintain the existing vertical clearance if the existing clearance is less than twenty three feet (23'-0").
 - vi. Horizontal clearance to the centerline of the track should not be reduced unless approved by the Engineer.
 - vii. The Contractor shall clean the demolition debris shield daily or more frequently as dictated either by the approved design parameters or as directed by the Engineer.
- K. Vertical Demolition Debris Shield
1. This type of shield may be required for substructure removals in close proximity to CSXT track and other facilities, as determined by the Engineer.
 2. The Agency or its Contractor shall submit detailed plans with detailed calculations, prepared, signed, and sealed by a Professional Engineer, of the protection shield.

V. ERECTION PROCEDURE

- A. The Agency or its Contractor shall submit a detailed procedure for erection of a structure with Potential to Foul. The erection procedure must be approved by the Engineer prior to beginning work on the project.
- B. Erection work plans shall include a schematic plan depicting the following, at all stages of the construction:
1. All proposed locations of all cranes and equipment, calling out the operating radii.
 2. All proposed access and staging locations with all dimensions referenced from the center line of the nearest track.
 3. All proposed locations for stockpiling material or locations for truck loading.
 4. The location, with relevant dimensions, of all tracks, other railroad facilities; wires, poles, adjacent structures, or buried utilities that could be affected, showing that the proposed lifts are clear of these obstructions.
- C. No crane or equipment may be set on the CSXT rails or track structure and no material may be dropped on CSXT property.
- D. For erection of a structure over the tracks, the following information shall be submitted for review and acceptance by the Engineer, at least thirty (30) days prior to erection:
1. As-built beam seat elevations – field surveyed upon completion of pier/abutment construction.
 2. Current Top of Rail (TOR) elevations – field measured at the time of as-built elevation collection.
 3. Computations verifying the anticipated minimum vertical clearance in the final condition which accounts for all deflection and camber, based upon the current TOR and as-built beam seat elevations. The anticipated minimum vertical clearance shall be greater than or equal to that which is indicated by the approved plans. Vertical clearance (see definitions) is measured from TOR to the lowest point on the overhead structure at any point within six feet (6'-0") from centerline of the track. Calculations shall be signed and sealed by a Professional Engineer.
- E. Girders or girder systems shall be stable at all times during erection. No crane may unhook prior to stabilizing the beam or girder.
1. Lateral wind forces for the temporary conditions shall be considered in accordance with AREMA, Chapter 8, Section 28.6.2. The minimum lateral wind pressure shall be fifteen pounds per square foot (15 psf).
 2. Temporary bracing shall be provided at the piers, abutments, or other locations to resist overturning and/or buckling of the member(s). The agency shall submit a design and details of the proposed temporary bracing system, for review by the Engineer.
 3. Temporary bracing shall not be removed until sufficient lateral bracing or diaphragm members have been installed to establish a stable condition. Supporting calculations, furnished by the Professional Engineer, shall confirm the stable condition.
- F. Erection procedure submissions shall also include the following information:
1. All hoisting details, as dictated by Section III of this document.
 2. A time schedule for each of the various stages must be shown as well as a schedule for the entire lifting procedure. The proposed time frames for all critical subtasks (i.e., performing aerial splices, installing temporary bracing, installation of diaphragm members, etc.) shall be furnished so that the potential impact(s) to CSXT operations may be assessed and eliminated or minimized.
 3. The names and experience of the key Contractor personnel involved in the operation shall be included in the Contractor's means and methods submission.
 4. A guardrail will be required to be installed in a track in the proximity of temporary bents or shoring towers, when located within twelve feet (12'-0") from the centerline of the track. The guardrail will be installed by CSXT forces, at the expense of the Agency or its Contractor.
 5. Design and supporting calculations prepared by the Professional Engineer for items including the temporary support of components or intermediate stages shall be submitted for review.

VI. TEMPORARY EXCAVATION AND SHORING

- A. The Agency or its Contractor shall submit a detailed design and procedure for the installation of a sheeting/shoring system adjacent to the tracks. Shoring protection shall be provided when excavating with Potential to Foul, or as otherwise determined by CSXT. Shoring shall be provided in accordance with the AREMA, except as noted below.
- B. Shoring may not be required if all of the following conditions are satisfied:
1. The excavation does not encroach within the Theoretical Live Load Influence Zone. Please refer to Figure 1.
 2. The track structure is situated on level ground, or in a cut section, and on stable soil.
 3. The excavation does not adversely impact the stability of a CSXT facility (i.e. signal bungalow, drainage facility,

undergrade bridge, building, etc), or the stability of any structure on, over, or adjacent to CSXT property with potential to foul.

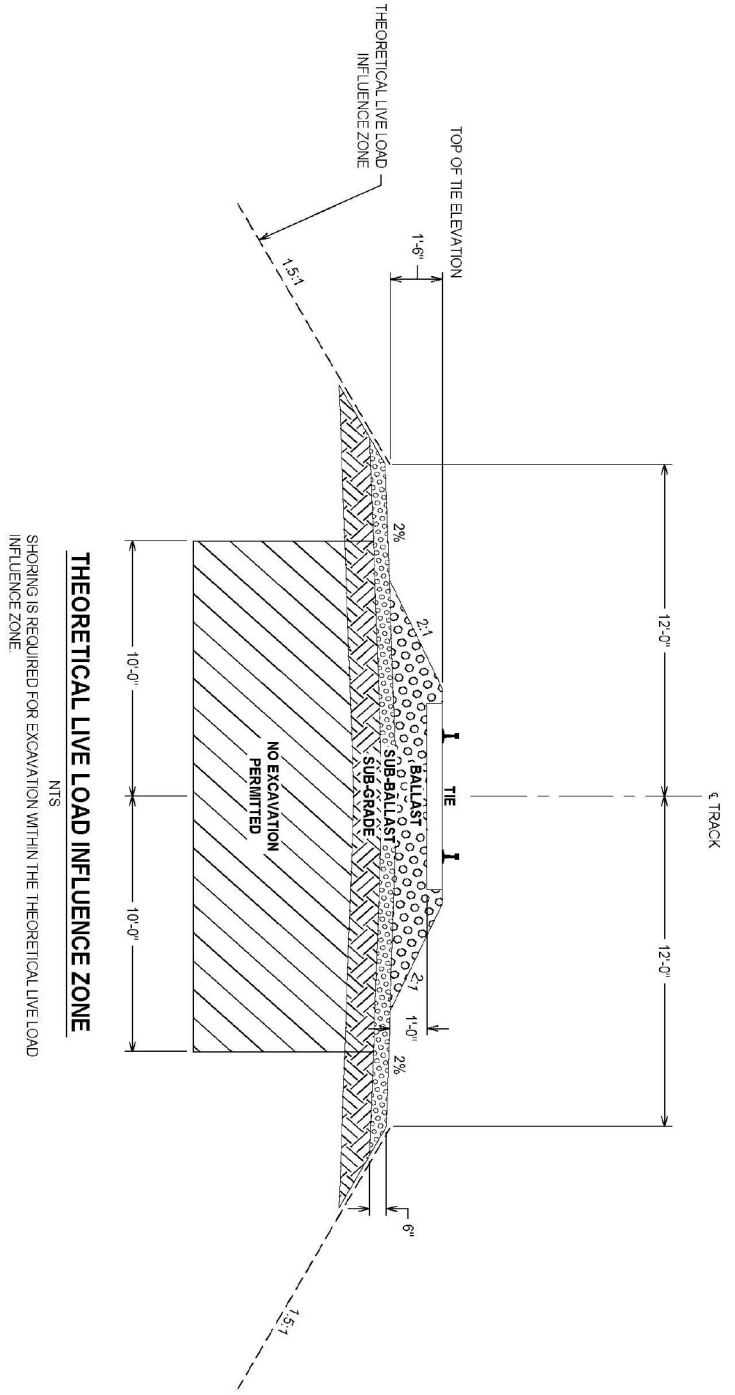
4. Shoring is not required by any governing federal, state, local or other construction code.

- C. Shoring is required when excavating the toe of an embankment. Excavation of any embankment which supports an active CSXT track structure without shoring will not be permitted.
- D. Trench boxes are not an acceptable means of shoring. Trench boxes are prohibited for use on CSXT property or within the Theoretical Railroad Live Load Influence Zone.
- E. Shoring shall be a cofferdam-type, which completely encloses the excavation. However, where justified by site or work conditions, partial cofferdams with open sides away from the track may be permissible, as determined by the Engineer.
- F. Cofferdams shall be constructed using interlocking steel sheet piles, or when approved by the Engineer, steel soldier piles with timber lagging. Wales and struts shall be included when dictated by the design.
- G. The use of tiebacks can be permissible for temporary shoring systems, when conditions warrant. Tiebacks shall have a minimum clear cover of 6'-0", measured from the bottom of the rail. Upon completion of the work, tiebacks shall be grouted, cut off, and remain in place.
- H. All shoring systems on, or adjacent to CSXT right-of-way, shall be equipped with railings or other fall protection, compliant with the governing federal, state or local requirements. Area around pits shall be graded to eliminate all potential tripping hazards.
- I. Interlocking steel sheet piles shall be used for shoring systems qualifying one or more of the following conditions:
 - 1. Within 18'-0" of the nearest track centerline
 - 2. Within the live load influence zone
 - 3. Within slopes supporting the track structure
 - 4. As otherwise deemed necessary by the Engineer.
- J. Sheet piles qualifying for one or more of the requirements listed in Section VI.I (above) of this document shall not be removed. Sheet piles shall be left in place and cut off a minimum of 3'-0" below the finished grade, the ditch line invert, or as otherwise directed by the Engineer. The ground shall be backfilled and compacted immediately after sheet pile is cut off.
- K. The following design considerations shall be considered when preparing the shoring design package:
 - 1. Shoring shall be designed to resist a vertical live load surcharge of 1,880 lbs. per square foot, in addition to active earth pressure. The surcharge shall be assumed to act on a continuous strip, eight feet six inches (8'-6") wide. Lateral pressures due to surcharge shall be computed using the strip load formula shown in *AREMA Manual for Railway Engineering*, Chapter 8, Part 20.
 - 2. Allowable stresses in materials shall be in accordance with AREMA Chapter 7, 8, and 15.3.
 - 3. A minimum horizontal clearance of ten feet (10'-0") from centerline of the track to face of nearest point of shoring shall be maintained, provided a twelve feet (12'-0") roadbed is maintained with a temporary walkway and handrail system.
 - 4. For temporary shoring systems with Potential to Foul, piles shall be plumb under full dead load. Maximum deflection at the top of wall, under full live load, shall be as follows:
 - i. One-half (1/2) inch for walls within twelve feet (12'-0") of track centerline (Measured from centerline of the nearest track to the nearest point of the supporting structure).
 - ii. One (1) inch for walls located greater than twelve feet (12'-0") from track centerline
- L. Shoring work plans shall be submitted in accordance with Section II of this document, as well as the following additional requirements:
 - 1. The work plan shall include detailed drawings of the shoring systems calling out the sizes of all structural members, details of all connections. Both plan and elevation drawings shall be provided, calling out dimensions from the face of shoring relative to the nearest track centerline. The elevation drawing shall also show the height of shoring, and track elevation in relation to bottom of excavation.
 - 2. Full design calculations for the shoring system shall be furnished.
 - 3. A procedure for cutting off the sheet pile, backfilling and restoring the embankment.

VII. TRACK MONITORING

- A. When work being performed has the potential to disrupt the track structure, a work plan must be submitted detailing a track monitoring program which will serve to monitor and detect both horizontal and vertical movement of the CSXT track and roadbed.
- B. The program shall specify the survey locations, the distance between the location points, and frequency of monitoring before, during, and after construction. CSXT reserves to the right to modify the survey locations and monitoring frequency as necessary during the project.
- C. The survey data shall be collected in accordance with the approved frequency and immediately furnished to the Engineer for analysis.
- D. If any movement has occurred as determined by the Engineer, CSXT will be immediately notified. CSXT, at its sole discretion, shall have the right to immediately require all contractor operations to be ceased, have the excavated area immediately backfilled and/or determine what corrective action is required. Any corrective action required by CSXT or performed by CSXT including the monitoring of corrective action of the contractor will be at project expense.

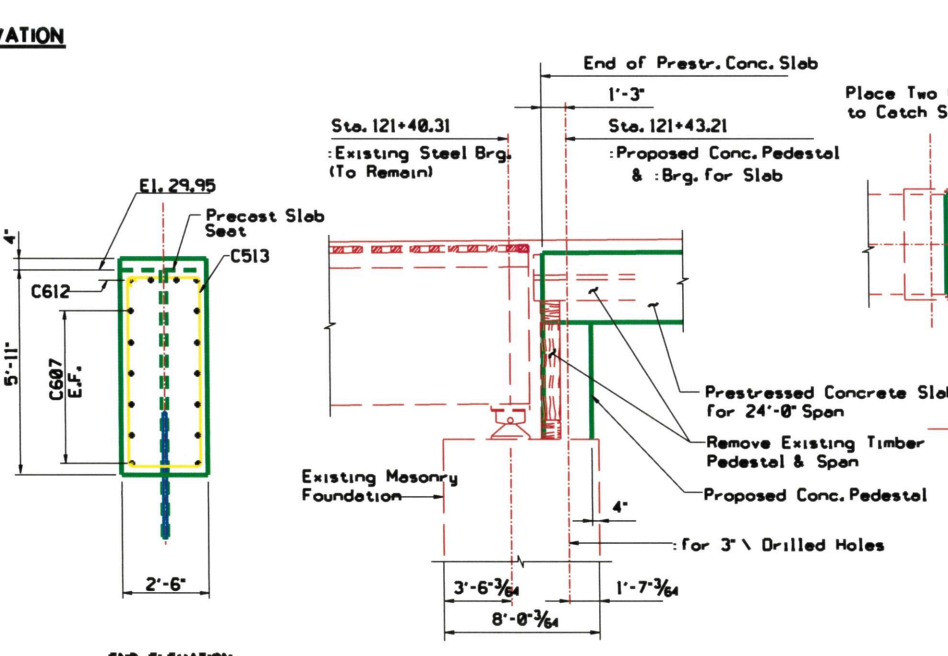
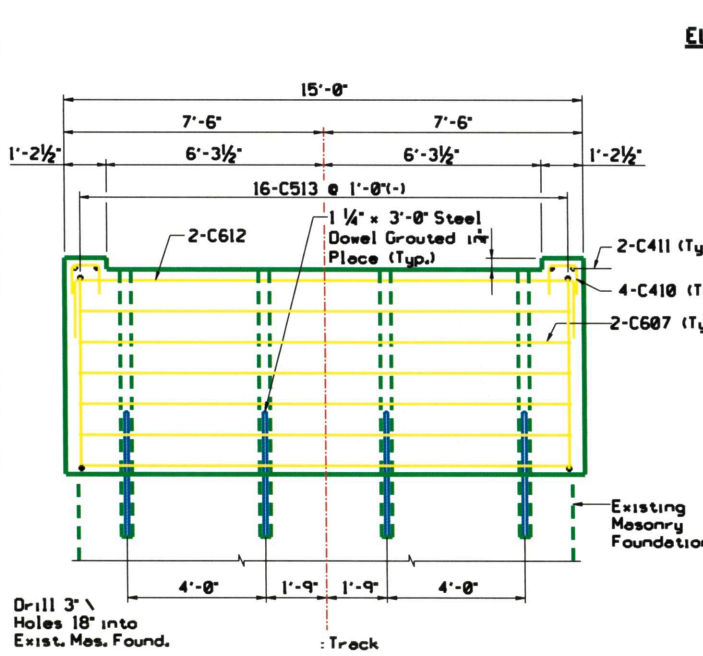
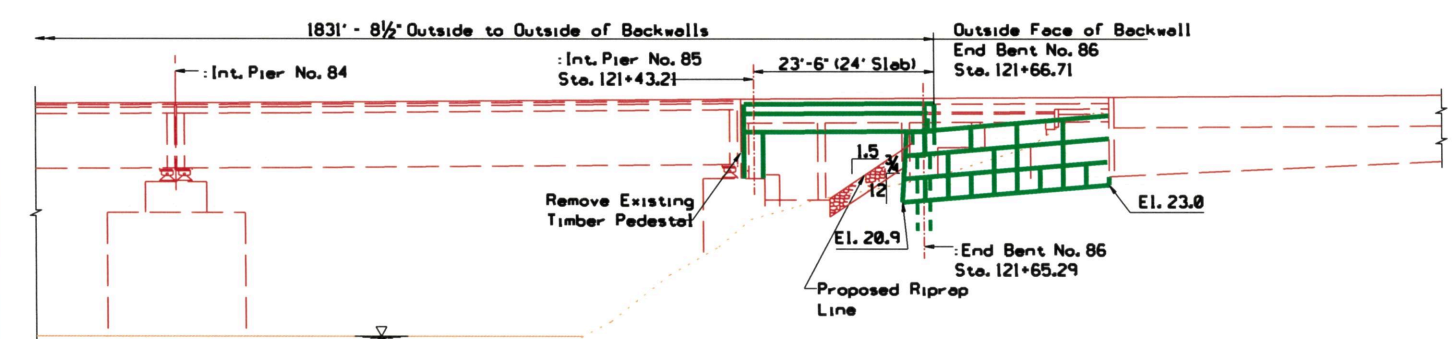
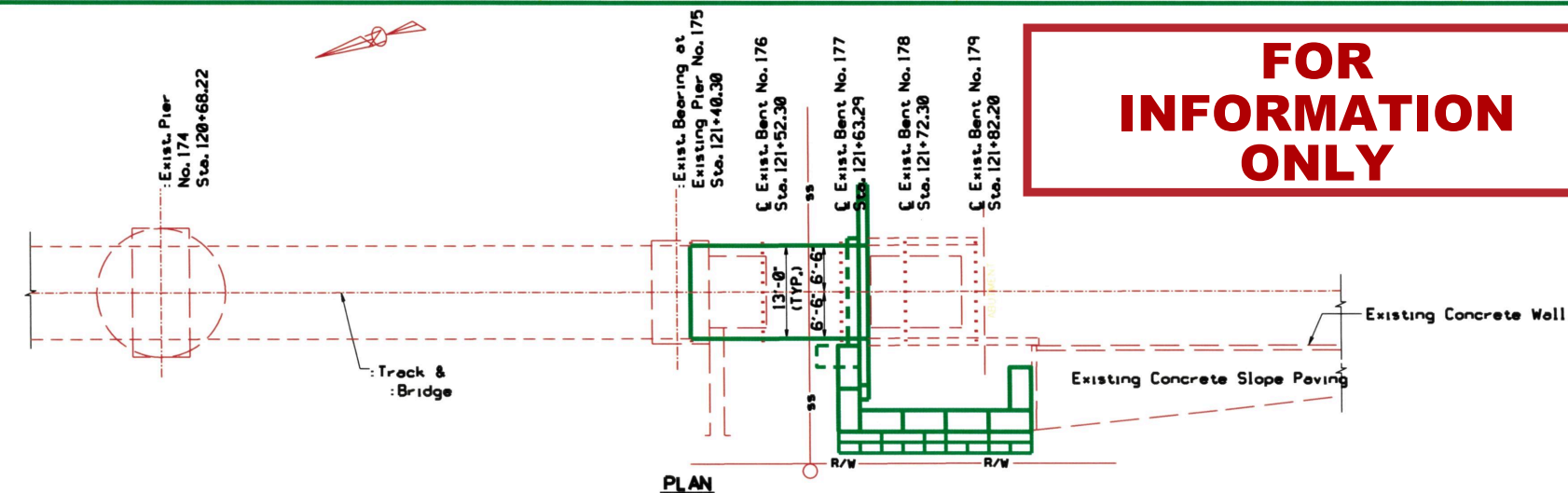
FIGURE 1: Theoretical Live Load Influence Zone



NOTES:

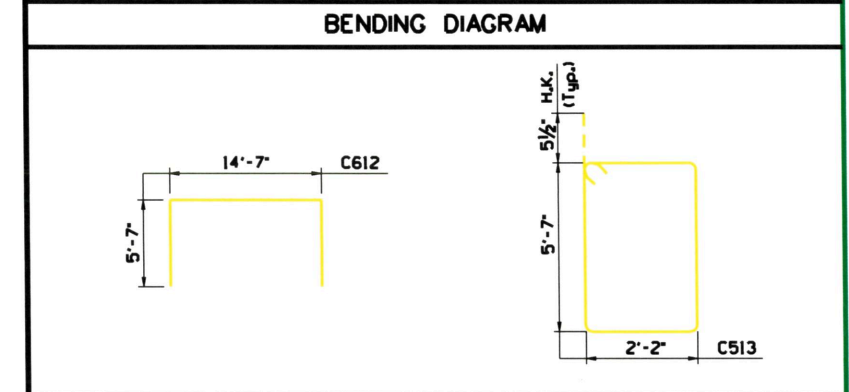
1. THEORETICAL LIVE LOAD INFLUENCE ZONE IS A $1 \frac{1}{2}$ HORIZONTAL TO 1 VERTICAL, THEORETICAL SLOPE STARTING 1'-6" BELOW TOP OF THE ELEVATION AND 12'-0" FROM THE CENTERLINE OF THE NEAREST TRACK.
2. REFER TO CONSTRUCTION SUBMISSION CRITERIA FOR ADDITIONAL REQUIREMENTS.
3. SHORING SHALL BE DESIGNED TO RESIST A VERTICAL LIVE LOAD SURCHARGE OF 1,880 LBS. PER SQUARE FOOT, IN ADDITION TO ACTIVE EARTH PRESSURE. THE SURCHARGE SHALL BE ASSUMED TO ACT ON A CONTINUOUS STRIP, 8'-6" WIDE. LATERAL PRESSURES DUE TO SURCHARGE SHALL BE COMPUTED USING THE STRIP LOAD FORMULA SHOWN IN AREMA MANUAL FOR RAILWAY ENGINEERING, CHAPTER 8, PART 2D.

FOR INFORMATION ONLY



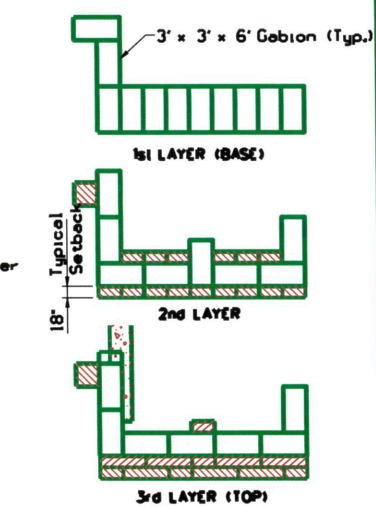
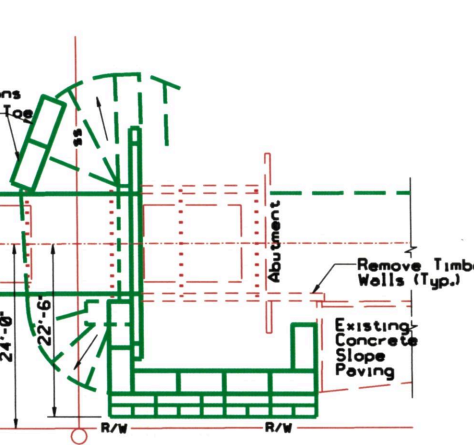
REINFORCING STEEL SCHEDULE

MARK	BAR NO.	NO. REQ'D	LENGTH	TYPE	LOCATION	WEIGHT (LBS.)
C607	6	12	14'-7"	Str	Slab Seat - Longit.	263
C410	4	8	2'-10"		Shoulder - Vert.	15
C411	4	4	2'-1"	Str	Shoulder - Transv.	6
C612	6	4	25'-9"		Slab Seat - Longit.	155
C513	5	16	16'-5"		Slab Seat - Stirrup	274
Total						713



ESTIMATED QUANTITIES

QUANTITY	UNIT	DESCRIPTION
713	LBS	Reinforcing Steel - Grade 60
8.3	CY	Concrete - Class 'A' or 'A'(AE)
2	EA	Neoprene Bearing Pads - 6 X 1/2 X 6'-2" Long
1	GAL	Concrete Curing Compound
50	LBS	Structural Steel - Dowels & Bracing
28	EA	Gabions (3' X 3' X 6')
84	Tons	Stone for Gabions



ENGINEERING DEPARTMENT

BRIDGE # MP AA 148.5 OVER TAR RIVER
GENERAL PLAN

REVISIONS	DATE	BY	CHKD	APP'D

SCALE: 1"=10'
DATE: 5/97
DRAWN: JF
CHECKED: JF

VAL. SEC. V.5 NC
19

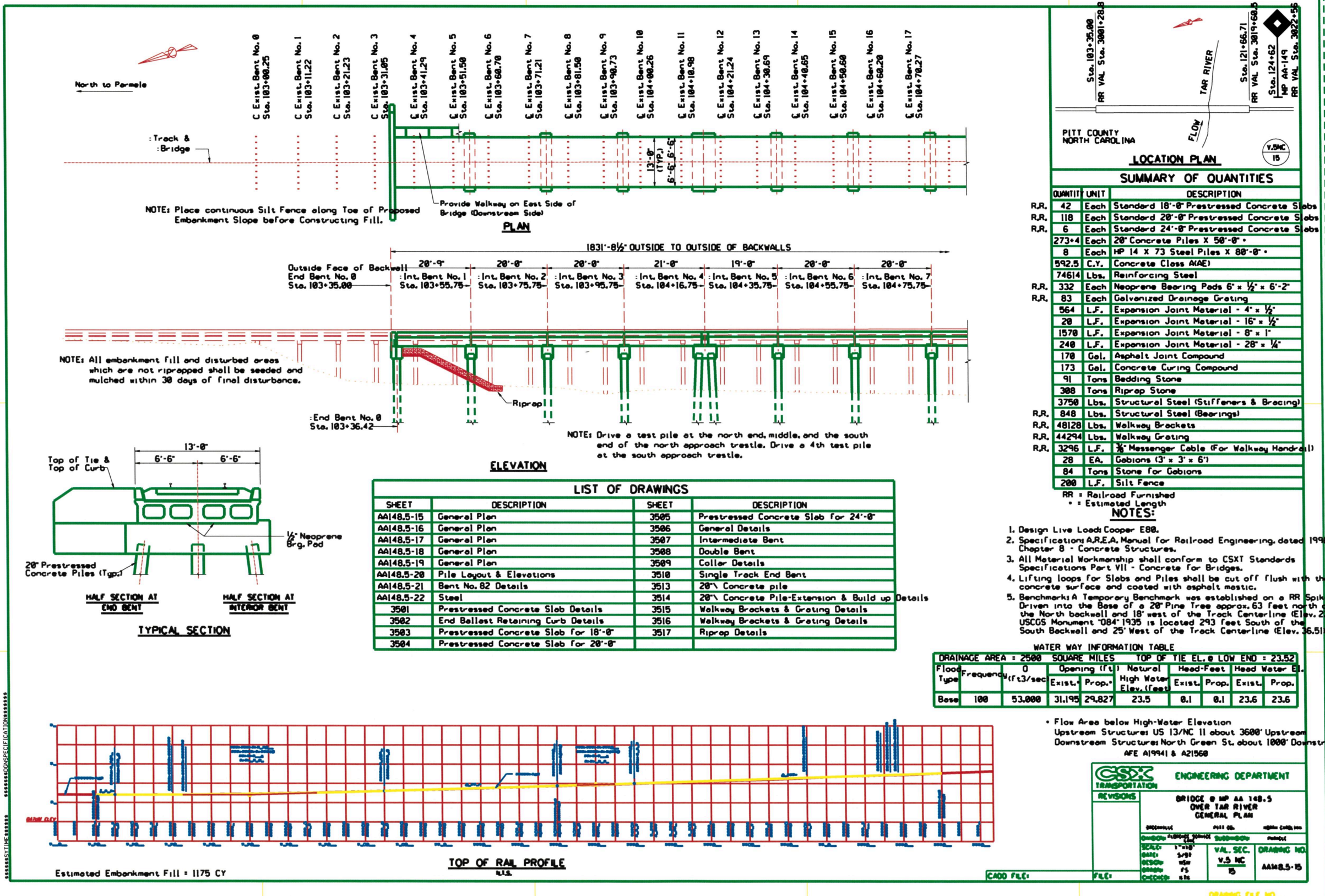
DRAWING NO. AA148.5-19

The following notes are on level 3:
Note: "DRAWING FILE NO." is on level 2.
Delete this for non-B&O jobs.
Note: Red snap points are on level 3.

TYPICAL SECTION IS SCALED UP BY 2.5

SCALE 1=10

FOR INFORMATION ONLY



SUMMARY OF QUANTITIES

QUANTITY	UNIT	DESCRIPTION
R.R. 42	Each	Standard 18'-0" Prestressed Concrete Slabs
R.R. 118	Each	Standard 20'-0" Prestressed Concrete Slabs
R.R. 6	Each	Standard 24'-0" Prestressed Concrete Slabs
273.4	Each	20" Concrete Piles X 50'-0"
8	Each	HP 14 X 73 Steel Piles X 80'-0"
592.5	C.Y.	Concrete Class AA(E)
74614	Lbs.	Reinforcing Steel
R.R. 332	Each	Neoprene Bearing Pads 6" x 1/2" x 6'-2"
R.R. 83	Each	Galvanized Drainage Grating
564	L.F.	Expansion Joint Material - 4' x 1/2"
20	L.F.	Expansion Joint Material - 16' x 1/2"
1578	L.F.	Expansion Joint Material - 8' x 1"
240	L.F.	Expansion Joint Material - 28' x 1/4"
170	Gal.	Asphalt Joint Compound
173	Gal.	Concrete Curing Compound
91	Tons	Bedding Stone
388	Tons	Riprap Stone
R.R. 3750	Lbs.	Structural Steel (Stiffeners & Bracing)
R.R. 848	Lbs.	Structural Steel (Bearings)
R.R. 48128	Lbs.	Walkway Brackets
R.R. 44294	Lbs.	Walkway Grating
R.R. 3296	L.F.	3/8" Messenger Cable (For Walkway Handrail)
28	EA.	Gabions (3' x 3' x 6')
84	Tons	Stone for Gabions
200	L.F.	Silt Fence

RR = Railroad Furnished
 * = Estimated Length

LIST OF DRAWINGS

SHEET	DESCRIPTION	SHEET	DESCRIPTION
AA148.5-15	General Plan	3505	Prestressed Concrete Slab for 24'-0"
AA148.5-16	General Plan	3506	General Details
AA148.5-17	General Plan	3507	Intermediate Bent
AA148.5-18	General Plan	3508	Double Bent
AA148.5-19	General Plan	3509	Collar Details
AA148.5-20	Pile Layout & Elevations	3510	Single Track End Bent
AA148.5-21	Bent No. 82 Details	3513	20" Concrete pile
AA148.5-22	Steel	3514	20" Concrete Pile-Extension & Build up Details
3501	Prestressed Concrete Slab Details	3515	Walkway Brackets & Grating Details
3502	End Ballast Retaining Curb Details	3516	Walkway Brackets & Grating Details
3503	Prestressed Concrete Slab for 18'-0"	3517	Riprap Details
3504	Prestressed Concrete Slab for 20'-0"		

WATER WAY INFORMATION TABLE

DRAINAGE AREA = 2500 SQUARE MILES	TOP OF TIE EL. @ LOW END = 23.52		Natural		High Water		Head-Feet		Head Water El.	
	Frequency	Opening (ft.)	Exist.	Prop.	Exist.	Prop.	Exist.	Prop.	Exist.	Prop.
Base 100	53.000	31.195	29.827	23.5	0.1	0.1	23.6	23.6		

- NOTES:**
- Design Live Load Cooper E88.
 - Specifications A.R.E.A. Manual for Railroad Engineering, dated 1995, Chapter 8 - Concrete Structures.
 - All Material Workmanship shall conform to CSXT Standards Specifications Part VII - Concrete for Bridges.
 - Lifting loops for Slabs and Piles shall be cut off flush with the concrete surface and coated with asphalt mastic.
 - Benchmarks: A Temporary Benchmark was established on a RR Spike Driven into the Base of a 20" Pine Tree approx. 63 feet north of the North backwall and 18' west of the Track Centerline (Elev. 22.49). USCGS Monument '084'1935 is located 293 feet South of the South Backwall and 25' West of the Track Centerline (Elev. 36.51).

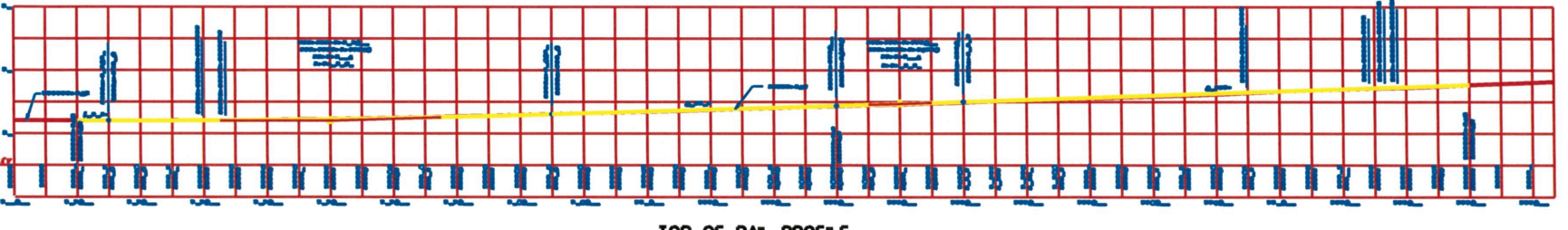
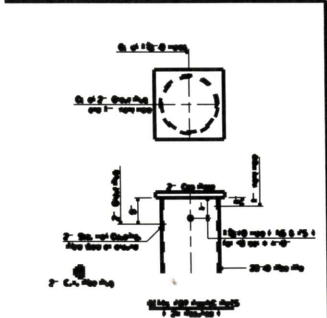
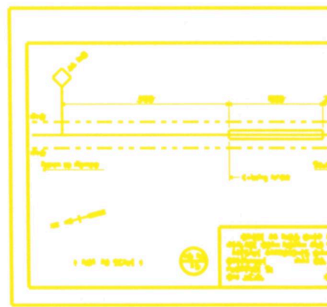
CSX TRANSPORTATION ENGINEERING DEPARTMENT

BRIDGE # MP AA 148.5 OVER TAR RIVER GENERAL PLAN

REVISIONS

NO.	DATE	BY	CHKD.	DESCRIPTION
1	11-18	WJR	WJR	ISSUED FOR CONSTRUCTION
2	5-91	WJR	WJR	REVISED
3	1-91	WJR	WJR	REVISED
4	1-91	WJR	WJR	REVISED

VAL. SEC. V.5 NC 15
 DRAWING NO. AA148.5-15



Estimated Embankment Fill = 1175 CY

CADD FILE: FILE: DRAWING FILE NO.