CHURCH CREEK FLOOD AND RESILIENCE: MOWLER COURT PROJECT

February 2022
Mayor John J. Tecklenburg

City Council

Boyd Gregg
Kevin Shealy
Jason Sakran
Robert M. Mitchell
Karl L. Brady, Jr.
William Dudley Gregorie

Perry K. Waring
Michael S. Seekings
A. Peter Shahid, Jr.
Stephen Bowden
Ross A. Appel
Caroline Parker
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SECTION 01105

ADVERTISEMENT FOR BIDS

PROJECT: CHURCH CREEK FLOOD AND RESILIENCE – MOWLER COURT PROJECT

OWNER: City of Charleston

RECEIPT OF BIDS: Separate sealed bids for the construction of the above referenced project will be received by the Owner at their office, April 7, 2022 until 2:00 p.m., local time at the Department of Stormwater Management, Engineering Division, 2 George Street, Suite 2100, Charleston, South Carolina, 29401 and at said office will be publicly opened and read aloud.

PROJECT DESCRIPTION: The purpose of this project is to provide storage of stormwater using nature-based design practices. The Work will include limited manipulation of existing curbs and a stormwater catch basin, the protection of existing trees, the removal of a select few trees, excavation of existing soil to proposed grade and native plantings, as shown in the Drawings. The Contractor shall be responsible for the success of the plants and seeded areas for a warranty period of 12 months.

EXPERIENCE: All bidders will need to include statement of qualifications demonstrating ability to meet the Standards for Qualifications of Contractors detailed in Supplemental Conditions section of The Contract Documents.

DOCUMENT EXAMINATION: The Contract Documents may be examined on the City’s Bidline online (https://www.charleston-sc.gov/131/BIDLINE)

SECURITY: Each bid must be accompanied by a certified check of the Bidder, or by a Bid Bond made payable to the Owner, for an amount equal to not less than 10% of the total bid as a guarantee that, if the bid is accepted, the required Agreement will be executed and that a 100% Performance Bond and 100% Payment Bond will be furnished.

OWNER’S RIGHTS: The Owner reserves the right to waive any informalities in bidding and to reject all Bids if it is in the Owner's best interest to do so. Unless all bids are rejected, award will be to the low responsive, responsible Bidder.

WOMEN’S AND MINORITY BUSINESS GOALS: This contract requires compliance with the City of Charleston’s minority and women-owned business goals. Bids will not be accepted without compliance with this program. All bidders are advised to familiarize themselves with the City’s women’s and minority business goals early in the bid preparation process as time is required to properly seek out and solicit qualified women and minority businesses. Goals with regards to Women’s and Minority Business Enterprises are specified in Section 01110.

Mr. Matthew Fountain PE, PG
Director of Stormwater Management
City of Charleston

(End of Section 01105)
SECTION 01110 INFORMATION FOR BIDDERS

1. RECEIPT AND OPENING OF BIDS: Bids will be received at the time and place as specified in the Advertisement for Bids, and then at said office publicly opened and read aloud. Late Bids will not be accepted nor considered.

2. LICENSES: The attention of Bidders is directed to the provisions of the acts for licensing of General Contractors for the State of South Carolina and all requirements of such acts which have bearing upon this work shall be deemed a part of the Specifications as if written therein in full. The showing by the Contractor of his license number shall be deemed as the Contractor's representation that he is legally qualified to enter into the prescribed Contract for any/or all portions of the work included in his Bid.

All Bidders submitting a Bid shall have a currently valid State of South Carolina Contractor's License for performing work under this contract. Required license numbers shall be shown on the Bid form immediately below the signature identification and on the face of the sealed envelope containing the submitted Bid.

Subcontractors who will be engaged by the General Contractor shall also hold the required licenses.

3. BID SECURITY: Each Bid must be accompanied by a certified check of the Bidder, or a Bid Bond duly executed by the Bidder as principal and having as surety thereon a surety company qualified to do business under the laws of the State of South Carolina and satisfactory to the Owner, in an amount not less than ten (10) percent of the Bid. Such check or Bid Bond will be returned to all except the three (3) lowest Bidders within three (3) days after the opening of Bids, and the remaining checks or Bid Bonds will be returned promptly after the Owner and the accepted Bidder have executed the Agreement, or, if no award has been made within 45 days after the date of the opening of Bids, upon demand of the Bidder at any time thereafter, so long as he has not been notified of the acceptance of his Bid.

4. GUARANTY BONDS: The Bidder to whom the contract is awarded will be required to execute the Agreement within 10 calendar days from the date when Notice of Apparent Low Bid is delivered to the Bidder.

The Bidder to whom the contract is awarded will be required to obtain the Performance Bond and Payment Bond, each in the sum of the full amount of the Contract Price, within 10 calendar days from the date when Notice of Intent to Award is delivered to the Bidder.

The Bonds must be duly executed and acknowledged by the Bidder as principal and by a corporate surety company qualified to do business under the laws of the State of South Carolina and satisfactory to the Owner as surety, for the faithful performance of the Contract and payment for labor and materials. The premiums for such Bonds shall be paid by the Contractor.

Each Bond must be valid for one year beyond the date of final acceptance of the project.

5. EXECUTION OF CONTRACT: The Owner, within 10 days of receipt of an Agreement signed by the party to whom the Agreement was awarded, shall send the Agreement to City Council for approval and return to such party an executed duplicate of the Agreement. Should the Owner not execute the Agreement within such period, the Bidder may, by written notice, withdraw his signed Agreement. Such notice of withdrawal shall be effective upon receipt of the notice by the Owner.

6. POWER OF ATTORNEY FOR BONDS: Attorneys-in-fact who sign Bid Bonds or Performance Bonds or Payment Bonds must file with each Bond a certified and effective dated copy of their power of attorney.

7. LIQUIDATED DAMAGES FOR FAILURE TO ENTER INTO CONTRACT: The successful Bidder, upon his failure or refusal to execute and deliver the Contract and Bonds required within 10 days
after he has received notice of the acceptance of his Bid, shall forfeit to the Owner, as liquidated damages for such failure or refusal, the security deposited with his Bid.

8. **LAWS AND REGULATIONS:** All applicable laws, ordinances, and the rules and regulations of all authorities having jurisdiction over construction of the project shall apply to the contract throughout, and they shall be deemed to be included as though herein written out in full.

9. **NON-RESIDENT CONTRACTORS:** A Bidder, who is a non-resident contractor, shall be aware of Section 12-9-310, Article 3, of the South Carolina Income Tax Act of 1926, as amended. This article requires the Owner entering into a contract with a non-resident taxpayer, where such contract exceeds ten thousand dollars, to withhold two percent (2%) of each and every payment made to the non-resident.

The funds deducted from the payment made to the non-resident taxpayer are funds deemed to be held in trust for the State of South Carolina and will be reported by the Owner to the South Carolina Tax Commission. This deduction is in addition to the retainage deductions specified in the General Conditions.

The withholding of two percent (2%) from payments made to the non-resident taxpayer may be waived only if the non-resident taxpayer shall insure the South Carolina Tax Commission by posting an acceptable bond in the sum of two percent (2%) of the total contract amount. The Owner must receive verification from the South Carolina Tax Commission if this deduction is to be waived.

10. **EXAMINATION OF DRAWINGS AND SPECIFICATIONS:** Each Bidder shall carefully examine Drawings and Specifications and all Addenda or other revisions thereto and thoroughly familiarize himself with the detailed requirements thereof prior to submitting a Bid. If any Bidder is in doubt as to the true meaning of any part of the Drawings, Specifications, or other Documents, or if any error, discrepancy, conflict, or omission is noted, the Bidder should immediately contact the Engineer in writing and request clarification. The Engineer will clarify the intent of the Documents and/or correct such error, discrepancy, conflict, or omission, and will notify all Bidders by Addendum in cases where the extent of work or the cost thereof will be appreciably affected. No allowance will be made after Bids are received for oversight by a Bidder.

11. **EXAMINATION OF SITE:** Each Bidder shall visit the site of proposed work and fully acquaint himself with conditions relating to construction and labor so he may fully understand facilities, difficulties, and restrictions attending execution of work under contract. By executing the Agreement, the Contractor represents that he has visited the site, familiarized himself with the local conditions under which the work is to be performed, and correlated his observations with the requirements of the Contract Documents.

12. **INFORMATION NOT GUARANTEED:** All information given on the Drawings or in the Contract Documents relating to subsurface conditions, existing structures, location of utilities, sewer inverts, or other information on existing facilities, is from the best sources at present available to the Owner. All such information is furnished only for the information and convenience of the Bidders.

It is agreed and understood that the Owner does not warrant or guarantee that the conditions, pipes, or other structures encountered during construction will be the same as those indicated on the Drawings or in the Contract Documents. The Bidder must satisfy himself regarding the character, quantities, and conditions of the various materials and the work to be done.

It further is agreed and understood that the Bidder or the Contractor will not use any of the information made available to him or obtained in any examination made by him in any manner as a basis or ground of claim or demand of any nature, against the Owner or the Engineer, arising from or by reason of any variance which may exist between the information offered by the actual materials or structures encountered during the construction work, except as may otherwise be provided for in the Contract Documents.
If any work is performed by the Contractor, or any subcontractor, prior to adequate verification of applicable data, any resultant extra cost for adjustment of work necessary to conform to existing conditions, or damage to existing facilities, shall be assumed by the Contractor without reimbursement or compensation by the Owner.

13. **COMPLETE WORK REQUIRED:** The Drawings, Specifications, and all supplementary documents are essential parts of the Contract, and requirements occurring in one are as binding as though occurring in all. They are intended to be cooperative, to describe and provide for a complete work. In case of discrepancy on the Drawings, figured dimensions shall govern. In case of omissions from the Specifications as to items of equipment and materials or quantities thereof, the Drawings shall govern. It shall be the responsibility of the Bidder to call to the attention of the Engineer obvious omissions of such magnitude as to affect the strength, adequacy, function, completeness, or cost of any part of the work in ample time for amendment by Addendum prior to letting date.

14. **ADDENDA AND INTERPRETATIONS:** No interpretation of the meaning of the Drawings, Specifications, or other Bid Documents will be made orally to any Bidder by the Engineers prior to award of the contract.

Every request for such interpretation should be in writing addressed to Joe Swaim, The City of Charleston, 2 George Street, Suite 2100, Charleston, SC 29401 or by e-mail: swaimj@charleston-sc.gov. To be given consideration, such request must be received at least 10 days prior to the date fixed for the opening of Bids. Any and all such interpretations and any supplemental instructions will be made in the form of written Addenda to the Specifications which, if issued, will be emailed to all prospective Bidders (at the respective email addresses furnished for such purposes), not later than 5 days prior to the date fixed for the opening of Bids. Failure of any Bidder to receive any such Addendum or interpretation shall not relieve such Bidder from any obligation under his Bid as submitted. All Addenda so issued shall become part of the Contract Documents.

15. **TIME FOR COMPLETION:** The Bidder must agree to commence work within the time stipulated in the Agreement. The Bidder also must agree to fully complete the project within the time stipulated in the Agreement.

16. **LIQUIDATED DAMAGES:** The Bidder must agree to pay as liquidated damages the amount set forth in the Agreement for each consecutive calendar day that the work is incomplete after the date of completion.

17. **WRITTEN MODIFICATIONS:** Any Bidder may modify his Bid by written communication at any time prior to the scheduled closing time for receipt of Bids, provided such written communication is received by the Owner prior to the closing time. The written communication should not reveal the Bid price but should provide the addition or subtraction or other modification so that the final prices or terms will not be known by the Owner until the sealed Bid is opened.

18. **WITHDRAWAL OF BIDS:** Any Bidder may withdraw his Bid, either personally or by written request, at any time prior to the scheduled time for opening of Bids or authorized postponement thereof.

No Bidder may withdraw his Bid for a period of 90 days after the date set for the opening thereof, and all Bids shall be subject to acceptance by the Owner during this period.

19. **IRREGULAR BIDS:** A Bid will be considered irregular and may be rejected for any one of the following reasons:

19.1 If the Bid is on a form other than that furnished by the Owner; or if the form is altered or any part detached.
19.2 If there are unauthorized additions, conditional or alternate Bids, or irregularities of any kind which may tend to make the Bid incomplete, indefinite, or ambiguous as to its meaning.

19.3 If the Bidder adds any provisions reserving the right to accept or reject an award, or to enter into a contract pursuant to an award.

19.4 If the Bid does not contain a price for each item listed.

19.5 If the Bid does not contain the aggregate of the Bid, obtained by adding the extended amounts of the various items, if applicable.

19.6 If the Bid contains obviously unbalanced Bid prices.

19.7 If there is reason to believe that any Bidder is interested in more than one Bid on the same project or that there has been collusion among the Bidders.

20. DISQUALIFICATION OF BIDDERS: More than one Bid from an individual, a firm or partnership, a corporation or any association, under the same or different names, will not be considered. Reasonable grounds for believing that any Bidder is interested as a principal in more than one Bid for the work contemplated will cause the rejection of all Bids in which such Bidder is believed to be interested. Any or all Bids will be rejected if there is reason to believe that collusion exists among the Bidders. Contracts will be awarded only to responsible Bidders capable of performing the class of work contemplated within the time specified, and having sufficient resources and finances to carry on the work properly.

21. ACCEPTANCE OR REJECTION OF BIDS: The Owner reserves the right to reject any and all Bids when such rejection is in the interest of the Owner; to reject the Bid of a Bidder who has previously failed to perform properly or complete on time contracts of a similar nature; and to reject the Bid of a Bidder who is not, in the opinion of the Engineer, in a position to perform the Contract. The Owner also reserves the right to waive any informalities and technicalities in Bidding. The Owner may also accept or reject any of the alternates that may be set forth on the Bid.

22. METHOD OF AWARD: Unless all Bids are rejected, the Contract will be awarded to the lowest responsive, responsible Bidder for the Church Creek Flood and Resilience - Mowler Court Project. A responsive Bidder is defined as one whose Bid is complete and submitted in accordance with the Contract Documents without excisions, exceptions, special conditions, or alternate Bids (unless specifically requested in the Bid form). A responsible Bidder is defined as one who is legally licensed to Bid and perform work in the State of South Carolina, maintains a permanent place of business, has adequate plant equipment to complete the work properly and within the established time limit, has adequate financial status to meet his obligations contingent to the work, and is considered by the Owner and Engineer to be capable of performing the work in accordance with the Contract Documents.

23. NOTICE TO PROCEED: The Notice to Proceed will be issued within 10 days of the execution of the Agreement by the Owner. Should there be reasons why the Notice to Proceed cannot be issued within such period, the time may be extended by mutual agreement between the Owner and Contractor. If the Notice to Proceed has not been issued within the 10-day period or within the period mutually agreed upon, the Contractor may terminate the Agreement without further liability on the part of either party.

24. ESTIMATED QUANTITIES: Bidders must satisfy themselves of the accuracy of the estimated quantities in the Bid Schedule by examination of the site and a review of the Drawings and Specifications, including Addenda. After Bids have been submitted, the Bidder shall not assert that there was a misunderstanding concerning the quantities of work or of the nature of the work to be done.
25. **EASEMENTS:** There are no anticipated easements required for this project. If an easement is required, the Owner will obtain it. Entry onto other private property by Contractor shall be made by separate agreement with the property owner. No additional compensation will be allowed for such agreements.

26. **WORK IN STATE RIGHTS-OF-WAY:** The Owner will obtain the necessary permits for construction across State Highway rights-of-way. The Contractor shall abide by all rules, regulations, and requirements of these agencies in regard to construction under this contract, including the giving of notices, provisions for inspections, and employment of such methods of construction as may be required. Wherever these Specifications may be in conflict with the regulations or requirements of these agencies, such regulations shall govern and these Specifications shall be modified to such extent as necessary to conform to the said rules, regulations, and requirements. Wherever additional costs are incurred due to requirements of these agencies, such additional periods of maintenance, special features of construction, etc., all such costs shall be included in the prices Bid. No additional compensation will be allowed for such costs after award of the Contract.

27. **RIGHT TO INCREASE OR DECREASE THE AMOUNT OF WORK:** The work comprises approximately the quantities shown in the Bid form, which will be used as a basis for comparison of Bids and not for final estimate. The Owner does not, by expression or by implication, agree that the actual amount of work shall correspond with the estimated quantities.

The Owner reserves the right to increase or decrease the amount of work under the Contract to the extent of 25% of the work contemplated, at the unit prices quoted in the Bid.

28. **MINORITY BUSINESS ENTERPRISE (MBE) PROGRAM**

   A. This Project is covered under the City of Charleston’s Minority Business Enterprise (MBE) Program, administered by Ruth Jordan, MBE Manager, 2 George Street, Suite 3600, Charleston SC, 29401, (843) 724-7434, jordanr@charleston-sc.gov.

   B. MBE Goals: The City has established goals for both Minority Business Enterprise (MBE) and Women Business Enterprise (WBE). An MBE is a small business owned and controlled by a minority. A WBE is a small business owned and controlled by a woman. The minority or woman must own a minimum of fifty-one percent (51%) of the business and they must control the management and daily operations of the business in order to qualify. The goals for this contract are a combined 20% for minority and women-owned business enterprise participation. These goals will be applied to the overall contract.

   C. Certification of Eligibility of MBE/WBE: All MBE/WBE subcontractors must have a Certificate of Eligibility on file with the City’s MBE office. Questions regarding certification requirements shall be addressed to the City’s Minority Business Enterprise Office. A list of certified minority and women owned firms can be found on the City of Charleston’s web site www.charleston-sc.gov using the Services link and then the Minority and Women Owned Business Development link.

   D. Bidder’s MBE/WBE Participation: All bidders must document the extent of their MBE participation by completing the MBE Compliance Provision Forms. **Bidders must also complete Affidavits A and B or Affidavit C and attach the entire package to the Bid Form. Bidders who fail to submit these documents as required, the Procurement Office shall deem the bid non-responsive and will be ineligible for award of the Contract.**

   E. The contractor shall perform the contract in accordance with the representations made in the Minority/Women-Owned/Disadvantaged Business Enterprise Compliance Provisions (Affidavit A) and the Work to be Performed by Minority Firms (Affidavit B) submitted as part of the bid proposal.
29. **FORM OF BID:** All Bids must be submitted on the blank Bid form provided therefore and must state the total price for which the Bidder will complete the work in accordance with the terms of the Contract Documents. All blank spaces must be filled in and there shall be no interlineation, alterations, or erasures.

The Bid must be signed manually in ink by a principal or an officer duly authorized to make contracts. The Bidder's legal name must be fully stated and the name and title of the person signing must be typed below his signature.

30. **SUBMITTING BIDS:** Each Bid must be submitted on the prescribed Bid form. All blank spaces for Bid prices must be filled in, in ink or typewritten, and the Bid must be fully completed and executed when submitted. Only one copy of the Bid form is required.

Bidders are cautioned that it is the responsibility of each individual Bidder to assure that his Bid is in the possession of the responsible official or his designated alternate prior to the stated time and at the stated place of the Bid opening. Owner is not responsible for Bids delayed by mail and/or delivery services of any nature.

Each Bid must be submitted in an opaque sealed envelope, plainly marked on the outside addressed and delivered as shown below. If forwarded by mail, the sealed envelope containing the Bid must be enclosed in another envelope addressed to the Owner in the following format and at the following address:
Upper Left Hand Corner

Bidder's Name
Bidder's Address
To: City of Charleston
Department of Stormwater Management
2 George Street, Suite 2100
Charleston, SC 29401

Attention: Mr. Matthew Fountain PE, PG
Director

Lower Left Hand Corner

Bid for Construction of:

CHURCH CREEK FLOOD AND RESILIENCE – MOWLER COURT

South Carolina General Contractor's License No. G117838 M112510

Classification

Expiration Date

City of Charleston Business License No.
SECTION 01140

BID

TO: City of Charleston (hereinafter called “Owner”)
    2 George Street, Suite 2100
    Charleston, SC 29401

FROM: IPW Construction Group, LLC
    71023 Dorchester Road
    North Charleston, SC 29418
    Phone (843) 308-0524

of the City of North Charleston, County of Charleston
and State of South Carolina, hereinafter called “Bidder.”

PROJECT: CHURCH CREEK FLOOD AND RESILIENCE – MOWLER COURT PROJECT

The Bidder, in compliance with your Advertisement for Bids for the construction of above referenced project, having examined the Drawings and Specifications with related documents and the site of the proposed work, and being familiar with all of the conditions surrounding the construction of the proposed project, including the availability of materials and labors, hereby proposes to furnish all labor, materials, and supplies, and to construct the project in accordance with the Contract Documents, within the time set forth therein, and the prices stated below. These prices are to cover all expenses incurred in performing the work required under the Contract Documents, of which this proposal is a part.

The Bidder declares that he has carefully examined the site of the proposed Work and fully informed and satisfied himself as to the conditions there existing, the character and requirements of the proposed Work, and the difficulties attendant upon its execution, and that he has carefully read and examined the Drawings, the annexed proposed Agreement, and the Specifications and other Contract Documents therein referred to, and knows and understands the terms and provisions thereof.

Bidder understands that information relative to existing structures, apparent and latent conditions, and natural phenomena, as furnished to him on the Drawings, in the Contract Documents, or by the Owner or the Engineer, carries no guarantee expressed or implied as to its completeness or accuracy, and he has made due allowance therefore.

TIME FOR COMPLETION AND LIQUIDATED DAMAGES: Bidder hereby agrees to commence work under this contract within 15 days of receipt of the Notice to Proceed and to fully complete the project within 90 consecutive calendar days thereafter.

Bidder also agrees to pay $500/day as liquidated damages for each consecutive calendar day thereafter as hereinafter provided in the General Conditions.
## ADDENDA
Bidder acknowledges receipt of the following Addenda:

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## BASE BID

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**TOTAL BASE BID PRICE** $227,143.25

1. It shall be the responsibility of the Contractor to provide quantities for bid items without quantities already pre-populated in the bid form.
2. The above unit prices shall include, but not limited to, all labor, testing, materials, dewatering, showing, removal, overhead, profit, insurance, taxes, fees, etc., and all efforts deemed necessary to complete the proposed improvements shown and described in the Contract Documents.
3. Owner’s Contingency Cash Allowance shall be used at the OWNER’S discretion for the project overruns or changes in scope of work. Contingency shall not be used at BIDDER’S discretion. Contingency shall only be used with approval and authorization by OWNER or OWNER’s REPRESENTATIVE.
Church Creek Flood and Resilience - Mowler Court Project

<table>
<thead>
<tr>
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**TOTAL ADDITIVE BID PRICE** 16,461.00

1. It shall be the responsibility of the Contractor to provide quantities for bid items without quantities already pre-populated in the bid form.
2. The above unit prices shall include, but not limited to, all labor, testing, materials, dewatering, showing, removal, overhead, profit, insurance, taxes, fees, etc., and all efforts deemed necessary to complete the proposed improvements shown and described in the Contract Documents.

Additional work shall be negotiated between the Owner and Contractor. Additional work shall be paid on a time and materials at the agreed upon rates and prices.

**BASE LUMP SUM BID**

The base lump sum price shall include all costs for the installation of the landscape and stormwater improvements in accordance with the Contract Documents. The lump sum bid for construction of the improvements is:

Two hundred twenty-seven (227) thousand one hundred forty-three dollars & twenty-five cents ($227,143.25). (BASE BID)

**ADDITIVE BID ITEMS**

Contractor agrees to **ADD** up to a net change to the Base Bid amount with City of Charleston approval.

Sixteen thousand four hundred sixty-one dollars & zero cents ($16,461.00). (ADDITION BID)

Bidder understands that the Owner reserves the right to reject any and all bids and to waive any informalities in the bidding. The Bidder agrees that this Bid shall be good and may not be withdrawn for a period of 90 calendar days after the scheduled closed time for receiving bids.

Upon receipt of written notice of the award of this Bid, Bidder will execute the formal Agreement within 10 days, and deliver Surety Bonds as required by the General Conditions. The bid security attached in the sum of 10% of total bid amount

($10% of total bid amount) is to become the property of the Owner in the event the Agreement and Bond are not executed within the time above set forth as liquidated damages for the delay and additional expense to the Owner caused thereby.

The undersigned declares that his firm is (delete those not applicable):

A corporation organized and existing under the laws of the State of **South Carolina**.

A partnership consisting of ________________________________

4 of 12 01140
The undersigned declares that the person signing this proposal is fully authorized to sign the proposal on behalf of the firm listed and to fully bind the firm listed to all the conditions and provisions thereof.

It is agreed that no person or persons or company other than the firm listed below or as otherwise indicated hereinafter has any interest whatsoever in this proposal or the contract that may be entered into as a result thereof, and that in all respects the proposal is legal and fair, submitted in good faith, without collusion or fraud.

Respectfully Submitted:

IPW Construction Group, LLC
(Contractor)

By:
(Signature)

Bryan H. Rembert, PE
(Name)

VP of Operations
(Title)

71623 Dorchester Rd.
(Address)

North Charleston, SC 29418

SC General Contractor's License No. 6117838 & M12510

Initial the following items to indicate compliance with specifications:

______The Contractor has complied with the Owner’s MBE Program and has completed and included Affidavits A and B or C.
NON-COLLUSION AFFIDAVIT OF PRIME BIDDER

State of South Carolina

County of Charleston

Bryan H. Rembert, PE, being first duly sworn, deposes and says that:

1. He is VP Operations of IPW Construction Group, LLC, the Bidder that has submitted the attached Bid:

2. He is fully informed respecting the preparation and contents of the attached Bid and of all pertinent circumstances respecting such Bid:

3. Such Bid is genuine and is not a collusive or sham Bid:

4. Neither the said Bidder nor any of its officers, partners, owners, agents, representatives, employees or parties in interest, including this affiant, has in any way colluded, conspired, connived, or agreed, directly or indirectly with any other Bidder, firm, or person to submit a collusive or sham Bid in connection with the Contract for which the attached Bid has been submitted or to refrain from bidding in connection with such Contract, or has in any manner, directly or indirectly, sought by agreement or collusion or communication or conference with any other bidder, firm, or person to fix the price or prices in the attached Bid or of any other Bidder, or to fix any overhead, profit, or cost element of the Bid price or the Bid price of any other Bidder, or to secure through any collusion, conspiracy, connivance, or unlawful agreement any advantage against the City of Charleston or any person interested in the proposed Contract; and

5. The price or prices quoted in the attached Bid are fair and proper and are not tainted by any collusion, conspiracy, connivance, or unlawful agreement on the part of the Bidder or any of its agents, representatives, owners, employees, or parties in interest, including this affiant.

(signed) Bryan H. Rembert, PE - VP Operations

Subscribed and sworn to before me this 4th day of April, 2022.

Lauren E. Rembert (Title)

My commission expires 8/18/2030.
Church Creek Flood and Resilience - Mowler Court Project

MWBE Compliance Provisions

New Women/Minority Business Enterprise Forms

Charleston City Council has adopted a policy setting a combined 20% as the guidelines for minority and women-owned business enterprise participation for this project.

The guidelines for participation in City of Charleston's contracts for services, including construction, are hereby made part of any contracting resulting from this solicitation. These requirements shall apply to all contracts and resulting subcontracts issued by contractors. A list of certified minority and women-owned firms can be found on the City of Charleston's website www.charleston-sc.gov using the Services link and then the Minority and Women Owned Business Development link; or by contacting Ruth Jordan, MBE Manager, 2 George Street, Suite 3600, Charleston, SC 29401, (843) 724-7434, jordanr@charleston-sc.gov.

The new compliance documents are located in the Bid Package. These documents must be completed and returned with your bid response. Failure to do so may cause your bid/proposal response to be deemed non-responsive.
Church Creek Flood and Resilience - Mowler Court Project
City of Charleston
Minority/Women-Owned Business Enterprise (MWBE)
Compliance Provisions

This document shall be included with the submittal of the bid or offer. If the bidder or offeror fails to submit the form with the bid or offer as required, the procurement officer shall deem the bid non-responsive or shall determine that the offer is not reasonably susceptible of being selected for award.

APPLICATION:

Charleston City Council has adopted a policy setting 20% as the guidelines for combined women-owned and minority-owned business enterprise participation for this project.

Definitions:
MBE is defined as a small business owned and controlled by minorities.
WBE is defined as a small business owned and controlled by women.
This means that fifty-one percent (51%) of the business must be owned by minorities or women and that they must control the management and daily operations of the business.

The guidelines for participation in City of Charleston’s contracts for services, including construction, are hereby made a part of any contract resulting from this solicitation. These requirements shall apply to all contracts and resulting subcontracts issued by contractors. A list of certified minority-owned and women-owned business enterprises can be found on the City of Charleston’s website www.charleston-sc.gov, or by contacting Ruth Jordan, MBE Manager, 2 George Street, Suite 3600, Charleston, SC 29401, (843) 724-7434, jordanr@charleston-sc.gov.

COMPLIANCE REQUIREMENTS:

1. The Offeror shall provide, with the submittal, the following Affidavits properly executed which signify that the Offeror understands and agrees to the incorporated contract provisions:

☐ Affidavit A – Listing of the Good Faith Efforts & Identification of Minority and Women-owned Business Participation as certification that efforts were made to use MWBE businesses on this project,

AND

☐ Affidavit B – Work to be Performed by Minority and/or Women-owned Firms

OR

☐ Affidavit C – Intent to Perform Contract with Own Workforce, in making this certification the Offeror states that the Offeror does not customarily subcontract elements of this type project and will perform all elements of the work with his/her own current work forces.

2. All affidavits supplied by the Offeror shall become a part of the agreement between the Contractor and the City of Charleston for performance of this contract. Failure to comply with any of these statements, certifications, or intentions stated in the Affidavits, or with the MBE/WBE provisions shall constitute a breach of the contract. Any such breach may result in termination of the contract in accordance with the termination provisions contained in the contract. It shall be solely at the option of the City of Charleston whether to terminate the contract for breach. In addition, any breach may result in the bidder being prohibited from participation in future construction bids as determined by the City of Charleston.

The Contractor shall provide an itemized statement of payments to each MBE AND WBE subcontractor before final payment is processed.

Name of Company: [IPW Construction Group, LLC]
Signature: [Signature]
Print Name: Bryan H. Rembert, PE
Title: [VP Operations]
Date: 4/1/2022
Attest: [Signature]
City of Charleston, South Carolina Listing of the Good Faith Effort

Affidavit of IPW Construction Group, LLC

(Name of Offeror)

I have made a good faith effort to comply under the following checked areas:
(A minimum of 6 areas must be checked in order to have achieved a "good faith effort")

- 1. Contacted MBE businesses that reasonably could have been expected to submit a quote and that were known to the contractor, or available on Federal, State or local government maintained lists, at least 10 business days before the submittal date and notified them of the nature and scope of the work to be performed. Complete Affidavit A, Page 2.

- 2. Followed up with contacted MBE subsequent to the initial contact and at least 72 hours prior to submittal deadline/bid opening either by phone, facsimile or in person.

- 3. Made the construction plans, specifications, and requirements available for review by prospective MBE businesses, or providing these documents to them at least 10 business days before the submittal deadline/bid opening.

- 4. Itemized elements of the work or combined elements of the work into economically feasible units to facilitate minority participation.

- 5. Attended pre-solicitation meetings scheduled by the City.

- 6. Provided MBE with assistance in getting required bonding or insurance requirements or provided alternatives to bonding or insurance for subcontractors.

- 7. Negotiated in good faith with interested MBEs and did not reject them as unqualified without sound reasons based on their capabilities. (Any rejection of a minority or woman business based on lack of qualifications shall include reasons for rejection documented in writing.)

- 8. Provided MBEs with assistance in need of equipment, loan capital, lines of credit, or joint pay agreements to secure loans, supplies, or letters of credit, including waiving credit that is ordinarily required. Assisted MBEs in obtaining the same unit pricing with the Offeror’s suppliers in order to help such businesses in establishing credit.

- 9. Provided training or mentoring to at least two (2) MBEs within 120 days prior to submittal deadline/bid opening. The training or mentoring program should be in conjunction with local trade groups, technical schools, or community organizations that provide recruitment, education or skill levels.

- 10. Negotiated joint ventures, partnership or other similar arrangements with MBEs in order to increase opportunities for minority business participation.

- 11. Provided quick pay agreements and policies to enable minority contractors and suppliers to meet cash-flow demands.

The undersigned hereby agrees to enter into a formal agreement with the firms listed in Affidavit B Work to be performed by Minority Firms conditional upon execution of a contract with the Owner. Failure to abide by this provision will constitute a breach of the contract.

The undersigned hereby certifies that he/she has read the terms of the minority business commitment and is authorized to bind the Offeror to the commitment herein set forth.

Date: 4/12/22
Name of Authorized Officer (Print/Type): Bryan H. Rembert, PE
Signature: [Signature]
Title: VP Operations
City of Charleston, South Carolina Minority Business Participation Efforts
(Use as many sheets as necessary)

I, **Bryan H. Rembert, PE**, hereby certify that on this project we contacted the following minority business enterprises as subcontractors, vendors, suppliers, or providers of professional services.

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<th>Minority Firm Address</th>
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<td>☐ (Women)</td>
</tr>
<tr>
<td>☐ (Asian American)</td>
<td>☐ (Hispanic)</td>
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<tr>
<td>☐ (American Indian)</td>
<td>☐ (Other)</td>
</tr>
<tr>
<td>☐ Follow up Verification</td>
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</tr>
</tbody>
</table>

We certify, under penalties of perjury, that we have examined the information in this affidavit, and to the best of our knowledge and belief, this information is true, correct and complete.

Date: **4/4/22**
Name of Authorized Officer (Print/Type): **Bryan H. Rembert, PE**
Signature: ______________

Notary Public for the State of SC
My Commission Expires: **8/15/2030**
Title: **VP Operations**
Print Name: **Lauren Rembert**
Phone Number: **803-460-7904**
Address: **7623 Dorchester Rd.**
Notary Seal: ______________

**Lauren Rembert**

01140
10 of 12
Church Creek Flood and Resilience - Mowler Court Project

AFFIDAVIT B

City of Charleston, South Carolina
Work to be Performed by Minority Businesses

Affidavit of IPW Construction Group, LLC
(Name of Offeror)

I hereby certify that on the Church Creek Flood & Resilience
(Project Name) Total Project Amount $ 227,143.25

I will make a good faith effort to expend a minimum of _________% of the total dollar amount of the contract with minority business enterprises. Minority businesses will be employed as subcontractors, vendors, suppliers, or providers of professional services. Such work will be subcontracted to the following firms listed below:

(Attach additional sheets if needed)

<table>
<thead>
<tr>
<th>Name and Phone Number</th>
<th>*Minority Code</th>
<th>Work Description</th>
<th>Dollar Value</th>
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<tr>
<td>IPW Const Group LLC</td>
<td>A</td>
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</tr>
</tbody>
</table>

Total MBE Participation: 21.9% $ 49,950.00

* Minority categories: African American (B); Hispanic (H); Asian American (A), American Indian (I); Woman Owned (W); Other (D)

The undersigned will enter into a formal agreement with minority firms for work listed in this schedule conditional upon execution of a contract with the Owner.

The undersigned hereby certifies that he/she has read the terms of this commitment and is authorized to bind the Offeror to the commitment set forth herein. We certify, under penalties of perjury, that we have examined the information in this affidavit and to the best of our knowledge and belief, this information is true, correct, and complete.

Date: 4/14/22 Name of Authorized Officer (Print/Type): Bryan H. Rembert, PE

Signature: ____________________________

Title: VP Operations

Sworn to before me this 4 day of April 2022 Notary Public for the State of SC

My Commission Expires: 8-18-2030

Notary Seal:

[Notary Seal]

Print Name: Lauren Rembert

Phone Number: 803-420-7904

Address: 7323 Dorchester Rd
Affidavit of  

(Name of Offeror)

I hereby certify that it is our intent to perform 100% of the work required for the contract

(Name of Project)

In making this certification, the Offeror states that the Offeror does not customarily subcontract elements of this type project, and normally performs and has the capability to perform and will perform all the elements of the work on this project with his/her own current work forces, and

The Offeror agrees to provide any additional information or documentation requested by the Owner in support of the above statement.

The undersigned hereby certifies that he/she has read this certification and is authorized to bind the Offeror to the commitments contained herein. We certify, under penalties of perjury, that we have examined the information in this affidavit, and to the best of our knowledge and belief, this information is true, correct and complete.

Date: N/A Name of Authorized Officer (Print/Type):

Signature: 

Title: 

Sworn to before me this _____ day of __________, 20__.

Notary Public for the State of

My Commission Expires: 

Print Name: 

Phone Number: 

Address:

(End of Section 01140)
SECTION 01142 BID BOND

KNOW ALL MEN BY THESE PRESENTS: that we, the undersigned IPW Construction Group, LLC,
7623 Dorchester Road, North Charleston, South Carolina 29418, as Principal,
and RLI Insurance Company, 9025 N. Lindbergh Drive, Peoria, IL 61615, as Surety, are
hereby held and firmly bound unto The City of Charleston
as OWNER, in the penal sum of Ten Percent (10%) of the attached bid*** for the payment of
which, well and truly to be made, we hereby jointly and severally bind ourselves, our heirs, executors,
administrators, successors, and assigns.
Signed this 7th day of April, 2022.
The Condition of the above obligation is such that whereas the Principal has submitted to
The City of Charleston a certain BID, attached hereto and hereby made a part hereof, to enter into a contract in writing, for the construction of:

CHURCH CREEK FLOOD AND RESILIENCE – MOWLER COURT PROJECT

NOW, THEREFORE,

1. If the said BID shall be rejected, or in the alternate,

2. If said Bid shall be accepted and the Principal shall execute and deliver a contract in the Form of
   Contract attached hereto (properly completed in accordance with said BID) and shall furnish a
   BOND for his faithful performance of said contract, and for the payment of all persons performing
   labor or furnishing materials in connection therewith, and shall in all other respects perform the
   agreement created by the acceptance of said BID.

Then this obligation shall be void, otherwise the same shall remain in force and effect; it being expressly
understood and agreed that the liability of the Surety for any and all claims hereunder shall, in no event,
exceed the penal amount of this obligation as herein stated. The Surety, for value received, hereby
stipulates and agrees that the obligations of said Surety and its BOND shall be in no way impaired or
affected by any extension of the time within which the OWNER may accept such BID; and said Surety
does hereby waive notice of any such extension.

IN WITNESS WHEREOF, the Principal and the Surety have hereunto set their hands and seals, and such of
them as are corporations have caused their corporate seals to be hereto affixed and these presents to
be signed by their proper officers, the day and year first set forth above.

IPW Construction Group, LLC
(x)
Bryan H. Rembert, PE - TP Operations
Principal

RLI Insurance Company
By: DEGH
Surety
Raymond E. Cobb, Jr. Attorney-in-Fact

SEAL

IMPORTANT: Surety companies executing a BOND must appear on the Treasury Department's most
current list (Circular 570 as amended) and be authorized to transact business in the State where the
project is located.

(End of Section 01142)
POWER OF ATTORNEY
RLI Insurance Company
Contractors Bonding and Insurance Company
9025 N. Lindbergh Dr. Peoria, IL 61615
Phone: 800-645-2402

Know All Men by These Presents:

That this Power of Attorney is not valid or in effect unless attached to the bond which it authorizes executed, but may be detached by the approving officer if desired.

That RLI Insurance Company and/or Contractors Bonding and Insurance Company, each as Illinois corporation, (separately and together, the "Company") do hereby make, constitute and appoint:

C. Wayne McCartha, Raymond E. Cobb Jr., M. Kathryn McCartha-Powers, jointly or severally

in the City of Columbia, State of South Carolina its true and lawful Agent(s) and Attorney(s) in Fact with full power and authority hereby conferred, to sign, execute, acknowledge and deliver for and on its behalf as Surety, in general, any and all bonds and undertakings in an amount not to exceed Twenty Five Million Dollars ($25,000,000.00) for any single obligation.

The acknowledgment and execution of such bond by the said Attorney in Fact shall be as binding upon the Company as if such bond had been executed and acknowledged by the regularly elected officers of the Company.

RLI Insurance Company and/or Contractors Bonding and Insurance Company, as applicable, have each further certified that the following is a true and exact copy of a Resolution adopted by the Board of Directors of each such corporation, and is now in force, to wit:

"All bonds, policies, undertakings, Powers of Attorney or other obligations of the corporation shall be executed in the corporate name of the Company by the President, Secretary, any Assistant Secretary, Treasurer, or any Vice President, or by such other officers as the Board of Directors may authorize. The President, any Vice President, Secretary, any Assistant Secretary, or the Treasurer may appoint Attorneys in Fact or Agents who shall have authority to issue bonds, policies or undertakings in the name of the Company. The corporate seal is not necessary for the validity of any bonds, policies, undertakings, Powers of Attorney or other obligations of the corporation. The signature of any such officer and the corporate seal may be printed by facsimile."

IN WITNESS WHEREOF, the RLI Insurance Company and/or Contractors Bonding and Insurance Company, as applicable, have caused these presents to be executed by its respective Vice President with its corporate seal affixed this 1st day of November, 2017.

RLI Insurance Company
Contractors Bonding and Insurance Company

By:

Barton W. Davis
Vice President

State of Illinois
County of Peoria

SS

On this 1st day of November, 2017 before me, a Notary Public, personally appeared Barton W. Davis, who being me duly sworn, acknowledged that he signed the above Power of Attorney as the aforesaid officer of the RLI Insurance Company and/or Contractors Bonding and Insurance Company and acknowledged said instrument to be the voluntary act and deed of said corporation.

By:

Gretchen L. Johngig
Notary Public

CERTIFICATE

I, the undersigned officer of RLI Insurance Company and/or Contractors Bonding and Insurance Company, do hereby certify that the attached Power of Attorney is in full force and effect and is irrevocable; and furthermore, that the Resolution of the Company as set forth in the Power of Attorney, is now in force. In testimony whereof, I have hereunto set my hand and the seal of the RLI Insurance Company and/or Contractors Bonding and Insurance Company this 7th day of April, 2022.

RLI Insurance Company
Contractors Bonding and Insurance Company

By:

Jean M. Stephenson
Corporate Secretary

GRETCHEN L. JOHNGIG
"OFFICIAL SEAL"
My Commission Expires May 26, 2023

3011920210112
A0058817
SECTION 01210 AGREEMENT

THIS AGREEMENT, made this __________ day of ____________________, 20__, by and between THE CITY OF CHARLESTON,

acting herein through its __________________________ Mayor

(Title of Authorized Official)

hereinafter call “OWNER” and __________ IPW Construction Group, LLC ____________________________

(Name of Contractor)

doing business as __________ a Corporation ____________________________________________

(an Individual), (a Partnership), or (a Corporation)

of the City of __________ North Charleston __________, County of __________ Charleston __________, and

State of __________ South Carolina ____________, hereinafter called “CONTRACTOR.”

WITNESSETH: That for and in consideration of the payments and agreements hereinafter mentioned:

1. The CONTRACTOR hereby agrees with the OWNER to commence and complete the construction described as follows:

   CHURCH CREEK FLOOD AND RESILIENCE – MOWLER COURT PROJECT

   hereinafter called the PROJECT.

2. The CONTRACTOR will furnish all of the materials, supplies, tools, equipment, labor, and other services necessary for the construction and completion of the PROJECT described herein.

3. The CONTRACTOR will commence the work required by the CONTRACT DOCUMENTS within 15 calendar days after the date of the NOTICE TO PROCEED and will fully complete the PROJECT within 90 consecutive calendar days unless the period for completion is extended otherwise by the CONTRACT DOCUMENTS. The CONTRACTOR further agrees to pay, as liquidated damages, the sum of $500.00 for each consecutive calendar day thereafter as hereinafter provided in the GENERAL CONDITIONS.

4. The CONTRACTOR agrees to perform all of the WORK described in the CONTRACT DOCUMENTS and comply with the terms therein for the sum of

   Two hundred forty-three thousand, six hundred four and 25/100 Dollars ($243,604.25)

   or as shown in the Bid Schedule.

5. The term “CONTRACT DOCUMENTS” means and includes the following:

   5.1 Advertisement for Bids

   5.2 Information for Bidders

   5.3 Bic
5.4 Bid Bond
5.5 Agreement
5.6 Performance Bond
5.7 Payment Bond
5.8 Certificate of Owners Attorney
5.9 Notice of Apparent Low Bidder
5.10 Notice of Intent to Award
5.11 Change Orders
5.12 Notice to Proceed
5.13 General Conditions
5.14 Supplemental Conditions (Including Drawings, Technical Specifications, Permits, and Additional Information)
5.15 Acknowledgment

No. N/A Dated ____________
No. N/A Dated ____________
No. N/A Dated ____________
No. N/A Dated ____________

6. The OWNER agrees to pay the CONTRACTOR in the manner and at such times as set forth in the General Conditions and such amounts as required by the CONTRACT DOCUMENTS.

7. This Agreement shall be binding on all parties hereto and their respective heirs, executors, administrators, successors, and assigns.
Church Creek Flood and Resilience - Mowler Court Project

IN WITNESS WHEREOF, the parties hereto have executed or caused to be executed by their duly authorized officials, this Agreement in six counterparts, each of which shall be deemed an original, in the year and day first above written.

___________________________________________
(OWNER)
By:_________________________________________

(SEAL)

___________________________________________
(Title of Authorized Official)

ATTEST:

___________________________________________
(Secretary)

___________________________________________
(Witness)

IPW Construction Group, LLC
(CONTRACTOR)
By:_________________________________________

Bryan H. Rembolt, PE
(Title)

(SEAL)

7623 Dorchester Road
(Address)

ATTEST:

___________________________________________
(Secretary)

___________________________________________
(Witness)

(End of Section 01210)
# Standardized Business License Application

**City or County:** City of Charleston

## Business Information

**Corporate name:** IPW Construction Group, LLC  
**Name shown to public:** S/A  
**Open date:** Feb 2013  
**Organization type:**  
- ☐ SOB proprietor  
- ☐ LLC  
- ☐ LLP  
- ☐ LP  
- ☐ Corporation  
**Business activity/type:** General Contractor  
**NAICS/SIC/Other code:**  
**Federal ID/SSN #:** 46-2076004  
**State retail sales #:**  
**Mailing address:** PO Box 409168 Charleston, SC 29423  
**Physical address:** 7613 Dorchester Rd. - Charleston, SC 29418  
**Contact name, title:** Tara Mayfield - Office Manager  
**Contact phone:** 843-308-0504 Ext. 304  
**Alternate phone:** 843-437-1430  
**Fax:** 843-308-4450  
**Email:** tara@ipwco.com  

## Owner or Principal(s) Information

**Owner or Principal(s) name(s), title(s):** Cypus D. Simon  
**Municiar Manager**  
**SSN #:**  
**Driver's license #:** 00780307  
**State:** SC  
**Expiration date:** 1/03/23  
**Mailing address:** PO Box 409168 Charleston, SC 29423  
**Work phone:** 843-308-0504 Ext. 304  
**Cell phone:** 843-437-3777  
**Fax:** 843-308-4450  
**Email:** cypus.simon@ipwco.com

## Job/Project Information

**Project start date:** TBD  
**Estimated end date:** TBD  
**Project location:** Mowler Court  
**Tax parcel #:**  
**Project type:**  
- ☐ New construction  
- ☐ Renovation  
- ☐ Other Provide storage of stormwater  
**General contractor name:** IPW Construction Group, LLC  
**State contractor license #:** G117838  
**State:** SC  
**Expiration date:** 10/31/22  
**Master/specialty license #:**  
**Job contact name:** Lauren Rembert  
**Phone:** 843-303-4100-7904  
**Total gross revenues of contract amount:** $243,604.25  
**Gross revenues, inside jurisdiction:** $243,604.25  
**Gross revenues, outside jurisdiction:** $na  
**Value of authorized deductions:** $na  
**Deduction type(s):** na

Contact your city or county business licensing office with questions regarding this form.  
Application produced by the South Carolina Business Licensing Officials Association.  
The SC Business Licensing Officials Association is an affiliate of the Municipal Association of SC.

<table>
<thead>
<tr>
<th>Rate</th>
<th>Busc</th>
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</thead>
<tbody>
<tr>
<td>$80</td>
<td>$798.40</td>
<td>$878.60</td>
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</table>
**LICENSE NUMBER: G117838**

South Carolina Department of Labor, Licensing and Regulation
Contractor’s Licensing Board

**GENERAL CONTRACTOR**

IPW CONSTRUCTION GROUP LLC
7623 DORCHESTER ROAD
N CHARLESTON SC 29416

is certified to practice in the following classification(s) and Group Limitation(s):
- Building-85, Interior Renovation-IR5, Masonry-MS5, Highway-HY5,
  Water & Sewer Lines-WL5, Asphalt Paving-AP5, Concrete Paving-CP5,
  Bridges-BR5, Grading-GDS, Highway Incidental-HI5

**LICENSE NUMBER: G117838**

Qualifying Party(s) (Primary Qualifications - PQ): MR CYRUS D SINOR
(C2G.17807 PQ)

Group Limitations - Amount Per Job:
- Group #1: $50,000
- Group #2: $200,000
- Group #3: $500,000
- Group #4: $1,000,000
- Group #5: Unlimited

Initial License Date: 03/04/2013
Expiration Date: 10/31/2022

This is a 2-PART POCKETCARD FOLD CARD - DO NOT CUT OR TEAR CARD IN HALF!
Both parts of this pocketcard must be presented to conduct business at all times.

---

**SOUTH CAROLINA DEPARTMENT OF LABOR, LICENSING AND REGULATION**

**CONTRACTOR’S LICENSING BOARD**

Hereby Certifies:

IPW CONSTRUCTION GROUP LLC
7623 DORCHESTER ROAD
N CHARLESTON SC 29416

Having given satisfactory evidence of the necessary qualifications required by laws of the State of South Carolina and is duly qualified and entitled to practice as a:

**GENERAL CONTRACTOR**

for the Classification(s) and Group Limitation(s) shown below:
- Building-85, Interior Renovation-IR5, Masonry-MS5, Highway-HY5, Water & Sewer Lines-WL5,
  Asphalt Paving-AP5, Concrete Paving-CP5, Bridges-BR5, Grading-GDS, Highway Incidental-HI5

**LICENSE NUMBER: G117838**

Expiration Date: 10/31/2022
Initial License Date: 03/04/2013

Qualifying Party(s) (Primary Qualifications - PQ): MR CYRUS D SINOR (C2G.17807 PQ)

It is at the discretion of the licensee to designate whenever they elect to pull permits and conduct business for this license.
**CERTIFICATE OF LIABILITY INSURANCE**

**PRODUCER**

Brown & Brown of South Carolina  
7515 Northside Dr., Suite 150  
North Charleston  
SC 29420

**INSURED**

IFW Construction Group LLC  
DBA IFW Survey and Engineering, PLLC  
P.O. Box 40968  
Charleston  
SC 29423

**CONTACT**

NAME: Lauren Madison  
PHONE: (843) 672-4567  
FAX:  
EMAIL: Lauren.Madison@brown.com

**INSCRIBER(S) AFFORDING COVERAGE**

INSURER A: Selective Insurance Company of America  
NAC #: 12572

INSURER B: Insurance Company of the West  
NAC #: 27847

INSURER C:  
NAC #:  
INSURER D:  
NAC #:  
INSURER E:  
NAC #:  
INSURER F:  
NAC #:  

**COVERAGE**

**CERTIFICATE NUMBER:** 21-22 Master All Lines  
**REVISION NUMBER:**

**THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFER NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DESCRIBES SPECIFICALLY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.**

**IMPORTANT:** If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must have ADDITIONAL INSURED provisions or be endorsed. IF SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

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<thead>
<tr>
<th>LETTER</th>
<th>TYPE OF INSURANCE</th>
<th>LIMITS</th>
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</thead>
<tbody>
<tr>
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<td>COMMERCIAL GENERAL LIABILITY</td>
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- CLAIMS-MADE  
- OCCUR |
|        | COMMERCIAL GENERAL LIABILITY |  
- CLAIMS-MADE  
- OCCUR |
|        | AUTOMOBILE LIABILITY |  
- ANY AUTO  
+ OWNED AUTOS ONLY  
- HIRER AUTOS ONLY  
- SCHEDULED AUTOS  
- NON-OWNED AUTOS ONLY  
- TOTAL |
|        | UMBRELLA LIABILITY |  
- OCCUR  
- CLAIMS-MADE  
- EXCESS LIABILITY |
| B      | WORKERS' COMPENSATION AND EMPLOYERS' LIABILITY |  
- ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/OWNER EXCLUDED (Mandatory in NH)  
+ DESCRIPTION OF OPERATIONS |
|        | PROFESSIONAL LIABILITY |

**DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)**

Job #: Church Creek Flood and Resiliency  
Job Type: Mower Court

City of Charleston is included as an additional insured with respect to the General Liability where required by written agreement.

**CERTIFICATE HOLDER**

City of Charleston  
2 George Street  
Charleston  
SC 29401

**CANCELLATION**

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

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<th>POLICY EXP (MM/DD/YYYY)</th>
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© 1988-2015 ACORD CORPORATION. All rights reserved.
April 22, 2022

City of Charleston
2 George Street
Charleston, South Carolina 29401

Re: Authority to Date Bonds and Powers of Attorney
Principal: IPW Construction Group, LLC
Bond No.: RCB0033458
Project: Church Creek Flood and Resilience - Mowler Court Project

Dear Sir or Madam:

Please be advised that as Surety on the above referenced bond, executed on your behalf for this project, we hereby authorize you to date the bonds and the powers of attorney concurrent with the date of the contract agreement.

Once dated, please email Kathryn (kathryn@mccartha-cobb.com) a copy of the bonds to our office.

Sincerely,
RLI Insurance Company

Raymond E. Cobb, Jr.
Attorney-in-Fact
SECTION 01212  PERFORMANCE BOND

KNOW ALL MEN BY THESE PRESENTS: that

IPW Construction Group, LLC

(Name of Contractor)

7623 Dorchester Road, North Charleston, SC 29418

(Address of Contractor)

hereinafter called Principal and

RLI Insurance Company

(Name of Surety)

9025 N. Lindeberg Drive, Peoria, IL 61615

(Address of Surety)

hereinafter called Surety, are held and firmly bound unto

City of Charleston

(Name of Owner)

2 George Street, Charleston, SC 29401

(Address of Owner)

hereinafter called OWNER, in the penal sum of Two Hundred Twenty-Seven Thousand, One Hundred

Fourty-Three and 25/100*** Dollars, ($ 227,143.25*** ) in lawful money

of the United States, for the payment of which sum well and truly to be made, we bind ourselves, successors, and assigns, 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 OWNER, dated the ______ day of ____________, 20__, a copy of which

is hereto attached and made a part hereof for the construction of:

CHURCH CREEK FLOOD AND RESILIENCE – MOWLER COURT PROJECT

NOW, THEREFORE, if the Principal shall well, truly and faithfully perform its duties, all the undertakings, covenants, terms, conditions, and agreements of said contract during the original term thereof, and any extensions thereof which may be granted by the OWNER, with or without notice to the Surety and during the one year guaranty period, and if he shall satisfy all claims and demands incurred under such contract and shall fully indemnify and save harmless the OWNER from all costs and damages which it may suffer by reason of failure to do so, and shall reimburse and repay the OWNER all outlay and expense which the OWNER may incur in making good any default, then this obligation shall be void; otherwise to remain in full force and effect.

PROVIDED, FURTHER, that the said Surety for value received hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of the contract or to the WORK to be performed thereunder or the SPECIFICATIONS accompanying the same shall in any wise affect its obligation on this BOND, and it does hereby waive notice of any such change, extension of time, alteration, or addition to the terms of the contract or to the WORK or to the SPECIFICATIONS.
PROVIDED, FURTHER, that no final settlement between the OWNER and the CONTRACTOR shall abridge the right of any beneficiary hereunder whose claim may be unsatisfied.

IN WITNESS WHEREOF, this instrument is executed in six (6) counterparts, each one of which shall be deemed an original, this the ___________ day of __________________, 20___.

ATTEST: 

[Signature]
(Principal) Secretary (SEAL)

[Signature]
Witness as to Principal
7623 Dorchester Rd, N Charleston, SC 29418
Address

[Signature]
ATTEST: 

[Signature]
(Surety) Secretary
Kathryn McCartha-Powers

[Signature]
Witness as to Surety
C. Wayne McCartha
131 Ministry Drive
Address
Irmo, South Carolina 29063

IPW Construction Group, LLC
Principal

By: [Signature]
Bryan H. Rembert, VP of Operations
7623 Dorchester Road
Address
North Charleston, SC 29418

RLI Insurance Company
Surety

By: [Signature]
Attorney-in-Fact
Raymond E. Cobb, Jr.
9025 N. Lindbergh Drive
Address
Peoria, IL 61615

NOTE: Date of BOND must not be prior to date of Contract. If CONTRACTOR is a Partnership, all partners should execute BOND.

IMPORTANT: Surety companies executing Bonds must appear on the Treasury Department's most current list (Circular 570 as amended) and be authorized to transact business in the State where the PROJECT is located.

(End of Section 01212)
SECTION 01214  PAYMENT BOND

KNOW ALL MEN BY THESE PRESENTS: that

IPW Construction Group, LLC
(Name of Contractor)

7623 Dorchester Road, North Charleston, SC 29418
(Address of Contractor)

e a Corporation hereinafter called Principal, and
(an Individual), (a Partnership), or (a Corporation)

RLI Insurance Company
(Name of Surety)

9025 N. Lindbergh Drive, Peoria, IL 61615
(Address of Surety)

hereinafter called Surety, are held and firmly bound unto

City of Charleston
(Name of Owner)

2 George Street, Charleston, SC 29401
(Address of Owner)

hereinafter called OWNER, in the penal sum of Two Hundred Twenty-Seven Thousand, One Hundred

Forty-Three and 25/100*** Dollars, $227,143.25*** in lawful money of the United States, for the payment of which sum well and truly to be made, we bind ourselves, successors, and assigns, 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 OWNER, dated the day of , 20___, a copy of which is hereto attached and made a part hereof for the construction of:

CHURCH CREEK FLOOD AND RESILIENCE – MOWLER COURT PROJECT

NOW, THEREFORE, if the Principal shall promptly make payment to all persons, firms, SUBCONTRACTORS, and corporations furnishing materials for or performing labor in the prosecution of the WORK provided for in such contract, and any authorized extension or modification thereof, including all amounts due for materials, lubricants, oil, gasoline, coal and coke, repairs on machinery, equipment and tools, consumed or used in connection with the construction of such WORK, and all insurance premiums on said WORK, and for all labor, performed in such WORK whether by SUBCONTRACTOR or otherwise, then this obligation shall be void; otherwise to remain in full force and effect.

PROVIDED, FURTHER, that the said Surety for value received hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of the contract or to the WORK to be performed thereunder or the SPECIFICATIONS accompanying the same shall in any wise affect its obligation on this BOND, and it does hereby waive notice of any such change, extension of time alteration, or addition to the terms of the contract or to the WORK or to the SPECIFICATIONS.

PROVIDED, FURTHER, that no final settlement between the OWNER and the CONTRACTOR shall abridge the right of any beneficiary hereunder, whose claim may be unsatisfied.
IN WITNESS WHEREOF, this instrument is executed in six (6) counterparts, each one of which shall be deemed an original, this the ______ day of _________________________, 20____.

ATTEST:

(Principal) Secretary (SEAL)

Witness as to Principal

7623 Dorchester Rd. N. Charleston, SC 29418
Address

ATTEST:

(Surety) Secretary (SEAL)

Witness as to Surety

C. Wayne McCartha

131 Ministry Drive
Address
Irmo, South Carolina 29063

IPW Construction Group, LLC
Principal

By: ______________________ (S)
Bryan H. Rombert, PE - Hot Operations
7623 Dorchester Road
Address
North Charleston, SC 29418

RLI Insurance Company
Surety

By: ______________________
Attorney-in-Fact Raymond E. Cobb, Jr.
9025 N. Lindbergh Drive
Address
Peoria, IL 61615

NOTE: Date of BCND must not be prior to date of Contract. If CONTRACTOR is a Partnership, all partners should execute BOND.

IMPORTANT: Surety companies executing Bonds must appear on the Treasury Department's most current list (Circular 570 as amended) and be authorized to transact business in the State where the PROJECT is located.

(End of Section 01214)
POWER OF ATTORNEY
RLI Insurance Company
Contractors Bonding and Insurance Company
9025 N. Lindbergh Dr., Peoria, IL 61615
Phone: 800-645-2402

Know All Men by These Presents:

That this Power of Attorney is not valid or in effect unless attached to the bond which it authorizes executed, but may be detached by the approving officer if desired.

That RLI Insurance Company and/or Contractors Bonding and Insurance Company, each an Illinois corporation, (separately and together, the "Company") do hereby make, constitute and appoint:
C. Wayne McCarthy, Raymond E. Cobb Jr., M. Kathryn McCarthy-Powers, jointly or severally

in the City of Columbia, State of South Carolina its true and lawful Agent(s) and Attorney(s) in Fact, with full power and authority hereby conferred, to sign, execute, acknowledge and deliver for and on its behalf as Surety, in general, any and all bonds and undertakings in an amount not to exceed Twenty Five Million Dollars ($25,000,000.00) for any single obligation.

The acknowledgment and execution of such bond by the said Attorney in Fact shall be as binding upon the Company as if such bond had been executed and acknowledged by the regularly elected officers of the Company.

RLI Insurance Company and/or Contractors Bonding and Insurance Company, as applicable, have each further certified that the following is a true and exact copy of a Resolution adopted by the Board of Directors of each such corporation, and is now in force, to-wit:

"All bonds, policies, undertakings, Powers of Attorney or other obligations of the corporation shall be executed in the corporate name of the Company by the President, Secretary, any Assistant Secretary, Treasurer, or any Vice President, or by such other officers as the Board of Directors may authorize. The President, any Vice President, Secretary, any Assistant Secretary, or the Treasurer may appoint Attorneys in Fact or Agents who shall have authority to issue bonds, policies or undertakings in the name of the Company. The corporate seal is not necessary for the validity of any bonds, policies, undertakings, Powers of Attorney or other obligations of the corporation. The signature of any such officer and the corporate seal may be printed by facsimile."

IN WITNESS WHEREOF, the RLI Insurance Company and/or Contractors Bonding and Insurance Company, as applicable, have caused these presents to be executed by its respective Vice President with its corporate seal affixed this 1st day of November, 2017.

By: Barton W. Davis
Vice President

State of Illinois
County of Peoria

On this 1st day of November, 2017, before me, a Notary Public, personally appeared Barton W. Davis who being by me duly sworn, acknowledged that he signed the above Power of Attorney as the aforesaid officer of the RLI Insurance Company and/or Contractors Bonding and Insurance Company and acknowledged said instrument to be the voluntary act and deed of said corporation.

By: Gretchen L. Johnigk
Notary Public

CERTIFICATE

I, the undersigned officer of RLI Insurance Company and/or Contractors Bonding and Insurance Company, do hereby certify that the attached Power of Attorney is in full force and effect and is irrevocable; and furthermore, that the Resolution of the Company as set forth in the Power of Attorney, is now in force. In testimony whereof, I have hereunto set my hand and the seal of the RLI Insurance Company and/or Contractors Bonding and Insurance Company this ______ day of ____________,

By: Jean M. Stevenson
Corporate Secretary
SECTION 01218 CERTIFICATE OF OWNER’S ATTORNEY

I, the undersigned, ________________________________________________________, the duly authorized and acting legal representative of______________________________________________________________

______________________________
(Signed)

I have examined the attached contract(s) and surety bonds and the manner of execution thereof, and I am of the opinion that each of the aforesaid agreements has been duly executed by the proper parties thereto acting through their duly authorized representatives; that said representatives have full power and authority to execute said agreements on behalf of the respective parties named thereon; and that the foregoing agreements constitute valid and legally binding obligations upon the parties executing the same in accordance with terms, conditions and provisions thereof.

______________________________
(Signed)

Date:__________________________

(End of Section 01218)
NOTICE OF APPARENT LOW BID

TO: IPW Construction Group, LLC

7823 Dorchester Rd.

North Charleston, SC 29418

PROJECT DESCRIPTION: CHURCH CREEK FLOOD AND RESILIENCE—MOWLER COURT PROJECT

The OWNER has considered the BID submitted by you on April 7, 2022, for the above described WORK in response to its Advertisement for Bids and Information for Bidders.

You are hereby notified that your BID has been determined to be the apparent low bid for items in the amount of $227,143.25 (BASE BID) and $16,461.00 (ADDITIVE BID).

You are required by the Information for Bidders to execute the Agreement and furnish the required proofs of City of Charleston business license, SC contractor's license, and certificates of insurance within ten (10) calendar days from the date of this Notice to you.

If you fail to execute said Agreement and to furnish said proofs of license and insurance within ten (10) days from the date of this Notice, said OWNER will be entitled to consider all your rights arising out to the OWNER'S acceptance of your BID as abandoned and as forfeiture of your BID BOND. The OWNER will be entitled to such other rights as may be granted by law.

You are required to return an acknowledged copy of this NOTICE OF APPARENT LOW BID to the OWNER.

Dated this 20th day of April, 2022

City of Charleston

By: __________________________
Matthew Fountain PE, PG

Title: Director of Stormwater Management

ACCEPTANCE OF NOTICE

Receipt of the above NOTICE OF APPARENT LOW BID is hereby acknowledged

This the 20th day of April, 2022

By: __________________________
Bryan H. Rembert, PE

Title: VP Operations
NOTICE OF INTENT TO AWARD

TO: IPW Construction Group, LLC

7623 Dorchester Rd.

North Charleston, SC 29418

PROJECT DESCRIPTION: CHURCH CREEK FLOOD RESILIENCE-MOWLER COURT PROJECT

The OWNER has considered the BID submitted by you on April 7, 2022, for the above described WORK in response to its Advertisement for Bids and Information for Bidders.

You are hereby notified that your BID has been accepted for items in the amount of $227,143.25 (BASE BID) and $16,461.00 (ADDITIVE BID).

You are required by the Information for Bidders to furnish the required CONTRACTOR'S Performance BOND and Payment BOND within ten (10) calendar days from the date of this Notice to you.

If you fail to furnish said BONDS within ten (10) days from the date of this Notice, said OWNER will be entitled to consider all your rights arising out to the OWNER'S acceptance of your BID as abandoned and as forfeiture of your BID BOND. The OWNER will be entitled to such other rights as may be granted by law.

You are required to return an acknowledged copy of this NOTICE OF INTENT TO AWARD to the OWNER.

Dated this_______day of ________________, 20__

City of Charleston

By:__________________

Matthew Fountain PE, PG

Title: Director of Stormwater Management

ACCEPTANCE OF NOTICE

Receipt of the above NOTICE OF INTENT TO AWARD is hereby acknowledged by

This the _____day of ________________, 20__

By

Title________________________
PROJECT: Church Creek Flood and Resilience - Mowler Court Project

CONTRACTOR: IPW CONSTRUCTION GROUP, LLC

CHANGE ORDER NO.: _____

1. Description of the Change Order:
(Reference any attachments by name and date)

_____________________________________________________________________________________________
_____________________________________________________________________________________________
_____________________________________________________________________________________________

2. Adjustments to the Contract Amount:

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
</tr>
</thead>
</table>
| Original Contract Amount                                                    | $ _______
| Change by Previously Approved Change Orders                                 | $ _______
| Contract Amount prior to this Change Order                                  | $ _______
| Amount of this Change Order                                                 | $ _______
| New Contract Amount, including this Change Order                           | $ _______

3. Adjustments in Contract Time:

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Original Date for Substantial Completion</td>
<td></td>
</tr>
<tr>
<td>Change in Days by Previously Approved Change Orders</td>
<td>___ Days</td>
</tr>
<tr>
<td>Change in Days for this Change Order</td>
<td>___ Days</td>
</tr>
<tr>
<td>New Date for Substantial Completion</td>
<td></td>
</tr>
</tbody>
</table>

4. Amount of this Change Order performed by MBE: $ 0

Biohabitats, Inc.                      IPW Construction Group, LLC                      City of Charleston
Architect/Engineer                     Contractor                                      Owner

2081 Clipper Park Road                 7623 Dorchester Rd                             2 George St, Suite 2100
Baltimore, MD 21211                    North Charleston, SC 29418                   Charleston, SC 29401
Address                                 Address                                      Address

____________________________________  __________________________________  ________________________________
Signature                              Signature                                      Signature

By: _______________________________  By: _______________________________  By: John J. Tecklenburg
Date: ______________________________  Date: ______________________________  Date: ______________________________
NOTICE TO PROCEED

TO: IPW Construction Group, LLC  
7623 Dorchester Rd.  
North Charleston, SC 29418

Date: ____________________  
Project: Church Creek Flood and Resilience – Mowler Court Project

You are hereby notified to commence WORK in accordance with the Agreement dated __________, on or before __________, and you are to complete the WORK within 90 consecutive days thereafter. The date of completion of all WORK is therefore ________________.

_________________________  
City of Charleston  
Owner

By ________________________  
Matthew Fountain PE, PG  
Title Director of Stormwater Management

ACCEPTANCE OF NOTICE

Receipt of the above NOTICE TO PROCEED is hereby acknowledged

by ____________________________

this the _____ day of ________________, 20__.

By ____________________________  
Title ____________________________
SECTION 01230  GENERAL CONDITIONS

1.  GENERAL

1.1  THE CONTRACT DOCUMENTS:  The Contract Documents consist of the Advertisement for Bids, Information for Bidders, Bid, Bid Bond, Agreement, Payment Bond, Performance Bond, Conditions of the Contract (General, Supplemental, and Other Conditions), Drawings, Specifications, Addenda, Notice of Intent to Award, Notice to Proceed, and Change Orders.

1.2  CORRELATION AND INTENT OF DOCUMENTS:  The Contract Documents are complementary, and what is required by any one shall be as binding as if required by all. The intent of the Drawings and Specifications is that the Contractor shall furnish all labor, supplies and materials, tools, machinery, equipment, transportation, maintenance of traffic, supervision, temporary construction of any nature, and all other services, facilities and means necessary for the proper execution and completion of the Work in accordance with the Contract Documents and all incidental work necessary to complete the Project in an acceptable manner, and fully complete the work or improvement ready for use, occupancy, and operation by the Owner.

Any mention in the Specifications or indication on the Drawings of articles, materials, methods, or operations shall require the Contractor to furnish such item or service as if it was fully specified unless it is noted or specified as not in the contract. It is intended that all materials shall be new and best quality in every respect unless otherwise noted or specified. All workmanship, methods of assembly, and erection shall be first class in every respect.

1.3  CONFLICT OR INCONSISTENCY:  If there is any conflict or inconsistency between the provisions of the Supplemental Conditions and the provisions of the other Contract Documents, the provisions of the Supplemental Conditions shall prevail. If there is any conflict or inconsistency between the provisions of the General Conditions and the provisions of any of the Contract Documents other than the Supplemental Conditions, the provisions of the General Conditions shall prevail.

In case of conflict between the Drawings and Specifications, the Specifications shall govern. Figure dimensions on Drawings shall govern over scale dimensions, and detailed Drawings shall govern over general Drawings.

In case of difference between small-scale and large-scale drawings, the large-scale drawings shall govern. Schedules on any contract drawing shall take precedence over conflicting information on that or any other contract drawing. On any of the drawings where a portion of the work is detailed or drawn out and the remainder is shown in outline, the parts detailed or drawn out shall apply also to all other like portions of the work. Where the word similar occurs on the drawings, it shall have a general meaning and not be interpreted as being identical, and all details shall be worked out in relation to their location and their connection with other parts of the work.

Any discrepancies found between the Drawings and Specifications and site conditions or any inconsistencies or ambiguities in the Drawings or Specifications shall be immediately reported to the Engineer, in writing, who shall promptly correct such inconsistencies or ambiguities in writing. Work done by the Contractor after his discovery of such discrepancies, inconsistencies, or ambiguities shall be done at the Contractor's risk.

Should a conflict be discovered within the Contract Documents, the Contractor shall be deemed to have estimated the higher quality way of doing the Work unless he shall have asked for and obtained a decision in writing from the Engineer before entering into this Contract.
1.4 **ADDITIONAL INSTRUCTIONS AND DETAIL DRAWINGS:** The Contractor may be furnished additional instructions and detail drawings, by the Engineer, as necessary to carry out the Work required by the Contract Documents. The additional drawings and instructions thus supplied will become a part of the Contract Documents. The Contractor shall carry out the Work in accordance with the additional detail drawings and instructions.

1.5 **SPECIFICATION HEADINGS:** For convenience of reference, these Specifications are divided into various Divisions, Sections, Subsections and Paragraphs. The titles of these headings shall not be taken as a correct nor complete segregation of the various types of material and labor or as an attempt to outline jurisdictional procedures. The headings shall not be deemed to limit or restrict the content, meaning or effect of such section, subsection, paragraph, provision, or part.

The organization of the Specifications into the various headings, and the arrangement of Drawings shall not control the Contractor in dividing the Work among Subcontractors or in establishing the extent of Work to be performed by any trade. Each subcontract shall be dependent upon its own definite confines, regardless of Divisions of these Specifications. No responsibility, either direct or implied, is assumed by the Owner for omissions or duplications by the Contractor or by any of his subcontractors due to real or alleged errors in arrangement of matter in Contract Documents.

1.6 **DRAWINGS AND SPECIFICATIONS FOR CONSTRUCTION PURPOSES:** The Contractor will be furnished a complete set of Electronic Drawings and Specifications to be used during the course of construction. If more hardcopy sets are needed, the Contractor will be required to pay the actual cost of printing and handling.

1.7 **DEFINITIONS:** Wherever the words hereinafter defined or pronouns used in their stead occur in the Contract Documents, they shall have the following meanings:

**ADDENDA:** Written or graphic instruments issued prior to the execution of the Agreement, which modify or interpret the Contract Document, Drawings, and Specifications by additions, deletions, clarifications, or corrections. Such addenda will take precedent over the position of the general drawings and specifications concerned and will be considered as part of the Contract Documents.

**AGREEMENT:** The Agreement represents the entire and integrated agreement between the parties hereto and supersedes all prior negotiations, representations, or agreements, either written or oral, including the bidding documents. The Agreement may be amended or modified by a Change Order.

**BID:** The written offer or proposal of the Bidder, submitted on the prescribed form, properly signed and guaranteed, to perform the work at the prices quoted by the Bidder.

**BID BOND:** The security furnished by the Bidder with his proposal for the Project is guaranty he will enter into a contract for the work if his proposal is accepted.

**BIDDER:** Any individual, firm, or corporation or combination of same submitting a bid for the work contemplated, acting directly or through a duly authorized representative.

**BONDS:** Bid, Performance, and Payment Bonds and other instruments of security furnished by the Contractor and his Surety in accordance with the Contract Documents.

**CALENDAR DAY:** Every day shown on the calendar, Sundays and holidays included.

**CHANGE ORDER:** A written order to the Contractor authorizing an addition, deletion, or revision in the Work within the general scope of the Contract Documents, or authorizing an adjustment in the Contract Price or Contract Time.
CONTRACT: The Contract Documents form the Contract. The Contract represents the entire and integrated agreement between the parties hereto and supersedes all prior negotiations, representations or agreements, either written or oral, including the bidding documents. The Contract may be amended or modified by a Change Order.

CONTRACT DOCUMENTS: The Contract Documents consist of the Advertisement for Bids, Information for Bidders, Bid, Bid Bond, Agreement, Payment Bond, Performance Bond, the Conditions of the Contract (General, Supplemental, and other Conditions), the Drawings, the Specifications, Addenda issued prior to execution of the Contract, Notice of Award, Notice to Proceed, and Change Orders.

CONTRACT PRICE: The total monies payable to the Contractor under the terms and conditions of the Contract Documents.

CONTRACTOR: The individual, firm, or corporation with whom the Owner has executed the Agreement by which the Contractor is obligated directly, or through Subcontractors, to perform work in connection with the Project.

The Contractor is the person or organization identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number and masculine in gender. The term Contractor means the Contractor or his authorized representative.

CONTRACT TIME: The number of calendar days stated in the Contract Documents for the completion of the Work.

DRAWINGS: The part of the Contract Documents that show the characteristics and scope of the Work to be performed and which have been prepared or approved by the Engineer.

EARTH: An excavated material or material to be excavated; all kinds of material other than rock.

ELEVATION: The figures given on the Drawings or in the other Contract Documents after the word elevation or abbreviation of it shall mean the distance in feet above the datum adopted by the Engineer.

ENGINEER: The person, firm, or corporation named as such in the Contract Documents and duly appointed by the Owner to undertake the duties and powers herein assigned to the Engineer, acting either directly or through duly authorized representatives.

EQUIPMENT: All machinery, together with the necessary supplies for upkeep and maintenance, and all tools and apparatus necessary for the proper construction and acceptable completion of the work.

FIELD ORDER: A written order effecting a change in the Work not involving an adjustment in the Contract Price or an extension of the Contract Time, issued by the Engineer to the Contractor during construction.

FURNISH: Furnish and install complete, in place, and ready for use.

INFORMATION FOR BIDDERS: The Notice to Contractors containing all necessary information as to provisions, requirements, date, place, and time of submitting bids.

LATEST EDITION: The current printed document issued eight weeks or more prior to date of receipt of bids.
MAINTENANCE OF TRAFFIC: All permits, manpower, equipment, and signage required to properly notify and direct the public around and through the work zone.

MATERIALS: Any substance specified for use in the construction of the Project and its appurtenances.

NET COST: The cost to the Contractor after application of all credits and discounts (excepting only cash discounts) and without the addition of any factor for burden, overhead, or indirect cost or profit.

NOTICE OF AWARD: The written notice of the acceptance of the Bid from the Owner to the successful Bidder.

NOTICE TO PROCEED: Written communication issued by the Owner to the Contractor authorizing him to proceed with the Work and establishing the date of commencement of the Work.

OPTIMUM MOISTURE CONTENT FOR COMPACTION: The moisture content of a soil calculated on the basis of dry weight of soil at which the soil can be compacted to the approximate maximum density under a specified standard method of compaction.

OWNER: A public or quasi-public body or authority, corporation, association, partnership, or individual for whom the Work is to be performed.

PAYMENT BOND: The approved form of security furnished by the Contractor to guarantee the payment to all persons supplying labor and materials in the prosecution of the work in accordance with the terms of the Contract.

PERFORMANCE BOND: The approved form of security furnished by the Contractor to guarantee the completion of the work in accordance with the terms of the Contract.

PRECONSTRUCTION CONFERENCE: A conference following award and prior to start of construction to be attended by a duly authorized representative of the Engineer and by the responsible officials of the Contractor and other affected parties.

PROJECT: The undertaking to be performed as provided in the Contract Document.

PROPOSAL: The written offer of the Bidder, submitted on the prescribed form, properly signed and guaranteed, to perform the work at the prices quoted by the Bidder.

PROPOSAL FORM: The approved form on which the Owner requires formal bids to be prepared and submitted for the work.

PROPOSAL GUARANTY: The security furnished by the Bidder with his proposal for a Project, as guaranty he will enter into a contract for the work if his proposal is accepted.

PROVIDE: Furnish and install complete, in place, and ready for use.

RESIDENT PROJECT REPRESENTATIVE: The authorized representative of the Owner who is assigned to the Project site or any part thereof.

ROCK: An excavated material or material to be excavated; only boulders and pieces of concrete or masonry exceeding 1/2 cu. yd. in volume, or solid ledge rock which, in the opinion of the Engineer, requires, for its removal, drilling and blasting, wedging, sledging, barring, or breaking up with a power-operated tool. No soft or disintegrated rock which can be removed with hand pick or power-operated excavator or shovel, no loose shaken, or previously blasted rock or broken stone in rock fillings or elsewhere, and no rock
exterior to the maximum limits of measurement allowed, which may fall into the excavation will be classified as rock.

SHOP DRAWINGS: All drawings, diagrams, illustrations, brochures, schedules, and other data prepared by the Contractor, a Subcontractor, manufacturer, supplier or distributor, which illustrate how specific portions of the Work shall be fabricated or installed.

SPECIALIST: An individual or firm of established reputation which is regularly engaged in, and which maintains a regular force of workmen skilled in either manufacturing or fabricating items required by the contract, installing items required by the contract, or otherwise performing work required by the contract. Where the contract specifications require installation by a specialist, that term shall also be deemed to mean either the manufacturer of the item, an individual or firm licensed by the manufacturer, or an individual or firm who will perform the work under the manufacturer's direct supervision.

SPECIFICATIONS: A part of the Contract Documents consisting of written descriptions of a technical nature of materials, equipment, construction systems, standards, and workmanship.

STRUCTURES: Bridges, culverts, catch basins, drop inlets, manholes, retaining walls, cribbing, endwalls, buildings, sewers, service pipes, underdrains, foundation drains, and other miscellaneous items which may be encountered in the work, and which are not otherwise classified herein.

SUBBASE: The layer or layers of specified or selected material of designated thickness or rate of application placed on a subgrade to comprise a component of the pavement structure to support the base course, pavement, or subsequent layer of the construction.

SUBCONTRACTOR: An individual, firm, or corporation having a direct contract with the Contractor or with any other Subcontractor for the performance of a part of the Work at the site. The term Subcontractor is referred to throughout the Contract Documents as if singular in number and masculine in gender and means a Subcontractor or his authorized representative.

SUB-SUBCONTRACTOR: An individual, firm, or corporation having a direct or indirect contract with a Subcontractor to perform any of the Work at the site. The term Sub-subcontractor is referred to throughout the Contract Documents as if singular in number and masculine in gender and means a Sub-subcontractor or an authorized representative thereof.

SUBGRADE: The top surface of a roadbed upon which the pavement structure and shoulders are constructed.

SUBSTANTIAL COMPLETION: That date as certified by the Engineer when the construction of the Project or a specified part thereof is sufficiently completed, in accordance with the Contract Documents, so that the Project or specified part can be utilized for the purposes for which it is intended.

SUPPLEMENTAL CONDITIONS: Conditions of the Contract other than the General Conditions.

SUPERINTENDENT: The Contractor's authorized representative in responsible charge of the work.

SUPPLIER: Any person or organization who supplies materials or equipment for the Work, including that fabricated to a special design, but who does not perform labor at the site.
SURETY: The corporation, partnership, or individual bound with and for the Contractor for the full and complete performance of the contract, and for the payment of all debt pertaining to the work.

TITLES (OR HEADINGS): The titles or headings of the sections and subsections herein are intended for convenience of reference and shall not be considered as having any bearing on their interpretation.

TRENCH PROTECTION: The falsework required to maintain the side walls of excavation from cave-ins, sloughing, or otherwise moving during excavation or while work in the trench is in progress. The protection must meet all OSHA safety standards.

WORK: All labor necessary to produce the construction required by the Contract Documents, and all materials and equipment incorporated or to be incorporated in the Project.

WRITTEN NOTICE: Any notice to any part of the Agreement relative to any part of this Agreement in writing and considered delivered and the service thereof completed, when posted by certified or registered mail to the said party at his last given address, or delivered in person to said party or his authorized representative on the Work.

1.8 ADDITIONAL DEFINITIONS: Wherever in the Specifications or on the Drawings, the words as designated, as detailed, as directed, as ordered, as permitted, as prescribed, as provided, as requested, as required, or words of like import are used, it shall be understood that the designation, detail, direction, order, permission, prescribed, provision, request, or requirement of the Engineer is intended.

Similarly, the words approved, acceptable, satisfactory, and words of like import shall mean approved by, acceptable to, or satisfactory to the Engineer.

1.9 ABBREVIATIONS: Where any other following abbreviations are used in the Specifications, they shall have the meaning set forth opposite each.

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Full Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>AA</td>
<td>Aluminum Association</td>
</tr>
<tr>
<td>AAMA</td>
<td>Architectural Aluminum Manufacturers Association</td>
</tr>
<tr>
<td>AAN</td>
<td>American Association of Nurserymen</td>
</tr>
<tr>
<td>AAR</td>
<td>Association of American Railroads</td>
</tr>
<tr>
<td>AASHTO</td>
<td>American Association of State Highway and Transportation Officials</td>
</tr>
<tr>
<td>AATC</td>
<td>American Association of Textile Chemists and Colorists</td>
</tr>
<tr>
<td>ACI</td>
<td>American Concrete Institute</td>
</tr>
<tr>
<td>ACPA</td>
<td>American Concrete Pipe Association</td>
</tr>
<tr>
<td>AED</td>
<td>American Equipment Dealers</td>
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<tr>
<td>AFBMA</td>
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<td>American Hot Dip Galvanizers Association</td>
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<td>AMCA</td>
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<td>ANSI</td>
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American Institute of Electrical Engineers
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2. **OWNER’S RIGHTS AND RESPONSIBILITIES**

2.1 **CHANGES IN THE WORK:** The Owner, without invalidating the Contract, may make changes in the Work and in the Drawings and Specifications therefore by making alterations therein, additions thereto, or omissions therefrom. All work resulting from such changes shall be performed and furnished under and pursuant to the terms and conditions of the Contract. If such changes result in an increase or decrease in the work to be done hereunder, or increase or decrease the quantities thereof, adjustment in compensation shall be made therefore as provided in Subsection 7.12 entitled *PAYMENT FOR EXTRA WORK.*

Except in an emergency endangering life or property, no change shall be made unless in pursuance of a written order from the Engineer authorizing the change, and no claim for additional compensation shall be valid unless the change is so ordered.

The Contractor agrees that he shall neither have nor assert any claim for, or be entitled to, any additional compensation for damages or for loss of anticipated profits on work that is eliminated.

2.2 **PROJECT ENGINEER:** The consultant for this project is: Biohabitats, Inc., Chris Streb (443) 414-2647 or cstreb@biohabitats.com.

2.3 **ENGINEER’S AUTHORITY:** The Engineer will be the Owner’s representative during the construction period and he will observe the work in progress on behalf of the Owner. The Engineer will have the authority to act on behalf of the Owner in the following matters consistent with Owner’s rights and obligations as set forth in these Contract Documents:

- 2.3.1 Interpretation of Contract Documents.
- 2.3.2 Approval of samples and shop drawings.
- 2.3.3 Preparation of supplementary details and instructions.
- 2.3.4 Inspection and approval of construction work.
- 2.3.5 Preliminary approval of progress payment applications.

Any instructions the Engineer may issue the Contractor shall be adjudged an interpretation of the Contract requirements and not an act of supervision. The Engineer has no authority, nor accepts any responsibility, either direct or implied, to direct and superintend the construction operations.

The Contractor shall proceed without delay to perform the work as directed, instructed, determined, or decided by the Engineer and shall comply promptly with such directions, instructions, determinations, or decisions. If the Contractor has any objection thereto, he may require that any such direction, instruction, determination, or decision be put in writing and within 10 days after receipt of any such writing, he may file a written protest with the Owner stating clearly and in detail his objections, the reasons therefore, and the nature and amount of additional compensation, if any, to which he claims he will be entitled thereby. A copy of such protest shall be filed with the Engineer at the same time it is filed with the Owner. Unless the Contractor files such written protest with the Owner and Engineer within such 10 day period, he shall be deemed to have waived all grounds for protest of such direction, instruction, determination, or decision and all claims for additional compensation or damages occasioned thereby, and shall further be deemed to have accepted such direction, instructions, determination, or decision as being fair, reasonable, and finally determinative of his obligations and rights under the Contract.

2.4 **LIABILITY OF OWNER:** No person, firm, or corporation, other than the Contractor, who signed this Contract as such, shall have any interest herein or right hereunder. No claim shall be made or be valid either against the Owner or any agent of the Owner and neither the Owner nor any agent of the Owner shall be liable for or be held to pay any money, except as herein provided. The acceptance by the Contractor of the payment as fixed in
the final estimate shall operate as and shall be a full and complete release of the Owner and of every agent of the Owner of and from any and all claims, demands, damages, and liabilities of, by, or to the Contractor for anything done or furnished for or arising out of or relating to or by reason of the work or for or on account of any act or neglect of the Owner or of any agent of the Owner or of any other person, arising out of, relating to, or by reason of the work, except the claim against the Owner for the unpaid balance, if any there be, of the amounts retained as herein provided.

2.5 RIGHTS-OF-WAY AND SUSPENSION OF WORK: The Owner shall furnish all land and rights-of-way necessary for the carrying out of this contract and the completion of the Work herein contemplated and will use due diligence in acquiring said land and rights-of-way as speedily as possible. But it is possible that all lands and rights-of-way may not be obtained as herein contemplated before construction begins, in which event the Contractor shall begin his work upon such land and rights-of-way as the Owner may have previously acquired and no claim for damages whatsoever will be allowed by reason of the delay in obtaining the remaining lands and rights-of-way. Should the Owner be prevented or enjoined from proceeding with the work, or from authorizing its prosecution, either before or after the commencement, by reason of any litigation, or by reason of its inability to procure any lands or rights-of-way for the said work, the Contractor shall not be entitled to make or assert claim for damage by reason of said delay or to withdraw from the contract except by consent of the Owner; but time for completion of the work will be extended to such time as the Owner determines will compensate for the time lost by such delay, such determination to be set forth in writing.

2.6 SURVEYS, PERMITS, AND REGULATIONS: The Owner will furnish all boundary surveys and establish all base lines for locating the principal component parts of the Work together with a suitable number of bench marks adjacent to the Work as shown in the Contract Documents. From the information provided by the Owner, unless otherwise specified in the Contract Documents, the Contractor shall develop and make all detail surveys needed for construction such as slope stakes, batter boards, stakes for pile locations and other working points, lines, elevations, and cut sheets. The Contractor shall carefully preserve bench marks, reference points and stakes and, in case of willful or careless destruction, he shall be charged with the resulting expense and shall be responsible for any mistakes that may be caused by their unnecessary loss or disturbance.

Permits and licenses of a temporary nature necessary for the prosecution of the Work shall be secured and paid for by the Contractor unless otherwise stated in the Supplemental Conditions. Encroachment permits, easements for permanent structures, and permits for permanent changes in existing facilities shall be secured and paid for by the Owner, unless otherwise specified. The Contractor shall give all notices and comply with all laws, ordinances, rules, and regulations bearing on the conduct of the Work as drawn and specified. If the Contractor observes that the Contract Documents are at variance therewith, he shall promptly notify the Engineer in writing, and any necessary changes shall be adjusted as provided in Subsection 2.1 entitled CHANGES IN THE WORK.

2.7 LINES, GRADES, AND MEASUREMENTS: The Owner's Engineer will set sufficient base lines and elevations as shown on the Drawings for location of the Work. The Contractor shall employ a registered civil engineer, or land surveyor and shall require said Engineer to establish all lines, elevations, reference marks, batter boards, etc., needed by the Contractor during the progress of the work, and from time to time to verify such marks by instrument or other appropriate means.

The Owner's Engineer shall be permitted at all times to check the lines, elevations, reference marks, batter boards, etc., set by the Contractor, who shall correct any errors in lines, elevations, reference marks, batter boards, etc., disclosed by such check. Such check shall not be construed to be an approval of the Contractor's work and shall not
relieve or diminish in any way the responsibility of the Contractor for the accurate and satisfactory construction and completion of the work.

The Contractor shall make, check and be responsible for all measurements and dimensions necessary for the proper construction of, and the prevention of misfittings in, the work.

2.8 **OWNER'S RIGHT OF AUDIT:** In case the Owner agrees that a Contractor is to perform work on a cost plus basis, the Owner is to have a full and complete right to audit and make copies of Contractor's or Subcontractor's records with respect to any payment the Owner may be requested to make for any work done on a cost plus basis.

2.9 **OWNER'S RIGHT TO SEPARATE CONTRACTS:** The Owner reserves the right to let other contracts in connection with the Work under similar General Conditions. The Contractor shall afford other contractors reasonable opportunity for the introduction and storage of their materials and the execution of their work, and shall properly connect and coordinate his work with theirs.

The Owner may perform additional Work related to the Project by himself, or he may let other contracts containing provisions similar to these. The Contractor will afford the other contractors who are parties to such Contracts (or the Owner, if he is performing the additional Work himself), reasonable opportunity for the introduction and storage of materials and equipment and the execution of Work and shall properly connect and coordinate his Work with theirs.

2.10 **OWNER'S RIGHT TO DO WORK:** If the Contractor should neglect to prosecute the work properly or fail to perform any provision of this contract, the Owner, after three (3) days' written notice to the Contractor may, without prejudice to any other remedy he may have, make good such deficiencies and may deduct the cost thereof from the payment then or thereafter due the Contractor. If such expense shall exceed the unpaid balance, the Contractor shall pay the difference to the Owner on demand.

The Engineer's certificate setting forth the fair and reasonable cost of repairing, replacing, rebuilding, or restoring any damaged or defective work or equipment when performed by one other than the Contractor shall be binding and conclusive as to the amount thereof upon the Contractor.

2.11 **OWNER'S RIGHT TO TERMINATE CONTRACT:** If the Contractor should be adjudged bankrupt, or if he should make a general assignment for the benefit of his creditors, or if a receiver or trustee should be appointed on account of his insolvency, or if he should persistently or repeatedly refuse or should fail, except in cases for which extension of time is provided, to supply enough properly skilled workmen or proper materials, or if he should fail to make prompt payment to Subcontractors or for material or labor, or persistently disregard laws, ordinances, or the instructions of the Owner and his representatives, or otherwise be guilty of substantial violation of any provision of the Contract, then the Owner, may, without prejudice to any other right or remedy and after giving the Contractor, and his surety, if any, seven days' written notice, terminate the employment of the Contractor and take possession of the premises and of all materials, as it may deem expedient. In such case, the Contractor shall not be entitled to receive any further payment until the work is finished. If the unpaid balance of the contract price shall exceed the expense of finishing the work including compensation for additional engineering, managerial, and administrative services, such excess shall be paid to the Contractor. If such expense shall exceed such unpaid balance, the Contractor shall pay the difference to the Owner.

2.12 **SUSPENSION OF WORK, TERMINATION, AND DELAY:** The Owner may suspend the Work or any portion thereof for a period of not more than ninety days or such further time as agreed upon by the Contractor, by written notice to the Contractor and the Engineer,
which notice shall fix the date on which Work shall be resumed. The Contractor will
resume that Work on the date so fixed. The Contractor will be allowed an increase in the
Contract Price or an extension of the Contract Time, or both, directly attributable to any
suspension.

2.13 **INSPECTIONS AND TESTING:** If the Contract Documents, Owner's instructions, laws,
ordinances, or any public authority having jurisdiction require any work to be specially
tested or approved, the Contractor shall give the Owner timely notice of its readiness for
observation by the Owner or inspection by another authority, and if the inspection is by
another authority rather than the Owner, of the date fixed for such inspection. The
required certificates of such inspection shall be secured by the Contractor. Observations
by the Owner shall be promptly made, and where practicable, at the source of supply. If
any work should be covered up without approval or consent of the Owner, it must, if
required by the Owner, be uncovered for examination, at the Contractor's expense.

2.14 **INSPECTION OF WORK AWAY FROM THE SITE:** If the work to be done away from the
construction site is to be inspected on behalf of the Owner during its fabrication,
manufacture, or testing, or before shipment, the Contractor shall give notice to the
Engineer of the place and time where such fabrication, manufacture, testing, or shipping
is to be done. Such notice shall be in writing and delivered to the Engineer in ample time
so that the necessary arrangements for the inspection can be made.

2.15 **PIPE LOCATION:** Exterior pipelines will be located substantially as indicated on the
Drawings, but the right is reserved to the Owner acting through the Engineer, to make
such modifications in location as may be found desirable to avoid interference with
structures or for other reasons. Where fittings, etc. are noted on the Drawings, such
notation is for the Contractor's convenience and does not relieve him from laying and
jointing different or additional items where required.

2.16 **PRIOR USE OR OCCUPANCY:** The Owner reserves the right to use or occupy the
Work or portion thereof, and to use equipment installed under the Contract, prior to final
acceptance. Such use or occupancy will not constitute acceptance of the Work or any
part thereof. Despite such use or occupancy, guarantee periods will not begin until the
completion of all work under the Contract, unless agreement to the contrary is made in
writing between the parties.

2.17 **WEATHER CONDITIONS:** In the event of temporary suspension of work, or during
inclement weather, or whenever the Engineer shall direct, the Contractor will, and will
cause his subcontractors to, protect carefully his and their work and materials against
damage or injury from the weather. If, in the opinion of the Engineer, any work or
materials shall have been damaged or injured by reason of failure on the part of the
Contractor or any of his subcontractors so to protect its work, such materials shall be
removed and replaced as the expense of the Contractor.

2.18 **OWNER'S RIGHT TO CLEAN UP:** If a dispute arises between the separate contractors
as to their responsibility for cleaning up, the Owner may clean up and charge the cost
thereof to the Contractor as the Engineer shall determine to be just.

3. **CONTRACTOR'S RIGHTS AND RESPONSIBILITIES**

3.1 **ACCESS TO WORK:** The Owner, the Engineer, and their officers, agents, servants, and
employees plus representatives of the various participating Federal or State agencies
may at any and all times and for any and all purposes, enter upon the work and site
thereof and the premises used by the Contractor, and the Contractor shall at all times
provide safe and proper facilities therefore.

3.2 **ACCIDENT PREVENTION:** In the performance of the contract the Contractor shall
comply with the applicable provisions of the regulations issued by the Secretary of Labor
pursuant to section 107 of the Contract Work Hours and Safety Standards Act entitled Safety and Health Regulations for Construction (29 CFR 1518, renumbered as Part 1926). Occupational Safety and Health Standards (29 CFR Part 1910) issued by the Secretary of Labor pursuant to the Williams-Steiger Occupational Safety and Health Act of 1970 are applicable to work performed by the contractor subject to the provisions of the Act.

3.3 STATED ALLOWANCES: The Contractor shall include in his proposal the cash allowances stated in the Bid Schedule. The Contractor shall purchase the Allowed Materials or Services as directed by the Engineer. If the actual price for purchasing the Allowed Materials or Services is more or less than the Cash Allowance, the contract price shall be adjusted accordingly. The adjustment in contract price shall be made on the basis of the purchase price without additional charges for overhead, profit, insurance, or any other incidental expenses.

3.4 ARCHAEOLOGICAL RIGHTS: There is a possibility that items of archaeological significance may be found during the excavation of the site. In such event, the Contractor shall stop excavation in the vicinity of the find and notify the Engineer immediately; subsequent excavation work shall proceed as directed by the Engineer. All items found which are considered to have archaeological significance are the property of the Owner.

3.5 AS-BUILT DRAWINGS: The Contractor shall designate one set of Drawings for As-Built Drawings. The Contractor shall indicate on these drawings all field changes affecting various mechanical, electrical, piping, and other items as well as locations as actually installed. The As-Built Drawings shall be kept current by the Contractor. The As-Built Drawings shall be delivered to the Engineer upon completion and acceptance of the work. Final payment for the work will not be made until the As-Built Drawings have been completed and delivered as indicated above.

3.6 OBLIGATIONS OF CONTRACTOR: The Contractor shall and will, in good workmanlike manner, do and perform all work and furnish all supplies and materials, tools, machinery, equipment, transportation, supervision, temporary construction of any nature, and all other services, means, and facilities except as herein otherwise expressly specified, necessary or proper to perform and complete all work required by this Contract, within the time herein specified, in accordance with the provisions of this Contract and in accordance with the Drawings and Specifications and in accordance with the direction of the Engineer as given from time to time during the progress of the work. He shall furnish, erect, maintain, and remove such construction plant and such temporary works as may be required.

The Contractor shall observe, comply with, and be subject to all terms, conditions, requirements, and limitations of the Contract and Specifications, and shall do, carry on, and complete the entire work to the satisfaction of the Engineer and the Owner.

The Contractor shall check all dimensions, elevations, quantities, and instructions shown on the Drawings or given in the Specifications and shall notify the Engineer should any discrepancy of any kind be found in the Drawings, Specifications, or conditions at the site. He will not be allowed to take advantage of any discrepancy, error, or omission in the Contract Documents. If any discrepancy is discovered, the Engineer will issue full instructions pertaining thereto, and the Contractor shall carry out these instructions as if originally specified.

3.7 CLAIMS FOR ADDITIONAL COST: If the Contractor wishes to make a claim for an increase in the Contract Sum, he shall give written notice thereof within twenty days after the occurrence of the event giving rise to such claim. This notice shall be given by the Contractor to the Owner before proceeding to execute the Work, except in an emergency endangering life or property, in which case the Contractor shall proceed in accordance
with Subsection 3.28 entitled **PROTECTION OF WORK, PROPERTY, AND PERSONS IN AN EMERGENCY**. No such claim shall be valid unless so made. If the Owner and the Contractor cannot agree on the amount of the adjustment in the Contract Sum, it shall be determined by the Engineer. Any change in the Contract Sum resulting from such claim shall be authorized by Change Order.

**3.8 CLAIMS FOR DAMAGE:** If the Contractor makes claim for any damages alleged to have been sustained by breach of contract or otherwise, he shall, within ten (10) days after occurrence of the alleged breach or within ten (10) days after such damages are alleged to have been sustained, whichever date is the earlier, file with the Engineer a written, itemized statement in triplicate of the details of the alleged breach and the details and amount of the alleged damages. The Contractor agrees that unless such statement is made and filed as so required, his claim for damages shall be deemed waived, invalid, and unenforceable, and that he shall not be entitled to any compensation for any such alleged damages. Within ten (10) days after the timely filing of such statement, the Engineer shall file with the Owner one copy of the statement together with his recommendations for action by the Owner.

The Contractor shall not be entitled to claim any additional compensation for damages by reason of any direction, instruction, determination, or decision of the Engineer, nor shall any such claims be considered, unless the Contractor shall have complied in all respects with the last paragraph of Subsection 2.a entitled **ENGINEER'S AUTHORITY**, including, but not limited to, the filing of written protest in the manner and within the time therein provided.

**3.9 CUTTING AND PATCHING:** The Contractor shall leave all chases or openings for the installation of his own or any other contractor's or subcontractor's work, or shall cut the same in existing work, and shall see that all sleeves or forms are at the work and properly set in ample time to prevent delays. He shall see that all such chases, openings, and sleeves are located accurately and are of proper size and shape and shall consult with the Engineer and the contractors and subcontractors concerned in reference to this work.

In case of his failure to leave or cut all such openings or have all such sleeves provided and set in proper time, he shall cut them or set them afterwards at his own expense, but in so doing he shall confine the cutting to the smallest extent possible consistent with the work to be done. In no case shall piers or structural members be cut without the written consent and approval of the Engineer.

The Contractor shall carefully fit around, close up, repair, patch, and point around the work specified herein to the satisfaction of the Engineer.

All of this work shall be done by careful workmen competent to do such work and with the proper small hand tools. Power tools shall not be used except where, in the opinion of the Engineer, the type of tool proposed can be used without damage to any work or structure and without inconvenience or interference with the operation of any facility. The Engineer’s approval of the type of tool shall not in any way relieve or diminish the responsibility of the Contractor for such damage, inconvenience or interference resulting from the use of such tools.

The Contractor shall not cut or alter the work of any subcontractor or any other contractor, nor permit any of his subcontractors to cut or alter the work of any other contractor or subcontractor except with the written consent of the contractor or subcontractor whose work is to be cut or altered or with the written consent of the Engineer. All cutting and patching or repairing made necessary by the negligence, carelessness, or incompetence of the Contractor or any of his subcontractors shall be done by or at the expense of the Contractor and shall be the responsibility of the Contractor.
3.10 CLEANING UP: The Contractor at all times shall keep the site of the work free from rubbish and debris caused by his operation under the Contract. When the work has been completed, the Contractor shall remove from the site of the work all of his plant, machinery, tools, construction equipment, temporary work, and surplus materials so as to leave the work and the site clean and ready for use.

All public streets adjacent to the site and all private ways at the site shall be kept clean of debris, spilled materials, and wet and dry earth at all times and shall be cleaned at the end of each working day. When wet earth is encountered, it shall be cleaned from the vehicles before they leave the site and enter streets and private ways.

3.11 NON-COMPLIANCE WITH CONTRACT REQUIREMENTS: In the event the Contractor, after receiving written notice from the Owner of non-compliance with any requirement of this Contract, fails to initiate promptly such action as may be appropriate to comply with the specified requirement within a reasonable period of time, the Owner shall have the right to order the Contractor to stop any or all work under the Contract until the Contractor has complied or has initiated such action as may be appropriate to comply within a reasonable period of time. The Contractor will not be entitled to any extension of contract time or payment for any costs incurred as a result of being ordered to stop work for such cause.

3.12 OVERALL PROJECT COORDINATION: The Contractor shall coordinate all Work of his Contract to produce the required finished Project in accordance with the Contract Documents. Special attention shall be given to the submission of shop drawings, samples, color charts, and requests for substitution within the specified time; furnishing the proper shop drawings to Subcontractors and material suppliers, whose work and equipment is affected by and related thereto; and the furnishing of all information concerning location, type, and size of built-in equipment and materials and equipment utilities. This coordination is in addition to all other coordination requirements called for in the technical sections of the Specifications.

3.13 COMMUNICATIONS: The Contractor shall forward all communications to the Owner through the Engineer.

3.14 NO DISCRIMINATION IN EMPLOYMENT: In connection with the performance of work under this Contract, the Contractor agrees not to discriminate against any employee or applicant for employment because of race, religion, color, or national origin. The aforesaid provision shall include, but not be limited to, the following: 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.

3.15 DRAWINGS AND SPECIFICATIONS AT THE SITE: The Contractor shall maintain at the site one complete set of all Drawings, Specifications, Addenda, approved Shop Drawings, Change Orders, and other Modifications, in good and readable condition and marked to record all changes made during construction. These shall be available to the Engineer. The Drawings, marked to record all changes made during construction, shall be delivered to the Engineer for the Owner upon completion of the work.

3.16 EMPLOY COMPETENT PERSONS: The Contractor shall endeavor to employ only competent persons on the Work. Whenever the Engineer notifies the Contractor in writing that in his opinion any person on the Work is incompetent, unfaithful, disorderly, or otherwise unsatisfactory, or not employed in accordance with the provisions of the Contract, such person shall be discharged from the Work and shall not again be employed on it, except with the written consent of the Engineer. Provided, however, that the failure of the Owner or Engineer to object to an employee is not to be considered acknowledgment or approval of the employee’s competence by the Engineer or Owner.
3.17 **EMPLOY SUFFICIENT LABOR AND EQUIPMENT:** If, in the judgment of the Engineer, the Contractor is not employing sufficient labor, plant, equipment, or other means to complete the work within the time specified, the Engineer may, after giving written notice, require the Contractor to employ such additional labor, plant, equipment, and other means as the Engineer may deem necessary to enable the work to progress properly.

3.18 **EXISTING STRUCTURES:** Where the dimensions and locations of existing structures are of importance in the installation or connection of any part of the Work, the Contractor shall verify such dimensions and locations in the field before the fabrication of any material or equipment which is dependent on the correctness of such information.

3.19 **INDEMNIFICATION:** The Contractor will indemnify and hold harmless the Owner and the Engineer and their agents and employees from and against all claims, damages, losses and expenses, including attorneys' fees, arising out of or resulting from the performance of the Work, provided that any such claim, damage, loss, or expense is attributable to bodily injury, sickness, disease, or death, or to injury to or destruction of tangible property including the loss of use resulting there from; and is caused in whole or in part by any negligent or willful act or omission of the Contractor, any Subcontractor, anyone directly or indirectly employed by any of them, or anyone for whose acts any of them may be liable.

In any and all claims against the Owner or the Engineer, or any of their agents or employees, by any employee of the Contractor, any Subcontractor, anyone directly or indirectly employed by any of them, or anyone for whose acts any of them may be liable, the indemnification obligation shall not be limited in any way by a limitation on the amount or type of damages, compensation, or benefits payable by or for the Contractor or any Subcontractor under workmen's compensation acts, disability benefit acts, or other employee benefits acts.

3.20 **INTOXICATING LIQUORS:** The Contractor shall not sell and shall neither permit nor suffer the introduction or use of intoxicating liquors upon or about the work.

3.21 **LEGAL ADDRESS OF CONTRACTOR:** The Contractor's business address and his office at or near the site of the work are both hereby designated as places to which communications may be delivered. The depositing of any letter, notice, or other communication in a postpaid wrapper directed to the Contractor's business address in a post office box regularly maintained by the US Postal Service or the delivery at either designated address of any letter, notice, or other communication by mail or otherwise shall be deemed sufficient service thereof upon the Contractor, and the date of such service shall be the date of receipt. The first named address may be changed at any time by an instrument in writing, executed and acknowledged by the Contractor, and delivered to the Engineer. Service of any notice, letter, or other communication upon the Contractor personally shall likewise be deemed sufficient service.

3.22 **MUTUAL RESPONSIBILITY OF CONTRACTORS:** The Contractor shall afford other contractors reasonable opportunity for the introduction and storage of their materials and equipment and the execution of their work, and shall properly connect and coordinate his Work with theirs.

If any part of the Contractor's Work depends for proper execution or results upon the work of any other separate contractor, the Contractor shall inspect and promptly report to the Owner any apparent discrepancies or defects in such work that render it unsuitable for such proper execution and results. Failure of the Contractor so to inspect and report shall constitute an acceptance of the other contractor's work as fit and proper to receive his Work, except as to defects which may develop in the other separate contractor's work after the execution of the Contractor's Work. To ensure proper execution of the subsequent work, the Contractor shall measure work already in place and shall at once
report to the Owner any discrepancy between the executed work and the Contract Documents.

Should the Contractor cause damage to any separate contractor on the work, the Contractor agrees, upon due notice, to settle with such contractor by agreement or arbitration, if he will so settle. If such separate contractor sues the Owner on account of any damage alleged to have been so sustained, the Owner shall notify the Contractor, who shall defend such proceedings at Contractor's expense, and if any judgment against the Owner arises there from, the Contractor shall pay or satisfy it and pay all costs incurred by the Owner.

3.23 NIGHT, LEGAL HOLIDAYS, AND SUNDAY WORK: No work shall be done at night, legal holidays, or on Sunday except:

3.23.1 Usual protective work, such as pumping and the tending of lights and fires;

3.23.2 Work done in case of emergency threatening injury to persons or property;

3.23.3 When provided for under Supplemental Conditions as herein specified;

3.23.4 If all of the conditions set forth in the next paragraph below are met.

No work other than that included in 3.23.1, 3.23.2, and 3.23.3 above, shall be done at night except when:

3.23.4.1 In the judgment of the Engineer, the work will be of advantage to the Owner and can be performed satisfactorily at night;

3.23.4.2 The work will be done by a crew organized for regular and continuous night work;

3.23.4.3 The Engineer has given written permission for such night work.

Any work necessary to be performed after regular hours, on Sundays, or Legal Holidays, shall be performed without additional expense to the Owner.

3.24 OCCUPYING PRIVATE LAND: The Contractor shall not (except after written consent from the proper parties) enter or occupy with men, tools, materials, or equipment, any land outside the rights-of-way or property of the Owner. A copy of the written consent shall be given to the Engineer prior to occupation of private land.

3.25 PERMITS AND RESPONSIBILITIES: The Contractor shall, without additional expense to the Owner, be responsible for obtaining any necessary licenses and permits, and for complying with any applicable Federal, State, and municipal laws, codes, and regulations, in connection with the prosecution of the work. He shall be similarly responsible for all damages to persons or property that occur as a result of his fault or negligence. He shall also be responsible for all materials delivered and work performed until completion and acceptance of the entire construction work, except for any completed unit of construction there of which theretofore may have been accepted.

3.26 PRECAUTIONS DURING ADVERSE WEATHER: During adverse weather and against the possibility thereof, the Contractor shall take all necessary precautions so that the Work may be properly done and satisfactory in all respects. When required, protection shall be provided by use of tarpaulins, wood and building-paper shelters, or other approved means.

During cold weather, materials shall be preheated, if required, and the materials and adjacent structure into which they are to be incorporated shall be made and kept
sufficiently warm so that a proper bond will take place and a proper curing, aging, or drying will result. Protected spaces shall be artificially heated by approved means that will result in a moist or a dry atmosphere according to the particular requirements of the work being protected. Ingredients for concrete and mortar shall be sufficiently heated so that the mixture will warm throughout when used.

The Engineer may suspend construction operations at any time when, in his judgment, the conditions are unsuitable or the proper precautions are not being taken, whatever the weather may be, in any season. The Contractor agrees that he shall not have or assert any claim for or be entitled to any additional compensation or damages on account of any such suspension.

3.27 PROTECTION OF WORK, PROPERTY, AND PERSONS: The Contractor will be responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the Work. He will take all necessary precautions for the safety of, and will provide the necessary protection to prevent damage, injury, or loss to all employees on the Work and other persons who may be affected thereby, all the Work and all materials or equipment to be incorporated therein, whether in storage on or off the site, and other property at the site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures, and utilities not designated for removal, relocation, or replacement in the course of construction.

The Contractor will comply with all applicable laws, ordinances, rules, regulations, and orders of any public body having jurisdiction. He will erect and maintain as required by the conditions and progress of the Work, all necessary safeguards for safety and protection. He will notify owners of adjacent utilities when prosecution of the Work may affect them. The Contractor will remedy all damage, injury, or loss to any property caused, directly or indirectly, in whole or in part, by the Contractor, any subcontractor, or anyone directly or indirectly employed by any of them or anyone for whose acts any of them be liable, except damage or loss attributable to the fault of the Contract Documents or to the acts or omissions of the Owner or the Engineer or anyone employed by either of them or anyone for whose acts either of them may be liable and not attributable, directly or indirectly, in whole or in part, to the fault or negligence of the Contractor.

3.28 PROTECTION OF WORK, PROPERTY, AND PERSONS IN AN EMERGENCY: In emergencies affecting the safety of persons or the Work or property at the site or adjacent thereto, the Contractor, without special instruction or authorization from the Engineer or Owner, shall act to prevent threatened damage, injury, or loss. He will give the Engineer prompt Written Notice of any significant changes in the Work or deviations from the Contract Documents caused thereby, and a Change Order shall thereupon be issued covering the changes and deviations involved.

3.29 PROTECTION AGAINST WATER AND STORM: The Contractor shall take all precautions necessary to prevent damage to the Work by storms or by water entering the site of the Work directly, tidally, or through the ground. In case of damage by storm or water, the Contractor shall at his own cost and expense make such repairs or replacements or rebuild such parts of the Work as the Engineer may require in order that the finished work may be completed as required by the Contractor.

3.30 PROTECTION OF EXISTING VEGETATION, STRUCTURES, UTILITIES, AND IMPROVEMENTS: The Contractor will preserve and protect all existing vegetation such as trees, shrubs, and grass on or adjacent to the site of the work which is not to be removed and which does not reasonably interfere with the construction work. Care shall be taken in removing trees authorized for removal to avoid damage to vegetation to remain in place. Any limbs or branches of trees broken during such operations or by the careless operation of equipment or by workmen, shall be trimmed with a clean cut and painted with an approved tree pruning compound as approved by the Engineer.
The Contractor will protect from damage all existing improvements or utilities at or near the site of the work, the location of which is made known to him, and will repair or restore any damage to such facilities resulting from failure to comply with the requirements of this Contract or the failure to exercise reasonable care in the performance of the Work. If the Contractor fails or refuses to repair any such damage promptly, the Owner may have the necessary work performed and charge the cost thereof to the Contractor.

The Contractor shall protect the trunks of trees adjacent to his work with the tree protection barricades shown in details. Tree protection shall be constructed to protect trees from injury from piled material, from equipment, from his operation, or otherwise due to his work. Excavating machinery and cranes shall be of suitable type and shall be operated with care to prevent injury to trees not to be cut and particularly to overhanging branches and limbs.

On paved surfaces, the Contractor shall not use or operate tractors, bulldozers or other power-operated equipment, the treads or wheels of which are so shaped as to cut or otherwise injure such surfaces.

3.31 RESTORATION OF PROPERTY: All existing surfaces, including lawns, grassed, and planted areas which have been injured by the Contractor's operations, shall be restored to a condition at least equal to that in which they were found immediately before work was begun. Suitable materials and methods shall be used for such restoration. All restored plantings shall be maintained by cutting, trimming, fertilizing, etc., until acceptance. The restoration of existing property or structures shall be done as promptly as practicable and shall not be left until the end of construction period.

3.32 INTERFERENCE WITH AND PROTECTION OF STREETS: The Contractor shall not close or obstruct any portion of a street, road, or private way without obtaining permits therefrom from the proper authorities. If any street, road, or private way shall be rendered unsafe by the Contractor's operations, he shall make such repairs or provide such temporary ways or guards as shall be acceptable to the proper authorities. See Section 4 – Supplemental Conditions.

Streets, roads, private ways, and walks not closed shall be maintained passable and safe by the Contractor, who shall assume and have full responsibility for the adequacy and safety of provisions made therefore.

The Contractor shall, at least 24 hours in advance, notify the highway, police, and fire departments in writing, with a copy to the Engineer, if the closure of a street or road is necessary. He shall cooperate with the police department in the establishment of alternate routes and shall provide adequate detour signs, plainly marked and well lighted, in order to minimize confusion.

3.33 TRAFFIC CONTROL: Where control of traffic is required for public safety, the Contractor shall provide an adequate number of flagmen employed at his own expense.

3.34 CONSTRUCTION DRAINAGE: The Contractor shall furnish all labor, materials and necessary equipment for the temporary control of surface water, tidal flow, and seepage water during construction and keep all excavations, pits, and trenches free from water at all times.

The Contractor shall furnish and operate pumps and other equipment required. Dikes and ditches shall be constructed around excavations and elsewhere as necessary to prevent surface water from flooding the excavations or standing in areas adjacent to excavations, in work areas, or in material storage areas. The Contractor shall take all necessary precautions to protect adjacent areas and properties at points other than that which would be considered the natural flow, prior to construction, without the expressed consent of the Owner in writing with a copy to the Engineer. He shall take steps to prevent the erosion of
soil, earth, and other material and the conduction of the eroded materials onto adjacent properties and shall be responsible for the removal of such materials and the restoration of adjacent areas to their original condition.

3.35 RETURN OF DRAWINGS: All copies of Drawings, Specifications, and other Documents furnished by the Owner or the Engineer to the Contractor may be used only in connection with the prosecution of the Work and shall be returned by the Contractor upon completion of the Work.

3.36 SITE INVESTIGATION: The Contractor acknowledges that he has investigated and satisfied himself as to the conditions affecting the Work, including but not restricted to those bearing upon transportation, disposal, handling and storage of materials, availability of labor, water, electric power, roads and uncertainties of weather, river stages, water table, tides, or similar physical conditions at the site, the confirmation and conditions of the ground, the character of equipment and facilities needed preliminary to and during prosecution of the Work. The Contractor further acknowledges that he has satisfied himself as to character, quality, and quantity of surface and subsurface materials or obstacles to be encountered insofar as this information is reasonably ascertainable from an inspection of the site, including all exploratory work done by the Owner, as well as from information presented by the Drawings and Specifications made a part of this Contract. Any failure by the Contractor to acquaint himself with the available information will not relieve him from responsibility for estimating properly the difficulty or cost of successfully performing the work. The Owner assumes no responsibility for any conclusions or interpretations made by the Contractor on the basis of the information made available by the Owner.

3.37 SOIL EROSION AND SEDIMENT CONTROL: The Contractor's attention is directed to the fact that unless exposed earth areas are properly cared for during construction, they may result in substantial sedimentation damage downstream from the construction area. The Contractor shall be responsible for conducting his site grading and drainage operations in such manner as to prevent excessive soil erosion of the construction site work areas. He shall at all times provide satisfactory means to prevent the movement and washing of soil onto pavements or into adjacent ditches, swales, inlets, and drainage pipes, to avoid the possibility of these structures becoming clogged with soil. He shall promptly repair all areas that may become eroded and shall clear drainage ditches, swales, and structures of siltation. The Contractor will indemnify and save harmless the Owner and Engineer from and against any and all claims, demands, fines, or assessments, including attorneys' fees and cost of defense arising out of or caused by the Contractor's failure to provide soil erosion and sediment control.

3.38 SUBSURFACE CONDITIONS: The applicable provisions governing Subsurface Conditions are contained in the Contract Documents.

3.39 SUBCONTRACTING: The Contractor may utilize the services of specialty Subcontractors on those parts of the Work, which, under normal contracting practices, are performed by specialty Subcontractors. The Contractor shall, without additional expense to the Owner, utilize the services of specialty subcontractors on those parts of the work specified to be performed by specialty subcontractors.

The Contractor shall not award any work to any subcontractor without prior written approval of the Owner, which approval will not be given until the Contractor submits to the Owner a written statement concerning the proposed award to the subcontractor, which statement shall contain such information as the Owner may require. No request for payment will be approved before this list has been received and reviewed by the Owner.

The Contractor shall not award Work to Subcontractors, in excess of fifty percent (50%) of the Contract Price, without prior written approval of the Owner.
The Contractor shall be fully responsible to the Owner for the acts and omissions of his Subcontractors, and of persons either directly or indirectly employed by them, as he is for the acts or omissions of persons directly employed by him.

The Contractor shall cause appropriate provisions to be inserted in all subcontracts relative to the Work to bind Subcontractors to the Contractor by the terms of the Contract Documents insofar as applicable to the Work of Subcontractors and to give the Contractor the same power as regards terminating any subcontract that the Owner may exercise over the Contractor under any provisions of the Contract Documents.

If any other contractor or any subcontractor of any such other contractor shall suffer or claim to have suffered loss, damage, or delay by reason of the acts or omissions of the Contractor or of any of his subcontractors, the Contractor agrees to assume the defense against any such claim and to reimburse such other contractor or subcontractor for such loss or damage. The Contractor agrees to and does hereby indemnify and save harmless the Owner from and against any and all claims by such other contractors or subcontractors alleging such loss, damage, or delay and from and against any and all claims, demands, costs, and expenses, including attorneys' fees, arising out of, relating to, or resulting from such claims.

The Contractor shall be responsible for the coordination of the trades, subcontractors, and material men engaged upon his work. The Owner or Engineer will not undertake to settle any differences between the Contractor and his subcontractors or between subcontractors. If any Subcontractor on the project, in the opinion of the Engineer, proves to be incompetent or otherwise unsatisfactory, he shall be replaced if and when directed in writing.

3.40 SUPERVISION: The Contractor shall keep on his work, during its progress, a competent superintendent and any necessary assistants, all being satisfactory to the Owner. The superintendent shall not be changed except with the consent of the Owner, unless the superintendent proves to be unsatisfactory to the Contractor and ceases to be in his employ. The superintendent shall represent the Contractor in his absence and all directions given to him shall be as binding as if given to the Contractor. Important directions shall be confirmed in writing to the Contractor. Other directions shall be so confirmed on written request in each case. The Owner shall not be responsible for the acts or omissions of the superintendent or his assistants.

The Contractor shall give efficient supervision to the Work, using his best skill and attention. He shall carefully study and compare all Drawings, Specifications, and other instructions and shall at once report to the Owner any error, inconsistency, or omission which he may discover.

3.41 TAXES: The Contractor shall promptly pay federal, state, and local taxes which may be assessed against him in connection with the work or his operations under the Agreement and/or the other Contract Documents, including, but not limited to, taxes attributable to the purchase of materials and equipment, to the performance of services, and the employment of persons in the prosecution of the work.

3.42 TEMPORARY HEAT: The Contractor shall provide temporary heat whenever necessary to protect all Work and materials against injury from dampness and cold and to dry out moisture from the building. Fuel, equipment, and method of heating shall be satisfactory to the Owner's Insurer and the Engineer.

Temporary heating apparatus shall be installed and operated in such a manner that finished work will not be damaged thereby.
3.43 **SANITARY FACILITIES:** The Contractor shall provide adequate sanitary facilities for the use of those employed on the Work. Such facilities shall be made available when the first employees arrive on the site of the Work, shall be properly secluded or screened from public observations, and shall be constructed and maintained during the progress of the Work in suitable numbers and at such points and in such manner as may be required or approved. The Contractor shall maintain the sanitary facilities in a satisfactory and sanitary condition at all times and shall enforce their use. He shall rigorously prohibit the committing of nuisances on the site of the work, on the lands of the Owner, or on adjacent property. The Owner and the Engineer shall have the right to inspect such facilities at all times to determine whether or not they are being properly and adequately maintained.

3.44 **TEMPORARY UTILITIES:** The Contractor shall make arrangements for and furnish as a part of the Contract, all electricity, water, lighting, and other utilities needed to do the Work called for by the Contract. Any separate contractors having a contract with the Owner shall make arrangements for and share the cost with the Contractor for the use of the required utilities on a pro rated schedule based on an agreed basis. All Electrical Work shall comply with the National Electrical Code.

The Contractor shall provide and pay for all temporary wiring, switches, connections, and meters. The Contractor shall provide sufficient electric lighting so that all work may be done in a workmanlike manner when there is not sufficient daylight.

3.45 **UNCOVERING AND CORRECTION OF WORK:** The Engineer shall be furnished by the Contractor with every reasonable facility for examining and inspecting the work and for ascertaining that the work is being performed in accordance with the requirements and intent of the Contract, even to the extent of requiring the uncovering or taking down of portions of finished work by the Contractor.

Should the work thus uncovered or taken down prove satisfactory, the cost of uncovering or taking down and the replacement thereof shall be considered as extra work unless the original work was done in violation of the Contract in point of time or in the absence of the Engineer or his inspector and without his written authorization, in which case said cost shall be borne by the Contractor. Should the work uncovered or taken down prove unsatisfactory, said cost shall likewise be borne by the Contractor.

The inspection of the work shall not relieve the Contractor of any of his obligations to perform and complete the work as required by the Contract. Defective work shall be corrected and unsuitable materials, equipment, apparatus, and other items shall be replaced by the Contractor, notwithstanding that such work, materials, equipment, apparatus, and other items may have been previously overlooked or accepted or estimated for payment. If the work or any part thereof shall be found defective at any time before the final acceptance of the work, the Contractor shall forthwith make good such defect in a manner satisfactory to the Engineer; if any materials, equipment, apparatus, or other items brought upon the site for use or incorporation in the work, or selected from the same, are condemned by the Engineer as unsuitable or not in conformity with the Specifications or any of the other Contract Documents, the Contractor shall forthwith remove such materials, equipment, apparatus, and other items from the site of the work and shall at his own cost and expense make good and replace the same and any material furnished by the Owner which shall be damaged or rendered defective by the handling or improper installation by the Contractor, his agents, servants, employees, or subcontractors.

If the Owner deems it inexpedient to correct work injured or done not in accordance with the Contract, an equitable deduction from the Contract Price shall be made therefore.

3.46 **COOPERATION WITH UTILITIES:** The Owner will notify all utility companies, all pipe line owners, or other parties affected, and endeavor to have all necessary adjustments of the
public or private utility fixtures, pipe lines, and other appurtenances within or adjacent to the limits of construction, made as soon as practicable.

Water lines, gas lines, wire lines, sewer lines, water and gas meter boxes, water and gas valve boxes, manholes, light standards, cableways, signals, and all other utility appurtenances within the limits of the proposed construction which are to be relocated or adjusted are to be moved by the Owners under separate agreement, except as otherwise provided for in the Supplemental Conditions or as noted on the Drawings.

The Drawings will show all known utilities located within the limits of the contract according to information obtained. The accuracy of the Drawings, in this respect, is not guaranteed by the Owner. The Contractor shall have considered in his bid all of the permanent and temporary utility appurtenances in the present or relocated position. No additional compensation will be allowed for any delays, inconveniences, or damages sustained by him due to any interference from the said utility appurtenances or the operation of moving them.

Unless otherwise provided, the cost of temporary rearrangement of utilities made only in order to facilitate the construction of the work will be borne by the Contractor.

3.47 VERIFICATION OF DIMENSIONS AND ELEVATIONS: Dimensions and elevations indicated on the Drawings in reference to existing structures, location of utilities, sewer inverts, or other information on existing facilities, are the best available data obtainable but are not guaranteed by the Engineer. The Engineer will not be responsible for their accuracy. Before proceeding with any work dependent upon the data involved, the Contractor shall field check and verify all dimensions, grades, inverts, lines, elevations, or other conditions of limitations at the site of the work to avoid construction errors or damage to existing facilities. If any work is performed by the Contractor, or any subcontractors, prior to adequate verification of applicable data, any resultant extra cost for adjustment of work necessary to conform to existing facilities, shall be assumed by the Contractor without reimbursement or compensation by the Owner.

If the Contractor, in the course of the work, finds any discrepancy between the Drawings and the physical conditions of the locality, or any errors or omissions in the Drawings or in the layout as given by survey points and instructions, he shall immediately inform the Engineer, in writing. The Engineer will promptly investigate the reported conditions and issue such instructions as may be necessary for the proper execution of the work. Any work done after such discovery and prior to receipt of such instructions shall be at the risk of the Contractor.

4. MATERIALS, EQUIPMENT AND WORKMANSHIP

4.1 CHEMICAL USAGE: All chemicals used during project construction or furnished for project operation, whether herbicide, pesticide, disinfectant, polymer, reactant, or of other classification, shall show approval of either EPA or USDA. The use of all such chemicals and disposal of residues shall be in strict conformance with manufacturer and USDA instructions.

4.2 CONTRACTOR’S TITLE TO MATERIALS: No materials or supplies for the Work shall be purchased by the Contractor or by any subcontractor subject to any chattel mortgage or under a conditional sale contract or other agreement by which an interest is retained by the seller. The Contractor warrants that he has good title to all materials and supplies used by him, in the Work, free from all liens, claims, or encumbrances.

4.3 CORRECTION OF WORK BEFORE COMPLETION: The Contractor shall promptly remove from the premises all work condemned by the Owner as failing to conform to the Contract Documents, whether incorporated or not and the Contractor shall promptly replace and re-execute his own work in accordance with the Contract and without
expense to the Owner and shall bear the expense of making good all work of other contractors destroyed or damaged by such removal or replacement. The fact that the Engineer may have previously overlooked such defective work shall not constitute an acceptance of any part of it.

If the Contractor does not remove such condemned work within a reasonable time, fixed by written notice, the Owner may remove it, and after storing it at the job site for 30 days, due written notice thereof being given the Contractor, the Owner may offer the material for sale and removal from the premises. Net proceeds from such sale shall be for the Contractor's credit against the Owner's Right to Do Work. If the material has no sale value, the Owner may remove it from the premises and/or otherwise dispose of it. The costs of such disposition shall be deducted from payments to the Contractor as provided in Subsection 2.10 entitled OWNER'S RIGHT TO DO WORK.

4.4 CORRECTION OF WORK AFTER COMPLETION: The Contractor shall remedy any defects due to faulty materials or workmanship and pay for any damage to other work resulting there from which shall appear within a period of one year from the date of final acceptance of the work except where longer periods are specified and in accordance with the terms of any special guarantees provided in the Contract.

4.5 CORRECTIONS OF WORK AFTER GUARANTEE PERIOD: It shall be the responsibility of the Contractor to permanently correct all defective items called to his attention within the guarantee period, whether such correction be made within the guarantee period or not. The Contract shall not be fully performed until such permanent corrections are made.

4.6 GENERAL GUARANTEE: For a period of at least one year after final acceptance, or longer if required by law, or by a special warranty provision of the CONTRACT DOCUMENTS, the CONTRACTOR warrants the fitness and soundness of all work done and for materials and equipment put in place. Neither the Final Certificate of Payment nor any other provision in the said CONTRACT shall constitute an acceptance of WORK not done in accordance with the CONTRACT DOCUMENTS, or relieve the CONTRACTOR of liability in respect to any express or implied warranties for faulty materials or workmanship. If within one year after the date of final completion or such longer period of time as may be prescribed by Laws or Regulations, or by the terms of any applicable special guarantee required by the CONTRACT DOCUMENTS, any WORK is found to be defective, the CONTRACTOR shall promptly, without cost to the OWNER, and in accordance with the OWNER'S written instructions, either correct such defective WORK, or if it has been rejected by the OWNER, remove it from the site and replace it with non-defective WORK. If the CONTRACTOR does not promptly comply with the terms of such instructions, or in an emergency where delay would cause serious risk of loss or damage, the OWNER may have the defective WORK corrected or the rejected WORK removed and replaced, and all direct, indirect, and consequential costs of such removal and replacement (including but not limited to fees and charges of engineers, architects, attorneys, and other professionals) will be paid by the CONTRACTOR. In special circumstances where a particular item of equipment is placed in continuous service before final completion of all THE WORK, the correction period for that item may start to run from an earlier date if so provided in the Specifications or by written amendment.

4.6.1 If in fulfilling the requirements of the CONTRACT or of any guarantee embraced therein or required thereby, the CONTRACTOR disturbs any work guaranteed under another contract, he shall restore such disturbed work to a condition satisfactory to the OWNER, and shall guarantee such restored work to the same extent as it was guaranteed under such other contract.

4.6.2 If the CONTRACTOR, after notice, fails to proceed promptly to comply with the terms of the guarantee, the OWNER may have the defects corrected and the CONTRACTOR shall be liable for all expenses incurred.
4.6.3 All special guarantees applicable to definite parts of the work that may be stipulated in the specifications or other papers forming a part of the CONTRACT shall be subject to the terms of this paragraph during the first year of the life of such special guarantee.

4.7 **HANDLING AND DISTRIBUTION:** The Contractor shall handle, haul, and distribute all materials and all surplus materials on the different portions of the work as necessary or required; shall provide suitable and adequate storage room for materials and equipment during the progress of the work, and be responsible for the protection, loss of, or damage to materials and equipment furnished by him, until the final completion and acceptance of the work.

Storage and demurrage charges by transportation companies and vendors shall be borne by the Contractor.

4.8 **MANUFACTURER'S DIRECTIONS:** All manufactured articles, material, and equipment shall be applied, installed, connected, erected, used, cleaned, and conditioned as directed by the manufacturers, unless herein specified to the contrary.

If the specifications or plans are contrary to the manufacturer's directions, the manufacturer shall be contacted by the Contractor before proceeding with the work and the Engineer advised if the manufacturer has any objections to the specified application.

4.9 **MATERIALS, SERVICES, AND FACILITIES:** It is understood that, except as otherwise specifically stated in the Contract Documents, the Contractor shall provide and pay for all labor, supplies and materials, tools, machinery, equipment, transportation, supervision, temporary construction of any nature, and all other services, means, and facilities of any nature whatsoever necessary to execute, complete, and deliver the Work within the specified time.

Materials and equipment shall be so stored as to insure the preservation of their quality and fitness for the Work. Stored materials and equipment to be incorporated in the Work shall be located so as to facilitate prompt inspection.

Materials, supplies, and equipment shall be in accordance with samples submitted by the Contractor and approved by the Engineer.

4.10 **MISCELLANEOUS ITEMS:** The work to be done by the Contractor, specified and enumerated under this Contract, shall include any minor details of the Work not specifically mentioned in the Specifications or shown on the Drawings, but obviously necessary for the proper completion of the Work, which shall be considered incidental and as being a part of and included with the Work for which prices are given in the Bid. The Contractor will not be entitled to any additional compensation therefore.

Miscellaneous items and accessories which are not specifically mentioned, but which are essential to produce a complete and properly operating installation or usable structure or plant, providing the indicated function, shall be furnished and installed without change in the contract price. Such miscellaneous items and accessories shall be of the same quality standards, including material, style, finish, strength, class, weight, and other applicable characteristics as specified for the major component of which the miscellaneous item or accessory is an essential part, and shall be approved by the Engineer before installation. The above requirement is not intended to include major components not covered by or inferable from the Drawings and Specifications.

4.11 **MISTAKES OF CONTRACTOR:** The Contractor shall promptly correct and make good any and all defects, damages, omissions, or mistakes, for which he and/or his agents, servants, employees, or subcontractors are responsible, and he shall pay to the Owner
all costs, expenses, losses, and damages resulting there from or by reason thereof as determined by the Engineer.

4.12 **PROTECTION AGAINST ELECTROLYSIS:** Where dissimilar metals are used in conjunction with each other, or against concrete surfaces, suitable insulation shall be provided between adjoining surfaces so as to eliminate direct contact and any resultant electrolysis. The insulation shall be bituminous impregnated felt, heavy bituminous coatings, nonmetallic separators or washers, or other approved materials.

4.13 **RIGHT TO MATERIALS:** Nothing in the Contract shall be construed as vesting in the Contractor any right of property in the materials, equipment, apparatus and other items furnished after they have been installed or incorporated in or attached or affixed to the work or the site, but all such materials, equipment, apparatus and other items shall, upon being so installed, incorporated, attached, or affixed, become the property of the Owner.

4.14 **ROYALTIES AND PATENTS:** The Contractor shall pay all applicable royalties and license fees. He shall defend all suits or claims for infringement of any patent rights and shall save the Owner harmless from loss on account thereof, except that the Owner shall be responsible for all such loss when a particular process or the product of a particular manufacturer or manufacturers is specified, but if the Contractor has information that the process or article specified is an infringement of a patent, he shall be responsible for such loss unless he promptly gives such information to the Owner in writing.

4.15 **SUBMITTAL SCHEDULE:** Within twenty (20) days after execution and delivery of the Contract, the Contractor shall prepare and deliver to the Engineer a Submittal Schedule. This includes a list of all submittals required under the Contract. The list shall identify each major group of shop drawings, coordination drawings, and schedules and each sample and the planned submission date for each.

After the Engineer's review of the list of submittals, the Engineer will meet with the Contractor for a joint review and correction and adjustment, as necessary, for agreement on the submittal. In addition, at the meeting the duration of the review period for each submittal will be established. The Contractor's planned submission date for each submittal shall allow no less than fifteen (15) working days for review and appropriate action before approval of the submittal becomes critical to the progress of the Contractor's work. Within five (5) calendar days after the joint review, the Contractor shall make any necessary revisions to the list of submittals, including durations of the review periods, in accordance with the agreements reached during the joint review and submit two revised copies to the Engineer. No application for partial payment will be approved until the submitted schedule is approved.

4.16 **SHOP DRAWINGS:** Shop Drawings are drawings, diagrams, illustrations, schedules, performance charts, brochures, and other data which are prepared by the Contractor or any Subcontractor, manufacturer, supplier or distributor, and which illustrate some portion of the Work. It shall be the Contractor's responsibility to furnish Shop Drawings as required by the technical specifications or as requested by the Engineer. These submittals must be made no later than is required by the submittal schedule.

Shop Drawings shall show the principal dimensions, weight, structural and operating features, space required, clearances, type and/or brand of finish or shop coat, grease fittings, etc., depending on the subject of the drawing. When it is customary to do so, when the dimensions are of particular importance, or when so specified, the drawings shall be certified by the manufacturer or fabricator, as correct for the Contract.

When so specified or if considered by the Engineer to be acceptable, manufacturer's specifications, catalog data, descriptive manner, illustrations, etc., may be submitted for approval in place of shop and working drawings. In such case the requirements shall be
as specified for shop and working drawings, insofar as applicable except that the submission shall be in quadruplicate.

The Contractor shall be responsible for the prompt and timely submittal of all shop and working drawings so that there shall be no delay to the work due to the absence of such drawings.

The Contractor shall check the Shop Drawings, shall coordinate them (by means of coordination drawings wherever required) with the work of all trades involved before submission and shall indicate thereon his approval. Drawings and schedules submitted without evidence of the Contractor's approval may be returned for resubmission.

By approving and submitting Shop Drawings, the Contractor thereby represents that he has determined and verified all field measurements, field construction criteria, materials, catalog numbers, and similar data, or will do so, and that he has checked and coordinated each Shop Drawing with the requirements of the Work and of the Contract Documents.

If drawings or schedules show variations from the contract requirements because of standard shop practice or for other reasons, the Contractor shall describe such variations in his letter of transmittal. If acceptable, the Engineer may approve any or all such variations and issue an appropriate change order. If the Contractor fails to describe such variations he shall not be relieved of the responsibility for executing the work in accordance with the Contract, even though such drawings or schedules may have been approved.

Each Shop Drawing or Coordination Drawing shall have a blank area, five by five inches, located adjacent to the title block. The title block shall display the following:

- Number and Title of Drawing
- Date of Drawing
- Revision Number and Date (if applicable)
- Project Title
- Name of Project Building or Facility
- Name of Contractor
- Name of Subcontractor (if applicable)
- Clear identity of Contents and Location of Work

Prior to submitting drawings to the Engineer, the Contractor shall check thoroughly all such drawings to satisfy himself that the subject matter thereof conforms to the Drawings and Specifications in all respects. All drawings that are correct shall be marked with the date, checker's name, and indication of the Contractor's approval, and then shall be submitted to the Engineer; other drawings shall be returned for correction.

The Contractor shall stamp all drawings to be submitted to the Engineer for approval. The rubber stamp shall incorporate the following items:

PROJECT TITLE

CONTRACTOR'S NAME

APPROVED BY _______________ DATE _______________

SPECIFICATION SECTION TRANSMITTAL NO.

The review of Shop Drawings will be general only and shall not relieve or in any respect diminish the responsibility of the Contractor for details of design, dimensions, etc., necessary for proper fitting and construction of the work as required by the Contract and for achieving the result and performance specified there under.
Should the Contractor submit for approval equipment that requires modifications to the structures, piping, layout, etc., detailed on the Drawings, he shall also submit for approval details of the proposed modifications. If such equipment and modifications are approved, the Contractor, at no additional cost to the Owner, shall do all work necessary to make such modifications. Required structural changes shall be designed and detailed by an Engineer registered in the state in which the project will be constructed. Drawings shall be signed and show registration number or may have seal affixed.

Submission of Shop Drawings shall be accompanied by a copy of a transmittal letter containing the Project name, Contractor's name, number of drawings, titles, specifications section, and other pertinent data. The submittal shall include the following:

- Four (4) legible copies of Shop Drawings or printed matter

The review of the Shop Drawings will be performed by the Engineer as follows:

- When the submittal fully conforms to the Contract Drawings and Specifications, the Engineer will approve it. The reproducible of each drawing or page of approved submittals will be stamped approved, signed, dated, and returned to the Contractor. Changes shall not be made to the approved drawings by the Contractor. If the Contractor desires to make any change from approved drawings, or pages of approved submittals, he shall notify the Engineer in writing that the approved material has been withdrawn and shall submit the substitution set in accordance with the above procedure.

- When the submittal clearly does not conform to the Contract Drawings and Specifications, the Engineer will disapprove it by stamping it Rejected. Rejected submittals shall be corrected and resubmitted within fourteen (14) calendar days from the date of rejection. Rejected submittals shall not be released for any work.

- When the submittal has only minor deviations from the Contract Drawings and Specifications, the Engineer will note the deviations and omissions as may be appropriate and approve the submittal subject to the notations by stamping it Approved as Noted. Approved as Noted submittals may be released for fabrication of work at the Contractor's risk; in any event the submittal shall be corrected and resubmitted for approval within fourteen (14) calendar days from the date of approval as noted.

The Contractor shall be responsible for delays resulting from the rejection or approval as noted of incomplete, inadequate, incorrect, or otherwise unacceptable submittals.

The Contractor shall assure that only drawings and pages of printed material bearing the Engineer's Approved stamp are allowed on the job site.

The Contractor shall submit, at the completion of the Project, one set of all reviewed and correct shop drawings, catalog cuts, and descriptive literature for all Work previously submitted. These sets shall be sent to the Engineer for the Owner before final Certificate of Payment is issued.

4.17 OPERATING AND MAINTENANCE MANUALS: One copy of each required Operating and Maintenance Manual must be submitted to the Engineer with the first submittal of shop drawings. Five additional copies of each required Operating and Maintenance Manual must be submitted to the Engineer within fourteen (14) days of the return of approved shop drawings to the Contractor. No payment will be approved on any equipment for which Operating and Maintenance Manuals are required until the Operating and Maintenance Manuals are received by the Engineer. These O&M manuals must be addressed specifically to the piece of equipment supplied and shall not
be general in nature; each item must be clearly identified and located. Each page must be printed on 8-1/2” x 11” paper or folded to that size in a manner that will be suitable for insertion in a three-ring binder.

4.18 **SAMPLES:** Samples are physical examples furnished by the Contractor to illustrate materials, equipment, or workmanship, and to establish standards by which the Work will be judged. It shall be the Contractor's responsibility to furnish samples as required by the technical specifications or as required by the Engineer. These samples must be submitted no later than is required by the Submittal Schedule.

Each sample shall have a label indicating the following:

- Project Title
- Name of Project Building or Facility
- Name of Contractor
- Name of Subcontractor (if applicable)
- Identification of Material with Specification Section
- Name of Producer and Brand (if any)

Samples shall be submitted in duplicate unless otherwise noted in the technical specifications and shall be accompanied by a copy of a transmittal letter containing Project Name, Contractor's Name, number of samples, specification section, and other pertinent data.

If the Engineer so requires, either prior to or after commencement of the work, the Contractor shall submit samples of materials for such special tests as the Engineer deems necessary to demonstrate that they conform to the Specifications. Such samples shall be furnished, taken, stored, packed, and shipped by the Contractor as directed. Except as otherwise expressly specified, the Contractor shall make arrangements for, and pay for, the tests.

All samples shall be packed to reach their destination in good condition. To ensure consideration of samples, the Contractor shall notify the Engineer by letter that the samples have been shipped and shall properly describe the samples in the letter. The letter of notification shall be sent separate from and should not be enclosed with the samples.

The Contractor shall submit data and samples, or place his orders, sufficiently early to provide ample time for consideration, inspection, testing, and approval before the materials and equipment are needed for incorporation in the work. The consequences of his failure to do so shall be the Contractor's sole responsibility.

In order to demonstrate the proficiency of workmen, or to facilitate the choice among several textures, types, finishes, surfaces, etc., the Contractor shall provide such samples of workmanship of wall, floor, finish, etc., as may be required.

When required, the Contractor shall furnish to the Engineer triplicate sworn copies of manufacturer's shop or mill tests (or reports from independent testing laboratories) relative to materials, equipment performance ratings, and concrete data.

4.19 **STORAGE OF MATERIALS AND EQUIPMENT:** All excavated materials, construction equipment, and materials and equipment to be incorporated in the Work shall be placed so as not to injure any part of the Work or existing facilities and so that free access can be had at all times to all parts of the Work and to all public utility installations in the vicinity of the Work. Materials and equipment shall be kept neatly piled and compactly stored in such locations as will cause a minimum of inconvenience to public travel and adjoining owners, tenants, and occupants.
4.20 **INSPECTION AND TESTING:** All materials and equipment used in the construction of the Project shall be subject to adequate inspection and testing in accordance with generally accepted standards, as required and defined in the Contract Documents.

The Owner shall provide all inspection and testing services not required by the Contract Documents.

The Contractor shall provide at his expense the testing and inspection services required by the Contract Documents.

If the Contract Documents, laws, ordinance, rules, regulations, or orders of any public authority having jurisdiction require any Work to specifically be inspected, tested, or approved by someone other than the Contractor, the Contractor will give the Engineer timely notice of readiness. The Contractor will then furnish the Engineer the required certificates of inspection, testing, or approval.

Inspections, tests, or approvals by the Engineer or others shall not relieve the Contractor from his obligations to perform the Work in accordance with the requirements of the Contract Documents.

The Engineer and his representatives will at all times have access to the Work. In addition, authorized representatives and agents of any participating Federal or State agency shall be permitted to inspect all work, materials, payrolls, records of personnel, invoices of materials, and other relevant data and records. The Contractor will provide proper facilities for such access and observation of the Work and also for any inspection or testing thereof.

If any Work is covered contrary to the written instructions of the Engineer it must, if requested by the Engineer, be uncovered for his observation and replaced at the Contractor's expense.

If the Engineer considers it necessary or advisable that covered Work be inspected or tested by others, the Contractor, at the Engineer's request, will uncover, expose, or otherwise make available for observation, inspection, or testing as the Engineer may require, that portion of the Work in question, furnishing all necessary labor, materials, tools, and equipment. If it is found that such Work is defective, the Contractor will bear all the expenses of such uncovering, exposure, observation, inspection, and testing and of satisfactory reconstruction. If, however, such Work is not found to be defective, the Contractor will be allowed an increase in the Contract Price or an extension of the Contract Time, or both, directly attributable to such uncovering, exposure, observation, inspection, testing, and reconstruction and an appropriate Change Order shall be issued.

4.21 **SUBSTITUTIONS:** The Contractor may recommend the substitution of a material, article, or piece of equipment of equal function for those referred to in the Contract Documents by reference to brand name or catalogue number, and if, in the opinion of the Engineer, such material, article, or piece of equipment is of equal function to that specified, the Engineer may approve its substitution and use by the Contractor. Any cost differential shall be deductible from the Contract Price, and the Contract Documents shall be appropriately modified by Change Order.

The Contractor warrants that if substitutes are approved, no major changes in the function or general design of the Project will result. Incidental changes or extra component parts required to accommodate the substitute will be made by the Contractor without a change in the Contract Price or Contract Time.

4.22 **OR EQUAL CLAUSE:** The phrase *or equal* shall be construed to mean that material or equipment will be acceptable only when in the judgment of the Engineer they are composed of parts of equal quality, or equal workmanship and finish, designed and
constructed to perform or accomplish the desired result as efficiently as the indicated brand, pattern, grade, class, make, or model.

Whenever a material, article, or piece of equipment is identified on the Drawings or in the Specifications by reference to manufacturers’ or vendors’ names, trade names, catalogue numbers; etc., it is intended merely to establish a standard of quality and function; and, any material, article; or equipment of other manufacturers and vendors which will perform adequately the duties imposed by the general design will be considered equally acceptable provided the material, article, or equipment so proposed, is, in the opinion of the Engineer, of equal substance and function. It shall not be purchased or installed by the Contractor without the Engineer's written approval.

4.23 WAGES AND OVERTIME COMPENSATION: The Contractor and each of his subcontractors shall comply with all applicable State and local laws or ordinances with respect to the hours worked by laborers and mechanics engaged in work on the project and with respect to compensation for overtime.

4.24 NO WAIVER: Neither the inspection by the Owner or the Engineer, nor any order measurement, approval, determination, decision, or certificate by the Engineer, nor any order by the Owner for the payment of money, nor any payment for or use, occupancy, possession, or acceptance of the whole or any part of the work by the Owner, nor the extension of time, nor any other act or omission of the Owner or of the Engineer shall constitute or be deemed to be an acceptance of any defective or improper work, materials, or equipment nor operate as a waiver of any requirement or provision of the Contract, or of any remedy, power, or right of or herein reserved to the Owner, nor of any right to damages for breach of contract. Any and all right and/or remedies provided for in the Contract are intended and shall be construed to be cumulative; and, in addition to each and every other right and remedy provided for herein or by law, the Owner shall be entitled as of right to a writ of injunction against any breach or threatened breach of the Contract by the Contractor, by his Subcontractors, or by any other person or persons.

4.25 WORK TO CONFORM: During its progress and on its completion, the work shall conform truly to the lines, levels, and grades indicated on the Drawings or given by the Engineer and shall be built in a thoroughly substantial and workmanlike manner, in strict accordance with the Drawings, Specifications, and other Contract Documents and the directions given from time to time by the Engineer.

All work done without instruction having been given therefore by the Engineer, without prior lines or levels, or performed during the absence of the Engineer, will not be estimated or paid for except when such work is authorized by the Engineer in writing. Work so done may be ordered uncovered or taken down, removed, and replaced at the Contractor's expense.

4.26 WORKING HOURS: It is contemplated that all work will be performed during the customary working hours of the trades involved unless otherwise specified in this Contract. Work performed by the Contractor at his own volition outside such customary working hours shall be at no additional expense to the Owner.

Any requests received by the Contractor from occupants of existing buildings to change the hours of work shall be referred to the Owner for determination.

5. INSURANCE, LEGAL RESPONSIBILITY, AND SAFETY
5.1 **LITIGATION OF DISPUTES: JURISDICTION:** OWNER and CONTRACTOR agree that this CONTRACT shall be interpreted according to the Laws of the State of South Carolina, and that the appropriate forum and jurisdiction for resolving any disputes and claims shall be the South Carolina Court of Common Pleas for Charleston County.

5.2 **WAIVERS EXPLICITLY IN WRITING:** No action or failure to act by the ENGINEER or the OWNER, or the CONTRACTOR shall constitute a waiver of any right or duty afforded any of them under the CONTRACT, nor shall any such action or failure to act constitute an approval of or acquiescence in any breach there under, except as may be specifically agreed in writing.

5.3 **ASSIGNMENTS:** The Contractor shall not assign the whole or any part of this Contract or any monies due or to become due hereunder without written consent of the Owner. In case the Contractor assigns all or any part of any monies due or to become due under this Contract, the instrument of assignment shall contain a clause substantially to the effect that it is agreed that the right of the assignee in and to any monies due or to become due to the Contractor shall be subject to prior claims of all persons, firms, and corporations for services rendered or materials supplied for the performance of the work called for in this contract.

5.4 **PERFORMANCE BOND AND PAYMENT BOND:** Unless otherwise noted in the Supplemental Conditions, a Performance Bond and a Payment Bond are required. The Contractor shall obtain a Performance Bond and Payment Bond, acceptable to the Owner in a surety company authorized to do business in the state in which the Project is constructed, each for the full amount of the Contract Sum. The bonds shall guarantee the Contractor's faithful performance of the Contract and the payment of all obligations arising there under. The bonds shall remain in force until:

5.4.1 The Project has been completed and accepted by the Owner.

5.4.2 The provisions of all guarantees required by these Contract Documents have been fulfilled or the time limitation for all guarantees has expired, or

5.4.3 The time for the filing of all mechanics' liens has expired, whichever is longer, after which it shall become void.

The Contractor shall pay all charges in connection with the bonds as a part of the Contract. One executed copy of the bonds shall be attached to each copy of the Contract before they are returned to the Engineer for the Owner's signature.

If the Contractor defaults, the Contractor or his Surety shall reimburse the Owner for any additional Engineering fees for additional services made necessary because of the Contractor's default.

5.5 **ADDITIONAL OR SUBSTITUTE BOND:** If at any time the Owner for justifiable cause, shall be or become dissatisfied with the surety or sureties for the Performance and/or Payment Bonds, the Contractor shall within 5 days after notice from the Owner to do so, substitute an acceptable bond (or bonds) in such form and sum and signed by such other surety or sureties as maybe satisfactory to the Owner. The premiums on such bond shall be paid by the Contractor. No further payments shall be deemed due nor shall be made until the new surety or sureties shall have furnished such an acceptable bond to the Owner.

5.6 **CHANGES NOT TO AFFECT BONDS:** It is distinctly agreed and understood that any changes made in the Work or the Drawings or Specifications therefore (whether such changes increase or decrease the amount thereof or the time required for its performance) or any changes in the manner or time of payments made by the Owner to the Contractor, or any other modifications of the Contract, shall in no way annul, release,
diminish, or affect the liability of the Surety on the Contract Bonds given by the Contractor, it being the intent hereof that notwithstanding such changes the liability of the Surety on said bonds continue and remain in full force and effect.

5.7 **COMPLIANCE WITH LAWS:** The Contract shall be governed by the law of the place where the Project is located. The Contractor shall abide by all local and State Laws or ordinances to the extent that such requirements do not conflict with Federal laws or regulations. The Contractor shall keep himself fully informed of all existing and future federal, state, and local laws, ordinances, rules, and regulations affecting those engaged or employed on the work, the materials and equipment used in the work or the conduct of the work, and of all orders, decrees, and other requirements of bodies or tribunals having any jurisdiction or authority over the same, including, but not limited to the US Department of Labor and Bureau of Standards Safety and Health Regulations for Construction and its amendments as set up under the Williams-Steiger Occupational Safety and Health Act of 1970. If any discrepancy or inconsistency is discovered in the Drawings, Specifications, or other Contract Documents in relation to any such law, ordinance, rule, regulation, order, decree, or other requirement, the Contractor shall forthwith report the same to the Engineer in writing.

The Contractor shall at all times observe and comply with, and cause all his agents, servants, employees, and subcontractors to observe and comply with all such existing requirements, and he shall protect, indemnify, and save harmless the Owner, its officers, agents, servants, and employees, from and against any and all claims, demands, suits, proceedings, liabilities, judgments, penalties, losses, damages, costs and expenses, including attorney’s fees, arising from or based upon any violation or claimed violation of any such law, ordinance, rule, regulations, order, decree, or other requirement, whether committed by the Contractor or any of his agents, servants employees, or subcontractors.

5.8 **REQUIRED PROVISIONS DEEMED INSERTED:** Each and every provision of law and clause required by law to be inserted in this Contract shall be deemed to be inserted herein, and the Contract shall be read and enforced as though it were included herein. If through mistake or otherwise any such provision is not inserted, or is not correctly inserted, then upon the application of either party the Contract shall forthwith be physically amended to make such insertion or correction.

5.9 **LIENS:** If at any time any notice of liens are filed for labor performed or materials or equipment manufactured, furnished, or delivered to or for the Work, the Contractor shall, at its own cost and expense, promptly discharge, remove, or otherwise dispose of the same, and until such discharge, removal, or disposition, the Owner shall have the right to retain from any monies payable hereunder an amount which, in its sole judgment, it deems necessary to satisfy such liens and pay the costs and expenses, including attorney’s fees, of defending any actions brought to enforce the same, or incurred in connection therewith or by reason thereof.

5.10 **CLAIMS:** If at any time there is any evidence of any claims for which the Contractor is or may be liable or responsible hereunder, the Contractor shall promptly settle or otherwise dispose of the same, and until such claims are settled or disposed of, the Owner may retain from any monies which would otherwise be payable hereunder so much thereof as, in its judgment, it may deem necessary to settle or otherwise dispose of such claims and to pay the costs and expenses, including attorneys’ fees, of defending any actions brought to enforce such claims, or incurred in connection therewith or by reason thereof.

5.11 **INSURANCE:** The Contractor shall not commence any work until he obtains, at his own expense, all required insurance. Such insurance must have the approval of the Owner as to limit, form, and amount. The Contractor will not permit any Subcontractor to commence work on this project until the same insurance requirements have been
complied with by such Subcontractor. All insurance coverage as required herein shall include the Owner as an additional insured therein.

The Contractor shall furnish the Owner with certificates showing the type, amount, class of operations covered, effective dates, and dates of expiration of policies. Such certificates shall also contain substantially the following statement: "The insurance covered by this certificate will not be canceled or materially altered, except after ten (10) days notice in writing and delivered by registered mail to the Owner." Should any policy be canceled before final payment by the Owner to the Contractor and the Contractor fails immediately to procure other insurance as specified, the Owner reserves the right to procure such insurance and to deduct the cost thereof from any sum due the Contractor under this Contract.

Any insurance bearing on adequacy of performance shall be maintained after completion of the project for the full guaranty period. Should such insurance be canceled before the end of the guaranty period and the Contractor fails immediately to procure other insurance as specified, the Owner reserves the right to procure such insurance and to charge the cost thereof to the Contractor.

Nothing contained in these insurance requirements is to be construed as limiting the extent of the Contractor's responsibility for payment of damages resulting from his operations under this Contract.

The Contractor is required to obtain and maintain for the full period of the Contract the following types of insurance coverage with limits not less than stated below:

5.11.1 WORKMEN'S COMPENSATION INSURANCE

As required by applicable State or territorial law for all of his employees to be engaged in work at the site of the project under this Contract and, in case of any such work sublet, the Contractor shall require the subcontractor similarly to provide Workmen's Compensation Insurance for all of the latter's employees to be engaged in such work unless such employees are covered by the protection afforded by the Contractor's Workmen's Compensation Insurance. In case any class of employees engaged in hazardous work on the project under this Contract is not protected under the Workmen's Compensation Statute, the Contractor shall provide and shall cause each subcontractor to provide adequate employer's liability insurance for the protection of such of his employees as are not otherwise protected.

5.11.2 COMPREHENSIVE GENERAL LIABILITY

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<tr>
<th>Premises and Operations</th>
<th>Bodily Injury</th>
<th>Property Damage</th>
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<td>$2,000,000/aggregate</td>
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<tr>
<td>Elevator Liability</td>
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<tr>
<td>Contractor's Protective Liability</td>
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<td></td>
<td>$2,000,000/aggregate</td>
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<tr>
<td>Products Liability, Including Completed Operations Coverage</td>
<td>$1,000,000/per occurrence</td>
<td>$2,000,000/aggregate</td>
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*COI should name the City as an additional insured.

*Explosion, Collapse & Underground (XCU) should not be excluded if the work contemplates this exposure
5.11.3 COMPREHENSIVE AUTOMOBILE LIABILITY

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<thead>
<tr>
<th></th>
<th>Combined single limit</th>
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<tr>
<td>(includes owner, non-owned and hired car)</td>
<td>Split Limits</td>
<td>Bodily injury per person: $500,000</td>
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<tr>
<td></td>
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<td>BI per occurrence: $1,000,000</td>
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<td></td>
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<td>Property Damage: $500,000</td>
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</tbody>
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5.11.4 WORKERS COMPENSATION

Must fulfill the statutory requirements.

5.11.5 ENVIRONMENTAL LIABILITY

- Per Occurrence: $1,000,000
- Aggregate: $1,000,000

5.11.6 SUBCONTRACTOR’S LIABILITY INSURANCE

Same limits as required of the General Contractor.

5.12 ORAL AGREEMENTS: No oral order, objection, claim, or notice by any party to the others shall affect or modify any of the terms or obligations contained in any of the Contract Documents, and none of the provisions of the Contract Documents shall be held to be waived or modified by reason of any act whatsoever, other than by a definitely agreed waiver or modification thereof in writing, and no evidence shall be introduced in any proceeding of any other waiver or modification.

5.13 SAFETY: In accordance with generally accepted construction practices, the Contractor shall be solely and completely responsible for conditions of the job site, including safety of all persons and property affected directly or indirectly by his operations during the performance of the work. This requirement will apply continuously 24 hours per day until acceptance of the work by the Owner and shall not be limited to normal working hours.

The Contractor shall take all reasonable precautions for the safety of, and shall provide all reasonable protection to prevent damage, injury or loss to:

5.13.1 All employees on the Work and all other persons who may be affected thereby;

5.13.2 All the Work and all materials and equipment to be incorporated therein, whether in storage on or off the site, under the care, custody, or control of the Contractor or any of Subcontractors or Sub-subcontractors; and

5.13.3 Other property at the site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures, and utilities not designated for removal, relocation, or replacement in the course of construction.

The Contractor shall comply with all applicable laws, ordinances, rules, regulations, and lawful orders of any public authority having jurisdiction for the safety of persons or property or to protect them from damage, injury, or loss. He shall erect and maintain, as required by existing conditions and progress of the Work, all reasonable safeguards for safety and protection, including posting danger signs and other warnings against hazards, promulgating safety regulations and notifying owners and users of adjacent utilities.
When the use or storage of explosives or other hazardous materials or equipment is necessary for the execution of the Work, the Contractor shall exercise the utmost care and shall carry on such activities under the supervision of properly qualified personnel.

The Contractor shall designate a responsible member of his organization at the site whose duty shall be the prevention of accidents. This person shall be the Contractor's superintendent unless otherwise designated in writing by the Contractor to the Owner and the Engineer.

The Contractor shall not load or permit any part of the Work to be loaded so as to endanger its safety.

6. **PROGRESS AND COMPLETION OF WORK**

6.1 **NOTICE TO PROCEED:** Following the execution of the Agreement by the Owner and the Contractor, written Notice to Proceed with the work shall be given by the Owner to the Contractor. The Contractor shall begin and shall prosecute the work regularly and uninterruptedly thereafter (except as provided for herein) with such force as to secure the completion of the work within the Contract Time.

6.2 **CONTRACT TIME:** The Contractor shall complete, in an acceptable manner, all of the work contracted for in the time stated in the Agreement. Computation of Contract Time shall commence the day to be specified in the Notice to Proceed and every calendar day following, except as herein provided, shall be counted as Contract Time.

6.3 **SCHEDULE OF COMPLETION:** The Contractor shall submit, at such times as may reasonably be requested by the Engineer, schedules showing the order in which the Contractor proposes to carry on the work, with dates at which the Contractor will start the various parts of the work, and estimated date of completion of each part.

6.4 **WORK CHANGES:** The Owner may, as the need arises, order changes in the work through additions, deletions, or modifications to the extent of 20% of the Contract Amount, without invalidating the Contract. Competition and time of completion affected by the change shall be adjusted at the time of ordering such change. Payment for addition or deletion of work shall be at the unit price set forth in the bid.

6.5 **EXTRA WORK:** New and unforeseen items of work found to be necessary, and which cannot be covered by an item or combination of items for which there is a Contract Price, shall be classed as Extra Work. The Contractor shall do such Extra Work and furnish such materials as may be required for the proper completion or construction of the whole work contemplated, upon written order from the Owner as approved by the Engineer. In the absence of such written order, no claim for Extra Work shall be considered. Extra Work shall be performed in accordance with these Contract Documents where applicable, and work not covered by such shall be done in accordance with the best construction practice and in a workmanlike manner. Extra Work required in an emergency to protect life and property shall be performed by the Contractor as required.

6.6 **EXTENSION OF CONTRACT TIME:** A delay beyond the Contractor's control occasioned by an Act of God, by act or omission on the part of the Owner or by strikes, lockouts, fire, etc., not caused by the Contractor, may entitle the Contractor to an extension of time in which to complete the work as agreed by the Owner, provided, however, that the Contractor shall immediately give written notice to the Owner of the cause of such delay. Act of God shall mean an earthquake, flood, cyclone, or other cataclysmic phenomenon of nature. Rain, wind, flood, or other natural phenomenon of normal intensity for the locality shall not be construed as an Act of God, and no reparation shall be made to the Contractor for damages to the work resulting therefrom.
All claims for extension of time shall be made in writing to the Engineer no more than twenty days after the occurrence of the delay; otherwise they shall be waived. In the case of continuing cause of delay only one claim is necessary. Any claim should include complete justification for the extent of the delay claimed.

This Subsection does not exclude the recovery of damages for delay for either party under other provisions of the Contract Documents.

6.7 ENGINEER'S CERTIFICATE OF SUBSTANTIAL COMPLETION: When the work to be performed under this Contract is substantially completed in accordance with the Contract Documents, the Engineer shall prepare an Engineer's Certificate of Substantial Completion to be acknowledged and accepted by the Owner and the Contractor. The Certificate may list items to be completed or corrected but such Certificate shall not relieve the Contractor of his obligation to complete all work, whether listed or not, in accordance with the Contract Documents nor will it preclude any right the Owner may have for recourse in accordance with the Contract Documents.

6.8 TERMINATION OF CONTRACTOR'S RESPONSIBILITY: The Contract will be considered complete when all work has been finished, the final review made up by the Engineer, and the project accepted in writing by the Owner. The Contractor's responsibility shall then cease, except as set forth in his Performance Bond, as provided in Subsection 4.6 entitled GENERAL GUARANTY, and as provided in Subsection 6.9 entitled CORRECTION OF FAULTY WORK AFTER FINAL PAYMENT.

6.9 CORRECTION OF FAULTY WORK AFTER FINAL PAYMENT: The making of the final payment by the Owner to the Contractor shall not relieve the Contractor of responsibility for faulty materials or workmanship. The Contractor shall promptly replace any such defects discovered within one year, except where longer periods are specified, from the date of written acceptance of the work.

6.10 PROGRESS SCHEDULE: Within twenty (20) days after execution and delivery of the Agreement and not less than ten (10) days prior to making an application for partial payment, the Contractor shall prepare and deliver to the Engineer a Progress Schedule on forms approved by the Engineer.

The schedule shall be set up in a Critical Path format and shall show the proposed dates of commencement and completion of the various subdivisions of work required under the Contract Documents.

The schedule shall show the dates of commencement and completion of the various subdivisions of work required by the Contract Documents and all activities required to accomplish the work. No activity included in the schedule shall have a duration greater than fifteen (15) days. After approval of the Submit Schedule, the Contractor shall incorporate this schedule into the CPM schedule.

The schedule shall be updated monthly. No progress payments will be made unless application is accompanied by the updated schedule.

6.11 SCHEDULES, REPORTS, AND RECORDS: The Contractor shall submit to the Owner such schedules of quantities and costs, progress schedules, payrolls, reports, estimates, records, and other data where applicable as are required by the Contract Documents for the Work to be performed.

The Contractor shall also submit, in a format as approved by the Engineer, a schedule of payments that he anticipates he will earn during the course of the Work.

6.12 ABANDONMENT OF WORK OR OTHER DEFAULT: If the work shall be abandoned, or any part thereof shall be sublet without previous written consent of the Owner, or the
All costs, expenses, losses, damages, attorney's fees, and any and all other charges incurred by the Owner under this Subsection shall be charged against the Contractor and deducted and/or paid by the Owner out of any monies due or payable or to become due or payable under the Contract to the Contractor; in computing the amounts chargeable to the Contractor, the Owner shall not be held to a basis of the lowest prices for which the completion of the work or any part thereof might have been accomplished, but all sums actually paid or obligated therefore to effect its prompt completion shall be charged to and against the account of the Contractor. In case the costs, expenses, losses, damages, attorney's fees, and other charges together with all payments theretofore made to or for the account of the Contractor are less than the sum which would have been payable under the Contract if the work had been properly performed and completed by the Contractor, the Contractor shall be entitled to receive the difference and, in case such costs, expenses, losses, damages, attorney's fees, and other charges, together with all payments theretofore made to or for the account of the Contractor, shall exceed the said sum, the Contractor shall pay the amount of the excess to the Owner.

7. PAYMENTS TO THE CONTRACTOR

7.1 PRICES FOR WORK: The Owner shall pay and the Contractor shall receive the prices stipulated in the Bid made a part hereof as full compensation for everything performed and furnished and for all risks and obligations undertaken by the Contractor under and as required by the Contract.

Payments by the Owner to the Contractor shall be based on a Lump Sum for the scope of Work. Unit prices have been received from the Contractor and agreed to by the Owner to provide agreed upon prices for modification to Work quantities. The Owner and Contractor agree that if the scope of Work either increases or decreases within 20% of the original unit quantities, the payment for such increase or decrease shall be based on the unit prices as set forth in the Contract Documents.
payment, submit to the Owner in a form approved by the Owner a schedule of values showing a breakdown of the Contract Sum itemized by trade and/or specification sections or as otherwise directed by the Owner and for each item shall show the total value including the Contractor's overhead and profit. Upon approval by the Owner, this schedule will be used in determining the value of the work done for the purpose of partial payments.

The costs employed in making up any of these schedules will be used only for determining the basis of partial payments and will not be considered as fixing a basis for additions to or deductions from the Contract Price.

7.3 APPLICATIONS FOR PARTIAL PAYMENT: Before the first day of each month, or as otherwise directed by the Owner, the Contractor shall make applications for the value of the work done and the materials installed and/or delivered to the site for installation in the project during the previous month. Such applications shall show the breakdown of the project into the same items as the schedule of values specified in Subsection 7.2 entitled SCHEDULE OF VALUES and showing for each item the total value, the value previously reported as complete, the value completed during the month, the cumulative value completed, and the value remaining to be done. The application shall also show the value of materials delivered to the site which have not been incorporated into the work and whose value is not included in the amount shown for the work of which they are a part. The value of such materials shall be established by attaching copies of invoices covering the materials to the application. The application shall include a summary of value of the work performed during the previous month, plus the value of the material delivered to the job site but not incorporated in the work, and minus the amount of the retainage indicated in Subsection 7.4 entitled RETAINAGE.

The Engineer will, within ten (10) days after receipt of each partial payment estimate, either indicate in writing his approval of payment and present the partial payment estimate to the Owner, or return the partial payment estimate to the Contractor indicating in writing his reasons for refusing to approve payment. In the latter case, the Contractor may make the necessary corrections and resubmit the partial payment estimate.

7.4 RETAINAGE: The Owner shall retain ten (10) percent of the amount of each payment until final completion and acceptance of all work covered by the Contract Documents. The Owner at any time, however, after fifty (50) percent of the work has been completed, if he finds that satisfactory progress is being made, will make further partial payments in full on the current and remaining estimates, but amounts previously retained shall not be paid to the Contractor at fifty (50) percent completion or any time thereafter. When, in the opinion of the Engineer, the progress of the Work is not satisfactory, additional amounts may be retained but in no event shall the total retainage be more than ten (10) percent of the value of the work completed. Upon substantial completion of the work, any amount retained may be paid to the Contractor. When the Work has been substantially completed except for Work that cannot be completed because of weather conditions, lack of materials, or other reasons that in the judgment of the Owner are valid reasons for non-completion, the Owner may make additional payments, retaining at all times an amount sufficient to cover the estimated cost of the Work still to be completed.

7.5 PAYMENTS WITHHELD: The Owner may withhold payment or, on account of subsequently discovered evidence, nullify the whole or part of any application to the extent necessary to protect himself from loss on account of the following:

7.5.1 Defective work not remedied.

7.5.2 Claims filed or reasonable evidence indicating the probably filing of claims.

7.5.3 Failure of the Contractor to make payments to Subcontractors, material suppliers, or employees.
7.5.4 A reasonable doubt that the Contract work can be completed for the balance unpaid.

7.5.5 Damage to another Contractor.

When the above grounds are removed, payment will be made for the amounts withheld because of them.

7.6 PAYMENT OF APPLICATIONS FOR PARTIAL PAYMENT: Upon verification and approval of the application for partial payment made as specified, the Owner will make payment of the amount found properly due. No payment made to the Contractor or partial or entire use or occupancy of the Work by the Owner shall be an acceptance of any work or materials not in accordance with this Contract.

7.7 FINAL INSPECTION: Upon receipt of written notice from the Contractor that the work has been completed and finished in accordance with the Contract, the Owner shall cause an inspection to be made of the work by his authorized representatives. A list shall be made of all deviations from the Contract requirements (commonly termed punch list), and a copy of such list furnished to the Contractor. The Contractor shall with reasonable haste remedy all defects so noted and shall notify the Owner upon the completion of such work. When inspection by the Owner's authorized representatives shows the work to be complete in accordance with the Contract, application for final payment may be made.

7.8 RELEASE OF LIENS: Neither the final payment nor any part of the retained percentage shall become due until the Contractor shall deliver to the Owner a complete and notarized release of all liens arising out of this Contract, or receipts in full in lieu thereof, and if required in either case, an affidavit that so far as he had knowledge of information the releases and receipts include all the labor and material for which a lien could be filed; but the Contractor may, if any Subcontractor refuses to furnish a release or receipt in full, furnish a bond satisfactory to the Owner, to indemnify him against any lien. If any lien remains unsatisfied after all payments are made, the Contractor shall refund to the Owner all monies that the latter may be compelled to pay in discharging such a lien, including all costs and a reasonable attorney's fee.

7.9 USE OR PARTIAL PAYMENT NOT ACCEPTANCE: It is agreed that this is an entire contract for one whole and complete work or result and that neither the Owner's entrance upon or use of the Work or any part thereof nor any partial payments by the Owner shall constitute an acceptance of the Work or any part thereof before its entire completion and final acceptance.

7.10 PAYMENT FOR UNCORRECTED WORK: Should the Owner direct the Contractor not to correct work that has been damaged or that was not performed in accordance with the Contract Documents, an equitable deduction from the Contract Amount shall be made to compensate the Owner for the Uncorrected Work.

7.11 PAYMENT FOR REMOVAL OF REJECTED WORK AND MATERIALS: The removal of work and materials rejected in accordance with Subsection 4.3 entitled CORRECTION OF WORK BEFORE COMPLETION and the re-execution of acceptable work by the Contractor shall be at the expense of the Contractor, and he shall pay the cost of replacing the work of other contractors destroyed or damaged by the removal of the rejected work or materials and the subsequent replacement of acceptable work.

Removal of rejected work or materials and storage of materials by the Owner, in accordance with Subsection 4.3 entitled CORRECTION OF WORK BEFORE COMPLETION, shall be paid by the Contractor within thirty (30) days after written notice to pay is given by the Owner. If the Contractor does not pay the expenses of such removal and after ten (10) days' written notice being given by the Owner of his intent to sell the
materials, the Owner may sell the materials at auction or at private sale and will pay the Contractor the net proceeds there from after deducting all the costs and expense that should have been borne by the Contractor.

7.12 **PAYMENT FOR EXTRA WORK:** Written notice of claims for payment for Extra Work shall be given by the Contractor within ten days after receipt of instructions from the Owner to proceed with the Extra Work and also before any work is commenced, except in emergency endangering life or property. No claim shall be valid unless so made. In all cases, the Contractor's itemized estimate sheets showing all labor and material shall be submitted to the Owner. The Owner's order for Extra Work shall specify any extension of the Contract Time and shall be based on unit price(s) or a combination of unit price(s) as set forth in the Contract Documents within 20% of the original unit quantities. Any unit quantity greater than 20% of the original amount shall include a cost savings to the Owner based on economy of scale.

7.13 **PAYMENT FOR WORK SUSPENDED BY THE OWNER:** If the work or any part thereof shall be suspended by the Owner and abandoned by the Contractor as provided in Subsection 2.12 entitled **SUSPENSION OF WORK, TERMINATION, AND DELAY,** the Contractor will then be entitled to payment for all work done on the portions so abandoned, plus fifteen (15) percent of the value of the abandoned work to compensate for overhead, plant expense, and anticipated profit.

7.14 **PAYMENT FOR WORK BY THE OWNER:** The cost of the work performed by the Owner, in accordance with Subsection 2.10 entitled **OWNER’S RIGHT TO DO WORK,** shall be paid by the Contractor.

7.15 **PAYMENT FOR WORK BY THE OWNER FOLLOWING TERMINATION OF CONTRACT BY OWNER:** Upon termination of the Contract by the Owner in accordance with Subsection 2.11 entitled **OWNER’S RIGHT TO TERMINATE CONTRACT,** no further payment shall be due the Contractor until the work is completed. If the unpaid balance of the Contract Amount shall exceed the cost of completing the work including all overhead costs, the excess shall be paid to the Contractor. If the cost of completing the work shall exceed the unpaid balance, the Contractor shall pay the difference to the Owner. The cost incurred by the Owner, as herein provided, and the damage incurred through the Contractor's default, shall be certified by the Owner.

7.16 **PAYMENT FOR SAMPLES AND TESTING OF MATERIALS:** Samples furnished in accordance with Subsection 4.18 entitled **SAMPLES,** shall be furnished by the Contractor at his expense.

7.17 **ACCEPTANCE AND FINAL PAYMENT:** When the Contractor shall have completed the work in accordance with the terms of the Contract Documents, he shall certify completion of the work to the Owner and submit a final Request for Payment, which shall be the Contract Amount plus all approved additions, less all approved deductions and less previous payments made. The Contractor shall furnish evidence that he has fully paid all debts for labor, materials, and equipment incurred in connection with the work, and, upon acceptance by the Owner, the Owner will release the Contractor except as to the conditions of the Performance Bond and the Payment Bond, any legal rights of the Owner, required guaranties, and Correction of Faulty Work after Final Payment, and will pay the Contractor's final Request for Payment. The Contractor shall allow sufficient time between the time of completion of the work and approval of the final Request for Payment for the Engineer to assemble and check the necessary data.

The Contractor shall deliver to the Owner a complete release of all liens arising out of this Contract before the retained percentage or before the final Request for Payment is paid.

7.18 **ACCEPTANCE OF FINAL PAYMENT AS RELEASE:** The acceptance by the Contractor of final payment shall be and shall operate as a release to the Owner of all claims and all
liability to the Contractor other than claims in stated amounts as may be specifically excepted by the Contractor for all things done or furnished in connection with this Work and for every act and neglect of the Owner and others relating to or arising out of this Work. Any payment, however, final or otherwise, shall not release the Contractor or his sureties from any obligations under the Contract Documents or the Performance Bond and the Payment Bond.

7.19 DELAYS AND DAMAGES: The date of beginning and the time for completion of the Work are essential conditions of the Contract Documents and the Work embraced shall be commenced on a date specified in the Notice to Proceed.

The Contractor will proceed with the Work at such rate of progress to insure full completion within the Contract Time. It is expressly understood and agreed by and between the Contractor and the Owner that the Contract Time for the completion of the Work described herein is a reasonable time, taking into consideration the average climatic and economic conditions and other factors prevailing in the locality of the Work. If the Contractor refuses or fails to prosecute the Work, or any separable part thereof, with such diligence as will insure its completion within the time specified in the Contract, or any extension thereof, or fails to complete said Work within such time, the Owner may, by written notice to the Contractor and his Surety, terminate his right to proceed with the Work or such part of the work as to which there has been delay. In such event the Owner may take over the Work and prosecute the same to completion, by contract or otherwise, and may take possession of and utilize in completing the work such materials, appliances, and plant as may be on the site of the work and necessary therefore. Whether or not the Contractor's right to proceed with the Work is terminated, he and his sureties shall be liable for any damage to the Owner resulting from his refusal or failure to complete the Work within the specified time.

If fixed and agreed liquidated damages are provided in the Contract and if the Owner so terminates the Contractor's right to proceed, the resulting damage will consist of such liquidated damages until such reasonable times may be required for final completion of the Work together with any increased costs occasioned the Owner in completing the Work.

If fixed and agreed liquidated damages are provided in the Contract, and if the Owner does not so terminate the Contractor's right to proceed, the resulting damage will consist of such liquidated damages until the Work is completed or accepted, provided that the Owner reserves the right to elect other remedies available at law or in equity in lieu of liquidated damages.

The Contractor's right to proceed shall not be so terminated nor the Contractor charged with resulting damage if:

7.19.1 The delay in the completion of the Work arises from unforeseeable causes beyond the control and without the fault or negligence of the Contractor, including but not restricted to, Acts of God, acts of the public enemy, acts of the Government in either its sovereign or contractual capacity, acts of another contractor in the performance of a contract with the Owner, fires, floods, epidemics, quarantine restrictions, strikes, freight embargoes, unusually severe weather, or delays of subcontractors or suppliers arising from unforeseeable causes beyond the control and without the fault or negligence of both the Contractor and such subcontractors or suppliers; and

7.19.2 The Contractor, within ten (10) days from the beginning of any such delay (unless the Owner grants a further period of time before the date of final payment under the Contract), notifies the Owner in writing of the causes of delay.
As used in subparagraph I, above, the term *subcontractors or suppliers* means subcontractors or suppliers at any time.

The Engineer shall ascertain the facts and the extent of the delay and extend the time for completing the Work when, in his judgment, the findings of fact justify such an extension, and his findings of fact shall be final and conclusive on the parties, subject only to appeal as provided in these General Conditions.

The rights and remedies of the Owner provided in this clause are in addition to any other rights and remedies provided by law or under this Contract.

(End of Section 01230)
SECTION 01232 SUPPLEMENTAL CONDITIONS

1. CONFLICT OR INCONSISTENCY: If there is any conflict or inconsistency between the provisions of the SUPPLEMENTAL CONDITIONS and the GENERAL CONDITIONS, the provisions of the SUPPLEMENTAL CONDITIONS shall prevail. If there is conflict between the provisions of the GENERAL CONDITIONS and any of the Contract Documents other than the SUPPLEMENTAL CONDITIONS, the provisions of the GENERAL CONDITIONS shall prevail.

2. CONFLICT OF INTEREST: No official of the Owner who is authorized in such capacity and on behalf of the Owner to negotiate, make, accept or approve, or to take part in negotiation, making, accepting, or approving any architectural, engineering, inspecting, construction, or material supply contract, or any subcontract in connection with the construction of the project, shall become directly or indirectly interested personally in this Contract or in any part thereof. No officer, employee, architect, attorney, engineer, or inspector of or for the Owner who is authorized in such capacity and on behalf of the Owner who is in any legislative, executive, supervisory, or other similar functions in connection with the construction of the project, shall become directly or indirectly interested personally in this Contract or in any part thereof, any material supply contract, subcontract, insurance contract, or any other contract pertaining to the project.

3. CONTRACT MODIFICATION: All changes that affect the cost of the construction of the project must be authorized by means of a contract change order. All change orders and contract modifications must be approved by the Owner prior to becoming effective. The contract change order will include extra work, work for which quantities have been altered from those shown in the bidding schedule, as well as decreases or increases in the quantities of installed units that are different from those shown in the bidding schedule because of final measurements. All changes should be recorded on a contract change order as they occur so that they may be included in the partial payment estimate.

4. TRAFFIC & CONSTRUCTION REQUIREMENTS FOR MOWLER COURT AND WOLK DRIVE

4.1 Permissible working hours are Monday through Friday, 7:00 a.m. to 7:00 p.m. and Saturdays between 9:00 a.m. and 7:00 p.m. No work is permitted on Sundays or on the following city holidays: New Year’s Day, Martin Luther King Jr Day, President's Day, Memorial Day, Independence Day, Labor Day, Veterans Day, Thanksgiving Day, Day After Thanksgiving and Christmas Day.

4.2 No materials shall be stored on the roadway, All excess materials shall be stored within the onsite approved staging and stockpile area that will not delay progress of work. The material storage site is to be limited to that which is required for immediate work. Location and size of storage area must be approved by the Engineer.

4.3 All impacted pavement markings shall be catalogued prior to the start of construction. It will be the responsibility of the contractor to see that any markings destroyed or removed by excavations are replaced. The materials and replacement of the pavement markings shall be in accordance with the South Carolina Department of Transportation requirements and approved by the City of Charleston Department of Traffic and Transportation.

5. TEN STATES STANDARDS: The horizontal and vertical separation of sewer lines and water mains must be in accordance with the Ten States Standards.

5.1 Horizontal Separation: Whenever possible, sewers should be laid at least 10 feet, horizontally, from any existing or proposed water main. Should local conditions prevent a lateral separation of 10 feet, a sewer may be laid closer than 10 feet to a water main if one of the following conditions exists:
5.1.1 It is laid in a separate trench.

5.1.2 It is laid in the same trench with the water mains located at one side on a bench of undisturbed earth.

5.1.3 In either case, the elevation of the crown of the sewer is at least 18 inches below the invert of the water main.

5.2 **Vertical Separation:** Whenever sewers must cross under water mains, the sewer shall be laid at such an elevation that the top of the sewer is at least 18 inches below the bottom of the water main. When the elevation of the sewer cannot be buried to meet the above requirement, the water main shall be relocated to provide this separation, or reconstructed with slip-on or mechanical joint cast iron pipe, asbestos-cement pressure pipe or prestressed concrete cylinder pipe for a distance of 10 feet on each side of the sewer. One full length of water main should be centered over the sewer so that both joints will be as far from the sewer as possible.

5.3 **Special Conditions:** When it is impossible to obtain proper horizontal and vertical separation as stipulated above, the water main should be constructed of slip-on or mechanical-joint cast iron pipe, asbestos-cement pressure pipe, or prestressed concrete cylinder pipe and the sewer constructed of mechanical joint cast iron pipe, and both services should be pressure tested to assure water-tightness.

6. **FEDERAL SAFE DRINKING WATER ACT:** In accordance with Section 1417 of this Act, any pipe, solder, or flux used in the installation or repair of public water systems and plumbing used for drinking water, must be lead free. Lead free is defined as less than 0.2 percent lead in solder and flux and less than 8.0 percent lead in pipes and fittings. Leaded joints for the repair of cast iron pipes are not included. Lead shot and lead packers in well construction are no longer allowed.

7. **WATER SUPPLY:** It shall be the Contractor's responsibility to purchase and convey the necessary water to any location at which it is required on the project.

8. **STATE AND LOCAL PERMITS, LICENSES, INSPECTIONS, CERTIFICATES:** The Contractor shall obtain such required documents and pay the fees assessed for each division of work for which such permits, licenses, and inspections are required. The Contractor shall also obtain and pay the fees for general permits such as Building Permits and Certificate of Occupancy.

9. **SIGNS:** The Owner reserves the right to all advertising privileges about the job and no signs shall be posted by the Contractor anywhere on the premises without approval by the Owner except those signs, posters, or bulletins required by Federal, State, or local authorities.

10. **OWNER'S INSURANCE AUTHORITY:** During all phases of construction, the Contractor will be required to perform his operations so as to comply expeditiously with the recommendations of the Owner's Insurance Authority.

11. **PUBLICITY:** All prime contractors and their subcontractors shall submit to the Owner for approval all publicity items, including photographs, relating to the work of this project. Owner shall approve any and all material prior to release for publication.

12. **PROTECTION OF WORK:** The Contractor shall at all times, until final acceptance of the work, provide protection of the work, either new or previously existing, from all hazards involved in his operations. All damage suffered by any item of work, including, but not limited to, drains, curbs, doors, equipment, and structures, shall be repaired or the item shall be replaced prior to final acceptance.
13. **ELEVATION DATUM:** The datum adopted by the Engineer is NAVD 88. All elevations shown on the Drawings or referred to in these specifications refer to this datum. Several control points are indicated on the Drawings.

14. **OCCUPYING PRIVATE LAND:** The Contractor shall not (except after written consent from the proper parties) enter or occupy with men, tools, or materials, any land outside the rights-of-way of property of the Owner. A copy of the written consent shall be given to the Engineer.

15. **WORK CITY RIGHTS-OF-WAY:** Attention is directed to the fact that work will be going on in City rights-of-way. The Owner has obtained permission for the Contractor to encroach on these rights-of-way for work.

The Contractor will be required to conform to the requirements of the South Carolina Department of Transportation and the City of Charleston while working within the rights-of-way.

16. **WORK BEING PERFORMED NEAR WATER AND SEWER LINES:** The Contractor will inform the Commissioners of Public Works as to the areas where work is being performed. It is required of a Contractor to obtain permission from the Commissioners of Public Works where alterations to their system are required. All repairs and/or alterations to Commissioners of Public Works owned utilities shall conform to their construction standards and requirements, including work being performed by approved contractors.

17. **TRAFFIC CONTROL:** The Contractor will comply with the manual published by the South Carolina Department of Highways and Public Transportation entitled *Manual on Uniform Traffic Control Devices for Streets and Highways, 2009 Edition*. Provide traffic control as required and approved by the South Carolina Department Transportation and the City of Charleston.

Upon completion and acceptance of the work or as the need for temporary traffic control devices ceases, they shall be removed by the Contractor and shall remain the property of the Contractor.

The Contractor shall provide signs where warranted to maintain traffic or to call attention to conditions on, or adjacent to, the construction work. Such signs shall be removed when they are no longer required.

All traffic control and marking devices shall be in accordance with the provisions of the *State of South Carolina Uniform Manual on Traffic Control Devices*. Upon completion and acceptance of the work or as the need for temporary traffic control devices ceases, they shall be removed by the Contractor and shall remain the property of the Contractor.

18. **LINES, GRADES, AND MEASUREMENTS:** The Contractor shall employ, at his own expense, a competent civil engineer or land surveyor who shall be registered in South Carolina and who shall be thoroughly experienced in field layout work. Said Engineer shall establish all lines, elevations, reference marks, etc., needed by the Contractor during the progress of the work, and from time to time he shall verify such marks by instrument or by other appropriate means. The Owner's Engineer may waive the requirement for the Engineer to be registered in South Carolina upon a presentation of a resume, which is satisfactory. The waiving of this requirement may be revoked at any time by the Owner's Engineer.

The Contractor's Engineer responsible for lines and grades shall verify to the Owner in writing that work has been constructed to lines and grades as shown on the Drawings. This certification shall accompany each request for payment. The Owner's Engineer shall be permitted at any time to check the lines, elevations, reference marks, lasers, etc., set by the Engineer employed by the Contractor, and the Contractor shall correct any errors in lines, elevations, reference marks, lasers, etc., disclosed by such check. Such a check shall not be construed to be an approval of the Contractor's work and shall not relieve the Contractor of the responsibility for the accurate construction of the entire work.
The Contractor shall make all measurements and check all dimensions necessary for the proper construction of the work called for by the Drawings and Specifications. During the prosecution of the work, he shall make all necessary measurements to prevent misfitting in said work, and he shall be responsible therefore, and for the accurate construction of the entire work.

The Owner's Engineer shall have access to all field notes. Field notes will be recorded in bound field books, and copies given the Owner's Inspector at the close of each shift.

19. CITY BUSINESS LICENSE: The successful Bidder and all subcontractors will be required to obtain a business license from the City of Charleston prior to beginning work, if said Bidder does not have a current license.

20. UTILITY LOCATIONS: Prior to beginning any excavation, the Contractor shall notify all public utility companies and have their lines located and marked. The following is a list of utility companies and persons to be contacted for utility locations.

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<th>UTILITY SERVICE OR FACILITY</th>
<th>PERSON TO CONTACT</th>
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<tr>
<td>Telephone, Electric, Gas,</td>
<td>Palmetto Utility Production Service</td>
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<td>Cable TV</td>
<td>1-888-721-7877</td>
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<td>Call 3 days prior to digging</td>
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<td>Water &amp; Sewer</td>
<td>Charleston CWS</td>
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<td>(843) 727-6800 (Ask for Service Department)</td>
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<td>Will send field technician to locate</td>
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21. DANGER SIGNALS AND SAFETY DEVICES: The Contractor shall make all necessary precautions to guard against damages to property and injury to persons. He shall put up and maintain in good condition, sufficient red or warning lights at night, suitable barricades, and other devices necessary to protect the public. In case the Contractor fails or neglects to take such precautions, the Owner may have such lights and barricades installed and charge the cost of this work to the Contractor. Such action by the Owner does not relieve the Contractor of any liability incurred under this Specifications or contract.

22. ARTIFACTS: Any historical artifacts that are unearthed during the excavation, removal, or construction of subsurface material are the property of the Owner and shall be immediately turned over. The contractor shall also immediately notify the Owner when items that could be construed as historical are unearthed. Excavation shall be stopped in the area until the Owner notifies the Contractor that excavation may proceed.

23. PAVEMENT GUARANTEE: The Contractor warrants to the Owner that all materials and workmanship furnished on roadways are guaranteed in accordance with the terms of the General Conditions, Section 4, General Guarantee, for a period of two (2) years. The Contractor will remedy any settlements or deficiencies of the pavement surface within this period.

24. CLEAN-UP FOLLOWING WORK: Contractor will expedite clean-up and restoration work as required by the Contract Drawings and Specifications. With the exception of designed alterations to existing curbs and storm catchment basin, to the maximum extent possible, roadways, drives, drainage ditches, and structures will be restored immediately following completion of construction efforts, but before demobilization. Restoration efforts that require erosion and sediment controls shall be completed prior to removal of said controls. The restoration or replacement of public or private property should be scheduled as a top priority work item in the execution of this project.

25. PRE-CONSTRUCTION CONFERENCE: Prior to construction, a pre-construction conference will be held with representatives of the Owner, Contractor, and the Engineer.
26. **PERFORMANCE STANDARDS:** Reference to standards, specifications, manuals, or codes of any technical society, organization, or association, or to the laws or regulations of any governmental authority, whether such reference be specific or by implication, shall mean the latest standard specification, manual, code or laws, or regulations in effect at the time of opening of Bids (or on the Effective Date of the Agreement if there were no Bids), except as may be otherwise specifically stated. However, no provision of any referenced standard, specification, manual, or code (whether or not specifically incorporated by reference in the Contract Documents) shall be effective to change the duties and responsibilities of Owner, Contractor, or any of their Consultants, agents, or employees from those set forth in the Contract Documents, nor shall it be effective to assign to Owner, or any of Owner's Consultants, agent, or employees, any duty or authority to supervise or direct the furnishing or performance of the Work. Where specific standards are not given for materials or installation, the provisions of the South Carolina Department of Transportation standard specifications for highway construction (2000 edition) will apply.

27. **AS-BUILT DRAWINGS:** The Contractor shall, upon completion of the work, furnish to the Owner, a marked set of reproducible drawings showing the field changes affecting the work, as actually installed and as specified under those sections of the specifications, and deliver them to the Owner. The Owner will furnish sufficient prints to the Contractor for marking, free of cost.

28. **SPECIFICATIONS AND DRAWINGS:** The following Drawings and Specifications form a part of this Contract as set forth in Paragraph 1.1, Section 01230, GENERAL CONDITIONS. The Drawings bear the general designation:

**THE DRAWINGS (APPENDIX A) ARE LISTED AS FOLLOWS**

<table>
<thead>
<tr>
<th>Sheet No.</th>
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<tbody>
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<td>Title Sheet</td>
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<td>2</td>
<td>Existing Conditions</td>
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<td>3</td>
<td>Demolition Plan</td>
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<td>Proposed Conditions</td>
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<td>Grading &amp; Drainage Plan</td>
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<td>Details</td>
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<td>Erosion &amp; Sediment Control</td>
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<td>Erosion &amp; Sediment Control Details</td>
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<td>14</td>
<td>Erosion &amp; Sediment Control Notes</td>
</tr>
<tr>
<td>15</td>
<td>Landscape Plan</td>
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<td>16</td>
<td>Landscape Details &amp; Schedule</td>
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**THE TECHNICAL SPECIFICATIONS ARE LISTED AS FOLLOWS**

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<tr>
<th>Section</th>
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<td>01 56 39</td>
<td>Temporary Tree and Plant Protection</td>
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<tr>
<td>01 57 13</td>
<td>Temporary Erosion and Sediment Control</td>
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<td>01 71 13</td>
<td>Mobilization</td>
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<td>01 71 23</td>
<td>Construction Stakeout &amp; Field Engineering</td>
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<tr>
<td>02 41 13</td>
<td>Selective Site Demolition</td>
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<td>03 30 00</td>
<td>Cast-in-Place Concrete</td>
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<tr>
<td>31 13 00</td>
<td>Selective Tree and Shrub Removal and Trimming</td>
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<tr>
<td>31 13 19</td>
<td>Selective Tree Root Pruning</td>
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Church Creek Flood and Resilience - Mowler Court Project

31 14 13 Soil Stripping and Stockpiling
31 20 00 Earth Moving
31 23 19 Dewatering
32 05 16 Aggregates for Exterior Improvements
32 05 19.13 Geotextile Fabric
32 06 10.13 Pedestrian Walkway
32 52 30 Woody Features
32 90 00 Planting
32 91 19.13 Compost Amended Soils Placement and Grading
32 92 00 Turf and Grasses
33 01 31.11 Connection to Manhole
33 05 33.36 Corrugated, Non-Perforated HDPE Drainage Pipe
33 42 00 Stormwater Conveyance

29. **ADVERSE WEATHER AND WEATHER DELAYS:** If the basis exists for an extension of time in accordance with the General Conditions, an extension of time on the basis of weather may be granted only for the number of Weather Delay Days in excess of the number of days listed as the Standard Baseline for that month.

The Owner has reviewed weather data available from the National Oceanic and Atmospheric Administration and determined a Standard Baseline of average climatic range for the Charleston Area. Data reflects the average number of days receiving 0.25 inches or more between the years of 2018-2020 for each month. Standard Baseline shall be regarded as the normal and anticipatable number of calendar days for each month during which construction activity shall be expected to be prevented and suspended by cause of adverse weather. Suspension of construction activity for the number of days each month as listed in the Standard Baseline is included in the Work and is not eligible for extension of Contract Time. Standard Baseline is as follows:

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<tr>
<th>Jan</th>
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Adverse Weather is defined as the occurrence of one or more of the following conditions within twenty-four (24) hours that prevents exterior construction activity or access to the site;

1.) precipitation (rain) in excess of one inch (1.00”) liquid measure;
2.) frozen precipitation (snow, or ice) in excess of one-tenth inch (0.10”) liquid measure;
3.) temperatures that do not rise above that specified for the day’s construction activity, if such temperature requirement is specified or accepted as standard industry practice;
4.) sustained wind in excess of thirty (30) m.p.h.
5.) standing snow in excess of thirty (30) inches

Contractor shall take into account that certain construction activities are more affected by adverse weather and seasonal conditions than other activities, and that “dry-out” or “mud” days are not eligible to be counted as Weather Delay Day until the standard baseline is exceeded. Hence, Contractor should allow for an appropriate number of additional days associated with the Standard Baseline days in which such applicable construction activities are expected to be prevented and suspended. Adverse Weather may include, if appropriate, “dry-out” or “mud” days;

1.) for precipitations days above the standard baseline;
2.) only if there is a hindrance to site access or sitework and Contractor has taken all reasonable accommodations to avoid such hindrance;
3.) at a rate no greater than 1 make-up day for each day or consecutive days of precipitation beyond the standard baseline that total 1.0 inch or more, liquid measure, unless specifically recommended otherwise by the Owner.

A Weather Delay Day may be counted if adverse weather prevents work on the project for fifty percent (50%) or more of the Contractor’s scheduled work day and critical path construction
activities were included in the day’s schedule, including a weekend day or holiday if Contractor has scheduled construction activity that day.

Typically, adverse weather and weather delays outside of the control of both the Owner and the Contractor are excusable but non-compensable, meaning the Owner may grant the Contractor a time extension but not additional compensation. If adverse weather is the basis for the claim of additional time, such claims shall be documented by data substantiating that weather conditions could not be reasonably anticipated, were abnormal for the period of time, and had an adverse effect on the construction schedule.

Weather Delay Report shall consist of: 1. Indicate for each calendar month the days on which construction activity affecting the critical path of the Work was prevented by weather conditions. 2. Indicate measurement of precipitation, temperature, wind, or other influencing factors. 3. Describe the construction activity that was scheduled, on the critical path, and delayed. 4. At the end of the month, add up the number of days delay, subtract the baseline number given in this Section, and show the resulting claimable days in excess of baseline. 5. Submit a copy of the completed report with the next application for payment. Reports submitted with applications for payment do not constitute a claim or preliminary claim for extension of time.

When making a claim for a time extension based on weather delay(s): 1. Submit a copy of all Weather Delay Reports completed since the last month for which a time extension was previously claim, or the commencement of Work if no previous claim, through the last month for which delay is being claimed. Claims for time extension based upon weather delays are unjustified if a submitted report does not corroborate the claim or if no report was submitted when it was required with an application for payment or if Contractor was not working on days without Adverse Weather. 2. If requested, submit daily jobsite work logs showing actual work days and which and to what extent construction activities have been affected by weather on a monthly basis. 3. Submit actual weather data to support claim for time extension obtained from nearest NOAA weather station or other independently verified source approved by Owner at beginning of project. 4. Organize claim and documentation to facilitate evaluation on a basis of calendar month periods and submit. 5. If an extension of the Contract Time is appropriate, it shall be implemented in accordance with the General Conditions.

30. STANDARD FOR QUALIFICATION OF CONTRACTORS: The work included in this contract must be performed by a Contractor who has demonstrated experience in low impact design and/or wetland restoration construction.

The contractor needs to demonstrate and provide documentation of completing at least 3 projects, over $200,000 each, working near sensitive environmental features, involving the construction of low impact design and/or wetland restoration. Subconsultant work cannot count towards this total. A reference is required for each of the three projects. Each reference provided shall include the reference contact’s name, phone number and email address as well as the firm name.

In addition, contractor must provide and identify a Field Superintendent/Foreman who will be responsible for the day-to-day construction operations as detailed in section technical specifications. The Field Superintendent/Foreman shall be on site at all times during construction activities. The field Superintendent/Foreman shall meet the following requirements:

a) Has five years of experience serving as a field superintendent/foreman;

b) Has managed at least two (2) projects involving the construction of low impact design and/or wetland restoration to create and restore natural habitat within the last five (5) years. The total contract amount for at least two (2) of the contracts must be a minimum of $200,000.
The Contractor shall designate a Field Superintendent/Construction Foreman who shall be on site daily to oversee the installation work. The Field Superintendent/Construction Foreman’s duties shall include, but not be limited to, the following activities:

a) Maintain full-time, onsite construction supervision and provide daily inspections, quality control, monitoring, coordination of all trades and subcontractors, record drawings, and daily work logs;

b) Provide general safety and signage and ensuring that each subcontractor prepares and submits an adequate safety program and monitoring throughout the project;

c) Ensure that proper Erosion and Sediment Control measures are installed and maintained;

d) Check materials used to confirm that they meet the standards of the design specifications and approved submittals;

e) Certify that structures installed are within the specifications included in the permitted designs; and

f) Confirm that plans and specifications are followed, and work is contained within the limits of disturbance and to minimize environmental impact to the Project Area.

References and resumes for this type of work shall be required for submission with the bid package to the Project Owner.

31. LANDSCAPE MAINTENANCE AND WARRANTY: The Contractor warrants to the Owner that all materials and workmanship on all landscape items are guaranteed in accordance with the terms of the Contract Documents specifically Section 329000 Planting, Section 329119.13 Compost Amended Soil Placement and Grading, and Section 329200 Turf and Grasses, for a period of a minimum of one (1) year. The Contractor will remedy any settlements or deficiencies of the landscaping within this period.

(End of Section 01232)
SECTION 01234  CITY OF CHARLESTON LOCAL VENDOR RECOGNITION

AFFIDAVIT

Personally appeared before me __________________________ (the “Bidder seeking Local Vendor Recognition”) who, after being duly sworn, does hereby depose and certify that the Bidder seeking Local Vendor Recognition identified in this bid response and who signs below meets the following qualifications for local vendor recognition as provided in Sections C and E of the City of Charleston’s Procurement Policy:

1. The bid is for construction services or goods and supplies only and is greater than $20,000;
2. Has a physical business address located within the City of Charleston and has been doing business in the City of Charleston for a period of 12 months or more prior to the bid opening date - (A post office box or temporary construction or office trailer will not be considered a place of business);
3. Has a valid City of Charleston business license which was issued at least 12 months prior to the bid opening date;
4. Provides a copy of its current City of Charleston business license with its bid;
5. Provides proof of payment of all applicable City of Charleston licenses, taxes and fees with its bid;
6. Is in compliance with any applicable federal, state and local requirements regarding the type of business in which the Local Vendor is engaged.

By submitting this Affidavit, the Bidder seeking Local Vendor Recognition understands that in addition to meeting the requirements set forth above, in order for the Bidder seeking Local Vendor Recognition to qualify for local vendor recognition, his bid must be within 4% or $10,000, whichever is lower, of the bid amount of the lowest responsive and responsible non-local bidder for said construction services or goods and supplies, and he requests that the local vendor recognition as set forth in Sections C and E of the City’s Procurement Policy be exercised in consideration of the contract award of this bid. Failure to complete and return this Affidavit with the specified attachments set forth above with his bid will result in not being eligible to receive the benefits of the local vendor recognition.

BUSINESS NAME: __________________________________________

CHARLESTON STREET ADDRESS: _____________________________

SIGNATURE: __________________________ TITLE: ____________

By: __________________________
(Print Name)

Sworn to and subscribed before me at _________________________.
State of ________________, this ____________ day of _____________, 20___.
____________________________________ (SEAL)
Notary Public for ________________
My Commission Expires ____________
THE TECHNICAL SPECIFICATIONS

CHURCH CREEK FLOOD AND RESILIENCE: MOWLER COURT PROJECT
SECTION 01 20 00 – MEASUREMENT AND PAYMENT

PART 1 - GENERAL

1.01 DESCRIPTION

A. Payment for the various Items of the Bid, as further specified herein, shall include all compensation to be received by the CONTRACTOR for providing all tools, equipment, supplies, and manufactured articles, and for all labor, operations, and incidentals appurtenant to the items of work being described, as necessary to complete the various items of the WORK all in accordance with the requirements of the Contract Documents. Work also includes all costs of permits and cost of compliance with the regulations of public agencies having jurisdiction, including South Carolina Occupational Safety and Health Administration (SC OSHA); SC OSHA is part of the South Carolina Department of Labor, Licensing, and Regulation. No separate payment will be made for any item that is not specifically set forth in the Bid, and all costs therefore shall be included in the prices named in the Bid for the various Items of work.

B. Payment for each respective item shall include such general costs for the providing of drawings, submittals, samples, tools and appliances necessary to complete the work as specified and shown on the Contract Drawings.

C. Measurement and Payment for each respective item shall be in accordance with the relevant specification.

1.02 RELATED SECTIONS

A. Section 00 12 30 General Conditions

B. Section 00 12 32 Supplemental Conditions

1.03 REFERENCE STANDARDS (NOT USED)

1.04 ABBREVIATIONS, DEFINITIONS, AND TERMS (NOT USED)

1.05 SUBMITTALS

A. Format and Contents

1. CONTRACTOR shall submit Application for Payment in accordance with General Conditions Article 7, Payments to the Contractor, and as specified herein.

2. Application for Payment shall be made electronically on forms and spreadsheets approved by the OWNER.

1.06 QUALITY ASSURANCE (NOT USED)

1.07 DELIVERY, STORAGE, AND HANDLING
A. The CONTRACTOR shall make his own arrangements for delivery and handling of equipment and materials as it may require for the prosecution of the WORK. The location of all temporary roads and similar facilities shall be subject to the approval of the OWNER and these shall be located and operated so as not to interfere with other work carried on by the OWNER, by other contractors, or by municipalities.

B. The OWNER shall be provided with itemized delivery lists and/or tickets of the materials and equipment delivered to the site which are intended to be incorporated into the WORK. Any materials or equipment delivered to the site without prior approval of the OWNER will be at the sole risk of the CONTRACTOR and will be subject to rejection and removal. No WORK shall be done or material or equipment installed until such is fully approved, and no unapproved work, materials or equipment will be included in any estimate for payment.

C. The CONTRACTOR shall make all necessary arrangements and provisions for the storage of materials and equipment to be used on this Contract. Materials and equipment shall be kept neatly piled and compactly stored in such locations as will cause the minimum of inconvenience to public travel and adjoining property.

D. Material which are to become the property of the OWNER shall be so stored as to facilitate their inspection and ensure preservation of their quality and fitness, including proper protection against damage by freezing and wet weather.

E. Equipment shall be stored in strict accordance with the manufacturer’s recommendations and shall be stored in the approved staging and stockpile areas as approved by the OWNER.

F. Lawns and/or other private property shall not be used for storage purposes without written permission of the OWNER, its agent or other person in possession or control of such premises.

G. When a pay estimate is allowed on account of material delivered to the site or in the vicinity thereof or under the possession and control of the CONTRACTOR but not yet incorporated therein, such materials shall become the property of the OWNER. If such material is stolen, destroyed or damaged by casualty before being used, the CONTRACTOR will be required to replace it at its own expense without further cost to the OWNER.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

PART 4 – MEASUREMENT AND PAYMENT

4.01 MEASUREMENT

A. The price for all labor, material, tools, equipment, and all incidentals necessary for the measurement of payment items and preparation of invoices are incidental to respective line items as specified in the Contract Documents.

4.02 PAYMENT
A. Payments for submittals are incidental to respective line items. Unit prices have been received from the Contractor and agreed to by the Owner to provide agreed upon prices for modification to Work quantities. The Owner and Contractor agree that if the scope of Work either increases or decreases within 20% of the original unit quantities, the payment for such increase or decrease shall be based on the unit prices as set forth in the Contract Documents.

END OF SECTION 01 20 00
SECTION 01 33 00 – SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.1 DESCRIPTION

A. This Section describes the expected contents and procedures by which the CONTRACTOR is to compile and provide project submittal documentation to the OWNER for review and acceptance.

1.2 QUALITY ASSURANCE

A. Disorganized submittals which do not meet the requirements above will be returned without review.

B. Except when otherwise specifically defined by the OWNER, the OWNER will return each submittal to the CONTRACTOR, with comments noted thereon, within 5 calendar days following receipt by the OWNER. Upon receipt of such large or complex submittals, the OWNER will notify the CONTRACTOR that additional time will be required for review and comment.

C. If a submittal is returned to the CONTRACTOR marked “APPROVED”, formal revision and resubmission of said submittal will not be required.

D. If a submittal is returned marked “APPROVED AS CORRECTED”, the CONTRACTOR shall make the corrections on the submittal, but formal revision and resubmission of said submittal will not be required. However, the corrections noted shall be incorporated into the WORK. If the CONTRACTOR disagrees with and determines not to incorporate all comments, it is the CONTRACTOR’s responsibility to so notify the OWNER and to resubmit the submittal addressing all corrections.

E. If a submittal is returned marked “REVISE AND RESUBMIT”, the CONTRACTOR shall revise said submittal and shall resubmit the required number of copies of said revised submittal to the OWNER for review.

F. If a submittal is returned marked “NOT APPROVED”, it means that the submitted material or product does not satisfy the specification; the submittal is so incomplete that it cannot be reviewed; or is a substitution request not submitted in accordance with the Contract Documents. The CONTRACTOR shall prepare a new submittal with a new transmittal and submittal number, incorporating specified materials and/or products and shall submit the required number of copies of said new submittal to the OWNER for review.

G. If a submittal is returned “SUBMITTAL NOT REQUIRED”, it means that no further action is required regarding this submittal.

H. Fabrication of an item shall be commenced only after the OWNER has reviewed the pertinent submittals and returned copies to the CONTRACTOR marked either “APPROVED” or “APPROVED AS CORRECTED”. Corrections indicated on submittals
shall be considered changes necessary to meet the requirements of the Contract Documents and shall not be taken as changes to the contract requirements.

I. Prior to submission to the OWNER, all submittals shall be carefully reviewed by an authorized representative of the CONTRACTOR. Each submittal shall be dated, signed, and certified by the CONTRACTOR as being correct and in strict conformance with the Contract Documents. In the case of Shop Drawings, each sheet shall be so dated, signed, and certified. The OWNER will only review submittals which have been so certified by the CONTRACTOR. All non-certified submittals will be returned to the CONTRACTOR without action taken by the OWNER, and any delays caused thereby shall be the total responsibility of the CONTRACTOR.

J. Written notification of a request for a deviation must be provided at the time of submittal, and indicated as such on the Submittal Transmittal Form, including written reasons for the deviation and approval of the deviation by any affected CONTRACTORS. If approved, all costs associated with or caused by the deviation shall be the sole responsibility of the CONTRACTOR requesting the deviation. Approval of a submittal containing an undisclosed deviation does not constitute approval of said deviation.

K. The OWNER’s review of submittals shall not relieve the CONTRACTOR of the entire responsibility for the correctness of details and dimensions. The CONTRACTOR shall assume all responsibility and risk for any misfits due to any errors to submittals. The CONTRACTOR shall be responsible for the dimensions and the design of adequate connections and details.

PART 2 – PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 SUBMITTALS

A. Submittals shall include the following, as well as any other submittals specified by the Contract Documents:

1. Contractor’s Organizational Chart.
2. Contractor’s Schedule of Values.
3. Contractor’s Warranty, as required and described by General Terms and Conditions.
4. A list of all permits and licenses that the CONTRACTOR shall obtain; indicating the agency required to grant the permit, the expected date of submittal for the permit, and the required date for receipt of the permit.
5. Contractor’s Schedule for the Work.
6. Contractor’s Submittal Schedule.
7. Shop Drawings, Product Data and Samples.
8. Contractor’s Inspection Reports.


10. Prevailing Wage Rate data, final affidavit to the Prevailing Wage Rate Coordinator and certified, if applicable.

11. Emergency phone numbers.

12. Contractor’s Project Specific Safety Program, if applicable.

13. Inspection and Testing Reports.

14. Security Submittals, if applicable.

15. Traffic Maintenance Plan, if applicable.

16. Operation and Maintenance Manuals, if applicable.

17. Red-lined drawings.

B. Submittals shall be made electronically through the OWNER’s approved processes as outlined in the General Conditions.

C. If the Submittal includes a sample, or objects that cannot be transmitted electronically, the CONTRACTOR shall complete the Submittal noting in the “Description of Item Submitted” that the necessary number of items will be given to the Construction Supervisor.

D. The OWNER and/or ENGINEER will review and make comments to the Submittal, as required.

3.2 SUBMITTING PROJECT SCHEDULES

A. Project Schedules shall be made electronically through the OWNER’s approved processes as outlined in the General Conditions 6.10 Progress Schedule.

B. The OWNER and/or ENGINEER will review and make comments to the Schedule, as required.

3.3 SUBMITTING SHOP DRAWINGS

A. The term “Shop Drawings” as used herein shall be understood to include detailed design calculations, shop-prepared drawings, fabrication drawings, installation drawings, erection drawings, lists, graphs, catalog sheets, data sheets, product samples, personnel qualifications, installation/inspection data, performance reports, test data, product and material certifications, mock-ups, warranties, and similar items. Contractor shall submit all items as specified and described in each Specification Section. Whenever design calculations are part of a submittal, such calculations shall bear the signature and seal of a professional engineer registered in the state of South Carolina.
B. Organization and Format

1. All shop drawings shall be submitted in accordance with the General Conditions 4.16 Shop Drawings.

3.4 REQUESTS FOR INFORMATION (RFI)

A. Requests for Information shall be made electronically to the OWNER and ENGINEER through an approved process.

B. The CONTRACTOR shall initiate the workflow by inputting the necessary information required into an RFI Template approved by the OWNER. The RFI shall include the following:

1. Project name
2. Project number
3. Name of the originator
4. RFI subject
5. Specification or Drawing reference number

C. The OWNER and/ or ENGINEER will assign the RFI number, review and answer the RFI.

PART 4 – MEASUREMENT AND PAYMENT

4.01 MEASUREMENT

A. The price for all labor, material, tools, equipment, and all incidentals necessary for the preparation and revisions of material submittals, project schedules, shop drawings, and requests for information are incidental to respective line items as specified in the Contract Documents.

4.02 PAYMENT

A. Payments for submittals are incidental to respective line items. Unit prices have been received from the Contractor and agreed to by the Owner to provide agreed upon prices for modification to Work quantities. The Owner and Contractor agree that if the scope of Work either increases or decreases within 20% of the original unit quantities, the payment for such increase or decrease shall be based on the unit prices as set forth in the Contract Documents.

END OF SECTION 01 33 00
SECTION 01 55 13 – MULCH ACCESS ROAD

PART 1 - GENERAL

1.01 DESCRIPTION

A. Work included: Furnish, transport, stockpile, install, maintain and remove temporary woodchip/mulch access roads as specified in the Contract Documents and/or as directed by the OWNER. Revisions to the alignment that minimize tree and wetland disturbance shall be implemented to maximum extent practical and require review and approval by the OWNER prior to implementation.

B. Related Work: Documents affecting work of this section include, but are not necessarily limited to, General Provisions and Modifications of these Specifications.

1.02 RELATED SECTIONS

A. Section 01 56 39 Temporary Tree and Plant Protection

B. Section 01 57 13 Temporary Erosion and Sediment Control

C. Section 32 05 19.13 Geotextile Fabric

D. Section 32 06 10.13 Pedestrian Walking Trail

1.03 REFERENCE STANDARDS

A. South Carolina Department of Transportation Standard Specifications for Highway Construction 2007.


C. South Carolina Department of Health and Environmental Control 2014.

1.04 ABBREVIATIONS, DEFINITIONS, AND TERMS (NOT USED)

1.05 SUBMITTALS

A. The CONTRACTOR shall submit a sample of the proposed mulch/woodchip material to the OWNER for approval prior to furnishment.

B. The CONTRACTOR shall submit the supplier and material data of geotextile fabric to the OWNER for approval prior to furnishment.

C. In the event mats are required, hardwood matting and/or proposed equivalents must be submitted and approved by the OWNER. The submittal shall provide dimensions, materials and photos representative of the mats intended for use.

1.06 QUALITY ASSURANCE
A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.

B. Use equipment adequate in size capacity, and numbers to accomplish the work of this Section in a timely manner.

C. In addition to complying with requirements of governmental agencies having jurisdiction, comply with the directions of the ENGINEER, which may also include the Project Architect, Project Civil Engineer, or the Geotechnical (Soil) Engineer.

D. Proper installation is critical, and experience has shown that roads do not function properly when poorly installed.

E. Roads require regular inspection and maintenance by the CONTRACTOR to ensure their effectiveness. The OWNER reserves the right to request the replacement of the road deemed to be in poor working condition by the CONTRACTOR at no additional cost to the OWNER.

F. If found damaged or improperly installed, the road shall be replaced and/or repaired immediately by the CONTRACTOR at no additional cost to the OWNER.

G. Roads must be inspected after each rainfall and at least daily during prolonged rainfall.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Mulch/Woodchip material shall be stored in the approved staging and stockpile areas.

B. Geotextile material shall be kept in the approved staging areas and kept dry and in neat conditions as to not damage the product. Handle with care as to not defect the product.

C. Unsuitable material shall be removed at The CONTRACTOR’s expense.

1.08 SEQUENCING AND SCHEDULING

A. Shall be installed per the Erosion and Sediment Control Plan, in the sequence indicated per the Sequence of Construction as indicated on the approved construction drawings.

B. When both mulch access road and hardwood matting are applicable, mulch access roads shall always be placed down first and then hardwood matting.

C. All temporary roads shall be installed and inspected by the erosion and sediment inspector prior to commencing grading activities.

1.09 WARRANTY

A. The CONTRACTOR shall warranty all temporary access roads necessary until they have received approval from the erosion and sediment control inspector to remove any or all controls once the work is complete.

1.10 MAINTENANCE
A. The woodchip/mulch access road shall be maintained throughout the duration of construction. The road shall be kept as needed to maintain full depth and width and in good working order during construction.

B. If applicable, Hardwood Matting shall be maintained throughout the duration of construction. They shall be kept in place and in good working order during construction.

C. The OWNER reserves the right to request maintenance, at no additional cost, if the road dimension become different from those specified.

D. The CONTRACTOR shall maintain all temporary erosion and sediment controls in accordance with the South Carolina Department of Health and Environmental Control, including but not limited to:

   1. Keep access road clean of any dirt build up.
   2. Refresh woodchips/mulch when dimensions become different than those specified.
   3. Replace woodchips/mulch when dirt builds up compromises the function of the access road.
   4. If applicable, replace hardwood matting when damage compromises the function of the access road.

E. The CONTRACTOR shall maintain all temporary access roads necessary until they have received approval from the erosion and sediment control inspector to remove any or all controls.

PART 2 - PRODUCTS

2.01 GENERAL

A. Provide approved like materials from the same manufacturer or supplier to provide consistent composition and appearance.

B. Only use products that have been approved by the OWNER.

2.02 MATERIALS

A. Geotextile Fabric

   1. Geotextile Fabric underlayment shall be Non-Woven SE geotextile that meets the requirements in Section 32 05 19.13 Geotextile Fabric.

B. Mulch/Woodchips

   1. Mulch/Woodchips may be produced on-site using available waste hardwood or imported from an approved vendor.
2. Mulch/Woodchips shall consist of non-composted, natural wood and bark from hardwood trees that have been milled or chipped to a maximum 4 inch particle size. Woodchips shall contain no more than 20% hardwood sawdust a negligible amount of other woody materials, and free of trash or invasive species seed.

C. Hardwood Mats (if applicable)
   1. A minimum 6 inches thick, 3-ply hardwood construction mat or approved equivalent.

PART 3 - EXECUTION

3.01 GENERAL

A. Upon authorization by the OWNER, the CONTRACTOR shall install the Mulch Access Road as determined at the pre-construction meeting and/or as field directed by the ENGINEER.

B. The CONTRACTOR shall utilize all materials, tools, equipment and labor to perform this scope of work to industry standards and in a safe working manner.

3.02 PREPARATION

A. The CONTRACTOR shall provide the proposed location and alignment of the access road which shall then be verified by the OWNER at the erosion and sediment control meeting, pre-construction meeting, and/or prior to installation. Revisions to the alignment that minimize tree and wetland disturbance shall be implemented to maximum extent practical and require review and approval by the OWNER prior to implementation.

B. The CONTRACTOR shall install the necessary temporary tree and plant protection in accordance with the Contract Documents and Section 01 56 39 Temporary Tree and Plant Protection prior to road installation.

C. The CONTRACTOR shall install the necessary temporary erosion and sediment controls in accordance with the Contract Documents and Section 01 57 13 Temporary Erosion and Sediment Control prior to road installation.

3.03 INSTALLATION

A. The installation of the mulch access road shall be as follows:
   1. Install the mulch access road in locations specified in the Contract Documents, or as agreed upon with the Erosion and Sediment Control Inspector, ENGINEER, and/or OWNER.

   2. If an underlayment is required, place down matting or geotextile prior to placing mulch/woodchips.

   3. Place a minimum of 12 inches of mulch/woodchips on the ground.
4. The CONTRACTOR shall ensure that equipment is always kept on the mulch road where present.

B. If applicable, the installation of the hardwood matting road shall be as follows:

1. First install the mulch access road as indicated above, with the exception of placing a minimum of 6 inches of mulch/woodchips.

2. Place hardwood matting on top of the mulch access road at locations specified in the Contract Documents and/or as verified with the OWNER at the erosion and sediment control meeting.

3. Mats may also be placed to protect tree roots or in low, wet areas throughout the site to maintain passable access road or as directed by the OWNER. The CONTRACTOR shall ensure that equipment is always kept on Matting where Matting present.

3.04 CLOSEOUT ACTIVITIES

A. Upon completion of site construction, and with the approval of the erosion and sediment control inspector and/or the OWNER, the CONTRACTOR shall remove any and all temporary access roads.

1. Removal of hardwood matting (if required):
   
a. The CONTRACTOR shall take care to remove any and all broken pieces of hardwood matting from the site. The CONTRACTOR shall be responsible for the disposal of the broken mats at no additional cost to the OWNER.

2. Removal of mulch access road:
   
a. If a geotextile underlayment was required, remove said geotextile in its entirety and properly dispose of trash.

   b. Remove mulch/woodchips in their entirety. Scarify area (existing soil) of removed mulch/woodchip access road to reduce potential compaction and increase seed germination potential. Mulch access road areas shall be scarified to a minimum depth of 3 inches below the mulch itself, and all rocks and other debris over 2 inches in size shall be removed.

   c. Restore walking trail in accordance with Section 32 06 10.13 Pedestrian Walkway Trail.

PART 4 – MEASUREMENT AND PAYMENT

4.01 MEASUREMENT

A. The price shall include the furnishing of all labor, materials, tools, equipment and incidentals necessary to complete the temporary mulch access road as shown on the Contract Drawings. This work shall include the temporary mulch access road be completed as detailed in Section 01 55 13 Temporary Access Road.
4.02 PAYMENT

A. Payments by the Owner to the Contractor shall be based on a Lump Sum for the scope of Work. Unit prices have been received from the Contractor and agreed to by the Owner to provide agreed upon prices for modification to Work quantities. The Owner and Contractor agree that if the scope of Work either increases or decreases within 20% of the original unit quantities, the payment for such increase or decrease shall be based on the unit prices as set forth in the Contract Documents.

END OF SECTION 01 55 13
SECTION 01 56 39 – TEMPORARY TREE AND PLANT PROTECTION

PART 1 - GENERAL

1.01 DESCRIPTION

A. Work included: Furnish, transport, stockpile, install, maintain and remove Tree Protection Barricades intended for trees to be saved. Tree Protections shall be placed on all trees denoted in the Construction Drawings with a “TPF” symbol. The purpose of the protection is to provide a barrier against trees being damaged by heavy equipment or other construction related activities.

B. Related Work: Documents affecting work of this section include, but are not necessarily limited to, General Provisions and Modifications of these Specifications.

1.02 RELATED SECTIONS

A. Section 01 57 13 Temporary Erosion and Sediment Control

B. Section 31 13 00 Selective Tree and Shrub Removal and Trimming

1.03 REFERENCE STANDARDS

A. South Carolina Department of Transportation Standard Specifications for Highway Construction 2007.


C. South Carolina Department of Health and Environmental Control 2014.

1.04 ABBREVIATIONS, DEFINITIONS, AND TERMS

A. CRZ: Critical root zone.

B. DBH: Diameter at breast height.

C. TPF: Tree Protection Barricade

1.05 SUBMITTALS

A. The CONTRACTOR shall submit material data for the tree protection components, including but not limited to, blaze orange fence and stand panels, for approval by OWNER prior to furnishment.

1.06 QUALITY ASSURANCE

A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.
CHURCH CREEK FLOOD & RESILIENCE PROJECT - MOWLER COURT
TEMPORARY TREE AND PLANT PROTECTION

B. Use equipment adequate in size capacity, and numbers to accomplish the work of this Section in a timely manner.

C. In addition to complying with requirements of governmental agencies having jurisdiction, comply with the directions of the ENGINEER, which may also include the Project Architect, Project Civil Engineer, or the Geotechnical (Soil) Engineer.

D. Proper installation is critical, and experience has shown that protections do not function properly when poorly installed.

E. Tree and plant protections require regular inspection and maintenance by the CONTRACTOR to ensure their effectiveness. The OWNER reserves the right to request the replacement and/or repairs to the protections deemed to be in poor working condition by the CONTRACTOR at no additional cost to the OWNER.

F. If found damaged or improperly installed, tree protections shall be replaced and/or repaired immediately by the CONTRACTOR at no additional cost to the OWNER.

G. Tree protections must be inspected after each rainfall and at least daily during prolonged rainfall.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Materials shall be kept in the approved staging and stockpile areas until installation can occur and/or upon removal.

B. Deliver, store, and handle tree protection material to avoid bending, warping, and cracking.

C. Unsuitable material shall be removed at The CONTRACTOR's expense.

1.08 SEQUENCING AND SCHEDULING

A. Shall be installed per the Erosion and Sediment Control Plan, in the sequence indicated per the Sequence of Construction as indicated on the approved construction drawings.

B. When applicable, tree protections shall be installed, prior to certain erosion and sediment control activities (refer to Section 01 57 13 Temporary Erosion and Sediment Control).

C. Install all temporary tree protections prior to commencement of selective tree removal and grading activities. All temporary protection shall be inspected by the erosion and sediment inspector and/or the OWNER prior to commencing grading activities.

1.09 WARRANTY

A. The CONTRACTOR shall warranty all temporary tree and plant protections until they have received approval from the erosion and sediment control inspector and/or the OWNER to remove any or all controls once the work is complete.

1.10 MAINTENANCE
A. The CONTRACTOR shall maintain all temporary tree and plant protections until they have received approval from the erosion and sediment control inspector and/or the OWNER to remove any or all controls once the work is complete.

B. Temporary tree and plant protections shall be maintained throughout the duration of construction. They shall be kept in place and in good working order.

C. The OWNER reserves the right to request maintenance, at no additional cost, if the temporary tree and plant protections installed are different from those specified on the construction drawings, become damaged and/or are no longer in good working order.

PART 2 - PRODUCTS

2.01 GENERAL

A. Provide approved like materials from the same manufacturer or supplier to provide consistent composition and appearance.

B. Only use products which have been approved by the OWNER.

2.02 MATERIALS

A. Blaze Orange Fence

1. Minimum 4-foot-tall orange polyethylene fencing. Fencing shall be erected with stand panels that do not require excavation for anchorage.

PART 3 - EXECUTION

3.01 GENERAL

A. All materials and construction techniques shall be installed as indicated in the Construction Documents.

B. The CONTRACTOR shall utilize all materials, tools, equipment and labor to perform this scope of work to industry standards and in a safe working manner.

3.02 PREPARATION

A. Coordinate the installation of tree protection barricade with early site set up in order to protect the trees and plants as much as possible. At the Pre-construction meeting, review and define trees, and any other plants, requiring tree protection. The CONTRACTOR shall provide the proposed trees and plants indicated for protection which shall then be verified by the OWNER at the erosion and sediment control meeting and/or prior to installation. Any revisions to trees and plants indicated for protection or additions that minimize tree disturbance shall be implemented to maximum extent practical and require review and approval by the OWNER prior to implementation.

B. This work shall be performed as access is established and shall be completed prior to clearing and grading activities in accordance with the Contract Documents and Section 31 13 00 Selective Tree and Shrub Removal and Trimming.
3.03 INSTALLATION

A. Tree Protection Barricade

1. Boundaries of tree protection area should be flagged prior to installing devices.

2. Erect minimum 4-foot-tall blaze orange fence as shown on the plans to protect the tree and root system by excluding all detrimental construction activity with the critical root zone (CRZ). Rule of thumb 1.5 feet of distance from trunk per inch of diameter as a guide to establish a perimeter around a tree’s root zone.

3. Tree protection fencing shall be placed continuously around an individual tree, or an area of trees indicated for saving. Group of trees may be grouped as one.

3.04 CLOSEOUT ACTIVITIES

A. Upon completion of site construction, and with the approval of the erosion and sediment control inspector and/or the OWNER, the CONTRACTOR shall remove from the site all items related to temporary tree and plant protections at no additional cost to the OWNER.

B. The CONTRACTOR shall be responsible for the removal of all trash and any other materials incidental to the project and disposing of them off-site per the General Conditions at no additional cost to the OWNER.

PART 4 – MEASUREMENT AND PAYMENT

4.01 MEASUREMENT

A. The price shall include the furnishing of all labor, materials, tools, equipment and incidentals necessary to complete temporary tree barricade and remove same when no longer required, as shown in the Contract Documents. This work shall include the installation and maintenance of a tree protection barricade as detailed in Section 01 56 39 Temporary Tree and Plant Protection.

4.02 PAYMENT

A. Payments by the Owner to the Contractor shall be based on a Lump Sum for the scope of Work. Unit prices have been received from the Contractor and agreed to by the Owner to provide agreed upon prices for modification to Work quantities. The Owner and Contractor agree that if the scope of Work either increases or decreases within 20% of the original unit quantities, the payment for such increase or decrease shall be based on the unit prices as set forth in the Contract Documents.

END OF SECTION 01 56 39
SECTION 01 57 13 – TEMPORARY EROSION AND SEDIMENT CONTROL

PART 1 - GENERAL

1.01 DESCRIPTION

A. Work included: Furnish, transport, stockpile, install, maintain and remove all temporary erosion and sediment controls as specified in the Contract Documents, and/or as directed by the OWNER.

B. Related Work: Documents affecting work of this section include, but are not necessarily limited to, General Provisions and Modifications of these Specifications.

1.02 RELATED SECTIONS

A. Section 01 56 39 Temporary Tree and Plant Protection
B. Section 31 13 19 Selective Tree Root Pruning
C. Section 32 05 19.13 Geotextile Fabric
D. Section 32 90 00 Planting
E. Section 32 92 00 Turf and Grasses

1.03 REFERENCE STANDARDS

A. South Carolina Department of Transportation Standard Specifications for Highway Construction 2007.
C. South Carolina Department of Health and Environmental Control 2014.

1.04 ABBREVIATIONS, DEFINITIONS, AND TERMS

A. BOF: Blaze Orange Fence
B. SCE: Stabilized Construction Entrance
C. SF: Silt Fence
D. SWPPP: Storm Water Pollution Prevention Plan.

1.05 SUBMITTALS

A. The CONTRACTOR shall submit source/supply and material data for all erosion and sediment control devices installed onsite, including, but not limited to, high visibility fencing, construction entrance, silt fence, inlet protections, etc. to the OWNER for approval prior to furnishment.
B. Any changes or deviations to the erosion and sediment control plan must be submitted to the OWNER for approval.

C. The CONTRACTOR shall submit a Stormwater Pollution Prevention Plan (SWPPP) to the OWNER for approval prior to implementation. Any proposed changes shall be reviewed and approved by the OWNER prior to implementing those changes.

1.06 QUALITY ASSURANCE

A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.

B. Use equipment adequate in size capacity, and numbers to accomplish the work of this Section in a timely manner.

C. In addition to complying with requirements of governmental agencies having jurisdiction, comply with the directions of the ENGINEER, which may also include the Project Architect, Project Civil Engineer, or the Geotechnical (Soil) Engineer.

D. SWPPP shall be kept onsite at all times and updated as revisions are approved and implemented.

E. Proper installation is critical, and testing has shown that controls do not function properly when poorly installed.

F. Controls require regular inspection and maintenance by the CONTRACTOR to ensure their effectiveness.

G. If found damaged or improperly installed, the controls shall be replaced and/or repaired immediately by the CONTRACTOR at no additional cost to the OWNER.

H. Controls must be inspected after each rainfall and at least daily during prolonged rainfall.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Materials shall be kept in the approved staging and stockpile areas and be kept dry and in neat condition as to not damage the products.

B. Isolate sites where chemicals, cements, solvents, paints, or other potential water pollutants are stored in areas where they will not cause runoff pollution.

C. Store toxic chemicals and materials such as pesticides, paints, and acids in accordance with manufacturer’s guidelines. Protect groundwater resources from leaching by placing a plastic mat, packed clay, tar paper, or other impervious materials on any areas where toxic liquids are to be opened and stored.

D. Unsuitable material shall be removed at The CONTRACTOR’s expense.

1.08 SEQUENCING AND SCHEDULING
A. Shall be installed per the Erosion and Sediment Control Plan, in the sequence indicated per the Sequence of Construction as indicated on the approved construction drawings.

B. All temporary erosion and sediment controls shall be installed and inspected by the erosion and sediment inspector prior to commencing grading activities.

1.09 WARRANTY

A. The CONTRACTOR shall warranty all temporary erosion and sediment controls necessary until they have received approval from the erosion and sediment control inspector, and/or the OWNER, to remove any or all controls once the work is complete.

1.10 MAINTENANCE

A. The CONTRACTOR shall maintain all temporary erosion and sediment controls necessary until they have received approval from the erosion and sediment control inspector, and/or the OWNER, to remove any or all controls once the work is complete.

B. The CONTRACTOR shall inspect and maintain all temporary erosion and sediment controls in accordance with the South Carolina Department of Health and Environmental Control.

C. The OWNER reserves the right to request maintenance, at no additional cost, if the temporary erosion and sediment controls are different from those specified and/or if the controls become damaged and are no longer in good working order failing to meet sediment control requirements.

PART 2 - PRODUCTS

2.01 GENERAL

A. Provide approved like materials from the same manufacturer or supplier to provide consistent composition and appearance.

B. Only use products which have been approved by the OWNER.

2.02 MATERIALS

A. Blaze Orange Fence

   1. Fencing
      a. Use minimum 4-foot-tall highly visible blaze orange fencing.

   2. Posts
      a. Posts shall be minimum 6-foot-tall steel ‘T’ posts or 2-by-2-inch timbers

B. Stabilized Construction Entrance

   1. Geotextile Fabric
a. Shall be non-woven and meet the requirements in Section 32 05 19.13 Geotextile Fabric

2. Aggregate/Stone

a. Shall be 2 inch to 3 inch crushed aggregate or equivalent recycled concrete, without rebar.

C. Silt Fence

1. Geotextile

a. Shall be woven fabric and conform to the minimum criteria:

<table>
<thead>
<tr>
<th>Silt Fence Fabric</th>
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<th></th>
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<tr>
<td>Minimum Tensile Strength</td>
<td>120 lbs. (535 N)</td>
<td>ASTM D 4632</td>
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<tr>
<td>Maximum Elongation at 60 lbs</td>
<td>50%</td>
<td>ASTM D 4632</td>
</tr>
<tr>
<td>Minimum Puncture Strength</td>
<td>50 lbs (220 N)</td>
<td>ASTM D 4833</td>
</tr>
<tr>
<td>Minimum Tear Strength</td>
<td>40 lbs (180 N)</td>
<td>ASTM D 4533</td>
</tr>
<tr>
<td>Apparent Opening Size</td>
<td>≤ 0.84 mm</td>
<td>ASTM D 4751</td>
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<tr>
<td>Minimum Permittivity</td>
<td>1X10-2 sec.-1</td>
<td>ASTM D 4491</td>
</tr>
<tr>
<td>UV Exposure Strength Retention</td>
<td>70%</td>
<td>ASTM G 4355</td>
</tr>
</tbody>
</table>

2. Fence posts

a. Shall be a minimum of 36 inches long, composed of nominal dimensioned 2-by-2-inch hardwood of sound quality. Steel posts can be used as an alternative and must be standard ‘T’ or ‘U’ section weighing not less than 1 pound per linear foot and provided the geotextile can be adequately secured to the post.

D. Type E Inlet Protection

1. Curb Inlet Filter

a. Must meet the requirements for SCDOT 815.2.4.4 Type E Surface Course Inlet Filters. Use only Type E inlet filters appearing on SC DOT’s Qualified Products Listing (QPL). Only use filters that have a minimum diameter of 9 inches and a minimum length that is 2 foot longer than the length of the curb opening.

E. Type F Inlet Protection

1. Inlet Tube

a. Must meet the requirements for SCDOT 815.2.4.5 Type F Inlet Tubes. Use only Type E inlet tubes appearing on SC DOT’s Qualified Products Listing (QPL).

PART 3 - EXECUTION
3.01 GENERAL

A. The CONTRACTOR shall install all temporary erosion and sediment controls in accordance with the Contract Documents.

B. The CONTRACTOR shall utilize all materials, tools, equipment and labor to perform this scope of work to industry standards and in a safe working manner.

3.02 PREPARATION

A. The CONTRACTOR shall provide the proposed location and alignment of any and all erosion and sediment controls which shall then be verified by the Erosion and Sediment Control Inspector and OWNER at the erosion and sediment control meeting, pre-construction meeting, and/or prior to installation. Any revisions to minimize tree and wetland disturbance shall be implemented to maximum extent practical and require review and approval by the Erosion and Sediment Control Inspector and OWNER prior to implementation.

B. The CONTRACTOR shall install the necessary temporary tree and plant protection in accordance with the Contract Documents and Section 01 56 39 Temporary Tree and Plant Protection prior to erosion and sediment control installation.

3.03 INSTALLATION

A. Blaze Orange Fence (BOF)

1. The CONTRACTOR shall install the BOF at the locations specified on the construction drawings and per the ‘Blaze Orange Fence’ detail on sheet 13 of 16.

2. The BOF must be maintained and kept in good working order. Maintenance may include removal of accumulated debris from fencing, and resetting and/or replacing the fence (i.e. fencing and posts) when damaged.

B. Stabilized Construction Entrance (SCE)

1. The CONTRACTOR shall install the SCE at the locations specified on the construction drawings and in accordance with the South Carolina Department of Health and Environmental Control ‘Residential Lot Construction Entrance’ detail on sheet 12 of 16.

2. The SCE must be maintained and be free of excess dirt, mud or other contaminants that negatively impact entrance performance. Maintenance may include the removal of excess dirt, mud or other contaminants and/or involve the placement of fresh stone or recycled concrete. Maintenance also includes sweeping and cleaning of the street to ensure no material is tracked onto the street. Water may not be used to clean the street.

C. Silt Fence (SF)
1. The CONTRACTOR shall install the SF at the locations specified on the construction drawings and in accordance with the South Carolina Department of Health and Environmental Control ‘Silt Fence’ detail on sheet 12 of 16.

2. When installation of silt fence interferes with tree roots, CONTRACTOR shall exercise the appropriate root pruning in accordance with Section 31 13 19 Selective Root Pruning.

3. The SF must be maintained and kept in good working order. Maintenance may include removal of accumulated debris from fencing, and resetting and/or replacing the fence (i.e. fencing and posts) when damaged.

D. Type E Inlet Protection

1. The CONTRACTOR shall install the Type E inlet protections at the locations specified on the construction drawings and in accordance with the South Carolina Department of Health and Environmental Control ‘Type E’ detail on sheet 12 of 16.

2. The inlet protection must be maintained and kept in good working order. Maintenance may include removal of accumulated debris, resetting of protection, or replacement of protection.

E. Type F Inlet Protection

1. The CONTRACTOR shall install the Type F inlet protections at the locations specified on the construction drawings and in accordance with the South Carolina Department of Health and Environmental Control ‘Type F’ detail on sheet 12 of 16.

2. The inlet protection must be maintained and kept in good working order. Maintenance may include removal of accumulated debris, resetting of protection, or replacement of protection.

3.04 CLOSEOUT ACTIVITIES

A. Upon completion of site construction, and with the approval of the erosion and sediment control inspector and/or the OWNER, the CONTRACTOR shall remove any and all temporary erosion and sediment controls.

1. Blaze Orange Fence (BOF)

   a. The CONTRACTOR shall be responsible for removal and disposal of BOF materials.

   b. The CONTRACTOR shall restore the areas where BOF was removed which may include decompaction of the underlying soil, grading of existing soils and application of topsoil if needed. Areas shall be scarified to a minimum depth of 2 inches and all rocks and other debris over 2 inches in size shall be removed. Grade area to match existing and/or proposed grades and eliminate low spots. Add topsoil to eliminate low spots and/or if the existing soil is not conducive for vegetative re-establishment.
c. The CONTRACTOR shall seed (temporary and/or permanent) the area of the removed BOF in accordance with Contract Documents and Section 32 92 00 Turf and Grasses. Temporarily stabilize with straw or pine mulch.

2. Stabilized Construction Entrance (SCE)
   a. The CONTRACTOR shall be responsible for the removal and disposal of SCE materials.
   
   b. The CONTRACTOR shall restore the areas where SCE was removed which may include decompaction of the underlying soil grading of existing soils, and application of topsoil if needed. Areas shall be scarified to a minimum depth of 2 inches and all rocks and other debris over 2 inches in size shall be removed. Grade area to match existing and/or proposed grades and to eliminate low spots. Add topsoil to eliminate low spots and/or if existing soil is not conducive for vegetative re-establishment.
   
   c. The CONTRACTOR shall seed (temporary and/or permanent) the area of the removed entrance in accordance with the Contract Documents and Section 32 92 00 Turf and Grasses. Temporarily stabilize with straw or pine mulch.
   
   d. If shown on the planting plan, The CONTRACTOR shall plant the area of the removed entrance in accordance with the Contract Documents and Section 32 90 00 Planting.

3. Silt Fence (SF)
   a. The CONTRACTOR shall be responsible for removal and disposal of SF materials.
   
   b. The CONTRACTOR shall restore the areas where SF was removed which may include decompaction of the underlying soil, grading of existing soils and application of topsoil if needed. Areas shall be scarified to a minimum depth of 2 inches and all rocks and other debris over 2 inches in size shall be removed. Grade area to match existing and/or proposed grades and eliminate low spots. Add topsoil to eliminate low spots and/or if the existing soil is not conducive for vegetative re-establishment.
   
   c. The CONTRACTOR shall seed (temporary and/or permanent) the area of the removed SF in accordance with Contract Documents and Section 32 92 00 Turf and Grasses. Temporarily stabilize with straw or pine mulch.

4. Type E Inlet Protection
   a. The CONTRACTOR shall be responsible for removal and disposal of the Inlet Protection materials.
   
   b. The CONTRACTOR shall restore the area to the same condition or better.

5. Type F Inlet Protection
   a. The CONTRACTOR shall be responsible for removal and disposal of the inlet protection materials.
b. The CONTRACTOR shall restore the area to the same condition or better.

PART 4 – MEASUREMENT AND PAYMENT

4.01 MEASUREMENT

A. The price shall include the furnishing of all labor, materials, tools, equipment and incidentals necessary to complete erosion and sedimentation controls and remove same when no longer required, as shown in the Contract Documents. This work shall include all work required to be compliant with the current National Pollutant Discharge Elimination System (NPDES) Construction Storm Water General Permit. This work shall include the installation and maintenance of blaze orange fence as detailed in Section 01 57 13 Temporary Erosion and Sediment Control. This work shall include inspection of the project site by qualified personnel. Inspections are to be completed once every calendar week and within 24 hours of a 0.5” storm event or greater. This work shall be installed in accordance with the Contract Drawings and with these specifications. This work shall include seeding of all disturbed areas and installation of temporary control measures. The site shall reach 85% cover prior to removal of any erosion and sedimentation control.

B. The price shall include the furnishing of all labor, materials, tools, equipment and incidentals necessary to complete erosion and sedimentation controls and remove same when no longer required, as shown in the Contract Documents. This work shall include all work required to be compliant with the current National Pollutant Discharge Elimination System (NPDES) Construction Storm Water General Permit. This work shall include the installation and maintenance of the stabilized construction entrances as detailed in Section 01 57 13 Temporary Erosion and Sediment Control. This work shall include inspection of the project site by qualified personnel. Inspections are to be completed once every calendar week and within 24 hours of a 0.5” storm event or greater. This work shall be installed in accordance with the Contract Drawings and with these specifications. This work shall include seeding of all disturbed areas and installation of temporary control measures. The site shall reach 85% cover prior to removal of any erosion and sedimentation control.

C. The price shall include the furnishing of all labor, materials, tools, equipment and incidentals necessary to complete erosion and sedimentation controls and remove same when no longer required, as shown in the Contract Documents. This work shall include all work required to be compliant with the current National Pollutant Discharge Elimination System (NPDES) Construction Storm Water General Permit. This work shall include the installation and maintenance of silt fence as detailed in Section 01 57 13 Temporary Erosion and Sediment Control. This work shall include inspection of the project site by qualified personnel. Inspections are to be completed once every calendar week and within 24 hours of a 0.5” storm event or greater. This work shall be installed in accordance with the Contract Drawings and with these specifications. This work shall include seeding of all disturbed areas and installation of temporary control measures. The site shall reach 85% cover prior to removal of any erosion and sedimentation control.

D. The price shall include the furnishing of all labor, materials, tools, equipment and incidentals necessary to complete erosion and sedimentation controls and remove same when no longer required, as shown in the Contract Documents. This work shall include
all work required to be compliant with the current National Pollutant Discharge Elimination System (NPDES) Construction Storm Water General Permit. This work shall include the installation and maintenance of Inlet Protection (Type E) as detailed in Section 01 57 13 Temporary Erosion and Sediment Control. This work shall include inspection of the project site by qualified personnel. Inspections are to be completed once every calendar week and within 24 hours of a 0.5” storm event or greater. This work shall be installed in accordance with the Contract Drawings and with these specifications. This work shall include seeding of all disturbed areas and installation of temporary control measures. The site shall reach 85% cover prior to removal of any erosion and sedimentation control.

E. The price shall include the furnishing of all labor, materials, tools, equipment and incidentals necessary to complete erosion and sedimentation control and remove same when no longer required, as shown in the Contract Documents. This work shall include all work required to be compliant with the current National Pollutant Discharge Elimination System (NPDES) Construction Storm Water General Permit. This work shall include the installation and maintenance of Inlet Protection (Type F) as detailed in Section 01 57 13 Temporary Erosion and Sediment Control. This work shall include inspection of the project site by qualified personnel. Inspections are to be completed once every calendar week and within 24 hours of a 0.5” storm event or greater. This work shall be installed in accordance with the Contract Drawings and with these specifications. This work shall include seeding of all disturbed areas and installation of temporary control measures. The site shall reach 85% cover prior to removal of any erosion and sedimentation control.

4.02 PAYMENT

A. Payments by the Owner to the Contractor shall be based on a Lump Sum for the scope of Work. Unit prices have been received from the Contractor and agreed to by the Owner to provide agreed upon prices for modification to Work quantities. The Owner and Contractor agree that if the scope of Work either increases or decreases within 20% of the original unit quantities, the payment for such increase or decrease shall be based on the unit prices as set forth in the Contract Documents.

B. Payments by the Owner to the Contractor shall be based on a Lump Sum for the scope of Work. Unit prices have been received from the Contractor and agreed to by the Owner to provide agreed upon prices for modification to Work quantities. The Owner and Contractor agree that if the scope of Work either increases or decreases within 20% of the original unit quantities, the payment for such increase or decrease shall be based on the unit prices as set forth in the Contract Documents.

C. Payments by the Owner to the Contractor shall be based on a Lump Sum for the scope of Work. Unit prices have been received from the Contractor and agreed to by the Owner to provide agreed upon prices for modification to Work quantities. The Owner and Contractor agree that if the scope of Work either increases or decreases within 20% of the original unit quantities, the payment for such increase or decrease shall be based on the unit prices as set forth in the Contract Documents.

D. Payments by the Owner to the Contractor shall be based on a Lump Sum for the scope of Work. Unit prices have been received from the Contractor and agreed to by the Owner to provide agreed upon prices for modification to Work quantities. The Owner
and Contractor agree that if the scope of Work either increases or decreases within 20% of the original unit quantities, the payment for such increase or decrease shall be based on the unit prices as set forth in the Contract Documents.

E. Payments by the Owner to the Contractor shall be based on a Lump Sum for the scope of Work. Unit prices have been received from the Contractor and agreed to by the Owner to provide agreed upon prices for modification to Work quantities. The Owner and Contractor agree that if the scope of Work either increases or decreases within 20% of the original unit quantities, the payment for such increase or decrease shall be based on the unit prices as set forth in the Contract Documents.

END OF SECTION 01 57 13
SECTION 01 71 13 – MOBILIZATION

PART 1 - GENERAL

1.01 DESCRIPTION

A. Work included:

1. Mobilization shall include the obtaining of all permits; moving onto the site all products and equipment; furnishing applicable construction facilities; and all project management all as required for the proper performance and completion of the WORK in accordance with the General and Supplemental Conditions. Mobilization shall include the following principal items:

   a. Moving on to the construction site all CONTRACTOR’s facilities and equipment, including CONTRACTOR’s and OWNER’s field offices, if applicable;
   b. Providing on-site sanitary facilities, if applicable;
   c. Obtaining all required permits;
   d. Having all OSHA required notices and the establishment of safety programs, if applicable;
   e. Having the CONTRACTOR’s Superintendent at the job site full time;
   f. Submitting initial applicable submittals;
   g. Submitting any submittals required by any authority under the Storm Water Pollution Prevention Plan, if applicable;
   h. The CONTRACTOR shall obtain all the necessary hydrant permits, meters and any other appurtenance necessary for all water connections in each affected community. All connections shall be performed and paid for in accordance with the requirements set forth by the local municipalities, if applicable;
   i. The CONTRACTOR shall negotiate any additional access easements he deems necessary to mobilize and complete his work at the various work sites, if applicable;
   j. Provide the OWNER with a Traffic Plan that is acceptable to the local municipalities, and meets the requirements of the SCDOT or other requirements of the local municipalities, if applicable.

2. All WORK associated with Final Cleaning and Demobilization of site shall be included in the Mobilization bid item. Cleaning and Demobilization of the site shall include the following:

   a. Leave the Work site and adjacent areas affected in a clean condition satisfactory to the OWNER.
b. Remove all waste associated with construction contract.

c. Remove grease, dirt, dust, paint or plaster splatter, stains, labels, fingerprints, and other foreign materials from exposed surfaces.

d. Repair, patch, and touch up marred surfaces to specified finish and match adjacent surfaces.

e. Broom clean exterior paved driveways and parking areas.

f. Hose clean sidewalks, loading areas, and others contiguous with principal structures.

g. Rake clean all other surfaces.

h. Leave water courses, gutters, and ditches open and clean with no obstructions.

i. With approval, remove all temporary erosion control measures.

B. Related Work: Documents affecting work of this section include, but are not necessarily limited to, General Provisions and Modifications of these Specifications.

1.02 RELATED SECTIONS

A. Section 00 12 30 General Conditions

B. Section 01 33 00 Submittal Procedures

1.03 REFERENCE STANDARDS

A. South Carolina Department of Transportation Standard Specifications for Highway Construction 2007.


C. South Carolina Department of Health and Environmental Control 2014.

1.04 ABBREVIATIONS, DEFINITIONS, AND TERMS (NOT USED)

1.05 SUBMITTALS

A. Prior to mobilization CONTRACTOR shall submit a Progress (CPM) Schedule in accordance with 6.10 Progress Schedule of the General Conditions within twenty (20) days after execution and delivery of the Agreement and not less than ten (10) days prior to making an application for partial payment.

B. Prior to mobilization CONTRACTOR shall submit a Submittal Schedule in accordance with 4.15 Submittal Schedule of the General Conditions within twenty (20) days after execution and delivery of the Contract, the CONTRACTOR shall prepare and deliver to the OWNER and ENGINEER a Submittal Schedule. This includes a list of all submittals required under the Contract.
C. Prior to mobilization CONTRACTOR shall submit a Schedule of Values in accordance with 7.2 Schedule of Values of the General Conditions within twenty (20) days after execution and delivery of the Contract, the CONTRACTOR shall prepare and deliver to the OWNER and ENGINEER a Schedule of Values. This includes a list of all submittals required under the Contract.

1.06 QUALITY ASSURANCE

A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.

B. Use equipment adequate in size capacity, and numbers to accomplish the work of this Section in a timely manner.

C. In addition to complying with requirements of governmental agencies having jurisdiction, comply with the directions of the ENGINEER, which may also include the Project Architect, Project Civil Engineer, or the Geotechnical (Soil) Engineer.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Delivery

1. Scheduling: Schedule delivery of products or equipment as required to allow timely installation and to avoid prolonged storage.

2. Packaging: Deliver products or equipment in manufacturer's original unbroken cartons or other containers designed and constructed to protect the contents from physical or environmental damage.

3. Identification: Clearly and fully mark and identify as to manufacturer, item, and installation location.

4. Protection and Handling: Provide manufacturer's instructions for storage and handling.

B. Protection, Storage and Handling

1. Protect all products or equipment in accordance with manufacturer's written directions.

   a. Store products or equipment in approved location to avoid physical damage to items while in storage.

   b. Handle products or equipment in accordance with manufacturer's recommendations and instructions.

2. Protect equipment from exposure to elements and keep thoroughly dry.

C. Field Quality Control
1. Inspect Deliveries:
   a. Inspect all products or equipment delivered to the site prior to unloading. Reject all products or equipment that are damaged, used, or in any other way unsatisfactory for use on Project. Unsuitable products or equipment shall be removed at the CONTRACTOR’s expense.

2. Monitor Storage Area: Monitor storage area to ensure suitable temperature and moisture conditions are maintained as required by manufacturer or as appropriate for particular items.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

PART 4 – MEASUREMENT AND PAYMENT

4.01 MEASUREMENT

A. The price shall consist of the preparatory work and operations for the assembling and setting up necessary for the project, insurance costs, storage areas, sanitary facilities, moving in of personnel and equipment, incidentals to the project site, all final site cleaning and demobilization, and any other facilities, as required by the specifications and special requirements of the contract, as well as by local or state law and regulation, including all permits required for the project (Unless called out in a specific permit allowance). This work shall include project coordination, including assembling and maintaining a project schedule for the duration of the project. This work shall include providing submittals as detailed in Section 01 33 00 Submittal Procedure. This work shall include all safety components. This work shall include pre-construction pictures of the project site conditions prior to the start of any construction This work shall include construction progress reports and photographs at the agreed upon duration with the OWNER. This work shall include providing and maintaining temporary facilities. If applicable this work shall include installation, maintenance, and removal of Project Signs by the CONTRACTOR. This work shall include demobilization and closeout activities efforts as detailed in Section 01 71 13 Mobilization.

4.02 PAYMENT

A. Payments by the Owner to the Contractor shall be based on a Lump Sum for the scope of Work. Unit prices have been received from the Contractor and agreed to by the Owner to provide agreed upon prices for modification to Work quantities. Up to 70% of the unit price shall be paid for activities associated with Mobilization with the remainder to be paid upon completion of Demobilization. The Owner and Contractor agree that if the scope of Work either increases or decreases within 20% of the original unit quantities, the payment for such increase or decrease shall be based on the unit prices as set forth in the Contract Documents.

END OF SECTION 01 71 13
SECTION 01 71 23 - CONSTRUCTION STAKEOUT AND FIELD ENGINEERING

PART 1 - GENERAL

1.01 DESCRIPTION

A. This item shall consist of furnishing, placing, replacing when required, marking and maintaining all Construction Layout stakes necessary for proper guidance and control of construction operations. It shall also include the preparation of all construction staking, field books, such as alignment books, slope and grade books, blue-top books etc. It shall also include any additional Surveyor’s, Civil, Structural or other professional engineering services specified or required to execute CONTRACTOR’s construction methods.

1.02 QUALIFICATIONS OF SURVEYOR OR ENGINEER

A. When it is specified or required for the CONTRACTOR to retain the services of an engineer or surveyor, then each shall meet the following requirements:

1. Surveyor shall be a Registered Land Surveyor in the State the project site is located.

2. Engineer shall be a Registered Professional Engineer in the State the project site is located.

1.03 QUALITY ASSURANCE

A. The CONTRACTOR must use competent personnel and appropriate equipment for all work required to set and maintain the elevations and dimensions as specified in the Contract Documents.

B. This stakeout must be installed to the satisfaction of all appropriate permit inspectors before any operation commences.

C. If any discrepancies between plan and field conditions are found, the CONTRACTOR must resolve any needed field adjustments with the OWNER before starting construction.

D. The CONTRACTOR will be held fully responsible for maintaining the project during the course of the construction including the period of the as-built certification.

1.04 PROJECT/SITE CONDITIONS

A. Project Surveyor: Employ and retain, as needed, at the Site a surveyor with experience and capability of performing surveying and layout tasks required in the Contract Documents and as required for the Work. Tasks included are:

1. Provide modern surveying equipment, including stakes, monuments and other required markers, and accessories required for performance of the Work.
2. Establish required lines and grades for constructing all facilities, structures, pipelines, and site improvements.

3. Keep professional, accurate, well organized, and legible notes of all measurements and calculations made while surveying and laying out the Work.


PART 2 - PRODUCTS

2.01 EQUIPMENT AND MATERIALS

A. All surveying equipment, stakes and any other material necessary to perform the work shall be furnished by the CONTRACTOR, either directly or by a sub-contracted Registered Land Surveyor.

B. The surveyor must use marker materials that can be maintained by the CONTRACTOR during the course of construction.

PART 3 - EXECUTION

3.01 SURVEY REFERENCE POINTS

A. Existing basic horizontal and vertical control points for the Project are those designated on drawing.

B. Locate and protect control points prior to starting site work and preserve all permanent reference points during construction. OWNER's established reference points damaged or destroyed by CONTRACTOR, either directly or by a subcontractor, will be re-established at CONTRACTOR’s expense.

C. The CONTRACTOR shall provide a Registered Land Surveyor, subject to the OWNER's approval, to establish and/or re-establish all benchmarks, reference points, line and grade points necessary to complete the work at no additional expense to the OWNER.

D. The CONTRACTOR shall notify the ENGINEER in the event any original reference point or benchmark as defined in subparagraph A and B, is destroyed or lost, and if required by the ENGINEER, shall replace said reference point or benchmark as per the requirements of subparagraph C.

3.02 CONSTRUCTION STAKEOUT

A. Establish lines and levels, locate and layout by instrumentation and similar appropriate means all site improvements:

1. Stakes for grading, fill and topsoil placement

2. Stakes for alignment and grades for roadways, parking facilities, and other pavements or structures.

3. Storm drainage alignment and invert elevations.
B. A complete and accurate log of all control and survey work, as it progresses, shall be maintained.

1. Survey data shall be in accordance with recognized professional surveying standards and prevailing standards of practice in the locality where the Site is located. Original field notes, computations, and other surveying data shall be recorded by CONTRACTOR’s surveyor in CONTRACTOR-furnished hard-bound field books, and shall be signed by CONTRACTOR’s surveyor. Completeness and accuracy of survey Work, and completeness and accuracy of survey records, including field books, shall be responsibility of CONTRACTOR. Failure to organize and maintain survey records in a professional manner that allows reasonable and independent verification of calculations, and to allow identification of elevations, dimensions, and grades of the Work, shall be cause for rejecting the survey records, including field books.

2. Illegible notes or data, and erasures on any page of field books, are unacceptable. Do not submit copied notes or data. Corrections by ruling or lining out errors will be satisfactory if initialed by the surveyor. Violation of these requirements may require re-surveying the data in question.

C. CONTRACTOR shall verify layouts, and line and grade of work, as work progresses, at random times to verify proper installation and shall notify ENGINEER of status.

D. At the ENGINEER’s request, surveying stakeout data shall be submitted for review to verify accuracy of field engineering work.

3.03 RECORD DRAWINGS AND CERTIFICATION

A. AS-BUILT RECORD DRAWINGS: Upon completion of the work, the CONTRACTOR shall provide a certified final as-built survey by a Registered Land Surveyor showing all dimensions, locations, angles, and elevations of all portions of work performed under his contract. Provide storm drainage as-built drawings of the storm drainage system and the improvements installed. The CONTRACTOR will be provided a copy of the original Site electronic CAD files to use as a base for the creation of these as-built record drawings. Survey shall show all improvements and their relations to any and all existing conditions that are relative to their use.

1. Horizontal and vertical locations of existing and new structures:

   a) Vertical tolerance - +/- 0.2’, maximum for structures.

   b) Vertical tolerance - +/- 0.2’, maximum for grading.

   c) Horizontal tolerance - +/-0.2’, maximum for structures.

   d) Horizontal tolerance - +/-0.5’, maximum for grading.

B. CERTIFICATE OF CONFORMANCE: Submit a certificate signed by Professional Engineer or Registered Land Surveyor, as each portion of work requires, certifying that elevations and locations of improvements are in conformance or non-conformance with Contract Documents.
3.04 CLOSEOUT ACTIVITIES

A. Upon completion of site construction and with approval from the OWNER, the CONTRACTOR shall remove control markers, stakes, etc and dispose of them properly in accordance with the General Conditions at no additional cost to the OWNER.

PART 4 – MEASUREMENT AND PAYMENT

4.01 MEASUREMENT

A. The price shall include all the furnishing of all labor, materials, tools, equipment and all incidentals necessary to complete Survey Reference Points and Construction Stakeout per the Contract Document as detailed in Section 01 71 23 Construction Stakeout-Field Engineering and Section 00 12 30 General Conditions.

B. The price shall include all the furnishing of all labor, materials, tools, equipment and all incidentals necessary to complete the Record Drawings and Certifications per the Contract Document as detailed in Section 01 71 23 Construction Stakeout-Field Engineering and Section 00 12 30 General Conditions.

4.02 PAYMENT

A. Payments by the Owner to the Contractor shall be based on a Lump Sum for the scope of Work. Unit prices have been received from the Contractor and agreed to by the Owner to provide agreed upon prices for modification to Work quantities. The Owner and Contractor agree that if the scope of Work either increases or decreases within 20% of the original unit quantities, the payment for such increase or decrease shall be based on the unit prices as set forth in the Contract Documents.

B. Payments by the Owner to the Contractor shall be based on a Lump Sum for the scope of Work. Unit prices have been received from the Contractor and agreed to by the Owner to provide agreed upon prices for modification to Work quantities. The Owner and Contractor agree that if the scope of Work either increases or decreases within 20% of the original unit quantities, the payment for such increase or decrease shall be based on the unit prices as set forth in the Contract Documents.

END OF SECTION 01 71 23
SECTION 02 41 13 – SELECTIVE SITE DEMOLITION

PART 1 - GENERAL

1.01 DESCRIPTION

A. Work included: Clearing site for structures; disposing, and recycling of contaminated soil; general demolition required on site; protection of existing utilities; and temporary shielding. Including but not limited to curb cuts, termination and relocation of utilities.

B. Related Work: Documents affecting work of this section include, but are not necessarily limited to, General Provisions and Modifications of these Specifications.

1.02 RELATED SECTIONS

A. Section 01 56 39 Temporary Tree and Plant Protection
B. Section 01 57 13 Temporary Erosion and Sediment Control
C. Section 31 23 19 Dewatering

1.03 REFERENCE STANDARDS

A. South Carolina Department of Transportation Standard Specifications for Highway Construction 2007.
C. South Carolina Department of Health and Environmental Control 2014.

1.04 ABBREVIATIONS, DEFINITIONS, AND TERMS

A. LOD: Limits of disturbance

1.05 SUBMITTALS

A. Permits and notices authorizing grading activities shall be submitted to the OWNER prior to the start of Site Preparation Activities. These shall also be posted onsite.

B. Pre-existing condition photos of the entire proposed work area and surrounding area, including access, shall be taken by the CONTRACTOR and provided to the OWNER prior to any construction activities.

1.06 QUALITY ASSURANCE

A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.
B. Use equipment adequate in size capacity, and numbers to accomplish the work of this Section in a timely manner.

C. In addition to complying with requirements of governmental agencies having jurisdiction, comply with the directions of the ENGINEER, which may also include the Project Architect, Project Civil Engineer, or the Geotechnical (Soil) Engineer.

D. At the Pre-construction meeting review methods and procedures related to demolition including, but not limited to, the following:

1. Inspect and clearly define areas within the LOD to be selectively cleared or demolished.

2. Review and finalize any applicable schedules and/or plans, and verify availability of materials, personnel, equipment, and facilities needed to make progress and avoid delays.

3. Review requirements of work performed by other trades that rely on site clearing and demolition operations.

4. Review areas where existing construction is to remain and requires protection.

1.07 PROTECTION

A. The CONTRACTOR shall be responsible for protecting all utilities within the work areas throughout the entire duration of construction by the appropriate means.

B. The CONTRACTOR shall repair any utilities damaged during construction at no additional expense to the OWNER.

C. The CONTRACTOR shall bring to the OWNER’s attention any utility lines where proposed grading will result in less than 6 inches of vertical clearance or minimum 5 feet of horizontal clearance from proposed utility lines.

1.08 EXISTING CONDITIONS

A. The CONTRACTOR shall submit pre-construction photographs of the entire site as well as all surrounding areas. This shall include but is not limited to pathways, paved and concrete surfaces and all areas within the LOD.

1.09 MAINTAINING TRAFFIC

A. Do not close or obstruct roadways without permits. If the street is blocked or impacted during construction at any time for any reason the CONTRACTOR is required to obtain a street blocking permit. Coordinate with Traffic and Transportation prior to construction.

B. Conduct operations with minimum interference to public or private roadways.

C. If traffic signs or markings within the Right-of-Way are impacted, relocation of these items must be coordinated with Traffic and Transportation prior to construction.
D. All traffic control devices will be to Manual of Uniform Traffic Control Devices (MUTCD).

1.10 MATERIALS OWNERSHIP

A. Unless otherwise indicated, demolition waste becomes the property of the CONTRACTOR and must be disposed of off-site.

B. Historic items, relics, antiques, and similar objects including, but not limited to, cornerstones and their contents, commemorative plaques and tablets, and other items of interest or value to OWNER that may be uncovered during demolition remain the property of OWNER. If these or similar items are discovered, the OWNER shall be notified prior to any action by the CONTRACTOR.

1. Once approved by the OWNER, carefully salvage in a manner to prevent damage and promptly return to OWNER.

1.11 WARRANTY

A. Remove, replace, patch, and repair materials and surfaces cut or damaged during selective demolition, by methods and with materials so as not to void existing warranties.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.01 GENERAL

A. All storm drain infrastructure is to remain in place and operational.

B. All transformers are to remain in place and operational.

3.02 PREPARATION

A. The CONTRACTOR shall install the necessary temporary tree and plant protection in accordance with the Contract Documents and Section 01 56 39 Temporary Tree and Plant Protection prior to site clearing and demolition activities.

B. The CONTRACTOR shall install the necessary temporary erosion and sediment controls in accordance with the Contract Documents and Section 01 57 13 Temporary Erosion and Sediment Control prior to site clearing and demolition activities.

C. When applicable, dewatering devices shall be installed, in accordance with Section 31 23 19 Dewatering, functioning and result in dry conditions prior to the commencement of site clearing and demolition activities.

3.03 DEMOLITION

A. Do not demo or clear cut the entire site at one time. Perform demolition in conjunction with the phases provided in the sequence of construction and per the Demolition Plan as indicated on the Contract Documents.
B. Curb Cut Demolition

1. Saw cut taking care to preserve adjacent edges
2. Removal and disposal of concrete, subgrade, etc to specified elevation
3. Preparation of subgrade scarify

C. Coordinate with Dominion Energy Group for relocation of any underground electrical facilities and service terminations prior to removal. Electric services shall be removed and terminated back to the source. Transformers to remain.

D. Coordinate with Charleston Water System for termination and capping of Water and Sewer Services at the property line as required.

E. Coordinate with Communications Utility for relocation of communication lines as required.

3.04 CLOSEOUT ACTIVITIES

A. Material resulting from demolition and not scheduled for salvaging shall become the property of the CONTRACTOR and shall be suitably disposed of off-site. Disposal of unsuitable material shall be at no extra expense to the OWNER. Disposal shall be performed as promptly as possible and not left until the final clean up.

B. Site Restoration

1. Below-Grade Areas: Rough grade below-grade areas ready for further excavation or new construction.
2. Site Grading: Uniformly rough grade area of demolished construction to a smooth surface, free from irregular surface changes. Provide a smooth transition between adjacent existing grades and new grades.

PART 4 – MEASUREMENT AND PAYMENT

4.01 MEASUREMENT

A. The price shall include the furnishing of all labor, materials, tools, equipment and incidentals necessary to remove structures as shown on the Contract Drawings. This work shall be installed in accordance with the Contract Drawings and with these specifications. Curb cut demolition shall be completed as detailed in Section 02 41 13 Selective Site Demolition. Concrete

4.02 PAYMENT

A. Payments by the Owner to the Contractor shall be based on a Lump Sum for the scope of Work. Unit prices have been received from the Contractor and agreed to by the Owner to provide agreed upon prices for modification to Work quantities. The Owner and Contractor agree that if the scope of Work either increases or decreases within 20% of the original unit quantities, the payment for such increase or decrease shall be based on the unit prices as set forth in the Contract Documents.
END OF SECTION 02 41 13
SECTION 03 30 00 – CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.01 DESCRIPTION

A. Work included: Furnish, transport, stockpile, install and maintain, the proposed cast-in-place curb & gutter and pedestrian ramp as designated and detailed in the Contract Documents.

B. Related Work: Documents affecting work of this section include, but are not necessarily limited to, General Provisions and Modifications of these Specifications.

1.02 RELATED SECTIONS

A. Section 01 57 13 Temporary Erosion and Sediment Control
B. Section 32 05 19.13 Geotextile Fabric
C. Section 31 23 19 Dewatering
D. Section 32 92 00 Turf and Grasses

1.03 REFERENCE STANDARDS

A. South Carolina Department of Transportation Standard Specifications for Highway Construction 2007.
C. South Carolina Department of Health and Environmental Control 2014.
D. South Carolina Department of Transportation Americans with Disabilities Act (ADA) Transition Plan 2014.

1.04 ABBREVIATIONS, DEFINITIONS, AND TERMS (NOT USED)

1.05 SUBMITTALS

A. Concrete Curb & Gutter
   1. Submit concrete mix design to the OWNER for approval prior to furnishment.
   2. Submit the supplier and material data of geotextile fabric to the OWNER for approval prior to furnishment.
   3. Submit the source/supply and material data for aggregate base course to the OWNER for approval prior to furnishment.

B. Pedestrian Ramp
1. Submit concrete mix design to the OWNER for approval prior to furnishment.

2. Submit manufacturers details for Detectable Warning Material to OWNER for approval prior to furnishment.

1.06 QUALITY ASSURANCE

A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.

B. Use equipment adequate in size capacity, and numbers to accomplish the work of this Section in a timely manner.

C. In addition to complying with requirements of governmental agencies having jurisdiction, comply with the directions of the ENGINEER, which may also include the Project Architect, Project Civil Engineer, or the Geotechnical (Soil) Engineer.

D. Testing required for this part of the work will be furnished by the CONTRACTOR.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Materials shall be kept in the approved staging and stockpile areas and be kept dry and in neat condition as to not damage the products.

B. Unsuitable material shall be removed at The CONTRACTOR’s expense.

1.08 SEQUENCING AND SCHEDULING

A. Install cast-in-place structures in the sequence indicated per the Sequence of Construction as specified on the approved Construction Drawings.

1.09 WARRANTY

A. The CONTRACTOR shall warranty the cast-in-place structures and associated features for the contracted length of time. Any material that has to be replaced or repaired shall be replaced or repaired by the CONTRACTOR at no additional cost to the OWNER.

1.10 MAINTENANCE

A. The CONTRACTOR shall maintain the cast-in-place structures and associated features for the contracted length of time. Any material that has to be replaced or repaired shall be replaced or repaired by the CONTRACTOR at no additional cost to the OWNER.

PART 2 - PRODUCTS

2.01 GENERAL

A. Provide approved like materials from the same manufacturer or supplier to provide consistent composition and appearance.

B. Only use products which have been approved by the OWNER.
2.02 MATERIALS

A. Non-woven Geotextile Fabric
   1. Use non-woven geotextile fabric in accordance with Section 32 05 19.13 Geotextile Fabric.

B. Stone Sub-Grade
   1. Use Aggregate base course No. 57 Stone.

C. Cast-In-Place Concrete
   1. Use minimum Class 4000 concrete.

D. Detectable Warning Material
   1. Use SCDOT qualified product list 61 minimum 2'-0" x 5'-0" detectable warning material.

PART 3 - EXECUTION

3.01 GENERAL

A. The CONTRACTOR shall install the curb & gutter and pedestrian ramp in accordance with the Contract Documents.

B. The CONTRACTOR shall utilize all materials, tools, equipment and labor to perform this scope of work to industry standards and in a safe working manner.

3.02 PREPARATION

A. The CONTRACTOR shall install the necessary temporary erosion and sediment controls in accordance with the Contract Documents and Section 01 57 13 Temporary Erosion and Sediment Control prior to structure installation.

B. When applicable, dewatering devices shall be installed, in accordance with Section 31 23 19 Dewatering, functioning and result in dry conditions prior to the commencement of construction activities.

3.03 INSTALLATION

A. Curb Cut
   1. Install curb cut in accordance with SCDOT Standard Drawing 720-105-01.

   2. If subgrade extends into water table, non-woven geotextile shall be used to encase the compacted stone subgrade.

   3. Stone subgrade shall be compacted No. 57 aggregate with a minimum thickness of 3 inches.
4. CONTRACTOR shall maintain edge of pavement elevation for full length of curb cut. From edge of pavement, transition existing pavement elevation to proposed elevation back of curb within the 1 foot 6 inches curb width.

B. Pedestrian Ramp

1. Install pedestrian ramp with detectable warning material in accordance with SCDOT Standard Drawings 720-901-01, 720-901-02, 720-910-01 and 720-981-36 details.

3.04 CLOSEOUT ACTIVITIES

A. Backfill up to the installed structures to the grades as detail on the plans. Scarify fill area adjacent to the concrete structures and remove all concrete debris, rocks and other debris over 2 inches size. Seed (temporary and/or permanent) the disturbed area in accordance with Contract Documents and Section 32 92 00 Turf and Grasses. Temporarily stabilize with straw or pine mulch.

PART 4 – MEASUREMENT AND PAYMENT

4.01 MEASUREMENT

A. The price shall include the furnishing of all labor, materials, tools, equipment and incidentals necessary to install the Curb Cut as specified and as shown on the Contract Drawings. Concrete Curb Cut shall be completed as detailed in Section 03 30 00 Cast-in-Place Concrete.

B. The price shall include the furnishing of all labor, materials, tools, equipment and incidentals necessary to install the Pedestrian Ramp as specified and as shown on the Contract Drawings. Concrete Pedestrian Ramp shall be completed as detailed in Section 03 30 00 Cast-in-Place Concrete.

4.02 PAYMENT

A. Payments by the Owner to the Contractor shall be based on a Lump Sum for the scope of Work. Unit prices have been received from the Contractor and agreed to by the Owner to provide agreed upon prices for modification to Work quantities. The Owner and Contractor agree that if the scope of Work either increases or decreases within 20% of the original unit quantities, the payment for such increase or decrease shall be based on the unit prices as set forth in the Contract Documents.

B. Payments by the Owner to the Contractor shall be based on a Lump Sum for the scope of Work. Unit prices have been received from the Contractor and agreed to by the Owner to provide agreed upon prices for modification to Work quantities. The Owner and Contractor agree that if the scope of Work either increases or decreases within 20% of the original unit quantities, the payment for such increase or decrease shall be based on the unit prices as set forth in the Contract Documents.

END OF SECTION 03 30 00
SECTIONS 31 13 00 – SELECTIVE TREE AND SHRUB REMOVAL AND TRIMMING

PART 1 - GENERAL

1.01 DESCRIPTION

A. Work included: Selective tree and shrub removal intended for trees above 6" DBH as denoted on the Construction Drawings.

B. Related Work: Documents affecting work of this section include, but are not necessarily limited to, General Provisions and Modifications of these Specifications.

1.02 RELATED SECTIONS

A. Section 01 57 13 Temporary Erosion and Sediment Control

1.03 REFERENCE STANDARDS

A. South Carolina Department of Transportation Standard Specifications for Highway Construction 2007.


C. South Carolina Department of Health and Environmental Control 2014.

1.04 ABBREVIATIONS, DEFINITIONS, AND TERMS

A. DBH: Diameter at breast height.

B. LOD: Limits of Disturbance.

1.05 SUBMITTALS

A. In the instance a tree(s) require removal by climbing to ensure maximum safe removal based on site conditions, The CONTRACTOR shall submit a certification of the tree expert subcontractor for approval by OWNER prior to execution.

1.06 QUALITY ASSURANCE

A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.

B. Use equipment adequate in size capacity, and numbers to accomplish the work of this Section in a timely manner.

C. In addition to complying with requirements of governmental agencies having jurisdiction, comply with the directions of the ENGINEER, which may also include the Project Architect, Project Civil Engineer, or the Geotechnical (Soil) Engineer.
D. At the Pre-construction meeting, review and define trees denoted for removal. The CONTRACTOR shall layout the areas to be cleared and ribbon all trees over 6” DBH for removal. The OWNER and CONTRACTOR shall walk the site and review the trees for removal. No trees shall be removed until the CONTRACTOR has received approval by the OWNER.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Large woody debris harvested onsite in the tree removal process for re-use on site shall be stored and handled according to all safety standards per the contract of this project.

B. Woody material shall be stored in the approved staging and stockpile areas.

C. Unsuitable material shall be removed at The CONTRACTOR’s expense.

1.08 SEQUENCING AND SCHEDULING

A. Conduct selective tree and shrub removal and trimming in the sequence indicated per the Sequence of Construction as specified on the approved Construction Drawings.

1.09 WARRANTY

A. Remove, replace, patch, and repair materials and surfaces cut or damaged during selective removal and trimming, by methods and with materials so as not to void existing warranties.

1.10 MAINTENANCE

A. The CONTRACTOR shall maintain a neat site. Clear the ground surface of designated trees, and other objectionable material, vegetation, and growth.

B. Do not remove trees and other landscape features that do not interfere with the Work or are designated for preservation. Prevent damage or injury to existing trees, plants, and other vegetation that are to remain within or adjacent to the Project Limits.

C. Conduct operations with minimum interference to public or private roadways

PART 2 – PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.01 GENERAL

A. The CONTRACTOR shall only clear items for approval within the LOD.

B. The CONTRACTOR shall utilize all materials, tools, equipment and labor to perform this scope of work to industry standards and in a safe working manner.

3.02 PREPARATION

A. The CONTRACTOR shall layout the areas to be cleared and ribbon all trees over 6” DBH for removal. The OWNER and CONTRACTOR shall walk the site and review the trees
for removal. No trees shall be removed until the CONTRACTOR has received approval by the OWNER.

C. The CONTRACTOR shall install the necessary temporary erosion and sediment controls in accordance with the Contract Documents and Section 01 57 13 Temporary Erosion and Sediment Control prior to clearing activities.

3.03 INSTALLATION

A. The CONTRACTOR shall utilize all tools, equipment, and labor to perform the clearing of trees to industry standards.

B. The CONTRACTOR shall clear the site in a manner that preserves stability and reduces erosion potential as much as possible. Do not clear cut the entire site all at once.

C. The CONTRACTOR shall save the necessary number of trees, with their rootwads intact, as indicated on the construction drawings. These shall be handled and stored in a manner so as to not cause damage to the root fan or tree trunk.

D. All material not used onsite shall be hauled off site by the CONTRACTOR.

E. Some trees may require climbing and topping to ensure maximum safe removal based on site conditions. This shall be done by a certified tree expert.

3.04 CLOSEOUT ACTIVITIES

A. Upon completion, material resulting from clearing and not scheduled for salvaging shall become the property of the CONTRACTOR and shall be suitably disposed of off-site. Disposal shall be performed as promptly as possible and not left until the final clean up.

PART 4 – MEASUREMENT AND PAYMENT

4.01 MEASUREMENT

A. The price shall include the furnishing of all labor, materials, tools, equipment and incidentals necessary to complete the select tree and shrub removal and trimming as shown on the Contract Drawings. The price shall include select trees between 6"-12" DBH and stump removal, removal of trees felled by others, and disposal in accordance with the contract drawings and with these specifications. This work shall be completed as detailed in Section 31 13 00 Selective Tree and Shrub Removal and Trimming.

B. The price shall include the furnishing of all labor, materials, tools, equipment and incidentals necessary to complete the select tree and shrub removal and trimming as shown on the Contract Drawings. The price shall include select trees between 12"-24" DBH and stump removal, removal of trees felled by others, and disposal in accordance with the contract drawings and with these specifications. This work shall be completed as detailed in Section 31 13 00 Selective Tree and Shrub Removal and Trimming.

C. The price shall include the furnishing of all labor, materials, tools, equipment and incidentals necessary to complete the select tree and shrub removal and trimming as shown on the Contract Drawings. The price shall include select trees greater than 24"
DBH and stump removal, removal of trees felled by others, and disposal in accordance with the contract drawings and with these specifications. This work shall be completed as detailed in Section 31 13 00 Selective Tree and Shrub Removal and Trimming.

4.02 PAYMENT

A. Payments by the Owner to the Contractor shall be based on a Lump Sum for the scope of Work. Unit prices have been received from the Contractor and agreed to by the Owner to provide agreed upon prices for modification to Work quantities. The Owner and Contractor agree that if the scope of Work either increases or decreases within 20% of the original unit quantities, the payment for such increase or decrease shall be based on the unit prices as set forth in the Contract Documents.

B. Payments by the Owner to the Contractor shall be based on a Lump Sum for the scope of Work. Unit prices have been received from the Contractor and agreed to by the Owner to provide agreed upon prices for modification to Work quantities. The Owner and Contractor agree that if the scope of Work either increases or decreases within 20% of the original unit quantities, the payment for such increase or decrease shall be based on the unit prices as set forth in the Contract Documents.

C. Payments by the Owner to the Contractor shall be based on a Lump Sum for the scope of Work. Unit prices have been received from the Contractor and agreed to by the Owner to provide agreed upon prices for modification to Work quantities. The Owner and Contractor agree that if the scope of Work either increases or decreases within 20% of the original unit quantities, the payment for such increase or decrease shall be based on the unit prices as set forth in the Contract Documents.

END OF SECTION 31 13 00
SECTION 31 13 19 – SELECTIVE TREE ROOT PRUNING

PART 1 - GENERAL

1.01 DESCRIPTION

A. Work included: Selective tree root pruning which is necessary to preserve the life of existing trees within the limits of disturbance (LOD) as indicated on the Contract Documents.

B. Related Work: Documents affecting work of this section include, but are not necessarily limited to, General Provisions and Modifications of these Specifications.

1.02 RELATED SECTIONS

A. Section 01 57 13 Temporary Erosion and Sediment Control

B. Section 01 56 39 Temporary Tree and Plant Protection

1.03 REFERENCE STANDARDS

A. American National Standard for Pruning, ANSI A300-2008 or most recent version.

1.04 ABBREVIATIONS, DEFINITIONS, AND TERMS

A. ANSI: American National Standard Institute

B. DBH: Diameter at breast height

C. CRZ: Critical root zone.

D. LOD: Limits of Disturbance.

1.05 SUBMITTALS (NOT USED)

1.06 QUALITY ASSURANCE

A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.

B. Use equipment adequate in size capacity, and numbers to accomplish the work of this Section in a timely manner.

C. In addition to complying with requirements of governmental agencies having jurisdiction, comply with the directions of the ENGINEER, which may also include the Project Architect, Project Civil Engineer, or the Geotechnical (Soil) Engineer.
D. At the Pre-construction meeting, review and define trees within the proposed grading area requiring root pruning. No tree roots shall be pruned until the CONTRACTOR has received approval by the OWNER.

E. All tools and work must be in accordance with accepted arboricultural practices and as approved by the OWNER.

1.07 DELIVERY, STORAGE, AND HANDLING (NOT USED)

1.08 SEQUENCING AND SCHEDULING (NOT USED)

1.09 WARRANTY (NOT USED)

1.10 MAINTENANCE

A. The CONTRACTOR shall maintain a neat site. Clear the ground surface of designated trees, and other objectionable material, vegetation, and growth.

B. Do not prune tree roots and other landscape features that do not interfere with the Work or are designated for preservation. Prevent damage or injury to existing trees, plants, and other vegetation that are to remain within or adjacent to the Project Limits.

PART 2 – PRODUCTS

2.01 GENERAL (NOT USED)

2.02 MATERIALS (NOT USED)

2.03 EQUIPMENT

A. Roots shall be cleanly cut using vibratory knife or other acceptable equipment.

PART 3 - EXECUTION

3.01 GENERAL

A. The CONTRACTOR shall only prune items for approval within the LOD.

B. The CONTRACTOR shall utilize all materials, tools, equipment and labor to perform this scope of work to industry standards and in a safe working manner.

3.02 PREPARATION

A. Boundary of root retention areas shall be flagged and/or fenced prior to trenching.

B. The CONTRACTOR shall install the necessary temporary tree and plant protection in accordance with the Contract Documents and Section 01 56 39 Temporary Tree and Plant Protection prior to pruning activities.

C. The CONTRACTOR shall install the necessary temporary erosion and sediment controls in accordance with the Contract Documents and Section 01 57 13 Temporary Erosion and Sediment Control prior to pruning activities.
3.03 INSTALLATION

A. Exact location of trench shall be field identified by ENGINEER or Landscape Architect on site. CONTRACTOR shall avoid critical root zone (CRZ) to the best of their ability or where directed by ENGINEER or Landscape Architect on site.

B. No roots must be cut within a minimum of three trunk diameters (measured at DBH) without expressed approval by the OWNER.

C. Root pruning must be performed to the depth of excavation or 24 inches, whichever is less. Excavate root pruning trench maximum 2 foot depth and maximum 6 inches in width.

D. Cleanly cut roots using acceptable equipment. Roots less than 1.5 inches diameter can be cleanly pruned using handsaws, pruners, loppers or sharp vibratory knife. Roots of 1.5 inches diameter or larger must be cleanly pruned by hand with handsaws, pruners, loppers, or other specifically designed root pruning equipment as soon as the root is encountered. All blades must be cleaned before each cut when working with trees or roots that have visible signs of defects or decay.

E. The tree roots must not remain exposed to air during pruning activities. All exposed roots and cut ends must be kept moist with damp burlap or covered with an OWNER-approved soil until final grade is established.

F. Immediately backfill trench with soil removed from trench or with organic soil.

G. Root pruning must not be undertaken when the soil on site is wet and when more than the top 1 inch of soil is frozen.

H. All material not used onsite shall be hauled off site by the CONTRACTOR at no additional cost to the OWNER.

3.04 CLOSEOUT ACTIVITIES

A. Upon completion, material resulting from pruning and not scheduled for salvaging shall become the property of the CONTRACTOR and shall be suitably disposed of off-site. Disposal shall be performed as promptly as possible and not left until the final clean up.

PART 4 – MEASUREMENT AND PAYMENT

4.01 MEASUREMENT

A. The price shall include the furnishing of all labor, materials, tools, equipment and incidentals necessary to complete the selective tree root pruning of the site as specified and as shown on the Contract Drawings. The price shall include select root pruning, and disposal in accordance with the contract drawings and with these specifications. This work shall be completed as detailed in Section 31 13 19 Selective Tree Root Pruning.

4.02 PAYMENT
A. Payments by the Owner to the Contractor shall be based on a Lump Sum for the scope of Work. Unit prices have been received from the Contractor and agreed to by the Owner to provide agreed upon prices for modification to Work quantities. The Owner and Contractor agree that if the scope of Work either increases or decreases within 20% of the original unit quantities, the payment for such increase or decrease shall be based on the unit prices as set forth in the Contract Documents.

END OF SECTION 31 13 19
SECTION 31 14 13 – SOIL STRIPPING AND STOCKPILING

PART 1 - GENERAL

1.01 DESCRIPTION

A. Work included: Salvaging and stockpiling of existing topsoil for reuse onsite. Topsoil that has been salvaged from the site shall be placed to a minimum 2 inches depth as described in the Contract Documents or as directed by the OWNER.

B. Related Work: Documents affecting work of this section include, but are not necessarily limited to, General Provisions and Modifications of these Specifications.

1.02 RELATED SECTIONS

A. Section 01 56 39 Temporary Tree and Plant Protection
B. Section 01 57 13 Temporary Erosion and Sediment Control
D. Section 31 20 00 Earth Moving
E. Section 31 23 19 Dewatering
F. Section 32 90 00 Planting
G. Section 32 92 00 Turf and Grasses

1.03 REFERENCE STANDARDS

A. South Carolina Department of Transportation Standard Specifications for Highway Construction 2007.
C. South Carolina Department of Health and Environmental Control 2014.

1.04 ABBREVIATIONS, DEFINITIONS, AND TERMS

A. LOD: Limits of disturbance.

1.05 SUBMITTALS

A. The CONTRACTOR shall submit a soils test to the OWNER for approval. CONTRACTOR shall submit written notification at least 15 days before reuse of any excavated materials and may only reuse material after receiving approval by the OWNER.

B. If the CONTRACTOR desires to amend the salvaged topsoil to help promote vegetative establishment, the soil tests and amendment plan, detailing proposed amendments and quantities, shall be submitted to the OWNER, and approved prior to implementation.
1.06 QUALITY ASSURANCE

A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.

B. Use equipment adequate in size capacity, and numbers to accomplish the work of this Section in a timely manner.

C. In addition to complying with requirements of governmental agencies having jurisdiction, comply with the directions of the ENGINEER, which may also include the Project Architect, Project Civil Engineer, or the Geotechnical (Soil) Engineer.

D. Testing required for this part of the work will be furnished by the CONTRACTOR.

E. At the Pre-construction meeting review methods and procedures related to excavation including, but not limited to, the following:
   1. Inspect and clearly define areas within the LOD to be selectively graded.
   2. Review and finalize any applicable schedules and/or plans, and verify availability of materials, personnel, equipment, and facilities needed to make progress and avoid delays.
   3. Review requirements of work performed by other trades that rely on grading operations.
   4. Review areas where existing construction is to remain and requires protection.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Materials indicated on the Construction Drawings or designated in the field by the OWNER to be salvaged shall be carefully removed and delivered to a location on site to be determined by the OWNER.

B. Storage site/location to be determined and reviewed by the OWNER, prior to the start.

C. Unsuitable material shall be removed at The CONTRACTOR’s expense.

1.08 SEQUENCING AND SCHEDULING

A. Conduct topsoil stripping, stockpiling and placement activities in the sequence indicated per the Sequence of Construction as indicated on the approved construction drawings.

1.09 WARRANTY

A. Remove, replace, patch, and repair materials and surfaces cut or damaged during grading efforts, by methods and with materials so as not to void existing warranties.

1.10 MAINTENANCE

A. The CONTRACTOR shall maintain a neat site.
B. Do not remove trees and other landscape features that do not interfere with the Work or are designated for preservation. Prevent damage or injury to existing trees, plants, and other vegetation that are to remain within or adjacent to the Project Limits.

C. Conduct operations with minimum interference to public or private roadways.

PART 2 - PRODUCTS

2.01 GENERAL

A. Exercise soil stripping and stockpiling efforts in accordance with Section 31 20 00 Earth Moving requirements.

B. Use only products which have been approved by the OWNER.

2.02 MATERIALS

A. Topsoil salvaged from the project site within the limits of grading. All roots, stones, clods, and debris over 2 inches must be removed from the material prior to placement.

PART 3 - EXECUTION

3.01 GENERAL

A. The CONTRACTOR shall salvage (strip and stockpile) and place topsoil in accordance with the Contract Documents.

3.02 PREPARATION

A. The CONTRACTOR shall install the necessary temporary tree and plant protection in accordance with the Contract Documents and Section 01 56 39 Temporary Tree and Plant Protection prior to grading activities.

B. The CONTRACTOR shall install the necessary temporary erosion and sediment controls in accordance with the Contract Documents and Section 01 57 13 Temporary Erosion and Sediment Control prior to grading activities.

C. When applicable, dewatering devices shall be installed in accordance with Section 31 23 19 Dewatering, functioning and result in dry conditions prior to the commencement of grading activities.

3.03 INSTALLATION

A. Soil Stripping

1. Before beginning the excavation operations, obtain the OWNER’s approval for topsoil stripping operations. CONTRACTOR shall not perform stripping operations when the ground is frozen.
2. Confirm the thickness of stripping based on the Construction Drawings and field conditions. Strip vegetation and underlying topsoil and soil to the confirmed depth below the existing ground surface.

3. The CONTRACTOR shall grade the site in a manner that preserves stability and reduces erosion potential as much as possible.

B. Stockpiling of Soil

1. Temporarily store soil in approved stockpiles as shown on the Construction Drawings. Do not commingle different types or classifications of material. During periods of rain, cover stockpiles with polyethylene sheeting to keep material dry. Contain stockpiles with the approved erosion and sediment control measures. Construct stockpiles to heights not exceeding 15 feet and with side slopes no steeper than 2H:1V. Segregate material of differing types and levels of contamination depending on reuse or disposal.

2. Temporarily store in approved stockpiles until material is determined suitable for the future use by the OWNER. The CONTRACTOR shall sample and analyze stripped material in stockpiles to determine suitability for use as topsoil.

3. The OWNER shall determine what is considered suitable stripped topsoil. Stripped topsoil shall be free from debris, stones, roots and clods over 2 inches. Store suitable stripped material within the Project Limits until placement. Reuse or dispose of unsuitable stripped material. Disposal on unsuitable material shall be at no extra expense to the OWNER.

4. Protect and maintain the stockpile and graded areas until reuse or disposal. Provide protection for the stockpile to control the stormwater run-off, erosion, and unauthorized contact. Where the material in the stockpile is saturated, take the appropriate measures to dry it out.

5. The CONTRACTOR shall make all efforts to store soil onsite, within the approved staging and stockpile area. When temporarily storing soil is not possible within the Project Limits, the CONTRACTOR shall notify the OWNER immediately and provide an alternative location. Storage outside the approved stockpile areas, especially those outside the Project Limits must first be approved by the OWNER.

C. Reuse of Salvaged Soil

1. Verify that all required soil tests have been submitted and accepted by the OWNER.

2. Do not handle topsoil if it is wet or frozen.

3. The CONTRACTOR shall completely prepare and finish the surface of all areas to be covered in topsoil according to the grading plan on the approved Construction drawings.

4. Immediately prior to being covered with topsoil, the prepared sub grade shall be loosened to a depth of 2 inches and be free from rocks or other foreign material 2 inches or greater.
5. Prior to the start of placing topsoil, all grass, weeds, brush, stumps, and other objectionable material shall be removed from the surface of stockpiles.

6. Topsoil shall be placed and spread at a depth sufficient so that, after settlement, the completed work shall leave a minimum depth of 2 inches of topsoil and be in conformance with the depth, lines, grades, and elevations specified in the Contract Documents.

7. Rocks and other foreign material larger than 2 inches shall be removed and disposed of by the CONTRACTOR.

3.04 CLOSEOUT ACTIVITIES

A. Disposal of unsuitable material shall be at no extra expense to the OWNER. Disposal shall be performed as promptly as possible and not left until the final clean up.

B. When the stockpile is removed, restore the area to the original condition. Scarify stockpile area (existing soil) to reduce potential compaction and increase seed germination potential. Scarify to a minimum depth of 2 inches below the proposed surface/grade, and all rocks and other debris over 2 inches size shall be removed. Grade area to match existing and/or proposed grades and eliminate low spots. Add topsoil to eliminate low spots and/or if the existing soil is not conducive for vegetative re-establishment.

C. The CONTRACTOR shall seed (temporary and/or permanent) the restored area in accordance with Contract Documents and Section 32 92 00 Turf and Grasses. Temporarily stabilize with straw or pine mulch.

D. If shown on the planting plan, The CONTRACTOR shall plant the area of the restored area in accordance with the Contract Documents and Section 32 90 00 Planting.

PART 4 – MEASUREMENT AND PAYMENT

4.01 MEASUREMENT

A. The price shall include the furnishing of all labor, materials, tools, equipment and all incidentals necessary to complete excavation and stockpiling of topsoil as shown on the Contract Drawings. This work shall include excavation as detailed in Section 31 20 00 Earth Moving and Section 31 14 13 Soil Stripping and Stockpiling.

4.02 PAYMENT

A. Payments by the Owner to the Contractor shall be based on a Lump Sum for the scope of Work. Unit prices have been received from the Contractor and agreed to by the Owner to provide agreed upon prices for modification to Work quantities. The Owner and Contractor agree that if the scope of Work either increases or decreases within 20% of the original unit quantities, the payment for such increase or decrease shall be based on the unit prices as set forth in the Contract Documents.

END OF SECTION 31 14 13
SECTION 31 20 00 - EARTH MOVING

PART 1 - GENERAL

1.1 DESCRIPTION

A. Work included: Excavate, backfill, compact, and grade the site to the elevations shown on the Drawings, as specified herein, and as needed for the installation of underground utilities, storm drainage systems, roadway subgrades, building pads, and general site grading and also to meet the requirements of the construction shown in the Contract Documents.

B. Related Work: Documents affecting work of this section include, but are not necessarily limited to, General Provisions and Modifications of these Specifications.

1.2 QUALITY ASSURANCE

A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.

B. Use equipment adequate in size capacity, and numbers to accomplish the work of this Section in a timely manner.

C. In addition to complying with requirements of governmental agencies having jurisdiction, comply with the directions of the ENGINEER, which may also include the Project Architect, Project Civil Engineer, or the Geotechnical (Soil) Engineer.

D. Testing required for this part of the work will be furnished by the CONTRACTOR.

PART 2 - PRODUCTS

2.1 SOIL MATERIALS

A. Fill and backfill materials:

1. Provide soil materials free from organic matter, and deleterious substances, containing no rocks or lumps larger than 2-3/8" inches their greatest dimension, and containing no more than 15% fines (material passing No. 200 sieve and having a maximum Dry Density as defined by ASTM D-1557 of 100 pcf.

2. Off-site fill material is subject to the approval of the ENGINEER, and is that material removed from excavations imported from off-site borrow areas, predominantly granular, non-expansive soils free from roots and other deleterious matter. Submit samples of materials to soils laboratory for testing and approval prior to execution of filling.

3. Do not permit rocks having a dimension greater than 1 inch in the upper 12 inches of fill or embankment.
4. Cohesionless materials used for trench backfill: Provide sand free from organic material and other foreign matter and approved by the ENGINEER.

2.3 WEED KILLER

A. Only when required, provide a dry, free-flowing, dust-free chemical compound, soluble in water, capable of inhibiting growth of vegetations, and approved for use on this work by government agencies having jurisdiction.

2.4 OTHER MATERIALS

A. Provide other materials, not specifically described but required for a complete and proper installation, as selected by the CONTRACTOR, subject to the approval of the ENGINEER or OWNER.

PART 3 - EXECUTION

3.1 SURFACE CONDITIONS

A. Examination

Examine the areas and conditions under which work of this Section will be performed. Correct conditions detrimental to timely proper completion of the work. Do not proceed until unsatisfactory conditions are corrected.

B. Proof-rolling

Proof-rolling is not applicable to this project.

C. Mucking (if applicable)

1. When unsatisfactory or unsuitable soils (muck) are encountered and are required to be removed by the engineer, the cost of the removal and replacement shall be determined according to the contract provisions, when payment is to be based upon a unit price, such price shall be determined as noted below.

2. Mucking: CONTRACTOR shall provide a unit price for mucking (removable of unsuitable soils). The unit price shall include the removal of unsuitable soils below the area of stripping (assume 8 inches stripping) and shall include the disposal of muck offsite. The unit price shall also include backfilling and compacting with suitable offsite fill. The unit cost submitted shall be based upon in-place measurement. No truck measures will be allowed.

3.2 PROCEDURES:

A. Protection of Utilities:

1. Contractor shall contact Palmetto Utilities Protection Services (PUPS) at 1-888-721-7877, or “811”, a minimum of three (3) business days prior to beginning construction and contact Charleston Water System (CWS) at 1-843-727-6800 (ask for Service Department) a minimum of five (5) business days prior to beginning construction.
2. Unless shown to be removed, protect active utility lines shown on the drawings or otherwise made known to the CONTRACTOR prior to excavating. If damaged, repair or replace at no additional cost to the OWNER.

3. If active utility lines are encountered, and are not shown on the Drawings or otherwise made known to the CONTRACTOR, promptly take necessary steps to assure that service is not interrupted.

4. If service is interrupted as a result of work under this Section, immediately restore service by repairing the damaged utility at no additional cost to the OWNER.

5. If existing utilities are found to interfere with the permanent facilities being constructed under this section, of which are not already predetermined, immediately notify the OWNER and secure his instructions.

6. Do not proceed with permanent relocations of utilities until written instructions are received from the OWNER.

B. Protection of persons and property:

1. Barricade open holes and depressions occurring as part of the Work, and post warning lights on property adjacent to or with public access.

2. Operate warning lights during hours from dust to dawn each day and as otherwise required.

3. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, washout, and other hazards created by operations under this Section.

C. Dewatering:

1. Remove all water, including rain water, encountered during trench and sub-structure work to an approved location by pumps, drains, and other approved methods in accordance with Section 31 23 19 Dewatering.

2. Dispose of all subsurface water in accordance with the requirements of the approved SWPPP and the requirements specified in Section 31 23 19 Dewatering.

3. Keep excavations and site construction area free from standing water. The CONTRACTOR shall maintain the site to control storm water in such a manner as to prevent damage to the existing soils and subgrades from excessive runoff velocities, erosion, and ponding water.

D. Use means necessary to prevent dust becoming a nuisance to the public, to neighbors, and to other work being performed on or near the site.

E. Maintain access to adjacent areas at all times.

3.3 GENERAL EXCAVATION
A. Perform excavating of every type of material encountered within the limits of the Work to the lines, grades, and elevations indicated and specified herein.

B. Unsatisfactory excavated materials:
   1. Excavate to a distance below grade as directed by the ENGINEER, and replace with materials in accordance with the paragraph entitled “Mucking.”
   2. Include excavation of unsatisfactory materials, and replacement by satisfactory materials, as parts of the work of this Section.

C. Surplus materials:
   1. Dispose of unsatisfactory excavated material, and surplus satisfactory excavated material, away from the site at disposal areas arranged and paid for by the CONTRACTOR, unless directed otherwise in writing by the OWNER and ENGINEER.

D. Excavation of rock:
   1. Where rocks, boulders, granite, or similar material is encountered, and where such material cannot be removed or excavated by conventional earth moving or ripping equipment, take required steps to proceed with the general grading operations of the Work, and remove or excavate such material by means which will neither cause additional cost to the OWNER nor endanger buildings or structures whether on or off the site.
   2. Do not use explosives without written permission from the OWNER.

E. Excavate and backfill in a manner and sequence that will provide proper drainage at all times.

F. Borrow:
   1. Obtain material required for fill or embankment in excess of that produced within the grading limits of the Work from borrow areas selected and paid for by the CONTRACTOR and approved by the ENGINEER.

G. Ditches and gutters
   1. Cut accurately to the cross sections, grades, and elevations shown.
   2. Maintain excavations free from detrimental quantities of leaves, sticks, trash, and other debris until completion of the Work.
   3. Dispose of excavated materials as shown on the Drawings or directed by the soil engineer; except do not, in any case, deposit materials less than 3'- 0" from the edge of a ditch.
H. Unauthorized excavation:

1. Unauthorized excavation consists of removal of materials beyond indicated subgrade elevations or dimensions without specific instruction from the ENGINEER or the OWNER.

2. Elsewhere, backfill and compact unauthorized excavations as specified for authorized excavations, unless otherwise directed by the ENGINEER or OWNER.

I. Stability of excavations:

1. Shore and brace where sloping is not possible because of space restrictions or stability of the materials being excavated.

2. Maintain sides and slopes of excavations in a safe condition until completion of backfilling.

J. Shoring and bracing:

1. Provide materials for shoring and bracing as may be necessary for safety personnel, protection of work, and compliance with requirements of governmental agencies having jurisdiction.

2. Maintain shoring and bracing in excavations regardless of the time period excavations will be open.

3. Carry shoring and bracing down as excavation progresses.

K. Excavating for pavements:

1. Cut surface under pavements to comply with cross sections, elevations, and grades.

2. Undercut a minimum of 10 inches below finished subgrade elevation, including stripping.

M. Cold weather protection:

1. Protect excavation bottoms against freezing when atmospheric temperature is less than 35 degrees F.

3.4 TRENCHING FOR UTILITIES

A. Provide sheeting and shoring necessary for protection of the work and for the safety of personnel.

1. Prior to backfilling, remove all sheeting.

2. Do not permit sheeting to remain in the trenches except when, in the opinion of the ENGINEER, field conditions or the type of sheeting or methods of construction such as use of concrete bedding are such as to make removal of sheeting impracticable.
In such cases, the ENGINEER may permit portions of sheeting to be cut off and remain in the trench.

B. Open cut:

1. Excavate for utilities by open cut.

2. If conditions at the site prevent such open cut, and if approved by the ENGINEER trenching may be used.

3. Short sections of a trench may be tunneled if, in the opinion of the ENGINEER, the conductor can be installed safely and backfill can be compacted properly into such tunnel.

4. Where it becomes necessary to excavate beyond the limits of normal excavation lines in order to remove boulders or other interfering objects, backfill the voids remaining after removal of the objects as directed by the soil engineer.

5. When the void is below the subgrade for the utility bedding, use suitable earth material and compact as approved by the ENGINEER, but in no case to the relative density directed less than 90%.

6. When the void is in the side of the utility trench or open cut, use suitable earth or sand compacted or consolidated as approved by the ENGINEER or OWNER, but in no case to a relative density less than 80%.

7. Remove boulders and other interfering objects, and backfill voids left by such removals, at no additional cost to the OWNER.

8. Excavating for appurtenances:
   a. Excavate for manholes and similar structures to a distance sufficient to leave at least 12 inches clear between outer surfaces and the embankment or shoring that may be used to hold and protect the banks.
   b. Overdepth excavation beyond such appurtenances that has not been directed, will be considered unauthorized. Fill with sand, gravel, or lean concrete as directed by the ENGINEER or OWNER, and at no additional cost to the OWNER.

C. Trench to the minimum width necessary for proper installation of the utility, with sides as nearly vertical as possible. Accurately grade the bottom to provide uniform bearing for utility.

D. Depressions:

1. Dig bell holes and depressions for joints after the trench has been graded. Provide uniform bearing for the pipe on prepared bottom of the trench.

2. Except where rock is encountered, do not excavate below the depth indicated or specified.
3. Where rock is encountered, excavate rock to a minimum overdepth of 4 inches below the trench depth indicated or specified.

E. Where utility runs traverse public property or are subject to governmental or utility company jurisdiction, provide depth, bedding, cover, and other requirements as set forth by legally constituted authority having jurisdiction, but in no case less than the depth shown in the Contract Documents.

3.5 BEDDING FOR UTILITIES

A. Provide bedding as indicated on the Construction Drawings.

3.6 BACKFILLING OF UTILITY TRENCHES

A. General:

1. Do not completely backfill trenches until required tests have been performed, and until the utilities systems as installed conform to the requirements specified in their pertinent Sections of these Specifications.

2. Except as otherwise specified or directed for special conditions, backfill trenches to the ground surface with selected material approved by the ENGINEER.

3. Reopen trenches which have been improperly backfilled, to a depth as required for proper compaction. Refill and compact as specified, or otherwise correct to the approval of the OWNER.

4. Do not allow or cause any of the Work performed or installed to be covered up or enclosed by work of this Section prior to required inspections, tests, and approvals.

5. Should any of the Work be so enclosed or covered up before it has been approved, uncover all such work and, after approvals have been made, refill and compact as specified, all at no additional cost to the OWNER.

B. Lower portion of trench:

1. Deposit approved backfill and bedding material in layers of 6 inches maximum thickness, and compact with suitable tampers to the density of the adjacent soil, or grade as specified herein, until there is a cover of not less than 24 inches over sewer and 12 inches over other utility lines.

2. Take special care in backfilling and bedding operations as not to damage pipe and pipe coatings.

C. Remainder of trench:

1. Except for special materials for pavements, such as “flowable fill”, backfill the remainder of the trench with material free from stones larger than 6 inches or ½ the layered thickness, whichever is smaller, in any dimension.
2. Deposit backfill material in layers not exceeding the thickness specified, and compact each layer to the minimum density directed by the soil engineer.

D. Adjacent to buildings: Mechanically compact backfill within ten feet of buildings.

3.7 GENERAL SITE FILLING AND BACKFILLING

A. General:

1. For each classification listed below, place acceptable soil material layers to required subgrade elevations.

2. In excavations, use satisfactory excavated or borrow material

3. Under asphalt pavements, use satisfactory excavated or select structural fill borrow materials as approved by soils engineer. Refer to alternates for furnishing and installations of geogrid materials.

B. Backfill excavations as promptly as progress of the Work permits, but not until completion of the following.

1. Acceptance of construction below finish grade including, where applicable, damp-proofing and water-proofing.

2. Inspecting, testing, approving, and recording locations of underground utilities.

3. Removing concrete formwork.

4. Removing shoring and bracing, and backfilling of voids with satisfactory materials.

5. Removing trash and debris.

6. Placement of horizontal bracing on horizontally supported walls.

C. Ground surface preparation:

1. Remove vegetation, debris, unsatisfactory soil materials, obstructions, and deleterious matter from ground surface prior to placement of fills.

2. Plow, strip, or break up sloped surfaces steeper than one vertical to four horizontal so that fill materials will bond with existing surfaces.

3. When existing ground surface has a density less than specified under "compacting" for the particular area, break up the ground surface, pulverize, moisture-condition to the optimum moisture content, and compact to required depth and percentage of maximum density.

D. Placing and Compacting:

1. Place backfill and fill materials in layers not more than 8 inches in loose depth. Conform with paragraph entitled "COMPACTING."
2. Before compacting, moisten or aerate each layer as necessary to provide the optimum moisture content.

3. Compact each layer to required percentage of maximum density for area.

4. Do not place backfill or fill material on surface that are muddy, frozen, or containing frost or ice.

5. Place backfill and fill materials evenly adjacent to structures, to required elevations.

6. Take care to prevent wedging action of backfill against structures by carrying the material uniformly around the structure to approximately the same elevation in each lift.

3.8 GRADING

A. General:

1. Uniformly grade the areas within limits of grading under this Section, including adjacent transition areas.

2. Smooth the finished surfaces within specified tolerance.

3. Compact with uniform levels or slopes between points where elevations are shown on the Drawings, or between such points and existing grades.

4. Where a change of slope is indicated on the Drawings, construct a rolled transition section having a minimum radius of approximately 8 feet 0 inches, unless adjacent construction will not permit such a transition, or if such a transition defeats positive control of drainage.

3.9 COMPACTING

A. Control soil compaction for other than clay soils during construction to provide the minimum percentage of density specified for each area as determining according to ASTM D 1557.

B. Provide not less than the following maximum density of soil material compacted at optimum moisture content for the actual density of each layer of soil material in place, and as approved by the ENGINEER or OWNER.

1. Lawn, playing field and other:

   a. Compact the top 8 inches of subgrade and each layer of fill material or backfill material at 90% of maximum density.

   b. Compact the upper 12 inches of filled areas, or natural soils exposed by excavating, at 90% of maximum density.

2. Walking Path:
a. Compact the top 8 inches of subgrade and each layer of fill material or backfill material at 95% of maximum density.

3. Pavements:
   a. Compact the top 12 inches of subgrade and each layer of fill material or backfill material at 98% of maximum density.

4. Utility Trenches:
   a. Compact each layer of backfill material at 95% of maximum density where utilities cross under paved areas and at 90% of maximum density for unpaved areas.

C. Moisture Control:
   1. Where subgrade or layer of soil material must be moisture-conditioned before compacting, uniformly apply water to surface of subgrade or layer of soil material to prevent free water appearing on surface during or subsequent to compacting operations.
   2. Remove and replace, or scarify and air dry, soil material that is too wet to permit compacting to the specified density.
   3. Soil material that has been removed because it is too wet to permit compacting may be stockpiled or spread and allowed to dry. Assist drying by discing, harrowing, or pulverizing until moisture content is reduced to a satisfactory value as determined by moisture-density relation tests approved by the ENGINEER or OWNER.

3.10 QUALITY CONTROL
   A. Secure the ENGINEER's inspection and approval of subgrades, and fill layers before subsequent construction is permitted thereon.

   B. Provide at least the following tests to the approval of the ENGINEER or OWNER:
      1. At paved areas, at least one field density test for every 5000 S.Y. of paved area, but not less than three tests.
      2. In each compacted fill layer, one field density test for every 5000 S.Y. of overlaying area, but not less than three tests.

3.11 TEST FOR DISPLACEMENT OF SEWERS AND STORMDRAINS
   A. Check sewers and storm drains to determine whether displacement has occurred after the trench has been backfilled to above the pipe and has been compacted as specified. Comply with requirements in respective section for each utility type.

3.12 MAINTENANCE
   A. Protection of newly graded areas:
1. Protect newly graded areas from traffic and erosion, and keep free from trash and weeds.

2. Repair and reestablish grades in settled, eroded, and rutted areas to the specified tolerances.

B. Where completed compacted areas are disturbed by subsequent construction operations or adverse weather, scarify the surface, reshape, and compact to the required density prior to further construction.

PART 4 – MEASUREMENT AND PAYMENT

4.01 MEASUREMENT

A. The price shall include the furnishing of all labor, materials, tools, equipment and all incidentals necessary to complete excavation, grading and stabilization, and haul off as shown on the Contract Drawings. This work shall be installed in accordance with the Contract Drawings and with these specifications. This work shall include excavation as detailed in Section 31 20 00 Earth Moving.

B. The price shall include the furnishing of all labor, materials, tools, equipment and all incidentals necessary to complete excavation, grading and stabilization, and haul off specific to the Walking Path as shown on the Contract Drawings. This work shall be installed in accordance with the Contract Drawings and with these specifications. This work shall include excavation as detailed in Section 31 20 00 Earth Moving.

4.02 PAYMENT

A. Payments by the Owner to the Contractor shall be based on a Lump Sum for the scope of Work. Unit prices have been received from the Contractor and agreed to by the Owner to provide agreed upon prices for modification to Work quantities. The Owner and Contractor agree that if the scope of Work either increases or decreases within 20% of the original unit quantities, the payment for such increase or decrease shall be based on the unit prices as set forth in the Contract Documents.

B. Payments by the Owner to the Contractor shall be based on a Lump Sum for the scope of Work. Unit prices have been received from the Contractor and agreed to by the Owner to provide agreed upon prices for modification to Work quantities. The Owner and Contractor agree that if the scope of Work either increases or decreases within 20% of the original unit quantities, the payment for such increase or decrease shall be based on the unit prices as set forth in the Contract Documents.

END OF SECTION 31 20 00
SECTION 31 23 19 – DEWATERING

PART 1 - GENERAL

1.01 DESCRIPTION

A. Work included: Furnish, transport, install, maintain and remove structures, pumps and equipment necessary to maintain flow for the purpose of isolating and dewatering work areas during construction activities on site as well as maintaining erosion and sediment control compliance as specified in the Contract Documents and permits, as directed by the OWNER or as necessary.

B. Related Work: Documents affecting work of this section include, but are not necessarily limited to, General Provisions and Modifications of these Specifications.

1.02 RELATED SECTIONS

A. Section 01 57 13 Temporary Erosion and Sediment Controls

B. Section 32 05 19.13 Geotextile Fabric

C. Section 32 92 00 Turf and Grasses

1.03 REFERENCE STANDARDS

A. South Carolina Department of Transportation Standard Specifications for Highway Construction 2007.


C. South Carolina Department of Health and Environmental Control 2014.

1.04 ABBREVIATIONS, DEFINITIONS, AND TERMS (NOT USED)

1.05 SUBMITTALS

A. The CONTRACTOR shall submit material data for all dewatering components, including, but not limited to, sandbags, polyethylene sheeting, sediment filter bags, geotextile, aggregates, etc.

B. Upon the OWNERS request, the CONTRACTOR shall submit a water control plan that provides information on all aspects of proposed water control and dewatering throughout the course of the project. This information shall include sequencing, locations, equipment, materials and other items related to dewatering.

C. The CONTRACTOR shall submit a Stormwater Pollution Prevention Plan (SWPPP) to the OWNER for approval prior to implementation. Any proposed changes shall be reviewed and approved by the OWNER prior to implementing those changes.
1.06 QUALITY ASSURANCE

A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.

B. Use equipment adequate in size capacity, and numbers to accomplish the work of this Section in a timely manner.

C. In addition to complying with requirements of governmental agencies having jurisdiction, comply with the directions of the ENGINEER, which may also include the Project Architect, Project Civil Engineer, or the Geotechnical (Soil) Engineer.

D. All Dewatering equipment and materials must be in good, working condition free from defects, missing components, extreme wear, or other issues negatively affecting Dewatering performance.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Materials shall be kept in the approved staging and stockpile areas and be kept dry and in neat condition as to not damage the products.

B. Shall be delivered, stored and handled according to all safety standards per the contract of this project.

C. Unsuitable material shall be removed at The CONTRACTOR’s expense.

1.08 SEQUENCING AND SCHEDULING

A. Dewatering devices shall be installed, functioning and result in dry conditions prior to the commencement of grading activities.

1.09 WARRANTY

A. The CONTRACTOR shall warranty all dewatering controls until they have received approval from the erosion and sediment control inspector to remove any or all controls once the work is complete.

1.10 MAINTENANCE

A. Turbid water shall not leave the limits of the project site. Turbid water is defined as that which can change the clarity of the receiving body of water. If this occurs, work shall cease until additional maintenance, reconfiguring or additional efforts and equipment are deployed to correct the issue.

B. The CONTRACTOR shall maintain water control throughout site construction to maintain a dry, workable condition as well as satisfy the erosion and sediment control requirements set forth by the South Carolina Department of Health and Environmental Control.
C. The OWNER reserves the right to request maintenance, at no additional cost, if the dewatering controls are different from those specified and/or if the controls become damaged and are no longer in good working order failing to meet sediment control requirements.

PART 2 - PRODUCTS

2.01 GENERAL

A. Provide approved like materials from the same manufacturer or supplier to provide consistent composition and appearance.

B. Only use products which have been approved by the OWNER.

2.02 MATERIALS

A. The following materials are suggested for use with dewatering methods however this list is not intended to be comprehensive. The CONTRACTOR may elect to use other tools, pumps, or materials to maintain dewater the site. When required the CONTRACTOR shall submit a Water Control Plan.

1. Sandbags
   a. Consists of cubic foot or cubic yard sandbags composed of material resistant to ultraviolet radiation, tearing and puncture, and woven tightly enough to prevent leakage of fills materials (i.e., Sand, fine gravel, etc.).

2. Polyethylene Sheeting
   a. Consists of polyethylene plastic, which is impervious and resistant to puncture and tearing. Sheeting that is at least 10 mil in thickness.

3. Pump(s) & Hoses
   a. Sufficient size to maintain uninterrupted base flow to the channel downstream of the work area. The pump around shall include a hose suitable to convey water overland to the downstream section. Hose material and fittings shall be in good working order with no leaks that cause erosion or a change in the clarity of the receiving body of water. Minimum linear feet of hose required is equivalent to the maximum estimate for one workday provided by the CONTRACTOR.

4. Sediment Filter Bags
   a. Manufactured sediment control bags shall consist of polypropylene non-woven geotextile with double stitched seams using high strength thread that meets or exceeds the minimum requirements:

<table>
<thead>
<tr>
<th>Sediment Filter Bag</th>
<th>Minimum Grab Tensile Strength</th>
<th>Minimum Puncture Strength</th>
<th>Flow Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>250 lbs.</td>
<td>150 lbs</td>
<td>70 GAL/MIN/FT2</td>
</tr>
<tr>
<td></td>
<td>ASTM D 4632</td>
<td>ASTM D 4833</td>
<td>ASTM D 4491</td>
</tr>
</tbody>
</table>

31 23 19 - 3
Contract Documents
b. Size bag shall accommodate the diameter pump discharge hose.

6. Sump Pit
   a. 12 inch diameter perforated corrugated metal, HDPE, or PVC pipe with watertight connection cap or plate on the bottom
   b. Clean ¾ to 1 ½ inch stone
   c. ¼ inch galvanized hardware cloth
   d. Non-woven geotextile in accordance with Section 32 05 19.13 Geotextile Fabric

B. Additional materials, such as pumping stations, rip rap outlet pads, portable sediment tanks, may be required to properly dewater the site and maintain erosion and sediment control compliance, but shall be submitted for approval by OWNER prior to installation.

2.03 EQUIPMENT
   A. Appropriately sized pumps and hoses to dewater the work area.

PART 3 - EXECUTION

3.01 GENERAL
   A. All materials and construction techniques shall be installed as indicated in the Contract Documents.
   B. The CONTRACTOR shall utilize all materials, tools, equipment and labor to perform this scope of work to reasonable industry standards and maximum safety.

3.02 PREPARATION
   A. Ensure all equipment (hoses & pumps) are in good working order prior to installation.

3.03 INSTALLATION
   A. Installation of sandbags, sheeting, dewatering devices(i.e. sump pit and filter bag), and pumps shall be in accordance with the approved Erosion and Sediment Control Plan as specified in the Contract Documents, or as directed by the OWNER, in accordance with Section 01 57 13 Temporary Erosion and Sediment Controls Dewatering pumps and filtration devices that are required to complete the work but not shown on the

<table>
<thead>
<tr>
<th>Minimum Permittivity</th>
<th>1.2 sec⁻¹</th>
<th>ASTM D 4491</th>
</tr>
</thead>
<tbody>
<tr>
<td>UV Resistance</td>
<td>70% strength @ 500 Hours</td>
<td>ASTM D 4355</td>
</tr>
<tr>
<td>Apparent Opening Size</td>
<td>0.15-0.18 MM</td>
<td>ASTM D 4751</td>
</tr>
<tr>
<td>Seam Strength</td>
<td>90%</td>
<td>ASTM G 4632</td>
</tr>
</tbody>
</table>
Construction Drawings may be placed throughout the site at the CONTRACTOR’s discretion.

**B. Sump Pit**

1. The CONTRACTOR shall install the Sump Pit at the locations specified on the construction drawings and in accordance with the ‘Sump Pit’ detail on sheet 12 of 16.

2. The Sump Pit must be maintained and kept in good working order. Maintenance may include removal of accumulated debris stone, and resetting

**C. Filter Bag**

1. The CONTRACTOR shall install the Filter Bag in the locations specified on the construction drawings and in accordance with the ‘Filter Bag’ detail on sheet 12 of 16.

2. The Filter Bag must be maintained and kept in good working order. Maintenance may include removal of accumulated debris, and resetting and/or replacing any and all components of the system (i.e. filter bag, mulch, sand, woodchips or straw bales).

### 3.04 CLOSEOUT ACTIVITIES

**A.** Upon completion of site construction, and with the approval of the erosion and sediment control inspector and/or the OWNER, from the site all items related to Dewatering utilized during construction.

1. **Sump Pit**
   
   a. The CONTRACTOR shall be responsible for removal and disposal of the Sump Pit materials.

   b. The CONTRACTOR shall restore the areas where Sump Pit was removed which may include decompaction of the underlying soil, backfilling, grading of existing soils and application of topsoil if needed. Sump Pit areas shall be scarified to a minimum depth of 2 inches and all rocks and other debris over 2 inches in size shall be removed. Grade area to match existing and/or proposed grades and eliminate low spots. Add topsoil to eliminate low spots and/or if the existing soil is not conducive for vegetative re-establishment.

   c. The CONTRACTOR shall seed (temporary and/or permanent) the area of the removed sump pit in accordance with Contract Documents and Section 32 92 00 Turf and Grasses. Temporarily stabilize with straw or pine mulch.

2. **Filter Bag**

   a. The CONTRACTOR shall be responsible for removal and disposal of the Filter Bag materials.

   b. The CONTRACTOR shall restore the areas where Filter Bag was removed which may include decompaction of the underlying soil, grading of existing soils and
application of topsoil if needed. Filter Bag areas shall be scarified to a minimum depth of 2 inches and all rocks and other debris over 2 inches in size shall be removed. Grade area to match existing and/or proposed grades and eliminate low spots. Add topsoil to eliminate low spots and/or if the existing soil is not conducive for vegetative re-establishment.

c. The CONTRACTOR shall seed (temporary and/or permanent) the area of the removed Filter Bag in accordance with Contract Documents and Section 32 92 00 Turf and Grasses. Temporarily stabilize with straw or pine mulch.

PART 4 – MEASUREMENT AND PAYMENT

4.01 MEASUREMENT

A. The price shall include the furnishing of all labor, materials, tools, equipment and incidentals necessary to complete dewatering efforts and remove same when no longer required, as shown on the Contract Drawings. This work shall include all work required to be compliant with the current National Pollutant Discharge Elimination System (NPDES) Construction Storm Water General Permit. This work shall include the installation and maintenance of dewatering efforts including but not limited to sump pit, filter bag, and pump around as detailed in Section 31 23 19 Dewatering.

4.02 PAYMENT

A. Payments by the Owner to the Contractor shall be based on a Lump Sum for the scope of Work. Unit prices have been received from the Contractor and agreed to by the Owner to provide agreed upon prices for modification to Work quantities. The Owner and Contractor agree that if the scope of Work either increases or decreases within 20% of the original unit quantities, the payment for such increase or decrease shall be based on the unit prices as set forth in the Contract Documents.

END OF SECTION 31 23 19
SECTION 32 05 16 – AGGREGATES FOR EXTERIOR IMPROVEMENTS

PART 1 - GENERAL

1.01 DESCRIPTION

A. Work included: Furnish, transport, stockpile, install and maintain, the proposed cobble aprons as designated and detailed in the Contract Documents.

B. Related Work: Documents affecting work of this section include, but are not necessarily limited to, General Provisions and Modifications of these Specifications.

1.02 RELATED SECTIONS

A. Section 01 57 13 Temporary Erosion and Sediment Control

B. Section 32 05 19.13 Geotextile Fabric

C. Section 31 23 19 Dewatering

1.03 REFERENCE STANDARDS

A. South Carolina Department of Transportation Standard Specifications for Highway Construction 2007.


C. South Carolina Department of Health and Environmental Control 2014.

1.04 ABBREVIATIONS, DEFINITIONS, AND TERMS (NOT USED)

1.05 SUBMITTALS

A. Stone Sub-Grade

1. Submit the source/supply and material data of stone aggregate no 57 to the OWNER for approval prior to furnishment.

2. Submit the supplier and material data of geotextile fabric to the OWNER for approval prior to furnishment.

B. Cobble Apron

1. Submit the source/supply and material data of cobble to the OWNER for approval prior to furnishment.

2. Submit the supplier and material data of geotextile fabric to the OWNER for approval prior to furnishment.

1.06 QUALITY ASSURANCE
A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.

B. Use equipment adequate in size capacity, and numbers to accomplish the work of this Section in a timely manner.

C. In addition to complying with requirements of governmental agencies having jurisdiction, comply with the directions of the ENGINEER, which may also include the Project Architect, Project Civil Engineer, or the Geotechnical (Soil) Engineer.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Materials shall be kept in the approved staging and stockpile areas and be kept dry and in neat condition as to not damage the products.

B. Unsuitable material shall be removed at The CONTRACTOR’s expense.

1.08 SEQUENCING AND SCHEDULING

A. Install cobble apron structures in the sequence indicated per the Sequence of Construction as specified on the approved Construction Drawings.

1.09 WARRANTY

A. The CONTRACTOR shall warranty the cobble apron structures and associated features for the contracted length of time. Any material that has to be replaced or repaired shall be replaced or repaired by the CONTRACTOR at no additional cost to the OWNER.

1.10 MAINTENANCE

A. The CONTRACTOR shall maintain the cobble apron structures and associated features for the contracted length of time. Any material that has to be replaced or repaired shall be replaced or repaired by the CONTRACTOR at no additional cost to the OWNER.

PART 2 - PRODUCTS

2.01 GENERAL

A. Provide approved like materials from the same manufacturer or supplier to provide consistent composition and appearance.

B. Only use products which have been approved by the OWNER.

2.02 MATERIALS

A. Non-woven Geotextile Fabric

1. Use non-woven geotextile fabric in accordance with Section 32 05 19.13 Geotextile Fabric.
B. Cobble
   1. Use rounded rock with a d50= 6”.

C. #57 Stone
   1. Use angular gravel meeting the requirements of SCDOT for Aggregate, Coarse, #57 Stone.

PART 3 - EXECUTION

3.01 GENERAL
   A. The CONTRACTOR shall install the stone sub-grade (#57 Stone) and cobble apron in accordance with the Contract Documents.

   B. The CONTRACTOR shall utilize all materials, tools, equipment and labor to perform this scope of work to industry standards and in a safe working manner.

3.02 PREPARATION
   A. The CONTRACTOR shall install the necessary temporary erosion and sediment controls in accordance with the Contract Documents and Section 01 57 13 Temporary Erosion and Sediment Control prior to construction activities.

   B. When applicable, dewatering devices shall be installed in accordance with Section 31 23 19 Dewatering, functioning and result in dry conditions prior to the commencement of grading activities.

3.03 INSTALLATION
   A. Stone Sub-Grade (#57 Stone)
      1. Install stone sub-grade in accordance with ‘Curb Cut’ detail shown on sheet 9 of 16.
      2. Install non-woven geotextile fabric underlayment.
      3. Install Stone sub-grade minimum thickness of 3 inches.
      4. Compact Stone sub-grade.

   B. Cobble Apron
      1. Install cobble apron in accordance with ‘Curb Cut’ detail shown on sheet 9 of 16.
      2. Install non-woven geotextile fabric underlayment.
      3. Cobble apron width minimum 15 feet to match or exceed curb cut dimensions.
      4. Cobble apron to extend minimum 5 feet from back of concrete curb.
      5. Install cobble apron minimum thickness of 9 inches.
4. Cobble apron to be flush with back of curb cut.

3.04 CLOSEOUT ACTIVITIES

A. The CONTRACTOR shall be responsible for the removal of all trash and any other materials incidental to the project and disposing of them off-site per the General Conditions at no additional cost to the OWNER.

PART 4 – MEASUREMENT AND PAYMENT

4.01 MEASUREMENT

A. The price shall include the furnishing of all labor, materials, tools, equipment and incidentals necessary to install the Stone Sub-Grade (#57 Stone) as shown on the Contract Drawings. The work shall be completed in as detailed in Section 32 05 16 Aggregates for Exterior Improvements.

B. The price shall include the furnishing of all labor, materials, tools, equipment and incidentals necessary to install the Cobble Apron (D50 = 6 inch) as shown on the Contract Drawings. The work shall be completed in as detailed in Section 32 05 16 Aggregates for Exterior Improvements.

4.02 PAYMENT

A. Payments by the Owner to the Contractor shall be based on a Lump Sum for the scope of Work. Unit prices have been received from the Contractor and agreed to by the Owner to provide agreed upon prices for modification to Work quantities. The Owner and Contractor agree that if the scope of Work either increases or decreases within 20% of the original unit quantities, the payment for such increase or decrease shall be based on the unit prices as set forth in the Contract Documents.

B. Payments by the Owner to the Contractor shall be based on a Lump Sum for the scope of Work. Unit prices have been received from the Contractor and agreed to by the Owner to provide agreed upon prices for modification to Work quantities. The Owner and Contractor agree that if the scope of Work either increases or decreases within 20% of the original unit quantities, the payment for such increase or decrease shall be based on the unit prices as set forth in the Contract Documents.

END OF SECTION 32 05 16
SECTION 32 05 19.13 – GEOTEXTILE FABRIC

PART 1 - GENERAL

1.01 DESCRIPTION

A. Work included: Furnish, transport, stockpile, install, and maintain Geotextile as required for the project. There are multiple locations indicated on the Construction Drawings that require geotextile fabric. All Geotextile Fabric is considered incidental to the respective structure as specified in the Contract Documents, or as directed by the OWNER.

B. Related Work: Documents affecting work of this section include, but are not necessarily limited to, General Provisions and Modifications of these Specifications.

1.02 RELATED SECTIONS

A. Section 01 55 13 Mulch Access Road
B. Section 01 57 13 Temporary Erosion and Sediment Control
C. Section 03 30 00 Cast-In-Place Concrete
D. Section 32 05 16 Aggregates for Exterior Improvements
E. Section 33 42 00 Stormwater Conveyance

1.03 REFERENCE STANDARDS

A. South Carolina Department of Transportation Standard Specifications for Highway Construction.
C. South Carolina Department of Health and Environmental Control 2014.

1.04 ABBREVIATIONS, DEFINITIONS, AND TERMS

A. ASTM: American Society for Testing and Materials
B. NTPEP: National Transportation Product Evaluation Program

1.05 SUBMITTALS

A. The CONTRACTOR shall submit the supplier and material data of geotextile fabric to the OWNER for approval prior to furnishment.

1.06 QUALITY ASSURANCE
A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.

B. Use equipment adequate in size capacity, and numbers to accomplish the work of this Section in a timely manner.

C. In addition to complying with requirements of governmental agencies having jurisdiction, comply with the directions of the ENGINEER, which may also include the Project Architect, Project Civil Engineer, or the Geotechnical (Soil) Engineer.

D. The CONTRACTOR shall ensure the material delivered to the site matches these specifications for type, dimension and color. The OWNER reserves the right to reject any non-conforming material delivered to the site.

E. All other incidental components related to geotextile, if used, must also be submitted and approved.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Materials shall be kept in the approved staging areas and kept dry and in neat conditions as to not damage the product.

B. Handle with care as to not defect the product.

C. Unsuitable material shall be removed at The CONTRACTOR’s expense.

1.08 SEQUENCING AND SCHEDULING

A. The geotextile fabric shall be installed as needed during the progression of construction. All Geotextile Fabric is considered incidental to the respective structure as specified in the Contract Documents, or as directed by the OWNER.

1.09 WARRANTY

A. The CONTRACTOR shall warranty geotextile for the contracted length of time. Any material that has to be replaced or repaired shall be replaced or repaired by the CONTRACTOR at no additional cost to the OWNER.

1.10 MAINTENANCE

A. The CONTRACTOR shall maintain geotextile for the contracted length of time. Any material that has to be replaced or repaired shall be replaced or repaired by the CONTRACTOR at no additional cost to the OWNER.

PART 2 - PRODUCTS

2.01 GENERAL

A. Provide approved like materials from the same manufacturer or supplier to provide consistent composition and appearance.
B. Only use products which have been approved by the OWNER.

2.02 MATERIALS

A. Non-woven Geotextile Fabric

1. Geotextile shall be in accordance with that listed in the National Transportation Product Evaluation Program (NTPEP) for geotextiles.

2. Geotextile shall be manufactured from fibers consisting of long chain synthetic polymers, composed of a minimum 95 percent by weight of polyolefins or polyesters. The fibers shall be formed into a stable network so that the filaments or yarns retain their dimensional stability relative to each other, including selvages.

3. Geotextile shall be nonwoven and shall meet the following:

<table>
<thead>
<tr>
<th>Property</th>
<th>ASTM Test Method</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grab Strength</td>
<td>ASTM D-4632</td>
<td>200 lb</td>
</tr>
<tr>
<td>Puncture Strength</td>
<td>ASTM D-6241</td>
<td>80 lb</td>
</tr>
<tr>
<td>Permittivity</td>
<td>ASTM D-4491</td>
<td>0.20 sec⁻¹</td>
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<table>
<thead>
<tr>
<th>Property</th>
<th>ASTM Test Method</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apparent Opening Size, maximum</td>
<td>ASTM D-4751</td>
<td>0.30 mm</td>
</tr>
<tr>
<td>Trapezoid Tear Strength</td>
<td>ASTM D-4533</td>
<td>80 lb</td>
</tr>
</tbody>
</table>

Note 1: All property values are based on minimum average roll values in the weakest principal direction, except for apparent opening size.

Note 2: The ultraviolet stability shall be 50 percent after 500 hours of exposure.

2.03 EQUIPMENT (NOT USED)

PART 3 - EXECUTION

3.01 GENERAL

A. All materials and construction techniques shall be installed as indicated in the Construction Documents.

3.02 PREPARATION

A. Prepare the subgrade for the placement of the geotextile by excavating and/or backfilling (whichever is applicable) to the appropriate subgrades.

3.03 INSTALLATION

A. There are multiple locations indicated on the Construction Drawings that require geotextile fabric. The CONTRACTOR shall install the Geotextile in accordance with the Contract Documents with regard to the corresponding application.

B. Geotextile shall be placed loose so as to not tear the fabric during installation but should also be in full contact with the soil.
C. No rips, punctures or tears will be acceptable. If this occurs during installation, the fabric must be removed and replaced.

D. If more than one piece is required, overlap should be a minimum of 6 inches and securely held in place so as to not move mid construction. When overlapping ends of geotextile, the upstream end shall be placed overtop the downstream end conducive with stream flow. When overlapping edges of geotextile mid-bank, the upslope geotextile shall be placed overtop the downslope matting conducive with sheet flow.

3.04 CLOSEOUT ACTIVITIES

A. The CONTRACTOR shall be responsible for off-site removal and disposal of trash, excess backfill and any materials incidental to the project and disposing of them off-site as per the General Conditions, at no additional cost to the OWNER.

PART 4 – MEASUREMENT AND PAYMENT

4.01 MEASUREMENT

A. The price for all labor, materials, tools, equipment, and all incidentals necessary for the furnishment, transportation, storing, installation, maintenance, removal, and disposal of all geotextile fabric are incidental to respective line items as specified in the Contract Documents.

4.02 PAYMENT

A. Payments for submittals are incidental to respective line items. Unit prices have been received from the Contractor and agreed to by the Owner to provide agreed upon prices for modification to Work quantities. The Owner and Contractor agree that if the scope of Work either increases or decreases within 20% of the original unit quantities, the payment for such increase or decrease shall be based on the unit prices as set forth in the Contract Documents.

END OF SECTION 32 05 19.13
SECTION 32 06 10.13 – PEDESTRIAN WALKING TRAIL

PART 1 - GENERAL

1.01 DESCRIPTION

A. Work included: Furnish, transport, stockpile, install and maintain, the pedestrian walking trail as designated and detailed in the Contract Documents.

B. Related Work: Documents affecting work of this section include, but are not necessarily limited to, General Provisions and Modifications of these Specifications.

1.02 RELATED SECTIONS

A. Section 01 57 13 Temporary Erosion and Sediment Control

B. Section 31 23 19 Dewatering

C. Section 32 90 00 Planting

D. Section 32 92 00 Turf and Grasses

1.03 REFERENCE STANDARDS

A. South Carolina Department of Transportation Standard Specifications for Highway Construction 2007.

D. South Carolina Department of Transportation Americans with Disabilities Act (ADA) Transition Plan 2014.

1.04 ABBREVIATIONS, DEFINITIONS, AND TERMS

A. ADA: Americans with Disabilities Act.

1.05 SUBMITTALS

A. Pedestrian Walking Trail

1. Submit the supplier and material data of plantation mix to the OWNER for approval prior to furnishment.

2. Submit the source/supply and material data of sod to the OWNER for approval prior to furnishment.

3. Submit the source/supply and material data of steel edging to the OWNER for approval prior to furnishment.

1.06 QUALITY ASSURANCE
A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.

B. Use equipment adequate in size capacity, and numbers to accomplish the work of this Section in a timely manner.

C. In addition to complying with requirements of governmental agencies having jurisdiction, comply with the directions of the ENGINEER, which may also include the Project Architect, Project Civil Engineer, or the Geotechnical (Soil) Engineer.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Materials shall be kept in the approved staging and stockpile areas and be kept dry and in neat condition as to not damage the products.

B. Unsuitable material shall be removed at The CONTRACTOR’s expense.

1.08 SEQUENCING AND SCHEDULING

A. Install pedestrian walking trail in the sequence indicated per the Sequence of Construction as specified on the approved Construction Drawings.

1.09 WARRANTY

A. The CONTRACTOR shall warranty the pedestrian walking trail for the contracted length of time. Any material that has to be replaced or repaired shall be replaced or repaired by the CONTRACTOR at no additional cost to the OWNER.

1.10 MAINTENANCE

A. The CONTRACTOR shall maintain the pedestrian walking path for the contracted length of time. Any material that has to be replaced or repaired shall be replaced or repaired by the CONTRACTOR at no additional cost to the OWNER.

PART 2 - PRODUCTS

2.01 GENERAL

A. Provide approved like materials from the same manufacturer or supplier to provide consistent composition and appearance.

B. Only used products which have been approved by the OWNER.

2.02 MATERIALS

A. Steel Edging

   1. Use 3/16 inch thick black border guard steel edging by Boarder Concepts (704-541-5509) or approved equivalent.

B. Plantation Mix
1. Crushed granite mixture composed of granite sand and granite 789 typical for walkways and driveways or approved equivalent.

C. Sod

1. Use sod in accordance with Section 32 92 00 Turf and Grasses.

PART 3 - EXECUTION

3.01 GENERAL

A. The CONTRACTOR shall install the pedestrian walking trail in accordance with the Contract Documents.

B. The CONTRACTOR shall utilize all materials, tools, equipment and labor to perform this scope of work to industry standards and in a safe working manner.

3.02 PREPARATION

A. The CONTRACTOR shall install the necessary temporary erosion and sediment controls in accordance with the Contract Documents and Section 01 57 13 Temporary Erosion and Sediment Control prior to grading activities.

B. When applicable, dewatering devices shall be installed in accordance with Section 31 23 19 Dewatering, functioning and result in dry conditions prior to the commencement of grading activities.

3.03 INSTALLATION

A. Scarify the existing soil.

B. For at grade trail installation, cut 3 inches and place 3 inches of plantation mix to match existing grade in between edging treatment. Plantation mix to be lightly compacted and rolled into place. Edging treatment shall be flush with existing grade and consist of at least 16 foot lengths with overlapping and interlocking joints.

C. For above grade trail installation, place 3 inches of plantation mix above existing grade in between metal edging. Plantation mix to be lightly compacted and rolled into place. Edging treatment shall be flush with the trail and extend 3 inches below existing grade and consist of at least 16 foot lengths with overlapping and interlocking joints. At edging treatment tie into existing grade at a 3:1 slope with plantation mix.

D. Place one roll of sod on either side of trail. Typical width 18 inches.

3.04 CLOSEOUT ACTIVITIES

A. Backfill up to the installed walkway to the grades as detail on the plans. Scarify fill area adjacent to the walkway and remove all debris over 2 inches in size. Seed (temporary and/or permanent) the disturbed area in accordance with Contract Documents and Section 32 92 00 Turf and Grasses. Temporarily stabilize with straw or pine mulch.
B. The CONTRACTOR shall be responsible for the removal of all trash and any other materials incidental to the project and disposing of them off-site per the General Conditions at no additional cost to the OWNER.

PART 4 – MEASUREMENT AND PAYMENT

4.01 MEASUREMENT

A. The price shall include the furnishing of all labor, materials, tools, equipment and incidentals necessary to complete the Pedestrian Walking Trail as shown on the Contract Drawings. This work shall include the installation of steel edging, plantation mix, and stabilization as detailed in Section 32 06 10.13 Pedestrian Walkway.

4.02 PAYMENT

A. Payments by the Owner to the Contractor shall be based on a Lump Sum for the scope of Work. Unit prices have been received from the Contractor and agreed to by the Owner to provide agreed upon prices for modification to Work quantities. The Owner and Contractor agree that if the scope of Work either increases or decreases within 20% of the original unit quantities, the payment for such increase or decrease shall be based on the unit prices as set forth in the Contract Documents.

END OF SECTION 32 06 10.13
SECTION 32 52 30 – WOODY FEATURES

PART 1 - GENERAL

1.01 DESCRIPTION

A. Work included: Furnish, transport, stockpile, install, and maintain woody features including but not limited to, standing snags, coarse woody debris and downed logs, as described in the Contract Documents or as directed by the OWNER. CONTRACTOR shall utilize on-site trees harvested as part of the approved tree removal operation.

B. Related Work: Documents affecting work of this section include, but are not necessarily limited to, General Provisions and Modifications of these Specifications.

1.02 RELATED SECTIONS

A. Section 01 57 13 Temporary Erosion and Sediment Control

1.03 REFERENCE STANDARDS (NOT USED)

1.04 ABBREVIATIONS, DEFINITIONS, AND TERMS

A. CWD: Course woody debris.

1.05 SUBMITTALS

A. The CONTRACTOR shall submit the supplier and material data for the dead posts associated with the ‘Downed Log’ detail for approval by OWNER prior to furnishment.

1.06 QUALITY ASSURANCE

A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.

B. Use equipment adequate in size capacity, and numbers to accomplish the work of this Section in a timely manner.

C. In addition to complying with requirements of governmental agencies having jurisdiction, comply with the directions of the ENGINEER, which may also include the Project Architect, Project Civil Engineer, or the Geotechnical (Soil) Engineer.

E. At the Pre-construction meeting, review and define trees denoted for removal. The CONTRACTOR shall layout the areas to be cleared and ribbon all trees over 6” DBH for removal. The OWNER and CONTRACTOR shall walk the site and review the trees for removal. CONTRACTOR shall harvest appropriate sized trees and set aside for re-use in woody features.

1.07 DELIVERY, STORAGE, AND HANDLING
A. Large woody debris harvested onsite in the tree removal process for re-use on site shall be stored and handled according to all safety standards per the contract of this project.

B. Woody material shall be stored in the approved staging and stockpile areas.

C. Unsuitable material shall be removed at The CONTRACTOR’s expense.

1.08 SEQUENCING AND SCHEDULING

A. Install woody features in the sequence indicated in the Sequence of Construction as specified on the approved Construction Drawings.

B. Perform site grading prior to placement of woody features in accordance with Section 31 20 00 Earth Moving.

1.09 WARRANTY

A. The CONTRACTOR shall warranty the woody features for the contracted length of time. Any material that has to be replaced or repaired shall be replaced or repaired by the CONTRACTOR at no additional cost to the OWNER.

1.10 MAINTENANCE

A. The CONTRACTOR shall maintain the woody features for the contracted length of time. Any material that has to be replaced or repaired shall be replaced or repaired by the CONTRACTOR at no additional cost to the OWNER.

PART 2 - PRODUCTS

2.01 GENERAL

A. Utilize salvaged woody debris harvested onsite in the tree removal process. Only trees approved for removal shall be harvested or used. The CONTRACTOR shall select hard wood tree species to be used first and as available. No decayed or non-structural trees shall be used without approval.

2.02 MATERIALS

A. Standing Snag
   1. Snag shall consist of a log 10-18 inches in diameter.

B. Coarse Woody Debris (CWD)
   1. CWD shall consist of tree trunks, branches, and/or rootwads that have a minimum diameter of 4 to 16 inches.

C. Downed Log
   1. Downed log shall be minimum diameter 8 inches, maximum diameter 18 inches.
2. Dead posts shall be hardwood posts minimum length 4 feet, minimum diameter 4 inches.

PART 3 - EXECUTION

3.01 GENERAL

A. All Woody Features shall be installed per the Contract Documents.

B. Place woody features at the locations as shown on the plans or at the direction of the ENGINEER to ensure locations are suitable and secure.

3.02 PREPARATION

A. The CONTRACTOR shall install the necessary temporary erosion and sediment controls in accordance with the Contract Documents and Section 01 57 13 Temporary Erosion and Sediment Control prior to grading activities.

B. Harvest on-site large woody debris by pushing over trees as part of the approved clearing, leaving as much of the root fan intact as possible. Carefully transport large woody debris to minimize breakage.

3.03 INSTALLATION

A. The CONTRACTOR shall layout the locations of the woody debris and receive ENGINEER and/or OWNER approval prior to installation.

B. Standing Snag

1. Sharpen end of log to be driven into ground with a chainsaw.

2. Install vertical snag minimum 1/3 of log length below ground with 2 to 3 feet above ground.

3. Compact native soil around the base of the log that is underground.

4. All snags shall be placed away from the road or any fences.

C. Coarse Woody Debris (CWD)

1. Sharpen end of CWD to be driven into ground with a chainsaw.

2. CWD to be driven into the ground to a depth that is a minimum of 1/3 the length of woody material. Excavation for placement of CWD is not acceptable.

3. Compact native soil around the base of the CWD that is underground.

4. Placement of CWD shall appear natural and vary throughout the bottom of the facility.

D. Downed Log
1. Install downed log parallel to ground. Install with minimal excavation so that half of the log is below grade and the other half is above grade.

2. Space dead posts a maximum of every 5 feet with four (4) posts minimum per downed log. Abut dead post to downed log. Install posts with a minimum of half the post length below grade/ground.

3.04 CLOSEOUT ACTIVITIES

A. The CONTRACTOR shall be responsible for the removal of all trash and any other materials incidental to the project and disposing of them off-site per the General Conditions.

B. Any salvaged woody material not used shall become the property of the CONTRACTOR and shall be suitably disposed of off-site. Disposal shall be performed as promptly as possible and not left until the final clean up.

PART 4 – MEASUREMENT AND PAYMENT

4.01 MEASUREMENT

A. The price shall include the furnishing of all labor, materials, tools, equipment and incidentals necessary to complete the woody features as shown on the Contract Drawings. This work shall include, coarse woody debris, downed logs, and standing snag, and be completed as detailed in Section 32 52 30 Woody Features.

4.02 PAYMENT

A. Payments by the Owner to the Contractor shall be based on a Lump Sum for the scope of Work. Unit prices have been received from the Contractor and agreed to by the Owner to provide agreed upon prices for modification to Work quantities. The Owner and Contractor agree that if the scope of Work either increases or decreases within 20% of the original unit quantities, the payment for such increase or decrease shall be based on the unit prices as set forth in the Contract Documents.

END OF SECTION 32 51 30
SECTIONS 32 90 00 – PLANTING

PART 1 - GENERAL

1.01 DESCRIPTION

A. Work included: Furnish, transport, stockpile, install, and maintain a 1-year warranty on all landscaping material, including but not limited to trees, shrubs, and herbaceous material to implement the planting plans as specified in the Contract Documents, or as directed by the OWNER.

B. Related Work: Documents affecting work of this section include, but are not necessarily limited to, General Provisions and Modifications of these Specifications.

1.02 RELATED SECTIONS

A. Section 32 06 10.13 Pedestrian Walking Trail

1.03 REFERENCE STANDARDS

A. South Carolina Department of Transportation Standard Specifications for Highway Construction 2007.


C. South Carolina Department of Health and Environmental Control 2014.

D. American Standard for Nursery Stock, as published by the American Nursery and Landscape association.

1.04 ABBREVIATIONS, DEFINITIONS, AND TERMS

A. ANLA: American Nursery & Landscape Association

B. ASNS: American Standard for Nursery Stock

1.05 SUBMITTALS

A. The CONTRACTOR shall submit documentation from plant suppliers demonstrating compliance with the requirements of this specification.

B. Fifteen (15) days prior to the start of planting work, the CONTRACTOR shall submit a proposed planting schedule showing species, quantities, any proposed substitutions, and also provide the source of plant material to the OWNER for review. No plantings shall be performed until this submittal is approved by the OWNER.

C. Any problems with obtaining any of the specified plant materials shall be forwarded in writing to the OWNER. The cause of the acquisition problems shall be discussed in detail and a list of vendors contacted shall be included. The CONTRACTOR shall be
aware that more than one (1) vendor may be required to obtain all the necessary plant
materials. Suggestions concerning appropriate substitutions may be included with this
correspondence; however, only the OWNER may approve such substitutions.

D. The CONTRACTOR shall supply tickets from the suppliers that the plants supplied are
the plants specified or agree to under substitution. No compensation shall be made for
materials or the cost of installation for plants species that are not specified.

1.06 QUALITY ASSURANCE

A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced
in the necessary crafts and who are completely familiar with the specified requirements
and the methods needed for proper performance of the work of this Section.

B. Use equipment adequate in size capacity, and numbers to accomplish the work of this
Section in a timely manner.

C. In addition to complying with requirements of governmental agencies having jurisdiction,
comply with the directions of the ENGINEER, which may also include the Project
Architect, Project Civil Engineer, or the Geotechnical (Soil) Engineer.

D. All plant material must be inspected and approved by the OWNER prior to installation.
The OWNER reserves the right reject non-conforming material at no additional cost to
the OWNER.

E. The CONTRACTOR shall be responsible for all certificates of inspection of plant
materials that may be required by federal, state, or other authorities to accompany
shipments of plants.

1.07 DELIVERY, STORAGE, AND HANDLING

A. All plants shall be packed, transported, and handled with utmost care to ensure
adequate protection against injury or damage to the root ball and desiccation. Plants
must be protected from excessive vibration and/or other physical damage that may
occur during procurement and delivery. Plants shall not be thrown or bounded off a truck
or loader to the ground. Plants shall not be dragged, lifted, or pulled by the truck or
braces in a manner that will damage branch or root structure.

B. Plant materials transported in vehicles shall be protected from wind whipping either by
use of covered vehicles or secure tarps. Failure to protect plant materials during
transport to the site will result in rejection of plant materials.

C. Plants will be delivered as close as possible to the date planting will begin. Upon
shipment arrival, plants will be unpacked, and roots will be checked to ensure they are
moist. Plant roots will be sprinkled with water if they appear dry. Do not wet stems or
tops.

D. If not planting the same day as shipment arrival, plants will be repacked, and roots
covered with moist packing material and stored at a temperature between 35 degree F –
45 degree F. If storing boxed plants outdoors, keep boxes sheltered from wind. Daily
temperature variation may not exceed lows of 32 degree F or highs of 45 degree F. Plants may be stored in this format for up to 24 hours post-delivery.

E. If plants cannot be stored at the specified temperatures, or the entire shipment cannot be planted within one day from delivery, the plants will be temporarily staged in the ground by digging a trench long and wide enough to completely cover the roots. Trench backfill material will be recently adjacent tilled topsoil compacted by foot. Plants can be temporarily staged for up to fourteen (14) days prior to planting. Landscaper shall photo document the staged materials and provide to OWNER.

1.08 SEQUENCING AND SCHEDULING

A. Install plants after finish grades are achieved and after any applicable seed and/or stabilization matting.

B. Plant deciduous, woody plants between November 1st and March 15th whenever the temperature is between 32 degrees F and 65 degrees F and the soil is in a workable condition, unless otherwise approved in writing.

1.09 WARRANTY

A. The CONTRACTOR shall maintain a minimum 85% survival rate within each representative 500 square foot area of all planting zones and material for a minimum of 1 year (12 months) from the final inspection and initial planting acceptance by the OWNER and include at least one full continuous growing season consisting of the full months of June through October, inclusive.

B. Following installation and throughout the warranty period, the CONTRACTOR shall actively maintain the installed planting work. This work includes removing debris accumulated in the planting area, resetting trees and shrubs to upright positions, reseeding bare soil areas, removing, and replacing dead trees and shrubs, and watering during drought conditions.

C. If 85% survival rate per 500 square foot area is not demonstrated at the end of the one-year warranty, as evidenced by a site review with the OWNER and CONTRACTOR, the CONTRACTOR shall replace in kind and replant in kind all unhealthy and dead material in quantities that will achieve the 85% survival rate per 500 square foot area. The intent is to prevent a scenario in which there may be areas of barren land in sensitive landscape positions such as sloped areas, etc. that, while included with all site plantings, may achieve an 85% survival rate but leave areas of the site vulnerable to localized erosion.

1.10 MAINTENANCE

A. Maintenance and warranty shall begin upon acceptance of the planting efforts, by the OWNER, and last for one year. The CONTRACTOR shall maintain the recently planted material by watering, weeding including invasive species, replacement of dead material and any other methods necessary to encourage and promote the health, vigor and survivability of the plant material.
B. Watering:

1. For all maintenance areas, CONTRACTOR is responsible for watering. Watering and rainfall shall supply a minimum of 1 inch of water per week.

2. It will be the CONTRACTOR's responsibility to supply water if there is none available on the site. Any costs associated with supplying water shall be the responsibility of the CONTRACTOR from planting through to the end of the warranty period.

C. Following each bi-weekly maintenance visit, the CONTRACTOR shall provide a written report to the OWNER detailing the condition of the project site and the corrective actions taken to address deficiencies.

D. The CONTRACTOR shall perform maintenance visits to the project site at the agreed upon time intervals as requested by the OWNER. Additional maintenance visits may be performed at the CONTRACTOR's discretion and expense.

PART 2 - PRODUCTS

2.01 GENERAL

A. Provide approved like materials from the same manufacturer or supplier to provide consistent composition and appearance.

B. Plant quality and size: all plants shall be true to type and nomenclature and typical of their species or variety. Ensure that all plant materials conform to the current edition of the American Standard for Nursery Stock (ASNS), as approved by the American Nursery and Landscape Association (ANLA). They shall have a normal habit of growth with well-developed branch systems and vigorous root systems. They shall be sound, healthy, and vigorous plants, free from visible defects, disfiguration, injury, recognizable disease of any kind, insect eggs, borers, and any infestation. All plants shall be nursery grown in a suitable growth medium. It is the responsibility of the CONTRACTOR to inspect the plants before removal from the nursery where they have been grown to make sure that the plants meet these requirements. CONTRACTOR shall ensure plants continue to meet these requirements through installation.

C. All plants shall conform to all sizes and measurements detailed in these specifications and indicated on the plans. Unacceptable plants shall be culled at the nursery prior to being packed. No substitutions for any materials shall be made unless agreed to in writing by the OWNER. With the approval of the OWNER, plants larger in size than specified may be utilized, but such plants shall not increase the contract price. Plants shall have a form and architecture that is easily planted for the stock specified.

D. The CONTRACTOR shall notify the OWNER of the unavailability of plant material in the contract, as well as provide confirmation of all orders from all sources of supply Fifteen (15) days prior to start of work. Any proposed substitutions must be submitted in writing to the OWNER for approval. The OWNER must approve all plant substitutions prior to delivery.
E. If a substitute species is required, the species must be native to the South Carolina region and of the same size, and cost as the original plant. As noted above, the CONTRACTOR shall make every proactive effort to ensure that proposed plant material per the planting plan, including species and associated quantities/sizes, are reserved in anticipation of project plantings. Substitutions made solely on the basis of negligence in securing planting material shall be rejected.

F. Native plant material must be derived from the local genotypes of the native Plants specified. For purposes of this native plant material paragraph, “local” shall mean within 200 miles from the planting site. However, a reasonable effort shall be made to obtain sources of plant material as close to the planting site as possible. All plants must have been grown in a hardiness zone no warmer than Zone 8b or colder than Zone 8a as determined by the USDA Agricultural Research Service, Plant Hardiness Zone Map. Unless otherwise specified, straight species are required; cultivars or varietals shall be rejected.

F. Plant materials must be selected from certified nurseries that have been inspected by state and/or federal agencies. A copy of the State Department of Agriculture Nursery Inspection Certification, from all nurseries supplying plant material, must be submitted to the OWNER upon request.

G. Plant material collected from the wild is prohibited with the exception of native material cultivated from the site corresponding to proposed species in applicable planting units or otherwise directed by the OWNER.

H. Only use products which have been approved by the OWNER.

2.02 MATERIALS

A. Plant Material

1. Container Grown Plants

   a. Container grown stock shall have been grown in a container long enough for the root system to have developed sufficiently to hold its soil. Roots shall visibly extend to the inside face of the growing container. All container-grown plants shall be grouped and kept moist until they are planted. Containerized stock that exhibits evidence of excessive circling (girdling) roots shall be rejected.

   b. It is the CONTRACTOR’s responsibility to ensure that arrangements are made to ensure that all species, associated quantities, and material sizes specified in the planting plan and schedules are procured to minimize any substitutions in species or material sizes to the maximum extent practicable.

   c. OWNER’s onsite representative may reject plants damaged in handling and/or transportation.

   d. No plants shall be installed unless the OWNER’s onsite representative approves both the conditions of the plantings and the process of installation, which include plant spacing, clustering instruction and any specific planting location due to species characteristics and considerations.
B. Water

1. Water used for the establishment or maintenance of plants shall be free from any substances that are injurious to plant life, including but not limited to oil, acids, alkalis and salts.

C. Mulch

1. Provide mulch conforming to the requirements of SCDOT 811.2.5.

D. Fertilizer (if applicable)

1. Provide fertilizer conforming to the requirements of SCDOT Subsection 810.2.5.

E. Lime (if applicable)

1. Provide lime conforming to the requirements of SCDOT Subsection 810.2.6.

F. Stakes for Bracing and Anchoring

1. Provide bracing and supports for trees and shrubs conforming to the requirements of SCDOT 811.2.6.2.

2.03 EQUIPMENT

A. It is the responsibility of the CONTRACTOR to utilize the appropriate equipment necessary to complete the requirements in this specification in a safe working manner.

B. It is the responsibility of the CONTRACTOR to utilize equipment, or the lack thereof, that limits disturbance to the newly completed project area. All areas that have been disturbed or destroyed due to the use of equipment by the CONTRACTOR, as solely determined by the OWNER, shall be repaired in accordance with these specifications by the CONTRACTOR; at his own expense.

PART 3 - EXECUTION

3.01 GENERAL

A. Optimal Planting Season

1. Woody shrubs and trees shall be planted between the first of November 1st and March 15th. The OWNER may permit planting at other times when necessary. Trees and shrubs shall not be planted when the ground is frozen.

2. Herbaceous material (EV & SAV) shall be planted between April 1st and June 1st. Herbaceous material shall not be planted when the ground is frozen.

B. During planting, all areas shall be kept neat, clean, and free of all trash and debris, and all reasonable precautions shall be taken to avoid damage to existing plants, structures, and private property.
3.02 PREPARATION

A. Plant Layout

1. The CONTRACTOR shall lay out and identify planting zones, and as requested by the OWNER or ENGINEER, individual planting locations. The CONTRACTOR shall request that the OWNER inspect and approve plant spacing and locations before proceeding with installation.

2. All areas disturbed by construction shall be planted in accordance with the composition and planting schedules for each designated planting zone. Areas within designated planting zones not disturbed by construction shall be supplemented with trees and shrubs to meet the acre quantities specified in the composition schedule at the direction of the OWNER.

3. The CONTRACTOR shall refer to the Plant Schedules and Details in the Contract for specific spacing requirements.

4. In the Plant Schedules, the CONTRACTOR shall use the Overall Minimum Spacing figure to determine the spacing between each species of vegetation. The CONTRACTOR shall use the individual spacing figure to determine the spacing between each plant of the same species.

B. Pre-Installation Inspection

1. The CONTRACTOR shall meet with the OWNER during delivery of plant materials at the project site. Each item shall be labeled with the product name (genus, species), material size, and vendor. The CONTRACTOR shall provide the OWNER with copies of all shipping manifests for the materials. The OWNER shall verify the materials delivered are in a healthy and vigorous condition and are consistent with the plan requirements in regard to quantity, species, and size.

2. The OWNER shall be the sole judge of the conditions of quality and acceptability and will direct all corrections to the CONTRACTOR in writing. All rejected materials shall be immediately removed from the site and replaced with specified materials at the CONTRACTOR’s expense.

3. The OWNER shall reject all plant materials not achieving these specifications: material having damaged or missing leaders, multiple leaders, Y-crotches, or indications of topping or heading back.

4. The OWNER may also reject plants damaged during handling or transportation, or that are otherwise inadequate to the standards listed in the specification prior to installation. If rejected, plantings must be replaced by the CONTRACTOR at no additional cost to the OWNER.

5. No plants shall be installed unless the OWNER approves the plant material, and the proposed plant locations.

3.03 INSTALLATION
A. Planting

1. Immediately after site preparation and approval, trees and shrubs shall be planted. The CONTRACTOR shall coordinate work to prevent any delays that result in damage to plant material (e.g. freezing, desiccation, etc.). Coordinate work to prevent delays in planting that may expose the root systems of plants to the air, sun, or freezing conditions. Planting shall be conducted according to Optimal Planting Season or as approved by the OWNER. Plant material shall not be planted when the ground is frozen.

2. Rootstock of the plant material shall be kept moist during transport, from the source to the job site and until planted.

3. All planting pits shall be dug by hand or other acceptable method. Side walls of planting pits shall be dug so that they are vertical or sloping outward in heavy soils. Scarify the walls of the pit after digging to maximize the potential for root penetration into adjacent soil areas.

4. Excavate the planting pit to two (2) times the width of the root mass.

5. The planting pit shall be dug to a depth allowing the first lateral root of the root mass to be flush with the existing grade.

6. Remove all non-organic debris larger than 1-inch diameter from the pit and tamp loose soil in the bottom of the pit by hand.

7. Plant material shall be handled by the root mass; do not handle the plant by the branches, leaves, trunk or stem.

8. Place the plant in the center of the planting pit. Set plants plumb and at the same depth at which they were grown in the nursery, except set trees with a trunk flare 1/2 to 1 inch above the surrounding grade to allow for settling. Shave the root ball as needed to correct circling (girdling) roots prior to backfilling. Set roots for the various conditions as follows:

a. Containerized Plants (trees and shrubs):

1). Immediately before planting, remove the container, and make three (3) vertical cuts equidistantly spaced around the perimeter of the root mass. Make each cut 1/2 inch deep from the top of the root-earth mass to the bottom.

b. Herbaceous material:

1). 1. Locations and sizes of emergent vegetation planting beds (plugs) to be determined in the field by the CONTRACTOR and evaluated by the ENGINEER prior to planting.

9. Backfill the planting pit with existing soil and hand tamp to remove major voids and air pockets. Do not compact soil such to the degree that it becomes detrimental to root growth and air exchange. Do not cover the top of the root mass with soil.
10. Install tree and shrub protection as shown in the Construction Drawings as applicable.

11. Water plant thoroughly immediately after planting, unless otherwise directed by the OWNER and/or the ENGINEER. Waterings shall occur at the intervals specified above.

12. The CONTRACTOR shall backfill any vacant planting pits at the close of each day as needed.

13. Remove all tags, labels, strings and wire from the plant materials, once directed by the OWNER and/or the ENGINEER.

B. Mulching

1. Place mulch within 48 hours after planting. Place mulch material as a top layer on the backfilled plant hole after all planting operations have been completed. Place the mulch in a "doughnut" shape with no mulch touching the main stem(s) of the planted vegetation. In general, ensure that this layer of mulch may be up to 3 inches in depth, but vary it according to the climatic conditions and to the type of material used. The OWNER will determine the appropriate depth of mulch.

2. Planting mulch can inhibit the growth of seed mix when intermixing plantings within seeded area. Special attention should be placed on limiting planting mulch outside of specific individuals species’ planting footprints.

C. Staking and Guying

1. Stake all trees in accordance with SCDOT 811.4.17 Staking.

2. Stake all trees in accordance with SCDOT 811.4.18 Guying.

3.04 CLOSEOUT ACTIVITIES

A. Clean-Up

1. The CONTRACTOR shall be responsible for the removal of all trash and any other materials incidental to the project and disposing of them off-site. During planting, all areas shall be kept neat, clean, and free of all trash and debris, and all reasonable precautions shall be taken to avoid damage to existing plants, turf, structures, and private property. All stakes, guying materials, and any other plant protection measures are to be completely removed from and disposed off-site following two (2) years after initial planting acceptance.

B. Damage

1. All areas where the installed plants have been disturbed or destroyed by the CONTRACTOR’S negligent actions or inactions, as solely determined by the OWNER, shall be replanted in accordance with these specifications by the CONTRACTOR at his own expense. Replanting shall occur at the next available planting window and shall not be delayed until the end of the warranty period.
C. Initial Construction Inspection

1. Upon completion of all planting installation requirements, the CONTRACTOR shall request an inspection of plantings by the OWNER. The OWNER will perform the initial inspection within 15 days after notification that all work and final cleanup has been completed.

2. If an initial inspection reveals no deficiencies, the OWNER will provide the CONTRACTOR with notification of acceptance, and the one-year warranty period shall commence.

3. If an initial inspection reveals deficiencies, the OWNER will provide the CONTRACTOR with a punchlist. Upon completion of the punchlist, the CONTRACTOR shall request an inspection by the OWNER. The OWNER will perform the follow-up initial inspection within 15 days after notification that all work and final cleanup has been completed. If the follow-up initial inspection reveals no deficiencies, the OWNER will provide the CONTRACTOR with notification of acceptance, and the one-year warranty period shall commence.

D. Final Inspection

1. The CONTRACTOR shall request the final inspection on or before the end of the establishment period, a minimum of 1-year after the initial planting acceptance. The OWNER will perform the final inspection within 15 days after notification. At that time the OWNER will determine which plants are rejected or missing and need replacing.

E. Replacements

1. The CONTRACTOR shall replace all plants designated at the final inspection by the OWNER within 30 calendar days during the next planting window specified above.

2. Replace plantings using the methods and procedures outlined previously for initial plantings. Furnish, install, and care for the replacement plantings for a 90-day period without any additional compensation.

3. If any of the replacement plantings are defective, missing, or otherwise unsatisfactory at the end of the 90-day period as determined by the OWNER, the CONTRACTOR shall replace with satisfactory plantings without any additional compensation.

F. Final Acceptance

1. Upon completion of all planting replacements established at the final inspection, the CONTRACTOR shall request final acceptance by the OWNER. The OWNER will perform a final acceptance inspection within 15 days after notification that all work and final cleanup has been completed. If an inspection reveals no deficiencies, the OWNER will provide the CONTRACTOR with final acceptance.
A. The price shall include the furnishing of all labor, materials, tools, equipment and incidentals necessary to complete the Trees – 2 Gal w/ Tree Protection Plantings as shown on the Contract Drawings. This work shall include the trees and be completed as detailed in Section 32 90 00 Planting.

B. The price shall include the furnishing of all labor, materials, tools, equipment and incidentals necessary to complete the Shrubs - 1 Gal as shown on the Contract Drawings. This work shall include the shrubs and be completed as detailed in Section 32 90 00 Planting.

C. The price shall include the furnishing of all labor, materials, tools, equipment and incidentals necessary to complete the herbaceous plantings as shown on the Contract Drawings. This work shall include the plugs and be completed as detailed in Section 32 90 00 Planting.

4.02 PAYMENT

A. Payments by the Owner to the Contractor shall be based on a Lump Sum for the scope of Work. Unit prices have been received from the Contractor and agreed to by the Owner to provide agreed upon prices for modification to Work quantities. The Owner and Contractor agree that if the scope of Work either increases or decreases within 20% of the original unit quantities, the payment for such increase or decrease shall be based on the unit prices as set forth in the Contract Documents.

B. Payments by the Owner to the Contractor shall be based on a Lump Sum for the scope of Work. Unit prices have been received from the Contractor and agreed to by the Owner to provide agreed upon prices for modification to Work quantities. The Owner and Contractor agree that if the scope of Work either increases or decreases within 20% of the original unit quantities, the payment for such increase or decrease shall be based on the unit prices as set forth in the Contract Documents.

C. Payments by the Owner to the Contractor shall be based on a Lump Sum for the scope of Work. Unit prices have been received from the Contractor and agreed to by the Owner to provide agreed upon prices for modification to Work quantities. The Owner and Contractor agree that if the scope of Work either increases or decreases within 20% of the original unit quantities, the payment for such increase or decrease shall be based on the unit prices as set forth in the Contract Documents.

END OF SECTION 32 90 00
SECTION 32 91 19.13 – COMPOST AMENDED SOIL PLACEMENT AND GRADING

PART 1 - GENERAL

1.01 DESCRIPTION

A. Work included: Providing (furnish, transport, mix, and stockpile) and installing compost amended soil over prepared subsoil prior to establishment of vegetation. Compost amended soil shall be placed to a 2-inch depth as described in the Contract Documents or as directed by the OWNER.

B. Related Work: Documents affecting work of this section include, but are not necessarily limited to, General Provisions and Modifications of these Specifications.

1.02 RELATED SECTIONS

A. Section 01 56 39 Temporary Tree and Plant Protection
B. Section 01 57 13 Temporary Erosion and Sediment Control
D. Section 31 23 19 Dewatering
E. Section 32 90 00 Planting
F. Section 32 92 00 Turf and Grasses

1.03 REFERENCE STANDARDS

A. South Carolina Department of Transportation Standard Specifications for Highway Construction 2007.
C. South Carolina Department of Health and Environmental Control 2014.

1.04 ABBREVIATIONS, DEFINITIONS, AND TERMS

A. ASTM: American Society for Testing Materials
B. LOD: Limits of disturbance
C. USDA: United States Department of Agriculture

1.05 SUBMITTALS

A. The CONTRACTOR shall submit a soils test report to the OWNER for approval minimum 15 days prior to installation.

B. The CONTRACTOR shall submit written notification at least 15 days before import of any imported materials including compost for approval by the OWNER.
1.06 QUALITY ASSURANCE

A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.

B. Use equipment adequate in size capacity, and numbers to accomplish the work of this Section in a timely manner.

C. In addition to complying with requirements of governmental agencies having jurisdiction, comply with the directions of the ENGINEER, which may also include the Project Architect, Project Civil Engineer, or the Geotechnical (Soil) Engineer.

D. Testing required for this part of the work will be furnished by the CONTRACTOR.

E. The CONTRACTOR must provide the OWNER with a soil test report from an accredited soils testing lab for all to-be supplied compost. Only compost approved by the OWNER shall be used.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Compost amended soil shall be stockpiled in the designated stockpile areas. Storage site/location to be determined and reviewed by the OWNER, prior to the start.

B. Unsuitable material shall be removed at The CONTRACTOR’s expense.

1.08 SEQUENCING AND SCHEDULING

A. Conduct compost amended soil placement and grading in the sequence as indicated in the Sequence of Construction as specified on the approved Construction Drawings.

1.09 WARRANTY

A. Remove, replace, patch, and repair materials and surfaces cut or damaged during grading efforts, by methods and with materials so as not to void existing warranties.

1.10 MAINTENANCE

A. The CONTRACTOR shall maintain a clean, litter and trash-free work site.

B. Do not remove trees and other landscape features that do not interfere with the Work or are designated for preservation. Prevent damage or injury to existing trees, plants, and other vegetation that are to remain within or adjacent to the Project Limits.

C. Conduct operations with minimum interference to public or private roadways.

PART 2 - PRODUCTS

2.01 GENERAL

A. Provide approved like materials from the same manufacturer or supplier to provide consistent composition and appearance.
B. Only use products which have been approved by the OWNER.

2.02 MATERIALS

A. The compost amended soil shall be a mixture of compost and native soils.

<table>
<thead>
<tr>
<th>ITEM</th>
<th>COMPOSITION BY VOLUME</th>
<th>REFERENCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compost</td>
<td>60%</td>
<td>See below.</td>
</tr>
<tr>
<td>Native Soils</td>
<td>40%</td>
<td>See below</td>
</tr>
</tbody>
</table>

1. Native Soils: The native soils shall have a USDA soil texture classification of a loam, sandy loam, clay loam, silt loam, or sandy clay loam. The soil shall have the following particle size distribution:

   A. U.S.D.A.
      a. Particle Name Size (mm) Allowable Limit
      b. Gravel 2.00 – 4.75 Less than 5%
      c. Sand 0.05 – 2.00 25 – 40%
      d. Silt 0.002 – 0.05 25 – 50%
      e. Clay minus 0.002 20 – 35%

   B. Maximum sand content in native soil shall be 50%.

   C. Soils having low moisture content, low nutrient levels, low pH, materials toxicity to plants, and/or unacceptable soil gradation are not acceptable. The soil component shall meet the following specifications:
      1. The particle size analysis as defined above.
      2. The pH shall be approx. 5.5 to 7.8 (NCR 221)
      3. The soluble salts shall be less than 1.5 mmoh/cm (NCR 221)
      4. The organic matter content shall be 2.0 to 4.0% (ASTM D 2974 Method C)

   D. All roots, stones, clods, and debris over 2 inches must be removed from the material prior to placement.

2. Compost: The Compost must conform to the following requirements:
A. Must be weed-free and derived from a well-decomposed source of organic matter. The compost must be produced using an aerobic composting process meeting CFR 503 regulations, including time and temperature data indicating effective weed seed, pathogen and insect larvae kill. The compost must be free of any refuse, diseases, contaminants or other materials toxic to plant growth. Non-composted products will not be accepted. Test methods for the items below should follow USCC TMECC guidelines for laboratory procedures.

B. Material must be relatively free (<1% by dry weight) of inert or foreign man-made materials. A sample must be submitted to the Owner for approval prior to being used and must comply with all local, state, and federal regulations.

C. At the time of placement the compost/mulch must have a wet basis moisture content of 30-60%.

D. The compost must meet the requirements as described below:

### Requirements for Compost

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Range</th>
<th>Testing Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>pH</td>
<td>5.0-7.5</td>
<td>TMECC 4.11A</td>
</tr>
<tr>
<td>Soluble Salt Concentration</td>
<td>&lt; 10dS/m</td>
<td>TMECC 4.10-A</td>
</tr>
<tr>
<td>Moisture</td>
<td>30-60% wet weight basis</td>
<td>SMEWW 2540B</td>
</tr>
<tr>
<td>Organic Matter</td>
<td>30-65% dry weight basis</td>
<td>TMECC 5.07-A</td>
</tr>
<tr>
<td>Particle Size</td>
<td>98% pass through 3/4&quot; screen or smaller</td>
<td>TMECC 2.02-B</td>
</tr>
<tr>
<td>Stability (Carbon Dioxide evolution rate)</td>
<td>&gt;80% relative to positive control</td>
<td>TMECC 5.08-B</td>
</tr>
<tr>
<td>Maturity (Seed emergence and seedling vigor)</td>
<td>&gt;80% relative to positive control</td>
<td>TMECC 5.05-A</td>
</tr>
<tr>
<td>Physical contaminants (man-made inerts)</td>
<td>&lt;1% dry weight basis</td>
<td>TMECC 3.08-A</td>
</tr>
<tr>
<td>Chemical contaminants</td>
<td>Meet or exceed US EPA Class A standard, 40 CFR § 503.13, Tables 1 and 3 levels:</td>
<td></td>
</tr>
<tr>
<td>Arsenic</td>
<td>&lt; 41ppm</td>
<td>TMECC 4.06-AS</td>
</tr>
<tr>
<td>Cadmium</td>
<td>&lt; 39 ppm</td>
<td>TMECC 4.06-CD</td>
</tr>
<tr>
<td>Copper</td>
<td>&lt; 1,500 ppm</td>
<td>TMECC 4.05-CU</td>
</tr>
<tr>
<td>Lead</td>
<td>&lt; 300 ppm</td>
<td>TMECC 4.06-PB</td>
</tr>
<tr>
<td>Mercury</td>
<td>&lt; 17 ppm</td>
<td>TMECC 4.06-HG</td>
</tr>
<tr>
<td>Parameter</td>
<td>Range</td>
<td>Testing Method</td>
</tr>
<tr>
<td>----------------------------</td>
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<td>-----------------</td>
</tr>
<tr>
<td>Molybdenum</td>
<td>&lt; 75 ppm</td>
<td>TMECC 4.05-MO</td>
</tr>
<tr>
<td>Nickel</td>
<td>&lt; 420 ppm</td>
<td>TMECC 4.06-NI</td>
</tr>
<tr>
<td>Selenium</td>
<td>&lt; 100 ppm</td>
<td>TMECC 4.06-SE</td>
</tr>
<tr>
<td>Zinc</td>
<td>&lt; 2,800 ppm</td>
<td>TMECC 4.06-ZN</td>
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<tr>
<td>Biological contaminants</td>
<td>Meet or exceed</td>
<td>US EPA Class A</td>
</tr>
<tr>
<td>(pathogens)</td>
<td>standard, 40 CFR § 503.32(a) levels:</td>
<td></td>
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<tr>
<td>Fecal coliform</td>
<td>&lt; 1,000 MPN</td>
<td>TMECC 7.01</td>
</tr>
<tr>
<td></td>
<td>per gram, dry weight basis</td>
<td></td>
</tr>
<tr>
<td>Salmonella</td>
<td>&lt; 3 MPN per</td>
<td>TMECC 7.02</td>
</tr>
<tr>
<td></td>
<td>4 grams, dry weight basis</td>
<td></td>
</tr>
</tbody>
</table>

Recommended compost testing methodologies and sampling procedures are provided in Test methods for the Examination of Composting and Compost (TMECC), and Standard Methods for the Examination of Water and Wastewater.

A. Compost analysis report verifying compost meets the biological activity.

**Biological Requirements for Compost**

- Dry Weight 0.45-0.85
- Active Bacterial Biomass 15 – 25 micrograms/gram
- Total Bacterial Biomass 100 – 3000 micrograms/gram
- Active Fungal Biomass 15- 25 micrograms/gram
- Total Fungal Biomass 100 – 300 micrograms/gram
- Hyphal Diameter of fungi 2.5 – 3 micrometers
- Protozoa numbers/ Flagellates 10,000 minimum per gram
- Protozoa numbers/ Amoebae 10,000 minimum per gram
- Protozoa numbers/ Ciliates 50 – 100 minimum per gram
- Total Nematodes 20-30 per gram of soil
- Total Fungal to Total Bacterial 0.75-1.5
- Active to Total Fungal 0.01-.1
- Active Fungal to Active Bacterial 0.75-1.5

References:


PART 3 - EXECUTION

3.01 GENERAL

A. The CONTRACTOR shall place compost amended soil in accordance with the Contract Documents.

3.02 PREPARATION

A. Verify that all required tests have been submitted and accepted by the OWNER. Only materials approved by the OWNER shall be used. No amendments may be made until approval is provided by the OWNER.

B. The CONTRACTOR shall install the necessary temporary tree and plant protection in accordance with the Contract Documents and Section 01 56 39 Temporary Tree and Plant Protection prior to grading activities.

C. The CONTRACTOR shall install the necessary temporary erosion and sediment controls in accordance with the Contract Documents and Section 01 57 13 Temporary Erosion and Sediment Control prior to grading activities.

D. When applicable, dewatering devices shall be installed in accordance with Section 31 23 19 Dewatering, functioning and result in dry conditions prior to the commencement of grading activities.

3.03 INSTALLATION

A. Before compost amended soil placement:

1. CONTRACTOR shall not perform compost amended soil placement operations when the ground is frozen.

2. Immediately prior to being covered with compost amended soil, the prepared sub grade shall be loosened to a depth of 2 inches and be free from rocks or other foreign material 2 inches or greater.

3. If applicable, where the subsoil is either highly acidic or composed of heavy clay, ground limestone must be spread according to the soil test results, or if not specified, as approved by the OWNER prior to the placement of compost amended soil. Lime shall be distributed uniformly over designated areas and worked into the soil. Soil shall be tested and amended as per soil test recommendations.

4. The CONTRACTOR shall grade the site in a manner that preserves stability and reduces erosion potential in accordance with grades specified in the Construction Drawings and to the extent feasible.

B. Placement of Compost Amended Soil:

1. Do not handle compost amended soil if it is frozen.
2. The CONTRACTOR shall completely prepare and finish the surface of all areas to be covered in compost amended soil according to the grading plan on the approved Construction drawings. The finished surface of prepared soils shall be scarified/roughened to accept compost amended soil (i.e., no hardened/impervious areas shall remain to impede incorporation with compost amended soils).

3. Compost amended soil shall be placed and spread at a depth sufficient so that, after settlement, the completed work shall leave a minimum depth of 2 inches of compost amended soil and be in conformance with the depth, lines, grades, and elevations specified in the Contract Documents.

4. Rocks and other foreign material larger than 2 inches shall be removed and disposed of by the CONTRACTOR.

3.04 CLOSEOUT ACTIVITIES

A. Disposal of unsuitable material shall be at no extra expense to the OWNER. Disposal shall be performed as promptly as possible and not left until the final clean up.

C. If, applicable the CONTRACTOR shall seed (temporary and/or permanent) the compost amended soil area in accordance with Contract Documents and Section 32 92 00 Turf and Grasses. Temporarily stabilize with straw and pine mulch.

D. If shown on the planting plan, The CONTRACTOR shall plant the area of the compost amended soil area in accordance with the Contract Documents and Section 32 90 00 Planting.

PART 4 – MEASUREMENT AND PAYMENT

4.01 MEASUREMENT

A. The price shall include the furnishing of all labor, materials, tools, equipment and all incidentals necessary to complete the placement and grading of compost amended soil as shown on the Contract Drawings. This work shall include achieving the finished plan grades. This work shall include the installation of 2 inches of compost amended soil as detailed in Section 32 91 19.13 Compost Amended Soil Placement and Grading.

4.02 PAYMENT

A. Payments by the Owner to the Contractor shall be based on a Lump Sum for the scope of Work. Unit prices have been received from the Contractor and agreed to by the Owner to provide agreed upon prices for modification to Work quantities. The Owner and Contractor agree that if the scope of Work either increases or decreases within 20% of the original unit quantities, the payment for such increase or decrease shall be based on the unit prices as set forth in the Contract Documents.

END OF SECTION 32 91 19.13
SECTION 32 92 00 – TURF AND GRASSES

PART 1 - GENERAL

1.01 DESCRIPTION

A. Work included: Furnish, transport, stockpile, install, and maintain a 1-year warranty on all temporary seed, permanent seed and sod to implement the planting plans as specified in the Contract Documents, or as directed by the OWNER.

B. Related Work: Documents affecting work of this section include, but are not necessarily limited to, General Provisions and Modifications of these Specifications.

1.02 RELATED SECTIONS

A. Section 31 14 13 Soil Stripping and Stockpiling

B. Section 32 91 19.13 Compost Amended Soil Placement and Grading

1.03 REFERENCE STANDARDS

A. South Carolina Department of Transportation Standard Specifications for Highway Construction 2007.


C. South Carolina Department of Health and Environmental Control 2014.

E. South Carolina Department of Agriculture (SCDA).

1.04 ABBREVIATIONS, DEFINITIONS, AND TERMS

A. PLS: Pure Live Seed

B. SCDOT: South Carolina Department of Transportation

1.05 SUBMITTALS

A. The CONTRACTOR shall submit documentation from seed suppliers demonstrating compliance with the requirements of this specification.

1. Fifteen (15) days prior to the start of planting work, the CONTRACTOR shall submit a complete list of seed mixes and sod showing species and quantity, to the OWNER for review. This submission shall identify the seed or seed mix and include the seed sources with genetic origin of the material and identification of all varietal types. Any deviations from the seed mix specifications shall be clearly identified to the OWNER. No work shall be performed until this submittal is approved by the OWNER.
2. Upon rejection of any material, new material submissions shall be made until the proposed materials are in compliance with the specification, as solely determined by the OWNER. Any materials deemed not in compliance with the specifications by the OWNER shall not be utilized for this work. The OWNER reserves the right to reject on or after delivery any material that does not meet the specifications herein. All rejected materials and equipment shall be removed from the work site by the end of the working day.

B. The CONTRACTOR shall submit certified and dated seed tickets stating mix composition and weight in pounds (LBS) to the OWNER prior to application.

C. The CONTRACTOR shall submit certified and dated sod tickets stating mix composition and weight in pounds (LBS) to the OWNER prior to application.

1.06 QUALITY ASSURANCE

A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.

B. Use equipment adequate in size capacity, and numbers to accomplish the work of this Section in a timely manner.

C. In addition to complying with requirements of governmental agencies having jurisdiction, comply with the directions of the ENGINEER which may also include the Project Architect, Project Civil Engineer, or the Geotechnical (Soil) Engineer.

D. Testing required for this part of the work will be furnished by the CONTRACTOR.

E. Certified and dated seed tickets stating mix composition and weight in pounds (LBS) must be furnished to the OWNER prior to payment.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Seed and sod shall be stored in a cool dry place, away from moisture or direct sunlight.

B. Handle sod in a manner that prevents tearing, breaking, drying, or any other damage.

1.08 SEQUENCING AND SCHEDULING

A. Place seed and sod after finish grades are achieved and soil preparations have been made.

1.09 WARRANTY

A. The CONTRACTOR shall maintain a minimum 85% survival rate per 500 square foot area of all herbaceous seeding and sod for a minimum of 1 year (12 months) from the final inspection and initial planting acceptance by the OWNER and include at least one full continuous growing season consisting of the full months of June through October, inclusive. This shall include necessary care and replacement to achieve the required coverage. If 85% survival rate per 500 square foot area is not satisfactorily demonstrated
at the end of the warranty period, the CONTRACTOR shall reseed with the appropriate seed mixes and apply all necessary efforts to achieve the specified coverage. The intent of this warranty enforcement strategy is to prevent localized bare planted areas from contributing to erosion and other adverse site impacts.

1.10 MAINTENANCE

A. The CONTRACTOR shall perform all necessary weeding, overseeding, watering and other efforts necessary to maintain the warranty.

B. Watering:

1. For all maintenance areas, CONTRACTOR is responsible for watering. Watering and rainfall shall supply a minimum of 1 inch of water per week.

2. It will be the CONTRACTOR’s responsibility to supply water if there is none available on the site. Any costs associated with supplying water shall be the responsibility of the CONTRACTOR from planting through to the end of the warranty period.

C. Following each maintenance visit, the CONTRACTOR shall provide a written report to the OWNER detailing the condition of the project site and the corrective actions taken to address deficiencies.

PART 2 - PRODUCTS

2.01 GENERAL

A. Provide approved like materials from the same manufacturer or supplier to provide consistent composition and appearance.

2.02 MATERIALS

A. Temporary Seed

1. Temporary Seed shall consist of brown-top millet (*Urochloa ramosa*) March through August applied at a rate of 40 lbs per acre and grain rye September through March applied at a rate of 56 lbs per acre or approved substitution. The planting zones shall conform to those shown on the Construction Drawings.

B. Permanent Seed

1. Permanent seed shall consist of seed mixes specified on the planting schedules in the Construction Drawings at the specified rate in the schedules. The planting zones shall conform to those shown on the Construction Drawings.

2. Seed shall be certified that the Pure Live Seed (PLS) percentage is equal to or greater than that which is specified on the Plant Schedules. If the PLS is less than specified, the CONTRACTOR shall increase the seeding rate to compensate for the PLS difference as his/her own expense.
3. All seed and seed varieties shall be free from State and Federal prohibited noxious weeds including but not limited to the following:

Annual bluegrass   Corn cockle   Spurred anoda
Bermuda grass      Dodder       Wild garlic
Bindweed           Giant foxtail Wild onion
Cocklebur          Horse nettle

C. Wetland Native Seed Mix.

1. Wetland Native Seed Mix shall consist of seed varieties specified in the composition and planting schedules for the planting zones on the Construction Drawings.

2. Seed shall be certified that the Pure Live Seed (PLS) percentage is equal to or greater than that which is specified on the Plant Schedules. If the PLS is less than specified, the CONTRACTOR shall increase the seeding rate to compensate for the PLS difference as his/her own expense.

3. All seed and seed varieties shall be free from State and Federal prohibited noxious weeds including but not limited to the following:

Annual bluegrass   Corn cockle   Spurred anoda
Bermuda grass      Dodder       Wild garlic
Bindweed           Giant foxtail Wild onion
Cocklebur          Horse nettle

D. Upland Native Seed Mix.

1. Upland Native Seed Mix shall consist of seed varieties specified in the composition and planting schedules for the planting zones on the Construction Drawings.

2. Seed shall be certified that the Pure Live Seed (PLS) percentage is equal to or greater than that which is specified on the Plant Schedules. If the PLS is less than specified, the CONTRACTOR shall increase the seeding rate to compensate for the PLS difference as his/her own expense.

3. All seed and seed varieties shall be free from State and Federal prohibited noxious weeds including but not limited to the following:

Annual bluegrass   Corn cockle   Spurred anoda
Bermuda grass      Dodder       Wild garlic
Bindweed           Giant foxtail Wild onion
E. Sod

1. Sod shall consist of a Centipede grass specified for the planting zones or areas as shown on the Construction Drawings.

2. Provide vigorous, well-rooted, healthy turf, free from disease, insect pests, weeds, other grasses, stones, and any other harmful or detrimental materials.

3. Provide machine stripped sod with a uniform minimum soil thickness of 1 inch. The measurement for thickness excludes top growth and thatch.

F. Mulch/Tack

1. Mulch shall be un-rotted straw or hay applied at a rate of 70 to 90 lbs./1,000 square feet. The placement of mulch shall achieve 95% soil surface coverage. Tacking is to be achieved by crimping only.

2. Do not use mulch that contains noxious weed seeds, soil, sawdust, or any substance toxic to plant growth.

G. Water (if applicable)

1. Water used for the establishment or maintenance of seed and/or sod shall be free from any substances that are injurious to plant life.

H. Fertilizer (if applicable)

1. Seeding and sodding area soils shall be tested with soil test recommendations provided to the OWNER for review and approval. Provide fertilizer conforming to the requirements of SCDOT Subsection 810.2.5.

I. Limestone (if applicable)

1. Limestone shall be applied uniformly according to soil test recommendations. Provide limestone conforming to the requirements of SCDOT Subsection 810.2.6.

2.03 EQUIPMENT

A. It is the responsibility of the CONTRACTOR to utilize the appropriate equipment necessary to complete the requirements in this specification in a safe working manner.

1. Seeders which are compatible with seeding are broadcast/cyclone seeder and drop-type seeders.

2. Seed drill modified to handle native warm season grass and native forb seed mixes.

B. It is the responsibility of the CONTRACTOR to utilize equipment, or the lack there of, that limits disturbance to the newly completed project area. All areas that have been
disturbed or destroyed due to the use of equipment by the CONTRACTOR, as solely determined by the OWNER, shall be repaired in accordance with these specifications by the CONTRACTOR; at his own expense.

PART 3 - EXECUTION

3.01 GENERAL

A. The CONTRACTOR shall install the seed and sod in accordance with the Contract Documents.

B. Seeding and sod placement shall not be performed during periods of rain, severe drought, high winds, excessive moisture, frozen grounds, or other conditions that preclude satisfactory results. All seeding is to be performed in moderately dry to moist (not flooded) soil and at a time where the wind does not exceed a velocity of ten (10) miles per hour.

3.02 PREPARATION

A. The CONTRACTOR must examine the area and conditions under which the work is to be performed. The area must be properly prepared before seeding and sodding begins. The OWNER is to be notified in writing of conditions detrimental to the proper and timely completion of the work. The CONTRACTOR shall identify those areas that are detrimental to seeding and consult with the OWNER to determine corrective actions. Seeding and sodding work is not to proceed until either the undesired condition is corrected, or a waiver is granted from the OWNER. Unless directed by the OWNER, no seeding shall occur until all the soil testing results have been reviewed by both the CONTRACTOR and the OWNER, and the as-built survey verifying subsoil and topsoil elevations have been reviewed and approved by the OWNER.

B. Prior to seeding and sodding, the CONTRACTOR shall verify final elevations and prepare soils.

C. The CONTRACTOR shall with the approval of the OWNER incorporate all necessary amendments such as fertilizer and limestone, based on soil test recommendations, into the soil prior to seeding and sodding.

D. The CONTRACTOR shall ensure all soil is loose, friable and free of stone, sticks, debris or other material larger than 2 inches in size with the exception of woody debris.

E. Where applicable per the ENGINEER and/or OWNER, place compost per Section 31 91 19.13 Compost Amended Soil Placement and Grading, or topsoil prior to seeding and sodding in accordance with Section 31 14 13 Soil Stripping and Stockpiling. Areas to be seeded and sodded shall be maintained at approved grades.

F. All mechanical equipment for soil preparation or seeding and sodding shall be as approved and shall operate parallel to the contours unless otherwise approved by the OWNER. The CONTRACTOR shall be responsible for performing all work necessary to achieve and maintain an acceptable seedbed prior to seeding and sodding as required by the OWNER at no additional cost.

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Contract Documents
3.03 INSTALLATION

A. Seeding

1. All areas disturbed by construction shall be seeded in accordance with the planting plans and schedules indicated in the Contract. At a minimum, upon completion of soil disturbing activities, permanently stabilize disturbed areas within 7 days. Areas not disturbed shall not be seeded.

2. All areas to be seeded shall conform to the finished grades as specified in the Construction Drawings and be free of all weeds, trash, debris, brush, clods, loose rocks and other foreign materials larger than 2 inches in diameter or length that would interfere with seeding (aside from woody material). All gullies, washes or disturbed areas that develop subsequent to final dressing shall be repaired prior to seeding.

3. Seeding operations shall be initiated and completed within the seeding dates indicated for each of the mixes per vendor guidelines. No seeding shall be performed on frozen ground or when the temperature is 32°F (0°C) or lower.

4. The CONTRACTOR shall notify the OWNER at least forty-eight (48) hours in advance of the time they intends to begin sowing seed and shall not proceed with such work until permission to do so has been obtained. When delays in operations carry the work beyond the dates specified in the schedule, or when conditions of high winds, excessive moisture, or ice are such that satisfactory results are not likely to be obtained at any stage of the work, the CONTRACTOR shall stop the work. The work shall be resumed with the OWNER’s approval when the desired results are likely to be obtained or when approved corrective measures and procedures are adopted.

5. Permanent and Temporary seed installed by a broadcast spreader shall be capable of placing seed at the specified rate. Any alternative seeding methods must be approved by the OWNER, prior to application. All seeding equipment shall be calibrated before application to the satisfaction of the OWNER so that the material is applied accurately and evenly to avoid misses and overlaps.

6. Native Seed Mixes

A. Native seed shall be broadcast on top of finished, prepared grade using a broadcast spreader or by hand, capable of placing seed evenly across the surface at the specified rate. Alternative seeding methods must be approved by the OWNER prior to procurement or use on site.

B. Seeding equipment shall be calibrated before application to the satisfaction of the OWNER so that the material is applied accurately and evenly to avoid misses and overlaps.

C. To maximize the seed-to-soil contact, the seed shall be incorporated into the top 1/4” of the surface by using a cultipacker, other similar equipment, or by dragging a metal prong rake or chain link fence overtop the surface. Seed shall not be buried more than a 1/4” into the topsoil surface. The OWNER shall inspect and confirm that the seed has been applied in accordance with this specification prior to applying straw or mulch.
9. Following installation, seeded areas shall not be disturbed in any manner by vehicular, foot, or other traffic other than specified herein or approved by the OWNER. Particular care shall be taken to ensure complete and accurate coverage at the prescribed rates. Proper predetermined quantities of mixture in accordance with the specifications shall be used to cover specified sections of known surface area. Any area inadequately covered, as solely determined by the OWNER, shall be retreated at no additional cost.

B. Sodding

1. All areas disturbed by construction and requiring sod shall be done so in accordance with the planting plans and schedules indicated in the Contract. At a minimum, upon completion of soil disturbing activities, permanently stabilize disturbed areas within 7 days.

2. All areas to receive sod shall conform to the finished grades as specified in the contract and be free of all weeds, trash, debris, brush, clods, loose rocks and other foreign materials larger than 2 inches in diameter or length that would interfere with sod. All gullies, washes or disturbed areas that develop subsequent to final dressing shall be repaired prior to sod placement.

3. Sod operations shall be initiated and completed within optimal planting dates provided by the vendor’s guidelines. In general Sod placement shall be performed from March 1 - May 1 and September 15 – November 15 with Autumn being the preferred window, or as directed by the OWNER. No sod placement shall be performed on frozen ground or when the temperature is 32 degree F (0 degree C) or lower.

4. The CONTRACTOR shall notify the OWNER at least forty-eight (48) hours in advance of the time he/she intends to begin placing sod and shall not proceed with such work until permission to do so has been obtained. When delays in operations carry the work beyond the dates specified in the schedule, or when conditions of high winds, excessive moisture, or ice are such that satisfactory results are not likely to be obtained at any stage of the work, the CONTRACTOR shall stop the work. The work shall be resumed with the OWNER’s approval when the desired results are likely to be obtained or when approved corrective measures and procedures are adopted.

5. Lay sod on the prepared sod bed within 24 hours after cutting, except that sod may be stored in stacks or piles, grass to grass and roots to roots for not more than 5 days. Protect sod against drying from sun or wind and from freezing if necessary. Perform moving and laying of sod when weather conditions and soil moisture are favorable.

6. Lay the sod when the soil is moist. If necessary, moisten dry sod beds before sod is laid. Lay sections of solid sod edge to edge with staggered joints. Plug openings with sod or fill with acceptable loamy topsoil. Fill openings in joints with loamy topsoil. After laying sod and filling joints, roll or tamp with approved equipment to eliminate air pockets and provide an even surface.

7. Following installation, sod areas shall not be disturbed in any manner by vehicular, foot, or other traffic other than specified herein or approved by the OWNER.
C. Watering

1. Immediately after seeding, the site shall be watered lightly but thoroughly so that the top 4 inches of soil is saturated.

2. Thoroughly water all seeded areas after the seed has germinated. Apply a total rate of 300 gallons per 1000 square feet in at least two applications spread over seven days. Apply the water such that the spray that will not dislodge the matting material. Perform a second water application between seven and ten days after the primary applications. If ½-inch or greater of rainfall has occurred within the first seven-day period, the CONTRACTOR may omit the secondary application, if approved by the OWNER.

3. Water sod thoroughly immediately after installation to a depth of 3-4”, unless otherwise directed by the OWNER and/or the ENGINEER. CONTRACTOR shall keep sod uniformly moist (not soaked) by watering in short intervals 3-4 times a day for the first 12 days and should water within the window of 7am – 2pm for best results. After 12 days, watering shall occur once every day for a longer interval for 7 days. After this time period and after good rooting has been established, watering every second or third day is recommended.

D. Mulch/Tack

1. The CONTRACTOR shall mulch and tack all seeded areas immediately after seeding.

3.04 CLOSEOUT ACTIVITIES

A. Acceptance

1. Acceptance of the permanent seed installation shall not occur until at least four (4) weeks following completion of the seeding operation or until related soil erosion control items have been installed and accepted, including the soil and erosion control minimum coverage requirement. Acceptance of the seed installation by the OWNER shall be based on proper site preparation and installation, and satisfactory completion of required watering, if any. Acceptance of the WORK by the OWNER shall not relieve the CONTRACTOR from any obligations of the contract.

B. Damage

1. Damaged areas: all areas where the vegetative growth has been injuriously disturbed or destroyed by the CONTRACTOR’s actions or inactions, as solely determined by the OWNER, shall be restored and seeded in accordance with these specifications by the CONTRACTOR at his own expense. Reseeding shall occur at the next available seeding window and shall not be delayed until the end of the warranty period.

C. Trash Removal
1. The CONTRACTOR shall be responsible for the removal of all trash and any other materials incidental to the project and disposing of them off-site at no additional cost to the OWNER.

PART 4 – MEASUREMENT AND PAYMENT

4.01 MEASUREMENT

A. The price shall include the furnishing of all labor, materials, tools, equipment and incidentals necessary to complete the seeding as shown on the Contract Drawings. This work shall include the temporary seed be completed as detailed in Section 32 92 00 Turf and Grasses.

B. The price shall include the furnishing of all labor, materials, tools, equipment and incidentals necessary to complete the seeding as shown on the Contract Drawings. This work shall include the permanent seed be completed as detailed in Section 32 92 00 Turf and Grasses.

C. The price shall include the furnishing of all labor, materials, tools, equipment and incidentals necessary to complete the seeding as shown on the Contract Drawings. This work shall include the wetland native seed be completed as detailed in Section 32 92 00 Turf and Grasses.

D. The price shall include the furnishing of all labor, materials, tools, equipment and incidentals necessary to complete the seeding as shown on the Contract Drawings. This work shall include the upland native seed be completed as detailed in Section 32 92 00 Turf and Grasses.

E. The price shall include the furnishing of all labor, materials, tools, equipment and incidentals necessary to complete the seeding as shown on the Contract Drawings. This work shall include the sod be completed as detailed in Section 32 92 00 Turf and Grasses.

F. The price shall include the furnishing of all labor, materials, tools, equipment and incidentals necessary to complete the seeding as shown on the Contract Drawings. This work shall include the temporary straw mulch for stabilization be completed as detailed in Section 32 92 00 Turf and Grasses.

4.02 PAYMENT

A. Payments by the Owner to the Contractor shall be based on a Lump Sum for the scope of Work. Unit prices have been received from the Contractor and agreed to by the Owner to provide agreed upon prices for modification to Work quantities. The Owner and Contractor agree that if the scope of Work either increases or decreases within 20% of the original unit quantities, the payment for such increase or decrease shall be based on the unit prices as set forth in the Contract Documents.

B. Payments by the Owner to the Contractor shall be based on a Lump Sum for the scope of Work. Unit prices have been received from the Contractor and agreed to by the Owner to provide agreed upon prices for modification to Work quantities. The Owner and Contractor agree that if the scope of Work either increases or decreases within 20% of
the original unit quantities, the payment for such increase or decrease shall be based on the unit prices as set forth in the Contract Documents.

C. Payments by the Owner to the Contractor shall be based on a Lump Sum for the scope of Work. Unit prices have been received from the Contractor and agreed to by the Owner to provide agreed upon prices for modification to Work quantities. The Owner and Contractor agree that if the scope of Work either increases or decreases within 20% of the original unit quantities, the payment for such increase or decrease shall be based on the unit prices as set forth in the Contract Documents.

D. Payments by the Owner to the Contractor shall be based on a Lump Sum for the scope of Work. Unit prices have been received from the Contractor and agreed to by the Owner to provide agreed upon prices for modification to Work quantities. The Owner and Contractor agree that if the scope of Work either increases or decreases within 20% of the original unit quantities, the payment for such increase or decrease shall be based on the unit prices as set forth in the Contract Documents.

E. Payments by the Owner to the Contractor shall be based on a Lump Sum for the scope of Work. Unit prices have been received from the Contractor and agreed to by the Owner to provide agreed upon prices for modification to Work quantities. The Owner and Contractor agree that if the scope of Work either increases or decreases within 20% of the original unit quantities, the payment for such increase or decrease shall be based on the unit prices as set forth in the Contract Documents.

F. Payments by the Owner to the Contractor shall be based on a Lump Sum for the scope of Work. Unit prices have been received from the Contractor and agreed to by the Owner to provide agreed upon prices for modification to Work quantities. The Owner and Contractor agree that if the scope of Work either increases or decreases within 20% of the original unit quantities, the payment for such increase or decrease shall be based on the unit prices as set forth in the Contract Documents.

END OF SECTION 32 92 00
SECTION 33 01 31.11 – CONNECTION TO MANHOLE

PART 1 - GENERAL

1.01 DESCRIPTION

A. Work included: Furnish, transport, stockpile, install, and maintain the connection of the Corrugated, Non-Perforated 12” HDPE pipe to the existing stormwater manhole as specified in the Contract Documents, and/or as directed by the OWNER.

B. Related Work: Documents affecting work of this section include, but are not necessarily limited to, General Provisions and Modifications of these Specifications.

1.02 RELATED SECTIONS

A. Section 01 56 39 Temporary Tree and Plant Protection
B. Section 01 57 13 Temporary Erosion and Sediment Control
C. Section 31 20 00 Earth Moving
D. Section 31 23 19 Dewatering
E. Section 33 05 33.36 Corrugated, Non-Perforated HDPE Drainage Pipe

1.03 REFERENCE STANDARDS

A. South Carolina Department of Transportation Standard Specifications for Highway Construction.
C. South Carolina Department of Health and Environmental Control 2014.

1.04 ABBREVIATIONS, DEFINITIONS, AND TERMS

A. HDPE: High-Density Polyethylene
B. SCDOT: South Carolina Department of Transportation

1.05 SUBMITTALS

A. The CONTRACTOR shall submit the supplier and material data of non-shrink grout to the OWNER for approval prior to furnishment.

B. The CONTRACTOR shall submit the supplier and manufacturer data of the backwater valve to the OWNER for approval prior to furnishment.

1.06 QUALITY ASSURANCE
A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.

B. Use equipment adequate in size capacity, and numbers to accomplish the work of this Section in a timely manner.

C. In addition to complying with requirements of governmental agencies having jurisdiction, comply with the directions of the ENGINEER, which may also include the Project Architect, Project Civil Engineer, or the Geotechnical (Soil) Engineer.

D. The CONTRACTOR shall ensure the material delivered to the site matches these specifications for type, dimension and color. The OWNER reserves the right to reject any non-conforming material delivered to the site.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Materials shall be kept in the approved staging areas and kept dry and in neat conditions as to not damage the product.

B. Handle with care as to not defect the product.

C. Unsuitable material shall be removed at The CONTRACTOR’s expense.

1.08 SEQUENCING AND SCHEDULING

A. Conduct connection of Corrugated, Non-Perforated 12” HDPE into existing stormwater manhole in conjunction with installation of Corrugated, Non-Perforated 12” HDPE in accordance with Section 33 05 33.36 Corrugated, Non-Perforated HDPE Drainage Pipe per the Contract Documents.

1.09 WARRANTY

A. The CONTRACTOR shall warranty the connection to manhole for the contracted length of time. Any material that has to be replaced or repaired shall be replaced or repaired by the CONTRACTOR at no additional cost to the OWNER.

1.10 MAINTENANCE

A. The CONTRACTOR shall maintain the connection to manhole for the contracted length of time. Any material that has to be replaced or repaired shall be replaced or repaired by the CONTRACTOR at no additional cost to the OWNER.

PART 2 - PRODUCTS

2.01 GENERAL

A. Provide approved like materials from the same manufacturer or supplier to provide consistent composition and appearance.

B. Only use products which have been approved by the OWNER.
2.02 MATERIALS

A. Backwater Valve
   1. Furnish WAPRO WaStop NPS 12" Backwater Valve or an approved equivalent.

B. Non-Shrink Grout
   1. Use an SCDOT approved Type M mortar material in accordance with applicable requirements of Section 781 of SCDOT Standard Specifications for Construction.

PART 3 - EXECUTION

3.01 GENERAL

A. All materials and construction techniques shall be installed as indicated in the Contract Documents.

B. Existing stormwater manhole shall be protected during construction activities and flow shall be maintained.

3.02 PREPARATION

A. The CONTRACTOR shall install the necessary temporary tree and plant protection in accordance with the Contract Documents and Section 01 56 39 Temporary Tree and Plant Protection prior to grading activities.

B. The CONTRACTOR shall install the necessary temporary erosion and sediment controls in accordance with the Contract Documents and Section 01 57 13 Temporary Erosion and Sediment Control prior to grading activities.

C. When applicable, dewatering devices shall be installed in accordance with Section 31 23 19 Dewatering, functioning and result in dry conditions prior to the commencement of grading activities. Care shall be taken to ensure filter bag discharges to a stable area.

C. Prepare the subgrade for the placement of the drainage pipe by excavating and/or backfilling (whichever is applicable) to the appropriate subgrades in accordance with Section 31 20 00 Earth Moving.

3.03 INSTALLATION

A. Field connect backwater valve and Corrugated, Non-Perforated 12" HDPE drainage pipe to existing stormwater manhole in accordance with Contract Documents. Non-shrink grout shall be used to establish a watertight connection.

B. Backfill shall be placed in 6-inch lifts with adequate compaction of each lift to final subgrade elevation.

3.04 CLOSEOUT ACTIVITIES
A. The CONTRACTOR shall be responsible for off-site removal and disposal of trash, excess backfill and any materials incidental to the project and disposing of them off-site as per the General Conditions, at no additional cost to the OWNER.

PART 4 – MEASUREMENT AND PAYMENT

4.01 MEASUREMENT

A. The price shall include the furnishing of all labor, materials, tools, equipment and incidentals necessary to complete the Connection to the Manhole and installation of the Tide Valve. This work shall include the Tide Valve and Connection to Manhole and be completed as in Section 33 01 31.11 Connection to Manhole.

4.02 PAYMENT

A. Payments by the Owner to the Contractor shall be based on a Lump Sum for the scope of Work. Unit prices have been received from the Contractor and agreed to by the Owner to provide agreed upon prices for modification to Work quantities. The Owner and Contractor agree that if the scope of Work either increases or decreases within 20% of the original unit quantities, the payment for such increase or decrease shall be based on the unit prices as set forth in the Contract Documents.

END OF SECTION 33 01 31.11
SECTION 33 05 33.36 – CORRUGATED, NON-PERFORATED 12” HDPE DRAINAGE PIPE

PART 1 - GENERAL

1.01 DESCRIPTION

A. Work included: Furnish, transport, stockpile, install, and maintain the Corrugated, Non-Perforated 12” HDPE pipe which is to connect the draw down device to the existing stormwater manhole as specified in the Contract Documents, and/or as directed by the OWNER.

B. Related Work: Documents affecting work of this section include, but are not necessarily limited to, General Provisions and Modifications of these Specifications.

1.02 RELATED SECTIONS

A. Section 01 56 39 Temporary Tree and Plant Protection
B. Section 01 57 13 Temporary Erosion and Sediment Control
C. Section 31 20 00 Earth Moving
D. Section 31 23 19 Dewatering
E. Section 33 01 31 .11 Connection to Manhole
F. Section 33 42 00 Stormwater Conveyance

1.03 REFERENCE STANDARDS

A. South Carolina Department of Transportation Standard Specifications for Highway Construction.
C. South Carolina Department of Health and Environmental Control 2014.

1.04 ABBREVIATIONS, DEFINITIONS, AND TERMS

A. HDPE: High-Density Polyethylene
B. SCDOT: South Carolina Department of Transportation

1.05 SUBMITTALS

A. The CONTRACTOR shall submit the supplier and material data of Corrugated, Non-Perforated 12” HDPE pipe to the OWNER for approval prior to furnishment.

1.06 QUALITY ASSURANCE
A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.

B. Use equipment adequate in size capacity, and numbers to accomplish the work of this Section in a timely manner.

C. In addition to complying with requirements of governmental agencies having jurisdiction, comply with the directions of the ENGINEER, which may also include the Project Architect, Project Civil Engineer, or the Geotechnical (Soil) Engineer.

D. The CONTRACTOR shall ensure the material delivered to the site matches these specifications for type, dimension and color. The OWNER reserves the right to reject any non-conforming material delivered to the site.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Materials shall be kept in the approved staging areas and kept dry and in neat conditions as to not damage the product.

B. Handle with care as to not defect the product.

C. Unsuitable material shall be removed at The CONTRACTOR’s expense.

1.08 SEQUENCING AND SCHEDULING

A. Install drainage pipe (underdrain) in conjunction and accordance with Section 33 42 00 Stormwater Conveyance (i.e. Draw Down Device) and with Section 33 01 31.11 Connection to Manhole (i.e. Stormwater Manhole) per the Contract Documents.

1.09 WARRANTY

A. The CONTRACTOR shall warranty the Corrugated, Non-Perforated 12” HDPE drainage pipe for the contracted length of time. Any material that has to be replaced or repaired shall be replaced or repaired by the CONTRACTOR at no additional cost to the OWNER.

1.10 MAINTENANCE

A. The CONTRACTOR shall maintain the Corrugated, Non-Perforated 12” HDPE drainage pipe for the contracted length of time. Any material that has to be replaced or repaired shall be replaced or repaired by the CONTRACTOR at no additional cost to the OWNER.

PART 2 - PRODUCTS

2.01 GENERAL

A. Provide approved like materials from the same manufacturer or supplier to provide consistent composition and appearance.
B. Only use products which have been approved by the OWNER.

2.02 MATERIALS

A. Corrugated, Non-Perforated HDPE – 12” HDPE

1. Furnish Corrugated, Non-Perforated 12” HDPE pipe which conforms to the requirements of the Special Provisions and the latest edition of applicable SCDOT Supplemental Specifications, OMR Standard Method of Tests, and the Supplemental Technical Specification SC-M-714 in effect at the time the bid proposal for the project was advertised.

PART 3 - EXECUTION

3.01 GENERAL

A. All materials and construction techniques shall be installed as indicated in the Construction Documents.

B. Existing stormwater manhole shall be protected during construction activities and flow shall be maintained.

3.02 PREPARATION

A. The CONTRACTOR shall install the necessary temporary tree and plant protection in accordance with the Contract Documents and Section 01 56 39 Temporary Tree and Plant Protection prior to grading activities.

B. The CONTRACTOR shall install the necessary temporary erosion and sediment controls in accordance with the Contract Documents and Section 01 57 13 Temporary Erosion and Sediment Control prior to grading activities.

C. When applicable, dewatering devices shall be installed in accordance with Section 31 23 19 Dewatering, functioning and result in dry conditions prior to the commencement of grading activities.

C. Prepare the subgrade for the placement of the drainage pipe by excavating and/or backfilling (whichever is applicable) to the appropriate subgrades in accordance with Section 31 20 00 Earth Moving.

3.03 INSTALLATION

A. Drainage installation shall comply with Provisions of SCDOT Section 714 and in accordance with Manufacturer’s recommendations.

3.04 CLOSEOUT ACTIVITIES

A. The CONTRACTOR shall be responsible for off-site removal and disposal of trash, excess backfill and any materials incidental to the project and disposing of them off-site as per the General Conditions, at no additional cost to the OWNER.
PART 4 – MEASUREMENT AND PAYMENT

4.01 MEASUREMENT

A. The price shall include the furnishing of all labor, materials, tools, equipment and all incidentals necessary to complete the installation of the Corrugated, Non-Perforated 12" HDPE underdrain as shown on the Contract Drawings. This work shall include the Corrugated, Non-Perforated 12" HDPE underdrain and be completed as detail in Section 33 05 33.36 Corrugated, Non-Perforated HDPE Drainage Pipe.

4.02 PAYMENT

A. Payments by the Owner to the Contractor shall be based on a Lump Sum for the scope of Work. Unit prices have been received from the Contractor and agreed to by the Owner to provide agreed upon prices for modification to Work quantities. The Owner and Contractor agree that if the scope of Work either increases or decreases within 20% of the original unit quantities, the payment for such increase or decrease shall be based on the unit prices as set forth in the Contract Documents.

END OF SECTION 33 05 33.36
SECTION 33 42 00 – STORMWATER CONVEYANCE

PART 1 - GENERAL

1.01 DESCRIPTION

A. Work included: Furnish, transport, stockpile, install, and maintain the connection of the draw down device as specified in the Contract Documents, and/or as directed by the OWNER.

B. Related Work: Documents affecting work of this section include, but are not necessarily limited to, General Provisions and Modifications of these Specifications.

1.02 RELATED SECTIONS

A. Section 01 56 39 Temporary Tree and Plant Protection
B. Section 01 57 13 Temporary Erosion and Sediment Control
C. Section 31 20 00 Earth Moving
D. Section 31 23 19 Dewatering
E. Section 32 05 19.13 Geotextile Fabric
F. Section 33 01 31.11 Connection to Manhole
G. Section 33 05 33.36 Corrugated, Non-Perforated HDPE Drainage Pipe

1.03 REFERENCE STANDARDS

A. South Carolina Department of Transportation Standard Specifications for Highway Construction.
C. South Carolina Department of Health and Environmental Control 2014.

1.04 ABBREVIATIONS, DEFINITIONS, AND TERMS

A. HDPE: High-Density Polyethylene
B. SCDOT: South Carolina Department of Transportation

1.05 SUBMITTALS

A. The CONTRACTOR shall submit the supplier and material data of non-woven geotextile to the OWNER for approval prior to furnishment.
B. The CONTRACTOR shall submit the supplier and material data of the 15” HDPE pipe and solid split end cap to the OWNER for approval prior to furnishment.

1.06 QUALITY ASSURANCE

A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.

B. Use equipment adequate in size capacity, and numbers to accomplish the work of this Section in a timely manner.

C. In addition to complying with requirements of governmental agencies having jurisdiction, comply with the directions of the ENGINEER, which may also include the Project Architect, Project Civil Engineer, or the Geotechnical (Soil) Engineer.

D. The CONTRACTOR shall ensure the material delivered to the site matches these specifications for type, dimension and color. The OWNER reserves the right to reject any non-conforming material delivered to the site.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Materials shall be kept in the approved staging areas and kept dry and in neat conditions as to not damage the product.

B. Handle with care as to not defect the product.

C. Unsuitable material shall be removed at The CONTRACTOR’s expense.

1.08 SEQUENCING AND SCHEDULING

A. Install draw down device in conjunction and accordance with underdrain Section 33 05 33.36 Corrugated, Non-Perforated HDPE Drainage Pipe (i.e. 12” HDPE) and with stormwater manhole connection Section 33 01 31.11 Connection to Manhole per the Contract Documents.

1.09 WARRANTY

A. The CONTRACTOR shall warranty the draw down device for the contracted length of time. Any material that has to be replaced or repaired shall be replaced or repaired by the CONTRACTOR at no additional cost to the OWNER.

1.10 MAINTENANCE

A. The CONTRACTOR shall maintain the draw down device for the contracted length of time. Any material that has to be replaced or repaired shall be replaced or repaired by the CONTRACTOR at no additional cost to the OWNER.

PART 2 - PRODUCTS

2.01 GENERAL
A. Provide approved like materials from the same manufacturer or supplier to provide consistent composition and appearance.

B. Only use products which have been approved by the OWNER.

2.02 MATERIALS

A. Geotextile Fabric
   1. Use non-woven geotextile fabric in accordance with Section 32 05 19.13 Geotextile Fabric.

B. Perforated 15" HDPE Pipe
   1. Furnish perforated 15" HDPE pipe which conforms to the requirements of the Special Provisions and the latest edition of applicable SCDOT Supplemental Specifications, OMR Standard Method of Tests, and the Supplemental Technical Specification SC-M-714 in effect at the time the bid proposal for the project was advertised.
   2. Perforations shall be 0.75-1.00-inches in diameter.

C. End cap
   1. Use 15" solid split HDPE end cap.

D. Galvanized wire
   1. Use 16 gauge galvanized utility tie wire

PART 3 - EXECUTION

3.01 GENERAL

A. All materials and construction techniques shall be installed as indicated in the Contract Documents.

B. Existing stormwater manhole shall be protected during construction activities and flow shall be maintained.

3.02 PREPARATION

A. The CONTRACTOR shall install the necessary temporary tree and plant protection in accordance with the Contract Documents and Section 01 56 39 Temporary Tree and Plant Protection prior to grading activities.

B. The CONTRACTOR shall install the necessary temporary erosion and sediment controls in accordance with the Contract Documents and Section 01 57 13 Temporary Erosion and Sediment Control prior to grading activities.

C. When applicable, dewatering devices shall be installed in accordance with Section 31 23 19 Dewatering, functioning and result in dry conditions prior to the commencement of grading activities. Care shall be taken to ensure filter bag discharges to a stable area.
C. Prepare the subgrade for the placement of the drawdown device by excavating and/or backfilling (whichever is applicable) to the appropriate subgrades in accordance with Section 31 20 00 Earth Moving.

3.03 INSTALLATION

A. Install drawdown device in accordance with Contract Documents.

B. Connect solid 12” HDPE underdrain pipe to drawdown device in accordance with Contract Documents. Provide a watertight connection between the perforated 15” HDPE and solid 12” HDPE underdrain pipe.

C. Wrap perforated 15” HDPE pipe, including connection area with 12” HDPE underdrain pipe, with non-woven geotextile fabric and hold in place with galvanized wire.

D. Place 15” HDPE solid end cap onto perforated 15” HDPE pipe.

E. Backfill shall be placed in 6-inch lifts with adequate compaction of each lift to final subgrade elevation.

3.04 CLOSEOUT ACTIVITIES

A. The CONTRACTOR shall be responsible for off-site removal and disposal of trash, excess backfill and any materials incidental to the project and disposing of them off-site as per the General Conditions, at no additional cost to the OWNER.

PART 4 – MEASUREMENT AND PAYMENT

4.01 MEASUREMENT

A. The price shall include the furnishing of all labor, materials, tools, equipment and incidentals necessary to complete the draw-down device as shown on the Contract Drawings. This work shall include the draw-down device and be completed as detailed in Section 33 42 00 Stormwater Conveyance.

4.02 PAYMENT

A. Payments by the Owner to the Contractor shall be based on a Lump Sum for the scope of Work. Unit prices have been received from the Contractor and agreed to by the Owner to provide agreed upon prices for modification to Work quantities. The Owner and Contractor agree that if the scope of Work either increases or decreases within 20% of the original unit quantities, the payment for such increase or decrease shall be based on the unit prices as set forth in the Contract Documents.

END OF SECTION 33 42 00
APPENDIX A

CHURCH CREEK FLOOD AND RESILIENCE: MOWLER COURT FINAL DESIGN DRAWINGS
NOTES:

1. ALL STORM DRAIN INFRASTRUCTURE IS TO REMAIN IN PLACE AND OPERATIONAL.

2. UTILITY LOCATIONS SHOWN ON THE PLANS ARE APPROXIMATE AND TAKEN FROM AVAILABLE PLANS, RECORDS, AND FIELD RECONNAISSANCE. THE CONTRACTOR SHALL TAKE ALL NECESSARY MEASURES TO LOCATE AND PROTECT THE EXISTING UTILITIES AND MAINTAIN UNINTERRUPTED SERVICE EXCEPT WHERE INDICATED ON DEMOLITION PLANS. ANY DAMAGE INCURRED DUE TO THE CONTRACTOR'S OPERATION SHALL BE PAID FOR IMMEDIATELY BY THE CONTRACTOR'S EXPENSE. ALL UTILITIES SHALL HAVE A CLEARANCE OF 5 INCHES VERTICALLY AND A MINIMUM OF 6 FEET HORIZONTALLY.

REASON: INDICATED ON AS-BUILT DRAWINGS.

REASONS FOR DEMOLITION:

1. OBSOLETE FACILITIES AND SERVICE TERMINATIONS PRIOR TO OPERATIONAL.

2. REQUIRED.

3. NOT SURVEYED.

4. AS BUILT INV OUT = 3.68' REQUIRED.

5. REMOVED 15 FT OF EX CURB.

6. REMOVE 15 FT OF EX CURB.

7. REMOVE 15 FT OF EX CURB.

8. REMOVE 15 FT OF EX CURB.
NOTE: THREE BUY OUT PARCELS ON WOLK DRIVE WILL BE RETROFIT AS ANOTHER PHASE.
PROFILE VIEW OF MOWLER COURT CENTERLINE

PROVIDE MICRO-TOPOGRAPHIC FEATURES THROUGHOUT BOTTOM; SEE DETAIL

PEDESTRIAN WALKING TRAIL; SEE DETAIL

DRAW-DOWN DEVICE TOP ELEV = 6.25'

SEE DETAIL

BACKWATER VALVE INV = 4.4'

EXISTING STORMWATER MANHOLE

MIN. SIDE SLOPE 4:1

COBBLE APRON; SEE DETAIL

CURB CUT; SEE DETAIL

CORRUGATED, NON-PERFORATED 12" HDPE UNDERDRAIN INV = 4.5'

OF 16
### TYPICAL SECTION

#### CURB CUT

NOTES:

1. CONTRACTOR SHALL USE CAUTION AND MAINTAIN PAYMENT RISE TO PREVENT DAMAGE TO Curb OR EDGE AND TO ENSURE ALL MAINTENANCE WILL BE ENSURED. A MINIMUM DISTANCE OF 3 FT. MINIMUM SHALL BE KEPT FROM THE CURB OR EDGE OF THE PROPERTY.

2. CONTRACTOR SHALL USE CAUTION TO PREVENT DAMAGE TO THE EXISTING CURB OR EDGE OF THE PROPERTY.

3. CONTRACTOR SHALL USE CAUTION TO PREVENT DAMAGE TO THE EXISTING CURB OR EDGE OF THE PROPERTY.

4. CONTRACTOR SHALL USE CAUTION TO PREVENT DAMAGE TO THE EXISTING CURB OR EDGE OF THE PROPERTY.

5. CONTRACTOR SHALL USE CAUTION TO PREVENT DAMAGE TO THE EXISTING CURB OR EDGE OF THE PROPERTY.

### CURB & GUTTER (CONCRETE)

SCDOT STANDARD DRAWING 720-105-01

### DRAW-DOWN DEVICE

NOTES:

1. INSTALL LINES MIN 1/2 OF LID LENGTH RECOMMENDED WITH 2' - 4' WIDE CURB.

2. LID DIAMETER FOR RAIN GUTTER SHOULDN'T BE LESS THAN 8 INCHES.

3. INSTALL LINES FOR LID SHOULDN'T BE LESS THAN 8 INCHES.

4. INSTALL LINES FOR LID SHOULDN'T BE LESS THAN 8 INCHES.

### STANDING SNAG

NOTES:

1. INSTALL LINES MIN 1/2 OF LID LENGTH RECOMMENDED WITH 2' - 4' WIDE CURB.

2. LID DIAMETER FOR RAIN GUTTER SHOULDN'T BE LESS THAN 8 INCHES.

3. INSTALL LINES FOR LID SHOULDN'T BE LESS THAN 8 INCHES.

4. INSTALL LINES FOR LID SHOULDN'T BE LESS THAN 8 INCHES.

### MICRO-TOPOGRAPHIC FEATURES

NOTES:

1. INSTALL LINES MIN 1/2 OF LID LENGTH RECOMMENDED WITH 2' - 4' WIDE CURB.

2. LID DIAMETER FOR RAIN GUTTER SHOULDN'T BE LESS THAN 8 INCHES.

3. INSTALL LINES FOR LID SHOULDN'T BE LESS THAN 8 INCHES.

4. INSTALL LINES FOR LID SHOULDN'T BE LESS THAN 8 INCHES.

### COARSE WOODY DEBRIS (CWD)

NOTES:

1. INSTALL LINES MIN 1/2 OF LID LENGTH RECOMMENDED WITH 2' - 4' WIDE CURB.

2. LID DIAMETER FOR RAIN GUTTER SHOULDN'T BE LESS THAN 8 INCHES.

3. INSTALL LINES FOR LID SHOULDN'T BE LESS THAN 8 INCHES.

4. INSTALL LINES FOR LID SHOULDN'T BE LESS THAN 8 INCHES.

### PEDESTRIAN WALKING TRAIL

NOTES:

1. INSTALL LINES MIN 1/2 OF LID LENGTH RECOMMENDED WITH 2' - 4' WIDE CURB.

2. LID DIAMETER FOR RAIN GUTTER SHOULDN'T BE LESS THAN 8 INCHES.

3. INSTALL LINES FOR LID SHOULDN'T BE LESS THAN 8 INCHES.

4. INSTALL LINES FOR LID SHOULDN'T BE LESS THAN 8 INCHES.
CONTRACTOR TO USE ELIZABETH CITY BRICK (ECB) CONCRETE PAVERS OR APPROVED EQUAL; COLOR: CHARCOAL GRAY

GENERAL INSTALLATION CONDITIONS

1. LIKE ALL CONCRETE INSTALLATIONS, A PROPER SUBBASE IS CRITICAL TO THE INSTALLATION'S DURABILITY.

2. DETECTABLE WARNINGS SHOULD ALWAYS BE MOUNTED ON A CONCRETE SUB-BASE. AND ELIZABETH CITY BRICK (ECB) DOES NOT RECOMMEND MOUNTING DIRECTLY ON DIRT OR FILL.

INSTALLATION METHOD #1 - MORTAR BED WITH SEALANT JOINTS

1. FORM CROSSWALK WITH A BOXED OUT VOID FOR THE ADA BLOCK INSTALLATION. THE DIMENSIONS OF THE VOID SHOULD BE AT LEAST 6 INCHES WIDTH AND LENGTH. THE DEPTH OF THE VOID SHOULD BE AT LEAST 6 INCHES DEEP TO ATTAIN SUITABLE SUB-BASE CONDITIONS.


3. INSTALL ECB DOME BLOCK IN A 1/2 INCH THICK MORTAR AS SHOWN IN THE CROSS-SECTIONAL VIEW WITH THE BASE OF EACH BLOCK TIGHT AGAINST THE ADJOINING BLOCK. AND CENTERED IN VOID. ADJUST BLOCK BEDDING SO AS TO ATTAIN A DESIRED CONTOUR OR LEVEL.

4. APPLY SEALANT TO JOINTS AND PERIMETER USING SCHOMBURG DYNAST (MPD, TERRACO Dynam, A, CONCRETE CHOCK & MASONRY SEALANT OR PROFAC STICKS, VLC OR EQUIVALENT).

5. SEALANT ISSUE NOT TO SCALE.
1. Tighten sleeve around the pump discharge hose with a strap or similar device.

2. Place filter bag on suitable base (e.g., mulch, leaf/wood compost, woodchips, sand, or straw bales) located on a level or 5% maximum sloping surface. Discharge to a stabilized area. Extend base a minimum of 12 inches from edges of bag.

3. Control pumping rate to prevent excessive pressure within the filter bag in accordance with the manufacturer recommendations. As the bag fills with sediment, reduce pumping rate.

4. Remove and properly dispose of filter bag upon completion of pumping operations or after bag has reached capacity, whichever occurs first. Spread the dewatered sediment from the bag in an approved upland area and stabilize with seed and mulch by the end of the workday. Restore the surface area beneath the bag to original condition upon removal of the device.

5. Use nonwoven geotextile with double-stitched seams using high-strength thread. Size sleeve to accommodate a maximum 4 inch diameter pump discharge hose. The bag must be manufactured from a nonwoven geotextile that meets or exceeds minimum average roll values (MARV) for the following:

   - Grab tensile: 250 LB/ASTM D-4632
   - Puncture: 150 LB/ASTM D-4833
   - Flow rate: 70 gal/min/ft²/ASTM D-4491
   - Permeability (sec⁻¹): 1.2 sec⁻¹/ASTM D-4491
   - UV resistance: 70% strength @ 500 hours/ASTM D-4355
   - Apparent opening size (AOS): 0.15-0.18 mm/ASTM D-4751
   - Seam strength: 90%/ASTM D-4632

6. Replace filter bag if bag clogs or has rips, tears, or punctures. During operation keep connection between pump hose and filter bag watertight. Replace bedding if it becomes displaced.

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1. Use 12 inch or larger diameter corrugated metal, HDPE, or PVC pipe with 1 inch diameter perforations, 6 inches on center. Bottom of pipe must be capped with watertight seal.

2. Wrap pipe with 1 4 inch galvanized hardware cloth and wrap nonwoven geotextile, as specified in section H-1 materials, over the hardware cloth.

3. Excavate pit to three times the pipe diameter and four feet in depth. Place 3 4 to 1 1 2 inch stone or equivalent recycled concrete, 6 inches in depth prior to pipe placement.

4. Set top of pipe minimum 12 inches above anticipated water surface elevation.

5. Backfill pit around the pipe with 3 4 to 1 1 2 inch clean stone or equivalent recycled concrete and extend stone a minimum of 6 inches above anticipated water surface elevation. Discharge to a stabilized area at a nonerosive rate.

6. A sump pit requires frequent maintenance. If system clogs, remove perforated pipe and replace geotextile and stone. Keep point of discharge free of erosion.
NOTES:
1. BOUNDARIES OF PROTECTION AREA SHOULD BE STAKED AND FLAGGED PRIOR TO INSTALLING DEVICES.
2. DEVICE SHOULD BE MAINTAINED THROUGHOUT CONSTRUCTION.

ANCHOR POSTS MUST BE INSTALLED TO A DEPTH OF NO LESS THAN 1/3 OF THE TOTAL HEIGHT OF POST.

MAXIMUM 8 FEET ANCHOR POSTS SHOULD BE MINIMUM 2" STEEL 'U' CHANNEL OR 2"x2" TIMBER, 6' IN LENGTH
BLAZE ORANGE PLASTIC MESH

NOTES:
1. BOUNDARY OF ROOT RETENTION AREAS SHALL BE FLAGGED AND/OR FENCED PRIOR TO TRENCHING.
2. EXACT LOCATION OF TRENCH SHALL BE IDENTIFIED BY ENGINEER OR LANDSCAPE ARCHITECT ON SITE.
3. TRENCH SHALL BE IMMEDIATELY BACKFILLED WITH SOIL REMOVED OR ORGANIC SOIL.
4. ROOTS SHOULD BE CLEANLY CUT USING VIBRATORY KNIFE OR OTHER ACCEPTABLE EQUIPMENT.

REUSE OF DOCUMENTS: This document, and the ideas and designs incorporated herein, as an instrument of Professional Service, is the property of Biohabitats, Inc., and is not to be used in whole or in part, for any other project without the written authorization of Biohabitats, Inc.
1. IDENTIFY SPECIFIC EFFORTS TO BE TAKEN TO ADDRESS CONSTRUCTION ACTIVITIES AS THEY RELATE TO SITE STABILIZATION.

2. MINIMIZE DISTURBANCE WITHIN THE WORKING AREAS WHEREVER POSSIBLE. (WOS).

3. LEVEL ALL AREAS, WHICH MIGHT BE REQUIRED, TO BE PROPERLY MAINTAINED DURING ALL PHASES OF CONSTRUCTION. PRIOR TO THE PRE-CONSTRUCTION MEETING THE CONTRACTOR SHALL HAVE AN INSTALLATION PLAN IN ACCORDANCE WITH S.C. REG. 72-300 ET SEQ. AND SCR100000.

4. DETERMINE THE SEQUENCE OF CONSTRUCTION.

5. MINIMIZE SOIL COMPACTION AND, UNLESS INFEASIBLE, PRESERVE TOPSOIL.

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**PLANT SPACING - RANDOM**

**NOT TO SCALE**

**IM** - An individual minimum spacing distance *IM* is assigned to each individual species *See Plant Schedule*

**OM** - An overall minimum spacing distance *OM* is assigned to the planting configuration *See Plant Schedule*

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**PLANT COMPOSITION SCHEDULE**

**Zone 1 - Native Species**

- **Species Name**: Swamp Willow
  - **Common Name**: Argemone mexicana
  - **Site Location**: Native
  - **Planting Type**: Bare Root
  - **Quantity**: 200

- **Species Name**: Swamp Willow
  - **Common Name**: Argemone mexicana
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  - **Planting Type**: Bare Root
  - **Quantity**: 200

- **Species Name**: Swamp Willow
  - **Common Name**: Argemone mexicana
  - **Site Location**: Native
  - **Planting Type**: Bare Root
  - **Quantity**: 200

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**Zone 2 - Landscaping**

- **Species Name**: Swamp Willow
  - **Common Name**: Argemone mexicana
  - **Site Location**: Native
  - **Planting Type**: Bare Root
  - **Quantity**: 200

- **Species Name**: Swamp Willow
  - **Common Name**: Argemone mexicana
  - **Site Location**: Native
  - **Planting Type**: Bare Root
  - **Quantity**: 200

- **Species Name**: Swamp Willow
  - **Common Name**: Argemone mexicana
  - **Site Location**: Native
  - **Planting Type**: Bare Root
  - **Quantity**: 200

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**Zone 3 - Native Species**

- **Species Name**: Swamp Willow
  - **Common Name**: Argemone mexicana
  - **Site Location**: Native
  - **Planting Type**: Bare Root
  - **Quantity**: 200

- **Species Name**: Swamp Willow
  - **Common Name**: Argemone mexicana
  - **Site Location**: Native
  - **Planting Type**: Bare Root
  - **Quantity**: 200

- **Species Name**: Swamp Willow
  - **Common Name**: Argemone mexicana
  - **Site Location**: Native
  - **Planting Type**: Bare Root
  - **Quantity**: 200

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**Zone 4 - Landscaping**

- **Species Name**: Swamp Willow
  - **Common Name**: Argemone mexicana
  - **Site Location**: Native
  - **Planting Type**: Bare Root
  - **Quantity**: 200

- **Species Name**: Swamp Willow
  - **Common Name**: Argemone mexicana
  - **Site Location**: Native
  - **Planting Type**: Bare Root
  - **Quantity**: 200

- **Species Name**: Swamp Willow
  - **Common Name**: Argemone mexicana
  - **Site Location**: Native
  - **Planting Type**: Bare Root
  - **Quantity**: 200

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**Notes**

1. **Zone 1 - Native Species**: Set 1 to 3.
2. **Zone 2 - Landscaping**: Set 1 to 3.
3. **Zone 3 - Native Species**: Set 1 to 3.
4. **Zone 4 - Landscaping**: Set 1 to 3.

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**Landscape Details & Schedule**

**Project Title**: Mowler Court Flood and Resilience Project

**City of Charleston**

**Department of Stormwater Management**

**Scale**: 1:120

**Drawn By**: Biohabitats, Inc.

**Check**: Biohabitats, Inc.

**Issue Date**: August 28, 2021

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**CHURCH CREEK FLOOD AND RESILIENCE PROJECT: MOWLER COURT**

**FINAL DESIGN**

**CITY ID**: TRC-SP2021-000448